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The Decision Makers' Perceptions toward the Adoption of Information Technology by Government Institutions in Jordan and its Affect on Information Accessibility, and Decision Making Quality

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The purpose of this study was to explore the perceptions of decision-makers towards the use of this technology and its impact on access to information and the quality of decision-making.

Quantitative methodology was used to obtain the information necessary to achieve the objectives of this study. Three hundred questionnaires to decision-makers located in the city of Irbid were distributed. Two hundred sixty eight questionnaires were returned; 253 were usable, at 84% response rate. Descriptive statistics was used to analyze the data.

The results indicated the importance of computer technology in the Jordanian governmental organizations. The results revealed that the majority of the participants expressed positive perceptions about the technology. They saw this technology as a viable, necessary and effective tool. However, they still expected to have more active role of this technology in government institutions. Also, they provided many of the factors that led to some restrictions on the use of computers. In addition, the study revealed that the demographic characteristics that would hinder perceptions towards this technology seems mostly unfounded.

Based on the results of this study, Joradanian government should provide its employees more training and education opportunities on the use of this technology, in order to maintain, improve and increase the use of such technology in the future.

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I. Introduction

Today the world is going through a major technological revolution, especially in the field of information technology. Due to this rapid development of this technology many aspects of our lives are changing. Despite this rapidly changing world and the advancement of information technology, the dissemination of this technology is not well understood or used in developing countries as a whole.

Therefore, governments have responded in most developing countries to such a challenge through the development of national programs for the use of computers in organizations. However, these national programs were not based on research which led to the limited success of such programs. The reason, according to Rogers (2003) is that "start-up phase", which emphasizes the need to collect information and planning, seems to be missing in this deep and long process of implementation of the technology.

Moreover, this technology will not be used unless individuals have the skills, and knowledge necessary to apply it in their daily practices, regardless of its development and sophistication. That is, individuals should become effective agents to be able to take advantage of the technology in their work.

Thus, the responsibility of developing countries not only to provide computers to their organizations, but also to promote a culture of acceptance among end-users of these tools. In addition, a growing acceptance of information technology by decision-makers will improve the quality and performance of government institutions. Thus, it is important to know how well information technology is working for these organizations. Thus, the goal of this study was to investigate the perceptions of decision-makers towards this technology and its impact on access to information and the quality of decision-making.

a) The Importance of Information Technology

According to Hanson and Narula (1990), information is necessary for development of national and international identity. The flow of information is through communication technologies from individual to individual, group to group, government to government; government to people, and vice versa. Also, IT has a

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very important role to play in building social capabilities to generate information and application of knowledge for sustainable development. Social capabilities complement technological capabilities and it brings in so many different ways to generate economic growth (Mansell & Wehn, 1998, p. 10).

Therefore, like developed countries, many developing countries rely heavily on the development of information technology to reach the highest level of modernization. In other words, the impression is that the more progress and development of the use of technology, and the most modern and advanced country will be (Hanson & Narula, 1990).

As a developing country, Jordan has a marginal participation in the generation and diffusion of technology. In general, many developing countries participate to a minimal extent to the globalization of technology. This globalization is offering new technological opportunities, but these are not seized by those countries.

To conclude, when it comes to information technology the expectations are high that this technology will serve as an innovation that will replace conventional forms of communication. Nowadays, the reality of information age as presented by computer-based technology has become more of a tool that many people in different parts of the world use, specifically Western and developed countries of the world. Moreover, the developing countries are no exception, specifically Jordan. More and more people in those countries are becoming interested in adopting the computer-based technology in the workplace and for personal use. However, in order to effectively integrate computer technology into social and economic systems and gain the most of this advanced technology, Amoretti (2007) believes Governments need to recognize the importance of information technology, reconsider the development strategy, actively promote the process of participatory decision-making, improve human capacity, and focus on more development public/privat partnerships.

b) IT Development in Jordan

When it comes to IT development, like many other developing countries, Jordan is facing many issues in its efforts toward economic, social, cultural, and political development. The government of Jordan has recognized the importance of timely, relevant, and reliable data for the planning of the economic and social development of the country. Therefore, according to Ein-Dor, Goodman, and Wolcott (1999), if youngr generations are not part of the Information Society, it will be very difficult for them to take part in international economic development, because information society is seen as a lever for economic development; a desire to join the global information society; and a desire to participate in the economics of the global network, e-commerce, etc. Therefore, Jordan has moved towards adopting full e-government, in order to increase transparency, efficiency and effectiveness of the government operations (Stanton, 2006, UNDP, 2007).

However, the implementation of technology in Jordanian government organizations has not been guided by research, in order to overcome the challenges that facing the introduction of this new technology into organizations. Therefore, there is a need for research that looks at the current status of technology in Jordanian organizational context in general, and about decision makers' reaction to the new tools, in particular. Without understanding of the end-users' perceptions toward such a new tool may cause unforeseen consequences about its diffusion in Jordanian government organizations. Therefore, Davison, Vogel, Harris, and Jones (2000) believed less computerized countries like Jordan will have to take care of the challenges before they can gain the benefits of such tools.

c) Statement of the Problem

The effective use of any technology will require those who are involved to accept it first. According to Woodrow (1992) decision makers must develop positive perceptions toward the use of computers in order to accept and use the technology in their daily work activities. Therefore, we need to understand whether government personnel accept such technologies or not. Further, understanding of the primary elements of successful adaption of information technology is needed, also investigate if there are any blocks to acceptance. Hence, without good understanding of such elements, it will be difficult to know whether this technology is fully utilized or not by those individuals in the Jordanian government organizations.

d) Purpose of the Study

The purpose of this study was to investigate the perceptions of decision-makers towards this technology and its impact on access to information and the quality of decision-making.

e) Research Questions and Variables

The study focused on the following questions:

1. What are the decision makers' perceptions in Jordanian government organizations toward Computer Technology?
2. What are the decision-makers' perceptions with regard to the following:

A. Accessibility of information.
B. The quality of decision-making.

Quantitative methodology was applied in order to answer the above questions. In addition, due to the fact that there was not much research conducted on the use of computer technology in public institutions in Jordan, the nature of this study was generally exploratory rather than confirmatory.

Therefore, the dependent variable was decision makers' perceptions toward Computer Technology. Whereas, the independent variables were: (1) the accessibility of information; (2) the quality of decision-making; and (3) the characteristics of decision-makers (including gender, age, education, and computer training background, etc.).

f) Significance of the Study

Decision makers play an important role in the economic and social development in Jordan. In order for decision makers to carry out this role successfully they need more efficient and accurate information. Therefore, the researcher believed the study was significant because of the following reasons: First, the study provided very helpful and important information regarding the perceptions toward the use of computer technology by decision makers and sought to explain the factors influencing these perceptions, in order to provide a strong understanding of this phenomenon and make a clear understanding of the factors affecting the Jordanian decision-makers' perceptions toward the successful adoption and utilizations of computer-based system.

Furrther, due to the inappropriate information and ineffective management of information resources in most of the developing countries, they suffer from the lack of communication and efficient information. Therefore, successful adoption of this technology will help government personnel understand how this technology works and be more efficient in transferring the information among them and around the globe when needed.

II. Review of Related Literature

Given the broad perception of IT for developing countries, the importance of their needs, and the lack of their economic resources, it seems useful to understand the state of IT perception and integration in different countries and priorities on IT implementation.

a) The Development of IT in Public Administration

Efficient use of this technology for cost reduction was emphasized by organizations, and computing was centralized for economic reasons. However, as time passed the technology advanced as well as people's familiarity, comfort, and understanding of it, and that created a demand for new types of applications. The improvement in computer technology coupled with reduction in its price allowed organizations to apply this technology to more of their management functions. By the 1960s and 1970s, management information systems (MIS) were created and designed to provide managers at all levels of an organization with information support for their managerial functions, such as planning, control and decision making (Kroeber & Watson, 1987).

Therefore, the development in IT opens up new organizational and communicative possibilities: the convergence of information and communications technologies in multimedia applications; for example, the Internet allows the rapid transfer of masses of data between cities, countries, and continents. This clearly presents enormous opportunities for real-time intra-and especially inter-organizational communications by greatly facilitating the surveillance and control of spatially dispersed activities (Bloomfield, Coombs, Knights, & Littler, 2000, p. 170).

Danziger and Andersen (2002) believe there are important benefits, such as improved data access and quality for both public administrators and citizens. Bertucci and Szeremeta (2006) assert that public administration is transforming itself internally and externally through the use of modern information technology. Evidence indicates a rapid growth of IT applications throughout the world, particularly among the industrialized countries. However, there is a couse for concern for those interested in improving government capacity due to the uneven distribution and implementation of governmental IT innovations.

Furthermore, it is obvious that from all of these advances in computer and electronic communications technology there would be some kind of impact on organizations that adopt and use these technologies. In addition, IT allows advances in government participation, transparency, public service delivery, knowledge creation, and networking that promise to improve the human condition as we transition toward a knowledge society (Bertucci & Szeremeta, 2006). Therefore, it is imperative that researchers and practitioners need to more clearly understand and investigate the particular contextual variables that result in differential outcomes for diffusion and adoption of IT innovations globally and develop a way of analyzing the kind of impacts that these technologies may have on organizations and individuals, as well as any factors that might impede the utilization of such a technology.

b) IT and Decision-Making

IT would decrease the number of units involved in the process of decision making. Simon (1977) asserts that computers would centralize decision making, however would not alter the basic hierarchy of the organization (cited in Heintze & Bretschneider, 2000).

The various existing concepts, strategies, techniques, and programs claim to provide a sound theoretical basis and useful guidance for making rational decisions in the face of complex, usually multidimensional, choice problems. However, the critical question is whether such aims are actually achieved by employing decision-aiding technologies (Rohrmann & Schutz, 1993). Moreover, they added, the rapid development of computer technology, providing increasingly more powerful and inexpensive computer

systems, has made the computer an easily accessible tool for decision making.

However, Simon (1990) believes that information technology had a major impact on the collection and dissemination of information. He added, the faster communications has made easier for the creation of more unified organization spread around the globe. With modern communications, he said, we have changed the balance between the number of messages that can be produced and can be received. Therefore, information can be obtained regardless of the location and nature of the decision-making process. Computers are useful in setting the stage for decision-making because they provide the necessary information on issues such as the availability of the necessary funds to make investments, but they are not very useful in determining the whether to make a decision in a particular investment. Further, computers also provides the means for monitoring the information received so as to determine when you should be making decisions. It makes rational comprehensive model more usable, and the administrator will be able to compare and highlight the potential consequences and costs of alternative means for the implementation of policies (Kraemer & Dedrick, 1997; Rosenbloom & Goldman, 1998).

Therefore, Krumwiede and Roth (1997) believe that IT innovations must provide more or better information for managers to make decisions. Innovations include the installation of a new IT system for human resources information or material requirements planning system. To do so successfully managers need to understand the stages of the implementation process, such as initiation, adoption, acceptance, and etc. The lines between these are not always clear, but the general understanding of the stages that most IT innovations pass through important because the factors affecting the progress vary from stage to stage.

c) Information Technology Development in Jordan

The Jordanian government has long recognized the importance of collecting information in a timely manner, and can be relied upon for planning economic and social development of the country. The adoption and use of information technology in Jordan face similar obstacles to those faced by other developing countries. Despite the obstacles to the adoption and use of information technology in Jordan, the installation of information technology and markets have been on the rise.

i. *Jordan IT Policy*

The information technology works to facilitate the rapid communication between the places where it can be seen to collapse time and space differences. Equally important, for Jordan and other developing countries, the production of information technology services has become highly mobile which made the links in these industries could be placed in countries that otherwise might have difficulty in foreign investment attraction. Therefore, information technology is one of the growth sectors of the Jordanian economy, and further development in this sector is the key to modernization of economic and social life in Jordan.

Al-Jaghoub and Westrup (2003) believe Jordan is taken as an example of a developing country, which is trying hard to use their scarce resources to achieve prosperity for its citizens. Information technology was the focus of attention by the King and the Jordanian government to provide a golden opportunity for the country to use the most valuable assets, human resources, to achieve competitiveness regionally and even globally. The entry to the World Trade Organization has opened access for many parts of the Jordanian economy to international competition. Jordan was to attract both international agencies and is seeking to attract large, multinational IT companies. Because of the competition between the rival states, these companies are in a strong position to pick and choose between the sites and Jordan must adapt to this environment.

ii. *Computerization of the Public Sectors in Jordan*

In the mid-1980s computer prices started to decline and the larger institutions began to upgrade computer divisions and established their own computer centers. Further, the idea to connect the information centers and form a NIS was initiated to "organize and manage information activities to serve national goals and interests."Also, the Royal Scientific Society (RSS) and the Ministry of Planning (MoP) worked together to create two sets of databases to provide up-to-date scientific information and economic data for Jordanian public administrators, planners, and policy makers. Therefore, the first set of databases was hosted in the Scientific and Technical Information Center (STIC) at the Royal Scientific Society (RSS). Whereas, the second set of databases was hosted in the Social-Economic Information Center (SEIC) at the Ministry of Planning (MoP) (Kulchitsky, 2004).

iii. *Challenges to the Development of IT in Jordan*

The inequalities of the utilization of information-technology are found and determined by level of education and digital divides, like social and economic divides, exist within and not just between regions in Jordan and they are integral parts of a much broader and intractable "development divide" that include insufficient telecommunications infrastructure, high telecommunications tariffs, inappropriate or weak policies, organizational inefficiency, lack of locally-created content, and uneven ability to derive economic and social benefits from information-intensive activities (Rawabdeh, 2007).

Furthermore, because Jordan is a small market, there is a need for local IT companies to rapidly acquire

the skills for international business and develop quality products in order for them to compete in the regional/global market. Therefore, the challenge for IT industry is to diversify capabilities and find new markets in both the domestic and regional areas so as to make the industry and economy more resilient (Appendix A7, Jordan).

In general, Jordan's economic and political development efforts suffer from the lack of active public participation in civil society and the weakness of public and private sector institutions. There is a need for the private sector to be more heavily involved in identifying and guiding overall economic reform Jordan. Als, government personnel must develop strong decision-making and regulatory institutions to manage issues effectively. Finally, all citizens of the country need to better understand the importance of reform, as many now feel that they do not directly benefit from these efforts (USAID, 2007-2011).

To summarize, in order for developing countries to close the gap and digital divide with the more advanced world, especially in the area of information processing and management, they should and must take full advantage of this new technology if they. Even though, there are problems and issues facing developing countries in their adoption and utilization of IT, the litreture has shown that there are ways and steps that can be taken to overcome such problems and issues in order to have a successful implementation and take a full advantage of the highly advanced and sophisticated technology.

III. Research Design and Methodology

Since there are various options for conducting research, this section seeks to justify the choice and rationale for the selection of the specific procedures and methods that were employed during the study.

a) Design of the Research

A quatitative research method was used as a design for this study, which involved using a survey (close-ended questionnaire) for gathering information for scientific purposes from a sample of a population. This approach was followed; through which data were assembled by an instrument developed and adapted from similar studies.

i. *Validity and Reliability*

Due to the fact that the survey questionnaire for this study was adapted from other several prior studies, with the appropriate refinements and modifications to collaborate with this research, the validity and reliability have already been developed. Hence, the previously validated questionnaires was used to collect the data from participants to understand the perceptions of the decision-makers toward the use of information technology in government organizations in Jordan.

However, Cronbach's Alpha from the actual study are reported in Table 3.1. The alpha coefficients for the scales were: computer perceptions (0.85), changes in the accessibility of information (0.84), and perception of changes in decision-making quality (.84). The overall alpha coefficient was (0.84).

Table 3.1 : Summary of Reliability Analysis

No.	Domain	Alpha value
1.	Perceptions toward computer technology	0.85
2.	Changes in the accessibility of information	0.84
3.	Changes in decision-making quality	0.84
Overall/Perceptions		**0.84**

b) Population and the study Sample

The study's population was all decision makers in Jordanian government organizations who were located in the city of Irbid and volunteered to participate in this study (n = 300). The idea behind choosing all decision makers rather than draw a sample was that since this study was the first of its kind in the country at this level, it was extremely important to include the largest number in the target population. Also, because the unit of analysis was the individual, the survey could have been performed either across organizations or within one organization. The approach of this research was to survey individuals from various organizations and divisions. Surveying subjects in multiple organizations increases generalizability.

c) Data Collection

A total number of 268 completed questionnaires out of the 300 that had been sent out were returned given (a response rate of 89.33%). However, 15 of them were not completely answered, therefore they were not used for data analysis. The valid response rate of 84.33% is shown in Table 3.2 below.

Table 3.2 : Response Rate and Percentages

	Distributed	Returned	Unreturned	Valid
Number of questionnaires	300	268	32	253
Percentage	100.00	89.33	10.67	84.33

d) Data Analysis Procedures

Both descriptive and inferential statistics were used for analyzing the quantitative data of this study. The Statistical Package for the Social Sciences (SPSS) was used for the data analysis. Further, all negatively stated items were reversed and descriptive statistics for all independent/dependent variables were computed.

In order to answer the research questions, means, standard deviations, correlation coefficients, and multiple regression analyses were used. In order to identify independent variables that individually correlate with the dependent variable (perceptions toward computer technology), the correlation coefficient analysis was used. A complete explanation of data analysis is provided throughout the next section.

IV. Results and Data Analysis

The participants' responses to items in the survey questionnaire were examined using the frequency and percentage distributions in some cases and the means and standard deviations in other cases. This method of analysis was expected to provide information about the relationships between decision-makers' perceptions toward the use of information technology, by using regression, correlation, and other statistical methods.

Table 4.1: Percentage and Frequency for Demographic Information

Variable		Frequency	Percentage
Gender	Male	177	70.0
	Female	76	30.0
	Total	253	100.0
Age	Less than 30 years	66	26.1
	31-40 year	69	27.3
	41-50 year	87	34.4
	More than 50 year	31	12.3
	Yes	228	90.1
	No	25	9.9
What is your current level of computer skills and knowledge?	Excellent	62	24.5
	Good	118	46.6
	Average	47	18.6
	Fair	19	7.5
	Poor	7	2.8
Level of education	High school or less	18	7.1
	Some college courses	5	2.0
	Associate degree	30	11.9
	Bachelor degree	112	44.3
	Graduate degree	88	34.8

Country of last degree earned	Jordan	101	37.7
	USA	51	19.0
	UK	19	7.1
	Iraq	18	6.7
	Russia	10	3.7
	Other	31	11.6
	Missing	38	14.2
	Total	230	100.0
Length of time in this position	Less than 1 year	40	15.8
	From 1-5 years	81	32.0
	From 6-10 years	34	13.4
	More than 10 years	98	38.7
Computer Technology Use: Personally, how often do you use the computer to retrieve computer-based files?	Very seldom	20	7.9
	Occasionally	64	25.3
	Quite often	36	14.2
	Very Often	44	17.4
	Constantly	89	35.2
Personally, how often do you ask others, either by phone or in person, to provide you with information that is computer-based?	Very seldom	31	12.3
	Occasionally	67	26.5
	Quite often	43	17.0
	Very Often	58	22.9
	Constantly	54	21.3
Technology Training: Please indicate, all relevant statements that best describe the training level you have had in the use of computer technology in general.	Courses at college or university	121	47.8
	In-house organization courses	11	4.3
	Through self-study	78	30.8
	Through a colleague at work		10 4.0
	Through vendors/consultants		19 7.5
	None	14	5.6
Computer Technology Experience: How much experience have you had using computer?	None	31	12.3
	One year or less	48	19.0
	1 to 5 years	89	35.2
	More than 5 years	85	33.6

Table 4.1 shows frequency and percentage for demographic information, the majority of the respondents (70%; n = 177) were male and female were 30% (n = 76). Also, more than one third of the decision makers were between 41 and 50 years old, (34.4%; n = 87), between the age of 31 and 40 (27.3%; n = 69), less than 30 years old (26.1%; n = 66); and only 12.3% (n = 31) were more than 50 years old. Interestingly, most (90.1%; n = 228) of the respondents have computers at home; whereas only 9.9% (n = 25) did not have computers at home. Almost half (46.6%; n = 118) of the respondents reported their level of skills and knowledge as good. One fourth (24.5%; n = 62) was excellent; and only 2.8% (n = 7) was poor; close to half (44.3%; n = 112) held a bachelor's degree; more than one third (34.8%; n = 88) had graduate degrees, 11.9% (n = 30) with associate degrees, 7.1% (n = 18) had high school education or less, and only 2% (n = 5) with some college courses. In general, then this was a relatively educated population.

The distribution of the respondents according to the country where they earned their last degree showed that 37.7% of them earned their last degree from Jordan; 19.0% from universities in the United States; 7.1% from universities in the United Kingdom; 6.7% from universities in Iraq; and 3.7% from universities in Russia. However, 11.6% earned their degree from other countries such as Canada, Egypt, Germany, Lebanon, Sudan, and Romania.

More than one third (38.7%; n = 98) of them had been in the position for more than 10 years, (32%; n = 81) were in their first 5 years in the position, 15.8% (n

= 40) were in their first year in the position, and only 13.4% (n = 34) had been in the position from 6 to 10 years. In general, with just 15.8% (n = 40) reporting a year or less in the position, one can conclude that this was a group of expertise and skillful population.

Further, it was found that (35.2%; n = 89) were constantly using computer to retrieve files, while 25.3% (n = 64) reported occasionally, 17.4% (n = 44) very often, 14.2% (n = 36) quite often, and it is worth noting that only 7.9% (n = 20) of them had reported very seldom they use computer to retrieve files. In other words, a portion of the participants had taken the initiative to use this technology to retrieve files.

However, with regard to the computer use, their responses to this statement varied with the highest percentage (26.5%; n = 67) given to occasionally, then 22.9% (n = 58) very often, 21.3% (n = 54) constantly, 17% (n = 43) quite often, while the lowest percentage (12.3%; n = 31) was given to the very seldom choice. Also, with regard to IT training, the results, as shown in Table 4.1, indicate that about half (47.8%; n = 121) of the decision makers have had IT training through general courses at college or university. In general, decision-makers' IT training shown in Table 4.1 indicates that the respondents have had, in one way or another, some IT training, which may impact their IT usage.

As far as experience is concerned, it is worth noting that only 12.3% (n = 31) of them had no experience at all, which means this was a moderately experienced population with respect to computer use.

a) What Are the Perceptions of Decision Makers Toward the Use of Computer Technology?

To answer this question descriptive statistics were applied by using Means and Standard Deviations for each item in this domain and total of all items "Perceptions Toward Computer Technology", as presented in Table 4.2.

Table 4.2 : Standard Deviation, Mean, and Rank for Each Item of Perceptions Toward Computer Technology Domain

No.	Item	Mean	Std. Deviation	Rank
1.	I feel that using computer technology could provide me with information that would lead to a better decision.	4.07	0.86	4
2.	I feel that using computer technology allows me to be more innovative by providing opportunities for creative analysis output.	3.88	0.96	6
3.	*I feel that using computer technology can take up too much of my time performing many tasks.	3.47	1.08	7
4.	*I feel that using computer technology would involve too much time doing mechanical operations (e.g. programming, input data) to allow sufficient time for managerial analysis.	2.94	1.11	10
5.	I feel that using computer technology improves my productivity on the job.	4.26	0.81	3
6.	I feel that using computer technology gives me the opportunity to enhance my managerial image.	3.95	0.95	5
7.	I feel that using computer technology allows me to acces s, store, and retrieve information easily and without difficulties.	4.48	0.77	1
8.	*I feel that using computer technology exposes me to vulnerability of computer breakdown and loss of data.	2.96	1.08	9
9.	I feel that using computer technology allows me to be more independent of secretaries.	3.04	1.11	8
10.	I feel that computers are critical organization resources.	4.28	0.80	2
	Overall Mean/ Perceptions Toward Computer Technology	3.73	0.47	

*Note: * Negative Items Reversed.*

Table 4.2 displays the participants' perceptions toward computer technology, and it shows that the overall mean and standard deviation for Perceptions Toward Computer Technology after the negative items were reversed were 3.73 (Std. 0.47). Also means for the questions of ranged from 2.94 (Std.1.11) to 4.48 (Std. 0.77). In general, the data in the table show that the decision makers have favorable or positive perceptions toward computer technology for all 10 items.

b) Description of Decision Makers on Two Main Independent Variables

A description of decision makers on two main independent variables: *First: What Are the Decision-Makers' Perceptions With Regard to Changes in the Accessibility?* Means and standard deviations for each item and the overall mean score for the domain were calculated to answer this question Table 4.3.

Table 4.3 : Standard Deviation, Mean and Rank for Each Item of Changes in the Accessibility of Information Domain

No.	Item	Mean	Std. Deviation	Rank	
1.	I feel that computer technology has made it easier for me to get the information I need.	4.47	0.63	1	
2.	I feel that computer technology has provided the precise information I need.		4.14	0.82	4
3.	I feel that computer technology has provided sufficient information		4.14	0.81	5
4.	I feel that computer technology has provided reports that seem to be just about exactly what I need.	3.99	0.88	7	
5.	I feel that computer technology has provided up-to date information than that available in manual files	4.24	0.87	2	
6.	I feel that computer technology has provided me with the information I need in time	4.14	0.75	6	
7.	I feel that computer technology has made new information available to me which was not previously available.	4.21	0.77	3	
8.	Overall Mean/Changes in the Accessibility and Quality of Information		4.19	0.64	

Table 4.3 shows that the means for questions ranged from 3.99 (Std.0.88) to 4.48 (Std. 0.63); The overall mean score and standard deviation were 4.19 (Std. 0.64) out of 5; this indicates to a high degree that decision makers perceived an improvement in the accessibility of information that they receive due to the use of computer technology.

Second: Decision-Makers' Perceptions With Regard to Changes in Decision-Making Quality? Means and standard deviation for each item and the overall mean score for the domain were calculated to answer this question as shown in Table 4.4.

Table 4.4 : Standard Deviation, Mean and Rank for Each Item of Changes in Decision-Making Quality Domain

No.	Item	Mean	Std. Deviation	Rank
1.	I feel that the use of computer technology has enabled me to make better decisions.	3.75	0.83	5
2.	As a result of the use of computer technology, feel that I am better able to set my priorities in decision making.	3.68	0.91	6

3. I feel that the use of computer technology has improved the quality of decisions I make in this organizations.	3.77	0.80	4
4. As a result of the use of computer technology, I feel that the speed at which I analyze decisions has increased.	3.86	0.83	1
5. As a result of the use of computer technology, I feel that more relevant information has been available to me for decision making.	3.84	0.81	2
6. I feel that computer technology has led me to greater use of analytical aids in my decision making.	3.81	0.83	3
Overall Mean/Changes in Decision-Making Quality	3.78	0.70	

Table 4.4 shows that mean scores ranged from 3.68 (Std.0.91) to 3.86 (Std. 0.83); the overall mean and standard deviation were 3.78 (Std. 0.70) out of 5; this indicates that decision-makers have positive perceptions of the changes in their decisions quality due to the use of computer technology.

c) *The Overall Relationship Between Decision-Makers' Perceptions Toward Computer Technology and Their Perceptions of all Independent Variables as Well as the Characteristics of Decision-Makers*

For the relationships between decision-makers' perceptions toward the use of Computer and their perceptions of each of the variable, a Pearson Product Correlation analysis was used. The Multiple regression analysis was applied as shown in Tables 4.5-4.8.

Table 4.5 : The Result of Correlation Coefficient Between Decision-Makers' Perceptions Toward the Use of Computer Technology in Organizations and Their Perceptions of Independent Variables

Variable	Perceptions	Accessibility	Decision	Training
Perceptions	1.00			
Accessibility	.52**	1.00		
Decision	.52**	.69**	1.00	
Training	.16*	.16**	.16**	1.00
Gender	-.053	-.051	-.115	-.19**
Age	.065	.035	.15*	.28**
Own/home	-.023	-.19**	-.097	-.009
Knowledge	-.011	-.13*	-.18**	-.35**
Education	.057	.13*	.13*	.20**
Country	.045	-.009	.081	.14*
Length in position	.077	.060	.15*	.26**
Experience	-.013	-.056	.003	.028

*Note. ** Correlation is significant at the 0.01 level.*
**. Correlation is significant at the 0.05 level.*

d) A Brief Explaination of the Correlation Matrix of Independent Variables and Perceptions

There was a significant positive relationship (r = .52, $p < .05$) between decision-makers' perceptions toward computer and the perception of changes in the accessibility of information. Another significant positive relationship (r = .52, $p < .05$) between decision-makers' perceptions toward computer and the perception of changes in decision-making quality. Finally, a small positive relationship (r = .16, $p < .05$) existed between decision-makers' perceptions and computer training. All associations were significant at the .05 level and also at the .01 level of significance.

e) Correlation of Individual Attributes and Perceptions

Furthermore, to determine the relationship between decision-makers' perceptions toward the use of computer and the perceptions of the independent variables a multiple regression analysis was used Table 4.6.

Table 4.6 : Regression Analysis Between Decision-Makers' Perceptions Toward the Use of Computer and The Perceptions of the Variables

Variable	Unstandardized (b)	Standardized (b)	t	*p*
Accessibility	.15	.22	2.94	.004
Decision	.12	.19	2.44	.015
Training	.027	.061	1.19	.236

f) Multiple Regressions on Perceptions (Dependent Variable)

Table 4.6 shows, that the decision-makers' perceptions toward computer use was affected by three variables at the 0.05 level of significance. The absolute values of the standardized estimate (b) of these factors from largest to smallest: Changes in the Accessibility of Information (b = .22, t = 2.94, $p < .05$), and Perception of Changes in Decision-Making Quality (b = .19, t = 2.44, $p < .01$). However, Computer Training were not significant predictors of perceptions toward computer technology.

Furthermore, the R Square value represents the strength of relationship between the dependent variable and the independent variables. Table 4.7 shows that R square of 0.366 reflects the overall relationship between the perceptionss toward computer use and the independent variables: Changes in the Accessibility of Information, Changes in Decision-Making Quality and Computer Training, was statistically significant at the 0.01 level (F = 23.628, $p = 0.00$). The 0.350 of adjusted R square, reflecting an overall a relationship of about more than one third (35%) of the variability in perceptions was explained by the independent variables.

Table 4.7 : The Relationship Between Perceptions and Independent Variables

Sources	Sum of Squares	DF	Mean Square	F Value	R Square	Adjusted R Square	*p*
Model	18.285	6	3.048	23.628	.366	.350	0.00
Error	31.729	246	.129				
Total	50.014	252					

g) Overall Model of the Relationship Between Perceptions and Independent Variables

All in all, descriptive analysis has shown that decision makers in Jordanian government organizations are highly satisfied and hold favorable perceptions toward the use of computer technology. They have reported improvement in the accessibility of the information and the quality of the decisions as a result of

using this technology. In addition, based on the above results, one can conclude that the majority of the participants are advanced users of the technology with a high level of knowledge; therefore, their expectations for good information are high.

V. Discussions of the Findings, Recommendations, and Conclusions

a) Decision-Makers' Perceptions Toward Computer Technology

In this study and as predicted, perceptions have a significant effect on the willingness to use the technology. However, findings have shown that participants had positive perceptions toward the use of computer. These perceptions were evident with the overall mean of 3.73 (Std. 0.47) within the perception scale. Based on the findings, the majority of respondents indicated their acceptance and satisfaction with this technology to some degree and their seriousness about using computer technology. Therefore, perceptions toward computer usage which will enhance technology usage and users' satisfaction with the technology. Therefore, users' satisfaction influences technology usage, and technology usage also has an influence on users' satisfaction.

b) Changes in Accessibility of Information and Decision-Making Quality

The majority of participants feel that the use of computer technology in their organizations has improved the quality as well as the accessibility to the information. Likewise, the majority of the decision makers reported that the use of computer technology has made it easier for them to get needed information, has provided precise, sufficient, and up-to-date information, has made new information available, and has provided reports that seem to be just about exactly what they need. To sum up, these results showed that respondents reported high levels of satisfaction in their accessibility and quality of information as a result of using computer technology. One possible explanation for this is that the use of computer technology in Jordanian government organizations has been successful, and the system is effective. The results of the study were consistent with the findings in literature that successful use of computer technology favorably impacts the accessibility and quality of information.

Furthermore, in this study, the overall mean score of 3.78 for decision makers indicated that they positively believed that the use of computer has improved their decision-making quality. The improvement the decision-making quality may be due to their use of computer in their daily job routine. The results are consistent with the findings in the literature.

c) Decision-Makers' Perceptions in Relation to Demographic Characteristics

Based on the findings of this study, the relationships between demographic variables and the perceptions of the decision makers toward computer technology showed negligible (either positive or negative) relationships. Therefore, the high level of education attained by the respondents in this study (79% of them have a bachelor's degree or higher) as well as their relatively low average age (61.7% of them between the age of 30 and 49) may provide a partial explanation for the generally negligible relationships observed. In addition, these findings provide explanations that personal characteristics in adopting new technologies are not as important as people expect.

However, this study proves that computer technology is being used, but not to its full capacity in Jordanian public organizations, even though its advantages and impact are recognized by the majority of the decision makers in these organizations. It seems that the process of innovation will probably take a long time to reach the level of computer use seen in other parts of the world.

d) Recommendations for Policy and Practice

The results indicated that participants generally had positive perceptions toward computer use and experienced substantial improvement in their work performance and productivity through the access to quality information which is important for the overall goal of effective planning of social and economic development, despite the different factors/limitations they had mentioned. Therefore, it is essential for the government of Jordan to sustain and promote decision-makers' perceptions as a requirement for deriving the benefits of this advanced technology. Since positive perceptions toward such technology usually predict future technology use, the government of Jordan (policy-makers) can make use of decision-makers' positive perceptions toward computer technology in order to prepare them to integrate this technology in their daily work practices.

e) Suggestion for Future Research

Since the current study is the first of its kind and in order to produce more knowledge in this area, similar studies are needed with some changes to the setting, population, sampling procedures, or data collection methods utilized in the current study. For example, examining the perceptions of decision makers from different cities. Future research similar to this study should also be conducted in other developing countries.

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