DISSERTATION

THE CHARACTERISTICS OF TRAINERS AND THEIR LEVEL OF IMPLEMENTATION OF INFORMATION TECHNOLOGY AT THE INSTITUTE OF PUBLIC ADMINISTRATION IN SAUDI ARABIA

Submitted by

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WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY ALI S. ALQARNI ENTITLED THE CHARACTERISTICS OF TRAINERS AND THEIR LEVEL OF IMPLEMENTATION OF INFORMATION TECHNOLOGY AT THE INSTITUTE OF PUBLIC ADMINISTRATION IN SAUDI ARABIA BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

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ABSTRACT OF DISSERTATION

THE CHARACTERISTICS OF TRAINERS AND THEIR LEVEL OF IMPLEMENTATION OF INFORMATION TECHNOLOGY AT THE INSTITUTE OF PUBLIC ADMINISTRATION IN SAUDI ARABIA

This study examined the relationships between characteristics of trainer members and their level of information technology implementation at the Institute of Public Administration in Saudi Arabia. The implementation of information technology (IT) deals with a wide variety of issues; it has both the challenge of and opportunity for addressing the educational, psychological, behavioral, and lifestyle issues of individuals attending schools. A quantitative survey research design was used to investigate the connection between the trainer members' gender, age, years of experience, rank, computer access, training fields, the number of workshops taken, and job satisfaction, and their level of IT implementation. Finally, the question was whether there would be any combination of variables predicting IT implementation in training, research, and service.

The results show that specialty field, computer access in the classroom, workshop sessions, age, and job satisfaction are statistically significant as predictors of IT implementation. Likewise, the variables specialty field, computer access in the classroom, younger age, intrinsic job satisfaction, and computer experience significantly combine to predict the level of IT implementation in research. Finally, computer access in the classroom, younger age, and high intrinsic job satisfaction significantly combine to predict the level of IT implementation for the service sector.

In the current study, the three factors combined that predict a high level of IT implementation in all the three areas of training, research and service are computer access in the classroom, younger age, and intrinsic job satisfaction. While the level of IT implementation at the IPA on the whole is fairly high, recommendations to increase the use of IT even more include providing computer and Internet access in each classroom, gathering information from departments with higher Internet use, and fostering a work environment that supports a high level of job satisfaction for the trainers.

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CHAPTER 1 - INTRODUCTION

The Technology Revolution of the previous decade has impacted the world in a manner similar to the Industrial Revolution of the 19th century. Information Technology (IT) has drastically changed the manner in which the human race now conducts business, educates itself, and enjoys hobbies and leisure-time activities. According to Moore (2004) and Carnoy (1999), technology has greatly helped with globalization and the integration of the economies of regions and the wealth and prosperity enjoyed. Trade, capital, population migration and the forward and backward integration of markets have greatly influenced the economic development. Technology changes have also helped drastically reduce the cost of doing business and contributed to integrating the world market.

As Okunoye (2003) has pointed out, as part of the information technology revolution the modes of information transfer from educators to students have also changed. There was a long time in the past when books and printed materials for transferring information were rare. Students often learned by practice with the educator who supervised them. Latchman, Salzmann, and Bouzekri (1999) noted that this mode of education generally depended to a large extent on personal interaction. With books and printed materials becoming widely available after the invention of the printing press, the interaction between teachers and students and the learning process underwent changes. Students were given texts and published materials for home study, and discussion and debate styles were often used to impart knowledge. The modern communication media

that have arisen as a consequence of the recent IT developments have drastically changed many teaching styles and methods.

The United States Distance Learning Association (USDLA, 2004) defined distance learning as "the acquisition of knowledge and skills through mediated information and instruction, encompassing all technologies and other forms of learning at a distance" (p. 1). Imel (2001), in the text *Distance Education: A Systems View,* defined distance education as a planned learning effort that occurs at a different place from where the teaching actually occurs. This form of education requires special techniques concerning course-design, novel instructional techniques, electronic and other communication media and a unique infrastructure of administration and coordination. According to Imel, terms such as "wall-less education", "independent and non-traditional studies" and "life-long education" are often synonymous with distance education. Santicchia (2003) reported that the U.S. Department of Education estimated that students seeking online courses will "grow at a compound rate of 33% for the next several years, reaching approximately 2.2 million by 2004" (p. 1).

As Imel (2001) stated, the level of IT support and computer infrastructure needed for online education is high. Many of the connection requirements are standardized in the more developed countries of the world. Access to state-of-the-art computers at affordable rates and Internet connections such as broadband and cable are within easy reach for individuals in these countries. Universities are also using chat rooms, web cameras, and streaming audio and video technologies to facilitate the interaction between instructors and students. The use of these methods requires that both students and the instructors have a good quality IT infrastructure.

While many universities in the United States, Western Europe, and Australia have been offering online courses and distance learning programs for students in the developing countries around the world, as Santicchia (2003) has shown, little has been done to adapt these courses to the needs of the local populations. Developing countries, especially India, China, Pakistan and Iran, with their large populations offer tremendous opportunities for many universities in the developed countries to increase their student population and consequently their profits. Thus, while the implementation of IT in the educational arena has opened many new doors and made many new ways of instruction available, some regions profit more from the new Internet-based delivery methods than others.

According to Melville, Kraemer, and Gurbaxani (2004), the mass proliferation of the Internet and computer technologies over the course of the last decade has served as the basis for the development and implementation of these technologies on a large scale. Today, IT corporate advantages are utilized by almost every business and industry to help improve and facilitate the overall productivity of the organization, and in many cases the application of information technology provides a strategic competitive advantage over others in the same market. This suggests that the use of IT in an organization has a number of salient advantages that make it worth both the cost and time of implementation.

Examining the overall benefits that can be garnered from the changes and utilization of IT in the organization, numerous researchers have noted that when implemented properly, the IT system can serve as the basis to save an organization a considerable amount of money (Ryan, Harrison, & Schkade, 2002). In addition, Stiroh

(2001), O'Donnell (2004), Fernald and Ramnath (2004) stated that research on the benefits of IT utilization in the organization has shown IT can serve as the basis to improve the productivity of the organization, increase quality and customer satisfaction, and increase the value and use of human capital and information sharing in the organization. Clearly, as noted by Devaraj and Kohli (2000), the extensive body of literature on IT and its benefits for the organization is extremely valuable and revealing.

Sambamurthy and Subramani (2005) argued that when IT is implemented by the organization for the purposes of creating valuable knowledge sharing inside the organization, the managers and company leaders need to realize that technology alone will not be able to change the organization. According to these authors, the critical factor of how much impact the IT implementation will have on the company is that all members of the organization use IT once it is implemented. Somekh (2001) supports this assertion, noting that the only benefits that can be derived from IT systems utilized by the organization are those that can be realized from the actual use of the technology by members of the organization.

Davis and Naumann (1999) came to the same conclusion in their research, namely that IT needs to be embraced by members of the organization in order for it to produce the desired results for the development of the organization. If organizational members are unwilling or unable to effectively utilize the IT systems that have been implemented by the organization, the overall benefits that can be garnered from these systems will not be achievable. With this in mind, it becomes evident that there are two phases of IT development—implementation of the actual system and integration of the system into the larger context of day-to-day operations of the organization.

IT is extremely important in the Middle East for the future of teaching (training), research, and service. This study will research how trainers at the Institute of Public Administration (IPA) in Saudi Arabia implement IT. The three primary segments that outline the major purposes are (a) IT implementation for bottom line, (b) educational uses, and (c) characteristics of the users. This is a quantitative research study utilizing a survey method. The survey will be sent to the IPA trainers. The questionnaire will investigate the relationship between the characteristics of the trainers and their level of IT implementation. To fully understand this study, it is necessary to understand the background of IT which will be addressed in the next section.

Background

Use of IT in educational settings is a relatively new phenomenon that started in the 1900's and has improved since then (Blackwood, 2001; Roblyer & Edwards, 2000). These changes made the delivery of educational information more efficient, more manageable and organized (Roblyer & Edwards, 2000; Simonson & Thompson, 1997). According to Roblyer et al., in the 1950s, the US military utilized computer simulators in the training and education of pilots at the Massachusetts Institute of Technology (MIT). This initial use of computers was followed in the 1960s by large mainframes that were extremely large and cumbersome compared to today's IPODS and handheld computers.

These mainframes were developed by Computer Curriculum Corporation (CCC), Control Data Corporation (CDC), and International Business Machines (IBM), a multinational corporation. The 1970s saw the rise of the microcomputer (Roblyer & Edwards, 2000). They have been heavily produced by numerous companies and utilized by most universities and institutions since that time. Hooper and Rieber (1995) have

outlined this IT process in detail from development, production, organizations, and institutional use to the classroom settings and individual student learning. There are three primary segments to the background for this study that outline the major purposes: (a) IT implementation for bottom line, (b) educational uses, and (c) characteristics of the users.

IT Implementation for Bottom Line

IT is implemented to reach bottom line goals and objectives of the organization to propel it forward (Byrd, Sambamurthy, & Zmud, 1995). Howard, Schenk and Discenza (2004) stated that the university environment now has a great influence on the quality, range, and the scope of information that is delivered to implement IT and reach their bottom line. Similarly, there is no doubt that the environment within which the university operates has a great influence on the "sales or ultimate goals" that the university can hope to achieve using the new courses and programs. Many foreign universities that appear in the markets offering online courses fail to establish themselves for sustained periods of time in local markets. The cost of the education, the range and scope of the education and the applicability of the education to the local businesses in the region have all impacted the quality of education in Saudi Arabia.

Selwyn, Marriott, and Marriott (2002) explained that computers have helped teachers and instructors in universities deliver education in a format that is more easily compatible with the modern world. Managing computers and software needs for universities requires the installation of an information system that can handle the needs of the teaching and the administrative sections. Rapid evolutions in computer technology have offered universities a plethora of IT implementation options that can be customized to every aspect and need of the university. Networking technology has also benefited

from innovation and creates work conducted within university settings and customized to suit the unique needs of an educational institute.

Carlitz and Mario (1997) stated that over the years, many of the advanced and developed countries have encouraged industry-university collaborations to help the community and the region grow and prosper. Many innovative computing ideas were first tested in university settings. For example, a central email computer at the University of Wisconsin (THEORYNET) was funded by NSF and set up in 1988 to allow approximately 100 theoretical computer scientists to set up and exchange emails through phone modems. The University of Delaware provided the mail software, and the TCP/IP protocols were supported by Advanced Research Projects Agency (ARPA). In a similar manner, universities, governments and industries all over the industrialized world have worked together to generate networks that help create prosperity and wealth for the region and the citizens in the region.

In synthesizing this information it seems feasible to argue whether or not the organizations utilize IT to accomplish missions and goals. Puskar (2004) reported that while there are indeed specific issues that will impact the overall success of IT programs in the public organization, the central issue for development and success is the manner in which IT is utilized by the organization. As such, it becomes evident that while public organizations may need to consider specific issues in the development of IT programs for the organization, the central issue for success is the degree to which the members of the organization will integrate the use of these systems on a day-to-day basis.

With the realization that the current research clearly delineates the specific need for individuals to embrace the use of IT in order to make it an effective tool for the

development of the organization, it becomes clear that the ultimate success of IT implementation will be contingent upon how the organization chooses to effectively train and manage its members with regard to IT (Fisher & Howell, 2004). According to McAdam and Reid (2000), although research on the implementation of IT in the private sector suggests that organizations can effectively manage this process, due to the fact that they typically have an abundance of resources for training and staff development, a concern arises when it comes to the implementation of IT in the public sector. They indicated that public agencies are often held to strict budgets that seek to provide resources to clients rather than to organizational members; it stands to reason that the implementation and utilization of IT in the public sector may not be as effective as it is in the private sector.

Educational Uses of IT

IT is specifically implemented in public and private sectors for organization members to integrate and utilize IT systems for its overall systematic success (Puskar, 2004). The teaching styles displayed by the educator also impact the education imparted. Clegg, Trayhurn, and Johnson (2000) affirmed that the styles of teaching, personality, methods of delivery of educational information and the level of interaction between teacher and student impact the quality of education. The students have also changed - while some learn computer skills merely because "their job requires it," others will spend hours learning and reading more at home to improve their skills for educational, business, and personal use. In the past, student populations were generally young and inexperienced, education was generally used as a medium for them to find employment for the future. In recent times, large numbers of adults are coming back to schools and

colleges to obtain higher degrees, gain more knowledge, or use the additional education as leverage for higher job prospects. Many of these are using IT in educational environments, atmospheres, and for educational benefits.

According to Strange and Banning (2001) and Blackwood (2001), in the educational and institutional (university) atmosphere and environments - both formal and informal - the role of the IT savvy educator or teacher is critical. Teaching styles of educators and the modes of delivery of the education are often cited as the single most important factor that can attract a student to the subject being taught or disillusion the student from the learning process.

Roblyer and Edwards (2000) indicated that the modes of information transfer from educator to student have also changed. In ancient times, books and printed material for transferring information were rare. Students often learned by practical work under the supervision of the educator, or by rote. The result of the learning process generally depended extensively on levels and depths of personal interaction. With books and printed material, in the post-Middle Ages, teaching and student interaction evolved. Students were given texts and published material for home study; discussion and debate styles were often used to impart knowledge. Furthermore, Strange and Banning (2001) also supported the premise that the role of the educator is, now perhaps even more than in the past, quintessential in the delivery of education due to technological advances. Modern communication mediums, however, have drastically changed many of the teaching styles and methods used. Recently there has been a plethora of web based or Internet instruction. In such an environment, there are no performance metrics (yet) to recognize if the student truly absorbs the information imparted to him or her. Accessing a

student's level of cognition in these new educational methods is also more complex and difficult than the more traditional classroom methods.

Carlitz and Mario (1997) explained that changes in computer technology and the adaptation of computers to traditional educational needs require the support of personnel in this field. The benefits and advantages of using IT in any university environment have been observed to greatly improve and enhance the image and the capabilities of the stakeholders. Change in most situations takes time and training, and educating end users requires time, funding and determination. When teachers encounter new technology, it takes them time to assimilate the value of this technology for their teaching activities.

According to Byrd, Sambamurthy, and Zmud (1995), the overall impact that IT will have on the organization depends on the specific context of the organizational environment in which IT is implemented and how this technology is utilized. As such, there is an impetus to consider the use of IT in the public organization, such that the specific barriers to successful use and implementation can be discerned. While it is clear that the context of how well the IT system is integrated into the organization and utilized is paramount to this process, it is pertinent to consider if there are any other significant issues that arise in the implementation of IT in the public sector.

Assessing the current literature on this topic, Brown and Brudney (2003) have noted that the degree of success that IT has in the public sector is contingent upon how well members of the organization can delineate the needs of clients. They contend that because public organization have different goals and objectives than their private counterparts, members of the organization need to delineate the specific means by which IT will be used to improve the overall performance of the organization. If this basic need

is not met in the context of IT development, the use of this technology will be highly unsuccessful.

Bozeman and Pandey (2004) also considered the use and application of IT in the public sector. According to these authors, the extent to which IT is harnessed by the organization for the process of decision-making will ultimately impact how successful IT is in the development of the organization. Greenemeier (2004), in his brief review of the IT projects that have been undertaken by the federal government, notes that there is a wide variation on the overall success of the programs in each organization. He affirms that it is much easier to deal with the private sector than the public sector. He attributes these differences to the fact that the manner in which each organization has implemented these programs plays a significant role in their overall success. Thus, IT can truly assist organizations, institutions, and individuals in reaching their bottom line goals, missions, and objectives if they have the characteristics necessary to learning and implementing IT.

Characteristics of the Users

There are numerous user characteristics that determine if IT can be learned and successfully implemented. Program success depends on learning IT, the use of IT, variables that affect acceptance by the trainers, and IT application in the organizations. This final step is affected by gender, age, educational/learning attitudes, organizational experience, experience with computer technology, and years of computer education, access to computers and the Internet, and utilization of IT to gain job satisfaction. There are numerous variables to consider in compelling organizations to embrace information technology (Byrd, Sambamurthy, & Zmud, 1995). Blackwood (2001) showed that in organizational and educational settings the characteristic of users, their attitudes towards

learning, and their implementation of these learning techniques will determine the success of the individuals and organizations that rely on IT.

According to Bozeman and Pandey (2004), teachers in higher education have the responsibility of teaching, conducting research and identifying returning and promising students for mentoring and guidance through the highest ranks of education provided by the university or college. Trainers should try to understand the needs of the individual students and the subject matter that is being taught. Maslow (1954) identified five basic needs that drive human motivation: (a) physiological needs, (b) security needs, (c) the need for affiliation, (d) the need to feel self-esteem, and (e) the need for self-actualization. Maslow suggested that worker disaffection was due, not to something intrinsic to workers, but due to poor job design, managerial behavior and too few opportunities for job satisfaction. Over time, there have been various other motivation theories postulated.

Herzberg (1964) indicated that there are various factors that affect motivation: (a) working conditions, (b) salary, (c) job-security, and (d) company policies. Achievement in a specific field is affected by recognition of the value of the work done, pride in the work itself, responsibility for the work done, advancement and growth in the work place – all of these factors act as stimulants and motivate workers to improve the quality of their work. Organizations use various methods to motivate their employees.

Internet browsing, web mail, shopping, and work are often associated with the reasons that women are motivated to use computers. Cognitive styles and gender significantly impact the use of technology. However, as computers become more accessible and education and training programs more frequent, some of the anxiety and

fears associated with computer usage have been decreasing. For women, conflicts between home and work life can seriously impact the amount of time that can be spent learning new technology. Lack of mentoring and female role models for embracing IT is also impacting women's use of IT (Taylor, 2004).

Age has been identified as a factor that affects job satisfaction and the level of interaction with IT that is experienced (Vallas, 2003). Adult training is different when compared to teenage or youth training. Lankard (1995) stated that while the modern generations (Generation X, Y) have grown up on computers, older generations had to experience the learning curve for new systems. With the use of IT, older individuals restricted by personal and work commitments can gain wider knowledge and education if they are personally willing to undertake the learning curve required.

The number of years of computer experience that an individual has acquired has also been shown to impact the level at which an individual embraces information technology. Not surprisingly, Igbaria and Chakrabarti (1990) found similar results in their investigation of computer anxiety and attitudes toward computer use. Availability of a computer affected the experience that could be gained. Individuals having free and easy access to computers and who use it for work have greater opportunities to learn new uses for the equipment.

In his investigation of pre-service and in-service teachers in California, Yildirim (2000) found that those attending state mandated education courses for computer technology were more likely to implement computer technology in their classrooms. Those taking the courses also reported more favorable attitudes toward the use of computer technology overall. Cabell (2001) in his investigation of medical students' use

of IT found that informal courses on using this technology boosted overall usage and fostered positive attitudes toward computer technology.

As many researchers indicate (Carter, 2001; Clark, 2000; Parr, 1999), the access that an individual has to a computer will also serve as the basis for the utilization and integration of IT in the workplace. Selwyn, Marriott, and Marriott (2002) found that individuals with home computers were more likely to utilize computers in the academic setting. Thus, Chisholm, Carey, and Hernandez (2002) found that high school students that have access to computers at home are more likely to utilize computers in other settings and are often better versed in basic computer technology. On the other hand, a five-year longitudinal study about the application of technology in teaching and learning conducted by Parr (1999) came to the conclusion that there is no link between the accessibility of computers and teachers' willingness to incorporate computer-based activities into their instruction.

In spite of the fact that quantitative studies on the impact of Internet access on the use of IT have not been widely reported in the scholarly literature, there is some evidence that demonstrates the impact of a lack of Internet access on the overall attitude of the user. Without appropriate and consistent access to Internet technology, individuals will be either unwilling or unable to successfully embrace, implement and integrate information technology (Carter, 2001).

Researchers have reported a positive correlation between job satisfaction and IT use. Dvash and Mannheim (2001) and Thatcher, Stepina, and Boyle (2002) have noted that when employees are more satisfied with their jobs, they are more apt to embrace and utilize information technology. An environment which fosters honest and open

interaction between the management and workers helps workers relate to their jobs better, and it improves their esteem about their work and their role in the organization.

Over the last years, the invention of information technology has brought dramatic changes to the world of business, private and public institutions, and the world of education. How well IT is received, and how widely it is implemented, depends to a large degree on the people who do or do not make use of it. There is a wide range of factors that seem to determine whether a person is likely to use IT, including age, gender, years and amount of computer experience, job satisfaction. More specifically, the current research will address the manner in which IT relates to the history of the Institute of Public Administration (IPA) in Saudi Arabia and its involvement with this new technology.

History of the IPA in Saudi Arabia

The use of IT systems in the Middle East is strongly influenced by sociopolitical factors, even in the nations more tolerant of Western culture and technology (Fandy, 2000). In nations in which there is a greater degree of trust between the people and political authorities, there is a higher degree of IT penetration. Even when IT is used solely in a business context, there is a relatively high degree of social resistance to it, due to more conservative cultural forces that are resistant to change. In the social context of the Middle East, the way in which IT systems are used differs significantly from the way that they are used in Western nations, with the electronic system regarded as an adjunct to rather than a replacement of traditional communications methods. In many respects, the approach to IT in many areas of the Middle East is analogous to the back end approach

that was common in the Western nations until the development of the networking organizational paradigms during the 1980s.

There is, however, a strong willingness to learn the skills necessary to use electronic systems due to the recognition that IT is linked to future prosperity (Anderson, 2000). There remains a significant gap between the sophisticated IT systems that are available in the international marketplace and the skills necessary to use the systems in local Middle Eastern environments, including the Kingdom of Saudi Arabia. In order to remedy this difficulty, infrastructure developers such as the IPA have to closely examine the level of existing skills of the end users in order to provide the necessary training to insure the successful use of the information technology system.

According to McDowell (2001), despite efforts to improve the level of computer and Internet penetration in Saudi Arabia, it remains relatively low when compared to the more technically advanced nations of the United Arab Emirates. Saudi Arabia lacks extensive Internet infrastructure, which has a negative impact on the connectivity speed of end users. This serves as a disincentive for public and private organizations to increase reliance on the Internet as a means of increasing efficiency and improving communications. Part of the reason that there is difficulty with the deployment of new IT such as the Internet is the lack of a national strategy for technology development and deployment.

Zittrain and Edelman (2002) stated that Internet filtering in Saudi Arabia is very strict and tightly controlled. Internet filtering is the practice of controlling what Internet sites are accessible by individuals in the country. This practice is very important to the country since it has a very strong and well-defined religious, ethical, and governmental

structure. Thus, any future implementation of IT in Saudi Arabia will have to take into account the cultural and religious codes, standards, and practices of the kingdom.

The history of the IPA shows that the primary divisions are governed and managed by the Board of Directors (BOD) and the government (see Appendix A for the IPA chart). According to the IPA (2003), the purpose of the Institute is to promote the efficiency of government civil servants and prepare them academically and practically to carry out their responsibilities. This will prepare them to approach their administrative duties from the perspective of service delivery in accordance with the mission of the public organization. The IPA also recruits and trains individuals for future leadership roles. Table 1 summarizes the percentages of Saudi trained staff and administrators by the end of the training year 2001/2006 (IPA, 2006). It shows that of the 412 trainers at the IPA, about 80% were from Saudi Arabia and 102 trainers, about 20%, were non-Saudi. The IPA staff has 1201 employees in total including trainers, administrators, technicians and workers.

Table 1.1

Distribution of the IPA staff according to type of profession and nationality

Profession	Saudi	Non-Saudi	Total	% of Saudis
Training staff	412	102	514	80.1
Administrators	225	6	231	97.4
Technicians and workers	174	207	381	51.7
Total	881	320	1201	73.4

The IPA has in-service training programs and extensive preparation programs for their own staff. They are also developing and training people to apply IT principles to meet the future growth and development of Saudi Arabia and its government.

Computerization using IT is a central tool for the current administration at the IPA to link trainers and administrators with needed information. It connects trainers' present and future duties within the IPA as well as helps update and centralize information at the IPA in a secure manner. The IPA's Computer Center Department provides the school administrators with new tools to support them in training and administrative activities. A management information system is a formalized computer information system that can integrate data from various sources to provide the integrity of information necessary for management decision-making (Hicks, 1990). IT is designed to match the training structure, management tasks, instructional processes, and special needs of any school, institution, college, and university.

Research Problem and Statement

IT appears to be widely implemented by organizations to improve their bottom line and garner a number of benefits that can serve to propel the organization forward (Byrd, Sambamurthy, & Zmud, 1995). Although the extent to which a member of the organization uses IT affects the success of the program, the variables that impact user acceptance and application of IT are quite extensive. The manner and extent to which IT will be utilized and implemented by the individual user may be contingent upon gender, age, years of experience in the organization, years of experience with computer technology, amount of computer education, access to computers, access to the Internet, and job satisfaction. This study explores the working relationship between the

characteristics of trainer members and their level of implementation of IT at the IPA in Saudi Arabia.

Independent Variables (IV)

The following independent variables will be measured by a questionnaire called the Computer Usage Survey (see Appendix B for the English version; this will be translated into Arabic; the Arabic version will be given to the trainers). These variables are called the Characteristics of the Trainers:

1. Age, interval, continuous
2. Gender, nominal, two levels
    a. Male
    b. Female
3. Rank, ordinal, four levels
    a. Lecturer - Bachelors' degree
    b. Instructor - Office Management Diploma
    c. Instructor - Master's degree
    d. Professor - Doctoral degree
4. Training field, nominal, Five levels
5. Experience using the computer, ordinal, four levels:
    a. 1-5 years of experience
    b. 5-10 years of experience
    c. 11-15 years of experience
    d. 16 or more years of experience
6. Training in IT Workshops, ordinal, four levels:

a. 0 workshops

b. 1-2 workshops

c. 3-4 workshops

d. 5 or more workshops

7. Computer Access in classrooms, nominal, two levels, yes/no.
8. Computer Access in home, nominal, two levels, yes/no.
9. Internet Access in classrooms, nominal, two levels, yes/no.
10. Internet Access in home, nominal, two levels, yes/no.
11. Overall Access Score, interval, 0-6 (7 through 12 added together)
12. Intrinsic Job Satisfaction, interval, Likert, 4-24
13. Extrinsic Job Satisfaction, interval, Likert, 4-24
14. Overall Job Satisfaction, interval, Likert, 8-48

Dependent Variables

The following dependent variables will be measured by the questionnaire and are called Implementation of IT in:

1. Training, interval, 5-30
2. Research, interval, 5-30
3. Service, interval, 5-30

Research Questions

1. Is there a relationship between trainer's gender and level of Implementation of IT?
2. Is there a relationship between trainer's rank and the level of implementation of IT?

3. Is there a relationship between trainer's training fields and the level of implementation of IT?
4. Is there a relationship between trainer's age and level of implementation of IT?
5. Is there a relationship between trainer's years of experience and the level of implementation of IT?
6. Is there a relationship between trainer's training in IT workshops and the level of implementation of IT?
7. Is there a relationship between trainer's access to a computer in trainer's classroom and the level of implementation of IT?
8. Is there a relationship between trainer's access to a computer in trainer's home and the level of implementation of IT?
9. Is there a relationship between trainer's access to the Internet in the trainer's classroom and the level of implementation of IT?
10. Is there a relationship between trainer's access to the Internet in the trainer's home and the level of implementation of IT?
11. Is there a relationship between trainer's over all access and the level of implementation of IT?
12. Is there a relationship between trainer's intrinsic job satisfaction and the level of implementation of IT?
13. Is there a relationship between trainer's extrinsic job satisfaction and the level of implementation of IT?
14. Is there a relationship between trainer's overall job satisfaction and the level of implementation of IT?

15. Is there a combination of the Characteristics of Trainers that predicts their Level of Implementation of IT better than any one alone and, if so, what is the best combination?

Significance of This Study

This study can help decision makers design training programs that can help the trainers and educators use the IT system. Problems generally arise during the adoption of new technology, not as a consequence of the intricacy of the technology or the difficulty of concepts but more as a result of users being nervous and unsure of the processes that need to be used. According to Lipsey (2002), organizations strive to use "Relationship Intelligence (RI)" in order to divulge the intricate and complex interrelationships that tie individuals, groups, companies, organizations, relationships, similar experiences, knowledge, skills, and abilities together within the company. At universities, how these relationships are nurtured and maintained can help the staff make more valuable use of the IT system.

By training and investing in human capital, organizations constantly prepare themselves for changes in the environment. Many quality awards such as the Baldrige Criteria for Performance Excellence, the Deming Award, and the EFQM stress the need of training of the workforce to enhance the flexibility of the organization. The focus of continuous improvement is considered the process, and the employee involved is the product that is supposed to reflect his or her training, professional development, and other organizational education growth plans. A university is no different in this aspect, and the quality of education can be improved through effective management of the resources within the university (Vallas, 2003). Drawing on information gathered through this study,

management can identify the pitfalls and the potential problems that can arise as a result of poor vendor selection, implementation and maintenance of IT. Identifying the key personnel in the university and constantly involving these persons in the decision making process for improvement can also help get the best usage of the IT system.

The IPA in Saudi Arabia is a premier higher educational institute that offers a wide range of programs and areas of study to eligible candidates from the country and surrounding Arab countries. Understanding the problems related to the transition and implementation of IT is mandatory. It is vital to assess the needs of the organization and the manner in which the IT infrastructure will be used, and the project lifetime for any IT system implemented at the IPA. IT obsolescence is a factor that has to be considered and understood. IT requirements also change over time; as such the ability to apply the concepts to the unique environment that is present is also vital. Observing the advancements made by many countries in Asia and the growing need to offer quality education to their students has motivated the IPA to look forward to implementing IT systems that can help the students get the best quality of education and prepare them adequately for the workplace.

Limitations of the Study

This study will not address trainers outside of the government employment of Saudi Arabia. Thus, it is limited to the IPA trainers. The study is limited by the trainers' knowledge and skills and their satisfactions with implementing IT. Respondents are thought to have understanding of the survey items used in this study and awareness and experience related to IT implementation. This research is limited to those trainers who are willing to voluntarily participate in the survey.

Delimitations of the Study

This study will use the single population of trainers from the four branches of the IPA in Saudi Arabia. Only the trainers from the IPA, about 514, are being surveyed and not a broader group outside the IPA. This may also limit the application of the data. However, the population size in this study is commensurate with the number of IT users in other institutions in Saudi Arabia that could potentially utilize the results of this study and benefit from them.

Researcher's Perspective

The researcher is a citizen of Saudi Arabia and has worked for the IPA for 13 years and is intensely interested in the IT of the entire country. Prior to that work experience he obtained the equivalent of a bachelor's and master's degree in public administration with a diploma (post bachelor's) in business education. The researcher has a strong background in various IT topics and has received formal training in this area, which can possibly infuse some biases into the study.

The researcher is working closely with the government of Saudi Arabia on the task of maintaining and upgrading all the systems and applications that are supported in the computing environment. The researcher is also familiar with the biases and prejudices of others in the government of Saudi Arabia, and this has assisted the researcher in framing the topic under investigation. From personal experiences and global perspectives, he recognized that the government of Saudi Arabia needs to improve its IT infrastructure to keep pace with the global communities.

The chaotic situation of computer education in Saudi Arabia and the Arab world in general has been noticed and commented on by many outsiders. The problems of

computer education are also the result of the population not having fluency in English and the difficulty of embedding Arabic into programming. The IPA serves as the bridge for the country to make this transition. The IPA is also a front to the rest of the world for Saudi Arabia and undertakes active studies that might be conducted by global organizations.

To make the IPA's IT system effective and functional in the shortest possible time, it is also vital that the researcher, trainers and IT personnel identify the changes and improvements desired. The researcher seeks to undertake these changes within the framework of time, cost and existing expertise of the government and the IPA. In order to gain and maintain premier status in the region, the IPA is also realizing the need to develop a website for the Institute that is appropriate and acts as a marketing and advertisement tool for the center.

Likewise, the government and citizens need to make more contributions to the country and the world. The researcher may have biases in the form of pre-existing beliefs, knowledge about the trainers, their tasks, and biases which may have influenced the way in which the study was carried out, but he has tried extremely hard to avoid biases. The researcher may have biases regarding the administrative staff, trainers, managers, and the way they perform their jobs because he desires to improve the entire system. This included abandoning some of the false ideas he adopted from old managers and trainers and learning new global ideas regarding IT implementation and business education. The researcher believes that the advent of global IT communication networks is important to the world and wants to make contributions in this area.

The researcher believes that IT and its intricacies need to be understood by all end users; each user should desire to improve governmental IT implementation and utilize IT to its full potential. The researcher is familiar with the trainers' teaching style, research abilities, service attitudes, and national rules and regulations for education. Saudi Arabia, however, has also strict religious rules and regulations with respect to Internet usage. Access to information is limited and sites that are deemed 'inappropriate' (religion, sites providing information specifically to and about women, sites with sexual content, pages perceived to be hostile to Saudi Arabia and the policies of the region, and some entertainment sites) are generally blocked. The IPA is also undertaking the connection to the Internet and providing its staff with Internet access at work, home, and in educational institutions. For an educational institution, the ability to connect to various online journals and libraries as well as access resources of other universities can help improve and grow the curriculum and the courses supported by the government.

It is obvious, therefore, that the IPA needs to have effective trainers and educators who can help in the growth and development of the IT infrastructure in the government, nation, region, and world. Teachers and educators at the IPA have to be cognizant of the facts and the techniques used by other teachers in similar environments. Universities as an organizational entity are also changing significantly, and the teachers/faculty characteristics play an important role in this change process. While there are significant benefits to be gained from implementing IT at the IPA in Saudi Arabia that need to be addressed in this study, there are also challenges and restrictions. The researcher's goal is to be unbiased and more progressive in this study. Therefore, the implementation of IT

needs to be carefully examined, and unbiased conclusions need to be drawn from this study.

CHAPTER 2 - LITERATURE REVIEW

This chapter is divided into four sections. The first discusses the history and evolution of IT. Special focus is given to the U.S. where IT has changed the manner in which business is conducted both in the private and public sectors, including the field of education. The second section discusses the role of the IT revolution in education. This includes the implementation of IT in academic settings, the challenges and the benefits that come with the use of the new technology. The third section discusses the role of trainers and their constant professional development in the field of computers. The knowledge and the skill level of the educator and the willingness to learn new information are very critical. The fourth and last section of this chapter presents the theoretical framework that is behind the present study. Special regard is given to IT in public organizations and its role in Saudi Arabia.

The evolution of IT and growth of educational institutions along with the changing focus and the different educational programs offered is also discussed. Saudi Arabia is also changing its strategy with respect to mass education, and the change in public administration that goes along with these changes will also be discussed. There will also be a discussion of the needs of implementing IT in the public sector in Saudi Arabia and the supporting infrastructure required for a development of this nature. This will include a discussion of the availability of skilled employees and personnel along with trained and experienced consultants who can help the country make these transitions.

The History and Evolution of IT in Business and Educational Settings

Over the last fifty years or so, computer systems have moved from large mega computers that took up thousands of square feet for simple calculations to handheld computers that can complete the same calculations in just a fraction of the time. The first phase of the IT revolution during the 1970s and 1980s affected mostly administrative processes where work was delegated to large centrally controlled computers and minicomputers. The current second phase of the IT revolution is dominated by microcomputers and characterized by distributed resources and high-speed, fully connective peer-to-peer networks (Blackwood, 2001).

According to Blackwood (2001) and Pimchangthong, Plaisent, and Bernard, (2003), in an environment where personal computers are a part of almost every workplace, the development of computer networks is the most important aspect of the IT revolution. In 1969, the Defense Advanced Research Projects Agency (DARPA) established ARPANET which became the forerunner of the Internet. ARPANET was experimental in nature; its purpose was to link computers at major research universities in the western United States. This was accomplished by using a set of protocols that provided stability in connectivity.

Gradually researchers were able to come up with the advanced open architecture design of the ARPANET; from there the network design progressed to the Transmission Control Protocol/Internet Protocol (TCP/IP). The TCP/IP was adopted in 1983 and led to the establishment of the Internet. To make it possible for researchers at the European Laboratory for Particle Physics (CERN) to exchange information across different

computer platforms, Tim Berners-Lee created the hypertext transfer protocol (HTTP) in 1991 which supports the exchange of hyperlinked text documents. In 1994, the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign released a computer application called Mosaic. This application made it possible to transfer not only hyperlinked text documents via the Internet's hypertext transfer protocol, now it became also possible to exchange multimedia information with the World Wide Web potentially serving as a medium for global communication (Blackwood, 2001).

Pimchangthong et al. (2003) showed that IT has gone through different stages of evolution from the first generation of mainframe computers using vacuum tubes to the present day microprocessors. As technology has evolved, the application of technology has become more commonplace. In the past, computers were the privilege of universities that had tremendous funding and research projects. However, now even small universities can support IT infrastructures that can help the university make the best of the resources that it possesses. Through the launch of the Windows operating system with a graphical user interface (GUI) and multitasking environment in 1983, Microsoft was able to establish its dominance in the IT market. This brought the PC to the homes of millions of people, and the ability to connect remotely to different networks and share information and knowledge has enabled a wide section of the population to enjoy the benefits of the connectivity.

IT encompasses design, installation and maintenance of computer hardware, software, and a forum for collection, processing, storage, presentation, archiving and retrieval of information. The concepts of processing information collected using all the

capabilities of a computer (hardware, software, databases and storage technology) and the networks linking the components of computers together to share information as and when needed is referred to as Information Technology. An information system provides a societal capability based on the use of information that encompasses its full context of people, institutions, policies, processes, incentives, data, information technology, and infrastructure (World Bank, 2004).

After the organization of public schools, the implementation of the written expression as an educational tool, and the extensive sharing and use of textbooks, the advent of computer-based information technology has been called the fourth revolution in education. Information technologies provide a variety of advantages and enhancements to colleges and universities, allowing them to be more effective in their teaching, to reach a wider range of the population, and to help them cut down on expenses (Gates, 1996; Oblinger & Kidwell, 2000).

Internet-based distance education for example is made possible through recent technological developments and provides an alternative to the traditional classroom instruction model, giving access to higher education for a population that might not have been able to attend regular on-campus classes and allowing for more flexibility for both instructors and students. Many instructors now include web-based research assignments as a part of their classes, post assignment instructions and tools on their website; provide Internet based discussion forums for their students. The computer technology also assists university and college personnel in grading, managing student records and advising. In addition, the information technology supports the academic faculty with their research

projects, be it through Internet supported library access, online journals, or web-based discussions with their colleagues from all over the world (Blackwood, 2001).

Implementation of IT in an Educational Institute

Reiger and Stang (2000) stated that, "speed, which accounts for competitive advantage in today's dramatically changing environment, has completely altered the very essence of strategy, organizational culture, and time orientation" (p. 114). In the consumer market, in recent times there has been a convergence observed in digital technology. The merging of the three major industries of computer and software business, the consumer-electronics sector and the communications industry indicates the true effect of globalization.

According to World Bank (2004), information and knowledge get transmitted through networks. National information infrastructure consists of both the telecommunications networks and the strategic information systems necessary for widespread access to communications and information services. Typical among the strategic systems are sector-wide information systems for education, health, public financial management, and transportation. Electronic payments, university and science networks, trade facilitation, disaster prevention and management, property and business registries, and national statistics might also be considered strategic systems.

Steinberg (2003) stated that a study conducted in 2001 by Digital Opportunity Initiative identified five core elements that can create an "enabling environment" for any IT implementation:

1. Infrastructure (the hardware and "pipes," physical and wireless)

2. Human capacity (skilled individuals who can maintain, adapt, train, and use the technology)
3. Government policies (telecommunication policies that facilitate the adoption of information and communication technology (ICT), along with sound governance and trained regulators more generally)
4. Content (applications geared to the specific need of developing communities, such as local language and tools for educational institutions)
5. Support for enterprise

Smith and Rupp (2002) stated that there are generally six stages to the initiation of IT. These stages are identified as "initiation, adoption, adaptation, acceptance, reutilization, and infusion" (p. 64). The technology infrastructure and systems development are constantly changing, and individuals employed in the field need regular and periodic updating of skills. This becomes critical as the personnel at all times has to be able to use the equipment and the new technology that might be introduced during the implementation and then maintenance duration. The quality of education and training offered to potential workers in this industry is very important.

According to Chae and Marshall (2005), the emergence of the University System-Wide Management Information System (USMIS) in the 1980s was the result of the "technological, institutional and organizational" changes that were occurring. The private sector was already aggressively pursuing the advantages that the technology revolution had introduced, and significant advantages were observed when companies used software technology and integration applications. Enterprise wide Resource Planning (ERP), model-oriented Decision Support Systems (DSS), query and reporting tools, On-line

Analytical Processing (OLAP) were some of the most commonly employed tools.

According to Pimchangthong et al. (2003), technology is changing the way we live and work. Its influence is observed in all strata of the population and throughout the world. The implementation and use of IT in education in developed countries such as the U.S. and the U.K. has existed for the past two decades. The most aggressive and progressive schools adopted the use of this technology as far back as the 1970s. The educational institutes in developing countries are, however, racing to catch up with their developed counterparts in this arena with varied successes at different levels. Studies indicate that politics, law, culture, economics, technology infrastructure, and the availability of skilled personnel have greatly influenced the difference of key issues in the use of IT between developed and developing countries.

Implementation

Porter (1998) stated that selection of the best vendor to provide the software and the hardware requirements for the IT system is the first stage after the decision to implement an IT system within a university is undertaken. Different universities and schools, depending on the budget structure and the method of decision-making, might review a wide range of products from different vendors and their adaptability for the university's needs. Some vendors offer customizations and add-ons that can help incorporate future growth and development of the university. Universities should, however, be cognizant of the fact that customization and adaptation of software to its needs can be costly. Vendor stability and dependability is also essential, as the university might need to change and adapt individual modules at a later date. The implementation and installation of an IT system for the university is a long drawn-out process, and while there are similarities

between different universities, there are as many differences and variance. During the pre-implementation stages, care should be taken that the hidden costs of the IT implementation are investigated.

Budgets need to be planned at the initial stages and have to be reviewed by the necessary certifying individuals. This step prevents universities from starting the process of IT implementation and then realizing that they do not have the necessary funding for the modifications and the customizations desired. IT systems are costly, and the integration of new systems with legacy systems can make it even more costly. In environments where universities do not have the in-house expertise, hiring new personnel is also required - these costs also need to be incorporated in the budget planning. IT departments also require supporting staff for data entry and data validation during the initial stages if the legacy systems are not used and existing data is input into the new system (Ross, 2005).

Many universities possess legacy systems and hardware that are not compatible with many of the new models and software that are required for proper functionality of the IT. Often in these situations a centralized IS management is responsible for the different existing systems and many in-house and homegrown systems, and support for existing operations does not exist. Personnel responsible for creating the systems may have moved on, and many systems are maintained with 'band-aid' measures. To compound problems with legacy systems, different departments and schools maintain their systems in isolation of other systems. This results in systems not being completely compatible with each other (Schneider & Sarker, 2005). Replication and duplication of work is common and creates more confusion and chaos. Developing an IT system in-

house might have an advantage if the university has the necessary skill and know-how. A project of this nature, however, requires a number of dedicated personnel and with budget constraints, universities generally opt to select a vendor who can be held responsible for completing the tasks required for functioning of the IT systems (Ross, 2005).

In education, IT infrastructure needs to be implemented in two critical areas, administration and teaching. Universities are implementing new software that can help them track classes, registrations, records and student performance. IT has also changed the manner and strategy that the university can use for marketing and advertisement of the university and the services that it provides (Byers, 1997). Porter (1998) stated that the current environments in which organizations operate are very dynamic. And positioning, which was once the core of strategic management, no longer works. Every university has a unique and individual business structure. It is a result of the culture and the values of the employees of the university and the caliber of students attracted to the university. As a consequence, the structure resembles a puzzle that needs to be solved from within. Ross (2005) stated that modern universities are challenged constantly by a combination of technology changes, market changes, logistic challenges, student demands and human resource challenges. By identifying their core competencies and cultivating these options to generate revenue and reputation, universities can maintain their position and prestige in the region. Universities have to be able to look at the entire picture: external as well as internal factors affect an organization. Schneider and Sarker (2005) stated that simply duplicating the wining strategies used by others may not help a university in developing their IT infrastructure. Having proven knowledge and expert understanding of the variables affecting the university is important.

Any IT infrastructure also differs based on the needs and the level of the expertise that the employees within the university have to harness the information for their own needs. Developing intranets for effective communication is also required for modern day universities. Lack of communication is the most commonly cited reason for disconnect within universities. Departments and schools within large universities rarely - if ever – interact, and information flow is often found to be lacking (Byers, 1997).

Kreps (1989) stated that any IT system should increase the communication interaction between levels and departments. He identified two basic types of communication within organizations - formal communication and informal communication. Two types of formal communication exist within organizations: vertical and horizontal. Vertical communication can be further classified as upward or downward. In downward communication, all information transferred is sent from the management to the workers. In the case of upward communication, the opposite is the case. Horizontal communication exists when peers and individuals from different departments or schools are able to exchange communication.

Schneider and Sarker (2005) stated that for any organization, universities included, the effective use of both upward and downward communication as well as horizontal communication can help IT systems get designed for the most effective use. Lack of communication during the implementation stages of IT can generate ill will and discontent between the different departments, and individuals might be of the opinion that sufficient modules within the IT system were not created for their needs.

According to Medina and Fenner (2005) it is essential to obtain buy-in for any new IT system from the faculty and the administrative staff of the university. Often,

failure to understand the need for the implementation of the IT system is the major reason for resistance towards the IT usage. Selecting a team that is representative of the workforce of the university and essentially the end users can help during the process of vendor selection and implementation. Universities that can get the necessary buy-in from their employees are able to implement the system at a much faster and more effective rate. Technical tasks like understanding the processes of incorporating new technology and process-modification are often dependent on the people that are implementing these changes.

Identifying and implementing any IT system is not easy, and the team overseeing the operations might have to make difficult decisions. University top management should also be actively involved in the IT process and offer the teams that are involved with the implementation and maintenance constant feedback. Feedback from all the stakeholders to the IT department is essential to help them identify areas for improvement or changes (Schneider & Sarker, 2005). It has been observed that senior management is often aggressively involved during the initial stages but then loses interest or is focused on other needs of the university. When teams and IT departments feel that their needs and concerns are not eliciting the necessary feedback, workers can get disillusioned with the process and might avoid using the system for fear of mistakes and consequent reprimands (Reed & Luffman, 1986).

IT systems also have to consider the methods by which the employees in the university learn and understand new ideas. Learning models are often based on how people learn and how they can be effectively taught. The education model that any university espouses also should be used to identify factors that are critical to the IT

development for the university (Porter, 1998). The impact of learning and the education imparted by universities ultimately defines the society and the culture of the region. People learn differently, and educators and teachers have different styles of delivering and teaching course material. University IT systems have to be equipped to handle the needs of different students and teachers simultaneously and offer maximum interactivity (Ford, 2004).

Training of the staff can ensure that the basic understanding of the system is achieved. In large universities, training might take time, and it is necessary that the training be constantly reinforced with supplemental training and education of the system at constant intervals (Porter, 1998). Humans, by nature, tend to revert back to undertaking a task in the manner and procedure that they are the most comfortable with. A team dedicated to ensuring that training is offered constantly and that the training is adequate can help reduce the pitfalls of IT systems in universities. The team members selected should be drawn from all ranks of the university and have varying skill levels in the knowledge and the understanding of the IT system (Schneider & Sarker, 2005). This will help bring to the forefront issues and concerns that are experienced by the other employees of the university in a fair and just manner. Computers can be intimidating to individuals who do not understand the intricacies and requirements for operations. In addition, within the IT infrastructure itself the application needs of different individuals might differ significantly. It is important, therefore, that the training planned addresses these needs in a manner that helps reduce the stress and anxiety that employees might have when dealing with the new system (Uys, 2004). Experts in the IT and IS arena should not overwhelm employees with limited knowledge, and training should focus on

the ability to impart the knowledge required for completing and managing the tasks. Belittling issues and concerns can also lead to employees not understanding the tasks and shying away from asking questions. Treating all concerns and queries in a timely and fair manner can encourage greater participation and involvement of the workers at every stage of the implementation and usage. As workers get more comfortable with the system and the modules, the interest to learn more might also spark curiosity to enlist in the next level training and advancement (Medina & Fenner, 2005).

Many of the issues and concerns of implementing IT in universities are very similar to those of corporations. However, the non-profit aspect of universities and the dependence on external funding from government grants and private corporate donations often makes the process lengthier. In for-profit organizations, the incentive of reduced cost and better performance act as motivators for senior management to implement the systems in the organization (Ross, 2005). Managers, supervisors, and hourly employees also view the cost saving measures as a part of their responsibilities, and companies are increasingly tying in their profits from successful implementation of IT programs into bonuses and rewards that are offered to employees. These incentives are lacking in the university setting, and as a result the embracing of new technology is not always observed (Raymond, 2003).

Universities implementing IT systems also expect electronic records management (ERM) that offers flexibility of use and adaptation. Medina and Fenner (2005) identify five critical factors that should be addressed in ensuring that the best benefits of the ERM are obtained. They are:

1. Get user input at the beginning.

2. Develop a general organization structure for documents.
3. Create baseline expectations for document management practices.
4. Do not short-change management support and communication of user benefits.
5. Start expanding the organization's strategic focus beyond electronic documents.

Medina and Fenner (2005) addressed the fact that while these considerations were intended for a business setup, they are also very much applicable to a university environment where the needs are just as varied and demanding with respect to the system usage. The authors further went on to state that it is very distressing that workers in spite of the IT implementation are often unable to harness the knowledge and the intelligence that exists within the organization. Beard and Peterson (2003) stated that in universities the problems might be further complicated as limited overlap of teaching and course information can create 'black holes' of information that are not available to all. The best solution is often to start identifying areas where changes can be made, and information management departments in the university can keep a log of these requirements to ensure that these concerns and issues are addressed at the time of the next planned update.

IT infrastructure is very critical for the continued success of an organization in the present competitive world environment. Depending on the needs, the architecture of the networks and the data basing requirements might vary significantly even within similar sized universities offering comparable courses (Ross, 2005). IT and IS also require more empowerment to the rank and file employees setting up the structure or working on the

systems. Based on the extent of this power sharing that the employees enjoy, the architecture can differ significantly (Okunoye, 2003).

Challenges

While IT infrastructures have allowed a number of modifications and changes, they are also creating their own unique set of concerns and problems for universities. There is a general tendency to resist change, and this can also be said for universities and centers for higher education. Universities and educational sectors have been slow at adopting new technologies (Petrova & Claxton, 2005). By nature, humans tend to resist change if they feel the objectives of the change do not positively affect them. Change, however, is essential in all organizations and personal interactions - it helps the organization and the individuals grow and develop. Change is often dictated by the environment in which an organization, or university in the case of this study, operates and functions. The traditional definition of an environment includes all the elements that lie beyond the boundary of the organization and have the potential to affect all or a part of the organization (Daft, 1997). The environment is not a separate entity - a world *out there*; rather, it is an amalgamation of all the factors affecting an organization (Morgan, 1997).

Petrides, McClelland, and Nodine (2004) have reported that there are tremendous challenges experienced when implementing IT infrastructures on university campuses. In addition to the resistance to change on the part of many future IT users, the cost of the implementation and maintenance of these IT structures for the changing needs of a university is still being studied and evaluated. While universities are engaged in training and educating students for new changes and developments, they themselves are slow to

adopt changes and modifications to their management styles. Corporate environments have evolved and changed more dramatically when compared to the strict hierarchical nature of educational institutes in this day and age (Uys, 2004). Chae and Marshall (2005) stated, "unlike the business model, which generally emphasizes a management-driven approach, university management is based on shared governance by faculty and administrators that is for the most part temporarily drawn from the ranks of faculty" (p. 82).

Management of universities still follows a very traditional and bureaucratic system of management. The decision to implement IT infrastructure within the facilities is often the decision of the board of directors and the deans of the different schools that the university supports. To make this issue even more complicated, the administrative management in most universities is very centralized and controlled whereas educators and academics in the university are allowed significant latitude in their style of teaching and coursework management. These completely diverging approaches within the same university often create poor mediums for information transfer and communication (Kotler, 2000).

While universities are quick to teach the benefits of open management systems and interaction between functional departments, they are themselves very rigid when allowing for interchange of knowledge and information between the different schools that the university supports. This has resulted in IT systems not meeting the requirements of all the departments or in universities or implementation processes and decisions being made without all the facts on the issues that are faced (Medina & Fenner, 2005). IT technology mandates and requires greater levels of transparency of decisions and

processes. Therefore, universities are increasingly realizing that efforts and operating procedures for similar tasks have to be standardized and uniform. This requires significant culture and mentality changes. This is difficult, as the educational institutes have never gone through as significant a change as the one required as a result of the new technology being implemented (Beard & Peterson, 2003).

Change requires that university and school employees constantly are able to learn and train themselves to accept new ideas and methods. When the employees are constantly learning, they are also subliminally acknowledging the fact that new ideas and methods can help improve their jobs. Change is better accepted when learning is effectively combined with tangible results that can be felt and experienced (Levine, 2001):

> According to Ikehara (1999), learning happens in relation to an environment. A learning organization exists when the individuals in the organization continually learn not only to realize efficiency in the work role but also to develop as an individual and be creative in the organization as it pursues its unknown future. (p. 63)

Obsolescence can also play a very important role in any IT project development. Larger amounts of R & D spending, shorter product life cycles, differences in cultures and social needs, discrepancies in wages and salaries of workers and the increasing stakeholder demands have made IT implementation very challenging in universities. Identifying the total cost of ownership is also important for the implementation of any IT system. Organizations or universities are often 'surprised' when they are faced with the cost of implementing and maintaining the system (Porter, 1998). Budget planning for post-implementation needs even at the preliminary stages can help the university identify the true cost of the system in the university. These post-implementation costs include the

cost of training and recovery in cases where error and mistakes might corrupt existing data (Yahya & Goh, 2002).

It is important that every system operator understands that no matter how well designed the IS or the IT is, there is the potential that damages will occur at some point in time. According to Ross (2005), in addition to identifying the long-term goals of the university, any IT system designed should also be equipped to deal with system failure and effective recovery. Natural and manmade disasters such as fires, hurricanes, flooding and earthquakes are a reality, and backup planning for IS should always be considered. If universities do not support a strong room that is resistant to these disasters, then appropriate facilities need to be designed and constructed to house the hardware and support equipment. Existing facilities that house the IT equipment have to be inspected to ensure that they have the necessary safeguards to prevent catastrophic disasters. Limited IT budgets and manpower often result in universities 'making do' with the facilities and the infrastructure that they posses. IS disaster recovery therefore has to be also considered as a formalized field. This task becomes even more critical when data and information cannot be reproduced or the cost of reproducing the data is very high. As any IS grows and matures, the interconnectivity between the different applications also gets very intertwined, and disaster or complete failure of one system might seriously impact systems in areas that were not directly linked to the original system subjected to the disaster.

Understanding the risk associated with the various systems and the potential failures that could result are topics that have to be considered by any developing country that is interested in setting up the needed infrastructure for IS and IT. Developing IT and

IS infrastructure requires knowledge of the long-term as well as short-term needs of the company. Failure to design systems that are not robust or stable can spell disaster for the university over the long term (Porter, 1998). Setting up controls for the IT system can help reduce costly mistakes. While it is essential that IT systems allow transparency and connectivity, controls can ensure that only authorized personnel is allowed to make the critical changes required to the system. Periodic preventive maintenance can also help reduce the need for system shut downs (Brown and Brudney, 2003).

One of the salient negative effects of integrated IT systems is the overload of information that can exist. "Many people have never encountered or consciously considered the characteristics and features of good information, and the different information requirements for disparate roles within the organization. IT systems are often viewed as ideal systems for propagating information quickly and effectively. However, it has increasingly been observed that connectivity as a result of the integration of systems is also the reason for people to convey and transmit information that might not be really pertaining to the individual to whom the message is transmitted. Conceptually, information is a critical 'resource' for the university and as such should be managed just like any resource of time, money or labor. Misuse of this resource can impact other resources. For example, too much information can impact the time spent by the employees within the university in dealing with information (Beard & Peterson, 2003).

Language barrier is another major hurdle that has to be overcome. Most computer software and hardware require and use the English language for programming and setup. Countries with citizens not familiar with the language and lacking the ability to use the language can be at a serious disadvantage. Individuals in these countries will first have to

be taught the language and then taught how to use the software and the hardware associated with the various systems being set up in the region (Porter, 1998). IT and IS concepts tend to be technically and conceptually challenging for most individuals who work in the industry. When this is compounded with the lack or limitations in language, the challenge can become even more difficult. There is considerable resistance to the introduction of IT in Arab countries due to the fact that this technology is imported from the outside and is not a product of these cultures. The task of accepting new systems is made even harder by the fact that Arabic is also difficult to embed in computer programs due to the different alphabet, which makes the situation even more difficult (Kulik, 2000). In spite of the difficulty of the task, the implementation of IT is worth the benefits derived from it in the long term.

Benefits

The faculty members in higher education have three primary responsibilities, namely teaching, research, and service, and "each is being broadened and diversified by technology" which has numerous benefit to the organization and institution (Gillespie, 1998, p. 12). Since a computer was put to use in a learning environment for the first time as a flight simulator for training pilots in 1950's at the Massachusetts Institute of Technology (MIT), computers have changed the world of education and computer-based IT has expanded the possibilities of learning beyond the actual classroom experience. Some additional benefits are real life simulations, faster data and mathematical computations, more knowledge and information is available to educators, and greater knowledge storage capabilities are available for future reference (Roblyer & Edwards, 2000). As Gillespie (1998) said so aptly, computer-based IT frees "professors and

students to engage in teaching and learning in a much wider arena - cyberspace as well as classroom space" (pp. 14 - 15). To get the benefits from IT, it is necessary to train the teachers or to replace them with IT proficient educators.

While IT can greatly enhance the learning experience of students and has many other benefits, it is no replacement for experienced teachers. This was demonstrated by the negative response of both educators and students to computer-aided instruction (CAI) which was used to replace the teacher. On the other hand, the introduction of LOGO, a programming language that helps young children with mathematics, had a favorable impact on the students because it was taught and implemented by experienced teachers (Roblyer & Edwards, 2000). It seems that IT in the world of education is most successful when it provides access to information and takes on a collaborative role with the teacher, allowing the teacher to become a learning facilitator (Blackwood, 2001). As Green & Gilbert (1995) said, IT is no substitute for the teacher, but it changes the teacher's role: students will persist to need faculty to offer the theoretical structure and motivation that allow them to try to find and integrate new information.

The World Wide Web in Teaching

According to Green (2000), the World Wide Web has gained a lot of importance in instruction and made many contributions to education. Its uses range from the delivery of complete online courses to occasional Internet based research assignments. Over the last few years, there has been a steady increase in the use of Web resources in college and university courses. According to an annual survey on the use of computers in higher education, 42.7% of college courses have been using Web resources as a part of the class instruction or assignments. This is a very significant increase compared to 1995, when

Web resources were used in only 10.9% of all college courses. Green also stated that according to the Campus Computing Survey, in the year 2000 well over 50% of the participating institutions of higher education reported that they were offering full online courses through the Internet. About 13% make use of course management software, like WebCT, Web Course in a Box, or Blackboard for their online courses.

Technology in the Classroom

Technology is becoming a standard feature of more and more classrooms all over the United States and the world (Svinicki, 1999). Computers, data projection devices, VCRs, document cameras, access to network technology and document cameras are used as part of the teaching and learning process to open up more possibilities in delivering and accessing education materials. In addition to these technological features there is compressed video technology that makes it possible for students and teachers to interact with each other - or experts that are drawn into the learning process - from all over the globe. As shown by these examples, modern information technology is best used to enhance the role of the teacher, not as a replacement (Drucker, 2000). As indicated above, technology has numerous benefits to educators, the classroom, and in research to enhance the overall learning environment.

Information Technology in Research

Gillespie (1998) stated that with "more gradual changes occurring in teaching, technology has already substantially transformed the research and scholarship component of faculty life" (p. 10). There are two ways in which this transformation is occurring. The network and Internet technologies and online databases make it possible for researchers to access large collections of information, with the additional advantage of always being

able to access the very latest information, in contrast to research in the past when information resources were updated only periodically (Gillespie, 1998). Library holdings as well as Internet databases can be accessed through online searches. This means that searches can be conducted from the comfort of the office or personal computer and a wide range of information can be accessed within a very short period of time; searches can be conducted using traditional key words or a more sophisticated natural language technique (Gillespie, 1998; Van Dusen, 2000).

On the other hand, the information technology makes it possible for researchers to communicate with colleagues worldwide online, whether it is to exchange information, review each other's work, to collaborate in an academic venture, or to publish. In addition to one-on-one online communication there are specialized online discussion groups, online journals and conferences. The new information technology allows for contact and support among researchers at a level that has seldom been available in the past, it provides an unprecedented amount of contact between researchers and other experts. All of these interactions greatly support and enhance academic scholarship and community service (Blackwood, 2001).

Information Technology in Service

Thanks to information and network technology, it has now become easy for professors and other researchers to reach and serve the community at large (Gillespie, 1998; Van Dusen, 2000). While in the past community members had to come to the classroom in order to profit from academic expertise, professional and academic knowledge can now be easily delivered to the general population through the use of compressed video technology in workshops and similar events. "Technology breaks

down the barriers between campus and community and greatly eases the transfer of information, expertise, and resources in both directions" (Gillespie, 1998, p. 12). And of course, thanks to the new technology the local community has now expanded into wider areas, making it possible for researchers to reach a wider range of people than in the past and to present their materials in engaging ways (Blackwood, 2001). Conversely, the modern technology also makes it easier for community members to get in touch with experts and to profit from experiencing their presentations firsthand. In addition to delivering video or online-based courses, professors and other researchers can give the public access to their work by making information available on websites. As web-based access to information is more and more becoming a part of other activities like job searches, filling out applications, looking up information about institutions or events, the information that researchers and academics offer through websites becomes a part of a larger context. "The evolving technologies that will fuel many forms of formal higher education will be the same ones providing access for continuing education, for civic participation, and for future employment" (Van Dusen, 2000, p. 23).

Training Needs of the IT Industry

According to Porter (1998), competitive advantage for any industry comes from the value that a company can create for its customers. This is also very true for the educational institute, which has to create value for the students, the teachers and the administrators in the university. Knowledge management in this industry races to make knowledge more easily and widely available to the stakeholders (workers and customers) while at the same time recognizing the fact that knowledge value often resides in its particular context and point of view in the eyes of the stakeholder.

IT systems can provide universities with the ability to use information for discoveries and research. Many ideas and innovations were 'discovered' within educational settings. The Massachusetts Institute of Technology (MIT), for example, has been in the forefront for inventions and discoveries. The ability of MIT to adapt technology and use it effectively has helped the institute maintain its elite position as a premier school for engineering and science. Connectivity introduced as a result of IT also can be harnessed to ensure that universities and schools are not spending valuable resources undertaking studies that have already been completed. Thus, funding obtained through grants can be used more effectively to generate results that can offer the university better exposure and notice in the 'market' that it serves (Reed & Luffman, 1986).

The learning objectives and the tasks associated with these objectives differ between universities. Some universities categorize themselves as pure learning schools (where only knowledge and training is imparted to students) while others are research and learning schools. Based on the nature of the schools, IT infrastructure has to be developed to serve the growth and development of the school. Application of software to traditional topics taught at universities is on the rise. Students expect to be taught software development as a part of the curriculum. This requires that universities maintain software on the network and allow students and faculty to have access to this software. Universities are also allowing students and faculty to connect remotely from their homes and offices to university networks in an effort to offer greater convenience to all of them (Medina & Fenner, 2005).

Markets are defined as both physical entities and virtual entities. Physical markets are referred to as market places where goods are physically available for customers to evaluate and identify with. Virtual markets are those that have been created by the Internet and the web. In the case of a university, brick and mortar universities have the ability to create physical and virtual markets with relative ease by proper implementation of IT programs. Diversification of product lines (courses, educational programs, mediums by which the programs are offered) and/or services over a wider base can help universities manage their 'business risks' and reduce the quantifiable likelihood of loss or less-than-expected returns (Kotler, 2000).

Diversification occurs either proactively or as a defense mechanism to handle increased competition. The same is also true with universities. Failure to adopt new technology and ideas can result in the education being provided by the school becoming substandard and ineffectual. Of Porter's four types of diversification: Portfolio, Restructuring, Sharing Activities and Transferring Know-how, universities have selected 'Transferring Know-how' through IT systems as the best manner to distribute and manage their risks (Reed & Luffman, 1986).

According to Uys (2004) there have been different schools of thought with respect to the impact that technology has made on the educational institute. Some experts believe that the new emerging trend of distance education is just "an alternative delivery mode and its management is thus no different from that of other modes" (p. 54). Networked universities are able to offer greater flexibility to their students and the educators and teachers in the institute. The virtual classroom introduced as a result of the networked and IT systems in universities has also enabled universities to attract students remotely and to

exchange and utilize instructors and educators who are experts in their fields to teach remotely new subjects and topics into which the university might wish to diversify.

The convergence of computers, communication, and information is making it imperative that educational institutes are able to provide their students the best quality education. Knowledge networks are vehicles of change (Chandra, 2000). Advances in information technology directed toward organizational knowledge and learning have provided a revolutionary opportunity for information technology as a medium for facilitating and improving group communication and knowledge creation (Levine, 2001).

According to Raymond (2003), universities and schools of higher education are often the first introduction of new knowledge and concepts to the masses. The industry is also depending on universities and colleges to offer students basic training and education in the use of these IT systems. Knowledge management for any university is critical. Defining knowledge is never easy. There are important distinctions between data, information and knowledge. Data are raw facts collected by observation or monitoring; when data is filtered out to identify trends and organized it converts to information; and when this information is used in the operation, planning and strategy it is converted to knowledge. Information and knowledge get transmitted through networks within the university and with external collaborators and benefactors (Yahya & Goh, 2002).

Robust design of IT infrastructure and the ability of end users in universities to use effectively all the capability that is possessed by the IT system is essential. IT infrastructures in educational environments need to serve the administrators as well as the teaching staff. It is obvious that the demands from the IT system would be different for the two segments of users within the same university (Petrides, MeClelland & Nodine,

2004). As distance education becomes more common, the increased dependence on the effectiveness of the IT systems will be tested. Universities rely on knowledge creation and dissemination. "It can be seen that training related to creativity (empowerment and team building) is significant in the facilitation of knowledge documentation, knowledge transfer, and knowledge creation" (Yahya & Goh, 2002, p. 68).

The globalization of education has also forced universities and schools to identify the 'best principles' of universities and schools that might be geographically very distant. The increased access to adjunct faculty globally through the use of VoIP and web classes has increased the options that schools now have. Thus, eligible students in remote locations can still avail themselves of quality education. As government funding towards higher education in many countries is gradually decreasing, universities are increasingly changing their approach to management and application of technology in their institutions. In many cases, universities are also seeking out private entities to collaborate with to support many of the schools. This has resulted in universities having to drastically change their approach to technology adoption and performance of the university (Yeatts & Hyten, 1998).

The Characteristics of Trainers

The realization of how organizational members choose to embrace the use of IT technology has a very overwhelming impact on the success of these systems in the organization; thus, it is pertinent to consider the specific aspects of the individual members that may serve as the impetus to affect technology use (IPA, 2005). As such, gender, age, years of experience in the organization, years of experience with computer technology, amount of computer education, access to computers, access to the Internet,

and job satisfaction will be considered as mitigating variables for the overall integration of IT systems in the organization. With this in mind, a brief overview of what scholars have noted on these subjects needs to be considered.

Teachers in higher education have the responsibility of teaching, conducting research, and identifying returning and promising students for mentoring and guidance through the highest ranks of education provided by the university or college. Trainers and teachers are very important in determining the success of a university. Trainers should try and understand the needs of the individual students and the subject matter that is being taught. It is estimated that by 2020 most jobs will require the use of computers, and the need for better and relevant software is only expected to increase. Therefore, competing for human talent is only expected to become more difficult in the future for this industry. New methods for recruiting, training and retaining the human element are considered the more important variables in many knowledge and intelligence based industries (McGregor, 1985; Stephens & Heil, 1998).

Zeithaml, Berry, and Parasuraman (1991) concluded that changing the mindset and the human factor may ultimately come to represent the new competitive edge for a corporation, more than physical and other resources. Due to today's dynamic demographic, economic and social conditions, the interaction of individual and organizational development, the development of the human resource will by far be the most salient and tangible outcome of any organizational change.

According to McGregor (1985) and Stephens and Heil (1998), learning processes in an organization should be both improvement-oriented (where the worker is trained because he or she has not done the task before or the task was not performed in a

satisfactory manner) and innovation-oriented (the need to learn new ideas, techniques and technologies) to be effective in an organization. Morikawa (1995) showed that motivating workers in this industry has to go beyond the basic incentive and wage and benefit option. For people to work to their full potential, their basic needs have to be satisfied. McGregor (1985) and Stephens and Heil (1998) affirmed that traditionally academic settings have offered talented teachers and researchers perks and benefits such as flextime, less structured environment, fewer or no management controls and little or no supervision. The administrative staff, while not enjoying the flexibility to this extent, enjoys much more freedom than the corporate administrative staff. Teaching requires rapid acknowledgement of and reaction to new and emerging ideas and also the equally rapid deployment of these concepts and maverick attitudes towards traditional thinking within this industry.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) in its report 1998 confirmed that organizations are increasingly looking for ways to provide their workers with job satisfaction and enrichment in an effort to motivate the performance to higher standards. The Middle East, in spite of the great strides in engendering prosperity (mostly from oil), still depends on other countries to provide the technology know-how and the expertise requirements. Arab countries have some of the lowest levels of research funding in the world, according to the 1998 world science report of UNESCO (1998). R& D expenditure as a percentage of GDP was a mere 0.4% for the Arab world in 1996 compared to 2.35% in 1994 for Israel, according to the United Nations developmental program. Changes take time to be implemented in the region.

Maslow (1954) and McGregor (1985) believed that in order for people to work to their full potential, their basic needs have to be satisfied. Maslow identified five basic needs that drive human motivation: physiological needs, security needs, the need for affiliation, the need to feel self-esteem and the need for self-actualization. The needs of self-actualization can be achieved only if the first four needs have been satisfied. Evaluating these needs and their effect on workers is the key to developing any strategy for the company. Maslow suggested that worker disaffection was due not to something intrinsic to workers, but due to poor job design, managerial behavior and too few opportunities for job satisfaction. Job-enrichment is referred to by Maslow and McGregor as the latitude and personal responsibility that is conferred on a worker to allow him or her to perform their task in a manner that they perceive as comfortable and the best option while still producing the desired outcomes in the manner specified and with the quality desired. This drastically differs from the concept of job-enlargement where the worker is forced to perform and undertake more than his share of work in an attempt by the management to reorganize or restructure the job scope of the individual in any given position.

According to Stum (2001), Maslow evaluates motivation from the perspective of the employee/employer dynamic and not just the individual's relation to the environment. He affirmed that many of these factors of motivation change over the period of employment. While it is difficult and almost impossible to identify the exact stage that every employee in the organization is at, and to design a plan of action for every worker, understanding the factors that drive motivation can help organizations plan and strategize better for their human element. Over time there have been various motivation theories

postulated. Opinions and use of these theories have generated a variety of results and outcomes.

According to Herzberg (1964), there are various factors that affect motivation: working conditions, salary, job security and company policies. He stated that recognition of the value of the work done, pride in the work itself, responsibility for the work done, advancement and growth in the work place act as achievement stimulants. These factors motivate the workers to improve the quality of their work. Franken (1998) defined motivation as a multifaceted phenomenon. He associated motivation with an internal state of need, desire or want that serves to activate or energize behavior as well as to give direction to behavior. Motivation is also defined as a factor that helps people get energized and attain a goal that they set for themselves. Need and desires act as motivators for human beings and channel them towards undertaking a course of action that can help to attain a goal. According to Handy (1993), organizations use various methods to motivate their employees. Basically, there are three major categories of motivation that are commonly observed which are:

- Satisfaction theory: The worker derives some form of pleasure or satisfaction during the process of completion of the tasks. For example, a researcher may derive satisfaction from the fact that the ideas and concepts developed by him or her are being used to better the quality of life of society.
- Incentive theory: Here, a reward of some form may be offered to the workers to encourage them to perform better. For example, the sales and marketing staff are often provided with benefits and compensations that are above and beyond their basic salary in the hope that the workers will perform better.

- Intrinsic theory: This method of motivation targets the personal and human nature that exist in each individual - the goal to excel, to better oneself and to attain satisfaction about the quality of life lived. Workers who require this type of motivation are more focused on betterment of themselves, learning new tasks and attempting to achieve new goals. These goals can, however, be attained only if the basic goals are achieved.

The type of teaching that is undertaken by the university also impacts the level of IT utilization by the instructor. Granitz and Greene (2003) stated that changing the communication medium from face-to-face to distance learning creates challenges for faculty and students, as well as compatibility issues with the course content. According to Rovai and Lucking (2003), this is one of the major problems when the course transcends geographical boundaries and cultures. They also stated that English might not be the *lingua franca* of the students in every location; and while their skill at the language may be adequate for the course work there may be "catch-phrases" and slang that may not be as well understood. It was observed, however, that televised distance instruction can create subtle shifts in the behavior of the instructor, the teaching decisions that the instructor makes, or both.

Halio (2004) reported that there is a lower level of interaction between the groups undertaking this form of education. The role of the on-line teacher/instructor can help define either a good on-line educational program or a poor on-line training program. But there are limitations: body language, facial expressions, gestures, and words to communicate often are not as plentiful as compared to classroom settings. Carter (2001) stated that it is also important to understand that the needs from a class or physical group

based educational program differ significantly from distance education. Instructors also have to undergo different trainings when compared to classrooms to handle the issue of student participation and involvement. It is difficult for an instructor sitting miles (or countries) away to ensure that the student has grasped the concepts of the matter being taught without any direct real time contact. The quality of web cams and Internet connections has improved significantly in recent times and improved education and IT.

Halio (2004) stated that there are, however, no substitutes for actual classroom interactions. In both the formal and informal educational environments, the role of the educator or the teacher is salient. Teaching styles of the educator and the modes of delivery are often cited as the single most important factor that can attract a student to the subject being taught or disillusion the student from the learning process.

Gender

Examining the current literature on the use of IT by gender, it appears that women do not embrace the use of technology as eagerly as men. Interestingly, however, reasons for differences in the use of IT technology between men and women show that overall there are a number of reasons why women use IT less frequently than men (Epodoi, 2004). Weiser (2000) contends that men and women use IT for different purposes. As such, Weiser believes that differences in usage can be accounted for by the specific context of use and the information being gathered.

According to Harris and Wilkinson (2004), computing has a masculine history, deriving in its earliest stages from military applications. Many of the terminologies and phrases used indicate this history. Over the years, while women have increasingly sought occupational knowledge in this field, the total numbers of professionals in the computer

sciences and IT have been decreasing. The use of computers by genders significantly differs with respect to the reason for which they are used. Internet browsing, web mail, shopping and work are generally the reasons women use computers. Men, on the other hand, use it more as a tool for education, entertainment and hobbies.

While there has been quite a bit of research on the correlation between gender and computer use, the researchers have come to conflicting conclusions. Hattie (1990) conducted a meta-analysis of 19 research studies. She found that women were not keeping up with men in computer usage. Also, compared to their male counterparts, they would more frequently "yield control and feel more helpless when confronted with computers" (p. 4). Hattie's evidence has been supported by other researchers in the last decade (Harris & Wilkinson, 2004). However, there are others who maintain that there is no significant correlation between the attitude towards IT and the use of it and gender (Blackwood, 2001).

Clegg, Trayhurn, and Johnson (2000) and Epodoi (2004) have argued that in most cases women do not use IT because they do not have the education and experience necessary to understand the implications and the benefits of utilizing the technology. As such, many women choose not to actively utilize IT in the work setting. Thus, gender does indeed have a marked impact on how IT is received, utilized and integrated into the organization. Harris and Wilkinson (2004) also stated that case studies of computing work environments suggest that even when women do pursue computing education and careers, they interact differently with technology than their male counterparts, participate in different subcultures within the discipline, and experience different opportunities for career advancement.

According to recent study by Pande (2005), the number of women in IT jobs that require advanced skills such as engineering and system analysis remains small, women in developed countries are generally end users with limited knowledge of 'how the system works'. Kaminski and Reilly (2004) stated that women are less likely to enroll in classes which require computer know-how and "find computer work tedious, sedentary, and anti-social. However, as computers become more accessible and education and training programs more frequent, some of the anxiety and fears associated with computer usage have been decreasing. Researchers studying gender differences often have to account for the culture and the educational level of the population and the role that women play in society. There are definite findings that the cognitive ability of men and women differs significantly, and this can impact their likes and preferences.

Cognitions are defined by Kaminski and Reilly (2004) as any knowledge, opinion, or belief about the environment, about oneself, or about one's behavior. The societies in which we live also often determine our strengths and weaknesses; for example, accountants had to change their skill base from manual ledgers to computers when technology overtook the industry. The knowledge set is still the same, but the skills needed to perform the task have changed.

Social identity theory (SIT), first developed by Tajfel and Turner (1979), stresses the portion of our total identity in relation to gender that is derived from an individual's social group memberships. According to Tajfel and Turner (1978), there are three factors on which individuals base their understanding of both themselves and the society in which they live, namely categorization, identification and comparison. There is a general consensus that intellectually there is very little difference between women and men.

Culture and society often determine the roles that both genders play, and these are generally enforced from a very young age. Society and parents tend to "gender-condition" children for life.

Taylor (2004) indicated that cognitive styles and gender significantly impact the use of technology. *Cognitive dissonance* theory suggests that humans will seek balance or homeostasis in their lives and will resist influences or expectations to change. Teachers prefer a mix of idealist, analytical and realistic cognitive styles of leadership in their institutions. Gender is also especially relevant when leadership issues and management styles play an important role in pre-implementation stages of the IT infrastructure.

Sumner and Niederman (2004) affirmed that work related cultures also influence the adoption of IT by women. The general consensus in the technology industry is that significant time needs to be spent on any system before it is understood and adequately utilized. For women, conflicts between home and work life can seriously impact the amount of time that can be spent learning new technology. Mentoring and female role models for embracing IT are also lacking. In spite of some voices that claim there is no significant correlation between the use of IT and gender, the vast majority of research in this area claims that age may affect IT implementation.

Age

Exploring the issue of age as it relates to the use of IT, research that has been conducted in this area shows that younger employees are more amenable to utilizing IT systems than their older counterparts. Strouse (2004) noted, "Younger information seekers feel more confident of their online search skills than their older counterparts" (p. 27). Freudenthal (2001) reported similar observations in his quantitative comparison of

old and young workers in the organization. According to Freudenthal, older workers often find the complexity of IT overwhelming and are, in many cases, unwilling to embrace and integrate the use of these systems. What this implies is that the specific age of the employees should have a significant impact on the overall utilization of IT in the organization.

Exploring the issue of age as it relates to the use of IT, it is clear that the research that has been conducted in this area shows that younger employees are more amenable to utilizing IT systems than their older counterparts. However, many studies indicate that this is not necessarily the case in all situations. Shaw and Giacquinta (2000) stated that older individuals who have experienced satisfaction with respect to computers either on a personal level or work related in the past are more likely to use IT, and "computer use enhanced their efficiency, motivation, and organization" (p. 24).

Age is identified as a factor that affects job satisfaction and the level of interaction that is experienced. Depending on the task, responsibility and the accountability that an employee faces, the need to learn a new skill might become a significant priority. Workers who can identify the tangible benefits of training and developing a new skill tend to accept a change made within the organization. "Those that were very extensively self-taught and those that had very extensive general web experience reported significantly higher user satisfaction with the Internet than those reporting less extensive self-teaching and less extensive general web experience" (Simmers & Anandarajan, 2001, p. 39).

Among teachers in higher education, there seems to be a correlation between age and the use of IT. In a study that McCord conducted in 1984 among faculty at Drexel

University, he found age to be the strongest indicator towards prior computer experience; a decrease in age generally indicated an increase in computer experience. McCord's findings are supported by Jacobson and Weller (1987) who reported a negative correlation between age and computer skills or the use of computers. In their opinion, this negative correlation has to do with the fact that generally the younger university faculty is not yet tenured and thus spends more time on computer-based research. Baack and Brown (1991) found that older adults tended to have a less favorable attitude toward computers and computer applications.

Training adults is different from training teenagers or youth. There is much controversy with regards to the definition of an adult learner. An Adult Learner is defined as "an individual whose major role in life is something other than being full-time student" (Strouse, 2004, p. 17). When adults choose to, or are requested to take a training program to increase their knowledge in a process or product, they have an expectation that the program will be well designed and taught. Failure to design training programs that are flexible and in which trainees can pace the training process to suit their own knowledge absorption rates can result in the training becoming ineffectual for these adult learners (Tekinarslan, 2004).

According to Herman (2001), only when adult users view IT as a means to an end will they make effective use of the new technology. Even among academics, those that view IT as helping them improve their performance and output, no matter what age, are more willing to embrace technology and use it for their work and personal life. Kamal and Patil (2003) stated that the culture of the work/organizational or the home environment also impacted the access that was available to IT and the numbers of hours

that persons would spend familiarizing themselves with the technology. With the use of IT, older individuals restricted by personal and work commitments can gain wider knowledge and education if they are personally willing to undertake the learning curve required.

The ability to learn a new skill is a very satisfying experience for many people. A good example is the interest among senior citizens to use the Internet. For most baby boomers, and all-subsequent generations, computers and the Internet have become a way of life. For people in their late 60's and 70's however, for those who have never used a computer before, the experience can be stimulating. Research has very often indicated that people who are interested in new ideas and constantly open to learning are more likely to be happier and live longer. Learning has always been considered the defining trait of the human race. The ability and drive to constantly do it shows a high level of motivation (Glick, 2003).

Computer systems and software have become critical components for any industry. It is difficult to identify any company that is not involved with or needs the help of computers. Generations X and Y are reputedly more global, technologically oriented, and culturally diverse than the generations before them. While the modern generations (Generation X, Y) have grown up on computers, older generations had to experience the learning curve for new systems. The ready availability of a technology does not guarantee its immediate take-up and exploitation, and unless it promises some personal advantage it will not change well-established practices (Lankard, 1995).

Years of Experience in the Organization

Interestingly, the number of years that an individual has been employed with an organization and its impact on the use of IT has not been widely explored in current research. However, McCord (1984) in his investigation of faculty rank at Drexel University found that the more years those individuals had been employed with the organization; the less apt these individuals were to utilize information technology. McCord contends that younger members of the organization, in their attempt to gain tenure and move ahead, were more likely to embrace IT than established members of the faculty. McCord went on to argue that for those individuals that had been employed with the organization for a number of years, interest in embracing IT was low due to the fact that many did not feel that they had much to gain by regularly using new technology. While this investigation took place in the academic environment, it does provide some insight into attitudes of individuals who have been employed by an organization for a number of years.

Polyakov, Palmer, Devitt, and Coventry (2000) found similar results in the healthcare setting with more seasoned employees choosing not to use information technology. Similarly, Weenk, Govers, and Vlas (2004) found that educators working with students in developing IT were less likely to adopt new skills as their number of years of experience increased.

The number of years of computer experience that an individual has acquired has also been shown to impact the level at which an individual embraces information technology. Fagan, Neill, and Wooldridge (2004) in their study of 978 individuals found that "experience and support were positively related to computer self-efficacy and

computer self-efficacy was negatively related to anxiety and positively related to usage" (p. 95). What this effectively implies is that the more computer experience an individual has, the more likely it is that he or she will be willing to integrate and utilize information technology. Thus, to increase the use of IT, experience with computers is an essential component for the development and integration of these systems. Not surprisingly, Igbaria and Chakrabarti (1990) found similar results in their investigation of computer anxiety and attitudes toward computer use.

Years of Teaching Experience and Computer Usage

Availability of a computer affected the experience that could be gained. Individuals having free and easy access to computers and who use it for work have greater opportunities to learn new uses for the equipment. Unlike some other professions such as nursing and engineering, teachers are not identified by any particular cognitive style. This indicates that the nature of a teacher's work is very diverse. It does not call for only one particular style nor does it mould the teachers into any particular style (Markham, Kordsmeier, & Gatlin-Watts, 2003).

Experience for teachers is influenced by many variables which include culture, upbringing, nature of the course taught, the flexibility of the teaching styles and the caliber of the students being taught. This style has been the most traditional form of training provided to the worker in the work place (Imel, 2001). It is important to state that the learning experience can be significantly improved by the role of the trainer. While technology is important for the training process, it should not be the main focus of a training program. For example, a well-designed slide presentation can be just as effective as a talk given using transparencies and an overhead projector. The trainer's interaction

and understanding of the subject matter also is important for lecture-based training (Brown and Brudney, 2003).

Workers in IT departments, for example, may need training to help them stay current with their skills. To do this type of training in-house requires that the organization trains the instructor initially and assures that the individual has completely mastered all the tools required to train a highly technical and task oriented group of people. This is very difficult and the hidden cost of training the trainer has to be calculated. This hidden cost may be the loss of training days for the worker and the complexities that are introduced in scheduling the training to match the dates of the trainer and the workers. In addition, if the organization uses a group of trainers, cross- training and multiple training for trainers can seriously increase the cost of the organization (Markham, Kordsmeier, & Gatlin-Watts, 2003).

In Saudi Arabia, cultural and religious beliefs of the population have made the acceptance of change and technology more challenging and difficult for the community. In addition to culture, "financial aspects, conflict with personal values (religious), time constraints, lack of education, fear of loss of identity, fear of being controlled by the technology, experience and training, and access to computers" are responsible for the limited acceptance of IT as well (Al-Gahtani, 2004).

Amount of Computer Education

According to the research that Yildirim (2000) conducted on the amount of an individual's computer education and its relationship to the utilization of IT, both formal and informal education will impact an individual's level of IT use. According to Blackwood (2001), other researchers also point out that there are differences in the use of

IT depending on the level of experience and training with computers. A survey among library staff who had attended a formal computer class, for example, revealed that staff members who had attended the training felt less apprehensive about using computers than their colleagues without such training. Carter (2001) conducted a study of principals and technology training and came to the conclusion that "training is essential to the effective implementation and usage of e-mail" (pp. iii – iv). It is not only teachers, but also students who benefit from computer training.

Blackwood (2001) reported that students' prior computer experience positively correlated with their use of a computer-based tutorial program. In his investigation of pre-service and in-service teachers in California, he found that those attending state mandated education courses for computer technology were more likely to implement computer technology in their classrooms. Those taking the courses also reported more favorable attitudes toward the use of computer technology overall. Cabell (2001) in his investigation of medical student use of IT found that informal courses on using this technology boosted overall usage and fostered positive attitudes toward computer technology.

Access to Computers

As many researchers indicate (Carter, 2001; Clark, 2000; Harris & Wilkinson, 2004; Japer & Moore, 2004; Milet, 1990; Parr, 1999), the access that an individual has to a computer will also serve as the basis for the utilization and integration of IT in the workplace. Moore (2004) noticed that there is a direct correlation between the accessibility of computers in classrooms and teachers' willingness to use them: "access to computers is a key factor to using computers instructionally" (p. 265). Harris and

Wilkinson (2004) supported these findings with their own research data; they stated that the number of computers in a classroom indicates the likelihood of a teacher's making use of IT technology for instructional purposes. On the other hand, a five-year longitudinal study about the application of technology in teaching and learning conducted by Parr (1999) came to the conclusion that there is no relationship between the accessibility of computers and teachers' willingness to incorporate computer-based activities into their instruction.

Selwyn, Marriott, and Marriott (2002) found that individuals with home computers were more likely to utilize computers in the academic setting. In addition, Chisholm, Carey, and Hernandez (2002) found that high school students that have access to computers at home are more likely to utilize computers in other settings and are often better versed in basic computer technology. As such, it is evident that there is a direct relationship between the amounts of access an individual has to computers and his or her overall utilization of this technology.

Access to the Internet

The use of computers entered a new era with the advent of the Internet (Gates, 1996; Green & Gilbert, 1995). Where computers process and handle data and information, the Internet gives access to a large amount of new information through web pages, online databases, and collaboration software. The information that is available on the Internet and can be posted there consists of text, images, audio and video files among others (Gates, 1996). There is a variety of software programs available that help teachers and students with creating and maintaining their own Internet pages. In addition to posting websites, Internet technology makes it possible to connect live with other persons

from all over the globe for any desired purpose through compressed video technology (Blackwood, 2001).

In spite of the fact that quantitative studies on the impact of Internet access on the use of IT have not been widely reported in the scholarly literature, there is some evidence that demonstrates the impact of a lack of Internet access on the overall attitude of the user. For instance, Schneider (2001) commented on her encounters with individuals that do not have consistent access to the Internet. Her research suggests that individuals that do not have access to the Internet on a regular basis are more apt to gravitate to print rather than electronic sources, even if the information provided in these sources is out of date.

Further, Goldsborough (2000) argued that a lack of access to the Internet is what is promulgating the "digital divide" in America. According to this author, "Internet access is increasingly necessary to fully participate in the democratic process . . . Those who are connected have greater access to information and stronger voices in shaping public opinion and influencing government." (p. 46). What is clearly suggested here is that Internet access is a critical factor in the overall manner in which individuals will choose to embrace information and computer technology. Without appropriate and consistent access to Internet technology, individuals will be either unwilling or unable to successfully embrace, implement and integrate information technology.

Academic Discipline and Rank

Educators and instructors from all disciplines and schools do not show the same propensity to the use of technology in classrooms and for research work. It is observed that other than for word-processing and the use of emails, faculties have done little to

incorporate computers into the regular curriculum of students. While the PC has been increasingly used as a productivity-increasing tool in industry and business, universities and colleges have taken few measures to actually introduce the use of these tools. To achieve the optimized use of teaching and learning, two vital issues need to be addressed. They are academic facilities and faculty development (Candiotti & Clarke, 1998). While many teachers and educators display tremendous knowledge and know-how in their fields, computer knowledge and understanding has been treated with dread, and in many cases even fear. Universities that periodically upgraded their facilities and introduced multimedia labs and computerized curriculum in their schools provided teachers with greater incentives to learn about new technology and the application to their coursework. A faculty development lab where faculty members could work under the guidance of a professional staff member outside of the public user areas was also observed to help faculty get better situated and gain more confidence with the technology (Roach, 1996).

During the initial stages, reticence and anxiety with respect to knowledge and usage is observed, but this generally disappears as faculties get more ingrained with the concepts and the effective use of the technology.

> The faculty knew very well how to teach, and the encouragement of these workshops and continued staff support allowed them to focus their own teaching skills on getting the most from the technology. Faculty comments afterward indicated that staffing was critical, and that the combination of a place for them to work and a full-time staff member on hand to help them with both the planning and the small vexations was what it took to complete their projects. (Candiotti & Clarke, 1998, p. 36)

Many accrediting agencies in developed countries for schools and universities are also requiring that universities provide their students with the necessary computer education to enable them to handle the challenges of the work environment. Often the

lack of funding for computers in non-science and engineering departments and lack of incentive for faculty from other departments to use the existing computer facilities is also considered a major reason why all ranks and disciplines do not have the same access and knowledge of computers.

Faculty members at universities, in addition to teaching and research, might also be responsible for administrative tasks based on their rank and position. As teachers get more involved with administrative tasks, their interaction with students and the new teaching methods used might be significantly reduced. This change of job scope could either encourage them to get more informed as senior decision makers for IT development or result in them losing the motivation to continue retraining and educating themselves for the classroom environment and student interactions (Roach, 1996).

Job Satisfaction

Dvash and Mannheim (2001) and Thatcher, Stepina, and Boyle (2002) noted that when employees are more satisfied with their jobs, they are more apt to embrace and utilize information technology. While the specific reasons for these differing attitudes are not widely explored by these authors, it is hypothesized that employees working in an environment that promulgates less stress and anxiety will hold more favorable attitudes to developing and integrating new skills. As such, individuals that are satisfied with their jobs will be more likely to use IT systems. Understanding the demographic characteristics of the work force is an important task that most organizations undertake to identify the factors that motivate their employees.

Job-hopping is a new trend that is observed in many corporate environments, and the same is also being observed in academia. The privileges of job security or the high

paycheck as compensation for good performance are not always forthcoming. This often results in low morale, low self-esteem and job-dissatisfaction. An environment which fosters honest and open interaction between the management and the worker helps workers relate to their jobs better. It improves their esteem about their work and their role in the organization. Employees are constantly seeking more satisfaction and meaning from their work lives, and more balance in their lives as a whole (Dvash & Mannheim, 2001).

Traditional organizations and bureaucracies are based very extensively on the Theory X view of people and tasks that they could perform. Douglas McGregor also put forth the concept that people's management-behavior is dependent upon their view of human beings and work and postulated two theories—Theory X and Theory Y. In Theory X, close supervision was considered essential. Job definitions, and work and tasks allocated were all decided and implemented by the supervisor or manager. The manager or supervisor relied extensively on rewards, promises, incentives, rules and regulations. In some cases, threats, coercion and sanctions were used to control the "workers." The point was to ensure that the work was completed appropriately and on time (McGregor, 1960).

Theory Y (in theory) practices what Herzberg called "job enrichment." The role of the manager is still critical; however, not as a supreme power. The manager remains at the center. He or she facilitates the process initiation and control. The Theory Y culture is a monitoring, feedback and control system and can work very well in conjunction with the systems based structures in most cases. The university environment differs in many respects from a corporate for-profit organization. Contrary to popular belief, monetary

compensations are not the driving factor in motivating any work force (Dvash & Mannheim, 2001). Rather, factors such as job satisfaction and job enrichment play a more significant role in motivating individuals. The teaching profession is riddled with the added complication that the salaries and wages paid out are not comparable with the educational levels of the teachers who may have obtained higher salaries in another line of work (McGregor, 1960).

Universities, especially in the U.S., are increasingly relying on "part-time employees, adjunct faculty - contingent workers" to train and educate the students. Job security for adjunct faculty is non-existent and the salaries and compensations provided are pitiful and woefully inadequate. Salaries in academia are generally lower than in corporate entities. Studies indicate that "the average senior faculty member in the United States makes about $80,000 a year, the junior faculty average $47,000 to $56,000, while contingent faculty, even those working full-time, range from $12,000 to $37,000, and graduate instructors earn even less at $5,000 to $20,000" (Hough, 2003).

When part-time faculty members are used, compensation is often based on courses taught and not on the number of hours that are required for preparation and training. Little or no training or mentoring is provided; professional support for queries and concerns are also non-existent (Smith, 2003). Full-time or tenure track faculty are often not concerned with many issues other than the fear that the existence of tenure track positions are declining. This has resulted in encouraging faculty members to seek out more stable and dependable work environments. Job advancement and promotions take time. "There are some academics that may not be offered chairs in their establishments until another institution offers them in the first instance. In several cases, universities

would agree that it is not lack of merit on the part of some academics but lack of money to fund higher vacancies if declared" (Oshagbemi, 2000, p. 213).

A lot of attention has been given to topics such as motivation, productivity, job satisfaction and innovation. One of the well-known motivation theories is Vroom's motivation framework called Expectancy Theory. Expectancy Theory proposes that people are motivated to accomplish their tasks if three conditions are met: (a) they think that they are capable of performing their work; (b) they believe that their efforts will result in a certain outcome, and (c) they believe that the payoffs for doing their work are worthwhile (Vroom, 1964). In alignment with this theory, it can be assumed that educators would be motivated to use IT if they believed that a reasonable effort would get them to the point where they would feel comfortable with using the technology. In accordance with Vroom's theory, the investment of a reasonable effort and its positive result must additionally lead to the accomplishment of a personal goal. In the context of education and training, the goal could be more effective teaching, better and quicker research, or improved service opportunities (Blackwood, 2001).

In the book called *Diffusion of Innovations* (1983), Rogers defined diffusion as the process "by which (1) an innovation, (2) is communicated through certain channels, (3) over time, and (4) among the members of a social system" (p. 10). According to Rogers, the diffusion process consists of five stages: knowledge, persuasion, decision, implementation, and confirmation. Individuals or decision-making units progress sequentially through these stages (Rogers, 1983).

In the first stage, the knowledge stage, an individual is initially introduced to an innovation and explores how the innovation works. The persuasion stage signals that the

individual has developed an opinion about the innovation as positive or negative. In the decision stage the individual decides to either adopt or reject the innovation. During the fourth stage, the implementation stage, the individual uses the innovation. In the fifth stage, the confirmation stage, the individual will decide whether to embrace the innovation or not. According to Rogers, the diffusion process becomes self-sustaining when 10% to 25% of the members of the social system have reached the implementation stage (Blackwood, 2001).

According to the Motivation-Hygiene Theory that was developed by Herzberg based on a study of two hundred engineers and accountants, humans have two basic sets of needs: an animalistic need to avoid pain and a humanistic need to develop psychologically. On the animalistic needs side (the hygiene factors) we find issues like company policy and administration, supervision, salary, interpersonal relations, and working conditions – these factors have a direct impact on a person's level of job satisfaction (Blackwood, 2001). On the humanistic side (the motivators), we find issues like achievement, recognition, the work itself, responsibility, and advancement, with the last three issues being of the most importance for long-term improved job satisfaction. In Herzberg's opinion job dissatisfaction is not the opposite of job satisfaction, but they are two separate issues. In Herzberg's view positive hygiene factors can ensure the absence of job dissatisfaction, whereas strong motivators can ensure job satisfaction. According to Herzberg (1964), happiness comes from psychological growth and personal fulfillment. Thus, a person is both satisfied and fulfilled on the job or there is little satisfaction and fulfillment. There is always some level of satisfaction on any job – even if it is a small degree.

Maslow proposed in his Self-Actualization theory (1970) that people are motivated by a hierarchy of needs. According to Maslow, the first four levels of needs (physiological, safety, social, and ego) have to be fulfilled – if not, the person will feel motivated to obtain what it takes to fulfill them. As a result, these needs stop to be motivators once they have been fulfilled; a satisfied need is not a motivator of behavior (Blackwood, 2001). At the top of Maslow's hierarchy is the need for self-actualization, the need to follow a calling or be devoted to a cause. In contrast to the other four needs that lose their motivating power once they have been fulfilled, once the top level of needs has been reached, the urge for self-actualization and devotion becomes a very strong and permanent force (Maslow, 1954). In accordance with Maslow's theory, the integration of modern information technology towards better and more effective teaching could become the top motivator for innovative and dedicated teachers to create a higher level of job satisfaction (Blackwood, 2001).

Theoretical Framework

The theoretical background for the current study is the postulate that IT impacts the way in which employees in public and private organizations perform their tasks. There are a number of organizational and descriptive (personal) variables that determine the amount of impact that IT has on the performance of the employees' tasks. When the use of IT in an organization is determined, the organizational variables that establish the broad IT framework are assumed to be stable and the same for all employees. As Curtis and Cobham (2002) pointed out, the organizational variables encourage or discourage the use of IT for the performance of various tasks. The personal variables determine the extent to which an individual employee uses IT in the performance of assigned tasks.

This theoretical model suggests consequently that an intervention that alters a descriptive (personal) variable can potentially alter the way in which an employee makes use of the IT.

The characteristics of users, their attitudes towards learning, and their implementation of these learning techniques will determine the success of the individuals and organizations in educational settings in regards to any IT implementation. In addition to teaching, educators in higher education have the responsibility of conducting research and identifying returning and promising students for mentoring and guidance (Brown & Brudney, 2003).

According to Blackwood (2001), computers have been integrated into instruction since 1950, when a computer was used to control a flight simulator for training pilots at the Massachusetts Institute of Technology (MIT). Computer-based IT is changing the role of the instructor as a teacher to the role of knowledge facilitator. The World Wide Web (WWW) has added a further dimension to teaching with professors giving web-based assignments, discussion boards, and various courses that are completely delivered via Internet technology.

Brown and Brudney (2003) reported that the recent IT development has also made inroads into the way research in academic institutions is conducted. On one hand, IT makes it possible for researchers to access vast amounts of knowledge within a very short period of time, with the additional advantage that the very cutting-edge information is immediately available via the WWW. On the other hand, IT makes it possible for educators to exchange and discuss knowledge with other experts from all over the globe on a continuous basis, which among other advantages makes the duplication of work less

likely. The use of IT has also changed the nature of service activities for professionals in higher education. The new technology makes it easier to transfer information from the campus to an ever-expanding community in nanoseconds. This can be accomplished through web pages that departments or professors create and offer to the public, or through delivering IT based workshops for special interest groups.

According to Vroom's Expectancy Theory (1964), motivation combined with effort leads to performance and certain outcomes. In order for people to be motivated, the following three conditions need to be present: (a) they think that they are capable of performing the task; (b) they believe that their efforts will produce a certain result, and (c) they believe that the benefits of doing their work are worthwhile. In accordance with Expectancy Theory, educators will be motivated to use IT if they believe that a modest amount of effort will help them to competently use IT, and that it will assist them in achieving an important goal, such as being more efficient in delivering their teaching, research, or service work (Blackwood, 2001). According to Rogers and his book *Diffusion of Innovations* (1983), the diffusion process of an innovation becomes self-sustaining when 10% to 25% of the members of a social system have decided to implement it.

The process of talking to each worker and identifying, in a non-threatening environment, areas where the worker may feel that his or her skill levels are not as desired, is critical. The important factor in conducting this exercise is creating a climate of trust and mutual respect in the organization. Workers should feel free and comfortable discussing their levels of skill, or lack thereof, with individuals who may have the power to use the knowledge for their own personal agenda within the organization. In addition,

these discussions should have no bearing on the performance reviews that these same managers may make for the organization. In reality, this is a very fine line and workers are often skeptical of overtures made by the management with regards to assessing the skill levels (Erven, 2003).

Lewis (2003) stated that training has helped tremendously in defining the limits and the boundaries that the worker is allowed, while at the same time encouraging participation. Making the workers comfortable during training programs can also help them get more involved in the process. Noting queries and answering them in a timely manner can also encourage employees to work harder at acquiring a new skill. Just as workers (trainees) can gauge the comfort levels and confidence of the trainer, trainers are generally also able to classify the type of students and their motivational levels. By providing personal involvement, the trainers can help nervous and hesitant workers get through complex and difficult tasks. Adjusting course material and pace to help the slower trainees can instill confidence in the worker for the future.

According to Erven (2003), training should serve as a motivational medium by which workers realize that the organization is interested in developing them for both the task at hand and their own personal development. Training can be offered in two ways: in the first the worker is trained for the task he or she has to perform for the organization. In this case, all the relevant information to perform solely that task is offered to the worker. This type of training is very task specific and very often the most common form of training that is offered to employees. In these types of training programs, the organizations invest in their people for betterment of itself primarily. The worker also

gains benefits as he or she is trained for either a new skill or higher-level training of an existing skill.

In the second type of training, Lakshman (1999) showed that the organization may realize the potential of the worker for another position in the organization and offer to train the worker by providing formal education in the form of a degree or certificate. Here, the worker is offered a chance to grow and develop personally. While the organization will benefit from the knowledge and education that the worker has gained, the benefits of the education will be available to the worker for the long term

In some cases, training is provided to a worker who may not be performing as required. Offering training also offers the worker a chance to improve the skills needed for the job. Organizations do try and train existing workers for new skills rather than get in new workers with the skill set required. By doing this, the company indicates that the worker has been performing well and the company realizes the quality of work and is benefiting the corporation and the individual (Blackwood, 2001).

Conclusion

The literature review conducted here indicates that IT implementation in a university setting needs to serve the academic as well as the administrative divisions. The needs of both of these areas are often radically different. The focus of this study is on the characteristics of trainers/educators and their implementation of IT. Many factors have been identified as critical to the success of IT implementation by faculty in educational institutions. Studies of this nature have been undertaken in regions that have been using IT systems for a long time. Saudi Arabia is relatively new to the usage of IT.

As such, much of the information in the literature review might not be very relevant to the country.

Even in societies that have been using IT for a longer period of time, the implementation and use of the systems have differed significantly. Usage is very much dependent on the skill and the comfort level that faculty feels with respect to computation and the application of computation to the academic interest and class work. All educational needs are not the same, and even among the faculty members of the same university the demands on the IT system can be radically different. Traditionally science, math and engineering have depended on IT usage more that the liberal arts arena.

As Curtis and Cobham (2002) pointed out, organizational variables establish the broad IT framework that encourage or discourage the use of IT for the performance of various tasks, and personal variables determine the extent to which IT is used to support tasks. As a result, the personal variables determine the extent to which an individual employee uses IT in the performance of assigned tasks.

CHAPTER 3 - METHOD

This chapter presents and describes the research methodology for conducting this study. The following methodology was utilized to answer the research questions about the utilization of IT by trainers. The relationships between the characteristics of the trainers (independent variables) and various IT implementations performed by the trainers (dependent variables) were considered. This chapter discusses the research design and rationale, participants and site, data collection, measures, and data analysis.

Research Design and Rationale

The research design used in this study is the quantitative design methodology with surveys. This design served as the roadmap for gathering meaningful data and assuring the success of the project. Vroom's Expectancy Theory (1964), the theoretical model on which this study is based explained motivation in an organizational environment. McAdam and Reid (2000) stated that IT has an influence on the way in which employees in public and private organizations perform their tasks. The degree of impact that IT has on task performance is contingent on a number of organizational and personal variables.

According to Curtis and Cobham (2002), organizational variables establish the broad IT framework that encourages or discourages the use of IT for the performance of various tasks. Within the boundaries established by the organizational IT framework, personal variables determine the extent to which IT is used to support tasks. When a single organization is examined, the organizational variables are presumed to be constant for all employees of the organization. As a result, the personal variables determined the

extent to which the individual employee used IT in the performance of assigned tasks. Blackwood (2001) further suggested that when individuals are not using IT to the extent deemed appropriate by the organization, an intervention that alters a personal variable could potentially alter the way in which IT is used.

This research study used a quantitative paradigm utilizing a survey to answer questions proposed for this research. Gliner and Morgan (2000) wrote that surveys often use descriptive, associational and comparative approaches. The proposed research questions and the level of the measurement of each independent variable affect the type of approach. Individual characteristics, such as gender, with a small number of levels of the independent variable, lead to comparative questions. Also, associational questions were used when an independent variable, such as the number of workshops per year of computer training, with many ordered levels, is related with the IT implementation.

Participants and Site

According to Gliner and Morgan (2000), the target or theoretical population was "all of the participants of theoretical interest to the researcher and to which he or she would like to generalize" (p.146). They also discussed the accessible population, which was called the survey population or sampling frame. The accessible population was the group of participants "to which the researcher has access, perhaps through a telephone or membership directory" (p.146). In this study's case, the theoretical population were trainers in Middle Eastern government employ. The sampling frame or survey population for this study were all of the trainers who work for the IPA in Saudi Arabia. This was the sole criterion for selection of the trainers in the study that were surveyed.

The trainer population for this study was 514 trainers at the Institute of Public Administration (IPA) in Saudi Arabia with its four divisions, which consist of three male facilities, and one female facility. The IPA cooperated fully with this study, and believes that the findings of the study will be of significant benefit to the organization. As a result, the IPA provided all information necessary to support data collection.

On October 24, 1961, the government of Saudi Arabia under Royal Decree No. 93 established the Institute of Public Administration (IPA). It began as an autonomous corporate body with its headquarters in Riyadh. The IPA was created to address the expanding needs in training, research, and consultation for the administration of public sector organizations, and functions as an educational institution that trains public sector managers. In addition, the IPA offers programs to prepare and develop the competency of people needed to upgrade the performance level and efficiency of government agencies working in various development fields. In addition to the head quarters in Riyadh, three branches of the IPA were established: the branch in Dammam started its work on October 13, 1973; the Jeddah branch started on January 8, 1974; and in Riyadh a third branch for women started on January 11, 1983 (IPA, 2003). The IPA has trainees with many different job areas such as: office management, accounting, computer programming, storage management, public administration, economy, personnel management, banking, etc. Each of these sites participated in this study; they are all connected by one main computer network that is accessible to all administrative trainers.

The IPA is a public organization in Saudi Arabia created to address the expanding needs in training, research, and service for administration of public sector organizations. The institute functions as an educational institution that trains public sector managers.

Part of the overall strategy for using IT at the IPA is to achieve the organization's goals of training, research and service (IPA, 2001). The IPA (2003) stated that the ability of the organization to implement this strategy is contingent on the impact of IT on the tasks of the trainers at the IPA who deliver services to the trainees. Therefore, this study specifically examined the characteristics of the trainers at the IPA in order to determine the level of their utilization of IT.

Data Collection

According to Dillman (2000) and Menard (2002), data collection in general is the key to conducting a successful research study. Improper procedures in data collection, recording, and storage can alter the findings and conclusions of any study. Data collection can determine if the findings will be valid and reliable or unreliable and invalid. It is essential that data collection be geared towards answering the research questions and the purpose of the study. Gliner and Morgan (2000) showed that survey methods are "quite likely" the research approaches for quantitative associational research studies, which is the methodology used in this study. To this end, the data collection procedure in this study involved the dissemination of the survey questionnaire to 514 trainers for easy completion. Blackwood (2001) has shown that the types of questions in the Computer Usage Survey are easier to answer than other methods of data collection. Because of these factors, a high return rate was expected and provided sufficient data for this study. The data produced from the instrument were coded in accordance with the format established by the survey questionnaire, with the sub-categories of each primary question averaged to produce a composite score for the primary question about the IPA trainers.

The main office of the Public Relations Department at the IPA is in Riyadh, Saudi Arabia. There are three smaller sub departments: a women's branch in Riyadh, a Dammam branch, and a Jeddah branch. During the gathering of research data, the researcher was in the main office in Riyadh to answer questions, emails, and phone calls. The Public Relations Department of the IPA agreed to assist with the distribution of the survey, collection of the results, and answering any questions during the data gathering process.

Written permission from the IPA's director was obtained from the head office (see appendix C). However, the completion of this survey was voluntary for all IPA trainers and preliminary contact showed that most were willing to answer it. After written permission was gained from the IPA and Colorado State University's Human Research Committee, the survey instructions were mailed to trainers at the IPA. The process for distributing the survey was:

1. The researcher gave copies of the survey (see Appendix B, the English version; the Arabic version (see Appendix D) was given to the trainers with return envelopes to the main Public Relations (PR) office in Riyadh.
2. The PR office sent the survey with return envelopes (addressed to the researcher) to each branch office.
3. Each branch office distributed the survey to the trainers in the branch.
4. The trainers completed the survey; this process took only take about 10 minutes or less.
5. The trainers sealed their completed survey in the envelope provided and dropped it in the interoffice mail. Thus, the survey was anonymous, and

the trainers' completing and returning the survey was considered their informed consent to participate.

6. The researcher opened the envelopes at his desk at the IPA as he received them and entered the data in a spreadsheet or directly into SPSS.
7. One week after the first mailing of the surveys, the PR branch offices sent a thank you and reminder letter (Appendix C) about completing and for returning the survey.

Data were analyzed using the SPSS program. Both descriptive and inferential statistics were used to analyze the results. The researcher sent out the survey to each of the 514 trainers on the 2006 IPA's trainers list. After two weeks, the researcher sent a reminder letter. Table 3.1 shows the surveys sent to each branch. The main branch received more than half of those sent, approximately 66%, with the other branches receiving 10 to 12% each. Trainers had a month to complete the questionnaire and return it to the researcher. The number of returned surveys totaled 393. After eliminating invalid responses either from participants who gave empty responses or who gave two responses to the same question, the total of valid survey responses was 386, or a return rate of 75%.

Table 3.1

Number and Percentage of IPA Faculty Members in Each Branch

	Faculty Members	Percentages
The Main Branch	341	66.3%
Jeddah Branch	58	11.3%
Dammam Branch	63	12.3%
Women's Branch	52	10.1%
Total	514	100.0%

As the researcher received the data, he made preliminary analyses of the data. However, one month after the first mailing the researcher considered the data collection complete and began the final analysis using SPSS as outlined in the Analyses section below.

Measures

The questionnaire, which is called the Computer Usage Survey (CUS), is based on a survey questionnaire that Blackwood (2001) used for a similar research project with academic faculty in West Virginia. This researcher has Andrew Blackwood's permission to adapt and use the CUS for his own research. Appendix B shows that the CUS addresses three different areas. It is made up of three data collection sections and a cover letter.

Level of Implementation of Information Technology

The first section after the cover letter is the "Level of Implementation of Information Technology" (questions 1 thru 15). Blackwood (2001) identified two levels of computer usage: utilization and integration and had used a forced-choice, paired comparison method of measurement. However, for this study this researcher used a Likert scale to simplify the analysis and to be able to do a univariate factorial ANOVA.

The three different sections mentioned are: teaching, research, and service. The researcher utilized a Likert Scale arranged from strongly disagree to strongly agree, with a scale from one to six for all statements. The participants rated the fifteen statements to answer the research questions for this study. They measured the degree to which IT is supplemental, critical, essential, useful, and indispensable in their teaching, research, and service. These fifteen statements measure whether or not the trainers utilize and integrate

IT in their teaching, research, and service. The statements were modified from the survey of Blackwood (2001) by the present researcher to measure the utilization and integration of IT implementation in teaching, research, and service.

Job Satisfaction Scale

The second section, "Job Satisfaction Scale" measures the area of job satisfaction - intrinsic, extrinsic, and overall (questions 16 thru 23). Blackwood (2001) utilized the Mohrman Cooke Mohrman Job Satisfaction Scale (Mohrman, Cooke, & Mohrman, 1978). The present researcher has received permission from Mohrman to use the Mohrman-Cooke-Mohrman Job Satisfaction Scale for the present research project. The self-administered Mohrman-Cooke-Mohrman Job Satisfaction Scale consists of two components with four questions each. These questions were a Likert six-point scale, with possible responses ranging from one to six. The first component measures a respondent's perceived intrinsic satisfaction, and the second component measures a respondent's perceived extrinsic satisfaction. The sum of the scores of the reported intrinsic and extrinsic job satisfaction provides the score for the overall job satisfaction.

The Mohrman-Cooke-Mohrman Job Satisfaction Scale is based on Herzberg's Motivation-Hygiene Theory (Mohrman, Cooke, & Mohrman, 1978). According to Herzberg's Motivation-Hygiene Theory, humans have extrinsic as well as intrinsic needs, and each of these needs is fulfilled in a distinct way. Herzberg maintains that the extrinsic needs of people encompass the avoidance of pain, and the hygiene factors include company policy and administration, supervision, salary, interpersonal relations, and working conditions. The intrinsic need is to develop psychologically, and the motivating factors including achievement, recognition, work itself, responsibility, and advancement.

Demographics and Computer Experience and Access

The third area of the CUS, "Demographics and Computer Experience and Access" (questions 24 to 35) addresses some general information, such as the respondents' gender, age, years of experience, academic discipline, rank, amount of computer education, access to a computer, and access to the Internet. The demographic information obtained this way was tabulated for each response. The amount of computer education was determined by the response to two questions that asked the respondents about the computer training that they received through workshops and college credits in IT courses.

There are six questions (30 through 35) aimed at finding out whether trainers at the IPA have access to a computer and the Internet in their office, in the classroom, and/or at home. The overall access score was found by assigning a 0 to a no answer and a 1 to a yes answer and adding the scores of the six questions. This component uses a quantitative design that was based on the Levels of Computer Use assessment developed by Marcinkiewicz and Welliver (1993). The Levels of Computer Use Assessment is based on Vroom's Expectancy Theory (1964). It is used to explain the involvement of teachers with computers and is divided into five stages of involvement: familiarization, utilization, integration, reorientation, and evolution (Rieber & Welliver, 1989). Questions 30 and 33 regarding computer and Internet access in the office were not analyzed separately because almost all trainers had access , and thus it was not meaningful to compare those with and without access.

Validity and Reliability

According to Gliner and Morgan (2000), validity and reliability are very important in selecting surveys. The validity defined by Gliner and Morgan shows whether the instrument is actually measuring what it should measure. They stated that there are four types of measurement validity which are (a) content, (b) construct, (c) criterion related, and (d) face validity. Blackwood (2001) stated that "the Computer Usage Survey was developed by this researcher for this study" (p. 52). It was tested for readability and content validity by a panel of professors of educational leadership and 12 doctoral candidates in educational leadership. Each one received and evaluated the survey and reported favorable findings regarding adequacy and completion. This researcher sent the modified questions to his committee members for verification of content validity.

According to Mohrman, Cooke, and Mohrman (1978) the Job satisfaction scale data is from a valid and reliable pooled sample where the actual samples were combined for proper analysis and summary. The reliability for the satisfaction scales is as follows: "Intrinsic Satisfaction (Cronbach alpha = .86)" and "Extrinsic Satisfaction (Cronbach alpha = .71)" (p 22). Reliability is not mentioned in Blackwood's study. However, in the present study once the data was collected, a Cronbach's alpha was computed on each of the different sections of the Level of IT Implementation (Teaching, Research and Service) and the two different types of satisfaction (intrinsic and extrinsic). For the Level of Implementation, training questions 1-5, Cronbach's alpha was 0.79. For the Research questions, 6-10, Cronbach's alpha was 0.84. For the service questions, 11-15, Cronbach's alpha was 0.87. For the job satisfaction intrinsic measures, questions 16-19, Cronbach's alpha was 0.90. The job satisfaction extrinsic measures, 20-23, Cronbach's alpha was

0.84. So the internal reliability of the survey was adequate, as indicated by a Cronbach's alpha measure of more than 0.70.

Data Analysis Procedure

This study aimed to investigate the relationships between the characteristics of the IPA trainers and their level of IT implementation regarding their main tasks, which are: 1) teaching; 2) research; 3) service. This research study explored whether any individual independent variable or a combination of independent variables existed to explain the implementation of IT in these three main tasks.

Research questions were developed based on 16 independent variables. This quantitative research approach included comparative, associational and complex associational statistics. The following statistical tests were used to analyze associations among variables:

1. Pearson Moment-Product correlation
2. Spearman rho
3. *t* test
4. One-Way ANOVA
5. Univariate Factorial ANOVA

Table 3.2 shows each independent variable and its level of measurement, research approach, and quantitative statistical test for the analysis. Consequently, each independent variable was related with the three dependent variables, which were: the level of IT implementation in teaching, research, and service.

For the combination question (15) individual access scores (7 thru 12) were left out because it seemed that the Overall access score (13) would adequately represent

"Access" in predicting IT implementation. However, the individual satisfaction scores, intrinsic and extrinsic, were used as predictors of IT implementation. The statistical tests in Table 3.2 were performed using SPSS.

Table 3.2

Independent Variables, Their measurement, Approach and Analysis

Independent Variables And Measures	Number & Levels	Type of research approach	Statistical test used in analyzing the result
1. Gender, nominal	2 levels	Comparative	*t* test
2. Rank, nominal	4 levels	Comparative	One-Way ANOVA
3. Age, interval	Continuous	Associational	Pearson r
4. Training field, nominal	5 levels	Comparative	One-Way ANOVA
5. Experience using the computer, nominal	4 levels	Comparative	Spearman rho
6. Training in IT Workshops, Nominal	4 levels	Comparative	Spearman rho
7. Computer Access in classrooms, nominal	2 levels, yes/no	Comparative	*t* test
8. Computer Access in home, nominal	2 levels, yes/no	Comparative	*t* test
9. Internet Access in classrooms, nominal	2 levels, yes/no	Comparative	*t* test
10. Internet Access in home, nominal	2 levels, yes/no	Comparative	*t* test
11. Overall Access, interval	0-6	Associational	Pearson r
12. Intrinsic Job Satisfaction, interval	4-24	Associational	Pearson r
13. Extrinsic Job Satisfaction, interval	4-24	Associational	Pearson r
14. Overall Job Satisfaction, interval	8-48	Associational	Pearson r
15. Trainers Characteristics and their level of IT implementation	N/A	Complex Associational	Univariate Factorial ANOVA

Note. The dependent variables are Implementation of IT in Teaching, Research, and Service. These can vary from low to high and are probably normally distributed.

CHAPTER 4: RESULTS

There were 514 surveys sent to prospective participants of this study. Table 4.1 shows the number of distributed and returned complete surveys from the participants of each branch. Three branches including the Main, Jeddah, and Dammam branches recorded approximately 76% of completed surveys received. The women's branch was a bit lower at 67%. The overall response rate was 75%.

Table 4.1

Number and Percentage of Complete Surveys Returned

Branch	Distributed	Completed	Percentages
The Main Branch	341	260	76.2%
Jeddah Branch	58	44	75.9%
Dammam Branch	63	47	74.6%
Women's Branch	52	35	67.3%
Total	514	386	75.1%

Demographic Information of Participants

The participants in the study included both genders, but there was a large discrepancy between male and female faculty members. Of the 386 trainers, 92% were males and 8% were females. These percentages of trainers include 14% professors, 56% instructors with a master's degree, 15% instructors with a diploma in office management, and 14% lecturers. The majority of the trainers in the study identified themselves as instructors with a master's degree.

In this study, trainers are grouped into five areas including computing, English, office management, private sector, and public administration. The percentage of trainers in each field was: computing 17%, English 13%, office management 18%, private sector 17%, and public administration 36%.

Experience

Table 4.2 shows the experience of trainers, indicating various years of experience from one to 16 or more. The table also indicates that the groups with 6 to 10 years, 11 to 15 years, and 16 or more years of experience are approximately equivalent, each with about 30% of the trainers. The group with the least experience, with 1 to 5 years, is about one third of the size of other groups. Approximately 57% of the trainers have 11 or more years of experience.

Table 4.2

Faculty Member's Experience

Years of Experience	Frequency	%
1 – 5	43	11.1
6 – 10	122	31.6
11 – 15	114	29.5
16 or more	107	27.7

Training Sessions

Table 4.3 shows the number of training sessions taken by trainers. The table indicates that approximately 51% of trainers have taken 3 or more workshops while 49% have attended two or fewer workshops. Only about one in 10 trainers has not taken any workshop.

Table 4.3

Training Sessions Enrolled in by Trainers

Workshop/Training	Frequency	%
None	49	12.7
1 – 2	140	36.0
3 – 4	117	30.3
5 or more	80	20.7

Computer Access

Table 4.4 shows computer access both in the classroom and at home. Approximately 95% of the trainers have computer access in the classroom. In contrast, the majority of trainers do not have access to a computer at their home; about 45% of the trainers have computer access at home. Note that question 30 regarding access in the office was not reported in this chart because all of the trainers had access to computers in their office and it was eliminated as a variable.

Table 4.4

Trainers with Computer Access

	% Computer Access	
	Yes	No
Classroom	94.8	5.2
Home	45.3	54.7

Internet Access

Table 4.5 shows percentages of Internet access both in the classroom and at home. Of the 175 of trainers who have a computer at home, 72% have access to the Internet. For Internet access in the classroom, about 74% of trainers can access the Internet.

Please note that question 33 regarding Internet access in the office was not reported in this chart because all of the trainers had access to the Internet in their office.

Table 4.5

Trainers with Internet Access

	% Internet Access	
	Yes	No
Classroom	74.1	25.9
Home	71.8	28.2

The general, demographics for the respondents are as follows: they were all trainers for the IPA, age 23-60 years old with bachelor degrees or higher; mostly Saudi Arabian and a few other Arab males and females. They live primarily in the cities of Riyadh, Jeddah, and Dammam.

Research Questions Addressed

Gender

For Research Question 1, (Is there a relationship between trainer's gender and level of implementation of IT?), Table 4.6 shows the results of three independent *t*-tests of gender and implementation of IT. There was no significant difference between male and female trainers in the implementation of IT in training and research. However, males were significantly different from female in the implementation of IT in service ($p = .04$). Inspection of the two groups' means indicates that the average IT implementation in the service score for female trainers (4.80) was significantly higher than the score for males (4.53). The effect size, *d*, is approximately .27, which is smaller than typical.

Table 4.6

Relationships Between Trainer's Gender and Level of Implementation of IT

	N	*M*	*SD*	*t*	*p*
Training				0.07	0.962
Males	353	5.07	0.90		
Females	33	5.07	0.60		
Research				-0.59	0.684
Males	353	5.07	0.91		
Females	33	5.13	0.58		
Service				-2.10	0.041*
Males	353	4.53	1.02		
Females	33	4.80	0.66		

*$p<.05$

Rank

For Research Question 2, (Is there a relationship between trainer's rank and the level of implementation of IT?), Table 4.7 shows the results of three one-way ANOVAs used to compare the independent variable trainer's rank on implementation of IT. No significant difference was found among the four groups of trainers in training, research, and service on the level of IT implementation.

Table 4.7

Relationships Between Trainer's Rank and the Level of Implementation of IT

	N	*M*	*SD*	*F*	*p*
Training				0.96	0.410
Lecturer BA Degree	56	5.08	0.85		
Instructor Diploma	58	5.19	0.75		
Instructor Masters	216	5.01	0.92		
Professor PhD	56	5.19	0.82		
Research				0.32	0.814
Lecturer BA Degree	56	5.17	0.87		
Instructor Diploma	58	5.10	0.87		
Instructor Masters	216	5.05	0.91		
Professor PhD	56	5.06	0.87		
Service				0.59	0.624
Lecturer BA Degree	56	4.64	0.87		
Instructor Diploma	58	4.67	0.91		
Instructor Masters	216	4.50	1.03		
Professor PhD	56	4.55	1.06		

Training Fields

For Research Question 3, (Is there a relationship between trainer's training fields and the level of implementation of IT?), Table 4.8 shows a statistically significant difference was found among the five groups of trainer's training field on the level of training in IT implementation, F (4, 378) = 7.06, p = .001, and on the level of research in IT implementation F (4, 379) = 6.92, p = .001. Table 4.8 shows that the mean training scores were above 5.00 for computing, office management, and the private sector, but less than 5.00 for English and public administration. The means for research were similar.

Post hoc LSD tests indicate that trainer's training field differed significantly in their level of training IT implementation. Computing was higher than English (p < .001) and public administration (p < .001). Likewise, office management was higher than

English (p <.001) and public administration (p = .013). Finally, the public sector group was higher than both English (p < .001) and the public administration (p = .011).

There were also significant mean differences on trainer's training field in their level of research IT implementation. Again, the computing group was higher than English (p < .001) and public administration (p < .001). Private sector was higher than English (p < .001) and public administration (p < .001).

Table 4.8

Relationships Between Trainer's Training Fields and the Level of Implementation of IT

	N	*M*	*SD*	*F*	*p*
Training				7.06	<.001**
Computing	64	5.39	0.82		
English	49	4.70	0.94		
Office Man	68	5.22	0.71		
Private Sec	66	5.23	0.76		
Public Admin	136	4.90	0.93		
Research				6.92	<.001**
Computing	64	5.38	0.77		
English	49	4.82	0.84		
Office Man	86	5.10	0.82		
Private Sec	66	5.35	0.71		
Public Admin	136	4.86	0.99		
Service				1.84	0.121
Computing	64	4.65	1.06		
English	49	4.63	0.82		
Office Man	86	4.71	0.94		
Private Sec	66	4.60	1.04		
Public Admin	136	4.38	1.01		

**p<.01

Age

For Research Question 4, (Is there a relationship between trainer's age and level of implementation of IT?), a correlation was conducted. Table 4.9 shows the results of

these Pearson correlations between trainer's age and their level of IT implementation. There was no significant association between trainer's age and their level of IT implementation in training, research, or service.

Table 4.9

Relationships Between Trainer's Age and Level of Implementation of IT

	N	*r*	*p*
Training	385	-0.071	0.166
Research	385	-0.088	0.085
Service	385	-0.086	0.093

Years of Experience

For Research Question 5, (Is there a relationship between trainer's years of experience and the level of implementation of IT?), Table 4.10 shows the results of trainer's years of experience and the level of IT implementation. A statistically significant difference was found among the four years of experience groups on IT implementation in training, $F(3, 382) = 5.18$, $p = .05$, and in research, $F(3, 382) = 8.05$, $p < .001$, but not in service.

Table 4.10

Relationships Between Trainer's Years of Experience and the Level of Implementation of IT

	N	*M*	*SD*	*F*	*p*
Training				5.18	0.002*
1 - 5 years	43	4.62	1.01		
6 -10 years	122	5.04	0.83		
11-15 years	114	5.20	0.80		
16 +	107	5.16	0.90		
Research				8.05	<.001**
1 - 5 years	43	4.47	1.22		
6 -10 years	122	5.12	0.86		
11-15 years	114	5.17	0.82		
16 +	107	5.17	0.74		
Service				1.54	0.204
1 - 5 years	43	4.27	1.18		
6 -10 years	122	4.57	0.88		
11-15 years	114	4.55	1.05		
16 +	107	4.66	0.96		

*$p<.05$ **$p<.01$

Post Hoc LSD Tests indicate that groups with various years of experience differed on their level of training in IT implementation. Those in the 1 to 5 years group scored lower than those in each of the three more experienced groups. Likewise, there were also significant differences on trainer's years of experience on their level of IT implementation in research. Again, those in the 1 to 5 years group scored lower than those in each of the three more experienced groups.

Workshops Taken

For Research Question 6, (Is there a relationship between trainer's training in IT workshops and the level of implementation of IT?), a significant difference was found among the four levels of the number of workshops taken on IT implementation in

training, F (3, 382) = 6.55, p = .001, see Table 4.11. The Post Hoc LSD tests indicate that for those who attended 1 to 2 workshops the score was lower than for those with 3 to 4 workshops (p < .001, d = .13). Likewise, those who attended 1 to 2 workshops scored lower than those who took 5 or more workshops (p < .001). There was no significant difference in research and service.

Table 4.11

Relationships Between Trainer's Training in IT Workshops and the Level of Implementation of IT

	N	*M*	*SD*	*F*	*p*
Training				6.55	<.001**
None Workshops	49	5.08	1.04		
1 - 2 Workshops	140	4.83	0.89		
3 - 4 Workshops	117	5.19	0.75		
5 + Workshops	80	5.32	0.81		
Research				2.39	0.069
None Workshops	49	4.98	1.07		
1 - 2 Workshops	140	4.97	0.90		
3 - 4 Workshops	117	5.10	0.80		
5 + Workshops	80	5.28	0.84		
Service				0.75	0.520
None Workshops	49	4.60	1.04		
1 - 2 Workshops	140	4.46	0.96		
3 - 4 Workshops	117	4.57	0.96		
5 + Workshops	80	4.66	1.07		

**p<.01

Access to the Computer in the Classroom

For Research Question 7, (Is there a relationship between trainer's access to a computer in trainer's classroom and the level of implementation of IT?), Table 4.12 shows that instructors who had access to the computer in the classroom were significantly different from those who did not have access to the computer in the classroom on the

level of IT implementation in training ($p < .001$), research ($p < .001$), and service ($p = .001$).

Table 4.12

Relationships Between Trainer's Access to a Computer in the Trainer's Classroom and the Level of Implementation of IT

	N	*M*	*SD*	*t*	*p*
Training				4.09	<.001**
Yes	366	5.12	0.82		
No	20	4.31	1.42		
Research				5.30	<.001**
Yes	366	5.13	0.82		
No	20	4.08	1.45		
Service				3.31	<.001**
Yes	366	4.59	0.95		
No	20	3.85	1.45		

**$p<.001$

Inspection of the two means indicates that the average level of IT implementation in training for trainers who have access to a computer in the classroom (5.12) is significantly higher than for trainers who do not have access (4.31), with an effect size of approximately .95, which is very large (Cohen, 1988). Trainers who have access to a computer ($M = 5.13$) also differ significantly from trainers who do not have access to a computer ($M = 4.08$) in research. The effect size, d is approximately 1.24, which is very large. The means for service also shows that trainers who have access to the computer (4.59) were significantly higher than those who did not have access to a computer in the classroom (3.85), with an effect size of approximately .74, which is medium to large.

Access to a Computer at Home

For Research Question 8, (Is there a relationship between trainer's access to a computer in trainer's home and the level of implementation of IT?), Table 4.13 shows that there were no significant differences between trainers who have access to a computer in the home and trainers who did not have access to a computer in the home on the level of IT implementation for training, research, and service.

Table 4.13

Relationship Between Trainer's Access to a Computer in the Trainer's Home and the Level of Implementation of IT

	N	*M*	*SD*	*t*	*p*
Training				1.79	0.074
Yes	175	4.99	0.95		
No	211	5.15	0.80		
Research				1.10	0.271
Yes	175	5.02	0.92		
No	211	5.12	0.86		
Service				-0.21	0.837
Yes	175	4.57	0.99		
No	211	4.55	0.99		

Access to the Internet in the Classroom

For Research Question 9, (Is there a relationship between trainer's access to the Internet in the trainer's classroom and the level of implementation of IT?), Table 4.14 shows that there were no significant differences between those who had access to the Internet in the classroom and those who did not have access to the Internet for IT Implementation in training or research. However, trainers who have access to the Internet in the classroom were significantly different from those who did not have access to the

Internet for service ($p < .05$). Inspection of the two group means in service indicates that the average IT implementation for trainers who have access to the Internet (4.61) is higher than the average for trainers who do not have access to the Internet (4.39). The effect size *d* is approximately .22, which is smaller than typical.

Table 4.14

Relationships Between Trainer's Access to the Internet in the Trainer's Classroom and the Level of Implementation of IT

	N	*M*	*SD*	*t*	*p*
Training				-0.63	0.528
Yes	286	5.09	0.85		
No	100	5.03	0.94		
Research				-1.90	0.058
Yes	286	5.12	0.84		
No	100	4.93	1.00		
Service				-1.99	0.047*
Yes	286	4.61	0.95		
No	100	4.39	1.09		

*$p<.05$

Access to the Internet at Home

For Research Question 10, (Is there a relationship between trainer's access to the Internet in the trainer's home and the level of implementation of IT?), Table 4.15 shows that there were no significant differences between trainers who had access to the Internet at home and those who did not have access to the Internet at home on the level of IT implementation in training, research or service.

Table 4.15

Relationships Between Trainer's Access to the Internet in the Trainer's Home and the Level of Implementation of IT

	N	*M*	*SD*	*t*	*p*
Training				-0.96	0.338
Yes	277	5.10	0.90		
No	109	5.00	0.82		
Research				-1.47	0.142
Yes	277	5.11	0.88		
No	109	4.97	0.90		
Service				-1.85	0.066
Yes	277	4.61	1.02		
No	109	4.41	0.89		

Overall Access to Computers and the Internet

For Research Question 11, (Is there a relationship between trainer's overall access and the level of implementation of IT?), a correlation was computed. Table 4.16 shows that there was a statistically significant association between overall access and IT implementation in service, r (384) = .12, $p < .05$. The direction of the correlation was positive, which means that the trainers that have access to a computer and the Internet at home and also in the classroom tend to have higher levels of IT implementation. However, the effect size is small and the percentage of variance predicted is only 1.4% (r^2=.014).

Table 4.16

Relationships Between Trainer's Overall Access and the Level of Implementation of IT

	N	*r*	*p*
Training	386	0.038	0.457
Research	386	0.098	0.054
Service	386	0.120	0.018*

*$p<.05$

Intrinsic Job Satisfaction

For Research Question 12, (Is there a relationship between trainer's intrinsic job satisfaction and the level of implementation of IT?), Table 4.17 shows that all of the pairs of variables were significantly correlated. The strongest positive correlation, which would be considered approximately small to medium effect size, was between intrinsic job satisfaction and the level of IT implementation in training, r (384) = .219, $p < .001$. This means that trainers who had high intrinsic job satisfaction were likely to have a high level of IT implementation in training.

There was a significant positive correlation of intrinsic job satisfaction with the level of IT implementation in research, r (384) = .197, $p < .001$. The effect size was also small to medium. This means that trainers that had a relatively high intrinsic job satisfaction were likely to have a high level of IT implementation in research.

A significant positive correlation with a small to medium effect size was also found between trainer's intrinsic job satisfaction and their level of IT implementation in

service, r (384) = .164, p < .001. This means that trainers that had a relatively high intrinsic job satisfaction were likely to have a high level of IT implementation in service.

Table 4.17

Relationships Between Trainer's Intrinsic Job Satisfaction and the Level of Implementation of IT

	N	*r*	*p*
Training	386	0.219	<.001**
Research	386	0.197	<.001**
Service	386	0.164	0.001**

**p<.01

Extrinsic Job Satisfaction

For Research Question 13, (Is there a relationship between trainer's extrinsic job satisfaction and the level of implementation of IT?), Table 4.18 shows that there were statistically significant positive correlations between extrinsic job satisfaction and the level of IT implementation in training, research, and service. The correlation between trainers' extrinsic job satisfaction and the level of IT implementation in training was r (384) = .193, p < .001. The effect size was small to medium. This means trainers that have a relatively high extrinsic job satisfaction were likely to have a high level of IT implementation in training.

A statistical significance was also found between trainers' extrinsic job satisfaction and their level of IT implementation in research, r (384) = .209, p < .001 with small to medium effect size. This means that trainers that have a relatively high extrinsic job satisfaction were likely to have a high level of IT implementation in research.

There was also a statistical significance between trainers' extrinsic job satisfaction and their level of IT implementation in service, r (384) = .101, p < .05. The effect size is small. This means that trainers in service who have a high job satisfaction were likely to have a high level of IT implementation.

Table 4.18

Relationship Between Trainer's Extrinsic Job Satisfaction and the Level of Implementation of IT

	N	*r*	*p*
Training	386	0.193	<.001**
Research	386	0.209	<.001**
Service	386	0.101	0.046*

*p<.05 **p<.01

Overall Job Satisfaction

For Research Question 14, (Is there a relationship between trainer's overall job satisfaction and the level of implementation of IT?), Table 4.19 shows that all of the pairs of variables were significantly positively correlated. The correlation between trainers' overall job satisfaction and the level of IT implementation in training is r (384) = .230, p < .001 with small to medium effect size. This means that trainers that have a high overall job satisfaction tend to have a high level of IT implementation in training.

There was also a positive correlation between trainers overall job satisfaction and the level of IT implementation in research, r (384) = .226, p < .001. This means that trainers that have a high overall job satisfaction were likely to have a high level of IT implementation in research.

There was also a positive correlation between trainers' overall job satisfaction and the level of IT implementation in service, r (384) = .148, p < .001 with small effect size. This means that trainers that have a high overall job satisfaction were likely to a have high level of IT implementation in service.

Table 4.19

Relationship Between Trainer's Overall Job Satisfaction and the Level of Implementation of IT

	N	*r*	*p*
Training	386	0.230	<.001**
Research	386	0.226	<.001**
Service	386	0.148	0.004**

**p<.01

Predicting Level of IT Implementation

For Research Question 15, (Is there a combination of the characteristics of trainers that predicts their level of implementation of IT better than any one alone and, if so, what is the best combination?), Table 4.20a, Table 4.20b, and Table 4.20c show results of three univariate factorial ANOVAs, selecting only the main effects of the significant predictors. This is equivalent to using multiple regression. The tables show the means, betas, and ANOVAs that predict the level of IT implementation in training, research, and service, respectively.

In Table 4.20a, the ANOVA result shows that F = 4.93 for specialty field, F = 11.87 for computer access in the classroom, F = 4.37 for workshop session, F = 6.66 for age, and F = 17.78 for job satisfaction, and all are statistically significant. In addition, the

results show that the combination of predictors - specialty field (computing and not English), computer access in the classroom, many workshop sessions, younger age, and high intrinsic job satisfaction - significantly combine to predict the level of IT implementation in training.

Table 4.20a

Means, Betas, and Main Effect ANOVAs for IT Implementation in Training

	M	*B*	*F*	*p*
Field			4.93	0.001**
Computing	5.026	0.271		
English	4.390	-0.364		
Office Man	4.901	0.146		
Private Sec	4.917	0.163		
Public Admin	4.754	0[a]		
Computer Access in Classroom			11.867	0.001**
Yes	5.127	0[a]		
No	4.468	-0.659		
Workshop Sessions			4.374	0.005**
None	4.821	-0.146		
1-2 Workshops	4.564	-0.402		
3-4 Workshops	4.838	-0.129		
5 + Workshops	4.967	0[a]		
Age	38.94	-0.013	6.656	0.010*
Intrinsic Job Satisfaction	17.98	0.041	17.780	<.001**

* $p < .05$ ** $p < .01$

[a] This is parameter set to zero because it is redundant.

Table 4.20b shows the statistically significant results of ANOVAs that indicate that the combination of the predictors significantly combine to predict the level of IT implementation in research. The beta coefficients results shows that the predictor

variables - specialty field (computing or the private sector), computer access in the classroom, younger age, intrinsic job satisfaction, and more computer experiences - significantly combine to predict the level of IT implementation in research.

Table 4.20b

Means, Betas, and Main Effect ANOVAs for IT Implementation in Research

	M	*B*	*F*	*p*
Field			4.241	0.002**
Computing	4.849	0.320		
English	4.363	-0.166		
Office Man	4.622	0.093		
Private Sec	4.870	0.341		
Public Admin	4.530	0[a]		
Computer Access in Classroom			17.692	<.001**
Yes	5.054	0[a]		
No	4.240	-0.814		
Age	38.94	-0.018	10.497	0.001**
Intrinsic Job Satisfaction	17.98	0.033	11.360	0.001**
Computer Experiences			4.746	0.003**
1 - 5 years	4.259	-0.593		
6 - 10 years	4.689	-0.163		
11 - 15 years	4.787	-0.065		
16 + years	4.852	0[a]		

*p<.05 **p<.01

[a] This is parameter set to zero because it is redundant.

In Table 4.20c, the ANOVA results show that $F = 9.17$ for computer access in the classroom, $F = 5.87$ for age, and $F = 10.29$ for intrinsic job satisfaction, and all are statistically significant. Furthermore, the beta coefficients results show that the combination of predictors - computer access in the classroom, younger age, and high

intrinsic job satisfaction - significantly combine together to predict level of IT implementation in service.

Table 4.20c

Means, Betas, and Main Effect ANOVAs for IT Implementation in Service

	M	*B*	*F*	*p*
Computer Access in Classroom			9.166	0.003**
Yes	4.594	0[a]		
No	3.915	-0.679		
Age	38.99	-0.014	5.866	0.016*
Intrinsic Job Satisfaction	17.99	0.036	10.290	0.001**

*$p<.05$ **$p<.01$

[a] This is parameter set to zero because it is redundant.

Summary

The descriptive data provided baseline data of general characteristics of the participants. Large majority of them were males and had access to the computer and the Internet. More than half of the trainers had 11 or more years of experience.

The result of gender and IT implementation showed a significant result in service that favors females. The results of one-way ANOVA show there were no significant differences between trainer's rank on their IT implementation.

On the other hand, a statistically significant difference was found among the five groups of trainer's training fields on the level of IT implementation in training. There were also significant mean differences on trainer's training field in their level IT implementation in research. The computing group was higher than English and public

administration. Also the private sector and office management were higher than English and public administration.

There was no significant association between trainer's age and their level of IT implementation in training, research, or service. However, a statistically significant difference was found among the four years of experience groups (1-5years was the lowest) on IT implementation in training and in research, but not in service. Likewise, a significant difference was found among the four levels of the number of workshops taken (1-2 workshops was the lowest) on IT implementation in training.

Trainers who had access to the computer in the classroom were significantly higher than those who did not have access to the computer in the classroom on the level of IT implementation in training, research, and service. In contrast, there were no significant differences between trainers who had access to a computer in the home and trainers who did not have access to a computer in the home on the level of IT implementation in training, research, and service. There were no significant differences between those who had access to the Internet in the classroom and those who did not have access to the Internet in training or research IT implementation. However, trainers who had access to the Internet in the classroom were significantly higher than those who did not have access to the Internet for service, but the effect size was small. The results shows no significant differences between trainers who had access to the Internet at home and those who did not have access to the Internet at home on the level of IT implementation in training, research or service. There was a small statistically significant association between overall access and IT implementation in service, but no association between overall access and IT implementation in training and research.

The results show a positive association between intrinsic job satisfaction and IT implementation. All of the pairs of variables were significantly correlated. Likewise, there were statistically significant positive correlations between extrinsic job satisfaction and the level of IT implementation in training, research, and service. Similarly, for the overall job satisfaction, all of the pairs of variables were significantly positive correlated.

Finally, the results are statistically significant for combinations of variables predicting IT implementation in training, research, and service. The results show that specialty field (computing and not English), computer access in the classroom, workshop session, age, and job satisfaction are statistically significant as predictors of IT implementation. Likewise, the variables specialty field (computing or the private sector), computer access in the classroom, younger age, intrinsic job satisfaction, and computer experience significantly combined to predict the level of IT implementation in research. Finally, computer access in the classroom, younger age, and high intrinsic job satisfaction significantly combine to predict the level of IT implementation for the service sector.

CHAPTER 5

This chapter presents a discussion and a conclusion based on major findings in Chapter 4. Furthermore, recommendations and suggestions for future research are made at the end of the chapter.

Discussion

General Characteristics of Participants

Participants in the study included both genders, male and female trainers. Of the 386 participants, 351 were male and 35 were female. The completed and returned surveys from male trainers were about 76% of those sent out, while the response rate of the female trainers was 67%, with an overall 75% response rate. Among the four IPA branches, there was one branch to support and promote female government civil servants, and the other three branches were for males. The response rate in this study would appear to be higher than the average range.

The general characteristics of the participants in this study are:

1. A little over half of the trainers have 11 or more years of experience.
2. The vast majority were males.
3. More than half of them have a master's degree.
4. The vast majority of them have access to a computer in the classroom or at home.
5. More than half of them have taken three or more workshop sessions.

Trainer Gender

The literature reviewed in Chapter 2 revealed that there is evidence of potential gender differences in favor of males related to computer implementation (e.g. Epodoi, 2004; Harris & Wilkinson, 2004; Weiser, 2000). The results of the current study showed that there was no significant difference between male and female trainers on IT implementation in training and research. Interestingly, the results showed that the average IT implementation in service appears to indicate some differences attributable to gender. The results also indicate that female trainers reported their IT implementation as being significantly higher than that of male trainers in service.

Clegg, Trayhurn, and Johnson (2000) and Epodoi (2004) have argued that in most cases women do not use IT because they do not have the education and experience necessary to understand the implications and the benefits of utilizing the technology. The current study suggested that there was no difference in IT implementation in teaching and research between male and female trainers; female trainers reported though that their level of IT implementation in service was greater than that of male trainers. As such, female trainers choose to actively implement IT in the service work setting. Thus, gender does indeed have an impact on how IT is received, utilized and integrated into the organization. The results indicated that the statement that females are often more afraid of IT than males because of the culture in which they have been raised appears to be inconsistent for this group of educated women whose job it is to train other women.

Trainer Rank

No significant differences were found among trainer ranks in IT implementation in training, research, and service. Often the lack of funding for IT and lack of incentive

for trainers to use the existing computer facilities is considered a major reason why all ranks and disciplines do not have the same access and knowledge of computers (Schneider & Sarker, 2005). However, this result suggests that the IPA optimized the implementation of IT in training, research, and service for all trainers regardless of their rank.

Trainer Training Field

Based on the results of the current study, it appears that IT implementation in training and research differed significantly among training fields. For training, trainers in the computing field rated their IT implementation higher than trainers in English and public administration. Likewise, trainers in office management rated their IT implementation higher than English and public administration. Furthermore, trainers in the public sector also rated their IT implementation higher than English and public administration. Meanwhile, for research, trainers in computing ranked higher than English and public administration. In addition, the private sector was higher than English and public administration.

Candiotti and Clarke (1998) suggested that to achieve optimized IT implementation in teaching and learning, two vital issues need to be addressed, including academic facilities and faculty development. The results of the current study suggest that trainers in different training fields do not have the same access to and knowledge of computers. Although the IPA provided trainers with incentives to learn about IT, including periodically upgrading their facilities and introducing multimedia labs, the results suggest that trainers in some fields need to gain more confidence with the technology.

Trainer Age

The ability to learn a new skill is a very satisfying experience for many people. Research has very often indicated that people who are interested in new ideas and constantly open to learning stay mentally fit. It is not surprising that the findings of this study suggest there was no association between age and IT implementation among younger and older trainers at IPA. However, Freudental (2001) stated that older workers often find the complexity of IT overwhelming. Furthermore, he stated that older workers are more unwilling to embrace and integrate IT in their job.

Trainer Years of Experience

McCord (1984), Polyakov, Palmer, Devitt, and Coventry (2000), and Weenk, Govers, and Vlas (2004) found that the more years faculty members have been employed with the institution, the less likely they are going to implement IT. McCord (1984) suggested that this may be due to the fact that they had not much to gain by regularly using new technology.

The current study found opposite results in training and research and no difference in service. These results suggest that with more years of experience, the trainers have an increased interest in embracing IT. It may be that at the IPA trainers with experience see more to gain from implementing IT, which is contrary to the American and European studies.

Workshops Taken

The findings of this current study showed a significant difference among the number of workshops taken on IT implementation for trainers in training. However, in research and service, there was no significant difference. According to Yildirim (2000),

both formal and informal IT learning will impact an individual's level of computer use. The results of the current study suggest that the trainer who takes extra workshops will more often implement IT.

It would appear that the higher number of workshops attended, the higher the implementation of IT. According to Cabell (2001), workshops not only boosted the overall usage of IT, but fostered positive attitudes towards the computer. In this study, the researcher did not investigate the correlation of the number of workshop with attitudes toward IT implementation. However, it must be noted that in training those who took no workshops had a slightly higher score than those who had attended just a few. This may be due to the fact that trainers who took no workshops were already very well familiar with IT and felt no need for further training in this area.

Access to Technology

The results of the current findings suggested that computer access in the classroom translated into a significantly greater IT implementation in all three areas - training, research and service. In addition, it appears that computer availability affected the experience of the trainers. Trainers who had easy access to computers and who used it for work had greater opportunities to learn new uses of the equipment. As many researchers indicated (Carter, 2001; Clark, 2000; Harris & Wilkinson, 2004; Japer & Moore, 2004; Milet, 1990; Parr, 1999), the access that an individual has to a computer will serve as the basis for the utilization and integration of IT in the workplace. Moore (2004) noticed that there is a direct correlation between the accessibility of computers in classrooms and teachers' willingness to use them. These findings were also supported by Harris and Wilkinson (2004) who stated the number of computers in a classroom

indicates the likelihood of a teacher's making use of IT technology for instructional purposes, that without appropriate and consistent access to Internet technology, trainers will be either unwilling or unable to successfully embrace, implement and integrate information technology.

In the current study, trainers who had access to the Internet in the classroom were significantly higher in the implementation of IT than those who did not have access to the Internet, but in service only, not in training and research. This is in contrast to findings by Goldsborough (2000) who suggested that Internet access is a critical factor in the overall manner by which individuals will choose to embrace information and computer technology. According to him, without appropriate and consistent access to Internet technology teachers will be either unwilling or unable to successfully embrace, implement and integrate information technology.

According to Selwyn, Marriott, and Marriott (2002) and in alignment with this study, individuals are affected by the level of IT they are exposed to in their lives - individuals who have a lot of training and access to computers and the Internet, in general, outside the workplace are more apt to implement IT at work and are more comfortable in doing so. The current study does not support the general trend in the literature, stating that the access to a computer and the Internet at home serves as the basis for utilization and integration of IT in the workplace (Carter, 2001; Clark, 2000; Harris & Wilkinson, 2004; Japer & Moore, 2004; Milet, 1990; Parr, 1999).

The present study's findings show no significant differences between trainers who had access to computers in the home and trainers who did not have access to a computer in the home on the level of IT implementation in all three areas - training, research, and

service. This indicates that most trainers who had access to the computer at home do not use it to gain experience in using the computer for work. Though Selwyn, Marriott, and Marriott (2002) found that individuals with home computers were more likely to utilize computers in the academic setting, the IPA trainers were different from IT users in other regions in their use of IT at home. They generally separate home responsibilities from work and seldom carry work home, unlike other users in the IT industry as noted by Zittrain and Edelman (2002).

Job Satisfaction

In regards to intrinsic job satisfaction, the results of this study indicate that all the pairs of variables were significantly correlated and with a medium effect size. This result appears to support past research indicating that job satisfaction has a positive correlation with IT implementation. Dvash and Mannheim (2001) and Thatcher, Stepina, and Boyle (2002) stated that when employees are more satisfied with their jobs, they are more apt to embrace and utilize information technology.

Extrinsic job satisfaction also showed a positive correlation with IT implementation. Vroom (1964) stated that people are motivated to accomplish their tasks if three conditions are met: (a) they think that they are capable of performing their work; (b) they believe that their efforts will result in a certain outcome, and (c) they believe that the payoffs for doing their work are worthwhile. In alignment with this theory, it can be assumed that trainers would be motivated to use IT if they believed that a reasonable effort would get them to the point where they would feel comfortable with using the technology. In accordance with Vroom's Expectancy Theory, the investment of a reasonable effort and its positive result must additionally lead to the accomplishment of a

personal goal. In the context of the IPA, the goal could be more effective teaching, better and quicker research, or improved service opportunities.

When combined together, intrinsic and extrinsic job satisfaction, as overall job satisfaction was significantly correlated to IT implementation. The trainers that had high overall job satisfaction tended to have a high level of IT implementation in training. Likewise, the trainers that had high overall job satisfaction were likely to have a high level of IT implementation in research. In addition, the trainers that had high overall job satisfaction were likely to have a high level of IT implementation in service, but the correlation in this area was the lowest of the three and had a small effect size.

This result suggests that IPA trainers who are satisfied with their jobs will be more likely to implement IT. According to Maslow (1970) and his Self-Actualization Theory, people are motivated by a hierarchy of needs. Hierarchy levels include physiological needs, safety, social needs, and ego. If these needs are not fulfilled, the person will feel motivated to obtain what it takes to fulfill them. Once the needs have been fulfilled, they do not become a motivator anymore. At the top of Maslow's hierarchy is the need for self-actualization, the need to follow a calling or be devoted to a cause. In contrast to the other four needs that lose their motivating power once they have been fulfilled, once the top level of needs has been reached, the urge for self-actualization and devotion becomes a very strong and permanent force. In accordance with Maslow's theory, Blackwood (2001) indicated that the integration of modern information technology towards better and more effective teaching could become the top motivator for innovative and dedicated teachers to create a higher level of job satisfaction.

Predictors for IT Implementation

The specialty field of computing, computer access in the classroom, the number of workshop sessions, and high intrinsic job satisfaction significantly combine to predict the level of IT implementation in training. Rogers (1983) in his research came to the same conclusion with faculty. In contrast to the current study and Rogers' studies, Blackwell (2001) found no correlation between the number of workshops attended or intrinsic job satisfaction and the implementation of IT in teaching. On the other hand, he found a statistically significant relationship between computer access in the classroom and the implementation of IT in teaching and also between the academic discipline of the faculty member and the level of IT implementation in teaching, with significantly higher levels of IT implementation in teaching in engineering and technology.

The specialty fields--computing and private sector--computer access in the classroom, intrinsic job satisfaction, and more computer experience significantly combine to predict the level of IT implementation in research. In contrast to the findings at the IPA in Saudi Arabia, Blackwell (2001) found in his research that there was no statistically significant relationship between the academic discipline of faculty members and their level of IT implementation in research. He also found no statistically significant relationship between the years of experience of faculty members, access to a computer in the faculty member's classroom, or the intrinsic job satisfaction of faculty members and their level of IT implementation in research.

The findings from the surveys at the IPA in Saudi Arabia suggest that computer access in the classroom, younger age, and high intrinsic job satisfaction significantly combine together to predict the level of IT implementation for service. In his research in

academic settings, Blackwell (2001) did not find any statistically significant relationships between access to a computer in the faculty member's classroom, the age of faculty members, and the intrinsic job satisfaction of faculty members with their level of IT implementation in service.

Three factors in the current study combined to predict a high level of IT implementation in all three areas of training, research and service: computer access in the classroom, younger age, and intrinsic job satisfaction. While Rogers (1983) found a statistically significant relationship between computer access in the classroom and the implementation of IT in training, Blackwell (2001), on the other hand, did not find any significant relationship between computer access in the classroom and IT implementation in teaching, research, or service. In the categories of age and intrinsic job satisfaction, Blackwell (2001) also found no significant relationship between them and the level of IT implementation in teaching, research, or service.

Recommendations

In this study, the results suggest most trainers can access IT, whether in the classroom or at home. While the overall implementation at the IPA in Saudi Arabia is good, the researcher makes several recommendations to increase IT implementation at the IPA in training, research, and service even more.

Computer and Internet access in the classroom play an important role in the trainers' IT implementation. The survey results indicate that the average level of IT implementation in training, research, and service for trainers who have access to a computer in the classroom is significantly higher than for trainers who do not have this access. Looking at this situation, the researcher recommends that the IPA ensures that

computer access is available in every single classroom in all four branches of the institute. The survey results show no significant differences between those who had access to the Internet in the classroom and those who did not have access to the Internet for IT implementation in training or research. However, trainers who had access to the Internet in the classroom reported a higher level of IT implementation for service than those who did not have access to the Internet. In order to safeguard a high level of IT implementation in service among the trainers too, the researcher also strongly recommends Internet access for every classroom.

There were significant mean differences on trainers' training field in their level of IT implementation in training and research. IT implementation in public administration was much lower than for computing, but also lower than for the English and private sectors. The researcher suggests that the leaders of the public administration field gather information from leaders and trainers in the fields with higher IT implementation scores to find out how they can possibly increase IT implementation for public administration trainers above the current level.

Another predictor for a high level of IT implementation in training, research and service is high intrinsic job satisfaction. It is recommended that the IPA conducts a short survey among trainers to find out what contributes to this situation. The results will then enable the IPA leaders to ensure high intrinsic job satisfaction on an ongoing basis among the trainers.

Suggestions for Future Research

Based on the results and conclusions of the present study, some recommendations for further research are offered. While male and female IPA trainers reported the same

levels of IT implementation in training and research, males were significantly different from female in the implementation of IT in service in that the scores of males were lower in this aspect. This is in contrast to Blackwell's (2000) findings who discovered a significant relationship between the faculty members' gender and their level of IT implementation in research and in service. On the other hand, several researchers (Abouserie & Moss, 1992; Hattie, 1990; Mathews, 2000) came to the conclusion that women tend to make less use of IT. It would be interesting to investigate further whether women in Saudi Arabia behave differently from women in technologically more advanced countries with regards to the use of IT.

Another topic where further research is suggested is the question on how far a teacher's or trainer's training field is related to the level of IT implementation in research. In contrast to the current findings from the IPA where significant differences on the level of IT implementation in training and research were found depending on the trainers' training field, Blackwell (2001) in his study came to the conclusion that faculty members in engineering tended to make more use of IT in teaching than teachers from other fields, but that there was no significant difference between the academic discipline of a faculty member and the level of IT implementation in research in this study. Further research will be need to clarify this issue.

According to Blackwell's (2001) research, there was no relationship between IT workshops that teachers had attended and their level of IT implementation. In contrast to Blackwell, the current researcher has found the number of IT workshops attended by trainers to be related to their level of IT implementation. Further research in this area is suggested to clarify this topic, to find out how far these differing results may be

contingent upon the differences in cultures, IT training in the school system, IT access in general or previous IT knowledge.

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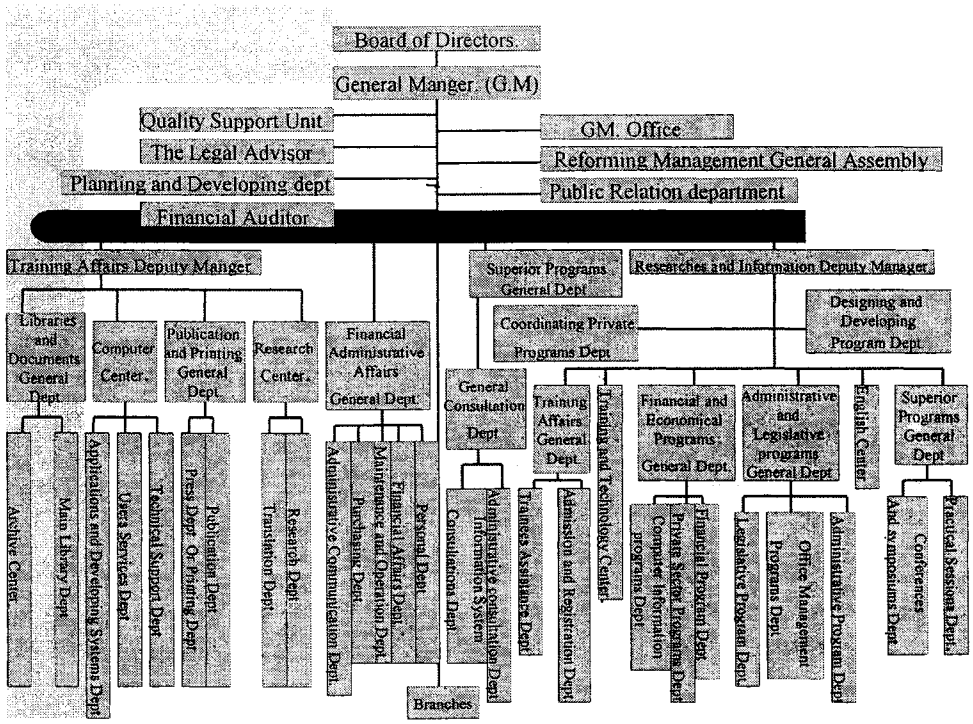
APPENDIX A - IPA ORGANIZATION CHART

INSTITUTE OF PUBLIC ADMINISTRATION
ORGANIZATION CHART



APPENDIX B - COMPUTER USAGE SURVEY

CSU Letterhead

COMPUTER USAGE SURVEY

Dear Trainer:

My name is Ali S. Alqarni and I am pursuing my doctorate in Higher Education Administration at Colorado State University, Ft. Collins, CO. I am sending you this letter to request that you complete this survey to gather data for my doctoral dissertation. My dissertation investigates the relationship between the characteristics of the trainers and their level of implementation of information technology (IT) at the Institute of Public Administration (IPA). To obtain the necessary information, all trainers at the IPA have been chosen to participate in this survey. The main Public Relations (PR) Office in Riyadh has sent this survey with return envelopes (Mr. Ali Alqarni, Institute of Public Administration, Riyadh, 11141, P.O., Box. 205. Office No. 5020) to each branch office, and your branch office has distributed the survey to each of the trainers in the branch.

Your participation is voluntary; there will be no penalties or loss of benefits involved should you choose not to participate in this survey or not to complete it. Your responses will remain anonymous and no correlation will be sought between respondents and the data provided. Your responses will not be available to your superiors. There is no compensation for completing this survey and there are no known benefits, but we hope you will gain more knowledge on the utilization of IT at the IPA.

The survey consists of questions that can either be answered on a scale of 1-6, or with yes or no; it should take approximately 10 minutes to complete. The research results and findings of my dissertation and will be available in the IPA Library. The information obtained will be included in the research results. There are no known risks. However, findings will be made available to you if you are interested in examining it is not possible to identify all potential risks in an experimental procedure, but the researchers have taken reasonable safeguards to minimize any known and potential, but unknown, risks.

An Arabic translation of this cover letter and survey are provided. Any questions or queries about the research questions or the respondents' rights can be addressed directly to me and they will be answered within one to three working days. Approval has been obtained from the IPA Administrators.

Please seal the completed survey in the attached envelope and drop in the interoffice mail to:
Ali Alqarni

Thank you for you assistance.

Sincerely,

Ali Alqarni
Saudi Arabia
Institute of Public Administration
Riyadh 11141
P.O. Box 205
Office No. 5020
Phone No. 01-474-5071
alqarnia@yahoo.com

Don Quick, Ph.D.
Mr. Ali Alqarni's advisor
School of Education
215 Education Building
Colorado State University
Fort Collins, CO 80523-1588
(001) 970-491-4683
don.quick@colostate.edu

Level of Implementation of Information Technology*

For each of the next fifteen items, please circle the number for the statement with which you most strongly agree. Select only one number for each item.

Training	**Strongly Disagree**					**Strongly Agree**
1. In my training, the use of IT is supplemental.	1	2	3	4	5	6
2. IT is critical to the functioning of my training.	1	2	3	4	5	6
3. The use of IT is not essential in my training.	1	2	3	4	5	6
4. For my training, the use of IT is indispensable.	1	2	3	4	5	6
5. The use of IT is useful to my training.	1	2	3	4	5	6
Research	**Strongly Disagree**					**Strongly Agree**
6. In my research, the use of IT is supplemental.	1	2	3	4	5	6
7. IT is critical to the functioning of my research.	1	2	3	4	5	6
8. The use of IT is not essential in my research.	1	2	3	4	5	6
9. For my research, the use of IT is indispensable.	1	2	3	4	5	6
10. The use of IT is useful to my research .	1	2	3	4	5	6
Service	**Strongly Disagree**					**Strongly Agree**
11. In my service, the use of IT is supplemental.	1	2	3	4	5	6
12. IT is critical to the functioning of my service.	1	2	3	4	5	6
13. The use of IT is not essential in my service.	1	2	3	4	5	6
14. For my service, the use of IT is indispensable.	1	2	3	4	5	6
15. The use of IT is useful to my service.	1	2	3	4	5	6

* Adapted from Blackwood, A., (2001). *A study of the relationship between characteristics of faculty Members in West Virginia colleges and their level of Implementation of information technology.* Dissertation. West Virginia University, Morgantown.

Job Satisfaction Scale*

Indicate your level of satisfaction with various facets of your job by circling a number on the six-point scale after each of the statements:

Intrinsic Satisfaction	**Low**					**High**
16. The feeling of self-esteem or self respect you get from being in your job	1	2	3	4	5	6
17. The opportunity for personal growth development in your job	1	2	3	4	5	6
18. The feeling of worthwhile accomplishment in your job	1	2	3	4	5	6
19. How satisfied you are with your present job when you consider the expectations you had when you took the job	1	2	3	4	5	6
Extrinsic Satisfaction	**Low**					**High**
20. The amount of respect and fair treatment you receive from your superiors	1	2	3	4	5	6
21. The feeling of being informed in your job.	1	2	3	4	5	6
22. The amount of supervision you receive	1	2	3	4	5	6
23. The opportunity for participation in determining methods, procedures and goals.	1	2	3	4	5	6

*Adapted from Mohrman, A. M., Cooke, R. A., & Mohrman, S. A. (1978). Participating in decision making: A multidimensional perspective. *Educational Administration Quarterly, 14*(1), 13-29.

Demographics and Computer Experience and Access

Please complete the following by filling in the blank or circling the letter of the correct response.

24. My age is _____years.

25. My gender is: a. Male b. Female

26. My faculty rank is:
    a. Lecturer - Bachelors' degree
    b. Instructor - Office Management Diploma
    c. Instructor - Masters degree
    d. Professor - Doctorial degree

27. My primary Training responsibility is in the field of: _____

28. My experience using the computer is:

    a. 1-5 years of experience
    b. 6-10 years of experience
    c. 11-15 years of experience
    d. 16 or more years of experience

29. How many training sessions for computer use have you taken in the past 5 years?
    a. 0 workshops
    b. 1-2 workshops
    c. 3-4 workshops
    d. 5 or more workshops

30. Do you have computer access in your office?
    a. Yes
    b. No

31. Do you have computer access in your classroom?
    a. Yes
    b. No

32. Do you have computer access in your home?
    a. Yes
    b. No

33. Do you have access to the Internet in your office?
    a. Yes
    b. No

34. Do you have access to the Internet in your classroom?
    a. Yes
    b. No

35. Do you have access to the Internet in your home?
    a. Yes
    b. No

Please seal the completed survey in the attached envelope and drop in the interoffice mail to: Ali Alqarni
The results of the data analyses will be presented in the graduate thesis for the Colorado State University. A synopsis of the study will be available to the IPA trainers.

Thank you for participating in this study.

APPENDIX C - REMINDER LETTER

Reminder Letter

Dear Sir,

Thank you for your participation in the study of "*The Relationship Between the Characteristics of Trainers and their Level of Implementation of Information Technology at the Institute of Public Administration in Saudi Arabia.* I appreciate the response that has been submitted for this is vital to my study. If you have not returned the response or misplaced the survey questionnaire, please let me know. I will send you another package. Please submit it by the due date stated on the survey.

Your participation has or will help us to understand the relationship between the characteristics of trainers and their level of implementation of information technology at the Institute of Public Administration in Saudi Arabia.

You are welcome to provide additional feedback related to this topic if you feel the need. Your opinion is valuable to us for the improvement of the IPA.

If there are any questions or problems related to completing the survey, please contact me at the following email as soon as possible: alqarnia@yahoo.com or you may call me at my office phone number which is 01 474 5333

Thank you again.

Best Regards,

Ali Alqarni

Appendix D – Survey in Arabic

استبانة حول استخدام الحاسب الآلي

سعادة عضو هيئة التدريب في معهد الإدارة العامة

أرفق لسعادتكم استبانة تجميع بيانات لرسالة دكتوراه بعنوان: " العلاقة بين خصائص أعضاء هيئة التدريب ومستوى تطبيقهم لتقنية المعلومات (الحاسب الآلي) في معهد الإدارة العامة". علماً أن هذه البيانات ستساعد الباحث في استكمال تقديم وإتمام رسالة الدكتوراه في مجال الإدارة التربوية في المراحل التعليمية العُليا. حيث سيتم طرح هذه الرسالة في جامعة ولاية كلورا دو ، في الولايات المتحدة الأمريكية ، بمدينة فورت كولنز. وللحصول على بيانات دقيقة تم اختيار أعضاء هيئة التدريب في المعهد بفروعه لتكون عينة لهذه الدراسة ، وقد تم الحصول على موافقة المدير العام لمعهد الإدارة العامة على نشر هذه الاستبانة بين أعضاء هيئة التدريب، لذا نأمل من جميع الزملاء والزميلات المشاركة في تعبئة الاستبانة المرسلة لكم عن طريق العلاقات العامة وإعادتها إلى الباحث في المظروف المرفق والمعنون كما يلي (معهد الإدارة العامة ، الرياض 11141 ، ص.ب. 205 ، مكتب رقم 5020. 1427/2/7هـ.

إن مشاركتكم تهم الباحث في تحقيق الهدف المنشود وتساعد في تسهيل إتمام الرسالة. تتألف الاستبانة من جزأين : الأول - عبارات تقاس بمقياس لكرت (Likert Scale) بسلم يتدرج من 1 – 6 ، يتم وضع دائرة على الرقم الذي يعكس وجهة نظر المشارك لكل عبارة. الثاني – بيانات شخصية يتم الإجابة عنها بملء الفراغ أو وضع دائرة على حرف الإجابة الصحيح ، واختيار نعم أو لا للأسئلة المتعلقة بخبرات الحاسب الآلي، ولن يستغرق إتمامها أكثر من دقائق معدودة. كما نود إحاطتكم أن جميع المشاركات سرية وتستخدم لغرض البحث من قبل الباحث فقط. ومشاركتكم لا تحمل أية نوع من المخاطرة ، علماً أن البيانات التي يتم الحصول عليها ستخضع لعملية التحليل الإحصائي ، إضافة إلى أن نتائج البحث واستنتاجاته ستكون متوافرة في مكتبة معهد الإدارة العامة.

نأمل من الجميع المشاركة ، وفي حالة وجود أي استفسار أو ملاحظة تتعلق بالاستبانة أو بأسئلة البحث أو بحقوق المشاركين، يمكنكم الاتصال بالباحث عن طريق الوسائل المدونة أدناه.

وتقبلوا منا فائق التحية والتقدير

الباحث
على بن سعيد القرني

المملكة العربية السعودية
معهد الإدارة العامة
الرياض 11141
ص. ب. 205
إدارة الاستشارات
مكتب رقم: 5020
هاتف : 014745017
جوال:0553081218
بريد الكتروني : alqarnia@yahoo.com

المشرف على البحث
Dr. Don Quick
Mr. Ali Alqarni's advisor

School of Education
215 Education Building
Colorado State University
Fort Collins, CO 80523-1588
USA
Phone: (001) 970-491-4683
E-mail: don.quick@colostate.edu

مستوى تطبيق تقنية المعلومات*

لكل من العبارات التالية ، ضع دائرة حول الرقم الذي يمثل مستوى استخدامك للحاسب الآلي.

التدريب	لا أوافق بتاتاً					أوافق بشدة
1 – يعد استخدام تقنية المعلومات (الحاسب الآلي) في تدريبي عملية تكميلية.	1	2	3	4	5	6
2 – يعد استخدام تقنية المعلومات (الحاسب الآلي) شديد الأهمية في تدريبي.	1	2	3	4	5	6
3 – استخدام تقنية المعلومات (الحاسب الآلي) ليس أساسيا في تدريبي.	1	2	3	4	5	6
4 – يعد استخدام تقنية المعلومات (الحاسب الآلي في تدريبي أمراً لا غنى عنه.	1	2	3	4	5	6
5 – استخدام تقنية المعلومات (الحاسب الآلي) مفيد في تدريبي.	1	2	3	4	5	6
البحث	**لا أوافق بتاتاً**					**أوافق بشدة**
6 – يعد استخدام تقنية المعلومات (الحاسب الآلي) في بحوثي عملية تكميلية.	1	2	3	4	5	6
7 – يعد استخدام تقنية المعلومات (الحاسب الآلي) شديد الأهمية في بحوثي.	1	2	3	4	5	6
8 – استخدام تقنية المعلومات (الحاسب الآلي) ليس أساسيا في بحوثي.	1	2	3	4	5	6
9 – يعد استخدام تقنية المعلومات (الحاسب الآلي) في بحوثي أمراً لا غنى عنه.	1	2	3	4	5	6
10 – استخدام تقنية المعلومات (الحاسب الآلي) مفيد في بحوثي.	1	2	3	4	5	6
الخدمة الاجتماعية**	**لا أوافق بتاتاً**					**أوافق بشدة**
11 – يعد استخدام تقنية المعلومات (الحاسب الآلي) في خدمتي الاجتماعية عملية تكميلية.	1	2	3	4	5	6
12 – يعد استخدام تقنية المعلومات (الحاسب الآلي) شديد الأهمية في أدائي لخدمتي الاجتماعية.	1	2	3	4	5	6
13 – استخدام تقنية المعلومات (الحاسب الآلي) ليس أساسيا في خدمتي الاجتماعية.	1	2	3	4	5	6
14 – يعد استخدام تقنية المعلومات (الحاسب الآلي) في خدمتي الاجتماعية أمراً لا غنى عنه.	1	2	3	4	5	6
15 – استخدام تقنية المعلومات (الحاسب الآلي) مفيد في خدمتي الاجتماعية.	1	2	3	4	5	6

**** الخدمة الاجتماعية تتمثل في أعمال الندوات والمؤتمرات والتعليم عن بعد بشكل عام ، إضافة إلى الخدمات المكتبية والاجتماعية لمجتمع المعهد.**

* مأخوذ عن:

Blackwood, A. (2001). *A Study of the Relationship between Characteristics of Faculty Members in West Virginia Colleges and Their Implementation of Information Technology*. Dissertation. West Virginia University, Morgantown.

مقياس الرضا الوظيفي*

حدّد مستوى رضاك عن الجوانب المختلفة من عملك بوضع دائرة حول الرقم الذي يحدد مستوى رضاك.

الرضا الداخلي (intrinsic)	منخفض					مرتفع
16 – الشعور بتقدير واحترام الذات في وظيفتك.	1	2	3	4	5	6
17 – فرصة تطوير النمو الشخصي في وظيفتك.	1	2	3	4	5	6
18 – الشعور بالإنجاز ذي القيمة في وظيفتك.	1	2	3	4	5	6
19 – مدى رضاك عن وظيفتك مقارنة بتوقعاتك حين قبلت فيها.	1	2	3	4	5	6
الرضا الخارجي (extrinsic)	**منخفض**					**مرتفع**
20– مدى الاحترام والمعاملة المنصفة من رؤسائك.	1	2	3	4	5	6
21 – الشعور بأنك تطلع على الأمور في وظيفتك	1	2	3	4	5	6
22 – مدى الإشراف الذي تتلقاه.	1	2	3	4	5	6
23 – فرصة المشاركة في تحديد الأهداف والطرق والإجراءات	1	2	3	4	5	6

بيانات شخصية وبيانات عن الخبرة في استخدام الحاسب الآلي

الرجاء إتمام الآتي بملء الفراغ و بوضع دائرة حول الحرف أو الرقم الذي يمثل الإجابة الصحيحة:

24 – العمر ———— عاماً.

25 – الجنس أ – ذكر ب – أنثى

26 – المؤهل العلمي:

أ . شهادة البكالوريوس
ب . دبلوم في الإدارة المكتبية
ت . شهادة الماجستير
ث . شهادة الدكتوراه

27 – القطاع الذي اتبع له :_____

28 – مدة خبرتي في استخدام الحاسب الآلي:

أ. 1 – 5 سنوات
ب. 6 – 10 سنوات
ت. 11 – 15 سنوات
ث. 16 سنة فأكثر

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* ماخوذ عن:

Mohrman, A. M., Cooke, R.A., & Mohrman, S. A. (1978). Participating in Decision Making: A Multidimensional Perspective. *Educational Administration Quarterly*, 14 (1), 13-29.

29 – عدد الحلقات أو الدورات أو ورش العمل التدريبية على الحاسب الآلي التي اشتركت فيها خلال السنوات الخمس الماضية:

أ. لم اشترك بأية حلقة أو دورة أو ورشة
ب. من 1 – 2 حلقة أو دورة أو ورشة
ت. من 3 – 4 حلقة أو دورة أو ورشة
ث. خمس حلقات أو دورات أو ورش عمل فأكثر

30 – هل لديك صلاحية الدخول لنظام الحاسب الآلي من المكتب؟

أ. نعم ب. لا

31 – هل لديك صلاحية الدخول لنظام الحاسب الآلي من قاعة المحاضرات ؟

أ. نعم ب. لا

32 – هل لديك صلاحية الدخول لنظام الحاسب الآلي من البيت ؟

أ. نعم ب. لا

33 – هل لديك صلاحية الدخول للإنترنت من المكتب ؟

أ. نعم ب. لا

34 – هل لديك صلاحية الدخول للإنترنت من قاعة المحاضرات ؟

أ. نعم ب. لا

35 – هل لديك صلاحية الدخول للإنترنت من المنزل ؟

أ. نعم ب. لا

الرجاء وضع الاستبانة بعد إتمامها في الظرف المرفق وإغلاقه وإرساله من خلال بريد المعهد الداخلي إلى:
علي سعيد القرني

ستعرض نتائج تحليل البيانات في أطروحة الدراسات العليا لدى جامعة ولاية كولورادو. وسيوفَّر للمدربين في المعهد ملخص للدراسة.

شكراً لمشاركتكم في هذه الدراسة.