EVALUATION OF ATTITUDE OF PAKISTANI POLICE OFFICERS TOWARDS USING COMPUTER TECHNOLOGIES: A STUDY OF PUNJAB AND CAPITAL POLICE

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FORWARDING SHEET

The thesis entitled "Evaluation of Attitude of Pakistani Police Officers towards Using Computer Technologies: A Study of Punjab and Capital Police" submitted by Abida Ellahi in partial fulfillment of M.S degree in Management Sciences with specialization in Technology Management, has been completed under my guidance and supervision. I am satisfied with the quality of student's research work and allow her to submit this thesis for further process as per IIU rules & regulations.

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Dedication

This thesis is dedicated to my beloved parents and brothers who passed on a love of reading and respect for education.


بسم الله الرحمن الرحيم

ABSTRACT

The present research is focused on exploring the Pakistani police officers' attitude and behavior towards use of computer technologies from both theoretical and practical perspectives. The theoretical context of this study helps to examine the factors which can affect the successful acceptance of computer technologies by Pakistani police officers. Technology acceptance framework has been analyzed by empirical analysis. The research empirically investigates that how the technology acceptance framework could be used in police department of Pakistan. Data was collected through a research survey. A questionnaire as instrument of survey was developed in English and Urdu languages. It was distributed to 200 Police officers in Islamabad and Punjab police of Pakistan. Responses to questionnaire were tested against the proposed technology acceptance framework. Findings confirmed the good model fit by supporting four out of six hypotheses. The supported hypotheses confirmed that variables facilitating conditions and attitude have direct relationship with dependent variable intention to use; and variables job fit and perceived ease of use have direct relationship with variable attitude. However, a direct relationship of variable affect towards usage with attitude and direct relationship of variable voluntariness with intention to use was not supported. The results provided several recommendations for reforming IT policy in police force.

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DECLARATION

I hereby declare that this thesis, neither as a whole nor as a part thereof, has been copied out from any source. It is further declared that I have prepared this thesis entirely on the basis of my personal effort made under the guidance of my supervisor.

No portion of the work, presented in this thesis, has been submitted in support of any application for any degree or qualification of this or any other university or institute of learning.

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Abida Ellahi

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LIST OF ACRONYMS

E-Government	Electronic Government
ICT	Information and Communication Technology
IT	Information Technology
EGD	Electronic Government Directorate
MPCU	Model of PC Utilization
NPA	National Police Academy
PC	Personal Computer
TAM	Technology Acceptance Model
TTF	Task-Technology Fit Model
DOI	The Diffusion of Innovations Theory
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
UNO	United Nations Organizations
IGP	Inspector General of Police
DIG	Deputy Inspector General
AIG	Additional/Assistant Inspector General
DSP	Deputy Superintendent of Police
ASI	Assistant Sub Inspector

CHAPTER 1

INTRODUCTION

Over the last decade, information technologies have experienced an extraordinary rate of development. These technologies have brought a significant change in the perceptions, attitudes and ways of thinking of its users. It is believed that information technology relieves many parts of our life by playing significant role (Nunn & Quinet, 2002). Progress of computer technology has been creating a strong need for organizations to adopt this technology in order to remain competitive. However, these computer technologies are unable to bring improvement in the organizational performance in case of absence of their effective utilization (Davis, Bagozzi & Warsaw, 1989).

Computer usage is widely used for measuring success of system by researchers (Al-Khaldi & Al-Jabri, 1998). It has also been observed that investment made by an organization on computer technologies to support several organizational activities contains potential invisible risk in case of absence of people's willingness to use it (Alavi & Henderson, 1981; Nickerson, 1981; Swanson, 1988).

If psychological reactions of users and organizational factors are ignored by system designers, it can bring failure in computerized systems (Robey, 1979). In law enforcement organization, use of information technology is made in order to provide support for police work in numerous ways such as use of different tools for analyzing data such as geographic information systems and recording crimes in databases (Adderly & Musgrove, 2001; Pelfrey, 2001). Law enforcement agencies are expected to have and utilize the finest technology available to conduct investigations, protect citizens, respond to crises and prevent crimes (Johnston, 2007).

A wide range of purpose-built technologies have been developed for integration with police systems to make these systems quicker, better organized and more influential for making community safe (Wright, 1978). The flexible nature of police tasks requires processing and handling of large amount of information. Potentials of a computer to handle data and to provide speedy and accurate information match these needs of police work (Colton, 1972).

Sparrow (1993) pointed out that policing is certainly an information-intensive business and proper managed information systems can provide valuable benefits in policing such as improvement of resources, redefining the work, increased efficiency and effectiveness of existing work. Garicano and Heaton (2007) indicated that information technology can enhance effectiveness in police work, when it is integrated with certain organizational practices which are adopted to take benefits of data availability. Information technology offers a tool to help police to achieve its wider and increasingly multifaceted tasks. Colvin and Goh (2005) emphasize that information technology has considerable effect on performance of police work. Ultimately, it can be said that if police officers accept information technology, it can

increase their performance and value (Gottschalk & Holgersson, 2006). For that reason, it is essential to learn that how much information technology is effective for a police force.

1.1. PROBLEM STATEMENT

Heavy investments are made by organizations in information technology (IT) these days. However, its successful implementation may be difficult to realize, if users do not appreciate expected gains. A major concern developed over the recent decades is the extent to which expenditure on information technology can result in desired benefits. Issue of acceptance of information technology is the smallest part of this concern (Dillon, 2001).

Previously, information systems researchers have explored a number of factors that influence usage of computers and success of a system. As a result of these studies a number of theoretical and practical justifications have been developed to help recognize and improve the successful exploitation of IT. It was observed that impact of information technology is dependent on the degree of its acceptance by employees (Smith, Caputi & Rawstone, 2000) and therefore end-users must respond positively to a system to make certain that it will be used widely and effectively (Culpan, 1995).

Strategies and applications of law enforcement agencies have been greatly affected by information technology. Today, law enforcement agencies are the potential customers of information technologies than ever before. According to the nature of law enforcement agencies, marrying the law enforcement with information technology can provide a well-organized and secure working environment and society (Boyd, 2001). Information technology is used in an agency for getting progress and

improvement of tasks (Sichel 1997). To a notable extent, it is confirmed that computer technologies are precious instruments in police job (Northrop, 1995). For this reason there is a universal obligation for police department to improve their intellectual openness to computers.

The effective and efficient use of information technology requires acceptance by police individuals who use them. Therefore, researches which are conducted in law enforcement settings for investigation of user's acceptance may provide significant suggestion for successful utilization of IT by law enforcement workforce (Lin, Hu & Chen, 2004). It is obvious that police management as well as policy makers have a strong need to identify the optimal practice of these systems (Gottschalk & Holgersson, 2006).

Many researches in various professions have been carried out to discuss the information technology acceptance by its users. However, limited researches have been carried out in law enforcement context in order to examine use of computer by officers of police. It is a fact that police organizations don't reveal their activities in public, that's why researchers could not well recognize and investigate the acceptance of information technology by officers (Manning, 2003). Most of the studies focused on acceptance of technology in business environment but limited studies have been carried out in law enforcement environments. Thus, it is necessary to conduct a study in order to evaluate the attitudes and perceptions of the police officers towards the information technology usage.

This research is focused on exploring the Pakistani police officers' attitude and behavior towards use of computer technologies from both theoretical and practical perspectives. The theoretical context of this study helps to examine the

factors which can affect the successful acceptance of computers by Pakistani police officers. An empirical support is provided for technology acceptance framework obtained from literature. The present study will also establish a fact that how the integrated technology acceptance framework could be used in police department of Pakistan.

1.2. RESEARCH QUESTIONS

This research uses an integrated technology acceptance framework developed to identify the user characteristics of information technology acceptance in police department of Pakistan. The following research questions about use of information technology will be answered.

1. Can technology acceptance framework confirm the acceptance of information technology by police officers for utilization of computer in police department of Pakistan?

2. To what extent Police officers in Pakistan as users will accept new technology?

1.3. OBJECTIVES OF THE STUDY

This research has an objective to examine the attitude and perceptions of Pakistani police officers towards acceptance of computers usage through application of integrated technology acceptance framework. These attributes and perceptions are then assessed and judged against the literature on recently developed technology acceptance models.

1.4. THE EXPECTED CONTRIBUTION OF RESEARCH

This research is expected to contribute in evaluation of possibilities of information sharing in police department of Pakistan by use of computers technologies. By addressing the research questions with the help of empirical analyses the following outcomes of research were expected.

- To assess applicability of technology acceptance models in police work environment by relying on self reports of individuals.
- To evaluate management practices for information technology in Pakistan police.
- To establish the theoretical and practical view of Pakistani police officers' behaviors and attitudes towards computer system.
- To recommend significant measures to police force for taking advantages of computers and IT.

1.5. RESEARCH METHODOLOGY

Information for this research was acquired from two sources. The first source was self administered survey. The second source was review of articles, newspapers, books, academic journals, and other data provided by police departments. Attitudes and behaviors towards the use of computer technologies in police work were measured with the help of questionnaires. Information technology models for individual's acceptance were used as a source to design the questionnaires and get results.

1.6. ORGANIZATION OF FOLLOWING CHAPTERS

Chapter 1 of this study illustrates the background, problem statement, research question and research objectives. Rest of the research is structured as follows.

Chapter 2 provides background information and an overview of this research including explanations for information technology in law enforcement and theories of information technology acceptance. An integrated model is discussed.

Chapter 3 presents overview of Pakistan Police. In this, introduction of sample police department and current status of information technology in these are discussed.

Chapter 4 illustrates design methods, methods of collection and the methods of processing of data employed in this research. Being quantitative nature of this research, the research design methods, survey contributors, instrumentation, processes and data analyses are given in this chapter. Hypotheses along with integrated model are also discussed.

Chapter 5 discusses results and explains statistical analyses of questionnaires used as instrument for survey conducted in police department of Pakistan. It provides statistical results, discussion of results and findings to explore the attitudes and behaviors of Pakistani police officers towards use of computer in police work.

Chapter 6 presents conclusion and limitations of this research. Finally, recommendations for the use of research results and areas of possible future research are stated. The schematic structure of the whole research is provided by fig 1.1.

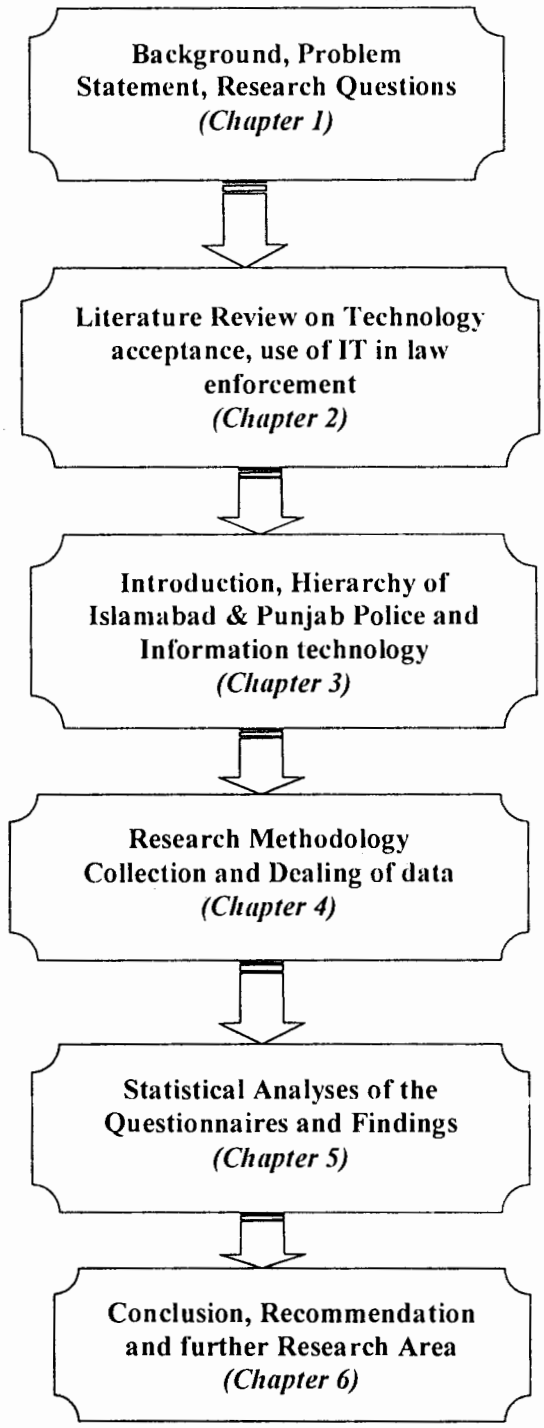


Figure 1.1: Schematic Organization of Research

CHAPTER 2

LITERATURE REVIEW

2.1. SIGNIFICANCE OF INFORMATION TECHNOLOGY IN LAW ENFORCEMENT

Merriam-Webster's Spanish-English dictionary (2009) provides definition of information technology as "technology involving the development, maintenance, and use of computer systems, software, and networks for the processing and distribution of data". It has been observed that computers have significantly improved the way of working of police by increasing their performance (Morgan, 1990). According to Sichel (1997) IT is adopted by an agency to improve things. In the context of law enforcement agencies it implies the enhanced administration, efficiency and effectiveness in the job and enhanced general community safety. Danziger and Kraemer (1985) regarded this efficiency means as bringing better effectiveness in inputs and outcome like increase rate of solved crimes by reducing costs.

Contribution of IT in policing can be observed in form of sharing information among officers, improvement of communications, demonstration of cooperation and establishment of constructive work environment (Chan, 2001). Information technology possess an ability for development and smoothing progress of relationships in law enforcement agencies (both inter and intra).

Along with it, it can help in improvement of working of police officers by making them efficient (Premkumar & Bhattacherjee. 2008). Though some researchers have claimed about the key role of IT in police organizations to get better police problem solving (Brown & Brudney. 2003) but still connection of IT use to improved enforcement has little empirical support. Hu et al. (2005) argued that the information technology's practice brings an encouraging influence on stopping and dealing of crimes as these are the central tasks of policing as well as the basic requirement of justice. Introduction of information technology has caused the extensive reorganization of police departments. It was found that IT has statistically insignificant effects on crime fighting and prevention. Reason for this minute impact of IT on effectiveness of police is that it is not integrated with organizational practices. In case of availabilities of new information and data provided by IT is adjusted with existing organizational practices than police can benefit from it. IT provides the public organizations improved productivity, but the considerability of these productivity enhancements in various sectors is questionable (Tenner .1996: Sichel, 1997).

Previous researches about utilization of computers in police organizations confirmed the actual and considerable advantages of their use (Danziger & Kraemer. 1986). However achievement of such benefits required some conditions. Brown and Brudney (2003) stated that the prospective gains of computer-assisted information processing and communication technologies have helped to regard the information a tangible asset and a product with latent worth.

Hughes and Love (2004) in their study pointed out the gaps regarding future of information and communication technology in police organizations. They stressed on the alignment and integration of information and communication technology with management style of police managers. Awareness of the importance of appropriate identification and application of information technologies was of primary focus for police managers.

Flanagin (2002) claimed about the positive impact of use of information technology tools for success of an organization. This could be realized for law enforcement agencies in form of timely, consistent and integral data along with cost effective means of data exchanges (Nunn & Quinet, 2002). Stopping future crimes or taking hold of criminals after occurrence of crime is also one of the bases of policing (Redmond & Baveja, 2002). However, computer technology has the prospective of facilitating police to gain the information about criminals before having the physical and verbal contact with criminals (Couret, 1999). For example, it is assumed that the by having fast access to complete records of criminals stored in computer provides more appropriate information about them, thus successful actions can be taken against them for making community safe (Colton, 1980). All of this results in enhancement of excellence of response. For this reason police has a strong need for effective information technology tools.

2.2. UTILITY OF INFORMATION TECHNOLOGY IN LAW ENFORCEMENT

Hughes and Jackson (2004) describe that before the use of computer in police department, records about crimes were stored manually. This record was considered a police "station specific". The most important records were moved to central office for storage. The advent of information technology serves the function of storage of data which is not station specific, rather it is available to all police officers. It shows that after introduction of information technology, the level of data collected has now increased.

Usage of information technology in the context of police could be seen in many ways. Adderly and Musgrove (2001) explained it by keeping the record of crimes. Many analytical tools could be used to disseminate the information from stored data like geographic information systems (GIS). Manning (1992) regarded the strategic application of information technology in the field of applied intelligence. Many Studies showed the computers and databases are being used for crimes analysis. Daihani & Rehman (2007) claimed that about 85 percent police officers confirm that computing has brought the easiness for getting information and saving their time (Daihani & Rehman, 2007).

A study conducted by LeBeuf (2000) shows that information technology in Canadian police force department is used as a mean for information and communication by using databases. In order to deal with traditional and high-tech crimes, police officers could get more information, and develop more valuable

policies or plans by getting information from these computerized applications. Garicano and Heaton (2009) conducted a survey to observe a relation of information technology with productivity using a new panel data set of police departments. The application of mobile technology in police work is studies by Lundin and Nulden (2004). All of these researches discussed above confirmed and insisted on application of technology in police activities.

Despite of the fact that information systems are widely available; many organizations are unable to achieve the complete benefits of these information systems. The reason for this inability is resistance of its users. Davis, Bagozzi and Warshaw (1989) considered that realization of acceptance and rejection of computers by people is not an easy issue. Flanagin (2002) claimed that law enforcement agencies face extra barriers as compared to other organizations for gaining advantages of computer technology.

Lewis (1995) defined a usable system in the context of user ease in dealing with the system and rapidly eliminating from errors. Northrop, Kraemer and King (1995) observed that full exploitation of computer potentials depends upon how much a system is user friendly and how much police officers have computer literacy and practice.

The significance of acceptance of technology is also investigated in past researches. Egan (1988) stated the importance of individual differences in system design; because they influence capability of people to use a system to perform their tasks well. Bukhari (2005) suggested that utilization of technology depends on how users evaluate it. If it is perceived to bring efficiency in their work, then users further use the system; but if they don't perceive it in that way then they can stop using it

(Lapointe & Rivard, 2005). Resistance to technology can minimize performance of users and organization as well because this resistance is an obstacle for commencing fresh technology (Al-Gahtani, 2004). Resistance to practice of information technology is trouble, however the acceptance of information technology can be considered as source of success for organizations at all levels. As a result, examination of acceptance and resistance of information technology is necessary (Al-Gahtani & King, 1999).

2.3. DISTINCTIVE CHARACTERISTICS OF POLICE OFFICERS

The varied nature of duties of a police officer requires multiple skills and abilities as well possession of characteristics which enable them to perform in an active way. Skolnick (1966) and Neiderhoffer (1967) found almost six to thirteen main qualities among them. These qualities are "*authoritarian, suspicious, insecure, honorable, cynical, hostile, loyal, secret, conservative, individualistic, efficient, prejudiced and dogmatic*".

In literature of information system, a growing interest can be seen regarding personality traits as a descriptive tool. Findings of such information system research demonstrate that personality characters are responsible for different behavior of individuals in unusual circumstances (Thatcher & Perrewe, 2002). Ultimately these personality traits facilitate us to recognize use of information system by people (Pratt & Chudoba, 2006).

Researchers have studied users' technology adoption using many frameworks such as technology acceptance model (TAM) (Davis 1989), theory of reasoned action (TRA) (Fishbein & Ajzen, 1975), diffusion of innovations theory (Rogers, 1995) and

theory of planned behavior (TPB) (Ajzen, 1991) etc. Thomson, Higgins & Howell (1991) presented personal computer utilization model for predicting PC utilization. All these models are based upon combination of attitude and belief of affecting the acceptance of technology.

Manning study (as cited in Colvin & Goh, 2005) found that conventional formation of police organizations and the routine functions of officers can oppose the usage of information technology. Acceptance and integration of technologies into daily work by users enables them to fully realize the benefits of technology (Devaraj & Kohli 2003). On the other hand resistance of technology innovations by users limits the expected benefits (Nov & Ye, 2008). Colvin and Goh (2005) stated that belief of police officers that any method of implementing information technology creates disturbances in their usual social structure, may cause a resistance to information technology.

2.4. BACKGROUND OF TECHNOLOGY ACCEPTANCE

There are number of theories which have been presented and extended for discussing acceptance of technology during past decades. By using these theories many studies have brought in front different acceptance criteria in order to verify the possibility of usage of technology. These studies tried to discuss the factors affecting adoption or rejection of technologies by people who use them.

2.4.1. Theory of Reasoned Action (TRA)

Fishbein & Ajzen (1975) presented Theory of Reasoned Action (TRA) which is believed to be an elementary and leading theory. Two constructs of this model are subjective norm and attitudes toward behavior. The theory states that behavior intent

is the most essential predictor of an individual's behavior. This intention to execute an action is a combination of subjective norm and attitude. Recently information system researchers have adopted TRA into the perspective of usage of information technology (Thompson et al, 1991).

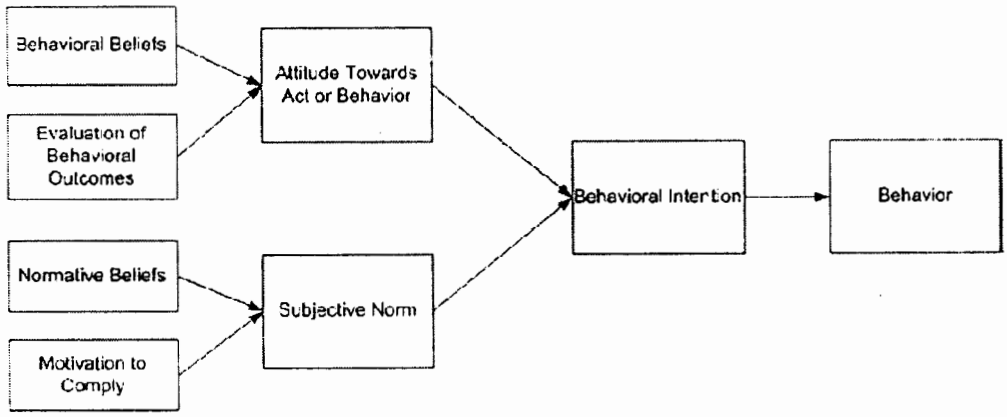


Fig 2.1 Theory of Reasoned Action Source : Legris et al (2003)

2.4.2. Theory of Planned Behavior (TPB)

Theory of planned behavior or TPB has also been effectively utilized for understanding f acceptance and utilization of technology by users. It is an addition of TRA model consisting of "attitude toward behavior" and "perceived behavioral control" as its core constructs/factors (Harrison et al. 1997). Extension of TRA by TPB is made by the addition of constructs attitude, actual behavior, behavioral intention and subjective norms (Madden, Ellen, & Ajzen, 1992). TPB assumes that not only attitudes but perceived behavioral control are also affected by the knowledge. Along with it a strong action can be observed between behavior and intention. In this model, behavioral intention can be explained in terms of probability of a certain action (Lin et. al, 2004).

According to Mathieson (1991) TPB offers more detailed information that can better guide development of technology .A different version of TPB is presented by Taylor and Todd (1995), which is termed as "Decomposed Theory of Planned Behavior" (DTPB). This version stated that attitude, behavioral control and subjective norms have equivalent contribution to the intention of behavior. TPB and DTPB are more influential then TAM in alone (Brown et al. 2002).

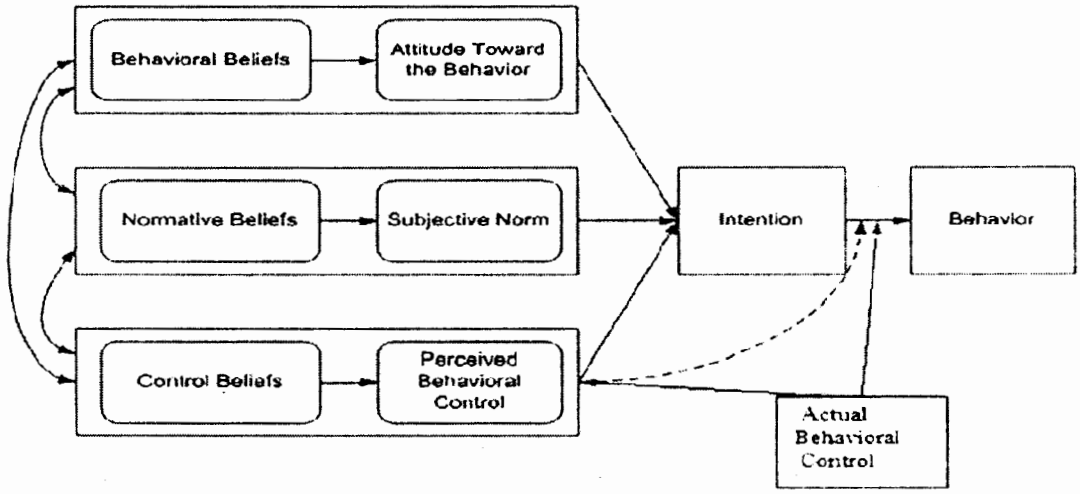


Figure 2.2. Theory of Planned Behavior Source: Ajzen (1991)

2.4.3. Task-Technology Fit Model (TTF)

Central point of Task Technology Fit model (TTF) is fit between tasks need of user and the functionality offered by technology (Goodhue & Thompson, 1995). Fundamental constructs of this model are task and technology characteristics. These constructs have a combine effect on task technology fit, which ultimately affects the utilization of technology. A measurement in order to show important factors for utilization of technology is developed by Goodhue & Thompson (1995). These factors

are compatibility, ease of use, quality, relationship with users, training, production, timeliness, ability to locate, authorization, and systems reliability.

According to Dishaw and Strong (1999) technology will be used only, if its functionality supports (Fit) tasks of a user. Irick (2008) regarded the task-technology fit as a key role player in influencing the individual impact and performance in use of information systems.

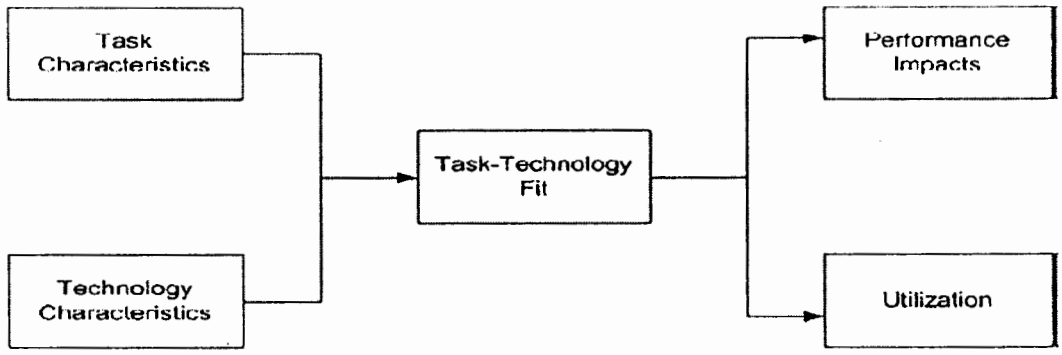


Fig 2.3 Task Technology Fit Model Source: Goodhue & Thompson (1995)

2.4.4. The Diffusion of Innovations Theory (DOI)

Rogers (1995) presented Diffusion of Innovation (DOI) theory which has its roots in sociology. This theory hypothesizes that the perceived features of innovation and the its way of communication determines the level of adoption of new technology (Premkumar & Bhattacherjee, 2008). The five features of technologies which tells about their adoption discussed by Rogers (1995) are relative advantage ("degree to which it presents enhancement over accessible means"), compatibility ("uniformity with social norms among its users"), complexity ("ease of use or learning"),

trialability ("prospect of trying innovation before using it") and observability ("degree to which the technology's achievements are visible").

The important elements of the theory were defined by Rogers (1995). First is innovation, which is an idea or system is perceived to be novel. Second, communication is a mean used by people by sharing information. Time is the third primary element of DOI theory which has three components. These are "innovation-decision process, adopter categories, rate of adoption". Fourth, a social system which consists of many individuals, these individuals shares a common goal or objective (Jennifer, 2004). Rogers (1995) discussed the five basic factors occur in social systems. These factors are implementation, knowledge, decision, persuasion and confirmation (Russell & Hoag, 2004). He then divided technology adopters into five kinds namely innovators, early adopters, early majority, late majority, and laggards.

Many researchers from different areas of study studied the diffusion of innovations within and across organizations, including information technology, organization development, management, health care and public health, education, and sociology (O'Neill et al, 1998). Moore and Benbasat (1991) used this theory in the perspective of information technology and refined a set of construct to study the acceptance of technology by person. The core constructs developed by (Moore & Benbasat, 1996) involve the issues of relative advantage, image, compatibility, voluntaries and ease of use. Relative advantage in IDT is defined by Moore and Benbasat (1991) as "degree to which an innovation is perceived as being better than its precursor". Ease of use core construct is the degree to which a technology is perceived as being difficult to use or not. Image is taken as the extent to which use of an innovation is perceived to enhance one's image in social system. Compatibility is

defined as the degree to which an innovation is perceived as being consistent with the existing values, needs and past experiences of potential adopters. Voluntariness of use is regarded as the degree to which utility of the innovation is considered as free will. According to Dillion & Morris (1996) this theory has been received a criticism that it does not focus on individual view of technology acceptance. Instead it focuses on society as whole.

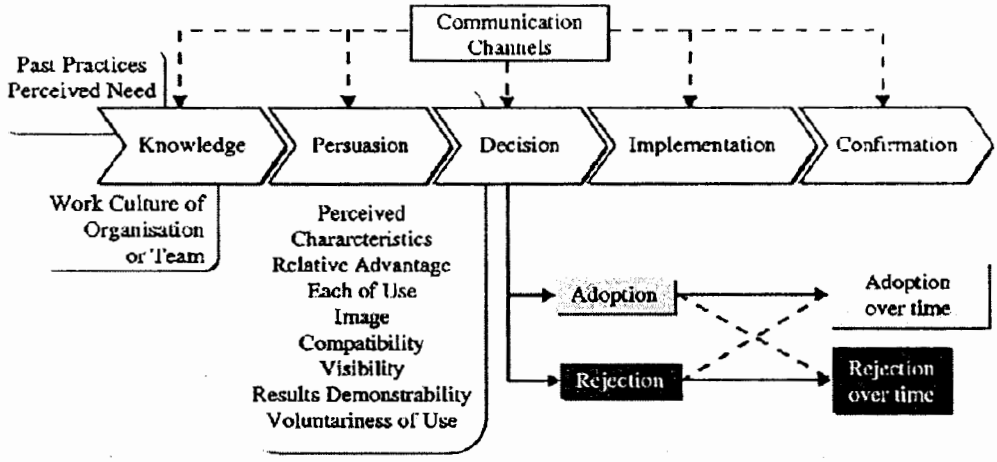


Fig 2.4 Innovation Diffusion theory Source: Rogers (2003)

2.4.5 Model of PC Utilization (MPCU)

Model of personal computer utilization or MPCU is developed by Thompson et al. (1991). The core constructs of this model are six including "job-fit, complexity, long term perceived consequences, affect towards use, social factors, and facilitating conditions" (Thomson et.al, 1991). The job fit component measures the degree to which an individual believes that capabilities of a PC are related with enhancement of job performance (Thomson et.al, 1991). Complexity measures the point to which an innovation is observed as difficult (Rogers & Shoemaker, 1971). Facilitating

conditions could be taken as those facilitating condition that could influence system utilization like support for users of PCs (Thomson et.al. 1991).

The affect towards use construct express the individuals' "emotion of joy, elation, pleasure, depression, distaste, discontentment, or hatred experienced from or of a behavior" (Pee et al. 2008). Long-term consequences was a construct investigated as perceived long-term significance emotionally involved to computer awareness and higher levels of computer use (Heilman & Taylor, 2007). Social factors refer to the individual norms, roles and values which in turn can be influenced by referent (Teo & Lim, 1998). According to Venkatesh et al (2003) although this model is developed to predict PC utilization, but it is well suited to predict use of information technologies other than PCs.

2.4.6 Technology Acceptance Model (TAM)

Davis (1986) developed the technology acceptance model (TAM) to describe the behaviors of individuals towards using computer. This model has its roots in theory of reasoned action, which concerns with factors of intention to act. The TAM addressed the reasons of user's acceptance or rejection of information technology by demonstrating how users come to acknowledge and adapt the technology. According to Vankatesh and Davis (2000) TAM assumes that that perceived ease of use and perceived usefulness influence the behavioral intention of a user. It ultimately predicts his attitude towards technology. Actual use of the technology is reliant upon intentions.

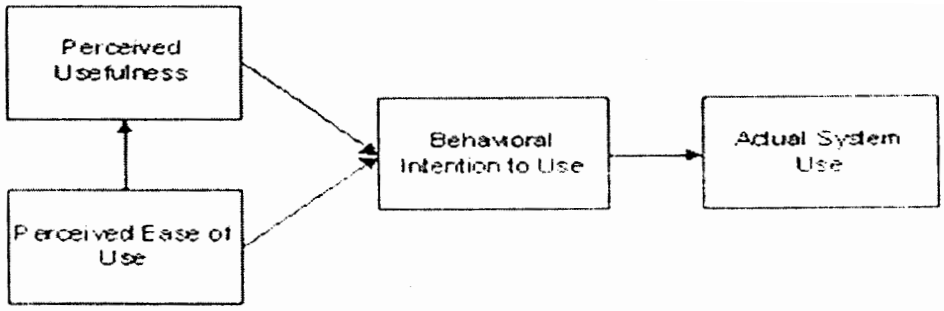


Fig 2.5. Technology Acceptance Model Source: Davis, Bagozzi and Warshaw (198

It is believed that TAM is strong, practical, and influential model for highlighting process of adoption of technology (Igbaria et al., 1995). Numerous researches (e.g Keil, Beranek & Konsynski., 1995; Venkatesh et al, 2003) wanted to expand original technology acceptance model or combine it with other models to expand its applicability in specific areas of technology acceptance and tackle the limitations of the model. Keil, Beranek and Konsynski (1995) attempted to improve the Davis model by introducing the usefulness/ease of use grid. This is a 2x2 grid in which each quadrant is demonstrating a mixture of these two constructs. The grid is applied in software use as a mean of indicating the particular mix of usefulness and ease of usefulness.

The applicability of TAM was also tested to explore decisions by organizations comprised of groups of users, instead of individual users to implement new technologies. These studies have studied TAM in relation to organizational implementation of new technologies in contexts such as police investigations, e-commerce, sales force coordination, and telemedicine etc (Jaeger & Matteson, 2009). On the contrary, some researchers also identified the inability of TAM for informing about individual's attitudes towards using a particular technology. This indicates that TAM has to include some more factors in order to improve its descriptive utility (e.g

Mathieson, 1991; Agarwal & Prasad., 1998; Hu et al., 1999). By keeping this in view Venkatesh and Davis (2000) proposed TAM2 model by including cognitive instrumental processes and subjective norms in original TAM (Lin et al, 2004). Social influence processes, subjective norms cognitive instrumental process, job relevance, output quality, voluntariness, image, result demonstrability and perceived ease of use are variables included in second version of TAM. Some other researchers also recommended amendments to the TAM for inclusion of other components. However, Legris et al (2003) regarded it a verified functional theoretical model.

2.6 RESEARCH FRAMEWORK

Present research intended to gain an understanding of the real user's opinions and attitudes towards accepting of system if it was to be put into use in their unit. The users in this particular case study were the police officers of Pakistan. The research framework applied for this study was based on combination of few constructs of three technology acceptance models which are DOI, MPCU and TAM (fig 2.6).

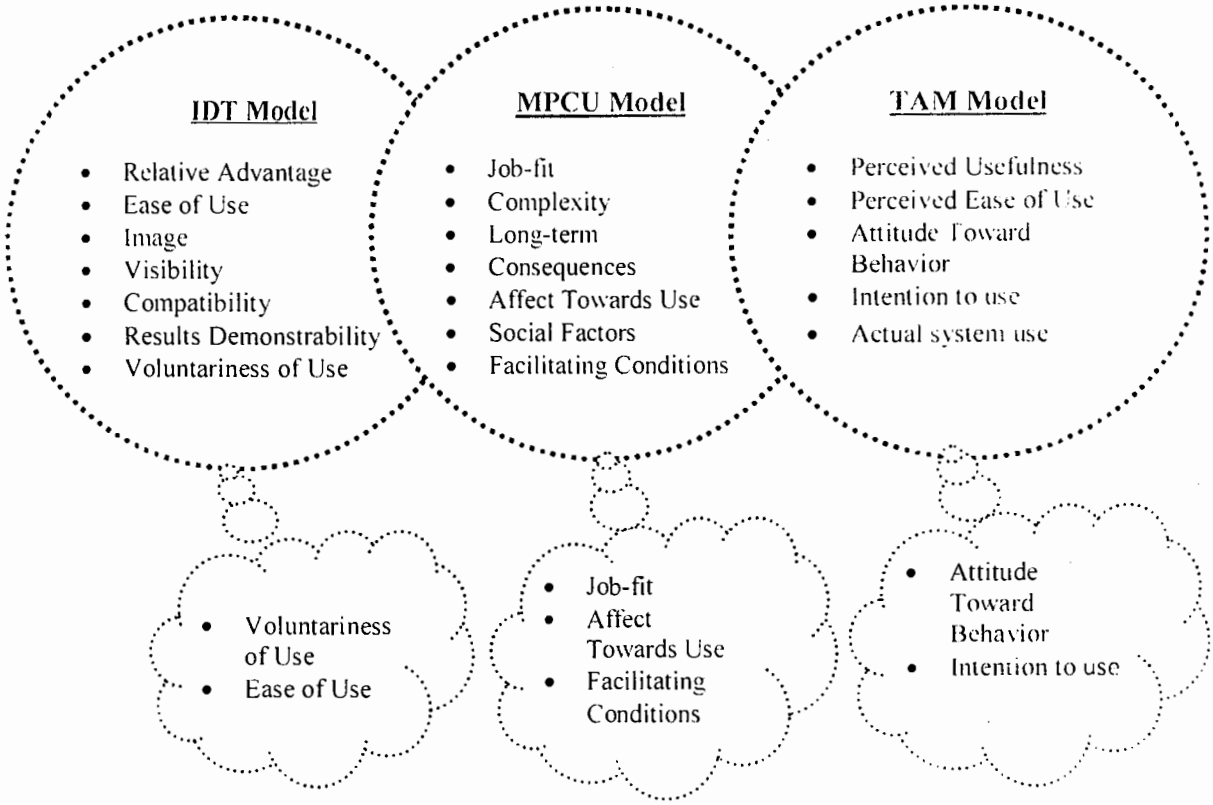


Fig 2.6 Core Constructs of Three Models and Their Selected Construct

Each of these models has a significant descriptive power, a model which presents an integration of constructs from these models may present a considerable improvement over a model taken alone (Dishaw & Strong, 1999). All these models like TAM, MPCU and DOI offer a required insight into the theoretical basis for investigating the factors that explain computer utilization and its links with work performance.

The elements of these models are selected for best description of attitude of police officers towards using computers in Pakistan. This particular design was selected because the attitudes about computers differ among professionals (Colvin & Goh, 2005). Thus, the police officers' attitudes towards computer utilization can be discussed by combining these different factors. Thus, combination of technology acceptance models, encompass great illustrative influence as compared to theory taken alone. The constructs intention to use and attitude from TAM; Job Fit,

facilitating conditions, affect towards usage from MPCU and voluntaries of use from IDT were adapted for this study.

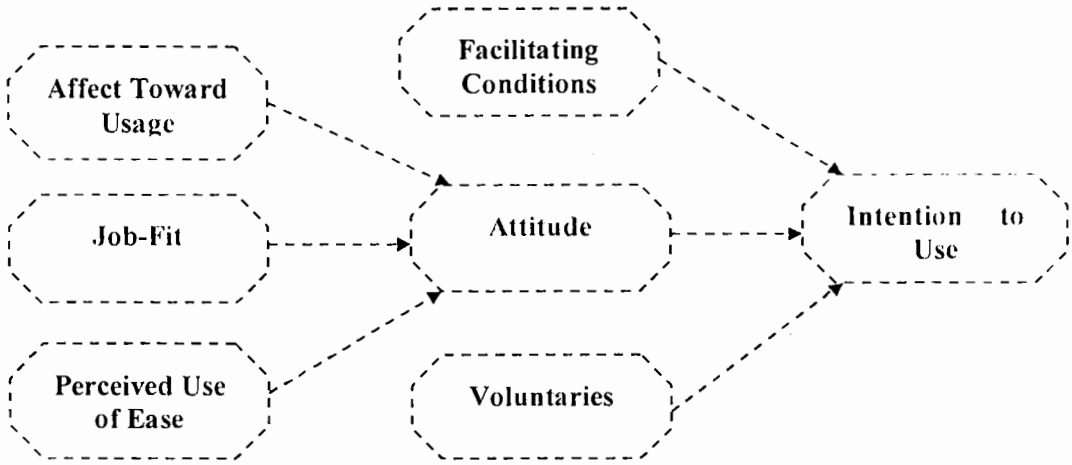


Fig 2.7 Pathway of Integrated Element

2.7. OPERATIONALIZATION OF RESEARCH VARIABLES

Intention to Use

The construct "intention to use" refers probability of use of system. Several researches empirically supported this variable (e.g Hu et al., 2005. Vankatesh & Davis, 2000, Wu & Wang, 2005). In TPB actual behavior is stated as outcome of behavior intention. Zhang's study (as cited in Yalcinkaya, 2007) found that behavioral intention is a superior determinant of system utilization. Intention to use was used as outcome/dependent variable in this study, instead of choosing actual system utilization. The reason for this was that in involuntary settings e.g. in law enforcement, actual system usage as dependent variable may not reveal the actual beliefs of users (Yalcinkaya, 2007).

Attitude

Attitude is defined by Ajzen (1988) as favorable or unfavorable response towards anything. In the context of law enforcement settings, the attitude can be described as positive or negative beliefs of police officers regarding technology (Huang & Chuang, 2007). Walker and Johnson (n.d.) pointed out in their study that attitudes may be referred as voluntary or non-voluntary readiness and the aspiration for personal contact. A strong association between computer attitude and other variables has been confirmed by many researchers. Among these, a key relation is favorable or positive association between attitudes and computer usage. In studies conducted to determine the computer users' attitudes, it can be used as either an independent variable that predicts computer-related behaviors (e.g Burkhardt & Brass, 1990) or as a dependent variable by which the researchers study the background of users' attitudes (e.g. Burkhardt, 1994; Igbaria & Parasuraman, 1989). Hu et al. (2005) regarded attitude as a vital factor for demonstrating intentions of police officer's to make use of computer. Thus it was hypothesized for this research that

H 1: Attitude of a police officer towards computer system has a positive correlation with intention to use this system.

Affect toward Usage

According to Triandis (1977), affect toward use is described as "feelings of joy, elation, or pleasure, or depression, disgust, displeasure, or hate associated by an individual with a particular act" (Thomson et al. 1991). For a study involving examination of the association between attitudes and behavior, Triandis (1980) suggested that affective and cognitive components of attitudes should be separated

and used the term "affect" for it. Later researchers used the terms confidence, anxiety or liking to measure the construct of affect.

Previously, computer anxiety (emotions towards computers) and attitudes towards computers were considered as synonymous. However, facts suggest that both are separate constructs (Shaft et al 2004). Bebetsos and Antoniou (2008) in their study to verify the attitudes of students towards the subject of computers, treated "affect" (emotions about computers) as separate construct to assess the attitude. In present research, affect towards usage is taken as positive emotions of police officers towards usage of computers. It was hypothesized that

H2: A police officer's affect towards computers has a positive correlation with attitude of police officers using the computers.

Perceived Ease of Use

The construct ease of use is defined by Davis (1989) as "the degree to which an individual believes that using a particular system is free of effort". Many studies provide the empirical support for effect of ease of use on attitude towards use of technology (e.g. Al-Gahtani & King, 1999; Lu & Gustafsen, 1994). According to Venkatesh (2000) perceived ease of use is a significant determinant of intention and actual behavior of individual for emerging IT/IS. In this study, ease of use is defined as the perception of police officers that their utilization of computer is free of effort. A hypothesis developed is

H 3: Perceived ease of use has a positive correlation with attitude of police officers using the computer system.

Job Fit

The job fit component measures the degree to which a person thinks that capabilities of computer are related with enhancement of job performance, efficiency, effectiveness and quality (Thomson et al., 1991). This concept or perception is defined by other researches as perceived usefulness. This concept is related to the productivity at work, effectiveness on the job, and motivating user for utilizing a specific technology (Yanga & Yoo, 2004). In this study, job fit refers to the notion that police officers consider the use of computers as useful in order to enhance their job performance

H 4: Perceived job fit has a positive correlation with attitude of police officers using the computer system.

Facilitating conditions

Facilitating conditions can be defined as "the support that users believe an organization or a technological infrastructure can provide or the usage of a new system" (Taylor & Todd, 1995). In this study, facilitating conditions means the belief that police officers have easy access to the computers and resources while doing work at computers. Venkatesh and Davis (2000) confirmed that availability of computer can determine acceptance of technology. In PC utilization model presented by Thompson et al (1991), facilitating conditions refer the technical support for PC use and it has a major effect on computer utilization. Hu et al. (2005) in their study conducted in law enforcement context found a direct effect of facilitating conditions on intention to use. By assuming that if the police officers believe that computers are easily accessible in the time of need, they will intend to use them instead of finding the alternative way for their job. A hypothesis is developed that

H5: Perceived facilitating conditions have a positive correlation with intention to use of police officers using the computers

Voluntariness

Agarwal et al. (1997) identified that the command from superiors may affect the technology acceptance. This influence was predicted by Moore and Benbasat (1991) in the construct of "perceived voluntariness". They added voluntariness in innovation diffusion theory for determining usage behavior. Braun et al (2003) claimed that in case of absence of voluntary use of technology, conventional models of technology acceptance present unusual relations of variables. Venkatesh and Davis (2000) in TAM 2 model delineate the concept of voluntariness as the non obligatory decision adoption. In this study since the use of computer has become mandatory for police officers so voluntariness is used to determine its direct influence on intention to use. Thus hypothesis was made that

H 6: Voluntariness has a positive correlation with intention to use for police officers using the computers.

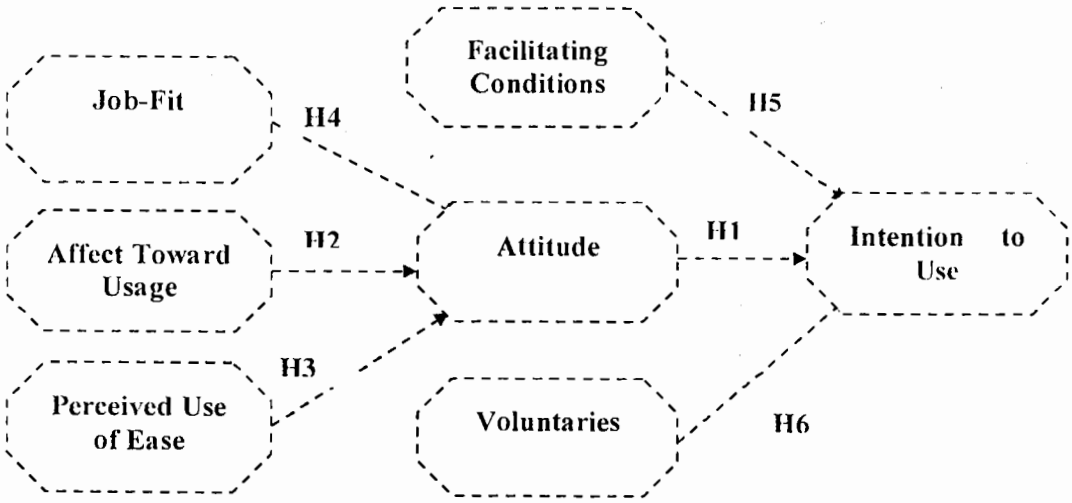


Fig 2.8 Pathway of Integrated Elements with Hypotheses

CHAPTER 3

CAPITAL AND PUNJAB POLICE

3.1. INTRODUCTION

The police system of Pakistan is more-than-eighty-year-old inherited from the British. It was designed in response to the social and political realities of those times. After independence, the law enforcement in Pakistan is carried out by several police forces. Currently, the four provinces and the Islamabad Capital territory have their own police force. Pakistani police is facing some serious constraints which are diminishing the performance of police system of Pakistan.

Some of these problems are an outdated legal and institutional framework (devised for a colonial rule), inadequate accountability, poor incentive systems, widespread corruption, and severe under-resourcing of law and order. In order to combat this situation several reforms are formed and implemented which exerted a positive impact. During the last decades, the new developments in law enforcement agencies are introduced and manual identification and investigation systems are converted into computer-based system. These recently technological systems are using at various places to provide efficient effective and less time consuming investigation systems.

Police Forces in Pakistan

The police force in Pakistan is divided into two segments. One is federal level and other is regional level force.

1. **Federal level forces**

The federal level forces working in Pakistan are Federal Investigation Agency, National Highways and Motorway Police, Pakistan Railways Police and Anti-Narcotics Force.

2. **Regional level forces**

The regional level forces working in Pakistan are Capital Territory Police, Punjab Police, Sindh Police, Frontier Police, Balochistan Police, Balochistan Constabulary, Frontier Constabulary, Azad Jammu and Kashmir Police, and Northern Areas Police. To maintain the law and order in Pakistan is a provincial issue, however, some high profile crimes are handled by Federal or military-cum-civil agencies, e.g Federal Investigation Agency (FIA), National Accountability Bureau (NAB), and Anti-Narcotic Force (ANF), etc. Generally the police officers are posted to these forces.

For this study, Islamabad and Punjab Police were selected as target sample of the study. Both are working separately in order to enforce the law practice in their respective regions.

3.2. CAPITAL/ISLAMABAD POLICE

Capital police came into existence in 1st Jan 1981 to fulfill the need for separate Police organization for the federal capital, Islamabad. The mission of capital police is "to uphold the rule of law with due regard to human rights and human dignity; to serve the people with honesty and efficiency, with courtesy and respect, with commitment and dedication, in striving to achieve the highest professional standards".

Table 3.1. Strength of Capital Police (as on 30 Oct 2009)

S.No	Rank	Grade	Total Strength
1	IGP	BS-21	1
2	DIG	BS-20	3
3	AIG	BS-19	3
4	SSP	BS-19	3
5	SP	BS-18	15
6	Director (B.D.Squad)	BS-18	1
7	ASP/DSP	BS-17	48
8	Inspector	BS-16	155
9	Sub Inspector	BS-14	448
10	ASI	BS-9	1041
11	Head Constable	BS-7	1348
12	Constable	BS-5	7271
Total			10337

Source :Islamabad Police

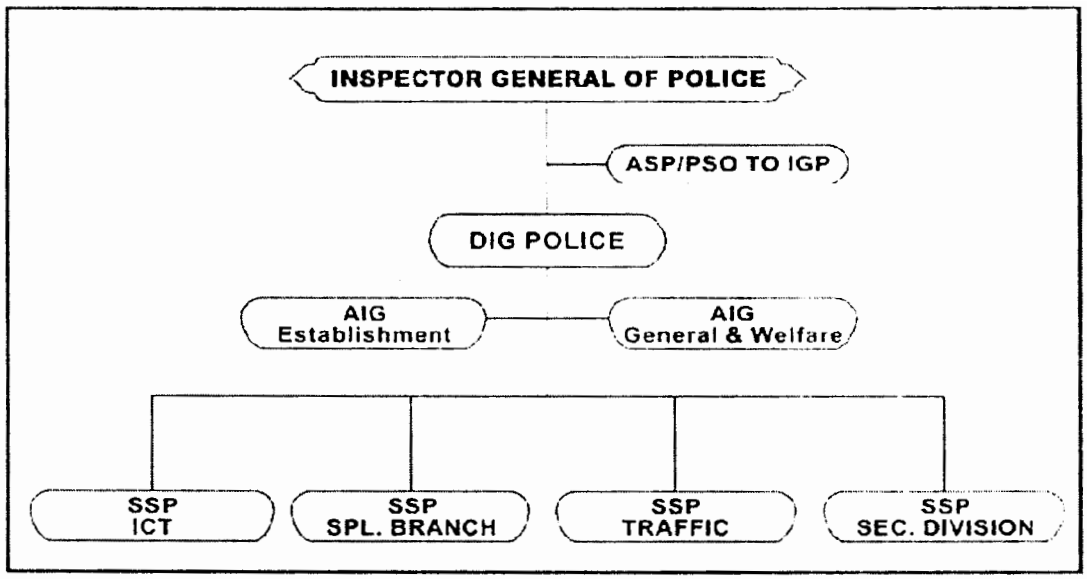


Fig 3.1 (a) Organizational Structure of Capital Police

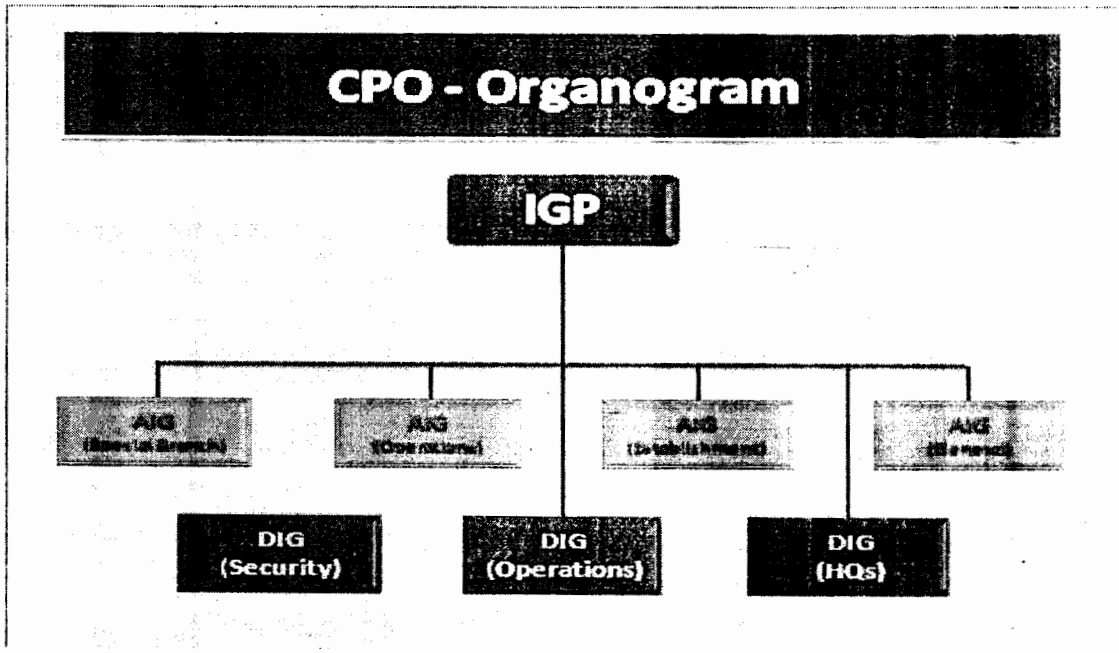


Fig 3.1(b) Central Police Office

3.2.1 Information Technology in Capital Police

Electronic Government Directorate of Pakistan initiated an e-enablement project to facilitate Islamabad police for its effective operations. Electronic enablement of Islamabad police is best implementation of technology getting in the operations of police system. This e-government initiative is a vital part of federal cabinet's approved national IT Policy action plan. The idea is to convert the traditional police stations of Pakistan into e-powered police stations, which can become a much improved source of service to the citizens of Pakistan.

This project includes provision of basic ICT infrastructure at some specific locations of Islamabad police. Email collaboration suite, office productivity suite and customized applications (internal registers) are to be provided to enhance the internal efficiency of Islamabad police. Many customized applications are developed under this project to provide services to Islamabad police, like Islamabad traffic police and security division of Islamabad police. There are twenty two registers in a police department covering various activities performed by police officials to fulfill their duty. Some of the major registers include FIR, roznamacha, daily diary, proclaimed offenders, lost and stolen vehicles, station inventory and stock register etc. The automation of these major registers also allows extensive and customized searches on the data bases generated.

ERP in Police Headquarter

Project also includes the provision of ERP (Enterprise Resource planning) solution to the Islamabad police. The components of this ERP solution deployed at Capital police are:

- Finance, Budgeting and Accounts Management
- Workflow System
- Inventory, Stock, Asset and Vehicle Management System
- Human Resource Management System and Payroll Module
- Procurement Management Module

Specific Applications

The specific applications are varying across different divisions of capital police such as for traffic police these are computer-based testing for driver's license test, computerization of driver's/ learner's license application process, computerization of challan/ticketing system, computerization of old records and computerizing selective logs for radio communications etc. The system also aids to maintain service record of police officers. Police officials can make better decisions regarding the placement and tracking of policemen in different regions of Islamabad.

The project provides development of friendly end user environment, which enables the users to make better use of databases. All the customized applications, emails, resource, information and contents provided to the police officers are accessible through one single portal interface so the police officers can access all their resource through one single window.

3.3. PUNJAB POLICE

Punjab police was officially formed in 1860 after the recommendation of police commission. In 1947, the division of Punjab between Pakistan and India led to the establishment of the Punjab police force of Pakistan. The Punjab police played a significant part in handling the refugee crisis of 1947-48. The Punjab police operate

under the Police Order 2002 and the Police Rules of 1934. There is a Central Police Office at Lahore which has a number of functional units like Finance & Welfare, Establishment, Headquarters, Operations, Training, Punjab Constabulary, etc.

Fig 3.2. Organization Chart of Punjab Police

Table 3.2. Sanctioned Strength of Punjab Police (as on 31st August 2009)

Rank	Total
Inspector General	01
Additional Inspector General	17
Deputy Inspector General	38
Deputy Inspector General, Legal	01
Assistant Inspector General	11
SSP	26
SSP, Legal	01
CTO (SSP)	05
STO	02
SP	199
SP, Legal	15
ASP	65
DSP	659
DSP, Legal	136
Inspector	2416
Inspector, Legal	462
Senior Traffic Warden	500
Sergeant	81
Sub Inspector	8373
Traffic Wardens	6850
Assistant Sub Inspector	12787
Head Constable	17873
Constable	119513
Total	**170,031**

Source: Punjab Police

3.3.1. Information Technology in Punjab Police

The Punjab police established a computer bureau (PCB) in 1987. It was one of the first in-house IT establishments in government of the Punjab departments. This computer bureau aims to provide the consultancy services to the Punjab police regarding computerization, purchase of hardware, technical support regarding development of different software for various sections and branches of the Punjab Police, services for analysis, design, development, implementation, monitoring and troubleshooting of different IT related projects in Punjab Police. In 2000, the start of e government projects in Pakistan has given a new touch to the information technology

usage in Punjab police. As a result of this boom, Punjab police has implemented several IT projects such as criminal record management information system (CRMIS) to maintain the records of criminals, criminal relatives, association, guarantors and gangs; crime mapping analysis and computerization of police stations, establishment of an electronic crime unit (ECU) to combat cyber crimes being reported etc. A project for automated finger print identification system is also being implemented with the assistance of US government to combat terrorism and crimes by capturing fingerprints of all criminals captured by the police.

This implementation of technology has provided information exchange gateway to the police department of Pakistan. The implementation of information technology have integrated the regional, district stations with the head office to provide efficient communication and information sharing for prompt and immediate action. This utilization of information technology has provided the Pakistani police with an efficient infrastructure. However, as the technology rapidly becomes obsolete, requiring new skills and knowledge to be mastered frequently, so this technology might not give the full benefits to the police. For the adaptation of this technology a sound understanding of the principles, purposes and concepts of ICT is required by police. Hence, this study aims to investigate the factors affecting Police officer's adoption or acceptance of technology.

CHAPTER 4

RESEARCH METHODOLOGY

4.1. INTRODUCTION

This chapter discusses research design and research methods undertaken in order to achieve the aims of thesis. The methods undertaken are briefly described in this chapter.

4.2. RESEARCH DESIGN

The research aimed to gain an understanding of the real user's believes and attitudes towards use of computers. Focus group of this research was those police officers working in Islamabad and Punjab police departments. The nature of this research was self administrated survey design. This survey design was preferred because researcher cannot control the conditions experienced by the subjects. This study is aimed to evaluate the beliefs and attitudes of police officers. The research designed to verify and assess the perceptions of individuals in turns provides basis for the correction of policies through the changes in the perceptions. It was assumed that self administered survey will help to verify those factors influencing the utilization of computer technology that is in phase of wide implementation in police department of Pakistan.

4.3. QUESTIONNAIRE DESIGN

A questionnaire as instrument of survey was designed and distributed to Police officers to determine the attitude and perception of the police officers towards computer usage. The questionnaire was developed in English language and it was also translated to the Urdu in order to avoid any confusion and misinterpretation.

4.3.1. Instrument Development

The instrument used in this study for the collection of data was questionnaire. This questionnaire was confirmed with the previous researches. The questionnaire which is composed of various scales which evaluate attitude aspect has been the common method for measuring individual's acceptance of technology.

4.3.2. Main body of questionnaire

The questionnaire was divided into four sections:

(1) Demographic profile

(2) Computer literacy, knowledge and skills of the participants

(3) Attitudes and perceptions towards the use of computers

(4) General comments

4.3.3 Measurement Scales

The format of scaling for the items in questionnaire used in this study was of three types. The first format for scale items presented in this questionnaire was "itemized format". It presents a range of statements with multiple choice options. For example:

My computer skills are:

- Very good
- Good
- Poor

The second format was the forced "choice format". In this format respondents must choose between distinct and jointly restricted options. The example for this format used in this survey is the question that if provided with computers and IT resources, will you be interested in learning more about IT for crime investigation? The options were:

- Yes
- No

The third format scale item used in this questionnaire was the "likert scale" in order to measure the attitudes. The theoretical aspect of attitude shows that, it has two dimensions. The one is direction (positive or negative tendency towards anything). The other is the intensity with which a person may like or dislike a thing and may express his feelings with varying degrees of strength or strength such as certainty or passion. Likert scale tends to explore the direction and intensity of attitude. The following question demonstrates an example of the likert scale format in this questionnaire: Using computer in policing would be a beneficial idea. The options provided were:

(1) Strongly agree

(2) Agree

(3) Neutral

(4) Disagree

(5) Strongly disagree

4.4. PARTICIPANTS AND SAMPLING PLAN

The sample for this research was drawn from police department of Pakistan currently working in Punjab and Islamabad Police departments. The unit of analysis in this

study was the individual police officer of Pakistan police. The sampling frame used was purpose sampling. Purposive sampling offers the benefits of selecting sample on the basis of specific features and conditions. In order to select sample from this sampling frame, simple random sampling was used. The reason behind the purposive sampling method was the inclusion of respondents who not only have the understanding but also use computer system. In this way the beliefs and attitudes of police officers towards computer usage can be better evaluated. The sample size of 230 respondents was selected, however, 200 out of 230 selected participants responded favorably. This sample size was supported by the researchers.

4.5. COLLECTION OF DATA

The questionnaire was distributed to the respondents after selecting the sample. Respondents were required to specify the extent to which they agree or disagree with set of statements of questionnaire. An explanatory note about purpose of research was also included in questionnaire. Understandable statements and check boxes were included in each questionnaire.

Two ways were adopted in order to distribute the questionnaire survey among the participants. The first was a paper (hard copy) survey and other was web-based survey via email. The hard form of questionnaire was distributed among the police officers working in Islamabad and Punjab police department because of the geographic feasibility. Some of the officers, who are currently on UNO mission and are posted in foreign countries temporarily, were accessed via email for this survey. The participants filled out the questionnaires anonymously, and they were guaranteed that their responses would be kept confidential and would not be circulated or disclosed to others authorities of their department.

CHAPTER 5

RESULTS AND DISCUSSION

5.1. INTRODUCTION

This chapter contains results based on data analyses. Results and analyses of the questionnaire were split into three parts. Part one deals with the results and analysis of questions of section one of the questionnaires. Part two deals with the results and analyses of questions stated in section two while part three interprets the results of questions of section three. In order to answer research questions six hypotheses were verified.

5.2 RESULT AND ANALYSIS OF QUESTIONNAIRE PART I

Part one discusses the results and analysis of the demographic profile of the participants.

DEMOGRAPHIC INFORMATION

For primary analysis of data, the response rate and descriptive statistics were analyzed. Total 230 questionnaires were distributed among respondents but only 200 usable responses were received. The total rate of response was 86.9%.

The respondents were asked to give demographic information such as their age, years of job experience and educational background. This demographic profile of respondents depicts a clear picture of the characteristics of respondents from selected sample.

Frequency Distribution of Respondents by Age

The responses presented in the table 5.1 and fig 5.1 (a) indicate that the respondents are fairly young. Almost 47.5% of the respondents were in the age group of 31-40 years and 35.0% were between 21 and 30 years old. Approximately 16.0% the respondents were in the age group of 41-50. Three respondents did not indicate their age.

Table 5.1: Age category

		Frequency	Percent
	21-30 years	70	35.0
	31-40 years	95	47.5
	41-50 years	32	16.0
	Total	197	98.5
Missing	**System**	3	1.5
Total		200	100.0

Fig 5.1 (a) Age category

Frequency Distribution of Respondents by Education Level

The responses presented in the table 5.2 and fig 5.2 (b) shows the educational level of the respondents. The summary of statistics in the table indicates the high level of education in general. Majority of the respondents (51.5%) have masters degree and the remaining (47.0%) have bachelors' degree. One missing value can also be observed.

Table 5.2: Education Level

		Frequency	Percent
	Graduation	94	47.0
	Masters	103	51.5
	Total	197	98.5
Missing	**System**	3	1.5
Total		200	100.0

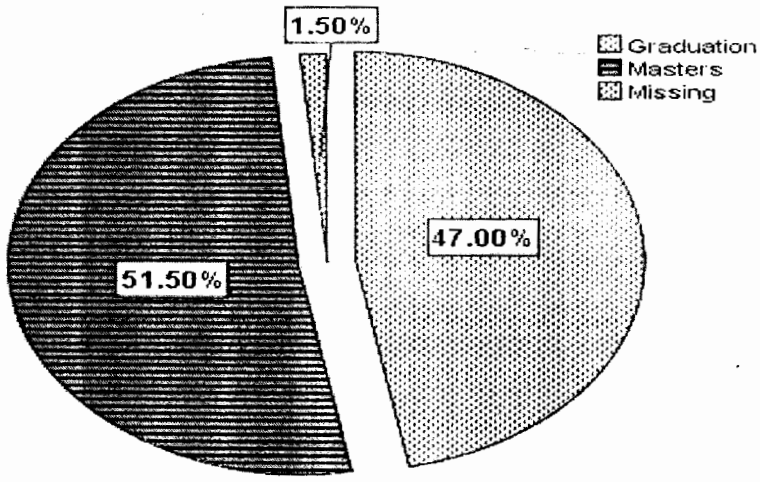


Fig 5.2 (b) Education Level

Frequency Distribution of Respondents by Job experience

The table 5.3 and fig 5.3 (c) reveals information about the job experience of respondents. The information about the job experience shows that majority respondents (35.5%) have on the job experience of 6-10 years. This percentage is immediately followed by 35.0% who have 1-5 years experience. Only 25.5% were those who have more than ten years of experience. A very few have less than a year experience i.e 2.5% which constitute the smallest group.

Table 5.3: No of Years in Job

		Frequency	Percent
	Less than year	5	2.5
	1-5 years	70	35.0
	6-10 years	71	35.5
	More than 10 years	51	25.5
	Total	197	98.5
Missing	**System**	3	1.5
Total		200	100.0

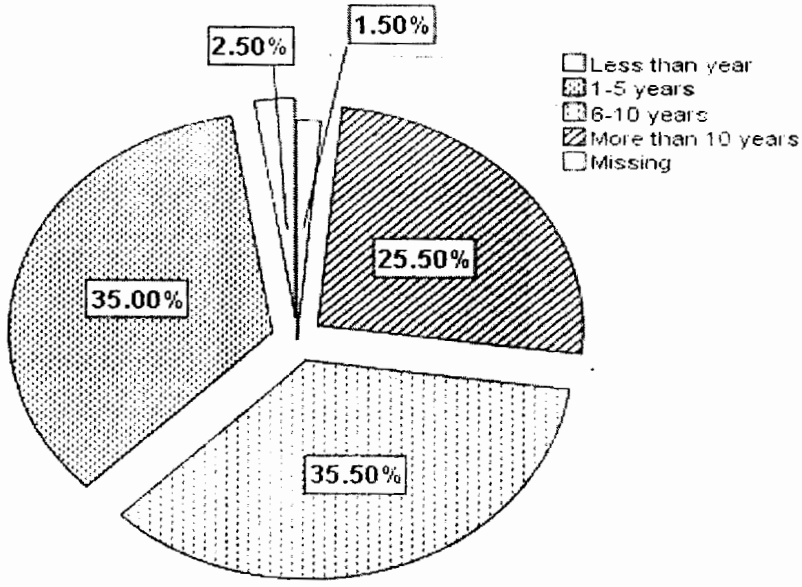


Fig 5.3 (c) No of Job Years

5.3. RESULT AND ANALYSIS OF QUESTIONNAIRE PART II

This part deals with the results and analysis of the introductory section which contains information about the background of the level of computer usage and skills of the respondents. This background information helps to make recommendation in more precise way.

Table 5.4: Computer skills

	Frequency	Percent
very good	24	12.0
Good	103	51.5
Medium	55	27.5
Poor	18	9.0
Total	200	100.0

5.4.1 Computer skills of participants

The responses of participants presented in the table 5.4 and fig 5.4 indicate that only 12.0% police officers have "very good" computer skills. On the other hand, majority respondents (51.5%) were those who have "good" level of computer skills. The remaining 27.5% respondents rated "medium" level of computer skill. There were also 9.0% who have poor level of skill for using computers. The respondents who indicated the "very good" degree of computer skills are usually those who have taken professional courses (basic or advance) for computer usage.

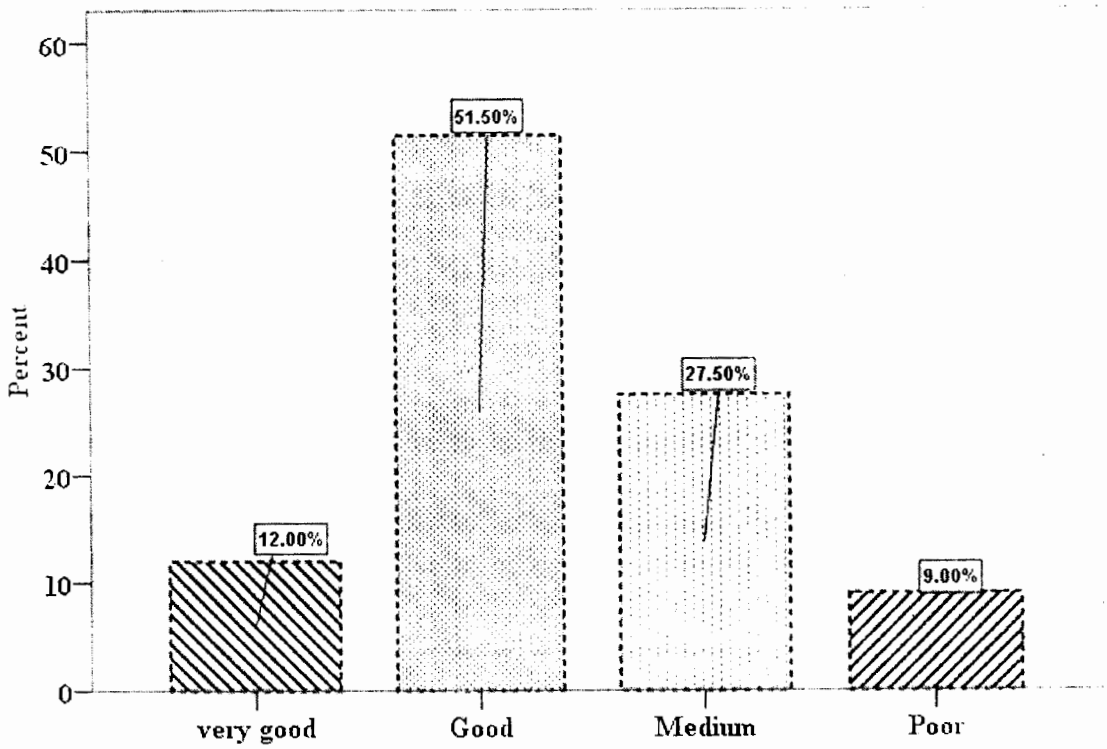


Fig 5.4 Computer Skills

Table 5.5: Frequency of Computer Usage

	Frequency	Percent	Valid Percent	Cumulative Percent
Every day	143	71.5	71.5	71.5
Only when needed	57	28.5	28.5	100.0
Total	200	100.0	100.0	

The table 5.5 and fig 5.5 reveals the information about the frequency of use of computers by respondents. The data values indicate that majority respondents (71.5%) work on computer every day, while 28.5% were those who use computer only when needed. This information is particularly useful for the planning of IT policy. This information can offer a valuable help for bringing a progress in the way the software is employed and this could result in the overall effectiveness of an organization.

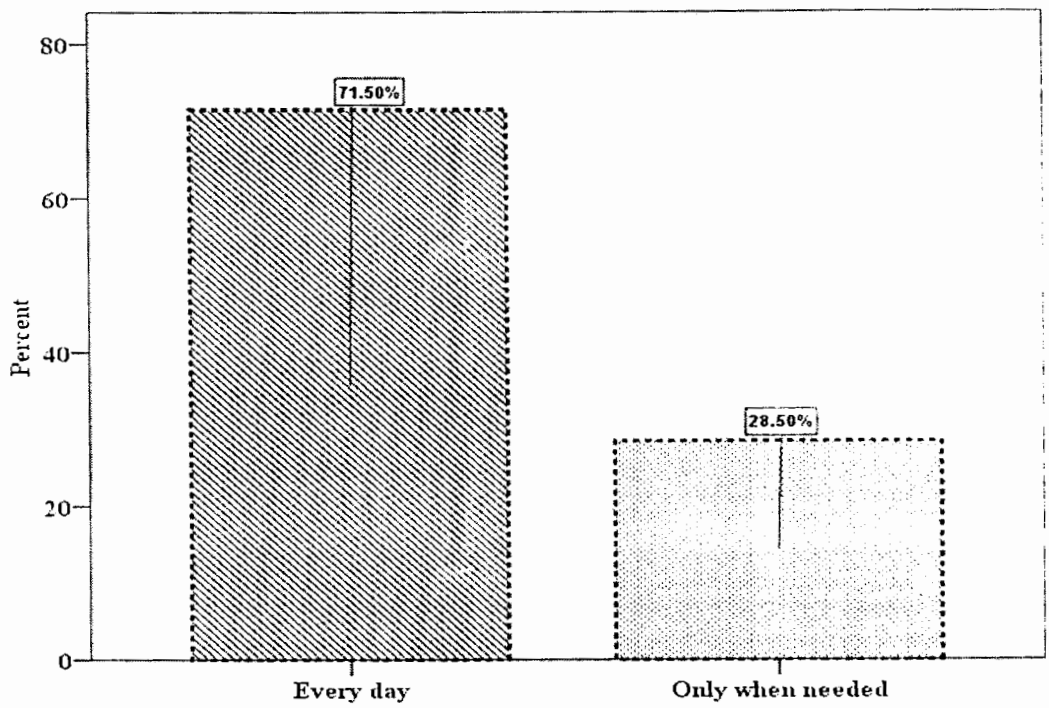


Fig 5.5 Frequency of Use

Cross tab and chi square test

In order to determine the independence or relatedness between computer literacy and frequency of use of computers, crosstab and chi-square tests were used. The values of chi square test are provided in table below. In the table of Chi square tests, the values of person chi square indicate whether two variables are independent. The values for "significance" are probabilities. A statistically significant result has a probability of less than 0.05. As it is hard to interpret the Chi-Square number so the p value is taken for interpretation. The likelihood ratio also tells much the same as Pearson's chi square.

Table 5.6 : Chi-Square Tests of Computer Skills and Frequency of Use

	Value	df	Sig. (2-sided)
Pearson Chi-Square	140.219	3	0.000
Likelihood Ratio	163.976	3	0.000
N of Valid Cases	200		

The chi square test values ($p<0.05$) in the above table determine that there is a significant relationship between respondents with computer skill between frequencies of use of computers. The p value for both Pearson chi square and likelihood ratio is 0.000 which is less than 0.05, so it shows statistically significant values. It means that the participants with high computer skills are more likely to use the computer frequently than those with little or no computer literacy. The results of responses confirm this assumption. Majority of respondents (12.0% and 51.5%) have confident level of computer skills, so 71.5% of respondents use computers on daily basis. It can be said that a relationship exists between computer skills and the frequency of use of the computer at work.

Table 5.7: Purposes of Use of Computers

	Frequency	Percent
Database management	10	5.0
Internet connection	30	15.0
Others (MS office etc)	20	10.0
All or most of the above option	140	70.0
Total	200	100.0

The table 5.7 and fig 5.6 presents information about the purpose of computer usage by respondents. The values clearly indicate that almost 70% of respondents use all or most of the tools of computers such as internet, intranet and word processing etc. However there were 15% respondents who use only internet when information from a

web site is needed and 10 % were those who use Microsoft office or word processing applications for making records etc. Database management is used by only 5% which constitute the smallest share of responses.

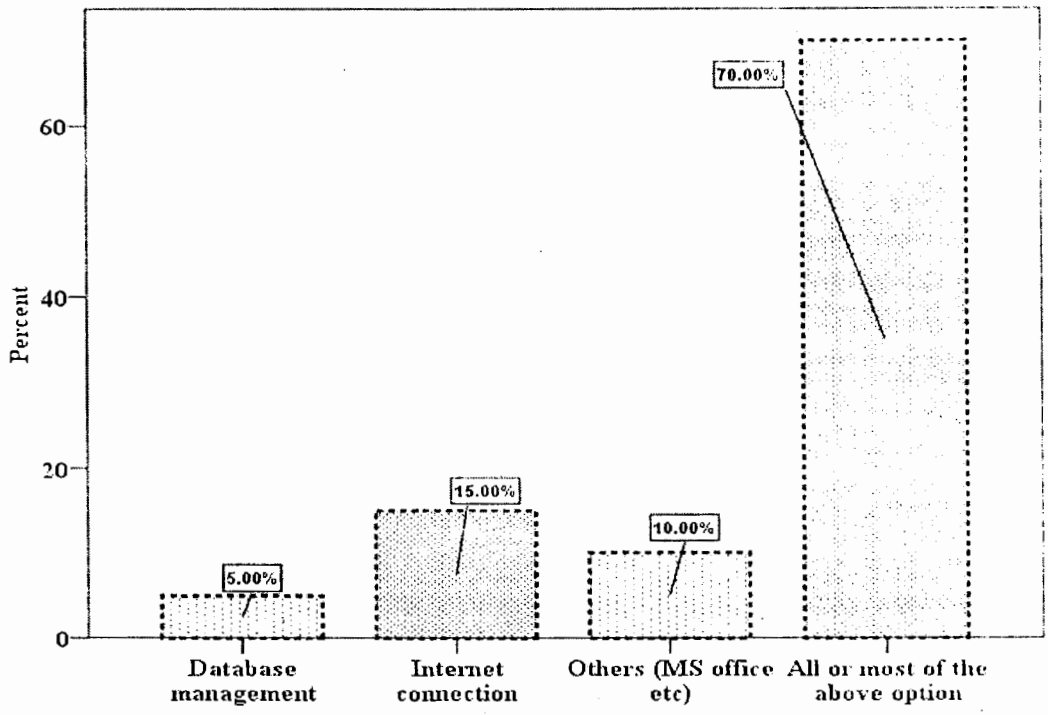


Fig 5.6 Purpose of using Computer

Table 5.8 Chi-Square Tests of Computer Skills and Purposes of Computer use

	Value	df	Sig. (2-sided)
Pearson Chi-Square	122.472	9	0.000
Likelihood Ratio	123.602	9	0.000
N of Valid Cases	200		

The chi- square test values (chi square =122.472, df= 9, P=0.000) in the above table are significant at $p<0.05$. The p value for both Pearson chi square and likelihood ratio is 0.000 which is less than 0.05, so it shows statistically significant values. It shows that there is a significant relationship between respondents with computer skills and respondents who use all or most of the tools of computers such as internet, intranet

and word processing etc at work. It means that respondents, who have high skills, use most of the applications of computers. The rate of response (12.0% +51.5%) for satisfied level of computer skills is consistent with high users of almost all of the tools of computers i-e use by 70% respondents. This assumption is confirmed so a conclusion can be drawn that computer skills is related with use of most of applications of computer.

Table 5.9: Chi-Square Tests Of Frequency of Use of Computer and Use of Computer Tools

	Value	df	Sig. (2-sided)
Pearson Chi-Square	26.594	3	0.000
Likelihood Ratio	39.844	3	0.000
N of Valid Cases	200		

In order to determine the independence or relatedness between frequency of use of computer and use of more computer tools, chi-Square test was performed. The significant values of Pearson chi-Square (26.594, df=3, P=0.000) in table 5.9 indicate that respondents who frequently use computer in their work, especially on daily basis, they are more likely to use almost all of the applications of computer for their job.

Table 5.10: Idea about use of computer in crime investigation

	Frequency	Percent
Yes	113	56.5
No	87	43.5
Total	200	100.0

The respondents were asked if they have any idea about the use of computer to assist with and enhance criminal investigations. The results in table 5.10 and fig 5.7 confirm that almost 43.5% of respondents were unaware of the full utilization of computer in crime investigation. However there were 56.5% who know how it can be used. In the section of general comments of questionnaire they wrote about the use of forensic technology and databases etc

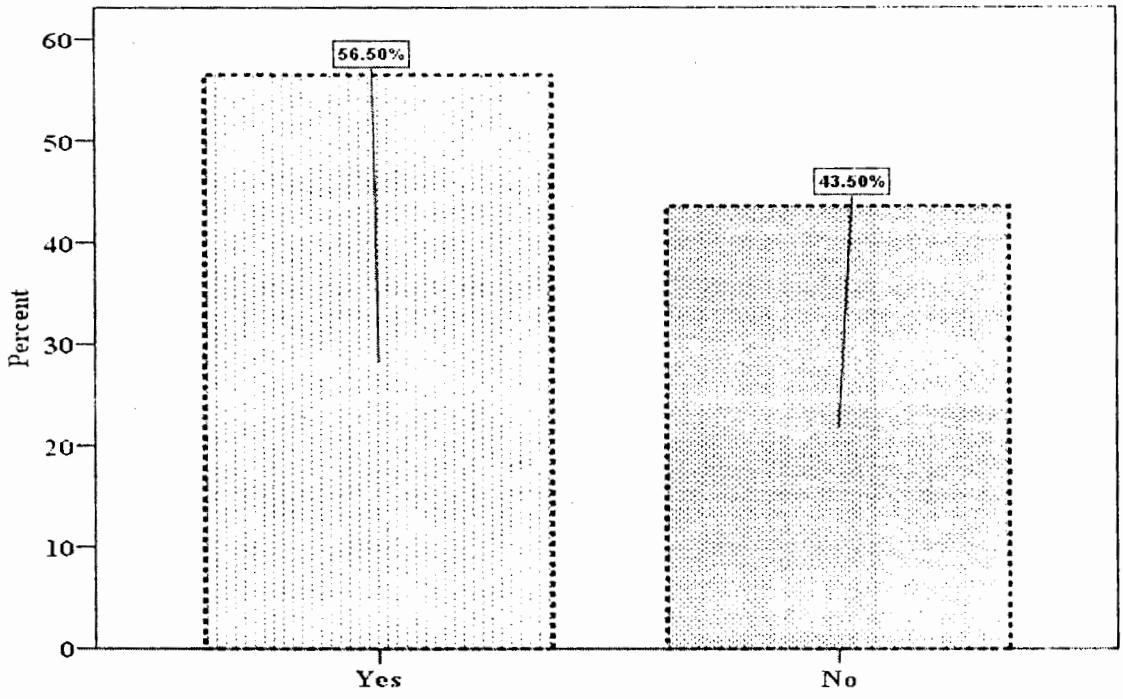


Fig 5.7 Idea about Use of Computer in Crime Investigation

Table 5.11: Practical exposure to the use of computer for crime investigation purpose

	Frequency	Percent
Yes	72	36.0
No	128	64.0
Total	200	100.0

The respondents were asked about their experience of using computer for crime investigation purposes. The results presented in the table 5.11 and fig 5.8 indicate that majority (64%) respondents had never use the computer for a crime investigation purpose. However there were 36.0 % of the participants who had, used the computer for crime investigation purpose. In the comments section they stated that they used it for the computer assisted finger prints, searching driver license database and the motor vehicle registration database etc while conducting training in a foreign country. Similarly some of them wrote that they use it in Pakistan while searching NADRA and motorway police databases.

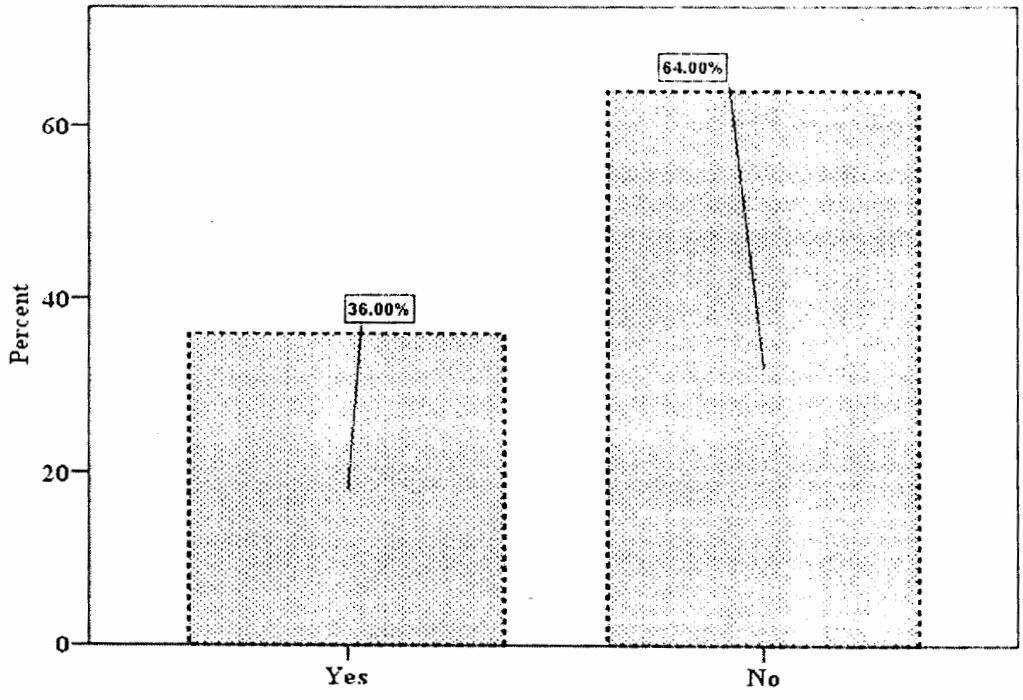


Fig 5.8 Practical Exposure to Computer for crime Investigation

Table 5.12: Learning about IT for crime investigation

	Frequency	Percent
Yes	165	82.5
No	35	17.5
Total	200	100.0

The table 5.12 and fig 5.9 reveals the information of the responses of questions asked about the willingness of learning about IT for crime investigation, if they were provided with the resources to do so. The results show that majority respondents (82.5%) are interested in learning more about the potentials of IT, if they were given a proper training for it. However the responses and general comment section indicate that 17.5% respondents are not personally interested in learning the applications of IT, unless they are officially implemented in the whole department. This shows that they would only learn if they were compelled to do so.

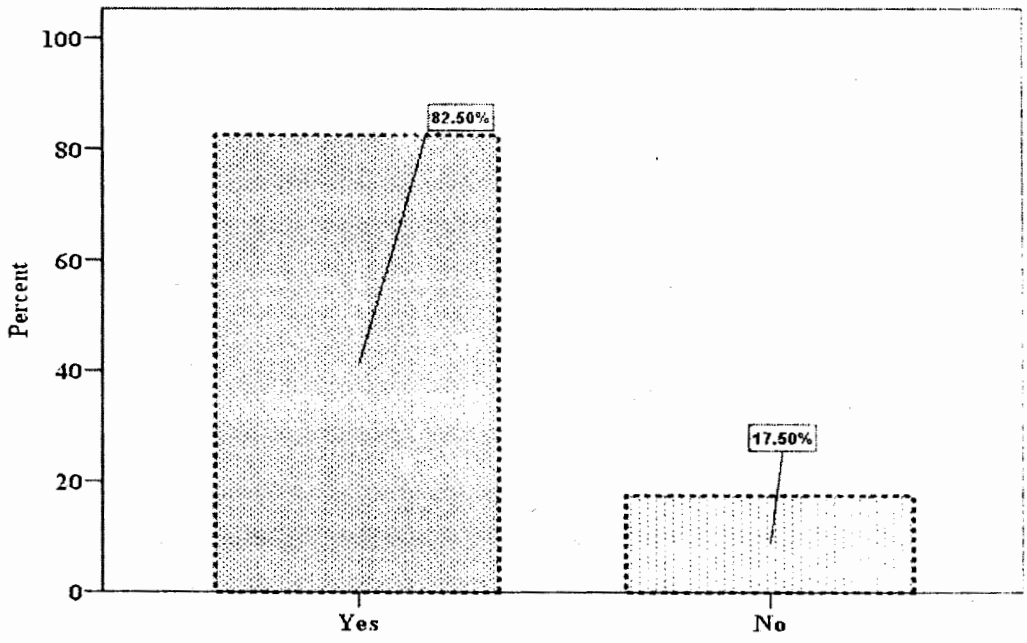


Fig 5.9 Learning about IT

Table 5.13: Chi-Square Tests of Use of Computer tools and Further Learning about IT

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.080	1	0.000
Likelihood Ratio	15.608	1	0.000
N of Valid Cases	16.995	1	0.000
	200		

In order to determine the independence or relatedness between the use of computer tools and further learning about application of IT, crosstab and chi-Square tests were used. The chi square test values (pearson chi square=17.080, df=1, p=0.000) in the above table are highly significant i-e p is less than 0.05. It confirms the presence of significant relationship between respondents with use of almost all of tools of computer and learning more about IT. It means that respondents, who use almost all or most of the tools of computers, are more likely to learn about further IT application in their work. If this assumption is checked with the response rate then it can be observed that 82.5% of respondents were in the favor of learning about IT applications. On the other hand 70.0% of respondents use almost all or most of the applications on computer. Both rates are high confirming the assumption that use of more computer tools is related with learning about more IT applications.

In summary, the results show that the majority police officers have the general knowledge about the use of computers for the enhancement of crime investigation. However, practically only 36.0% officers had exposure to it. All this indicates the lack of facilitating conditions as well as the official requirements of the IT applications for crime investigations.

5.4. RESULTS AND ANALYSIS OF QUESTIONNAIRE PART III

The part three of the questionnaire deals with the analysis of attitudes and perceptions of police officers towards the use of computers. In this section reliability and validity are examined before testing the six hypotheses. For checking reliability and construct validity in this study, Cronbach's alpha coefficient and factor analysis were chosen respectively.

5.4.1. RELIABILITY ANALYSIS

Reliability analysis is the measure taken to ensure that the scale is consistently measuring the constructs used in questionnaire. It is used to measure the internal consistency of items. The most common measure of scale reliability is Cronbach's alpha and it is used in this research. The value of Cronbach's alpha reliability coefficient normally ranges between 0 and 1. The closer Cronbach's alpha coefficient to 1.0 shows the greater internal consistency of the items in the scale. A common rule of thumb is Cronbach's alpha = "> 0.9 =Excellent, > 0.8 = Good, > 0.7 = Acceptable, > 0.6 = Questionable, > 0.5 – Poor, and < 0.5= Unacceptable"

The table 5.14 shows the construct, their items and values of reliability analysis. Based on the theoretical foundation, the factors were classified into the following seven groups: intention to use, perceived ease of use, attitude, affect towards usage, facilitating conditions, job fit and voluntariness. Each indicator was assigned to its corresponding factors, for example, with job fit, the indicators were JFi, JFii, JFiii and JFiv.

Table 5.14 : Survey Construct and Measurement Items

Cronbach alpha	**Intention to use was measured by a four item scale developed by Venkatesh and Davis (2000)**	
0.906	IUSE i	Assuming I have access to the computer system, I intend to use it
	IUSE ii	Given that I have access to the computer system, I predict that I would use it
	IUSE iii	I plan to continue using computer system
	IUSE iv	I prefer to use the computer even though I can do my work with other tools
	Job Fit was measured by a three item scale developed by Thompson, Higgins and Howell (1991)	
0.903	JF i	Using the computer system improves my job performance
	JF ii	Using the computer system enhances my effectiveness in my work.
	JF iii	The computer system meets the requirements of my job.
	JF iv	The computer system increases the communication within the police department
	Perceived Ease of Use was measured by four scale items developed by Venkatesh and Davis (2000)	
0.904	PEU i	I find the computer system to be easy to use.
	PEU ii	It is easy for me to become skillful at using Computer system.
	PEU iii	My interaction with the computer system is clear and understandable
	PEU iv	Interacting with the computer system does not require a lot of my mental effort.
	Attitude was measured by two scale items developed by Bhattacherjee (2000)	
0.803	ATT i	Using computer in policing would be a beneficial idea.
	ATT ii	Using the computer system in policing would be a pleasant experience.
	ATT iii	If I heard about a new information technology, I would look for ways to learn it
	Facilitating Conditions was measured by three scale items developed by Taylor and Todd (1995)	
0.826	FC i	There are enough computers for everyone to use them in Police Station
	FC ii	I have no difficulty finding a computer to use the when I need it.
	FC iii	I have enough resources for using computer
	Affect towards usage was adopted from work of Teo (2008)	
0.804	AFFTU i	I feel confidence to use computer
	AFFTU ii	I feel some or more anxiety while using computer
	AFFTU iii	I feel the sense of liking to use computer
	AFFTU iv	I do not want to use the computer system for policing in Pakistan
0.776	**Voluntariness was measured by two scale items developed by Venkatesh and Davis (2000)**	
	VOLUN i	My supervisor does not require me to use the Computer system
	VOLUN ii	Although it might be helpful, using the computer is certainly not compulsory in my job
	VOLUN iii	My use of the computer system is voluntary

In the output results of reliability analysis conducted in SPSS, there is other information along with the alpha values. This information includes the values of scale mean if item deleted, corrected item- total correlation and alpha if item deleted. The values in the column labeled "Corrected Item-Total Correlation" can be interperated as the correlations between each item and the total score from the questionnaire. Every reliable scale shows the correlation of all items with the total. The values below 0.3 mean that a particular item does not possess a very well correlation with the overall scale.

The values in the column labeled "Alpha if Item is deleted" can be interperated as the values of the overall alpha if that particular item is not included in the calculation. In fact they are reflecting the change in Cronbach alpha in the absence of that particular item. If the value of overall alpha is 0.8, then all values in this column should be around that same value. The values of scale mean if item deleted show the mean and the absence of a particular item.

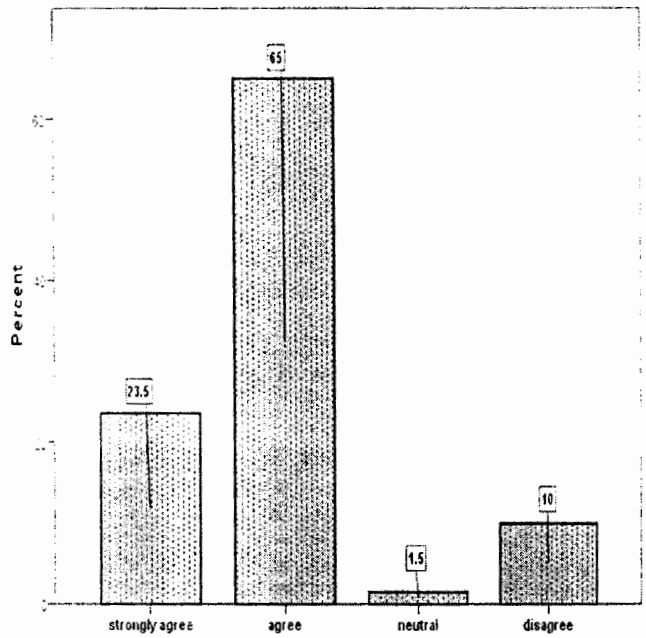
The values in table 5.14 and 5.15 indicate that all of the factors have the individual value of cronbach alpha above 0.7. The highest value of alpha is of the factor Intention to Use i-e, 0.906 and the lowest value is of the factor Voluntariness which is 0.776. Similarly the value of alpha for total items is 0.90 which confirms the internal consistency reliability of items of particular construct. All the values in the column labeled "Corrected Item-Total Correlation" are above 0.3, which shows that every particular item possesses a very well correlation with the overall scale.

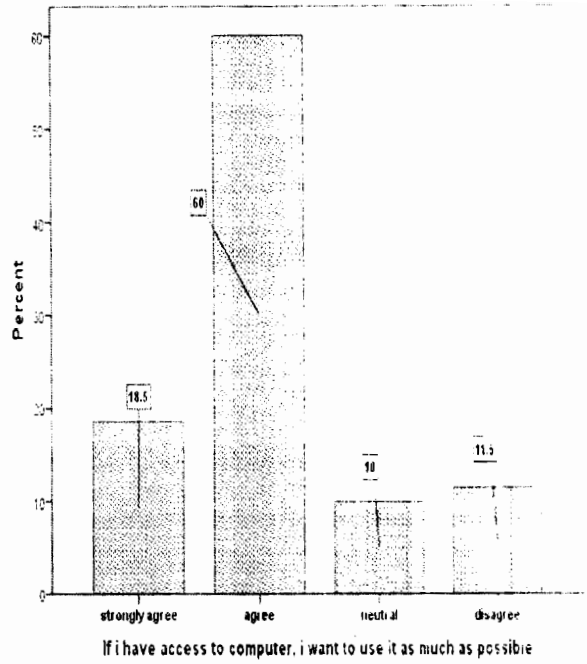
Table 5.15: Reliability Analysis

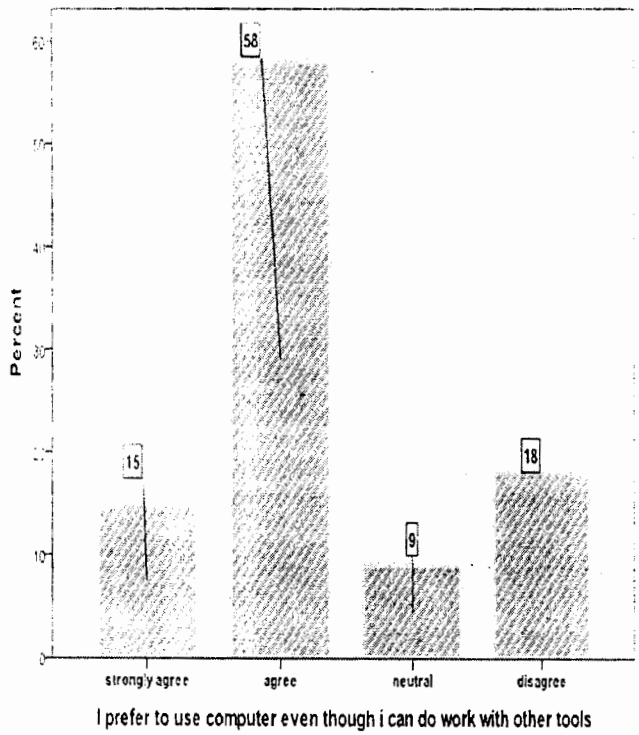
Factor/Constructs	Cronbach's Alpha	Items	Scale Mean if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
Intention to use	0.906				
		IUSE i	6.7450	0.694	0.911
		IUSE ii	6.5800	0.826	0.866
		IUSE iii	6.4250	0.764	0.888
		IUSE v	6.4250	0.886	0.842
Attitude	0.803				
		ATT i	4.1400	0.697	0.680
		ATT ii	3.7450	0.682	0.705
		ATT iii	3.5050	0.581	0.807
Job-Fit	0.903				
		JF i	7.1700	0.764	0.883
		JF ii	6.8650	0.797	0.879
		JF iii	6.5700	0.844	0.855
		JF iv	6.9500	0.785	0.876
Perceived Ease of Use	0.904				
		PEU i	7.7150	0.682	0.920
		PEU ii	7.4950	0.833	0.859
		PEU iii	7.5250	0.805	0.868
		PEU iv	7.6700	0.858	0.859
Facilitating Conditions	0.826				
		FC i	6.1900	0.819	0.611
		FC ii	6.3600	0.601	0.840
		FC iii	6.1700	0.644	0.797
Affect Toward Use	0.804				
		AFFTU i	8.6550	0.688	0.718
		AFFTU ii	7.6850	0.688	0.706
		AFFTU iii	8.6900	0.644	0.742
		AFFTU iv	6.5750	0.440	0.831
Voluntariness	0.776				
		VOLUN i	6.5300	0.591	0.722
		VOLUN ii	6.4700	0.682	0.722
		VOLUN iii	6.9200	0.595	0.743
Total Items Alpha: 0.904					

Frequency distribution of Responses

The frequencies of responses of third part of questionnaire are given in below graphs







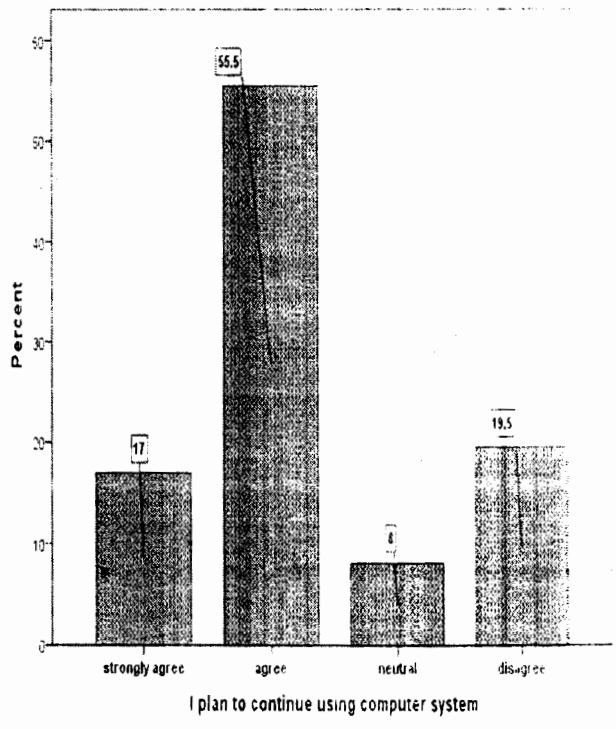
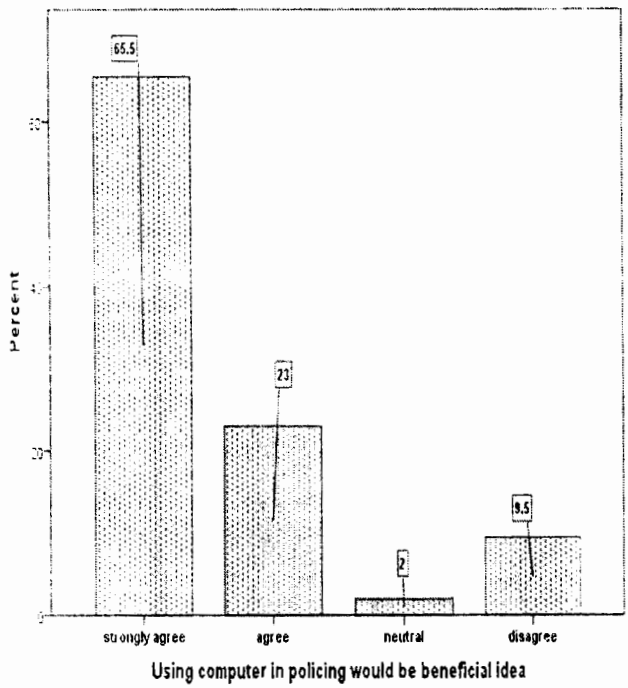


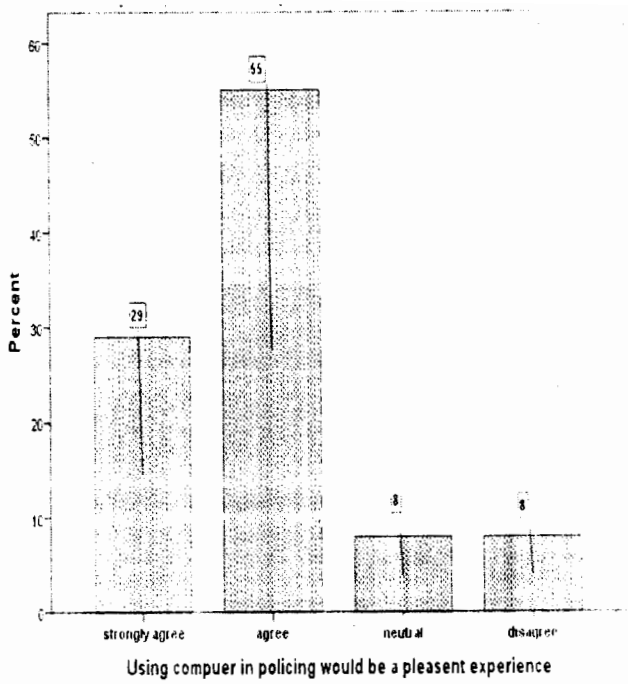
Fig 5.10 Responses of Construct "Intention to Use"

Description

Figure 5.10 displays responses about the questions measuring construct "intention to use". The response rate for each questions shows that 65%+23.50% respondents agree to use the computer if they have access to them. 10% respondents don't agree to use the system if they have access to them. Only 1.50% respondents were neutral about this opinion. The responses of question about "in my work, if I have access to the computer system, "i want to use it as much as possible" show that almost 60%+18.50% officers want to use computer much as possible.

On the other hand 11.50% don't want to use it and 10% were those who didn't express their opinion about it. Among the respondents 58% +15% always prefer to use the computer even though they can do their work with other tools. 18% were those who don't use computer if other tools are available. 9% officers didn't show their opinion about it. Out of 200 respondents, 55.50% and 15% officers will continue to use computer for their work. The other 19.50% have no planning to further use the computer , however, 17% did not express their opinion about it.





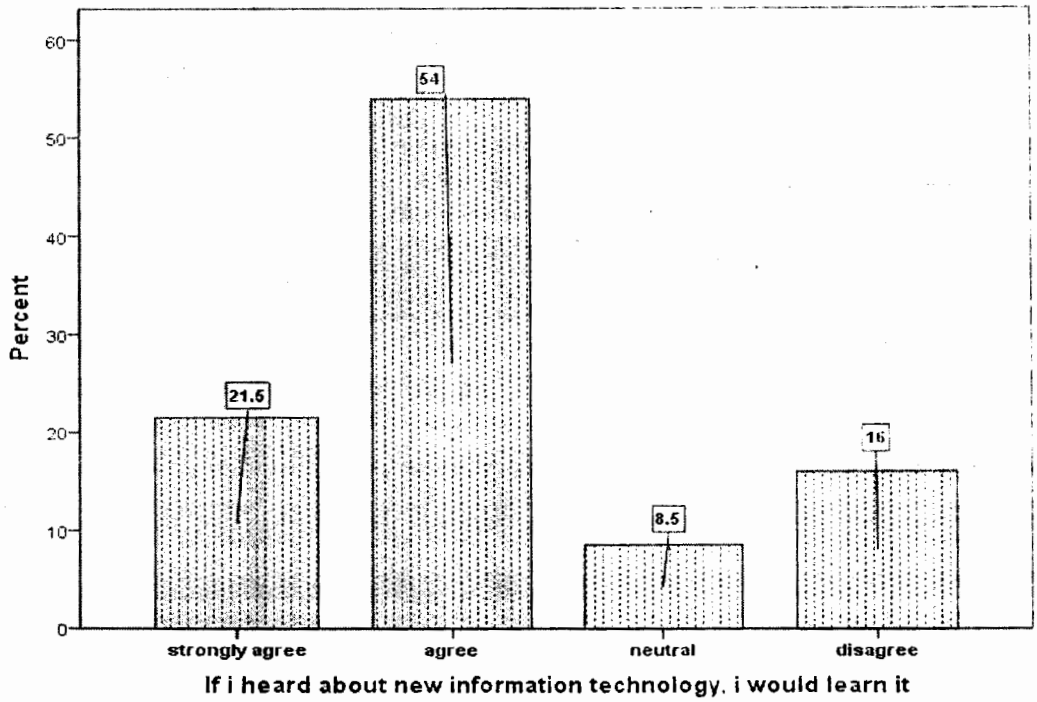


Fig 5.11 Responses of Construct "Attitude"

Description

The above figure 5.11 informs about the distribution of responses about those questions which were asked to measure the construct "attitude". The percentages show that 23%+65.50% officers consider the use of computer in policing a beneficial idea. However, there were 9.50% respondents who don't agree with it. Almost 2% did not express their opinion about it.

Majority of the respondents (55%+29%) think that use of computer in policing is a pleasant experience. However there were 8% respondents who don't agree that us of computer in police department is a pleasant experience. 8% of respondents were neutral about this opinion.

The respondents were asked that if they come to know about a new technology for using it in crime investigation or making their work easier, they would learn it or not. Majority of respondents (54%+21.50%) expressed their positive opinion that they would learn it. However 16% were those who would not like to learn about this new technology. The other 8.50% were neutral about this opinion.

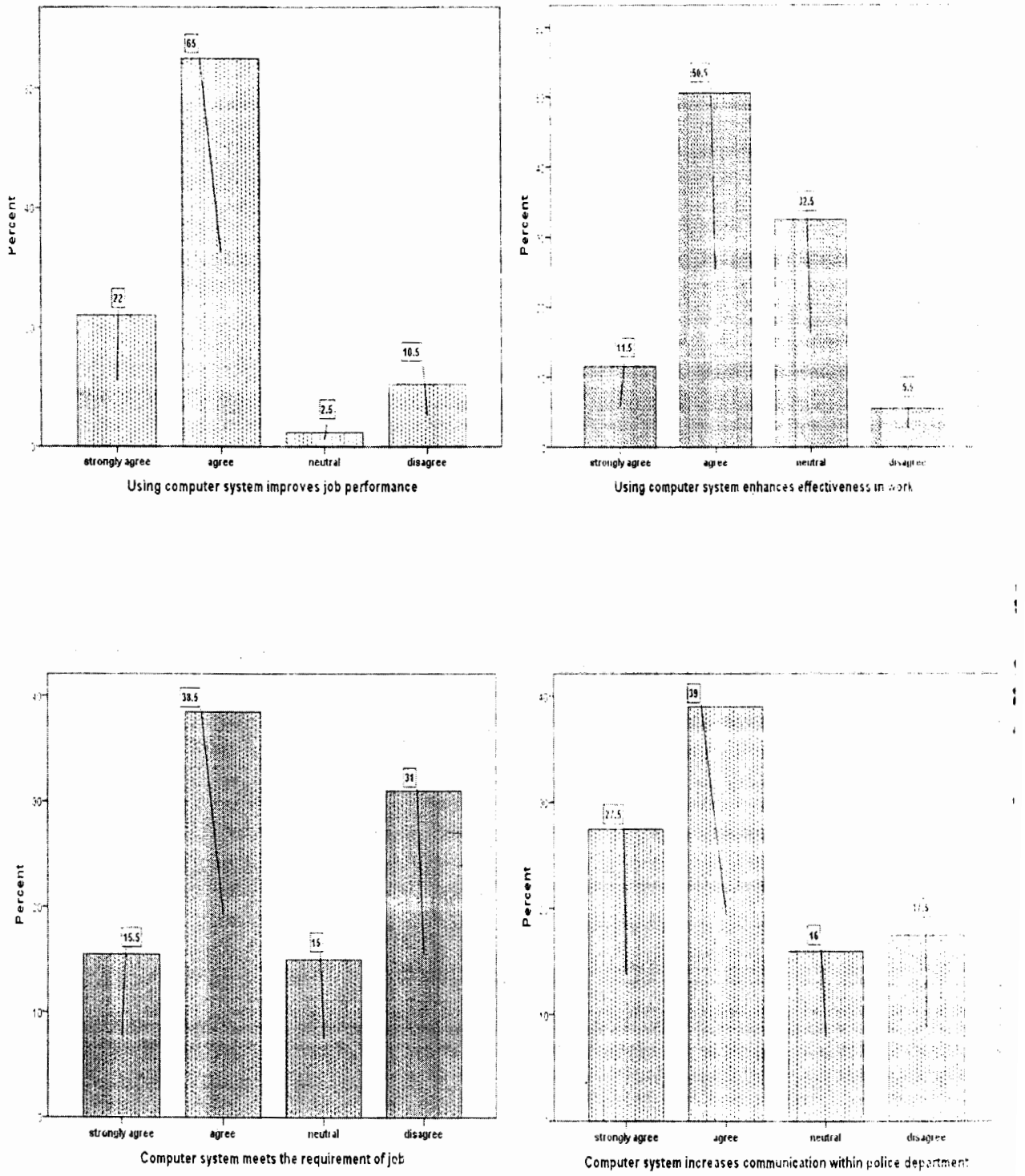


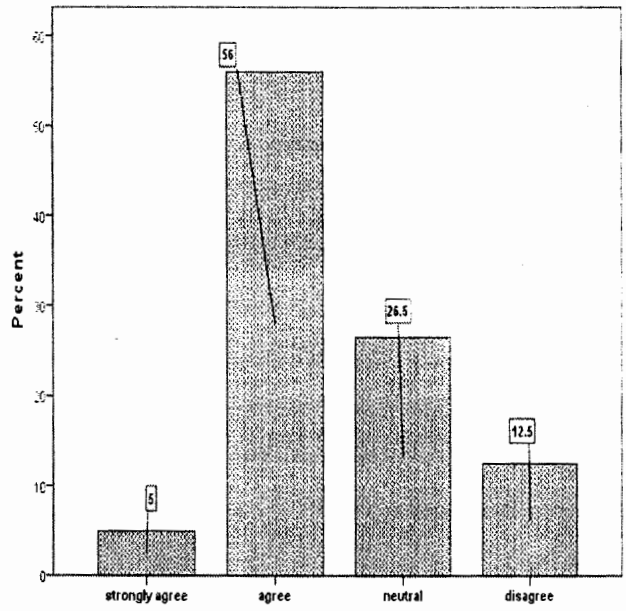
Fig. 5.12 Responses of Construct "Job Fit"

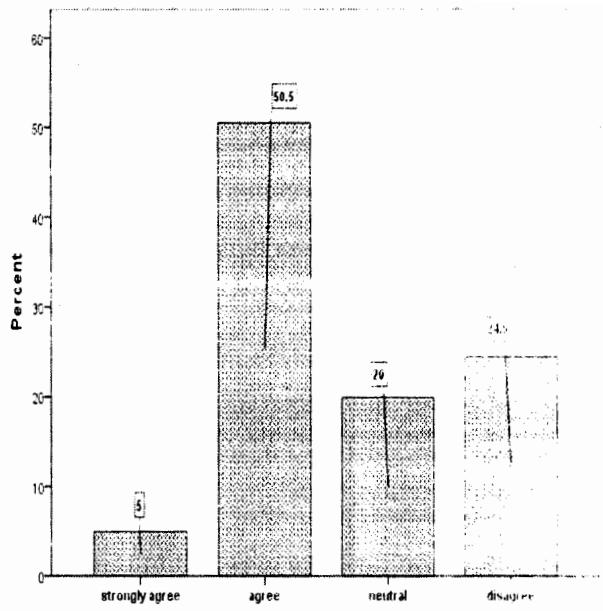
Description

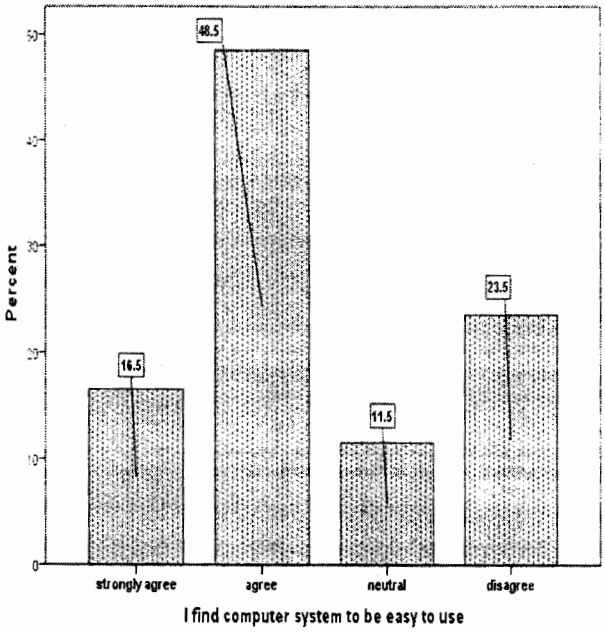
The figure 5.12 presents information about the percentage of responses of questions asked for measuring construct "Job fit". According to the responses majority (65%+22%) respondents accept the fact that use of computer improves job performance. However 10.50% were those who don't accept this fact. The remaining 2.50% didn't express their opinion.

Similarly majority 50.50% and 11.50% were agreeing with the statement that use of computer increases effectiveness of job. Only 5.50% were those who don't agree with it. 32.50% respondents did not express their opinion about this statement.

There were 38.50% and 15.50 % who admit that computer system meets the requirement of their job. However 31% were those who don't accept this fact and thus disagree with it. 15% were neutral about this opinion. Majority of respondents (39%+27.50%) accept the fact that use of computer increases communication among the units of Police department. On the other hand 17.50% were not agreeing with this statement. The remaining 16% were neutral about this opinion.







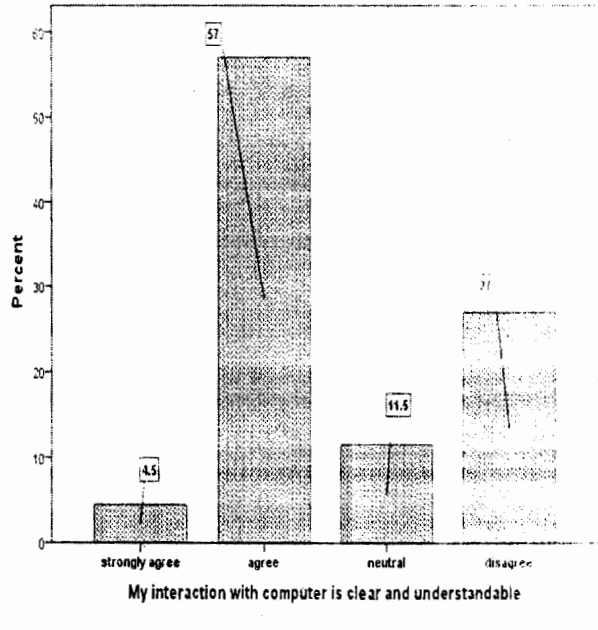


Fig 5.13 Responses of Construct "Ease of Use"

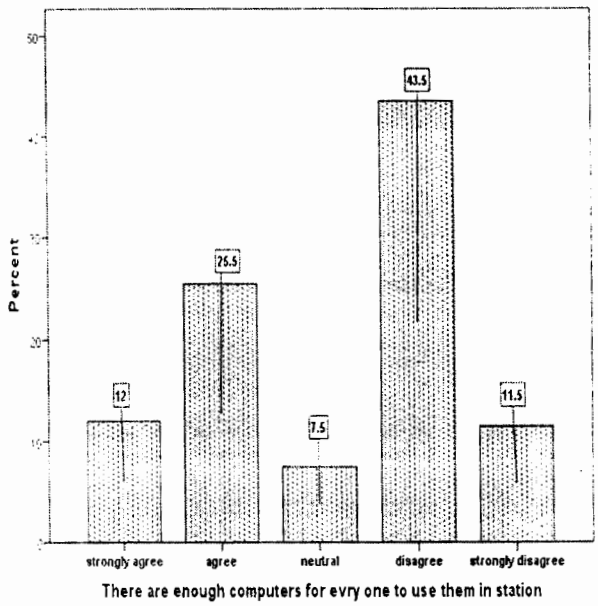
Description

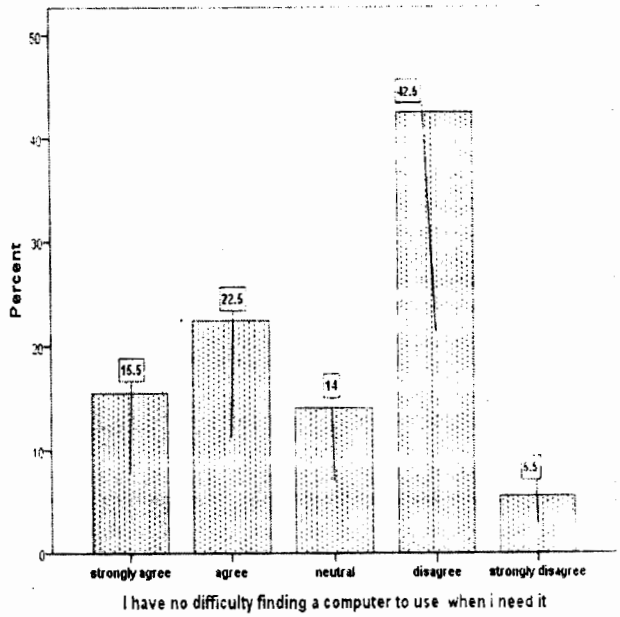
The above figure 5.13 gives percentage distribution of those respondents who gave responses about the questions measuring the construct "ease of use". The responses show that majority of respondents (56% +5%) accept that interaction with computer doesn't require much mental effort. However 12.50% were those who think that interaction with computer requires a lot of mental effort. The reaming 26.50% were neutral about this opinion.

Majority of respondents (50.50% and 5%) accept the fact that enhancing the computer skills is not much difficult. However 24.50% respondents think that it is not easy to be skillful at using computer. 20% were neutral about this opinion.

Almost 48.50% and 16.50% respond positively to the statement that "I find computer system to be easy to use". However 23.50% were those respondents who don't agree with the fact that they found computer system to be easy to use. 11.50% were neutral about this fact.

Majority 57% and 4.50% respondents agree that their interaction with computer is understandable. 27% of respondents don't agree with this statement. The remaining 11.50% did not express their opinion about this statement.





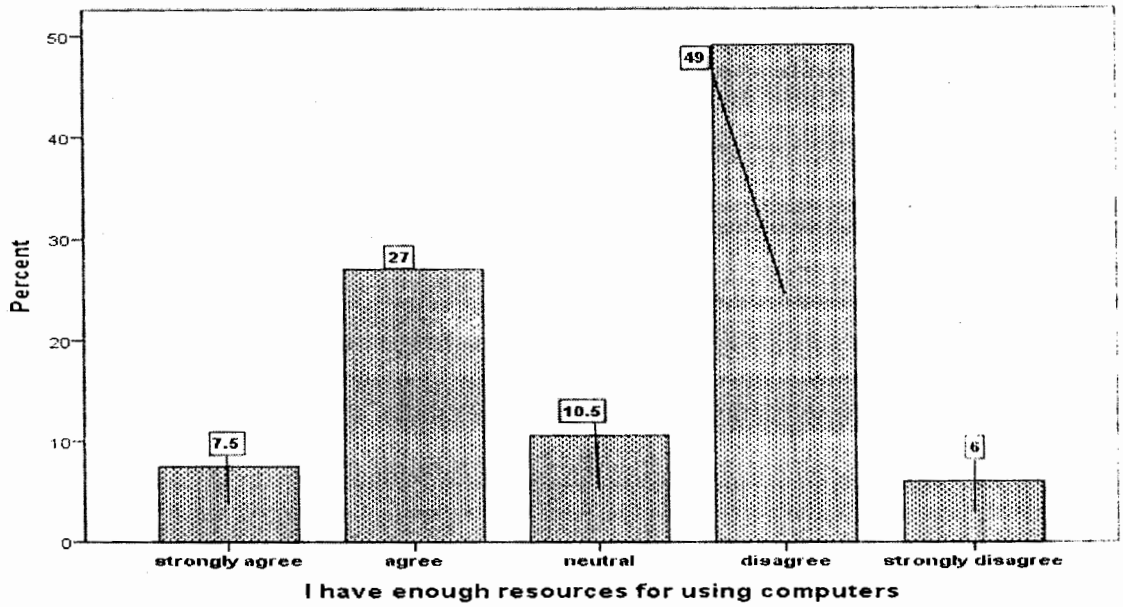


Fig 5.14 Responses of Construct "Facilitating Conditions"

Description

The responses of questions asked about measuring the construct "facilitating conditions" are given in above figure 5.14 . According to these responses majority (43.50% +11.5%) of respondents disagree about the fact that there are enough computers to use them in their department. 7.50% were those who didn't express their opinion about it. On the other hand there were also 25.50% and 12% who think that computer available in department are enough.

Similarly 42.50% and 5.50% respondents think that they face difficulty in finding a computer for doing work. The other 22.50% and 15.50% accept the fact that they don't face any difficulty to find computer when they need it. 14% respondents didn't express their view about it.

Majority of respondent 49% and 6% don't think that they have enough resources for using computer hardware and software both. On the other hand 27% and 7.50% were satisfied that they have enough resources for using computer. The remaining 10.50 were neutral about this view.

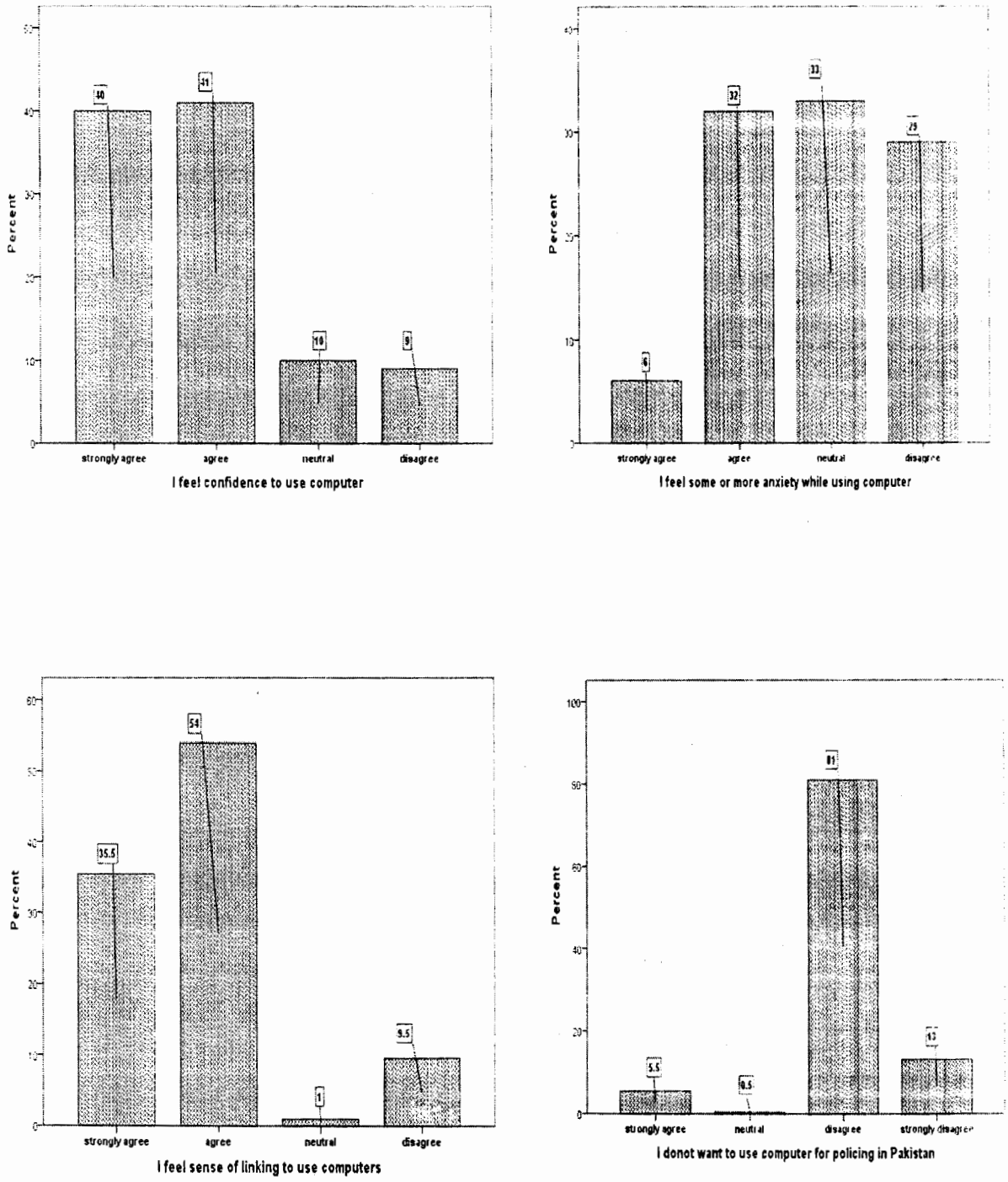


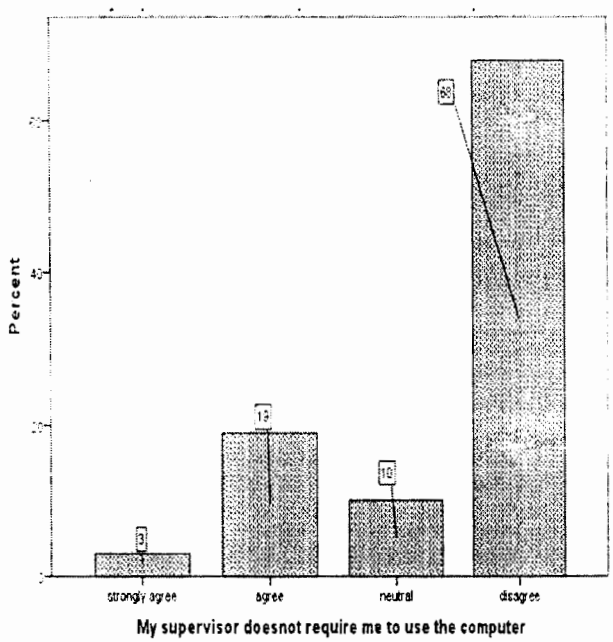
Fig 5.15 Responses of Construct "Affect towards Usage"

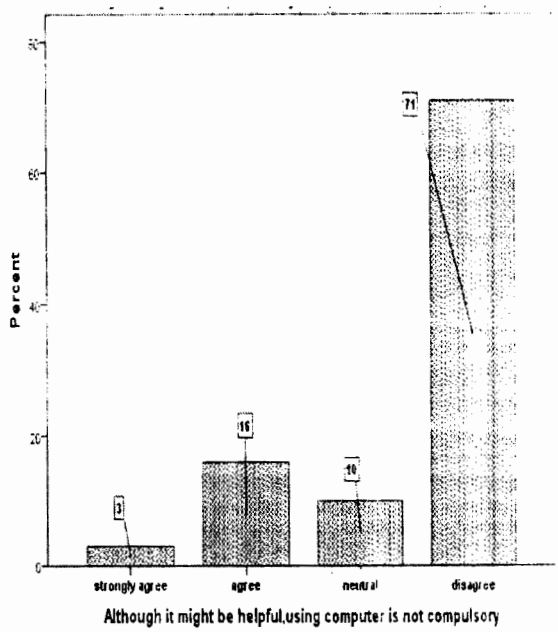
Description

The above figure 5.15 informs about the distribution of responses about those questions which were asked to measure the construct "affect towards usage". According to responses majority respondents 41% and 40% feel a confidence to use computer. However, 9% don't feel confidence to use computer. The remaining 10% were neutral about this opinion.

Similarly 29% respondents don't feel anxiety while using computer. But 32% and 6% respondents feel anxiety while using computer. 33% of respondents did not express their views about this statement.

There were 54% and 35.50% respondents who feel sense of liking to use computers; however 9.50% of respondents disagree with this fact. Only 1% didn't express their views about it. The responses show that 81% and 13% respondents want to use computer for policing in Pakistan. Only 5.50% respondents expressed their views that they don't want to use computer in policing.





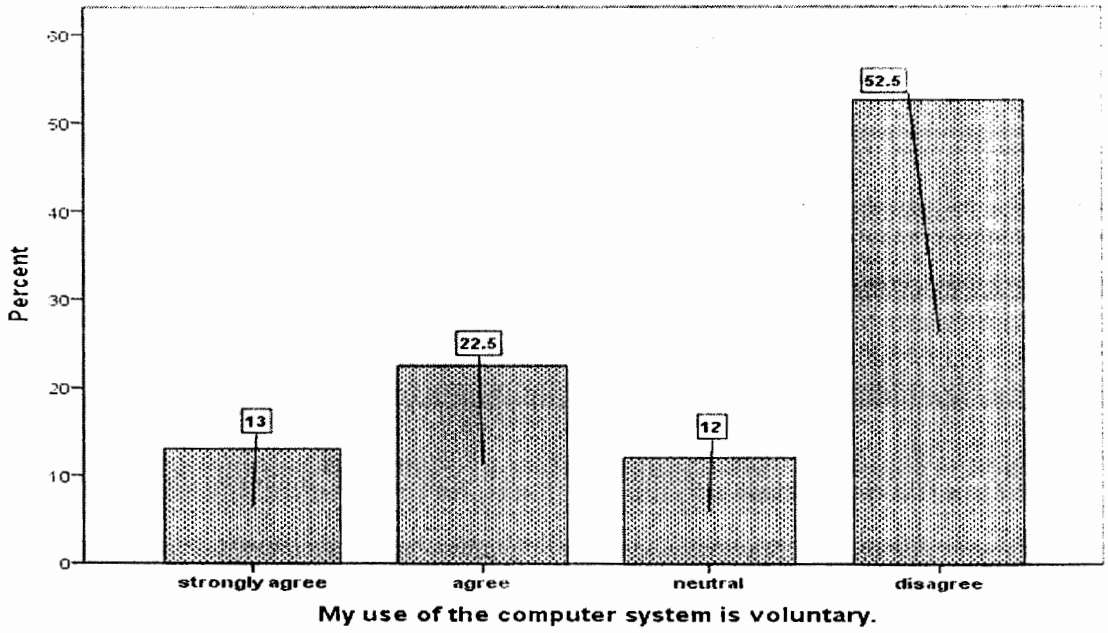


Fig 5.16 Responses of Construct "Voluntariness

Description

The responses of questions asked about measuring the construct "Voluntariness" is given in above figure 5.16. According to responses 68% of respondents think that their supervisor requires them to use computer for their work. Only 19%+3% respondents agree that their supervisor or boss doesn't not make it compulsory to use computer. There are 71% of respondents who think that using computer to carry out their job is compulsory. However, 16%+3% respondents think that although it might be helpful but using computer is not compulsory in their job. Only 10% respondents did not show their views.

About the question of voluntary use of computer only 22.50% and 13% respondents were those who think that their use of computer is voluntary. On the other hand majority of respondents 52.50% think that their use of computer is not voluntary and it is their official requirement. There were 12% who did not express their views about this statement.

5.4.2. VALIDITY ANALYSIS

Validity in research means that whether an instrument or test actually measures what it is aimed to measure. There are several forms of validity such as content validity, construct validity, external related, nomological validity and criterion related validity. Content validity refers to the extent to which items that make up an instrument or test are representative of a particular construct. In this study content validity is judged by probing the process that is used in generating scale items and its translation into other languages (i.e., Urdu in this study). All the variables are taken from extensive

literature review. To test the construct validity of the proposed seven-constructs. confirmatory factor analysis using LISREL 8.8 software was employed.

Confirmatory factor analysis (CFA) confirms the relationship between the observed variables and their underlying latent variables. For this purpose the knowledge of the theory, empirical research or both are used. The seven factor research framework was used in this study to describe the relationship among the factors and their latent variables while performing CFA. These factors were intention to use, perceived ease of use, attitude. facility. affect towards use. job fit and voluntariness. Each factor was assigned with an indicator e.g the indicators of factor attitude were ATTi, ATTii and ATTiii. The values of factor loadings while conducting confirmatory factor analysis are given in fig 5.17.

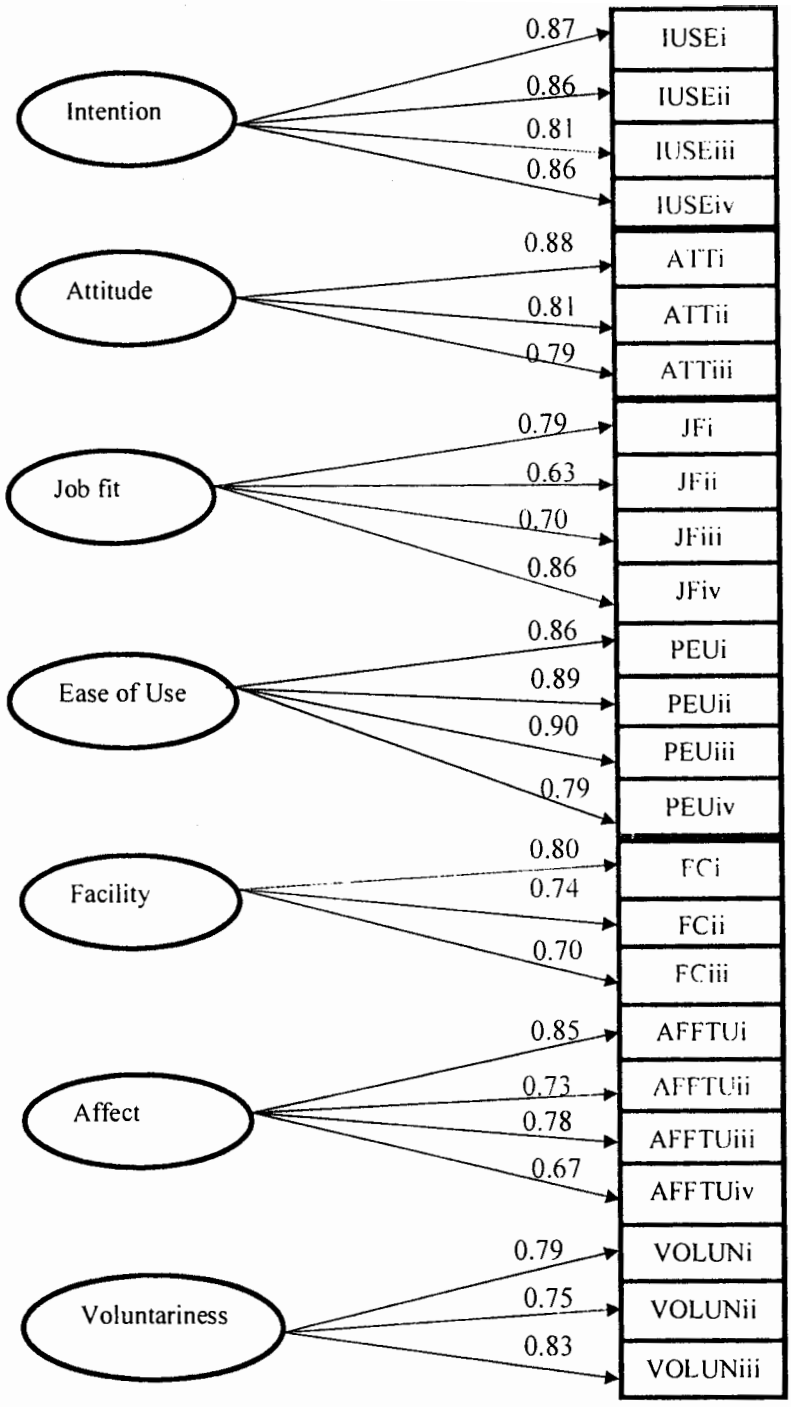


Figure 5.17 Confirmatory Factor Analysis- Factor Loadings

Factor loadings gives information about how strongly each variable is related to each factor. The variables with higher loadings show the strong correlation of the variables with the factors on which they were loaded. The values of each factor loading represented in the above figure 5.17 show that almost all of the observed variables loaded well (0.63-0.90) on their factors except JFii to job fit (0.63). The values of factor loadings in this model range from 0.63 to 0.90. These values of factor loadings can be interperated as the increase of 0.87 standard units of IUSEi with every standard unit increase in the intention to use variable.

5.4.2.1 Goodness of fit

The goodness-of-fit (table 5.16) is done to assess that how well the model/framework matches the observed data. The goodness-of-fit of the research model/framework developed may be determined by the GFI, AGFI, RMSR and the χ 2/df ratio. The Goodness of Fit Index (GFI) which indicates the degree of similarity or of variance jointly explained by the model. The suggested values of GFI ranges between 0 and 1, higher values indicating better model fit. The GFI in this research model is 0.92, indicating a good fit of the model to the data.

RMSR (Root Mean Square Residual) represents the average remaining value of the variance which is left unexplained by the model. In a well- fitting model, the value should be small i-e less than 0.5. The value of RMSR in this model is 0.11, signifying that only some of the variances were left unexplained by the proposed model. χ2 is considered as classic goodness-of-fit measure to determine overall model fit. The χ 2/df ratio is 1.76; a ratio of less than 2 is taken as indicator of good fit.

Table 5.16: Goodness-of-fit statistics

Goodness of Fit	Values
GFI	0.92
RMSR	0.11
x2	153.14
df	87
prob	0.001
x2/df	1.76

The statistical values of confirmatory factor analysis all met the criteria standards for adequacy of fit. All the values of factor loading confirm the assessment of construct validity which is assessed by examining the loadings of the items and their reliability (Cronbach alpha). In addition, the overall fit of the measurement model, as expressed by the fit indices, supports the validity of each construct.

5.4.3. HYPOTHESES TESTING

In order to specify and then evaluate the theoretical relationships among relevant constructs, empirical tests that measure the relationships among the constructs were conducted and then interpreted. These tests include multiple regressions in order to test the hypotheses. All of the independent variables were expected to be positively associated with its dependent variable. The three variables that are affect towards usage, perceived use of ease and job-fit were expected to be positively associated with attitude while attitude, voluntariness and facilitating conditions were expected to be positively associated with intention to use. These hypotheses were analyzed by using multiple regressions in SPSS 17.

In order to conduct multiple regression analysis, first the impact of affects towards usage, job fit and perceived ease of use were examined on the variable

attitude. In the next step the effects of variables attitude, voluntariness and facilitating conditions were checked on the dependent variable intention to use.

Influence on Attitude

The linear multiple regression equation for these independent and dependent variables is as follows:

$$H2, H3, H4: ATT = \beta 0 + \beta 1 JF + \beta 2 PEU + \beta 3 AFF + \varepsilon$$

In this equation ATT is attitude (dependent), JF is job fit (independent), PEU is perceived ease of use (independent) and AFF is affect towards usage (independent). ε is called the error term used in linear regression equation. The error term is added to this multiple regression equation because the independent variables by themselves cannot fully contribute to all observed variation in the dependent variable. This error term captures all factors which influence the dependent variable other than the independent variables.

Table 5.17: Regression Coefficients

	Independent Variables	Beta	t	Sig.
Step 1	job fit	0.751	16.005	0.000
Step 2	job fit	0.489	5.366	0.000
	Easy	0.303	3.328	0.001
Step 3	job fit	0.498	5.522	0.000
	Easy	0.296	3.288	0.001
	Affect	-0.106	-2.350	0.020
	Constant	0.427		

The above table presents the values of beta and t test. To control the indirect influence of job fit, perceived ease of use and affect towards usage on each other through

attitude, a stepwise regression was performed in which job fit was entered in step one, perceived ease of use in step two and affect towards usage was entered in step three. The values of beta indicate the individual contribution of each independent variable to the model. In this data the independent variable, "job fit" has beta value of 0.498 which indicates that a change of one standard deviation in the job fit will result in a change of 0.498 standard deviations in the attitude. Thus, the higher beta value, the greater is impact of independent variable on dependent variable. Similarly beta value of variable "perceived ease of use" is 0.296 indicating that one standard deviation change in perceived ease of use will result in 0.296 standard deviation change in out come variable attitude. On contrary the beta values of variable "affect towards usage" is negative, showing one standard deviation increase in affect will cause -0.106 standard deviation decrease in attitude.

The value of t statistics which helps to determine the relative importance of job fit is also significant ($p<0.05$) for both job fit and perceived ease of use. However for affect towards usage the t value is not significant that is 0.020 greater than 0.05.

Table 5.18 : Regression Model Summary

Model	R	R^2	Adjusted R^2	F Change	Sig
Step 1	0.751	0.564	0.562	256.166	0.000
Step 2	0.766	0.587	0.583	11.073	0.001
Step 3	0.774	0.599	0.592	355.524	0.002

The table above is the full model, or model with all independent variables which are job fit, easy to use and affect towards usage are included. This model provides not only a statistical test of the model's ability to calculate the outcome variable (the F test), but also the value of R, the corresponding R^2 and the adjusted R^2. The table contains the values of all step by step models. The values of third step model in which

all independent variables are included are taken for interpretation. The values of R are the values of the multiple correlation coefficients between the independent and the dependent variables. In this model the value of R of third model in which all independent variables are included is 0.774. This value of R provides a measure of how well attitude can be predicted from the set of independent variables' scores. The positive value of R confirms that job fit, perceived ease of use and affect towards usage can best predict "attitude". The value of R^2, which is a measure of how much of the variability in the outcome is accounted for by the independent variables, is 0.599. This value indicates that job fit, perceived ease of use and affect towards usage account almost 59.9% variations in the attitude.

The value in the Adjusted R^2column is a measure of model fit, adjusting for the number of independent variables in the model. Ideally its value is to be the same or very close to, the value of R^2. In this model the difference is very low (0.599-0.592=0.007 or 0.7%). This contraction means that if the model was derived from the population rather than a sample it would account for approximately 0.7% less variance in the outcome. The value of F is the test of the relationship between independent variable and dependent variable. The value of F is significant (smaller than 0.05), which shows that the job fit, perceived ease of use and affect towards usage do a good job explaining the variation in the attitude. All the values confirm the significant good fit of model.

After inserting the coefficients values in regression equation, the step three model can be considered the best equation, as table shows that adjusted R^2 (0.599) and value of F (355.524) is largest and significant ($p<0.05$).

H2, H3, H4: ATT = β0+ β1JF+ β2PEU+ β3AFF+ ε

H2, H3, H4: ATT= 0.427+ 0.498JF +0.296PEU +-0.106AFF

Based on these statistics it is observed that at significance level, both job fit and perceived ease of use constructs influence police officer's attitude towards using the computer system. However, affect towards usage is not positively associated with attitude. In particular, based on the t-values and the significance levels, one may suggest that job fit component, followed by perceived ease of use are the strongest predictors of attitude. A conclusion can be drawn on the basis of statistical results that H4 and H3 are supported while H2 is not supported.

Influence on Behavioral Intention to Use

H1, H5 and H6 were tested through a third regression model, with attitude, facilitating conditions and voluntariness regressing upon intention to use. To control for the indirect influence of attitude, facilitating conditions and voluntariness on intention to use through each other, a stepwise regression was performed in which attitude was entered in step one, facilitating conditions in step two and voluntariness was entered in step three. The regression equation or this model can be written as:

H1, H5 and H6: IUSE = β0+ β1ATT+ β2FC+ β3VOLUN+ ε

Table 5.19: Regression coefficients

	Independent Variables	Beta	t	Sig.
Step 1	attitude	0.706	14.030	0.000
Step 2	attitude	0.615	11.549	0.000
	Facility	0.219	4.108	0.000
Step 3	attitude	0.598	11.218	0.000
	Facility	0.229	4.317	0.000
	Voluntariness	-0.106	-2.177	0.031
	Constant	0.813		

For this model, the values of third step regression are taken for interpretation. The results in above table show that both attitude (0.598) and facilitating conditions (0.229) have positive beta values confirming their positive contribution in outcome variable intention to use. On the other hand, the construct voluntariness did not turn out to be a significant factor in directly affecting the intention to use with beta value of (-0.106). These results show that the variables, attitude and facilitating conditions are significant predictors of intention to use, being significant at $p<0.05$.

Table 5.20: Regression Model Two Summary

Model	R	R^2	Adjusted R^2	F change	Sig
Step 1	0.706[a]	0.499	0.496	196.848	0.000
Step 2	0.734[b]	0.538	0.533	16.874	0.000
Step 3	0.741[c]	0.549	0.542	244.740	0.001

The model having independent variables of attitude, facilitating conditions and voluntariness explained about 54% (adjusted R-squared) of variance in intention to use. Once again the model had good fit as reflected in its R^2 (0.549) and F values. In this model the difference between Adjusted R^2 and R^2 is also very low (0.549-

0.542=0.007 or 0.7%). This contraction means that if the model was derived from the population rather than a sample it would account for approximately 0.7% less variance in the outcome. The significant values of F (at 0.001) confirm the good fit of this model. After inserting the coefficients values in regression equation, the step three model (high value of R) can be considered the best equation, as table shows that adjusted R^2 (0.549) and value of F (244.740) is largest and significant ($p<0.05$).

$$H1, H5 \text{ and } H6: IUSE = \beta 0 + \beta 1 ATT + \beta 2 FC + \beta 3 VOLUN + \varepsilon$$

$$H1, H5 \text{ and } H6 = 0.813 + 0.598\ ATT + 0.229\ FC + -0.106\ VOLUN$$

The results confirm the positive influence of attitude and facilitating conditions on intention to use. However, voluntariness does not seem to have any direct relationship with intention to use. A conclusion can be drawn on basis of statistical results that H1 and H5 are supported while H6 is not support.

5.4.4. HYPOTHESES TESTING EVALUATION

H1: A police officer's attitude towards the computer system has a positive correlation with intention to use this system.

According to the statistical results attitude is positively correlated with behavioral intention to use computer system. The positive beta values of variable attitude (0.598) shows that one standard deviation increase in variable attitude will result in 0.598 increase in intention to use. This suggests that attitude of Police officers towards computers is a significant driver for their intention to use the computer.

H2: A police officer's affect towards has a positive correlation with attitude of police officers using the computers.

As analyzed in empirical results the beta values of variable affect towards usage is negative, showing that one unit increase in affect will cause -0.106 standard unit decreases in attitude. This result is not consistent with previous studies. In this study it shows that Police officer's affect towards using computers does not directly predict their attitudes towards computer. There is possibility that it might directly measure their intention to use the system.

H3: Perceived ease of use has a positive correlation with attitude of police officers using the computer system.

The results found that if Police officers perceive computers to be easy to use, then they consider them beneficial for their work. By having positive beta value of variable "perceived ease of use" 0.296, it is considered that one unit increase in perceived ease of use of Police officers will result in 0.296 unit increase in their attitude towards computers. Thus, this perceived ease of use of computers by officers is strong predictor of their attitude. Hypothesis three is accepted.

H4: Perceived job fit has a positive correlation with attitude of police officers using the computer system.

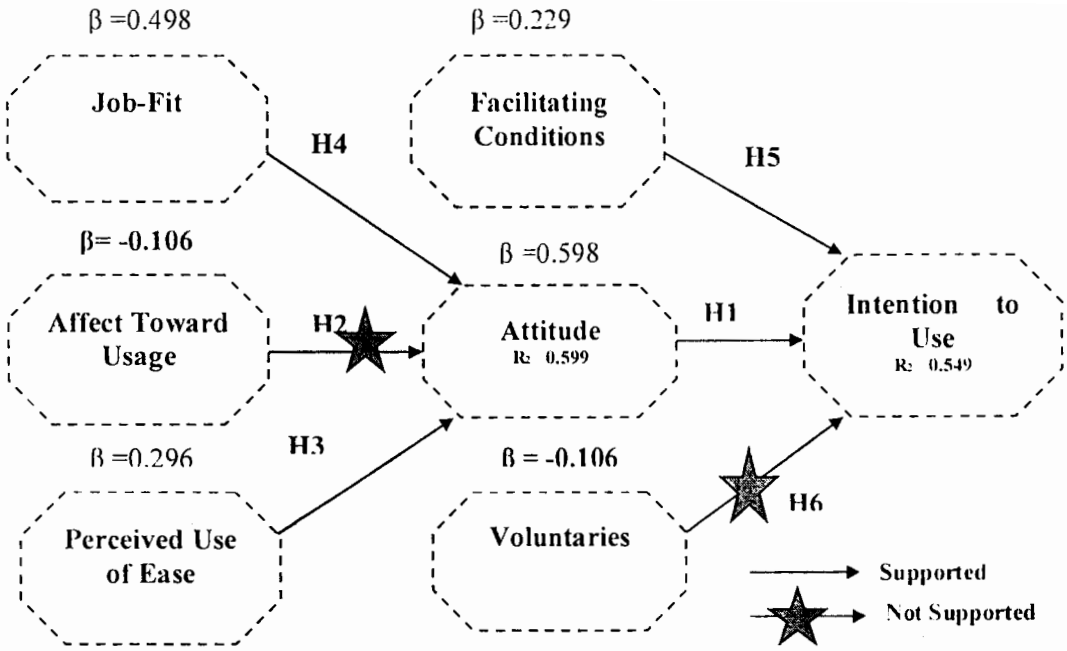
This hypothesis was also found significant and accepted. The statistics values show that job fit has beta value of 0.498 which indicates that an increase of one unit in the job fit will result in an increase of 0.498 units in the attitude of Police officers towards computers. The perception of Police officers that computer system meets the requirements of their job significantly drives their attitude towards computers.

H5: Perceived facilitating conditions have a positive correlation with intention to use of police officers using the computers.

The results shows positive beta value of facilitating conditions (0.229) which indicates that 0.229 unit increase in intention to use the computers will be caused by one unit increase in perceived facilitating condition. It means that if Police officers find enough physical resources for using computers or easy access to computers, they are more likely to use them. Thus, perceived facilitating conditions available for Police officers will increase their use of computers, and both are positively related. Hypothesis five is accepted.

H6: Voluntariness has a positive correlation with intention to use for police officers using the computers.

According to results voluntariness did not have a direct influence on behavioral intention of Police officers to use computer systems. The beta values appeared having negative signs (-0.106). However, it does not show the total absence of effect of voluntary use of computers by Police officers. In the current study, it shows the inability of "voluntariness" to directly measure intention to use of Police officers. Thus, hypothesis six is not supported in this study.



5.18 Pathway of Integrated Elements with Hypotheses Results

5.5. DISCUSSION OF RESULTS

The overall aim of the study was to determine the attitudes and perceptions of the Pakistani police officers towards the adoption of IT (usage of computer). The technologies can only improve the productivity of organizations if they are accepted and utilized by the employees of that organization. The results of the analysis of the data from the questionnaire were judged against with some of the recognizable technology acceptance models. identified in the literature.

In order to accomplish the aim of the research. questionnaires were distributed among 230 police officers of Pakistan. Along with it, some of the technology acceptance models, such as TAM, TTF, IDT, MPCU were used to make clear the findings of the questionnaire in order to expand a better understanding of how the attitudes and perceptions of Pakistani police officers can be explained.

The findings of attitudes of Pakistani police officers can offer a basis for an integrated research framework consisting of constructs from different models in the context of law enforcement of developing countries. This framework includes both intrinsic and extrinsic reasons of computer use. Results of this study suggest that pathway of integrated elements used in this study offers a useful tool in evaluating the acceptance and rejection of computer system in Pakistan police department. The statistical value of goodness-of-fit of models confirms that the model may explain the police officers' attitudes about their acceptance of computer technology with high likelihood. The reliability analysis for examining the internal consistency of items report a high internal consistency of instruments scales.

Consistent with the previous studies a fairly high level of positive computer attitudes was found in this study. This is attributed to the increasing use of computers in the police department in Pakistan. Two out of three components of research elements were observed to be significantly associated with the attitude towards using computers. These significant were job fit and perceived ease of use. The findings showed that among all variables, job fit has shown more significant contribution (49%) in predicting its outcome variable (attitude). This shows that if police officers find computers to be a mean of increasing their performance, then they are more likely to show a positive attitude towards its usage. The positive effect of perceived ease of use on attitude confirms the validity of TAM as in TAM perceived ease of use predicts the intention indirectly through attitudes. If police officers find computers to be easy to use or to be easy to understand, then they are more likely to show a positive attitude towards its usage. Affect was found to have an insignificant effect on attitude. This might reflect the limitation of pathway of integrated elements' applicability with

respect to user population. However this also reflects the possibility of direct effect of affect towards usage on intention to use.

The findings of direct effects of facilitating conditions, voluntariness and attitude on intention to use confirm the positive and significant contribution of attitude and facilitating conditions on intention to use. Attitude which is considered the successful factor to determine the use of computers was statistically verified in this study. The availability of resources in public sectors is vital, so the provision of support (technical and managerial) for police officers influence system utilization. According to results, this means if police officers find enough resources or easy access to computers, then they are more likely to have intention to use computers. On the other hand, voluntariness was not found to be a significant contributor in directly predicting intention to use. Voluntariness is basically a perception that use of computer is not compulsory. The findings confirm that voluntary and non voluntary willingness of Police officers in Pakistan to use computers does not directly measure their intention to use. However, it cannot be concluded that voluntariness does not have any influence on intention to use. This issue (insignificant results of affect towards usage and voluntariness) can be taken as implication of research.

The analysis of part one of questionnaire confirmed that information technology tools are being used by police officers of Pakistan. The results also confirmed a direct relationship between respondents with a higher degree of computer skills and frequency of use of computer at work. The explanation for this point is that officers with a lower degree of computer skill don't use computer on daily basis in order to conduct their tasks. A justification can be made that more computer literate officers are well aware of benefits of computer usage and they want to fully utilize

these benefits of sophisticated technologies instead of continuing traditional/manual practices. On the other hand, a second assumption can also be made that those officers who use computer on daily basis attain a very good level of computer expertise. The frequent use of computers directs user to gain a variety of computer-related skills and techniques thus enhancing one's knowledge of the computer as a whole. As a result of this one's learning possibilities and potentials are enhanced.

It has also been shown that officers who have high level of computer skills and use computers regularly, they are more likely to use almost all of tools of computer. It was seen that officers who use maximum available tools of computers are more likely to learn about further IT applications in their work. It is concluded that high computer literacy, results in maximum use of computer applications thus opening ways for exploring more benefits of IT in carrying out police tasks. The policing have an increasing reliance on information technologies so the utilization of maximum available tools of computer can result in strengthening the routine and non routine work of police. These findings emphasize on computer skills thus creating strong need for training of police officers. Training can provide them a possible and practical exposure to the use of computer for crime investigation purposes.

The response rate of respondents shows that above 40 % were disagree and less than 30% were agree about the satisfied availability of computer and relevant tools in their department. It confirms that currently the availability of computer or other tools does not fulfill the requirements of users. It means that officers are not satisfied with the availability of IT tools in their department. This less satisfaction of officers with the current status of facilitating conditions shows that they feel a need for more sophisticated systems or more use of IT in police department. This result can

be supported with the responses of officers who were asked about their practical exposure to the computers for crime investigation. The results presented in the table 5.11 and fig 5.8 indicates that majority (64%) respondents had never used the computer for a crime investigation purpose. However there were 36.0 % of the participants who had, used the computer for crime investigation purpose. Above 50% officers consider use of computer in policing a beneficial idea and pleasant experience. Along with it they would like to learn more about use of new technologies for their work. However, the lack of satisfactory resources is a drawback for getting full benefits of computer and related technologies. All this confirms that they have positive attitude towards using computers and they have intention to use them.

All information about officer's use of computer, their skills, their practical experiences and interest in further learning provides basis for further implementation of IT tools in police department (with reference to chapter three, about current technology applications in Islamabad and Punjab Police). As it is generally assumed, that maximum utilization of technology provides maximum benefits and enhancement in work. So by knowing that how much officer's use computer, what are their current skill levels etc, electronic government directorate can remove current deficiencies and add more features to make e enablement program more successful. These strategies will sure the maximum use of computer or related technology in police department, hence getting maximum benefits. As the e enablement program of police department is not fully implemented yet, so it would be better to know about user's experiences, feelings, pattern of use and attitudes during the implementation of project. In this way the investments being made on these projects might lead to a successful output in police department. Thus, current study by validating acceptance model framework

provides a way to measure experiences, feelings, pattern of use and attitudes of police officers of Pakistan towards technology.

5.6. RESEARCH FINDINGS

This research uses an integrated technology acceptance framework developed to identify the user characteristics of information technology acceptance in Police department of Pakistan. The following research questions related to information technology usability were tested.

I. Research Question One

1. Can technology acceptance framework confirm the acceptance of information technology by police officers for utilization of computer in police department of Pakistan?

This research question was answered by testing the research framework used in this study via statistical analysis. The confirmatory factor analysis shows that values of each observed variables loaded well (0.63- 0.90) on their factors/constructs except JFii to job fit (0.63). The range of values of factor loadings was from 0.63 to 0.90. The values of goodness of fit presented in table 5.16 also confirm that the research framework is well fit. The statistical values of confirmatory factor analysis all met the criteria standards for adequacy of fit. All the values of factor loading confirm the assessment of construct validity which is assessed by examining the loadings of the items and their reliability (Cronbach alpha). In addition, the overall fit of the measurement model, as expressed by the goodness of fit index, supports the validity of each construct. Along with it, the squared multiple correlations (value of R and R2) presented in table 5.18 and 5.20 confirm the explanatory power of the research

framework consisting of integrated elements. All these values indicate that the research framework used in this study provides an acceptable explanation of information technology adoption for Police officers using the computers. Thus it can be concluded that the technology acceptance framework verify the information technology adoption of police officers for using computer system in police department of Pakistan.

II. Research Question Two

2. To what extent do the Police officers in Pakistan as users will accept new technology.

This research question was answered by obtaining the responses of respondents. The response rate presented in table 5.12 confirms that majority of Police officers in Pakistan are willing to learn about new technologies for crime investigation, if they are provided with the resources to do so. Similarly the responses presented in fig 5.15 shows that majority respondents feel sense of liking and confidence while using computers. Along with it, they want to use computer in policing for conducting their tasks. All these points show their positive attitude towards computer and other technologies. Hence, it can be said that Police officers in Pakistan can accept new technologies if they are provided with proper resources.

The other findings of the present research are as follows:

- Information technology tools are being used by police officers of Pakistan.
- Police officers having good or high computer skills make maximum use of computers at work.

- Police officers with a lower degree of computer skills don't use computer on daily basis in order to conduct their tasks
- Police officers who have computer skills and use computers regularly, they use almost all of applications of computer.
- Officers who use maximum available applications of computers are more likely to learn about further IT applications in their work.
- High computer skills or knowledge, results in maximum use of computer applications thus opening ways for exploring more benefits of IT in carrying out police tasks.
- The maximum use of computers directs officers to gain a variety of computer-related skills and techniques thus enhancing one's knowledge of the computer as a whole.
- These findings emphasize on computer skills thus creating strong need for training of police officers.
- Police officers in Pakistan feel confidence and sense of liking towards using computers (above 50% positive responses).
- They perceive the use of computers to be easy to use (above 55% positive responses)
- They realize that use of computers meets the requirements of job thus makes their work easy (above 50% positive responses).
- They consider the use of computers in policing a beneficial idea and pleasant experience thus indicating a fairly high level of attitude towards using computers for their work (above 60%)
- They try to use computer as much as possible for their tasks thus having intention to use computers (above 65% positive responses)

- Police officers in Pakistan are not satisfied with availability of enough resources, thus feeling a need for more technology in their department (above 45% negative responses)
- They think that use of computers for conducting their work tasks is compulsory (above 50 % negative responses)
- Awareness of potentials of computers or technology is necessary before proper providing training for a specific system.
- Training and then getting feedback from the users is vital for effective use of technology in police department.
- The psychological factors affecting the maximum use of technology are must to be taken into account before initiating into any IT implementation in police department.

CHAPTER 6

CONCLUSION AND FUTURE RECOMMENDATION

6.1. CONCLUSION

The study provided groundwork for a basic theoretical integrated model that would explain the acceptance or rejection of information technology by police officers. The research framework presented in this study allows identifying the computer systems utilization through evidences gathered from extensive review of literature. This research has addressed the research questions set forth in this study. The research undertaken in this thesis has demonstrated that it is possible to increase the utilization of IT infrastructure by taking into account the users' characteristics. Evidences show that a failure to create or increase the acceptance of technology by its potential users may result in diminishing the desired performance expected from information technology investments. It is required to ensure that officers act positively to utilize information technology in an effective manner by having a rich understanding of their behavior.

The study found that police officers in Pakistan have positive attitudes toward computers and towards the use of computers in their work activities. This is encouraging fact as it has been recognized that computer attitudes influence not only the acceptance of computers, but also their use as professional tools.

Therefore, to have computers widely used in police department, awareness program about the positive aspects of computer systems should be launched in order to develop positive attitudes of officers towards technology.

The study provides a basis for the evaluation of success or failure of large investments by government in computing infrastructure, hardware, and software by examining the real effect of personal utilization of computers. The study can help to enhance the e government policy makers' understanding, with which they can come up with new strategies and plans to increase the usage of computer system in police department of Pakistan. It is expected that the outcomes from this study will not only produce a report about the attitudes of police officers towards computer usage in the current situation, but to provide appropriate suggestions to the relevant management on the policies and steps to be taken. It is projected that such measures will promote the adoption of information technology tools and contributes to performance of police department of Pakistan.

The findings of this research are instructive in the sense that they may offer help both practitioners and researchers in order to recognize the prospective vital constructs of personal computer usage. The technology tools are quickly spreading throughout the world, as well as the law enforcement agencies. Necessary measures should be adopted to ensure the technology is infused into organizations smartly. User friendliness, ease of access, managerial support, sufficient training, and fair use policies are all vital if the police department is to realize the potential benefits from this boom of technology. If police department will gain maximum to full benefits from utilization of technology, then it will ultimately leads to increase its performance. This increased performance will effect for making community more

secure. Thus, for gaining maximum benefits of technology, user's attitudes are necessary to measure. This research provides a framework for measuring attitudes of officers towards technology.

6.2. LIMITATIONS OF STUDY

The main restriction of the present research was time and resource constraints. Due to these constraints, there are some other limitations which are as follows:

- Due to time and resource constraints the subjects were not stratified on the basis of age, educational level, experience and other moderating factors; hence, they were treated as a single group.
- The explanatory and exploratory nature of the topic restricts researchers to go into the depth further. Despite that, this study was the first of its kinds to examine computer system usage in police department of Pakistan.
- The study was focused only on the usage of computer system in police department of Pakistan. It was not carried out in context of other crime investigation related technologies such as forensic and car tracking etc.

6.3. FUTURE DIRECTIONS

- The future research can be carried out in context of other crime investigation related technologies such as geographical information system and forensic sciences etc in Pakistan, as there is little to no research regarding it in Pakistan.
- Further research is also directed to examine the issues of differences in the socio-economic and cultural environments of respondents for accepting technologies.

- Future studies could use various demographic variables to capture a very large state-wide sample to examine the effects of the demographic factors.

6.4. RECOMMENDATIONS

This research provides recommendation to the Electronic Government Directorate and policy makers regarding the implementation of information technology plan and policy.

- It is recommended that the Electronic Government Directorate should continue to carry out the adoption and implementation of information technology especially in agencies.
- It is recommended to assure that education and training are provided properly to Police officers.
- EGD also needs to make certain that the IT infrastructure is in place for the police to access computer systems. As found in this study, the proper distribution of systems' hardware and software, as much as possible, enhances the acceptance of its use, so EGD should ensure that relevant computer facilities are also available along with necessary training to assist them in the crime investigation.
- As the technology has opened ways for both criminals and agencies, so in order to combat with criminal issues the police should have some updated training in order to handle the situation if come across.
- The National Police Academy should consider adding basic and advance IT or computer techniques for crime related courses in order to increase the IT literacy in police officers.

- Electronic Government Directorate which is also responsible for making purchasing decisions about technology hardware and software have to give strong priority to systems that facilitate compatibility , timeliness, user friendliness and quality of information.

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APPENDICES

QUESTIONAIRE

INTERNATIONAL ISLAMIC UNIVERSITY ISLAMABAD

(Department of Management Sciences)

Dear Respondent!

The purpose of this research is to know the Police officer's attitude towards the usage of computers in Pakistan. We request you to help us by providing some of information which you have about this attitude. It is guaranteed that data would be used only for research purpose. Please tick the answer of your choice. Your comments will help us to design further improvements so your comments are very important.

Thank you for your cooperation

DEMOGRAPHIC PROFILE

Age	a) 21-30 years	**b)** 31-40 years	**c)** 41-50 year	
Education	**a)** Graduation	**b)** Master		
No Of years in this Job	a) Less than year	b) 1-5 years	c) 6-10 years	d) more than 10 years
Location of Police station				
Your Rank				

Section One: Introductory Questions

First I would like to get a general idea about your job as a police officer

1. My computer skills are:

( ) Very good
( ) Good
( ) Medium
( ) Poor

2. How often do you use the computer at the police station?

( ) Everyday
( ) Only when needed
( ) Never

3. What are the purposes of using the computer at your station/ unit? *(You can check more than one)*

( ) Database management
( ) others applications(MS office, Excel etc)
( ) Internet connections
( ) All or most above of the above

4. Do you have any idea how the computer can be used to enhance or assist the criminal investigation? *If the answer is Yes. In what area is the computer used most for the police work*

( ) Yes
( ) No

_____

_____

5. Have you ever use computer for crime investigation purpose? *If the answer is Yes. How did you use it?*

( ) No
( )
Yes_____

6. If provided with computers and IT resources, will you be interested in learning more about IT for crime investigation? *If the answer is No, please explain why?*

( ) Yes
( ) No, because

_____

Section II

Please tick the appropriate answer

	Questions	Scale
Intention to Use	Assuming I have access to the computer system, I intend to use it	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	In my work, if I have access to the computer system, I want to use it as much as possible	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	I prefer to use the computer even though I can do my work with other tools	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	I plan to continue using the computer system	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
Job Fit	Using the computer system improves my job performance	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	Using the computer system enhances my effectiveness in my work.	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	The computer system meets the requirements of my job.	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	The computer system increases the communication within the police department	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	I find the computer system to be useful in my work.	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**

Easy to use	I find the computer system to be easy to use.	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	It is easy for me to become skillful at using Computer system.	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	My interaction with the computer system is clear and understandable	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	Interacting with the computer system does not require a lot of my mental effort.	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
Attitude	Using computer in policing would be a beneficial idea.	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	Using the computer system in policing would be a pleasant experience.	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	If I heard about a new information technology, I would look for ways to learn it	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
Facilitating conditions	There are enough computers for everyone to use them in Police Station	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	I have no difficulty finding a computer to use the when I need it.	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	I have enough resources for using computer	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly**

		Disagree
Affect Towards Usage	I feel confidence to use computer	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	I feel some or more anxiety while using computer	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	I feel the sense of liking to use computer	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	I do not want to use the computer system for policing in Pakistan	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
Voluntariness	My supervisor does not require me to use the Computer system	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	Although it might be helpful, using the computer is certainly not compulsory in my job	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**
	My use of the computer system is voluntary	◻ **Strongly Agree** ◻ **Agree** ◻ **Neutral** ◻ **Disagree** ◻ **Strongly Disagree**

ANY COMMENTS

سوال نامہ

انٹرنیشنل اسلامک یونیورسٹی

شعبہ مینجمنٹ سائنسز

!

اس تحقیق کا مقصد پولیس آفیسر کا کمپیوٹر کے متعلق برتاؤ کو پرکھنا ہے۔ہم آپ سے اس متعلق معلومات فراہم کرنے کی درخواست کرتے ہیں۔اس بات کی ضمانت دی جاتی ہے کہ یہ معلومات صرف مقاصد کے لئے استعمال ہوگی۔اپنی پسند کے جواب پر نشان لگائیں۔

آپکی رائے اس تحقیق کو بہترین بنانے میں مددگار ثابت ہوگی۔

خصوصیات آبادی

عمر: 21-30سال 31-40سال 41-50سال

تعلیم: گریجوشن ماسٹر

کے سال: ایک سال سے کم 1 - 5 سال 6-10سال

10 سال سے زیادہ

☐ پولیس اسٹیشن: _____

☐ عہدہ: _____

☐ نام: _____

حصہ اول : تعارفی سوالات

سب سے پہلے ان سوالات کے ذریعے آپ کام کی نوعیت کا اندازہ لگایا جائے گا۔

میری کمپیوٹر استعمال کرنے کی قابلیت ہے؟

☐ بہت اچھی ☐ اچھی

☐ درمیانے درجے کی ☐ کمزور

- آپ کب کب کمپیوٹر استعمال کرتے ہیں؟

☐ ہر روز ☐ ضرورتاً ☐ کبھی نہیں

- آپ کے اسٹیشن/ یونٹ میں کمپیوٹر استعمال کرنے کا کیا مقصد ہے؟

☐ ڈیٹا بیس مینجمنٹ ☐ انٹرانٹ

☐ انٹرنیٹ ☐ اس کے علاوہ یہ سب

۱۔ کیا آپ کو علم ہے کہ کمپیوٹر کس طرح جرائم کی تفتیش کے لئے استعمال کیا جا سکتا ہے؟ اگر ہاں تو بتلائے کہ کس طرح؟

☐ ہاں _____

☐ نہیں

۲) کیا آپ کمپیوٹر جرائم کی تفتیش کے لئے استعمال کیا ہے؟ اگر ہاں تو بتلائے کہ کس طرح؟

☐ ہاں _____

☐ نہیں

اگر آپ کو کمپیوٹر اور انفارمیشن ٹیکنالوجی مہیا کی جائے تو کیا آپ جرائم کی تفتیش کے لئے اس کا استعمال جاننا چاہیں گے؟ اگر نہیں تو بتلائے کہ کیوں؟

□ ہاں

□ نہیں _____

حصہ دوئم

)۔ جب میری کمپیوٹر سسٹم تک پہنچ ہوتی ہے تو اس کو ارادتاً استعمال کرتا ہوں۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

)۔ اگر میری پہنچ ہو تو میں کمپیوٹر سسٹم استعمال کروں گا۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

)۔ میرے کام کے سلسلے میں اگر میری پہنچ کمپیوٹر سسٹم تک ہوتی ہے تو میں اس کو حتی امکان استعمال کرنا چاہتا ہوں۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

)۔ اپنے کام کے لئے کمپیوٹر کو ہی ترجیح دیتا ہوں باوجود اس کے اس کے بغیر بھی کام کیا جاسکتا ہے۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

)۔ کمپیوٹر سسٹم استعمال کرنے کا مستقل ارادہ ہے۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

)۔ کمپیوٹر کا استعمال میرے کام میں بہتری لاتا ہے۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

)۔ کمپیوٹر کا استعمال میرے کام کو مزید موثر بناتا ہے۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

۸)۔ کمپیوٹر میرے کام کی ضروریات کو پورا کرتا ہے۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

۹)۔ کمپیوٹر سسٹم پولیس کے شعبے میں رابطے کو تیز کرتا ہے۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

۱۰)۔ میں کمپیوٹر سسٹم کو کام کے لئے مفید پاتا ہوں۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

۱۱)۔ کمپیوٹر کو استعمال کرنا بہت آسان خیال کرتا ہوں۔

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۱۲)۔ کمپیوٹر میں میرے نزدیک مہارت حاصل کرنا آسان ہے۔

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۱۳)۔ کمپیوٹر کے ساتھ میرا باہمی تعلق شفاف اور قابل سمجھ ہے۔

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۱۴)۔ کمپیوٹر کے ساتھ تعلق کے لئے زیادہ ذہنی کوشش نہیں چاہیے۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

۱۵)۔ پولیس میں کمپیوٹر کا استعمال بہت سودمند ہے۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

۱۶)۔ پولیس میں کمپیوٹر کا استعمال ایک خوشگوار تجربہ ہے۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

۱۷)۔ اگر کمپیوٹر ٹیکنالوجی میں کوئی نئی پیش رفت ہوتی ہے تو اس کے بارے میں سیکھنا چاہوں گا۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

۱۸)۔ اس پولیس اسٹیشن میں کمپیوٹر کی تعداد کافی ہے۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

19)۔ ضرورت کے وقت کمپیوٹر ڈھونڈنے میں مشکل نہیں پیش آتی ہے۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

20)۔ کمپیوٹر استعمال کرنے کے لئے کافی وسائل موجود ہیں۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

21)۔ کمپیوٹر استعمال کرتے وقت میں پُر اعتماد ہوتا ہوں۔

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22)۔ ○ کمپیوٹر استعمال کرتے وقت مجھے پریشانی محسوس ہوتی ہے۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

23)۔ ○ کمپیوٹر استعمال کرنا مجھے اچھا لگتا ہے۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

24)۔ ○ میں پولیس اسٹیشن میں کمپیوٹر کا استعمال نہیں چاہتا ہوں۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

25)۔ ○ میرا باس نہیں چاہتا ہے کہ میں کمپیوٹر استعمال کروں۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

26)۔ اگرچہ کمپیوٹر بہت مددگار ہے لیکن اس کا استعمال ضروری نہیں ہے۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

2)۔ میں کمپیوٹر کا استعمال اپنی مرضی سے کرتا ہوں۔

□ پُرزور متفق □ متفق □ نہ متفق نہ مخالف □ مخالف □ پُرزور مخالف

آپ کی رائے: _____