



**UNIVERSITY OF NAIROBI**

**SCHOOL OF COMPUTING AND INFORMATICS**

**MASTER OF SCIENCE IN INFORMATION TECHNOLOGY MANAGEMENT**

**COURSE: CCT 509 - RESEARCH**

**P54/ 65595/2013: ATINGA MOCHA ERIC**

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**PROJECT TITLE**

Police e-readiness assessment: a case study of five Kenyan police stations

**AFFILIATION:**

A Research project submitted to the School of Computing and Informatics in partial fulfillment of the requirements for the award of the degree of MSc. Information Technology Management of University of Nairobi.

Signature.....

Date:.....

## **DECLARATION**

This study report is my original work and has not been presented for an award of a degree in any other University.

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This Project has been submitted for examination with my approval as University Supervisor.

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## **ACKNOWLEDGMENTS**

I would like to express my sincere acknowledgement to the National Police Service (NPS), Kenya for granting me the opportunity to undertake this project by collecting data in the selected police stations. I also would like to express the most heartfelt thanks to my family for their support and patience during my extensive studies.

In addition, I would like to express my sincere gratitude to Dr. Chepken Christopher for the invaluable encouragement, guidance and discussions that helped me accomplish this study.

I also would like to thank the Usalama Reforms Forum staff for the role they played in making sure I understand a number of aspects when working on police matters. In fact, I would like to extend a hand of gratitude to all of them for their encouragement, invaluable assistance and advice, and most importantly, for their understanding during the completion process of my dissertation.

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## ABSTRACT

Information technology has become an increasingly important factor in carrying out police operations way from information capturing, prediction of crimes, taking finger prints, surveillance, investigations, decision formulation, among others. The efforts to adopt information technology largely depends on existence of comprehensive metrics for measuring readiness of any organization, department, firm or company as it is very crucial to planners and policy makers. To that end, there have been a number of frameworks developed and tested on e-readiness but few, if any, exist that have been formulated or tested to be used in gauging the e-readiness of policing organization. A good number of the maturity models developed have either focused on a government as whole or other organizations like the health sector, education sector and the private sector. Further, most of these tools disregard the internal organizational culture and structure of administration. The rigidity of police organizations and their relative difference in culture makes it a unique area that is worth studying and establishing factors that may be necessary to implement information and communication technology.

This study was aimed at defining organizational requirements that are necessary for the determination of the level of e-readiness in the police station in Kenya. This was accomplished by reviewing available literature on already developed e-readiness models and selecting one that relates closely to the police station setup. Thus, this study contributes an integrated e-readiness model for assessing the e-readiness of police stations in Kenya. The study was conducted in five police stations/camps in Kenya selected based on geographic location and the branch of police service i.e. the Administration police service and the Kenya police service. As such, this study sought to extend work done previously particularly in the literature review and the processes dimension by laying emphasis on the Perceived E-Readiness Model and introduction of two more factors into the Perceived organizational E-readiness construct.

Further this study revealed that most of the police stations and camps are at moderate levels of readiness that requires initiatives like training of officers, purchasing of more computer equipment's, enhancing access to internet, creating more awareness and coming up with policies to govern the use.

**Keywords** E-policing, e-readiness, ICT adoption in police, Police e-readiness framework

## **ABBREVIATIONS**

CSPP	-Computer Systems Policy Paper
EGDI	-E-Government Development Index
ICT	- Information and Communication Technology
IT	-Information Technology
OB	-Occurrence Book
OCPD	- Officer Commanding Police Division
OCS	-Officer Commanding Station
PEER	-Perceived Environmental E-Readiness
POER	-Perceived Organizational E-Readiness
TAM	- Technology Acceptance Model
UK	-United Kingdom
UN	-United Nations
UTUAT	- Unified Theory of Use And Acceptance Of Technology

## **1.0 CHAPTER ONE: BACKGROUND INFORMATION**

According to Janet Chan, et al. (Sep. 2001), historically, technology has revolutionized police practices. The introduction of the telegraph in the late nineteenth century and the use of two-way radios, motor vehicles and computer-aided dispatching during the twentieth century have brought about dramatic changes in the organization of police work and, with them, new public expectations of police services. They further argue that there is, therefore, every reason to expect that the latest round of technological change — the information technology revolution — will have an equally dramatic impact on policing.

In Kenya, the police station is the smallest unit in the hierarchy of policing. It is the point where data about crime is collected and criminal activities detected and prevented. The police have various roles including enforcing the law, keeping peace , protecting life and property, carrying out patrols, investigations- where they are required to write reports, prepare cases and testify in court among other duties where timely credible information systems are vital,( Egon1975). To enhance the police ability in carrying out these functions, the police need to have efficient and effective systems of processing, storing and retrieving crime information. How the various police roles are prioritized will, without doubt, have an impact on the policing of any society and how the safety of that place is defined. This can be determined by the tools and resources at their disposal in executing their mandate.

The work of the police is characterized by quick decision-making, working independently, ‘dirty work’, and danger meaning a lot of care must be exercised during the execution of the police’s mandate. The fact that crime and criminal activities have evolved so much makes it very difficult to comprehend the complexity of criminal trends and consequently provide viable solutions without use of computer systems that can constantly provide information on the trends and assist

to predict crime evolution. A recent study by, Berglund, E. (2005) shows that there is a widespread use of information retrieved from electronic records. This has changed the possibilities for police officers to get reliable and authentic information for both tactical and legal decisions, which increases the officers' ability to make more precise decisions in their day to day work.

Several recent studies have shown that information technology and information systems now handle many clerical tasks, and allow access to and searching of electronic information independently of the physical location of the users. It is evident that police stations receive large volumes of data on a daily basis, for example, in the year 2013, crime statistics in Kenya stood at 360,285 (Kenya annual crime statistics report 2013). This is from the 586 police stations in the country, meaning that on average, a police station handled 6000 cases that year- keep it in mind that these are cases that ended up in courts. Meaning some of the crime data recorded in the police stations and not followed up by complainants still was available but little was done to it other than being recorded in the Occurrence book. Further, as society and the nature of crime grow more complex, the structure of the data required to properly process crime data in order to make meaning out of it become more complex as well. These complexities soon overwhelm the ability of a manual system and even some more rudimentary computer-based systems.

The business of fighting crime by police runs on information. There is information about criminal incidents and information about potential offenders, information about characteristics of victims and offenders all of which might be a nightmare when it comes to processing by use of manual systems. Recent research has shown that most of the crimes are repetitive and are committed in the same places by same few people. According to Chandler Harris (December 21, 2008), criminal

behavior often follows identifiable patterns that can be used to predict criminal acts. This can be achieved by collecting, processing and storing data using information intelligence techniques that can be supported by effective ICT.

In fact, Maltz, Freidman, and Gordon (1991) maintain that “information is the lifeblood of the police” (p.12). The amount of information that the police receive during enforcing the law is overwhelming (Gottschalk, 2006). Police use information technology tools at almost every stage, including allocation of resources, patrolling, crime prevention, crime tracking, hot pursuits, and crime solving. Colvin and Goh (2005) assert that information technology has substantial impact on police practices. In addition, any increased acceptance of information technology by police officers improves the quality of policing and performance of law enforcement agencies (Gottschalk & Holgersson, 2006).

According to the Kenya ICT Master Plan Taskforce Report (2014), an integrated security, intelligence and surveillance system project will be implemented. Central to the effort will be a personal information data hub, a cross-agency database and master data platform, data warehouse, crime analytics, and profiling platform, as well as broadband connectivity in police stations. This is a clear indication that the Kenya government intends to implement digitization in police stations

As the police stations in developing countries are warming up towards computerization just like any government agencies, the how, when, who and what in relation to understanding the vital factors on implementation still remains unclear. For instance, recently the Kenya government announced an intention to install closed circuit televisions to assist in carrying out surveillances, but the question is; is there a clear tested model/tool that will aid the understanding of the

underlying factors to carry out a cost effective implementation process? Is there a proper understanding of the risks involved?

In most instances deployment of information systems has failed due to lack of understanding the levels of preparedness and determining the readiness of the organization considering the exceptionality of the organization in relation to the project to be deployed. Dada (2006) notes that, the achievement of high levels of e-readiness is being increasingly heralded as one of the top priorities for developing countries. Furthermore, a growing amount of time, money and effort is being invested in calculating the level of a country's e-readiness.

There exists many e-readiness maturity models with varied parameters of measurements and focused on many fields. These tools include but not limited to Diffusion of Innovations (Rogers, 2003), Technology Acceptance (TAM) (Davis et al., 1989), Unified Theory of Acceptance and Use of Technology (UTUAT) (Venkatesh et al., 2003), Theory of Reasoned Action (TRA) (Ajzen&Fishbein, 1975). Despite all these, few studies have been conducted in law enforcement setting to examine their applicability within the police department or organization. Manning (2003), notes that since the police organizations tend not to disclose their activities publicly, their adoptions of information technology are not well identified and studied by researchers. Other aspects need to be considered. For example, each profession has different structures, cultures, and administrative features. In addition, police agencies have unique characteristics and different features in terms of organizational structure; therefore, it is really difficult to make generalizations about them (Sheptycki, 2004). Thus, for accurate understanding of an organization e-readiness in each occupation, different instruments need to be developed. For example, Cork, Detmer, and Friedman (1998) argued that similar structures of attitudes and

beliefs cannot be known for different professions. They also claimed that each member of a different occupation has different attitudes regarding information technology adoption. A unique design for just one type of profession can address the acceptance and use of information technology to obtain accurate measurements (Colvina& Goh, 2005). Clearly, there is a need to develop an instrument designed for information technology acceptance for law enforcement settings. Additionally, the variety of work in policing, including personnel management and fighting different kinds of crimes, affects the adoption and usage of information technology and requires comprehensive tools. In this context, there is a need to understand the metrics and issues: what the primary elements of successful adoption of information technology are, what the primary blocks to acceptance are, policies, and what the aspects of law enforcement culture that are significantly different from the private sector corporate environment are, for the purpose of understanding introduction of ICT to policing institutions

In this study therefore, we explored the various frameworks that are vital to adopt information technology in police stations especially in developing countries and came up with a more comprehensive framework that encompass much of the aspects in the available frameworks and extend the features and variables that fit the police organization.

This study therefore, highlights challenges and opportunities existing in a field that little research has been done on and hence tries to compare what has been done in other fields to determine whether the findings are applicable and if not, come up with recommendations on the best model to be adopted as a tool for gauging e readiness in police stations particular in crime information management.

## 1.1 Definition of terms

This section looks at the various definitions that have been provided by various researchers and institutions in an effort to define the term e-readiness. From this, it is evident that the term e-readiness has varied definitions depending on one's area of research.

**E – Readiness:** Choucriet *al.*, (2003) points out that e-readiness is a relatively new concept that has been given impetus due to the dramatic advances in uses of information communication technologies and more particularly the rapid rate of Internet penetration throughout the world in business and industry. He therefore defines it in relation to a society that has the necessary physical infrastructure and a strong legal, policy and regulatory framework to competitively engage in the global information age. On the other hand, Little and Bose (2004), defines e-readiness as “the degree to which a country is prepared to participate in the networked world by assessing its advancement in areas that are most critical to the adoption of ICTs”. According to Wikipedia online encyclopedia; E-Readiness is the ability to use information and communication technologies to develop one's economy and to foster one's welfare. GMCT Information and Communication Technologies (2003), defines e-readiness as the extent of readiness in access to network infrastructures and technologies. While Economist Intelligence Unit (2009) defines it as a measure of the quality of a country's ICT infrastructure and the ability of its consumers, businesses and governments to use ICT to their benefit

For purpose of this paper, we shall define e-readiness as a measure of the degree to which a country or nation or organization is ready or willing or prepared to obtain benefits arising from information and communication technologies. This measure is often to gauge the status of an organization in relation to undertaking of ICT projects and therefore take advantage of the benefits presented by it.

**Computerization:** to control, perform, process, or store (a system, operation, or information) by



means of or in an electronic computer or computers.

**E-policing:** for the sake of this article, it will mean use of information technology in police functions

**E-readiness Tools / frameworks:** Variables used to gauge the readiness of the police as an institution for adoption of information technology systems.

## **1.2 Problem statement**

Lack of ease of access to crime data and other important information in the police station leaves newly transferred police station Commanders with options of guesswork and learning through day to day experiences. This is compounded by other challenges like lack of enough human resource, inefficient data storage, processing and retrieval systems, lack of enough storage space, among other challenges. This puts the community under very dangerous situation due to lack of proper and evidence based police decisions which are largely relying on speculations founded on hearsay which may be misleading as it is not void of prejudices and personal perceptions. Thus if data collected is correctly processed, stored and easily retrieved on request and in the right format, it can be of great importance to the police and the safety of the society will be enhanced.

According to the Kenya daily nation (Walubengo, July 8, 2013), research shows that globally, up to three quarters (75 %) of ICT projects end up in failure. He puts forward various reasons among them lack of e-readiness assessments which hinder implementation and also lead to obscured requirements thus ending up derailing the project and finally making it fail.

According to Gichoya M. (2007), Most of ICT projects that fail are partly as a result of poor planning that emanates from poor e-readiness assessments to detained specific requirements of

the project before any steps of adopting the same. He further notes that, it is important that all stakeholders of any project understand the importance of the e-readiness assessments.

As much as there are a number of maturity models and frameworks used to measure various aspects of readiness in the society and the fact that these tools are readily available does not assist either. This is for the reason that each of the tools is either too generic or focused on specific sectors that may not necessarily address the issues of computerization in other organizations like the police.

From the available literature, it is apparent that there exists very few studies that have been carried out either in Kenya or in most of the developing countries to come up with a framework or a tool that can be adopted and used by policy makers in the police to adopt information systems bearing in mind that the police as an institution has a wide range of differences from the other institutions in terms of culture, the way they keep information, how they are structured, the manner in which they operate and eventually the sensitivity of the data/information they handle. This is in agreement with the findings of Rachael L. et al. (2014) that technology acceptance in policing is under-researched, yet mobile devices are widely implemented across in some police stations like the UK.

This paper carries out a critical review on the concept of e-readiness framework, with a special focus on police stations in Kenya. In this light, a new model is developed and tested which gives importance to both e-readiness (the environment) and technology acceptance (the organization), in order to gain a richer understanding of the police station computerization.

### **1.3 Research objectives**

This study is focused in gauging the level of preparedness in the Kenya police stations to adopt information technology in its operations by testing the various already developed e-readiness frameworks. The study will, further, recommend an integrated framework that can be adopted in the Kenya police station situation to gauge preparedness of the station to adopt information technology at the station level. In summary, this study sought to:

1. Review exiting e-readiness tools used to measure e readiness including and determine their suitability in measuring e-readiness in the police station.
2. Propose an integrated framework /tool that could be adopted by police policy makers to assess the police's state of e readiness using clear set out indicators/parameters vital for ICT adoption in policing.
3. Test the framework and recommend its ability to gauge police station e-readiness.

### **1.4 Research questions**

The study seeks to address the following questions:

1. What are the commonly used e readiness majority frameworks/tools for determining e readiness of ICT adoption? Are the various parameters applicable to the police as an organization in developing countries?
2. What indicators/variables should be considered in assessing the readiness of a police station when deploying an ICT project?
3. What are the expected challenges associated with the process of measuring e-readiness using the newly proposed tool?

### **1.5 Scope of the study**

The purpose of this research paper was to provide the policing profession in developing countries like Kenya with an e-readiness framework that can be used to assess and ascertain level of preparedness of a station to adopt an ICT project with less risks of failure.

The fundamental principles and components of e-readiness models in use in the police and other similar organizations were examined, along with research developments being undertaken today that have the potential to directly enhance ICT adoption in police stations. As a source document for police policy makers it did not present new scientific research or highly technical data.

This research focused on the police station as the main area of study and its readiness to adopt information technology. The stations were selected based on their geographic location like in an urban setup, semi urban and rural based police station. Since research has indicated that various parts of countries have different levels of e-readiness abilities. This ensures validity of our data sources and also help decision makers appreciate differences presented by geographical locations and other demographic differences.

The paper reviewed and assessed ten existing e-readiness frameworks strongly related to e-readiness in order to come up with one that is most appropriate and representative of the police organization.

### **1.6 Justification**

The adoption of technologies by organizations is premised on their status of readiness (Fathian et al., 2008; Uzoka et al., 2007). Assessment of the current status of ICT adoption in organizations helps to understand if ICT policies and implementations are working and how to address failing

issues (Uzoka et al., 2007). As noted by TrywellKalusopa (2010), in most developing countries e-readiness assessments have formed the basis for the development of ICT policies that have guided the development of an information society and facilitated e-government (Little and Bose 2004). The National Policy for ICT Policy (2007: 5) for development also acknowledges this as an essential component of information technology adoption. Introduction of information technology in police stations needs to be informed by clear assessments on the abilities of the police stations to absorb and succeed in adopting information technologies.

According to recent research by Abida E.& Irfan M.(2010), various tools and models have been developed and used to carry out e readiness assessments for various ICT projects adoption and implementation; Most of them focusing on the wider government initiatives. The results show that used by themselves, such measures do not help in terms of development as they tend to focus on the wider environment while ignoring the level of the organization.

Research on technology has focused narrowly on the managerial potential of the systems rather than on employee morale or performance, control or management of crime, or delivery of enhanced services that improve the quality of community life and citizens' satisfaction with policing. (Manning 1992a, pp. 389–90) .This study is therefore important since there are few studies which have been done to produce frameworks for carrying out assessments in police stations as they are unique in their nature (sensitivity in information capturing, sharing and general operations). Furthermore most of the frameworks existing are centered on non-law enforcement organizations like businesses, banks, other government agencies and the general society.

The research area is unique from others in the following ways

- Culture of the organization: Operates in a highly “business-like” fashion with extensive formality of rules. While other organizations pride themselves on operating in a highly informal, relaxed fashion.
- The nature of their planning, policies and procedures (most of their operations are supposed to be real time action)
- Size of the organization: in terms of the number of divisions, products and services, and personnel .This features are most often associated with specific organizational issues.
- Bureaucracy thus affecting the way in which administration of police units is done
- Structure and strategies of the organization: In this context, strategies refer to the overall approaches used by the organization to effectively meet the needs of its external environment including the type of their clients.
- Police attitude and therefore acceptance of usage in the police setup

It has also been found out that with any new project, it is important to take the time and conduct an assessment. Organizations that do not conduct a thorough assessment are not able to ascertain the conditions necessary for a successful project. Often the perceived current condition is not reality and therefore the entire process of adopting information technology has a potential of failing when requirements are unclear thus leading to expensive failures that can be avoided. Project readiness evaluation process is a systematic look at the full spectrum of implementation issues. The evaluation process should examine the potential impact to the organization, people, technology and process with a deliberate focus on the key success factors for planned implementation, Celwyn (2013).

In brief, having a readiness assessment tool accrues several notable advantages among them:

- Helps to ascertain the true picture of the current state of readiness as possible
- The assessment answers not only how prepared the organization is for the project, but why they are in that particular state of readiness.
- Minimizes cost over runs and budget creep
- Reduces project delays
- Improves communication

Stephen et al. (2006) argues that most of the existing e-readiness tools fail to adequately address issues related to different organization by taking into consideration the nature of the operations the institutions carry out, their culture and form of administration. In 2001, bridges.org undertook a detailed study comparing some of the most commonly used tools available. It concluded that each tool had its own set of benefits and limitations and therefore they ought to be carefully selected in order to fulfill the required goals. He further added that most of the tools needed redesigning in order to be comprehensive assessment tools. For instance, measures of physical ICT infrastructure and education are popular factors in e-readiness assessments tools. Existing tools provide unsuitable parameters and factors in assessing the comprehensive e-readiness of organizations and are always matched by policy and economic environment surroundings (Rizk, 2004). Stephen et al. (2006) suggest that a new e-readiness integrated tool is needed that highlights information access and also co-locates the different segments of organizational, ICT, human resources, and external readiness. In addition to ignoring organizational issues, existing tools have not placed sufficient emphasis on e-readiness in police station organization.

## **2.0 CHAPTER TWO: LITERATE REVIEW**

Digital integration, with its information technology (IT) infrastructure, and its applications of e-government, e-commerce, e-policing, and other e-applications, is becoming of increasing importance, as a vital tool for development, both nationally and internationally. During the last decade, many leaders in government, business, and social organizations around the globe have considered how best to harness the power of IT for development.

E-readiness assessments are meant to guide development efforts by providing suitable tools for comparison and gauging progress. Several e-readiness initiatives have been launched to help countries in various fields, and numerous e-readiness assessment tools have been created and used by different groups, each looking at various aspects of IT, society, and the economy. This paper is concerned with the comparison of the e-readiness assessment tools in regard to different kinds of organizations and how they can be adopted to the police station situation

In the first section of this chapter; the e-readiness origin, definition, background and importance will be reviewed. In the next section, the focus will shift to reviewing of the existing e-readiness tools. At the end of this section, a comparison of the mentioned tools will be presented. Finally, a validated model/tool for assessing the e-readiness in police stations will be developed.

### **2.1 Origin of the e-readiness concept**

E-readiness is a relatively new concept that has been given impetus by the rapid rate of Internet penetration throughout the world, and the dramatic advances in uses of Information Technology (IT) in business and industry (Choucri et al., 2003, p. 2). The e-readiness concept was originated by the intent to provide a unified framework to evaluate the breadth and depth of the digital divide between more and less developed or developing countries during the latter part of 1990's



(Mutula& van Brakel, 2006: 212).

The first efforts in defining e-readiness were undertaken in 1998 by the Computer Systems Policy Project (CSPP) when it developed the first e-readiness assessment tool known as Readiness Guide for Living in the Networked World. It defined e-readiness with respect to a community that had high-speed access in a competitive market; with constant access and application of ITs in schools, government offices, businesses, healthcare facilities and homes; user privacy and online security; and government policies which are favorable to promote connectedness and use of the network (CSPP, 1998).

According to Stephen M. Mutula(2013), the concept of 'e-readiness' emerged because it became necessary to provide a unified framework to evaluate the breadth and depth of the digital divide at macro level between more and less developed countries during the late 90s. E-readiness measures the capacity of nations to participate in the digital economy. It is also perceived as the measure of a country's ability to leverage digital channels for communication, commerce and government in order to further economic and social development (Economist Intelligent Unit/IBM Institute for Business Value, 2008). Since the development of the first e-readiness tool, several e-readiness tools have emerged through efforts of development agencies, research organizations, academia, business enterprises and individuals. Bridges.org divides existing e-readiness assessment tools and models into two main categories with considering their perspective: e-society and e-economy. In fact "e-society" tools incorporate business growth and use of IT as part of their larger analysis, and consider business growth necessary for society's e-readiness. "e-economy" focused tools also include some factors of interest to the larger society, such as privacy and universal access (bridges.org, 2005).

## **2.2 Why organizational e-readiness**

The Knowledge Economy is emerging from two defining forces: the rise in knowledge intensity of economic activities, and the increasing globalization of economic affairs. The rise in knowledge intensity is being driven by the combined forces of the information technology revolution and the increasing pace of technological change. Globalization is being driven by national and international deregulation, and by the Information Technology (IT) related revolution. (Houghton and Sheehan, 2000: 2)

In fact, when IT is used properly, it offers tremendous potential to empower people in different organizations to overcome development obstacles. But in order for a country to gain the benefits offered by IT, technology must be implemented and used effectively across society and the economy. Moreover, organizations like police face the threat of being left behind if they do not address the growing digital divides both within and with-out the organization. Many developing country leaders have embraced IT as an engine for growth and development to help their nations, and they are driving the necessary changes to make that happen. However, translating a grand vision into practical steps that fit the local context, and then executing it effectively, is often easier said than done. Decision-makers need to know where the organization currently stands in terms of IT availability and use, so they can plan toward their goals to knowledge economy or knowledge society. Governments and development aid professionals often frame this discussion in terms of "e-readiness", or how ready a country is to gain the benefits offered by IT in terms of policy, infrastructure and ground-level initiatives. An e-readiness process based on an objective assessment that leads to sound e-strategies can offer a path for converting good intentions into planned action that brings real changes to people's lives (bridge.org, 2005).

E-readiness assessments are also useful in understanding and identifying the most key and relevant IT based development opportunities. For example, to put IT to effective use, a country must be 'e-ready' in terms of infrastructure, the accessibility of IT to the population at large and the effect of the legal and regulatory framework on IT use, benchmarking progress, collaborations, determining vision, strategy, and priorities (Dockett, 2002). Furthermore, e-readiness assessment enables organizations to set, measure and achieve realistic goals for an information society, information-based services, or planning for deployment. It is important to develop and conduct an e-readiness assessment so that the results can be leveraged to catalyze action, improve global competitiveness, and use limited resources wisely.

### **2.3 Existing literature on police adoption of information technology**

Researches on policing and technology adoption conducted in the recent past have basically centered their investigations around factors affecting adoption and diffusion of information technology in public sector organizations (Al-Zaabi H. et al, 2012), measuring the attitudes of police officers towards the use of information and communication technologies in policing (AB. Latiff AB, et al, 2007), investigations of challenges faced during computerization from security e-readiness perspectives (Charles N. Tarimo, 2006) and determining factors that affect the end-users' technology adoption in a government organization (Saadiyah Binti Kadir, 2013).

For instance, Al-Zaabi H. et al (2012) carried a study on the factors affecting information technology adoption and diffusion in the police service in UAE and noted that as much as e-government is reliant upon the provision of ICTs, there are many obstacles facing adoption of technology in policing such as cultural issues, inexperienced staff, and resistance from citizens and staff in different organizations as identified by Hesson (2007). Similarly AB. Latiff AB, et al (2007) carried out a research on attitudes towards ICT and working with computers at the Loyal

Malaysian Police workforce and the findings indicated that attitude of individual police officers were key in adoption process as they can lead to failure of ICT projects in the police organization if not well managed. Other factors focused on in studies relating to e-readiness and technology adoption that relate to this study include a research carried out by Haslinda Sutan Ahmad Nawi, Azizah Abd. Rahman and Othman Ibrahim (2014) who were looking at the factors that cause government ICT projects to fail. They noted that contextual factors like organizational culture, employee attitudes and leadership factors were vital and should not be overlooked.

From this literature it is notable that most of the researches on policing and use of technology has been around issues to do with social and organizational culture factors like attitude (Diamond and Freeman 2002:570), culture, leadership and structure of decision making. This presents an opportunity for this study to further explore these factors and provide their validity by collecting data to measure their significance in assessing police station e-readiness.

#### **2.4 Existing e-readiness frameworks**

Considering the importance of the e-readiness assessment, several organizations, academia and researchers have suggested different tools. Arce and Hopmann, (2002:1) confirms that the emergence of the concept of e-readiness attracted the development of various e-readiness assessment tools by different companies, organizations and groups, with each claiming that its tool would help diagnose the current situation and orient steps to narrow the digital divide .

Many theories and models including Diffusion of Innovations (Rogers, 2003), Technology Acceptance (TAM) (Davis et al., 1989), Unified Theory of Acceptance and Use of Technology (UTUAT) (Venkatesh et al., 2003), Theory of Reasoned Action (TRA) (Ajzen&Fishbein, 1975), Theory of Planned Behavior (TPB) (Ajzen, 1991), Technological, Organizational and Environmental (TOE) Framework (Tornatzky& Fleischer, 1990) , Perceived E-readiness Model

(PERM) Mollar and Licker (2005) and Emerging IT Framework (Cegielski et al., 2005) were considered. This Section gives a more details of the above e-readiness tools /models and theoretical development of the antecedents for policing organizational readiness.

#### **2.4.1 Technology-organization-environment framework**

The technology-organization-environment (TOE) framework was created by Tornatzky and Fleisher (1990). It describes factors that influence technology adoption and its likelihood. TOE describes the process by which a firm adopts and implements technological innovations are influenced by the technological context, the organizational context, and the environmental context (Tornatzky and Fleisher 1990). The technological context includes the internal and external technologies that are relevant to the firm. Technologies may include both equipment as well as processes. The organizational context refers to the characteristics and resources of the firm, including the firm's size, degree of centralization, degree of formalization, managerial structure, human resources, amount of slack resources, and linkages among employees. The environmental context includes the size and structure of the industry, the firm's competitors, the macroeconomic context, and the regulatory environment (Tornatzky and Fleisher 1990).

#### **2.4.2 Diffusion of Innovations Theory**

Diffusion of innovations theory seeks to explain how, why, and at what rate new ideas and technology spread through cultures. Everett Rogers, a professor of communication studies, popularized the theory in his book Diffusion of Innovations. Rogers proposes that four main elements influence the spread of a new idea: the innovation itself, communication channels, time, and a social system. This process relies heavily on human capital.

### **2.4.3 Perceived E-readiness Model (PERM)**

The model has two constructs as proposed by Molla and Licker (2005) i.e. the Perceived Organizational E-Readiness (POER) And Perceived Environmental E-Readiness (PEER). Further research done by Hayat Ali & Amal Alrayes (2014) concluded that the use of POER was highly effective in determining the external factors of e readiness assessment and the PEER provided effective criterial for measuring internal readiness for ICT adoption. The model takes cognizance of organizational factors (POER) such as awareness, human resources, business resources, technology resources, commitment, governance and environmental factors (PEER) such as government e-readiness, market forces e-readiness and support industries e-readiness, when making adoption decisions.

### **2.4.4 The Computer Systems Policy Project (CSPP)**

**The Computer Systems Policy Project (CSPP)**- a public policy advocacy group comprising of IT companies from the US. CSPP perceived e-readiness with respect to a community that has (Bridges.org, 2001) high-speed access in a competitive market; Constant access and application of ICTs in schools, government offices, businesses, healthcare facilities and homes; User privacy and online security; and Government policies that promote connectedness and the use of the network.

### **2.4.5 The Centre for International Development**

**The Centre for International Development** at Harvard developed the e-readiness assessment tool known as 'Readiness for the Networked World'. This tool assesses e-readiness according to whether or not a society has the necessary physical infrastructure (high bandwidth, reliability and

affordable prices); integrated ICTs throughout businesses, communities and government; and universal access (Bridges.org, 2001).

#### **2.4.6 McConnell International and World Information Technology and Services Alliance**

Correspondingly **McConnell International**, jointly with the **World Information Technology and Services Alliance** (WITSA), developed the 'Risk E-Business' tool in 2000, which views e-readiness in relation to whether a country has (Bridges.org, 2001): an extensive pervasion of computers in schools, businesses, governments, homes etc.; affordable and reliable access to the Internet in a competitive market; free trade; a skilled workforce; high standards of education and training in schools; a culture of creativity; government-business partnerships; transparency and stability in government; an evenly enforced legal system; secure networks; personal privacy; regulations allowing digital signatures and encryption; and consumers' trust in e-commerce security and privacy.

#### **2.4.7 Technology Acceptance Model- TAM**

This is a theory that models how users come to accept and use a technology. The model suggests that when users are presented with a new technology, there are two major factors determine their motivation towards the same viz:

- i) Perceived usefulness (PU) – This was defined by Fred Davis as "the degree to which a person believes that using a particular system would enhance his or her job performance".
- ii) Perceived ease-of-use (PEOU) – Davis defined this as "the degree to which a person believes that using a particular system would be free from effort" (Davis 1989).

The TAM has been improved continuously to get other versions like TAM2 (Venkatesh& Davis 2000 & Venkatesh 2000) and the Unified Theory of Acceptance and Use of Technology (or UTAUT, Venkatesh et al. 2003). A TAM 3 has also been proposed in the context of e-commerce with an inclusion of the effects of trust and perceived risk on system use (Venkatesh&Bala 2008).

#### **2.4.8 Bridges.org**

Generally, Bridges.org (2001) views e-readiness from the perspective of those who are not benefiting from IT, and which societies are not 'e-ready.' Many reports generated or referenced by Bridges.org study the digital divide and make recommendations. Like the tools already described, digital divide reports use a range of methods and standards for evaluating e-readiness. However, unlike e-assessment from an analysis of the various definitions and perceptions of 'e-readiness' described above, the concept is taken in this to mean a society characterized by the pervasive availability of access to high speed, good quality networks; the use of ICTs in everyday life, e.g. in records management (e-records), and content management (i.e. knowledge and information management); high levels of literacy; the presence of national enabling ICT policies; the right physical infrastructure (high bandwidth, reliability, and affordable prices).

#### **2.4.9 Mosaic's Global Diffusion of the Internet Project**

Created by the Mosaic Group, this framework has evolved over time, and there are a number of variants. It was created "to measure and analyze the growth of the Internet throughout the world." The research captures the state of the Internet within a country at a particular point in time," by measuring six dimensions: Pervasiveness (per capita usage), Geographic dispersion, Sectoral absorption (usage within major sectors of the economy), Connectivity infrastructure, Organizational infrastructure (the state of the Internet service market), Sophistication of use.



#### **2.4.10 APEC's E-Commerce Readiness Assessment**

The Asian Pacific Economic Cooperation (APEC) Electronic Commerce Steering Group developed this guide to help governments develop their own focused policies, adapted to their specific environment, for the healthy development of e-commerce." Six categories are measured for "readiness for e-commerce:"

- i. Basic infrastructure and technology (speed, pricing, access, market competition, industry standards and foreign investment).
- ii. Access to network services (bandwidth, industry diversity, export controls, credit card regulation).
- iii. Use of the Internet (use in business, government, homes).
- iv. Promotion and facilitation (industry led standards).
- v. Skills and human resources (ICT education, workforce).
- vi. Positioning for the digital economy (taxes and tariffs, Industry self-regulation, government regulations, consumer trust).

#### **2.4.11 CID's Readiness for the Networked World**

The Center for International Development at Harvard University developed this guide. It was published in 2000. The guide systematically organizes the assessment of numerous factors that determine the networked readiness of a community in the developing world." It measures 19 different categories, covering the availability, speed, and quality of network access, use of ICTs in schools, workplace, economy, government, and everyday life, ICT policy (telecommunications and trade), ICT training programs, and diversity of organizations and

relevant content online, and provides a grid with descriptions of four stages of advancement in each of 19 categories (placed into five groups). "The guide does not offer prescriptions for improved readiness" (Bridges, 2001, 2005; CID, 2000).

## **2.5 Research gap**

Despite several models and frameworks proposed for e-readiness as can be demonstrated from literature above, there has yet to be a unifying framework/model to assess police organizations' readiness to adopting ICT in the stations. It has been argued that it is challenging to provide a unifying theory to fit adoption of innovations and that frameworks should be built to fit the context of the area being investigated (Molla& Licker, 2005).

According to Salah K. Kabanda and Irwin Brown (2015) The TAM, TPB, UTAUT and DOI are suitable for examining the individual level of adoption, whilst the TOE framework and PERM are often used at firm level (Oliveira & Martins, 2011). This study therefore adopts Molla and Licker's (2005) Perceived eReadiness Model (The PERM as shown in figure 1) for identifying organizational and environmental/external factors that affect E-readiness, given that it focuses on both internal and external factors to measure e-readiness.

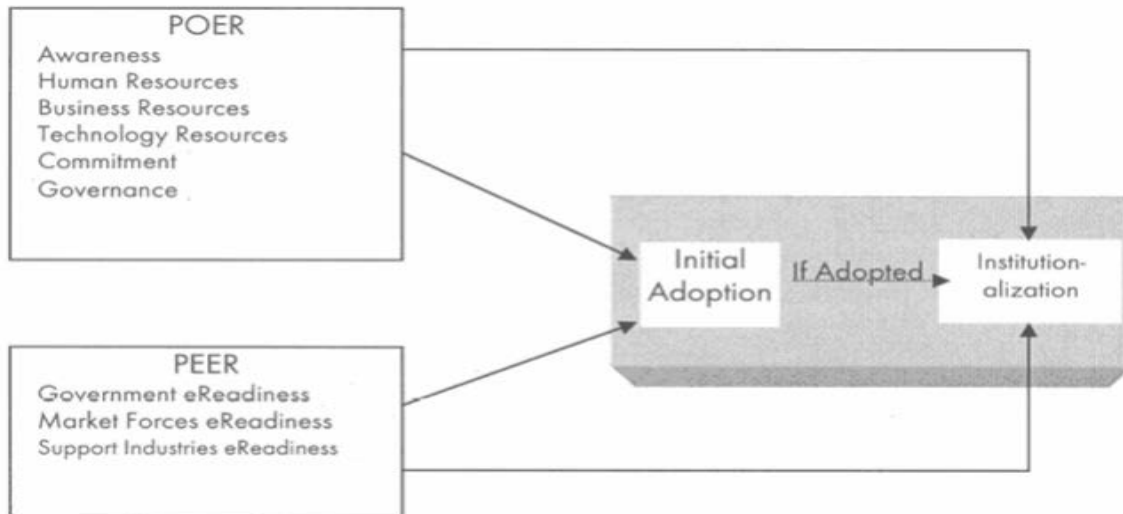


Figure 2.5-1 A model of E readiness assessment for ecommerce. Molla and Licker, 2005

Further, it is evident that most of the e readiness models and tools available are majorly generic and focuses on other sectors other than the police organizations. Consequently most of them have not specifically looked at the readiness in connection to specific organizations but are generally trying to measure an economy or country's readiness. Therefore, it is essential to come up with a more relevant model that is applicable in the police organization context. In contributing towards this goal, this study first reviewed the readiness literature in general and the E- readiness literature in particular in light of the police context by combining parameters identified in the framework and adding two more parameters i.e. user attitude and culture of bureaucracy as identified by other researchers like Diamond and Freeman (2002:570), Al-Zaabi H. et al (2012), Saadiyah Binti Kadir, (2013) among others to the model to get an integrated one that is more specific considering the fundamental differences between police organizations and other types of organizations.

## 2.6 Conceptual framework

As already been stated, on thorough analysis of the existing frameworks, we found out that none is comprehensive enough to tackle the issue of adoption in the police station setup but PERM seems to closely deal with organizational parameters for e-readiness assessments. In this study therefore, we are suggesting a modified framework based on the factors considered in the **PERM** with the addition of two more factors as they are characteristic of a police organization and represent the nature of the police systems and culture. These factors are individual officer's attitudes and bureaucratic culture which in most is characteristic of officers and systems in the service. For instance Cork, Detmer, and Friedman (1998) points out those similar structures of attitudes and beliefs cannot be known for different professions. They also claimed that each member of a different occupation has different attitudes regarding information technology adoption. A unique design for just one type of profession cannot address the acceptance and use of information technology to obtain accurate measurements (Colvina& Goh, 2005).

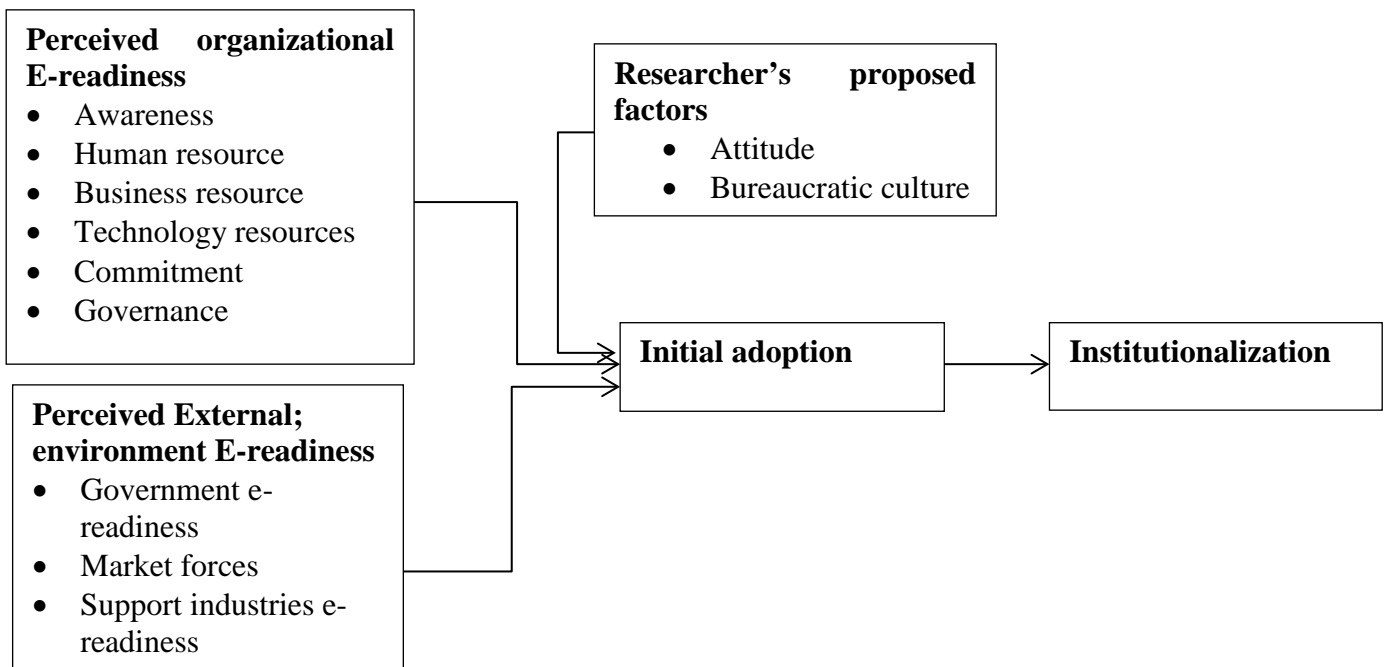


Figure 2.6-1 A Modified version of the Molla and Licker (2005) PERM

### **3.0 CHAPTER THREE: RESEARCH METHODOLOGY**

This section describes how the research was carried out. It outlines the plan, structure and strategy of investigating of the research problem, procedures adopted how the design was tested, and clear justification for all decisions, choices and innovative aspects of our study. Additionally, the research methodology is described in detail, including sampling, instruments, data collection, and the data analysis method.

A conceptual framework was proposed to test the factors to be considered when adopting information technology in a police station setup. In order to validate it, a case study research strategy was selected since it is a well-known approach for exploratory, theory-building research (Eisenhardt, 1989) allowing in depth investigation (Yin, 1993; Walsham, 1993; Pettigrew, 1990).

#### **3.1 Research design**

Mainly cross-sectional descriptive research was used to carry out this study with some elements of exploratory research. This is because our study was mainly about assessing the subject area through survey investigation in order to gain its understanding. Once more, the importance and outcomes of the model was predicted through forecast since we did not have enough time to test and collect data to prove that.

#### **3.2 Why Descriptive Research**

The first thing one needs to do in assessing readiness to adopt a new technology is understand the value, cost and associated best practices available for adopting the said new technology. Of course, there's a good chance that any information available early in a technology's availability will be anecdotal, which means that it is all that more difficult to measure. Next, one must

understand and analyze hurdles the organization has had in adopting other technologies. Finally, you must be able to envision what will change once you adopt this new technology. This task requires a deep understanding of the technology you are adopting as well as the capabilities it provides and the types of solutions it enables.

Minimal research exists related to the utilization of e-government in policing, this therefore means that there should be a close observation and exploration of the facts in existence, by analyzing existing practices and identifying elements for change, descriptive research comes in useful through exploration as it provides an opportunity for a practical approach to understand and describe the situation and therefore build a common ground for approaching it.

In addition, descriptions can be used as an indirect test of a theory or model of some behaviors/situations which cannot be studied any other way

### **3.3 Data collection methods**

The research was conducted using two complementary data gathering methods;

- I) Observation: this helped gain the practical experience of the status of the level of readiness in the different stations.
- II) Field survey that was administered through
  - a. Face to face Interviews: To seek clarification from the stakeholders on the state of technology and give their perceptions during the gathering of requirements.
  - b. Questionnaires: were be drafted to assist in interviewing main stakeholders, in this case the police officers working in the crime branch, investigation officers and the OCS (Officer commanding station) and other agencies like in the National Crime

Research Center. This was necessary since the agencies have a rich understanding of the area under investigation and hence provided useful insights for the study.

Surveys were useful for identifying variables & hypothetical constructs which were further investigated through other means to be able to clearly describe the police organizations in reaction to e readiness.

### **3.4 Sources of data**

This study gathered information from various sources including the government resources, the police service, scientific and academic research papers and projects and popular technology-oriented literature to develop a comprehensive understanding of the subject area.

Respondents were selected based on their relevant knowledge of the area being investigated (Hussey & Hussey, 1997). This research therefore, gathered information from various sources including the police stations staff, administrators like the OCS, the OCPD, the report office, crime branch and records office staff; scientific and academic research papers and popular technology-oriented literature .

Pangani Police Station was used as a case study to represent an urban area setup, Kisii Police station was also used to represent a semi urban police station, Rumuruti police post to represent the Police posts, Laikipia for administration police division and Ugunja police station to represent a police station in a rural area set up

Much of the information and research documentation was derived from online sources in government, commercial, and academic websites especially about the frameworks to be reviewed. In some instances, e-mail and telephone discussions with researchers involved in various technologies dealing with policing matters. Field research was also conducted in Pangani

police station which was aimed at interviewing the station commanders, the officer in-charge of crime, other police officers and the residents served by the station.

### **3.5 Data validation tool**

Before taking the questionnaire tool to the field, pretesting was done using five members of staff from the Kilimani police station and changes made. This process was used to gauge appropriateness of the tool and create room for any changes picked. The tool was then sent out to the field for the actual data collection.

### **3.6 Challenges encountered during data collection and how they were resolved**

One of the common problems encountered by the research teams was the limited time allocated, as the questionnaires were quite long (it took approximately 1 hour to complete one questionnaire). The interviewers had to collect primary data from a considerable number of respondents in a very short period of time. In addition, the geographical location of the stations presented a difficulty, as some of them were sparsely distributed in remote areas of the country. Generally all the teams encountered reluctance on the part of officers to cooperate and share information with the interviewers. This was one of the reasons why the planned number of samples was not met. There were also several instances when the respondents, especially those with very busy timelines, failed to keep their initial interview appointments with the research team after all the arrangements had been made. They were either out of the office or, or simply changed their minds and refused outright to be interviewed. A second round of appointments was therefore required. Extreme difficulty was also experienced in obtaining permission from the officers' in-charge to interview other officers in some stations. There was also a problem of illiteracy that made officers unable understand some of the terms in the questionnaire.

These challenges were solved by taking steps to minimize the time, cost, and effort required of respondents. The other step taken was by scheduling the data collection, to the extent possible, at



the convenience of the respondents and with adequate time to respond. Difficult terms were also explained to respondent's satisfaction.

### **3.7 Techniques used in data collection**

Note taking was the most common and easiest method of recording my observations at the field. Skills which were required in doing this included: organizing some shorthand symbols beforehand so that recording basic or repeated actions does not impede ability to observe, using many small paragraphs, which reflect changes in activities, who is talking, etc., and, leaving space on the page so one can write down additional thoughts and ideas about what's being observed.

### **3.8 Data analysis method and tools for analysis**

We deployed a mix of qualitative and quantitative data analysis methods. Qualitative data analysis enabled us to describe, explain and interpret the target area and understand its requirements. While quantitative research helped us quantify the problem conclusively especially to quantify the various factors to be able to determine the level of readiness in the station.

The research variables were measured in a 5-point Likert's scale, with 1 as "strongly disagree", and 5 as strongly agree. SPSS was used to analyze the data received to be able to come up with variable relations and quantify frequencies of the different parameters under study

## **4.0 CHAPTER FOUR: RESEARCH RESULTS AND DISCUSSION**

### **4.1 Introduction**

This chapter presents the results of the study on the level of e-readiness in the Kenya police organization. The presentation of the results has been done in 8 main sections touching on; Organizational Commitment to e-readiness, Organizational Culture Dimensions, Technology Resources, External E-Readiness, Human Resource E-readiness, Bureaucracy Dimensions, Attitude Dimensions, `Support Industries E-readiness, Awareness, Business resource and Government e-readiness

The study focused on e-readiness at police station level from selected stations. The data collected was analysed using SPSS Version 19 and computations of frequencies, averages, and other measures were used to analyse the data guided by the research questions in reference to study objectives.

### **4.2 Survey Questionnaire Response Rate**

The population of the study comprised of the NPS from selected police stations in Kenya. Pangani police station was used as a case study to represent an urban setup, Kisii Police station was used to represent a semi urban police station, Rumuruti police post to represent the Police posts, Laikipia for administration police division and Ugunja police station to represent police stations in rural area set up. The study questionnaire response return rate was 89.3% of the 56 officers in the selected stations. Drop and pick method was used while personal face to face visits boosted and enriched the understanding of the facts at the ground. Personalized letters and follow-up telephone calls to respondents also improved the response rate.

Table 4.2-1 Survey sites and questionnaire responses

Station/camp	Geographical area/environment	Questionnaires issued	Questionnaires Returned	% response
Pangani Police station	urban	14	14	100%
Kisii Police station	Urban	14	12	85.7%
Rumuruti AP Post	Rural	8	8	100%
Laikipia Ap Camp	Semi urban	12	10	83.3%
Ugunja Police station	Rural	8	6	66.7%
<b>TOTAL</b>		<b>56</b>	<b>50</b>	<b>89.3%</b>

### 4.3 Respondents Demographic Profile

#### 4.3.1 Age

The study established that majority of the police service personnel were in the youth age group of between 20 to 30 years which accounted for 50% of the members of the NPS who participated in the survey. The age group of 31-40 years accounted for 40% of the study while those who were aged over 50 years accounted for only 10% of the study respondents. This outcome points to the NPS in Kenya that it has the requisite personnel able to learn and operate in a digitized facilities

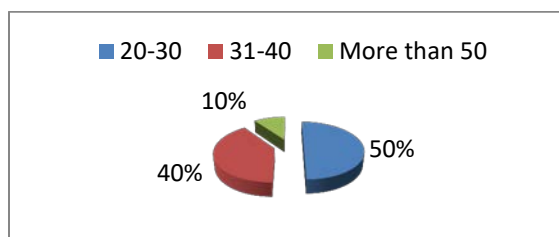


Figure 4.3-1: Respondents Age (Years)

Source: (Research Data 2016)

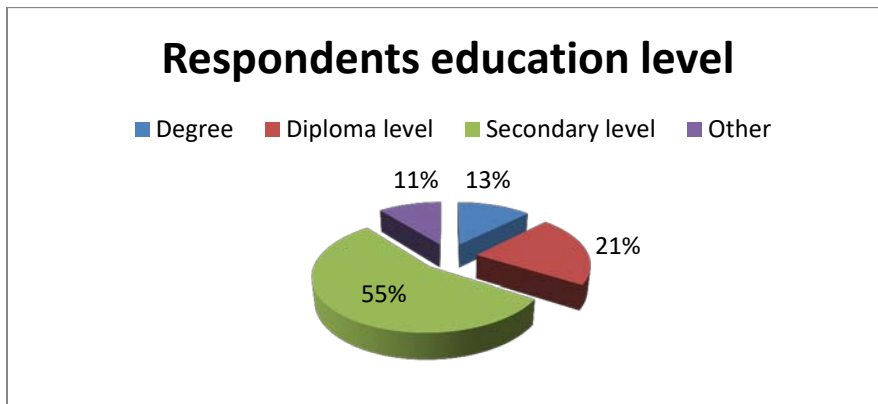
**Table 4.3-1 Pearson Product Moment Correlation Analysis Results for the Relationship between age and e-readiness Variables**

	Pearson correlation coefficient
Relationship between age and ability to learning ICT	0.760
P < 0.01	

Pearson's Product moment correlation statistical technique was used to test the strength of the relationship between age and ability to learning ICT. The Pearson's Product Moment Correlation co-efficient for age showed a strong positive relationship with the ability to learning ICT ( $r = 0.760, P < 0.01$ ).

### 4.3.2 Educational Background

The level of education of the respondents ranged from Bachelor's degree to those who completed secondary school education. As illustrated in figure 4.2, those with Bachelor's degree were 13%; diploma level of education was 21% while those with secondary education were 55% and other qualifications only accounted for 11%. The above statistics shows that the police service has a well-educated workforce that can be able to adapt to new technology.



**Figure 4.3-2 Education levels of Respondents**

Source: (Research Data 2016)

**Table 4.3-2 : Pearson Product Moment Correlation Analysis Results for the Relationship between education Background and level of individual e-readiness**

Variables	Pearson correlation coefficient
-----------	---------------------------------

Relationship between educational background and level of e-readiness	0.578*
--	--------

level of e-readiness

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

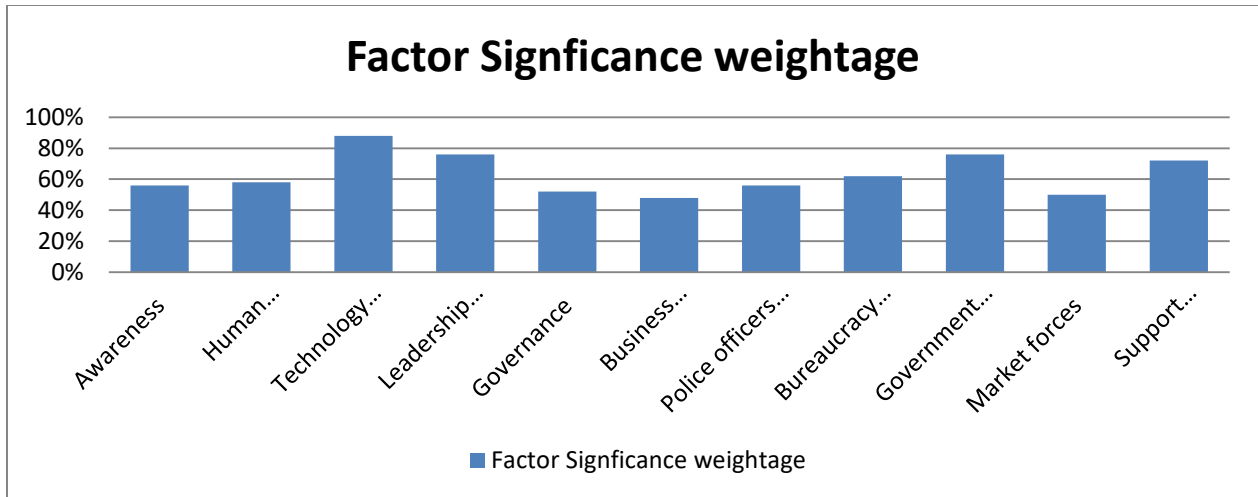
Pearson’s’ Product moment correlation statistical technique was used to test the strength of the relationship between educational background and level of e-readiness. The Pearson’s Product Moment Correlation co-efficient for education background showed a moderately positive relationship with the level of e-readiness ( $r= 0.578, P<0.05$ ).

#### **4.4 Validation of the various factors in the proposed conceptual framework**

The eleven factors proposed in the conceptual model were rated by respondents to determine their importance and also help determine their relevance to the policing organization in relation to ICT adoption. The findings were as below

**Table 4.4-1 significance weightage of the various factors in the proposed model**

<b>Factor</b>	<b>Average significance out of 5 as max.</b>	<b>% significance</b>
Awareness	2.8	56%
Human resource	2.9	58%
Technology resources	4.4	88%
Leadership commitment	3.8	76%
Governance	2.6	52%
Business resources	1.8	48%
Police officers attitude	2.8	56%
Bureaucracy of officers and systems	3.1	62%
Government e-readiness	3.8	76%
Market forces	2.1	50%
Support industries e-readiness	3.6	72%



**Figure 4.4-1 Graph showing significance of the factors in the proposed conceptual framework**

The scores are arrived by calculating the mean and standard deviation of all response weightage.

The weightage of each subcomponent is calculated as follows

$$\text{Weightage for each factor} = \frac{\text{Summation of the weightage of each factor for all responses}}{\text{Summation of maximum scale of each factor for all responses}}$$

As can be seen from the above figures, all the factors were considered to be relevant according to the respondents, although they had varying figures.

#### **4.5 The validated police station e-readiness assessment model based on Molla and Licker's 2005 PERM**

The modified and validated e-readiness framework 'is as shown below. You note that the researcher has introduced two dimensions into the Molar & Licker (2005) model to capture the business culture and police officers attitude.

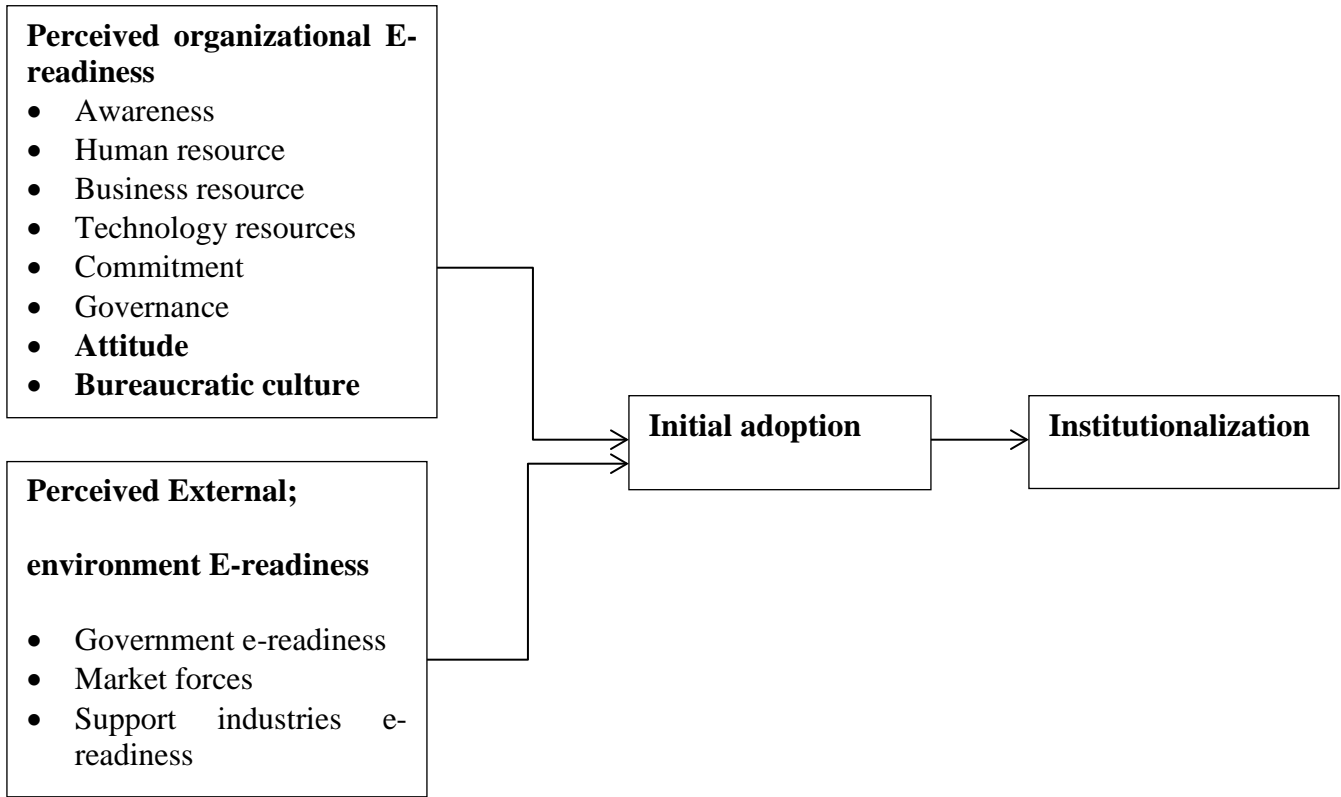


Figure 4.5-1: Validated version of the proposed PERM model

#### 4.6 Overall E-readiness per station

Basing on the different factors as shown above, the following table shows the scores for the various stations assessed

##### 4.6.1 Level of E-readiness in the Stations

The study purposively selected police station from varied demographic characteristics defined by their locations. The locations targeted were based on urban set up, semi-urban set up and rural set up. The table 4.3 below shows the levels of e-readiness for the stations measured by different parameters.

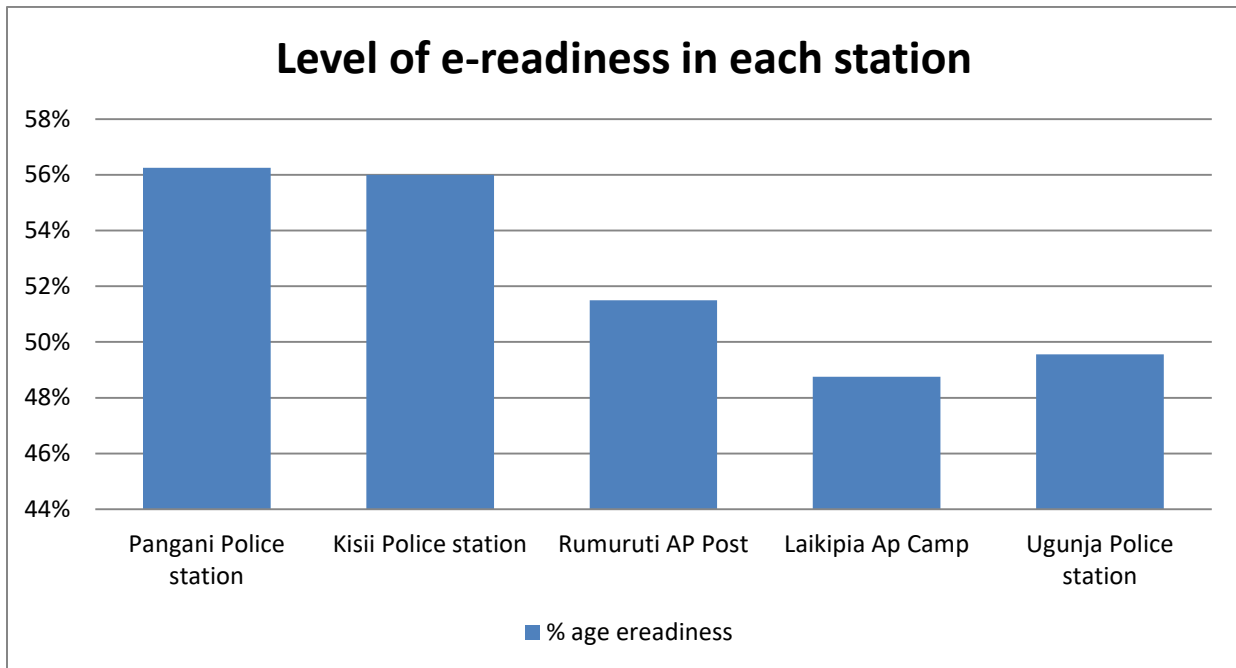


Figure 4.6-1 Current status of e-readiness in Kenyan police stations



Table 4.6-1 E-readiness by Stations

Station/camp	Technology resources		Awareness		Commitment		Human Resources		Governance		Business Resource		Attitude to E-readiness		Police Bureaucracy		Average score	
	Av. Score	%	Av. Score	%	Av. Score	%	Av. Score	%	Av. Score	%	Av. Score	%	Av. Score	%	Av. Score	%	Av. Score	%
Pangani Police station	3.8	76%	2.3	46%	2.1	42%	3.8	76%	1.8	36%	3	60%	3.9	78%	1.8	36%	2.8125	56%
Kisii Police station	3.5	70%	2	40%	2.4	48%	3.2	64%	1.7	34%	2.9	58%	3.9	78%	2.8	56%	2.8	56%
Rumuruti AP Post	1.2	24%	2.5	50%	3.1	62%	3.1	62%	0.9	18%	2.8	56%	3.4	68%	3.6	72%	2.575	52%
Laikipia Ap Camp	1.7	34%	1.5	30%	3.3	66%	2	40%	0.6	12%	3.1	62%	3.9	78%	3.4	68%	2.4375	49%
Ugunja Police station	3.1	62%	1.6	32%	2.7	54%	3.025	61%	1.3	26%	2.7	54%	2.4	48%	3	60%	2.478125	50%
<b>Overall</b>	<b>2.5667</b>	<b>51%</b>	<b>1.97143</b>	<b>39%</b>	<b>2.71111</b>	<b>54%</b>	<b>1.771429</b>	<b>35%</b>	<b>1.25</b>	<b>25%</b>	<b>2.89</b>	<b>58%</b>	<b>3.5</b>	<b>70%</b>	<b>2.92</b>	<b>58%</b>	<b>2.447583625</b>	<b>49%</b>

Source: (Research Data 2016)

It was established from the study that in terms of technological e-readiness, stations in the urban and peri-urban areas have higher level of readiness than other police stations in more rural areas. Pangani police station for instance recorded technological e-readiness of 21% while Ugunja a peri-urban station recorded 17% level of e-readiness. In terms of organizational culture e-readiness the same trend was observed with urban and peri-urban stations recording higher levels of e-readiness with Pangani at 22%. The other stations recorded low levels of e-readiness in this regard. Commitment to e-readiness was also rated and similar trends were also recorded. However, in some stations commitment was attributed to the station leadership and also linked to policy focus by station commanding officers. These reasons gave the response of 23% for Laikipia Ap camp. Market forces are the major push to e-readiness in police stations recording higher levels among all the police stations. This is attributed to the level of digital awareness among the Kenyan populace. In terms of human resource e-readiness, it was observed that most of the officers working in the stations were at good levels of e-readiness.

Bureaucratic systems and nature of officers in the service was however relatively high in the stations showing that it is a major challenge to attaining high levels of e-readiness in majority of the police stations. Attitude to e-readiness was moderate with most of the police officers showing good levels of positive attitude. Rumuruti recorded highest in this regard with 45% level of positive attitude to e-readiness. Government e-readiness is the highest parameter determining e-readiness among the stations reasons attributed to government policy to adopt e-governance in all its departments.

According to the study findings, Pangani Police station which is in an urban setting recorded the highest level of e-readiness at 23% followed by Ugunja police station (a peri-urban station) with 22% levels of e-readiness. Rumuruti also recorded good level of e-readiness at 20%. The reason for the variance in levels of e-readiness as derived from the study can be attributed to geographical

location, literacy levels of the personnel, availability of allocated resources and age of the personnel working at the stations. From these findings the following model can be derived.

$$Y = X_1 + X_2 + X_3 + X_4 + e$$

Where  $X_1$  is geographical location

$X_2$  is literacy levels

$X_3$  Resource availability

$X_4$  Age of the personnel

#### 4.7 Analytical Model Generation

Table 4.7-1 multiple linear regression

Constant	un-standardized		Standardized		T	P	VIF
	Coefficients		Coefficients				
	Beta $\beta$	Std. Error	Beta $\beta$	Statistic	Value		
Constant	0.63	0.27		2.33	0.021		
Location	0.59	0.265	0.28	2.23	0.020	2.16	
Literacy levels		0.64	0.24	0.33	2.67	0.002	2.30
Resource availability	0.66	0.14	0.19	4.71	0.000		
Age of the officer	0.57	0.12	0.04	4.01	0.004	1.62	

From table 4.8.1, the study results shows that resource availability amongst the four explanatory variables was more significant with a beta value of 0.66 while literacy levels, Geographical location and age had beta value of 0.64, 0.59 and 0.57 respectively.

The study results shows that resource availability amongst the four explanatory variables was more significant in influencing the e-readiness with the highest t-calculated of 4.71 and a p-value of 0.000. All the p-values for the variables were less than 0.05 which indicates that they are statistically significant in explaining the e-readiness in the stations.

$\beta_0$  is the autonomous components which are e-readiness parameters that are not influenced by the independent variables considered in the study. It also gives the Y intercept of our curve. From the table 4.8.1 on multiple linear regression,  $\beta_0 = 0.63$

$\beta_1$  is the coefficient of proportionality which tells the variation to which geographical location causes on e-readiness for police stations. From the table 4.8.1 on multiple linear regression,  $\beta_1 = 0.59$

$\beta_2$  is the coefficient of proportionality which tells the variation to which literacy levels causes on e-readiness. From the table 4.8.1 on multiple linear regression,  $\beta_2 = 0.64$

$\beta_3$  is the coefficient of proportionality which tells the variation to which resource availability causes on e-readiness. From the table 4.8.1 on multiple linear regression,  $\beta_3 = 0.66$

$\beta_4$  is the coefficient of proportionality which tells the variation to which age of personnel causes on e-readiness. From the table 4.8.1 on multiple linear regression,  $\beta_4 = 0.57$

The model is then generated as follows;

$$Y = 0.63 + 0.59X_1 + 0.64 X_2 + 0.66 X_3 + 0.57 X_4 + e$$

#### **4.8 Analysis of the Perceived Organizational E-Readiness (POER) factors**

This section presents the general descriptive statistics of the result of the study variables pertaining to the organization's internal e-readiness. These factors include: technology resources, awareness, human resources, business resources, commitment, governance with the addition of two other factors added by the researcher that include Organizational Culture Dimensions, Bureaucracy of police officers, Attitude Dimensions. All these were summarized as categorical variables and therefore presented in the form of descriptive statistics. The assessment used a 5-point Likert scale analysis measuring each item on a scale of one to five where 1 represented, Strongly Disagree (0--20%), 2 = Disagree (21-40%), 3 = moderate (neutral-41-60%), 4 = Agree (61-80%), and 5 = Strongly Agree ((81-100%). The results are presented in this section as will be demonstrated below.

Mean was calculated using the formula;

$$\text{Mean} = \frac{\sum fx}{\sum f}$$

$$\text{Std Dev.} = \sqrt{\frac{\sum(x-M)^2}{n-1}}$$

#### 4.8.1 Technology resources

**Table 4.8-1 Availability and Access to IT Infrastructure/technology resources**

Accessibility to IT infrastructure	Descriptive Statistics			
	N	Mean	Std. Deviation	%
There is ease in access to the fixed phone	50	3.3	1.63639	66%
There's access to the fax machine	50	0.9	1.52388	18%
There is availability of hardware tools such as computers, printers and scanners	50	3.4	0.84327	68%
There is easy access to the internet	50	3.2	1.54919	64%
Organization has access to wireless connections	50	2.3	1.25167	46%
Organization's access to LAN	50	1.6	0.8165	32%
Organization's access to WAN	50	1.6	0.5164	32%
Existence of suitable physical space for computer and IT	50	2.9	1.66333	58%
Power connectivity and availability	50	3.9	1.44914	78%
<b>Overall</b>	<b>50</b>	<b>2.5667</b>	<b>1.249974</b>	<b>52%</b>

Source: (Research Data 2016)

The table 4.5.1 shows descriptive statistics for the accessibility to IT infrastructure at the police stations. The first item asked respondents to rate if, there is ease in access to the fixed phone. The mean score on this item was 3.3 and a standard deviation of 1.63 corresponding to 46% level of access in regard to this item. This means that there is an over-average access to fixed phone and it is accessible at a rate of 66% among the stations covered in this study. The second item sought to establish if there is access to the fax machine. The mean obtained for this item was 0.9 corresponding to 18% level of access while a standard deviation of 1.5 was obtained. This showed that majority of the respondents reported lack of access to a fax machine. This can be attributed to the fact that most of the stations do not use fax machines nowadays. The third item sought to establish if there is availability of hardware tools such as computers, printers and scanners. The mean obtained for this item was 3.4 representing a 68% level of availability and a standard deviation of 0.84. This shows that in majority of police stations have computing hardware tools such as

computers, printers and scanners. The fourth item sought to establish whether there is easy access to the internet through LAN and WAN. The mean obtained for this item was 1.6 for both corresponding to a 64% level of access to internet and a standard deviation of 1.54. This shows that police stations moderately have access to the internet but majority of the stations do not have. From the face to face discussions held with some staff members, the stations usually use modems to connect to internet. The fifth item sought to establish if the organization has access to wireless connections. The mean obtained for this item was 2.3 corresponding to 46% level of access while a standard deviation of 1.25 was obtained. This showed that the majority of the respondents reported slightly below average level of access to wireless connections. This was majorly accessed by use of internet modems. The eighth item sought to establish if there is existence of suitable physical space for computer and IT. The mean obtained for this item was 2.9 corresponding to 58% level of space availability while a standard deviation of 1.66 was obtained. This showed that there is moderate availability of suitable physical space for computer and IT. The ninth item sought to establish if there is access to power connectivity and availability. The mean obtained for this item was 3.9 corresponding to 78% level of access while a standard deviation of 1.44 was obtained. This showed that the majority of the respondents reported ease of access to power connectivity and availability. The overall rating on the availability of IT infrastructure at the police stations was 2.6 corresponding to 52% level of availability. This meant that in general availability to IT infrastructure at police stations is moderate and can therefore support adoption of ICT moderately.

#### **4.8.2 Awareness Factor**

This is the comprehension of the surrounding environment of E-policing. Awareness can be achieved through keen understanding of the NPS structure, technologies, requirements, benefits and threats as well as forecast of future trends and their impact.

**Table 4.8-2 Descriptive statistics on awareness**

Awareness dimension	Descriptive Statistics			0%
	N	Mean	Std. Deviation	%
The station understand the value proposition of ICT	50	3.7	1.635262	74%
I understand the ICT policy	50	0	0	0%
I understand the NPS structure on how data is handled	50	3.4	1.752336	68%
I understand my role in relation to ICT use and changes expected	50	2	1.4174253	40%
I have been prepared adequately to handle and use ICT in my work	50	1.5	1.312863	30%
I understand risks and threats and have plans in place on how to handle them when using ICT	50	1.2	1.632512	24%
I think I understand the benefits policing of ICT going into the future	50	2	1.23313	40%
<b>Overall</b>	<b>50</b>	<b>1.971429</b>	<b>1.2737</b>	<b>39%</b>

### 4.8.3 Leadership Commitment to E-readiness

**Table 4.8-3 Descriptive statistics for Commitment to E-readiness**

Commitment to E-readiness	Descriptive Statistics			0%
	N	Mean	Std. Deviation	%
The leadership of the police service believes adoption of information technology in their work will enhance efficiency and effectiveness	50	3.7	1.25167	74%
Do you think the leadership is prepared to take risks of adopting ICT	50	2.6	1.07497	52%
Electronic model of communication has been taken as a priority within the police service	50	4.1	1.1005	82%
The leadership within the police service is committed to modern information technology	50	3.3	1.05935	66%
Most of the employees within the police service can understand IT issues	50	2.1	0.8756	42%
Most of the employees have been encouraged to embrace use of ICT in policing	50	2	0.8165	40%
There is a policy that encourages adoption of e-policing	50	2.1	0.8756	42%
Our organization is capable of dealing with rapid changes though support of leaders	50	2.9	1.1005	58%
<b>Overall</b>	<b>50</b>	<b>2.711111</b>	<b>1.036498</b>	<b>54%</b>

Source: (Research Data 2016)

The table 4.3.3 shows descriptive statistics for leadership commitment to e-readiness. The first item asked respondents to rate the level of understanding that leadership of the police service believe use of technology is important in enhancing their efficiency and effectiveness in service delivery. The

mean score on this item was 3.7 and a standard deviation of 1.25 corresponding to 74%. This means that the leadership of the police service believes use of information technology at the police station level is important and thus committed to enhancing e-governance within the police service. The second item sought to establish if the leadership is ready to take up risks associated with information technology. The mean obtained for this item was 2.6 corresponding to 52% with a standard deviation of 1.07. This showed that there is moderate willingness to uptake e policing and therefore readiness to tackle any challenges associated. The third item sought to establish whether electronic model of communication has been taken as a priority within the police service. The mean obtained for this item was 4. representing 82% and a standard deviation of 1.10. This shows that electronic model of communication has been highly taken as a priority within the police service. The fourth item sought to establish whether the leadership within the police service is committed to modern technology. The mean obtained for this item was 3.3 with a 66% level of commitment and a standard deviation of 1.05. This shows that there is moderate level of commitment to modern technology within the leadership of the police service. The fifth item sought to establish if most of the employees within the police service can understand IT issues. The mean obtained for this item was 2.1 corresponding to 42% level of understanding with a standard deviation of 0.87. This showed that the majority of the respondents reported low level of understanding of IT issues among employees of the police service. The sixth item asked respondents to rate whether most of the employees have been encouraged to embrace ICT in policing. The mean score on this item was 2 and a standard deviation of 0.81 corresponding to 40% level of experience in regard to this item. This means that most of the employees lack sufficient experience with network based applications. The seventh item asked respondents to rate if, there is policy that encourages adoption of e-governance. The mean score on this item was 2.1 and a standard deviation of 0.87 corresponding to 42% level encouragement in regard to this item. This means that there is a policy which moderately



encourages adoption of e-governance. The eighth item sought to establish if the organization is capable of dealing with rapid changes. The mean obtained for this item was 2.9 corresponding to 58% level of willingness while a standard deviation of 1.03 was obtained. This showed that the majority of the respondents believe that there is reasonable support by the police leadership.

The overall rating on the commitment to e-readiness at the police stations was 2.7 corresponding to 54% level of commitment to e-readiness. This meant that in general there is adequate level of commitment towards e-readiness in police stations.

#### 4.8.4 The Human Resources E-readiness

This sought to understand the ‘availability (accessibility) of employees with adequate experience and exposure to ICT’ (Molla & Licker, 2005).

**Table 4.8-4 Descriptive statistics for Human Resources E-readiness**

Human resources e-readiness	Descriptive Statistics			0%
	N	Mean	Std. Deviation	%
Relevant technical knowledge/skills required to execute my duties using ICT	50	3.2	1.22927	64%
Relevant certification in field of ICT	50	1.2	1.17379	24%
Had prior relevant experience before I joined the service on use of computer application	50	1	1.54919	20%
Comprehensive knowledge of the work practices, processes and procedures relevant to use of IT tools in the service	50	2.3	1.25167	46%
Experience of working with specialized IT equipment and machines in my work	50	2.3	1.05935	46%
Ability to work independently without supervision on ICT usage	50	1.3	1.28668	26%
Ability to learn new things through personal initiative especially those related to IT	50	1.1	0.97183	22%
<b>Overall</b>	<b>50</b>	<b>1.771429</b>	<b>1.183074</b>	<b>35%</b>

Source: (Research Data 2016)

The table 4.3.4 shows descriptive statistics for human resources e-readiness in the stations. The first item asked if respondents have relevant technical knowledge/skills required in executing duties using ICT. The mean score on this item was 3.2 and a standard deviation of 1.22 corresponding to

64% level of e-readiness. This means that at least there is an above average workforce that can be able to use ICT in their work environment. The second item sought to establish if there the respondents have a certification in the ICT field. The mean obtained for this item was 1.2 corresponding to 24% level of e-readiness with a standard deviation of 1.17. This is an implication that few members of staff have a certification in the use of ICT. The third item sought to establish whether respondents had prior relevant experience in use of computer applications prior to joining the service to which a mere 20% said yes. The standard deviation was 1.5 meaning that there was little variance in the responses which as well explains the fact that most officers joined the service when they just finished high school. The fourth item sought to establish whether comprehensive knowledge of the work practices, processes and procedures relevant to use of IT tools in the service. The mean obtained for this item was 2.3 with a 46% level of e-readiness and a standard deviation of 1.25. This shows that there is moderate comprehensive knowledge of the work practices, processes and procedures relevant to use of IT tools in the service. The fifth item sought to establish experience of working with specialized IT equipment and machines in my work. The mean obtained for this item was 2.3 corresponding to 46% level of e-readiness with a standard deviation of 1.05. This showed that the majority of the respondents reported moderate experience of working with specialized IT equipment and machines in my work. The sixth item asked respondents if they have ability to work independently using ICT without supervision. The mean score on this item was 3.9 and a standard deviation of 1.28 corresponding to 78% level of e-readiness in regard to this item. This means that most of the employees have ability to work independently without supervision. The seventh item asked if respondents have ability to effectively work with other departments of the police service. The mean score on this item was 4 and a standard deviation of 0.97 corresponding to 80% level of e-readiness in regard to this item. This means that there majority of the employees have ability to effectively work with other departments of the police service. The eighth item sought

to establish if the respondents have ability to learn new things through personal initiative especially those related to IT. The mean obtained for this item was 3.5 corresponding to 70% level of e-readiness while a standard deviation of 0.97 was obtained. This showed that there is high ability to learn new things through personal initiatives especially those related to IT.

The overall rating on the human resources e-readiness at the police stations was 3.0 corresponding to 35% effect of human resources e-readiness. This meant that in general the level of human resources e-readiness in police stations is relatively low.

#### 4.8.5 Police Bureaucracy

This sought to understand whether the nature of the structure of decision making in the service is a factor that should be included when assessing the e-readiness of police stations and the statistics are as follows

**Table 4.8-5 Descriptive statistics for Police Bureaucracy**

Police Bureaucracy	Descriptive Statistics			0%
	N	Mean	Std. Deviation	%
Insularity, parochialism ("not invented here" syndrome) and the pursuance of personal interest rather than the common good	50	3.3	0.49443	66%
Complex accountability and governance arrangements, particularly at a national level which create shared but diluted responsibility may hinder implementation	50	2.8	1.12927	56%
Inconsistent leadership, lack of trust, poor risk management and an 'institutionalized' culture of blame	50	0.4	1.109	8%
My police station is flexible in terms of rules and procedures of operation	50	2.8	0.82927	56%
In my police station, paperwork is used only when necessary as determined by the bosses	50	3.3	0.5443	66%
In my police station rules are set to fit specific situations.	50	3.1	0.84914	62%
Overreliance on demonstrating compliance.	50	2.7	1.06702	54%
In my police station authority is decentralized to optimize customer interaction	50	2.7	0.606702	54%
More responsibility and accountability is given at operational level	50	2.7	0.3595	54%
Overall	50	2.92	0.2598	58%

Source: (Research Data 2016)

The table 4.3.5 shows descriptive statistics for police bureaucracy. The first item sought to understand how respondents feel about decisions made in the station and how they may impact on implementing ICT. From the results 66% feel that that item will definitely affect the police readiness and it is a factor as they feel that mostly decisions made are biased towards personal interests as compared to general organizational interest. The second question sought to understand whether the hierarchical nature of decision making may impact the use of ICT in the service to which 56% feel that it is a factor that requires attention. 8% of respondents feel that there is little likelihood of mistrust or blame games that may impact on the use of ICT among the staff. This can be attributed by the fact that in most cases there are clear systems for assigning officers in duty and duty rosters are signed and countersigned by senior station administrators. In terms of flexibility in decision making and how it impacts on e-readiness, the respondents rated the police organization as less flexible in terms of rules and procedures of operation. The mean score on this item was 2.8 and a standard deviation of 1.22 corresponding to 56% level of bureaucracy in regard to this item. The fourth item sought to establish if in police organization, how decisions on use of manual paper based system as compared to the digital system can impact ICT take-up in the station. The mean obtained for this item was 3.3 corresponding to 66% with a standard deviation of 1.49 implying that the respondents generally agree on this fact and its impact. The fifth item sought to establish whether rules and regulations in the police organization rules are set to fit specific situations. The mean obtained for this item was 3.1 with a 62% level of bureaucracy and a standard deviation of 1.44. This shows that in police organization, rules are moderately set to fit specific situations. The sixth item sought to establish whether in police organization, authority is decentralized to optimize customer interaction. The mean obtained for this item was 2.7 with a 54% level of bureaucracy and a standard deviation of 1.15. This shows that there is moderate level of decentralizing authority to optimize customer interaction. The seventh item sought to establish if more responsibility and accountability

is given at operational level. The mean obtained for this item was 2.7 corresponding to 54% level of bureaucracy with a standard deviation of 1.15. This showed that the majority of the respondents reported moderate responsibility and accountability is given at operational level.

The overall rating on the police bureaucracy at the police stations was 2.9 corresponding to 58% effect of bureaucracy. This means that, in general there is moderate level of police bureaucracy in police stations and is a true factor that should be considered on assessing e-readiness of a police station. Looking closely at the standard deviations of the factors, you realize that the range of deviation is very narrow meaning that respondents largely agree on most aspects about police bureaucracy on a station's e-readiness.

#### 4.8.6 Police officers' Attitude

**Table 4.8-6 Descriptive statistics for Police officers' Attitude**

Attitude	Descriptive Statistics			0%
	N	Mean	Std. Deviation	%
Our police organization is open and interacts with customers	50	3.8	1.39841	76%
I am ready and open to change to use of ICT	50	3.5	1.77951	70%
I prefer to do my work even if there are other tools to use	50	3.3	1.56702	66%
Use of information technology will improve my work efficiency and effectiveness	50	3.4	1.50555	68%
I fear the introduction of ICT in crime recording and processing	50	3.8	1.39841	76%
People who influence my behavior, such as my supervisors think that I should use ICT	50	3.8	1.39841	76%
If I heard about a new information technology, I would look for ways to experiment with it	50	2.6	2.108	52%
<b>Overall</b>	<b>50</b>	<b>3.5</b>	<b>1.562623</b>	<b>70%</b>

Source: (Research Data 2016)

The table 4.4.6 shows descriptive statistics for police Individual officer’s attitude and how it affects e-readiness. The first item asked respondents if police organization is open and interacts with customers. The mean score on this item was 3.8 and a standard deviation of 1.39 corresponding to 76% level of attitude in regard to this item. This means that the police officers are open and interacts with customers. The second item sought to establish whether the police organization is open to change. The mean obtained for this item was 3.5 corresponding to 70% level of attitude with a standard deviation of 1.77. This showed that the majority of the respondents reported that police organization is open to change. The third item sought to establish whether police organization is results based. The mean obtained for this item was 3.3 with a 66% level of attitude and a standard deviation of 1.56. This shows that police organization is results based. The fourth item sought to establish whether the police organization is sensitive to the organization. The mean obtained for this item was 3.4 with a 68% level of attitude and a standard deviation of 1.50. This indicates that police officer’s attitudes can impact affect e-readiness and eventual adoption of technology.

The overall rating on the police organization attitude at the police stations was 3.5 corresponding to 70% effect of police organization attitude. This meant that in general there is high level of police organization attitude towards use of technology in carrying out police station functions.

#### 4.8.7 Governance

Governance refers to the strategic, tactical and operational model an organisation puts in place to govern its business activities and ICT use initiatives (Molla & Licker, 2005). The table below shows the descriptive statistics on governance

**Table 4.8-7: Descriptive statistics for governance**

Governance	Descriptive Statistics			0%
	N	Mean	Std. Deviation	%
The station understand the value proposition of ICT	50	4	2.1023	80%

Does the station have an ICT implementation plan/roadmap?	50	0.2	1.111	4%
Does the station have a clear communication on ICT explaining objectives and the change culture?	50	1.8	1.78927	36%
Does the station have a Capability assessment plan?	50	0	1.426227	0%
Is there a clear and robust risk management strategy	50	0	1.76333	0%
is there a clear framework on how to govern and audit suppliers	50	1	1.8762	20%
Is there a clear and robust Information security plan?	50	1	0.12341	20%
Is the leadership aware and comply with Legal and regulatory aspects	50	2	1.56702	40%
<b>Overall</b>	<b>50</b>	<b>1.25</b>	1.3512	25%

#### 4.8.8 Business Resources

This covers a wide range of capabilities and most of the intangible assets of the organization. It includes the openness of organizational communication; risk taking behaviour, existing business relationships, and funding to finance e-policing projects. Under this category we measured status of initiatives like ICT infrastructure, IT infrastructure capabilities and presence of ICT department

##### 4.8.8.1 Status of IT Infrastructure at police Stations

The status of IT infrastructure in the police stations was a key indicator to the level of e-readiness of the police. From the study, it was established that majority of the stations had computers used for typing and printing as reported by 70% of the officers while only 10% reported presence of few networked computers used only for email and maybe management. However, there were some stations without any computers at all which was reported by 20% of the police officers.

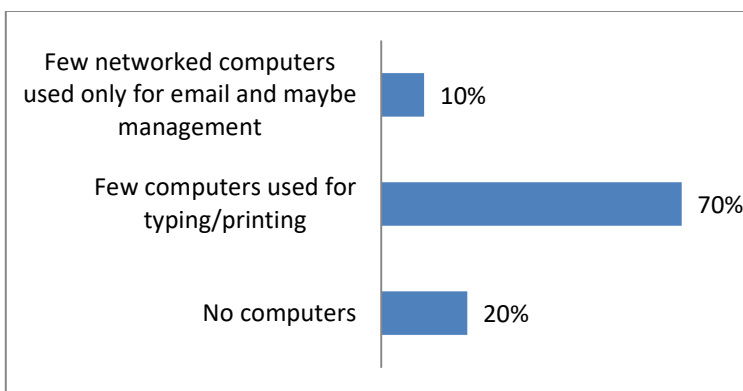


Figure 4.8-1 IT infrastructure capabilities

Source: (Research Data 2016)

#### 4.8.8.2 Presence of IT Department

Most of the police stations also reported lack of an established IT department within the police service. According to the findings of the study, only 10% of the respondents reported presence of an IT department within their station.

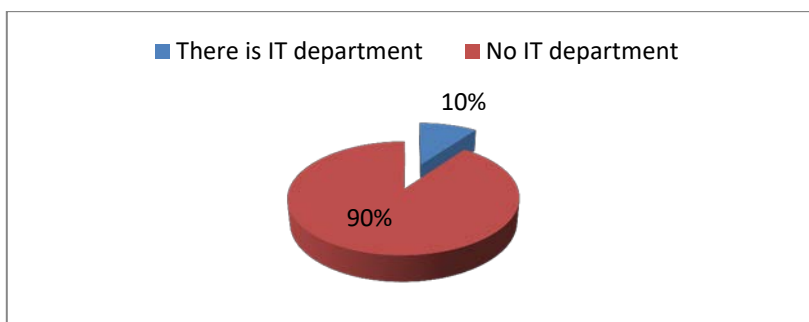


Figure 4.8-2 Presence of IT department

Source: (Research Data 2016)

### 4.9 Perceived External E-Readiness (PEER)

This scans the external environment that acts as a catalyst for the internal factors (POER). In this perspective three factors were considered.

#### 4.9.1 Government e-readiness

It assessed readiness on how the nation and its institutions are prepared to embrace, facilitate and support policing. Factors for determination on this included the willingness of the government to undertake computerization in the police stations, the allocation of the budget from the National Assembly, government plans, Ministry plans, development of implementation plans and other leadership:

#### 4.9.2 Market forces

Market Force E-Readiness which emphasizes that associated partners in conducting E-policing services will actually allow an electronic process of service delivery



### 4.9.3 Supporting Industries E-Readiness

The decision to adopt information technology depends on a number of support-giving industries whose activities might impact on a police station's e-policing adoption decision. The presence of supporting industries creates advantages by making available, efficient, rapid and sometimes preferential access to e-policing inputs as well as consuming e-policing outputs. The variables used to measure this factor are shown in the table below

**Table 4.9-1** Descriptive statistics for support industries

Support industries	Descriptive Statistics			0%
	N	Mean	Std. Deviation	%
Do you think the ministry of finance Is willing and ready to support e-policing?	50	3.9	1.635262	78%
Does the ministry of ICT intend and committed to support e policing	50	2.7	1.852427	54%
The ministry of defense and its departments share information with police using electronic means	50	2.3	1.752336	46%
The judiciary is ready to accept information gathered electronically in determining cases	50	3	1.74253	60%
Data generated from crime branch is shared with other government agencies electronically	50	1.9	1.652422	38%
<b>Overall</b>	<b>50</b>	<b>2.76</b>	<b>1.0826</b>	<b>55%</b>

### 4.10 DISCUSSION OF THE FINDINGS

This section gives details on data presentation on both theoretical and empirical studies in order to achieve the study objectives.

#### 4.10.1 Awareness on e-readiness

The first aspect that the study looked into was on the effect of police awareness on e-readiness. The emphasis was on the level to which the awareness on ICT has been enhanced at the police stations. The literature review, the objective and the conceptual framework led to the belief that awareness on ICT would be associated with higher levels of e-readiness. Empirical findings and literature shows that awareness leads to a significant and positive relationship with e-readiness aspects. It was anticipated that awareness would have a strong, positive and significant relationship with the levels

of e-readiness. According to the study findings, 40% of the personnel in the police were aware on the applications of ICT. This shows a low level of awareness and requires that more awareness be created to enhance higher levels of e-readiness.

#### **4.10.2 Human Resources on E-readiness**

This aspect was addressed using a number of indicators of human resources perspectives to e-readiness. The findings of the study are that the overall rating on the human resources e-readiness at the police stations was 1.78 corresponding to 35% effect of human resources e-readiness. This meant that in general there are low levels of human resources e-readiness in police stations. These findings are similar to findings by Mason and Harrison (2014) who established that organizations embark on enabling the human resources to acquire skills in ICT as a measure to enhance organizational e-readiness. This finding has an indication that the National Police Service in Kenya needs to invest more in skills acquisition among its human resources in order to enhance e-readiness. Supplying employees with the needed tools and equipment in their job is an important fact but also empowering them gives them the feeling that they are essential employees and hence will present better performance and guarantee success to adopting information technology.

#### **4.10.3 Technology Resources on E-readiness**

Literature review explained technology resources as an important factor in the organizational e-readiness. Technology competence as regarded by Kraemer (2012) can be used as variable influencing e-readiness. Technology competence in this study included IT infrastructure and skill or knowledge in using IT (IT know how). IT infrastructure is amount of physic technology resources, including various technology and technology services in organization to facilitate network and organizational activities. The overall rating on the technology resources at the police stations was 2.6 corresponding to 52% level of access. This meant that in general level of e-readiness in regard to IT infrastructure at police stations is moderate.

#### **4.10.4 Commitment on e-readiness**

The police stations verified findings in the literature that it is important that organizational commitment exist in the organization if e-readiness is to be successful (Rosenberg 2001). The respondents argued that the organization's commitment is one critical element of e-readiness success, and that a well-planned organizational strategy is a key source to ensure that success. Respondents also identified the organization's culture being an important readiness factor.

One reason for success with e-readiness according to the respondents was having the right people aboard and linking the e-policing strategy to broader organizational goals. The overall rating on the commitment to e-readiness at the police stations was 2.7 corresponding to 54% level of commitment to e-readiness. This meant that in general there is moderate level of commitment towards e-readiness in police stations. As well this can be attributed to the fact that the government has been pushing for digitization in sectors thus the leadership has no option but to comply.

#### **4.10.5 Governance**

It is important to note that ICT introduction is one of the areas that require a lot of work and commitment. This may be attributed to the fact that since there haven't been plans to roll out digitization, there haven't been cases of concern to ensure proper governance mechanism are put in place by key departments with resource allocation.

#### **4.10.6 Business resources**

This is one of the items that scored above average indicating that there are some forms of digitization in the stations that require to be given cognition so that they can act as springboards for e-policing.

#### **4.10.7 Police officers' attitude**

This is a factor that was introduced by the researcher and therefore tested in two ways: one was to determine if it can be included into the PERM model and secondly to determine the level of

readiness exhibited by the stations on this particular variable. It is important to note that through the data collected, respondents had strong feelings that it is a definite factor that will impact the use and adoption of any technology.

In respect to the level of readiness, the results indicate a moderate level of readiness implying that officers need to be educated on benefits of ICT to their day today work and therefore help them dispel fears about the use of ICT in policing.

#### **4.10.8 Bureaucratic culture in the stations**

Most respondents agreed that certain aspects of the nature of decision making have a strong positive correlation with IT adoption. Junior members of staff feel that their seniors especially those who joined the service before introduction of minimum education levels for qualifying as a basic requirement to be recruited may derail the processes of adoption. In addition, it was found out that there exists strong resistance to change within the ranks thus culminating in fears of slowing down e-policing agenda

#### **4.10.9 Government e-readiness**

There is a close relationship between the government e-readiness and the e-readiness for individual government departments. The E-Government Readiness Index (EGDI) is a composite measure of the capacity and willingness of countries to use e-government for ICT-led development. E-government is not driven by a single discipline such as information technology but a variety. The forces are derived from the social objectives of public administration in balancing efficiency, effectiveness and social efficacy, as well as, coping with the changing political landscape at both organizational and national levels. According to UN e-government readiness survey (2016) Kenya has an EGDI of 0.4186 and ranked 119 worldwide. This is a moderate rank which means that adoption of technology in the police service is achievable

#### **4.10.10Market forces**

The adoption of information technology is in many ways influenced by forces in the environment which necessitate an organization's e-readiness. The organization's perception of the connectivity, trust and willingness of the market forces such as Kenyan citizens, the judiciary, the Criminal investigations Department, the ministries of ICT and Interior and coordination and other partners to be committed and ready to consume the value of electronically generated policing services can affect maturity level of e-readiness and thus its decision to adopt e-policing. Organizations that perceive that their customers and partners are ready to conduct business electronically are more likely to adopt electronic services than when there is no such perception (NNI, 1999; Sillince, 1998).The National Police Service in Kenya is in many ways integrated with the business and social environment of the country. In this regard, there is increased pressure by the public to be able to access services from the police service. Similarly, other government agency like the Ministry of ICT has laid out frameworks and there is also a clear indication of readiness of consumption of electronic `services.

## 5 CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter summarizes the main findings, conclusion and recommendations emanating from the results of this study.

### 5.1 Summary

The main goal of this study was to identify factors that can be used to assess the e-readiness of a police station in Kenya, and then use the factors to carry out an e-readiness assessment on a sample of police stations and camps. A number of e-readiness frameworks were considered as part of the literature reviewed in this study. From the review, we established that there are many frameworks and models that can be used to assess e-readiness, however, none of them have been tested in a police station setup. Furthermore, they have been either focusing on the e-readiness of an economy, educational institutions, the whole country or adoption of specific technologies. For the purpose of this study and upon careful, assessment of the existing frameworks and models, the researcher was convinced that the Perceived E-readiness Model (PERM), which was proposed by Molla and Licker (2005), represents a number of variables that, if slightly modified, can be used to assess the e-readiness of a station. The researcher therefore added **police attitude** and **bureaucratic** nature of the police to the PERM model to represent the internal culture of the institution. This model was then used to frame the study guide for face to face tutorial and generate a questionnaire that was used to collect data.

The study was conducted in five police stations and camps with consideration of their geographic locations and type of police service as the Kenya National Police service is divided into two- the Kenya police service and the Administration police service. From our study findings, it's evident that, the levels of e-readiness to adopt information technology services in the Kenyan police stations are low. Consequently the levels vary from one station to another depending on the location of the station where urban based police stations and camps tend to be better endowed in terms of resources like electricity, some computer equipment's and availability of technical support. On the other hand,

administration police camps indicate much lower levels of e-readiness. This could be attributed to the fact that police camps do not process crime data and hence less commitment and investments from the government on computing facilities in the camps. On the same note, the camps tend to be located deep into the rural areas.

The findings also tend to indicate that police officer attitudes have a huge role to play. Officers who have served in the service for longer, who are in most instances part of the leadership in the police station, have low levels of positive attitude towards ICT adoption in police stations. Likewise the young members of the service perceive attitude from older members. The findings also indicate that internal bureaucratic nature of police systems play a big role in e-readiness as it shapes the internal readiness. This study clearly shows that issues relating to bureaucracy in any organizational setup are vital especially when one wants to introduce a change. This is because it directly affects how decisions are made and different leadership perspectives impact on the day to day running of any organization. Other factors that were considered in the study included awareness that was aimed at gauging the understanding of e-policing technologies, requirements, benefits and threats and projection of the future trends and its impact. According to the research findings, this is also a variable that has low levels. The commitment of the leadership and decision makers was also assessed in the study, Human resources, Governance, Government e-Readiness Market forces e-Readiness and Supporting Industries e-Readiness. The findings may print a dim picture about the preparedness of the stations to adopt information technology, it was established that the government and other stakeholders are really engaging to improve this aspects.

## **5.2 Conclusion**

Results from this study indicate that levels of e-readiness in police stations differ depending on a number of factors among them geographical location, the type of service-Administration police versus regular police, and other factors as identified using the PERM model with the addition of two other variables (officer's attitudes and bureaucratic nature of police officers and leadership ). In the

study we were able to identify factors that can be used to comprehensively measure e-readiness in a police station taking into account the unique nature of the organization of police. We also expected to use the framework to showcase the level of preparedness to adopt information technology related projects in three police stations namely Pangani in Nairobi city, Kisii police station in Kisii, Ugunja in Siaya and 2 AP camps namely Rumuruti and Laikipia.

We have documented the processes, lessons learnt and challenges of developing an organizational framework in an organization like the police in developing countries. The study has also contributed to theory of ICT project implementation in police station setups. And finally a tested e-readiness framework with eight variables divided into internal and external factors has been delivered. We consider that this provides a good starting point to even refine and make this tool better for the benefit of the public and security agencies as well.

Consequently, it is our trust that, the true status of a police station in terms of its ability to use information technology in its internal operations will help policy makers to avoid wastage of funds in terms of failed projects and be able to plan and assess the level of project implementations easily from time to time and replicate the same in key government departments going forward.

Despite its simplicity and limitations, the proposed assessment framework would correct the areas omitted by existing tools and lay a more comprehensive foundation for measuring and monitoring police stations e-readiness in Kenya and other developing countries.

### **5.3 Limitations of the study**

This kind of research required substantial financial resources and time in order to administer the questionnaire through the entire civil registration countrywide. The resources were limited and as such the questionnaire had to be administered in the few police camps/stations only. The study sample therefore is not adequate to comprehensively give a clear understanding as the various stations may have very specific requirements not realized in the selected sample therefore generalizations may not be appropriate. This may have caused a small margin of error on the



computed means though the results give the reflection and indication of the objective of the study. . However, an initial attempt to understand the adoption issues within the police station context has been made. Further, the study focuses mainly on tools relating to readiness to adoption of information technology without further and deep assessments on the impacts of the adoption.

#### **5.4 Recommendations**

According to the results obtained, the following recommendations are suggested:

1. Further research needs to be done to determine and rank the factors according to importance and applicability.
2. The government should increase commitment of governmental entities, management support towards E-policing initiatives, support their vision and provide leadership to E-policing projects.
3. Increase level of awareness through raising the level of understanding of E-policing threats and benefits and E-policing technologies.
4. Draw capacity building and training plans to train officers on ICT use, support and other aspects
5. The ministry of Interior and Coordination should work with ministry of energy to ensure power provision to all police stations posts and camps in Kenya
6. Further research needs to be carried out to test the framework in different setups and geographical locations.

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## APPENDIX I: QUESTIONNAIRE

### AN E-READINESS ASSESSMENT OF POLICE STATIONS TO ADOPT INFORMATION TECHNOLOGY

#### Section A: Demographic Information

1. Station/Camp/

2. What is your gender?

Female  Male

3. In which category does your age fall?

20-30  31-40  41-50  More than 50

4. What's your current position?

-----

5. What is the highest level of training on ICT that you have attained?

University Graduate  Diploma/Certificate  Seconda

Others -----

#### Section B: Technology Resources

6. How would you categorize your station's IT infrastructure capabilities? (Please tick the applicable circle)

No computers

Few computers used for typing/printing

Few networked computers used only for email and maybe Management

Fully networked department with applications on central server in departmental center

Fully networked department with applications on central server in police data center

7. Is there an IT department within the police station?

Yes

○ No

8. How many IT trained staff (in numbers) are there at your station under the following categories? (In-house means staff employed in the department).

Number of trained IT staff (In-House) .....

Number of trained IT Staff (Outsourced) .....

9. From the following parameters rate on a scale of five the level at which you agree with the IT situation at your station 1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree NA = Not Applicable or Don't Know

	1	2	3	4	5	NA
There is ease in access to the fixed phone						
There is access to the fax machine						
There is availability of hardware tools such as computers, printers, and scanners						
There is easy access to the internet						
Organization has access to wireless connections						
Organization's access to LAN						
Organization's access to WAN						
Existence of suitable physical space for computer and IT sections						
Power connectivity and availability						

### 10. Organizational Culture Dimensions

Please rate the organizational e-readiness by assessing whether the following are put into consideration. 1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree NA = Not Applicable or Don't Know

	1	2	3	4	5	NA
Assessment of the current Organization systems is done in terms of IT resources (people, applications, technology, facilities, and data)						
Responsibility of all departments and employees involved						
Associated changes in the Organization's structure						
Establishment and communication of IT policies and procedures to all employees						
Ways of dealing with continuous political, bureaucratic, and technical changes and risks						
Identification of possible internal funding for specific IT project						
Identification of stakeholders involved						

Role of each stakeholder						
Value to be realized on each stakeholder as a result of implementing						
IT is used in all functions of the organization						

### 11. Organizational Commitment to e-readiness

	1	2	3	4	5	NA
The leadership of the police service believes e-governance is important						
The leadership of the police service believes adoption of information technology in their work will enhance efficiency and effectiveness						
Do you think the leadership is prepared to take risks of adopting ICT						
Electronic model of communication has been taken as a priority within the police service						
The leadership within the police service is committed to modern information technology						
Most of the employees within the police service can understand IT issues						
Most of the employees have been encouraged to embrace use of ICT in policing						
There is a policy that encourages adoption of e-policing						
Our organization is capable of dealing with rapid changes though support of leaders						

### 12. External E-Readiness

Please rate whether the following factors are prompting the adoption of e-governance in your organization

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree NA = Not Applicable or Don't Know

	1	2	3	4	5	NA
There have been experiences of changing operations in the Organization as a result of using IT in the external environment						
The adoption of IT is informed by changing operational processes informed by changing trends in other organizations						
There is increased demand by citizens to conduct business digitally						
Legal environment encourages to conduct business on the Internet						

There is a direction to streamline business processes in the police operations						
There exist a strong integration of business processes between the different government agencies that work with the police						
The Organization is highly collaborative with other public agencies in the solution of problems, service delivery, or better work flow						
There is a dialogue with citizens using the police's electronic services concerning importance of IT use in police force						

### 13. Human Resource E-readiness

Human resources e-readiness (How would you rate your abilities in the given metrics below, Insert the applicable score out 5 with 5 being Excellent and 1 being Very Poor)	1	2	3	4	5
Relevant technical knowledge/skills required to execute my duties using ICT					
Relevant certification in field of ICT					
Had prior relevant experience before I joined the service on use of computer application					
Comprehensive knowledge of the work practices, processes and procedures relevant to use of IT tools in the service					
Experience of working with specialized IT equipment and machines in my work					
Ability to work independently without supervision on ICT usage					
Ability to learn new things through personal initiative especially those related to IT					
Ability to learn new things through personal initiative especially those related to IT					

### 14. Police Bureaucracy Dimensions

<i>(How would you rate your police organization in the given metrics below, Insert the applicable score out 5 with 5 being Excellent and 1 being Very Poor)</i>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Insularity, parochialism ("not invented here" syndrome) and the pursuance of personal interest rather than the common good					
Complex accountability and governance arrangements, particularly at a national level which create shared but diluted responsibility					
Inconsistent leadership, lack of trust, poor risk management and an					



'institutionalized' blame culture					
My police station is flexible in terms of rules and procedures of operation					
In my police station, paperwork is used only when necessary as determined by the bosses					
In my police station rules are set to fit specific situations.					
Overreliance on demonstrating compliance.					
In my police station authority is decentralized to optimize customer interaction					
More responsibility and accountability is given at operational level					

### 15. Officers Attitude Dimensions

<i>(How would you rate your police organization in the given metrics below, Insert the applicable score out 5 with 5 being Excellent and 1 being Very Poor)</i>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Our police organization is open and interacts with customers					
I am ready and open to change to use of ICT					
I prefer to do my work even if there are other tools to use					
Use of information technology will improve my work efficiency and effectiveness					
I fear the introduction of ICT in crime recording and processing					
People who influence my behavior, such as my supervisors think that I should use ICT					
If I heard about a new information technology, I would look for ways to experiment with it					

### 16. Support Industries E-readiness

What skills are necessary to better your E-readiness?

\_\_\_\_\_

Do your skills match with requirements to e-readiness?

Yes \_\_\_\_\_ No \_\_\_\_\_

Are there internal training programs within the police to enhance your e-readiness?

Yes \_\_\_\_\_ No \_\_\_\_\_

What skills or new IT competencies do you need to keep up with service delivery in future?

\_\_\_\_\_

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Are you aware of any courses or training opportunities that may be beneficial to you?

1. Yes
2. No

How would you rate the current e-readiness in your department? *(Circle only one appropriate option)*

1. Excellent
2. Good/can do better
3. Fair/ needs improvement
4. Bad/ non-existent

17. Weighing the significance of the factors considered in the study

<i>(How significant do you think the following factors are in determining adoption of information technology in the police station? Insert the applicable score out of 5 with 5 being very significant and 1 being Very insignificant)</i>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Awareness					
Human resource					
Technology resources					
Leadership commitment					
Governance					
Business resources					
Police officers attitude					
Bureaucracy of officers and systems					
Government e-readiness					
Market forces					
Support industries e-readiness					

-----End-----

## APPENDIX II

### 5.5 Schedule of work

	Task	Start Date	End Date	Duration(Days)	Days Remaining
1	Preliminary study	1/19/2016	2/19/2016	30	0
2	Requirements and specification analysis	1/19/2016	2/28/2016	10	0
3	Literature review	3/1/2016	3/16/2016	16	0
4	Proposal writing	3/16/2016	5/15/2016	30	0
<b>5</b>	<b>Milestone 1 presentation</b>	<b>6/6/2016</b>	<b>6/10/2016</b>	<b>5</b>	<b>0</b>
6	Questions formulation and printing	6/15/2016	6/20/2016	5	0
7	Dissemination of research questions	6/20/2016	6/30/2016	10	0
8	Carrying out of interviews	7/02/2016	7/16/2016	14	0
9	Collection of filled forms	7/16/2016	7/31/2016	15	0
10	Data analysis and interpretation	8/1/2016	8/10/2016	20	0
<b>11</b>	<b>Milestone 2 presentation</b>	<b>8/10/2016</b>	<b>8/20/2016</b>	<b>11</b>	<b>0</b>
12	Generation of initial reports	8/20/2016	8/22/2016	2	0
13	Writing of research paper(report)	8/30/2016	10/10/2015	40	0
<b>14</b>	<b>Milestone 3 presentation</b>	<b>12/30/2016</b>	<b>12/10/2016</b>	<b>1</b>	<b>1</b>

Table 5.5-1: Project work schedule

### 5.6 Gantt chart

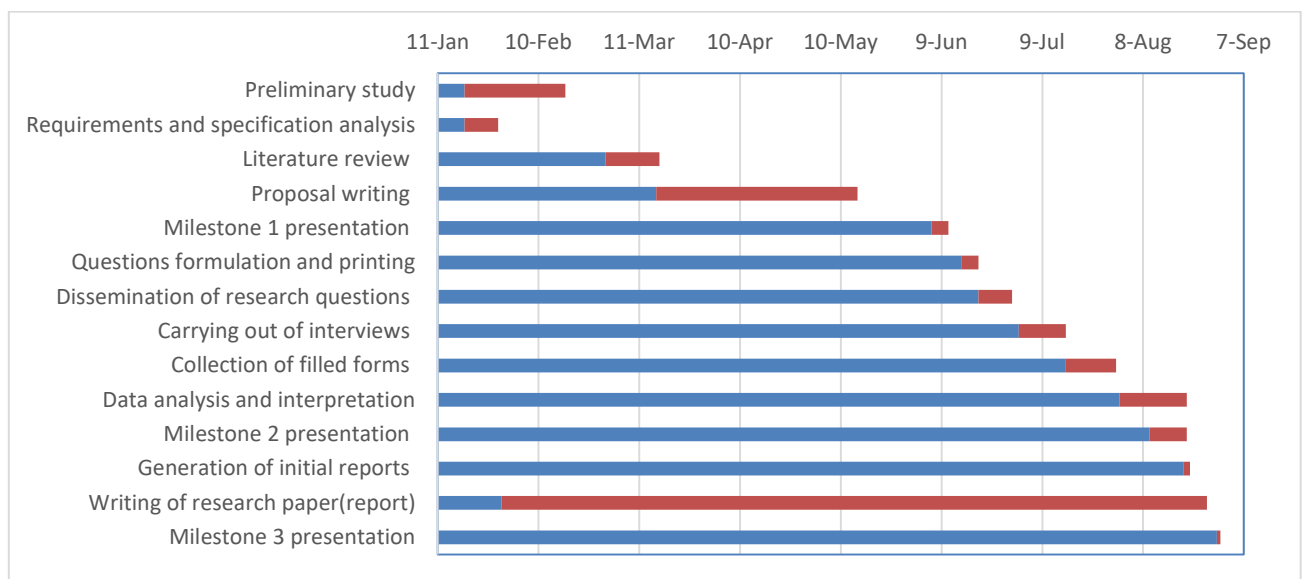


Figure 5.6-1: project Gantt chart

### 5.7 Project Budget

Item	Description	Amount (Ksh)
Communication	Airtime and data bundles purchase	20,000
Transport	Fuel to travel to and from the sites	50,000
Design and printing of tools	60 Questionnaires @100	6000
Stationery	Writing materials and pens	1000
Courier services	Courier of the questionnaires and answers	3,000
Accommodation and meals	Field accommodation and meals	50,000
<b>Total</b>		<b>133,000</b>

Table 5.7-1: project budget estimates