

**UNIVERSITY OF NAIROBI**

**FACULTY OF ARTS**

**DEPARTMENT OF SOCIOLOGY AND SOCIAL WORK**

**ASSESSING THE IMPACT OF INFORMATION TECHNOLOGY ON THE  
GATHERING OF CRIME INTELLIGENCE BY DCI INVESTIGATORS**

**(2011-2016)**

**BY**

**CHARITY JEBET ROP SIGILAI**

**C50/60535/2013**

**CSO 698: RESEARCH PROJECT**

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF  
ARTS IN SOCIOLOGY (CRIMINOLOGY AND SOCIAL ORDER) UNIVERSITY  
OF NAIROBI**

**NOVEMBER, 2018**

**DECLARATION**

This research project report is my original work and has not been presented for award of a degree in any other university.

Signed..... Date.....

**CHARITY JEBET ROP SIGILAI**

**REG. NO.: C50/60535/2013**

This research project report has been submitted for examination with my approval as the University Supervisor.

Signed..... Date.....

**PROF. EDWARD MBURUGU**

**SUPERVISOR**

## **DEDICATION**

I dedicate this research project to my family for their love, support and prayers throughout this study. I cherish your valuable contribution to most of this work.

## **ACKNOWLEDGEMENTS**

I wish to thank the Almighty God for his love, providence and for enabling me to accomplish this research project work.

My heartfelt appreciation and gratitude goes to the following people and organizations who guided and supported me in this study. I wish to immensely appreciate my supervisor; Prof. Edward K. Mburugu to his guidance and professional input throughout the study.

To my colleagues in the M.A Criminology and social order class of 2016 for their teamwork and moral support. Department of Sociology and social work at the University of Nairobi under the leadership of Prof. C. B. K. Nzioka for having given me the opportunity to be part of this degree programme.

My appreciation also goes to my workmates at the Directorate of criminal investigation headquarters (DCI), who participated in filling the study questionnaires. Indeed you accorded me the necessary support to complete this study.

Finally to my employer, Directorate of Criminal Investigation Department (DCI) which is under the National Police Service (NPS) for granting me the time and financial support to pursue my academic ambitions.

May God bless you all.

## TABLE OF CONTENTS

<b>DECLARATION</b> .....	<b>ii</b>
<b>DEDICATION</b> .....	<b>iii</b>
<b>ACKNOWLEDGEMENTS</b> .....	<b>iv</b>
<b>LIST OF TABLES</b> .....	<b>viii</b>
<b>LIST OF FIGURES</b> .....	<b>ix</b>
<b>ABSTRACT</b> .....	<b>x</b>
<b>CHAPTER ONE: INTRODUCTION</b> .....	<b>1</b>
1.1 Background to the Study.....	1
1.2 Statement of the Research Problem .....	3
1.3 Research Questions .....	4
1.4 Objectives of the Study.....	4
1.4.1 General Objective .....	4
1.4.2 Specific Objectives .....	4
1.5 Justification of the Study .....	5
1.6 Scope and Limitations of the Study .....	6
1.6.1 Scope and Limitations of the Study.....	6
1.6.2 Scope and Limitations of the Study.....	7
<b>CHAPTER TWO: LITERATURE REVIEW AND THEORETICAL</b>	
<b>FRAMEWORK</b> .....	<b>9</b>
2.1 Introduction.....	9
2.2 Literature Review.....	9
2.2.1 Background of the study.....	9
2.2.2 Information Technology and Crime Intelligence Gathering .....	10
2.2.3 Information Technology and Crime Intelligence Mapping and Analysis .....	11
2.2.4 Information Technology and Information Sharing.....	13
2.2.5 Information Technology and Crime Evidence .....	14
2.3 Theoretical Framework.....	16
2.4 Conceptual Framework.....	18

<b>CHAPTER THREE: STUDY METHODOLOGY .....</b>	<b>19</b>
3.1 Introduction.....	19
3.2 Research Site.....	19
3.3 Research Design.....	20
3.4 Unit of Analysis and Units of Observation.....	21
3.5 Target Population.....	21
3.6 Sample Size and Sampling Procedure .....	22
3.6.1 Sample Size .....	22
3.6.2 Sampling Procedure.....	23
3.7 Data Collection Methodology.....	24
3.7.1 Collection of Quantitative Data .....	24
3.7.1 Collection of Qualitative Data .....	24
3.8 Reliability and Validity of the Data .....	24
3.9 Ethical Considerations .....	25
3.10 Data Analysis .....	25
<b>CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND</b>	
<b>    INTERPRETATION .....</b>	<b>26</b>
4.1 Introduction.....	26
4.2 Social and Demographic Information of Respondents .....	26
4.2.1: Gender Distribution .....	26
4.3 Extent to Which Information Technology Has improved Crime Intelligence	
Gathering.....	28
4.4 Extent to Which Information Technology Has Enhanced Security of Police Officers	
in the Process of Intelligence Gathering .....	30
4.5 Impact of Information Technology on Crime Intelligence Mapping and Analysis .....	32
4.6 Impact of Information Technology on the Quantity and Quality of Evidence against	
Crime Suspects.....	33
4.7 Impact of Information Technology on Crime Prevention.....	34
4.8 Extent to Which Information Technology Impacts on Information Sharing .....	36

4.9 Cross tabulation of Data on Information Technology and Intelligence Gathering for Law Enforcement Agencies .....	39
4.9.1 Information Technology Usefulness by Law Enforcement Agents Based on Their Years of Service at an Agency.....	40
4.9.2 Information Technology Usefulness by Law Enforcement Agents Based On Their Rank .....	40
4.9.3 Information Technology Usefulness by Law Enforcement Agents Based On Their Education Level .....	41
4.9.4 Relations among Variables .....	42
<b>CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.</b>	<b>44</b>
5.1 Introduction.....	44
5.2 Summary of Findings.....	44
5.3 Conclusion of the Study.....	45
5.4 Recommendations of the Study .....	46
<b>REFERENCES.....</b>	<b>51</b>
<b>APPENDICES.....</b>	<b>53</b>
APPENDIX I: Research Authorization Letter .....	53
APPENDIX II: Structured Questionnaire.....	54
APPENDIX III: Key Informant Interview Guide.....	61

## LIST OF TABLES

<b>Table 3.1:</b> Target Population in the Directorate of Criminal Investigations .....	22
<b>Table 3.2</b> Target population (officers) and the distribution of sample by ranking. ....	23
<b>Table 4.1</b> Gender Distribution of Respondents .....	26
<b>Table 4.2</b> Gender Distribution according to Number of Years Worked at the DCI .....	27
<b>Table 4.3</b> Distribution of Respondents by Ranking .....	27
<b>Table 4.4</b> Distribution of Respondents by Level of Education .....	28
<b>Table 4.5</b> Extent to Which Information Technology Has Increased Crime Intelligence Gathering.....	29
<b>Table 4.6</b> Extent to Which Information Technology Has Enhanced Security of Police Officers in the Process of Intelligence Gathering .....	31
<b>Table 4.7</b> Impact of Information Technology on Crime Intelligence Mapping and Analysis.....	32
<b>Table 4.8</b> Impact of Information Technology on the Quantity and Quality of Evidence against Crime Suspects .....	34
<b>Table 4.9</b> Impact of Information Technology on Crime Prevention.....	35
<b>Table 4.10</b> Extent to Which Information Technology Impacts on Information Sharing ..	37
<b>Table 4.11</b> Usefulness of Information Technology and Intelligence Gathering at the Departmental Level.....	39
<b>Table 4.12</b> Information Technology Usefulness by Law Enforcement Agents Based On Their Years of Service at an Agency .....	40
<b>Table 4.13</b> Information Technology Usefulness by Law Enforcement Agents Based on their rank .....	40
<b>Table 4.14</b> Information Technology Usefulness by Law Enforcement Agents Based on their Education Level.....	41



## LIST OF FIGURES

<b>Figure 2.1:</b> Conceptual Framework .....	18
---	----

## ABSTRACT

The 21<sup>st</sup> century is fraught with innumerable challenges to policing emanating from emergent and mutating forms of criminal acts ranging from terrorism to organized crime and entrepreneurial crime. While traditionally, the predominant strategy employed by law enforcement agencies especially in regard to crime prevention and crime response has been centered on motorized preventive patrol and response to calls for service, recent technological developments as well as the evolution of crime and contemporary concerns over new and mutating forms of crime have created new technological problems and demands for police, as has the growth of cyber-crime.

Against this background therefore, this study sought to assess the impact of information technology on policing using the case of intelligence gathering on crime in the Directorate of Criminal Investigations in Kenya's National Police Service by examining the extent to which information technology has impacted on crime intelligence gathering, mapping and analysis, crime prevention, improved quantity and quality of evidence and security of police officers. The study used stratified sampling technique. The choice of stratified sampling was informed by the fact that there was a need to identify officers involved in crime intelligence gathering and/or those who have information on the study as well as their ranking within the DCI.

The study employed the *broken window* theory to examine the impact of information technology on policing owing to its emphasis on the fact that crime and all its negative consequences can be prevented and if one of the factors leading to crime, that of the policing end, can be addressed by the adoption of information technology. The study adopted a case study approach and data was collected using both quantitative and qualitative data collection methods. The data was collected, coded and analyzed using the statistical packages for the social sciences (SPSS) programme.

The key findings were that information technology has enabled DCI to use information systems to sieve out useful and non-useful intelligence, that it has enabled law enforcement agents to source crime intelligence more effectively; made their crime intelligence collection work easier and helped them cope with the amount of intelligence police need to do their work effectively. Lastly information technology has increased crime intelligence mapping and analysis within the Directorate of Criminal Investigations.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background to the Study

The 21<sup>st</sup> century is fraught with innumerable challenges some that have been with humanity for eons while others are either emergent forms of crime or mutating forms of criminal acts ranging from terrorism to organized crime and entrepreneurial crime in all forms. According to David L. Carter, late 20<sup>th</sup> and 21<sup>st</sup> century criminal acts such as drug trafficking and the associated crime of money laundering, continue to be a significant challenge for law enforcement agencies across the globe. In addition, transnational cybercrime such as internet fraud, identity theft cartels as well as global black marketeering of stolen and counterfeit goods, are some of the entrepreneurial crime problems that are increasingly becoming a norm if the volume of criminal incidents in the recent past is anything to go by (Carter, 2009). The mutation of traditional criminal acts such as trafficking has seen the art and antiquities of the same increase, often bringing a new profile of criminal into the realm of entrepreneurial crime (Carter, 2009) .

Traditionally, the predominant strategy employed by law enforcement agencies especially in regard to crime prevention and crime response has been centered on motorized preventive patrol and response to calls for service. This strategy, in place since the dawn of the 21<sup>st</sup> century was largely developed in response to the invention of the automobile and radio communications. However, recent technological developments as well as the evolution of crime and contemporary concerns over new and mutating forms of crime

such as organized crime and terrorism have created new technological problems and demands for police, as has the growth of computer-related crime (Solar, 2015).

There have been many important developments with respect to information technologies, analytic systems, video surveillance systems, license plate readers, DNA testing, and other technologies that have far reaching implications for policing amongst law enforcement agencies (Koper, Lum, Willis, Woods, & Hibdon, 2015). While technology acquisition and deployment decisions are high-priority topics for police, it is also important to examine the end product of technology in policing amongst law enforcement agencies and more so in regard to crime intelligence gathering. In this regard, the application of crime intelligence is of paramount importance by the law enforcement community if it desires to not only be effective but also be a pro-active law enforcement agency (Carter, 2009). Indeed, there has been a recognition and unequivocal support for intelligence-led policing as a collaborative enterprise that is primarily based on improved intelligence operations and community-oriented policing and problem solving.

The success of these measures has been monumental achievement with the field of law enforcement benefiting immensely over the years (Peterson, 2005). Media especially online has been monitored especially in West agencies of law enforcement. This has led to intelligence gathering and control any form of crime under investigation. There was evidence from the research by Mateescu, et al., (2015) that 80% in 2014 vendor online survey used media especially social as a tool to gather intelligence. In the US, it has been

cases of arrest of those criminals who boast their criminal offences online, they are tracked and also arrested (Mateescu, et al., 2015).

## **1.2 Statement of the Research Problem**

Advances in ICTs have been a mixed blessing for the Kenyan law enforcement agencies. With the explosive emergence and adoption of these technologies across the globe, law enforcement agencies have been equipped with tools that can necessitate and make it to coordinate like never before, creating an entirely new digital space of policing (Solar, 2015). ICTs include use of CCTV coverage, In-cities, use of drones to obtain intelligence data, forensic analysis of digital gadgets to name but a few.

Here in Kenya, the focus on technology and policing has been researched on by scholars such as Risper Nyongesa who has examined the strategy implementation process as a sustainability process in the Kenya Police Service (Nyongesa, 2013). However, the supply side of policing especially in light of the revolutionary nature that technology has had on the Kenyan society in general and especially in urban set ups in particular has not been holistically examined particularly in regard to the strategic criminology issues occasioned by technology. There is thus a dearth in the holistic examination of the impact of information technology on crime intelligence in Kenya.

Against this background therefore, this study sought to assess the impact of information technology on policing using the case of intelligence gathering on crime in the Directorate of Criminal Investigations in Kenya's National Police Service.

### **1.3 Research Questions**

- i. To what extent has information technology improved crime intelligence gathering by DCI investigators?
- ii. To what extent has information technology enhanced the security of police officers in the course of intelligence gathering?
- iii. To what extent has information technology impacted on crime intelligence mapping and analysis?
- iv. To what extent has information technology improved the quality of evidence against crime suspects?
- v. What impact has information technology had on crime commission?
- vi. What implications has information technology had on sharing of crime intelligence?

### **1.4 Objectives of the Study**

#### **1.4.1 General Objective**

The general objective of the study is to assess the impact of information technology on gathering of crime intelligence at the Directorate of Criminal Investigations department of the Kenya National Police Service.

#### **1.4.2 Specific Objectives**

The specific objectives that guided this study are;

- i. To assess the extent to which information technology has improved security of police officers in the process of intelligence gathering

- ii. To establish the impact of information technology on level of crime intelligence mapping and analysis
- iii. To examine the extent to which information technology has improved quality of evidence against crime suspects
- iv. To ascertain the extent to which information technology impacts on crime commission
- v. To analyze the impact of information technology on crime intelligence sharing

### **1.5 Justification of the Study**

Understanding the effects of technological change is a critical issue in the contemporary law enforcement sphere, especially in the context of the ICT revolutionary changes that have occurred in the last two decades of the 21<sup>st</sup> century. In this regard, technology acquisition and deployment decisions are high-priority topics for law enforcement agencies.

This study will aid the Directorate of Criminal Investigations in particular and Kenya's National Police Service in general in evaluating its policies and approaches on technology uptake, use and innovations on crime prevention. This will then help the National Police Service to determine areas of weaknesses in the formulations and implementation of the technology by making necessary adjustments in order to enhance the level of security. This study will also be an addition to the already existing literature on technology and crime prevention particularly in sub-Saharan Africa. The findings can

then be utilized by future researchers and academicians as they carry out their own literary works .

## **1.6 Scope and Limitations of the Study**

### **1.6.1 Scope and Limitations of the Study**

The study focused on the Directorate of Criminal Investigations, a department of the Kenya National Police Service. The study sought to examine the impact of information technology on crime intelligence gathering strategies, crime intelligence mapping and analysis as well as information sharing by examining how the Directorate of Criminal Investigations in Kenya's National Police Service employs information technology tools.

The study further also sought to determine the extent to which information technology has enhanced security of police officers in the process of intelligence gathering. To this end therefore, the study focused on the influence of technological innovations such as mobile technology and virtual intelligence mapping and its import on enhance security of police officers. In addition, the study sought to examine whether information technology has improved quantity and quality of evidence against crime suspects and especially in regard to the ability to pursue cases to their logical conclusion. Furthermore, the study also sought to ascertain the extent to which information technology prevents crime commission. The focus here was on the import of information technology innovations and their significance in crime prevention. Finally, the study sought to examine how the implementation of information technology in crime intelligence gathering, mapping and analysis has mutated in time and space especially with regard to the Directorate of



Criminal Investigations' policies and protocols; the incorporation of information technology into the planning process of intelligence gathering and information sharing processes.

### **1.6.2 Scope and Limitations of the Study**

This study is a case study and as such it is limited to the Directorate of Criminal Investigations in Kenya's National Police Service. Owing to the nature of the researcher, the researcher may face suspicion from the targeted respondents who will be worried that the information they gave will most likely be used to victimize and persecute them or be used to expose the tools used by the law enforcement agencies. The researcher will however assure the respondents that the information collected will only be used for academic purposes. In addition, the researcher will assure them that any information volunteered by the respondents will be treated with utmost confidentiality.

Suspicions and the attendant reservations may affect the level of cooperation from the targeted respondents which may result in a limitation being put by the respondents on the amount of information volunteered in the course of collecting data which may lead to scarcity of data as some of the cases investigated are of high profile and the data need to be protected. In addition, they may be reserved and volunteer information that is in the public domain and conceal information critical in establishing the crux of the study. The researcher will however assure the respondents of the importance of the research and the top beneficiaries who include the respondents themselves and the Directorate of Criminal Investigations in particular.

Structurally, the study is limited to Directorate of Criminal Investigations headquarters in Kiambu-Kenya's National Police Service. This may thus limit the amount of information gotten as well as its generality and the challenge of the study moving beyond the descriptive due to institutional and geographical scope of the study. However, the study will seek to triangulate data with a view to generalizing the information gotten to get a better grasp of issues within specialized law enforcement agencies and departments. Spatially, the study will be limited to DCI Headquarters. While it will limit the generality and ability of the scholar to make generalizations, it will enable the researcher undertake a deeper but holistic study of the case.

## **CHAPTER TWO**

### **LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

#### **2.1 Introduction**

This chapter sought to review literature on the impact of information technology on policing with a view to examining the lacuna in literature on the extent to which information technology has increased crime intelligence gathering, enhanced security of police officers in the process of intelligence gathering, crime intelligence mapping and analysis; improved quantity and quality of evidence against crime suspects as well as the prevention of crime commission and analyze the impact of information technology on crime intelligence sharing.

#### **2.2 Literature Review**

##### **2.2.1 Background of the study**

Across the globe, literature on technology and policing, as articulated by scholars such as (Koper, Lum, Willis, Woods and Hibdon (2015) has tended to focus more on operation and outputs and especially in regard to answering the question of whether a technology works and makes a process faster within the operations of law enforcement agencies. Furthermore, literature has extensively addressed effectiveness of technology in the hands of law enforcement agencies and its efficacy in reducing crime or improving service to citizens (Koper, Lum, Willis, Woods, & Hibdon, 2015; Solar, 2015).

After independence in most third world countries, breakdown of law and order as populations exploded and service delivery declined began to steadily rise especially in the course of the 1960s and the 1970s.

The police should prevent crime mainly as opposed to situations where they are assumed to act on already occurring incidences. This therefore calls for those preventive measures that need to be considered and implemented to make sure that the role is well manifested. Once police force has been well equipped, their service becomes easy and the society at large enjoys insecurity free society.

### **2.2.2 Information Technology and Crime Intelligence Gathering**

In law enforcement agencies, information is key and pivotal in ensuring that the agency in question keeps a tab of all its activities with a view to not only identifying trends but also connecting dots with a view to preventing crime. To this end, law enforcement agencies keep records of their activities. With regards to crime prevention, law enforcement agencies have a long history of gathering information on crime. This thus points to a pivotal import of information to crime prevention.

Supporting Byrne and Marx (2011) is Dunworth (2000) who is of the view that law enforcement agencies are in a prime position of using information technology in ways that are unique in ensuring criminal justice. Dunworth (2000) argues that law enforcement agencies require a clear understanding of their environment and the ways they can adapt to it (Dunworth, 2000).

It is however important to note that while most of these records have historically been captured on paper, the advent of information technology has heralded a new era in as far as information gathering in law enforcement is concerned.

### **2.2.3 Information Technology and Crime Intelligence Mapping and Analysis**

Another novel innovation is the Computer-Aided Dispatch (CAD) Systems which is based on the policing need for a rapid response to calls for service. Owing to the mandate of law enforcement professionalism viewing quick service-call response as a measure of organizational effectiveness, the system arose as a need to address the tremendous inefficiencies occasioned by jammed analogue dispatch systems such as telephone calls (Dunworth, 2000).

With regard to information sharing and the internet amongst law enforcement agencies, it is worth noting that information and knowledge lie at the heart of most law enforcement activities. While the overriding notion is that policing is primarily associated with patrolling the streets, as law enforcement agents must also gather and share intelligence. This is due to the fact that law enforcement agents rely on information, gathered facts and tacit knowledge developed from street experience in order to draw conclusions (Lindsay, Cooke, & Jackson, 2009).

Sharing of this information and knowledge effectively is also a critical and pivotal step to effective crime prevention, reduction and investigation strategies. To this end, law enforcement agents must work together rather than in isolation to solve criminal cases (Lindsay, Cooke, & Jackson, 2009).

The key challenge however is that law enforcement agencies encounter significant barriers in effectively sharing knowledge key among them irrational bureaucratic cultures, mammoth hierarchical command structures as well as authoritarian management style. With the base of this hierarchical pyramid containing the vast majority of employees, it is difficult to tap into the entire wealth of knowledge held at the lower level. The end result is a break down in the flow of information thus hindering effective decision-making (Lindsay, Cooke, & Jackson, 2009).

According to Chan (2001), technological change has altered important aspects of the 'field' of policing—technology has redefined the value of communicative and technical resources, institutionalized accountability through built-in formats and procedures of reporting, and restructured the daily routines of operational policing. However, Chan (2001) is of the view that even though the cultural dominance of law-enforcement policing style and resentment towards the demands of management and external agencies remains.

According to Manning (1992), the most important recent innovations in policing is the embedment of technology in police work. This is due to the fact that, Manning (1992) postulates, the police are information dependent and rely on the public as a primary source of information. Manning (1992) argues that there are at least three types of police information (primary, secondary, and tertiary), intelligence (prospective, retrospective, and applied), and operational strategies (preventive, prospective, and reactive), each of which interacts in a complex fashion with technology (Manning, 1992).

These processes, Manning (1992) further argues, are importantly patterned by police work, especially the role of the patrol officer, and the occupational cultures of policing. Technology is embedded in social organization; it shapes organizations and is shaped by them (Manning, 1992).

#### **2.2.4 Information Technology and Information Sharing**

With the advent of information technology however, better IT systems have heralded an increase in the number of police departments who use internal networks to connect computers within law enforcement agencies. This has also allowed police agencies, who have been typically fragmented from each other to share large amounts of information about crimes and criminals. In addition, it has facilitated the streamlining of the administration of this information. To this end, agencies are now not only linked horizontally across various local police departments, but vertically as well with local, national and regional agencies sharing information (Dunworth, 2000).

The ideal behind information sharing technology is the desire to mould an integrated justice system whereby law enforcement agencies are not only linked at various levels together, but also linkages are established to court and corrections systems. This allows criminal justice agencies to track individuals through the system, thus improving the quality and accuracy of data, the speed with which it is available, and the elimination of redundant or superfluous data entry (Dunworth, 2000).

Another common application of internet technology, and one that has been increasing steadily in recent years, is the building of police web sites whereby these sites largely serve as a means of enhancing communication between the law enforcement agencies and the public. This is done through a variety of means key among them; aiding the public with contact information thus facilitating the ability of the public to contact appropriate police personnel; disseminating important information, such as crime prevention brochures, crime reports and advisories and a “most wanted” criminals list (Manning, 2003; Stroshine, 2004).

With regard to crime prevention, as a concept with criminological circles, it denotes the activities such as crime prevention programs and/or strategies as well as the outcomes of the same such as lower levels of crime in communities and/or lower levels of offending/re-offending by individuals. It is based on the understanding of the pivotal role that formal social control mechanisms such as the deterrent effects of police, courts, and corrections and informal social control mechanisms, with a focus on the influence of family, peers, school, work, community and the role of shame and belief systems/religion through mechanisms such as attachment, commitment, and involvement. Furthermore, crime prevention strategies target different levels of prevention and on the need for individual, parochial and public actions to prevent crime (Byrne & Marx, 2011).

### **2.2.5 Information Technology and Crime Evidence**

The advent of information technology has however enabled preventive measures to be undertaken such as virtual patrol networks. This includes closed circuit television



(CCTV) surveillance systems. In almost all cities in Britain, this has been the *modus operandi* of crime prevention with police having an upper hand in crime monitoring (Byrne & Marx, 2011).

The key challenge with literature on policing and information technology is that while it shows how law enforcement agencies across the world are acquiring information technology to enable in policing and information gathering, the key unanswered question is on how the police are using this IT. This is due to the fact that if a law enforcement agency purchases systems with a view to just but switch from a paper to an electronic system, then it is missing out on the leverage acquired from core policing technologies. In this regard, while the potential effects of information technology (IT) systems on police productivity will be driven, in part, by the match between the technology and police activities, there is a need to understand how the technology is used. In Kenya, there is a lacuna in this realm.

It is also important to note that in modern policing, how information is used for reactive response to incidents is significantly different from proactive and community-policing activities. To this end, the effects of IT will be quite different depending on the architectural configuration of law enforcement agencies. It is thus important to assess the effects of IT systems on law enforcement based on the architectural configuration of specific cases, the Kenyan case for instance being a distinct one. Another issue of concern stems from what Jackson, Greenfield, Morral, and Hollywood (2015) cite out as the workability of systems within a law enforcement agency.

Finally, there is a pivotal need to have parameters to measure the impact of information systems on policing and especially in regard to crime intelligence gathering and prevention. According to Brynjolfsson (1993) the measurement of outputs and inputs as well as the management of information and technology by a law enforcement agency are key hence the need for a study to address these issues (Brynjolfsson, 1993). Such a study is missing in the Kenyan case.

### **2.3 Theoretical Framework**

This study employed the *broken windows* theory to examine the impact of information technology on policing. Popularized by James Q. Wilson and George Kellings (1982), the *broken window* theory operates on the backdrop of the fact that policing is influenced by the social environmental i.e., the societal measures in place in the society in question have a direct influence on patterns of offending has been taken up. In their theory, James Q. Wilson and George Kellings aptly demonstrate that certain signs of disorder (broken policing, decaying law enforcement institutions, broken windows, housing abandonment, litter and graffiti) will encourage criminality in communities.

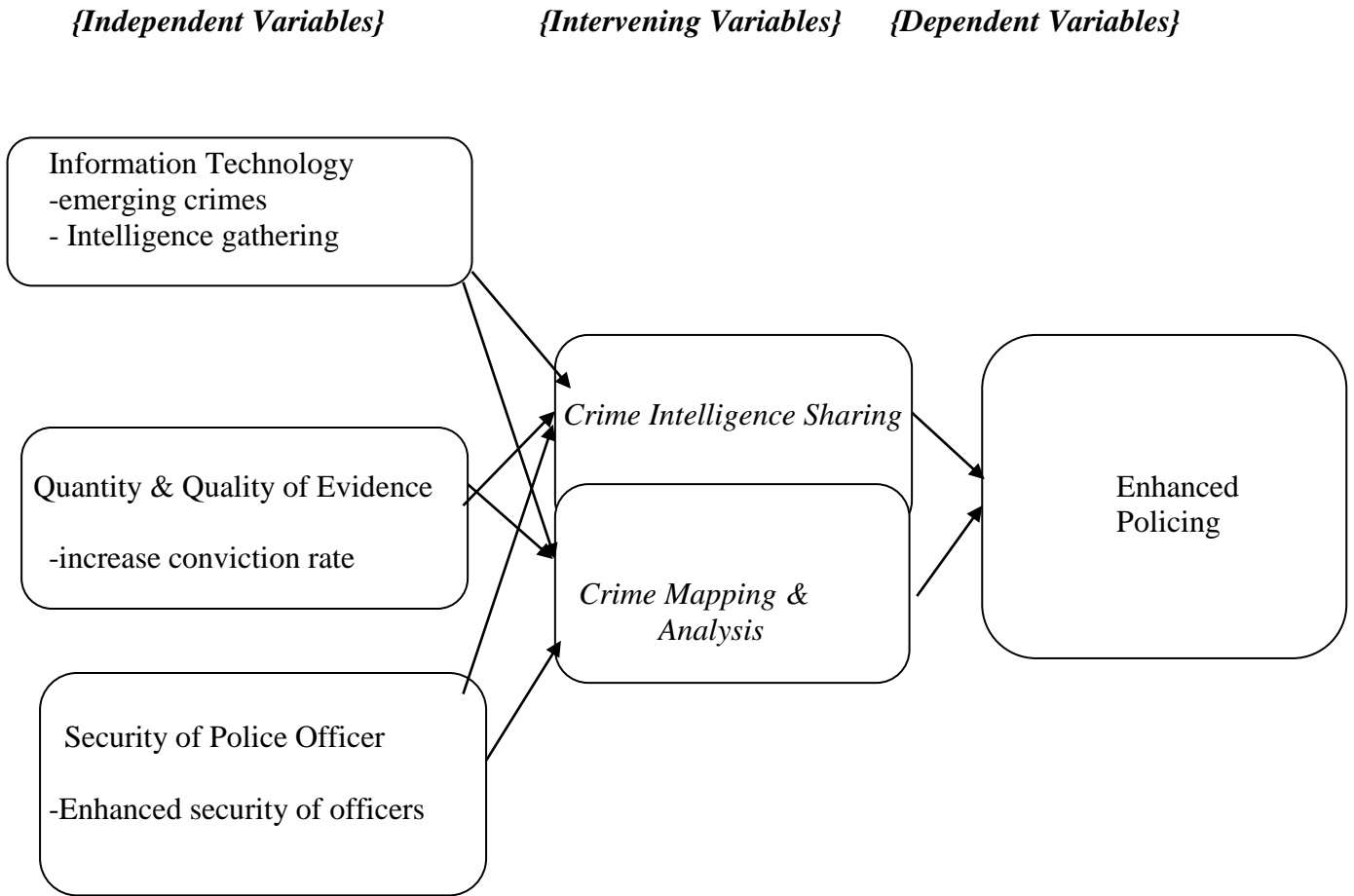
The application of the theory to this study was informed by the core idea behind the theory, i.e., the 'crime prevention' approach which places an emphasis on an active approach to crime prevention through the intervention of the particular causal factors that lead to a criminal incident occurring. Its emphasis on the fact that crime and all its negative consequences can be prevented does not escape this study. This study thus seeks

to find out if one of the factors leading to crime, that of the policing end, can be addressed by the adoption of information technology.

Another theory to be used in the study was the *gap theory* of crime. This theory as postulated by Peter Lock conceptualizes what he calls the Drawdown Fiasco whereby, downsizing of security agencies both in terms of material and human capital results in the inability of the law enforcement agencies in addressing emerging crime. According to Peter Lock, mishandled drawdowns can misfire resulting in an increase in crime. This results in a spike in emerging crime as the law enforcement agencies concerned can no longer be able to asphyxiate intelligence nor securitize their security jurisdictions (Lock, 1998). Within the study, the theory was pivotal due to the fact that it will help explain the nexus of upsizing and crime reduction particularly on crime intelligence sourcing, gathering and analysis.

## 2.4 Conceptual Framework

Figure 2.1: Conceptual Framework



The use of information technology by investigation agency on cases of emerging crimes and intelligence gathering will enhanced policing within the DCI, the quality and quality of information and evidence gathered due to the ability to analyze and process large amounts of information and sieve out information that can guarantee a conviction. In addition, crime intelligence gathering by the DCI virtual tools such as crime mapping applications that are at the disposal of DCI officers as well as digital analytical tools which help collect information as well as sieve out information that is helpful to policing.

## **CHAPTER THREE**

### **STUDY METHODOLOGY**

#### **3.1 Introduction**

This chapter identifies the method of data collection and analysis with a view to assessing the impact of information technology on policing using the case of intelligence gathering on crime in the Directorate of Criminal Investigations in Kenya's National Police Service.

#### **3.2 Research Site**

The research site for this study is the Headquarters for the Directorate of Criminal Investigation, Nairobi, is situated along Kiambu Road, opposite the Kenya Forest Service Headquarters, 6.4 kilometres north of Nairobi's Central Business District. As a branch of the National Police Service, the Directorate of Criminal Investigation is headed by a Director who reports to the Inspector General of Police. The Directorate of criminal investigations is charged with the mandate of;

- i. Collecting and providing criminal intelligence;
- ii. Undertaking investigations on serious crimes including homicide, narcotic crimes, human trafficking money laundering, terrorism, economic crimes, piracy, organized crime and cybercrime among others ,
- iii. Maintaining law and order;
- iv. Detecting and preventing crime;
- v. Apprehending offenders;
- vi. Maintaining criminal Records;

- vii. Conducting forensic analysis;
- viii. Executing directions given to the Inspector General by the Director of Public Prosecutions pursuant to Article 157(4) of the constitution;
- ix. Coordinating Interpol Affairs;
- x. Investigating any matter that may be referred to it by Independent Police Oversight Authority; and
- xi. Performing any other function conferred by it by any written law.

### **3.3 Research Design**

According to Press Academia 2018, a case study is a research strategy and an empirical inquiry that investigates a phenomenon within its real life context. Case studies are based on an in depth investigation of a single individual, group or event to explore the causes of underlying principles, it also involves analysis of person ,groups, events, period, policies, institution or other system that are studied holistically by one or more methods.

The case study assessed the impact of information technology on policing using the case of intelligence gathering on crime in the Directorate of Criminal Investigations in Kenya's National Police Service. The choice of this case study was informed by material and temporal resource constraints bedeviling the researcher hence the recourse to this research design which is simple and easier to study and collect data. While case studies as a research method have traditionally been viewed as lacking rigor and objectivity when compared with other social research methods, they may offer insights that might not be achieved with other approaches like surveys and exploratory designs. In addition,

the case study method as a research strategy is an obvious option at this academic level as it enabled the researcher to undertake a modest scale research project based on her academic level.

### **3.4 Unit of Analysis and Units of Observation**

The unit of analysis of the study was the impact of information technology on policing. On the other hand, the unit of observation were eighty (80) officers drawn from the Directorate of Criminal Investigations in Kenya's National Police Service and specifically its constituent departments namely; the land fraud unit, Anti-Banking Fraud Unit, Special Crime Prevention Unit, Anti-Terrorism Unit, Ballistic Unit, Antinarcotics Unit, Serious Crime Unit, Cyber Crime Unit and Forensic Unit.

### **3.5 Target Population**

The DCI has a total number of 6,043 officers distributed in its ten constituent departments. The ranks and number of law enforcement agents are as outlined in table 3.1 below;

**Table 3.1: Target Population in the Directorate of Criminal Investigations**

		<b>RANK</b>	<b>IN-POST</b>
<b>TOP RANKING OFFICERS</b>	1.	SAIG	2
	2.	AIG	24
	3.	CP	61
	4.	SSP	96
	5.	SP	35
	6.	ASP	68
<b>SUB-TOTAL</b>			<b>286</b>
<b>MIDDLE RANKING OFFICERS</b>	7.	CI	380
	8.	IP	468
<b>SUB-TOTAL</b>			<b>848</b>
<b>BOTTOM RANKING OFFICERS</b>	9.	S/SGT	78
	10.	SGT	191
	11.	CPL	1196
	12.	PC	3444
<b>SUB-TOTAL</b>			<b>4909</b>
<b>TOTAL</b>			<b>6043</b>

### **3.6 Sample Size and Sampling Procedure**

#### **3.6.1 Sample Size**

The sample size of the study was eighty respondents drawn from the constituent departments of the Directorate of Criminal Investigations whereby four were top ranking Directorate of Criminal Investigations officers, while eleven and sixty five officers were drawn from the middle and subordinate ranks of the Directorate of Criminal Investigations.



**Table 3.2 Target population (officers) and the distribution of sample by ranking.**

<b>Officer's Rank</b>	<b>Target Population</b>	<b>Sample</b>	<b>Percentage (%)</b>
Top Ranking DCI Officers	286	4	5.0
Middle Ranking DCI Officers	848	11	13.8
Lower Ranking DCI Officers	4909	65	81.2
<b>TOTAL</b>	<b>6043</b>	<b>80</b>	<b>100</b>

### **3.6.2 Sampling Procedure**

The study used stratified sampling technique. The choice of stratified sampling was informed by the fact that there was a need to identify officers involved in crime intelligence gathering and/or those who have information on the study as well as their ranking within the DCI.

This procedure was augmented by probability sampling procedure to ensure that there was an equal chance for each individual in the target population to be selected as a respondent in the study.

The sampling intervals were;

Top ranking DCI officers =  $286/4 = 71.5$

Middle ranking DCI officers =  $848/11 = 77.1$

Lower ranking DCI officers =  $4909/15 = 327.3$

### **3.7 Data Collection Methodology**

The primary data used in this study was collected using both quantitative and qualitative methods of data collection.

#### **3.7.1 Collection of Quantitative Data**

Quantitative data was collected using structured questionnaires. This is where questions are precisely asked. A total of 65 officers used structured questionnaire.

#### **3.7.1 Collection of Qualitative Data**

On the other hand, qualitative data was collected using focus group discussions. The focus group discussion was made of investigators from DCI Hqrs. The choice of focus groups emanated from the fact that they helped the researcher to generate information on collective views of the Directorate of Criminal Investigations as well as get the meanings that lie behind those views. Furthermore, this method helped to clarify, extend, qualify or challenge data collected through the quantitative method.

### **3.8 Reliability and Validity of the Data**

To ensure that the data collected was reliable and valid, the researcher employed a multipronged approach to data collection with a view to enabling her to triangulate the data from the field. Furthermore, the data collected from the field by the researcher was peer reviewed by the academic colleagues of the researcher with a view to identifying issues with the study. The information obtained was then used to enrich the available documented information.

### **3.9 Ethical Considerations**

The researcher assured the respondents that the information collected was going to be used solely for academic purposes. In addition, the researcher assured the respondents that any information volunteered by the respondents will be treated with utmost confidentiality.

### **3.10 Data Analysis**

Quantitative data was coded and then analyzed using the statistical packages for the social sciences (SPSS) programme to identify the major categories and sub-categories of data. On the other hand, qualitative data was analyzed using content analysis to establish recurrent themes.

## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION AND INTERPRETATION

#### 4.1 Introduction

This chapter analyzed the data obtained from the administered of the questionnaires with a view to establishing the impact of information technology on crime intelligence gathering by law enforcement agencies. Out of the projected 80 respondents, the study was able to get responses from 75 respondents representing a 93.75% response rate.

#### 4.2 Social and Demographic Information of Respondents

##### 4.2.1: Gender Distribution

The respondents were drawn from the DCI where 75 officers were selected and questionnaires administered. Table 4.1 below shows that 64% of the respondents were male and 36% were female. This implies that crime intelligence gathering is likely to give greater attention to crime committed by men than those committed by women.

**Table 4.1 Gender Distribution of Respondents**

<b>GENDER</b>	<b>FREQUENCY</b>	<b>PERCENTAGE (%)</b>
Male	48	64.0
Female	27	36.0
<b>TOTAL</b>	<b>75</b>	<b>100</b>

**Table 4.2 Gender Distribution according to Number of Years Worked in the Directorate of Criminal Investigations**

Table 4.2 below shows that distribution of officers according to number of years officers worked. A large number of officers have worked between 5-10 years followed by those who have worked between 0-5 years and lastly 16% for those who have worked between 15-20 years. Only 13.3% have worked above 20 years.

		<b>0-5 Years</b>	<b>5-10 Years</b>	<b>10-15 Years</b>	<b>15-20 Years</b>	<b>20+ Years</b>	<b>Total (N) Percent</b>
Gender	Male	(13) 27.1%	(13) 27.1%	(11) 22.9%	(4) 8.3%	(7) 14.6%	(48) 100%
	Female	(4) 14.8%	(8) 29.6%	(4) 14.9%	(8) 29.0%	(3) 11.1%	(27) 100%
<b>Total</b>		<b>(17) 22.7%</b>	<b>(21) 28.0%</b>	<b>(15) 20.0%</b>	<b>(12) 16.0%</b>	<b>(10) 13.3%</b>	<b>(75) 100%</b>

**Table 4.3 Distribution of Respondents by Ranking**

Table 4.3 below shows the proportionate distribution of officers according to rank. A large number of officers are in the bottom rank followed by 14.7% of officers in the middle rank. Only 5.3% constitute the top rank. It is likely that the leading rank is constituted of supervisory officers who enforce decision made at the top management.

		<b>Top Level Officer</b>	<b>Middle Level Officer</b>	<b>Bottom Level Officer</b>	<b>Total (N) Percent</b>
Gender	Male	(2) 4.7%	(8) 16.7%	(38) 79.1%	(48) 100%
	Female	(2) 7.4%	(3) 11.1%	(22) 81.4%	(27) 100%
<b>Total</b>		<b>(4) 5.3%</b>	<b>(11) 14.7</b>	<b>(60) 80%</b>	<b>(75) 100%</b>

**Table 4.4 Distribution of Respondents by Level of Education**

		University	College Diploma	Secondary School/"O" Levels	Primary School	Total (N)Percent
Rank in the Police Force	Top Level Officer	(4) 100%	(0) 0%	(0) 0%	(0) 0%	(4) 100%
	Middle Level Officer	(8) 72.7%	(20) 18.2%	(1) 9.1%	(0) 0%	(11) 100%
	Bottom Level Officer	(6) 10%	(5) 8.3%	(48) 80%	(1) 1.7%	(60) 100%
<b>Total</b>		<b>(18) 24%</b>	<b>(7) 9.3%</b>	<b>(49) 65.4%</b>	<b>(1) 1.3%</b>	<b>(75) 100%</b>

The study drew respondents from across the eight departments of the DCI with the bulk of the respondents having served for a period of ten years and below. The male gender was over-represented which might largely be due to the gender biased nature of recruitments in the years prior to the liberalization of law enforcement recruitment.

### **4.3 Extent to Which Information Technology Has improved Crime Intelligence Gathering**

The study sought to examine the extent to which information technology has increased crime intelligence gathering within the Directorate of Criminal Investigations. Using a 5-

point matrix, the study sought to examine the degree to which information technology impacted on crime intelligence gathering. The findings of this examination are presented in the table below.

**Table 4.5 Extent to Which Information Technology Has Increased Crime Intelligence Gathering.**

<b>Type of Crime Intelligence Gathering</b>	<b>No Extent</b>	<b>Small Extent</b>	<b>Moderate Extent</b>	<b>Great Extent</b>	<b>Very Great Extent</b>	<b>Total (N)Percent</b>
Extent to Which Information Technology has enhanced the Collection of Prompt Crime Intelligence	(9) 12.0%	(7) 9.4%	(21) 28.0%	(19) 25.3%	(19) 25.3%	(75) 100%
Extent to Which Information Technology Has Enhanced the Collection of Pre-Emptive Crime Intelligence	(5) 6.6%	(11) 14.7%	(19) 25.3%	(20) 26.7%	(20) 26.7%	(75) 100%
Extent to Which Information Technology Has Enhanced the Collection of Actionable Crime Intelligence	(3) 4.0%	(10) 13.3%	(20) 26.7%	(20) 26.7%	(22) 29.3%	(75) 100%

The research data analyzed above aptly shows that information technology has enhanced the effectiveness of the Directorate of Criminal Investigations through the use of information systems to sieve out useful and non-useful intelligence. Indeed, different departments such as the cyber-crime and the forensics unit increasingly (<60%) employed applications within their information systems to source intelligence. This impact was particularly prevalent among respondents who had had been in service for a

lesser amount of time owing to the fact that they are more conversant with the usage of technology than the older generation of law enforcement agents within the DCI.

Furthermore, those in higher ranks were more predisposed to employ information technology in their sourcing of intelligence than those in lower ranks. While the in depth interviews unearthed a number of issues especially technical ones which the DCI had fewer ICT resources, lower rates of ICT conversant personnel and poor ICT maintenance personnel.

#### **4.4 Extent to Which Information Technology Has Enhanced Security of Police Officers in the Process of Intelligence Gathering**

The study sought to examine the extent to which information technology has enhanced security of police officers in the process of intelligence gathering within the Directorate of Criminal Investigations. Using a 5-point matrix, the study sought to examine the degree to which information technology impacted on the process crime intelligence gathering. The findings of this examination are presented in the table below and the findings discussed afterward.



**Table 4.6 Extent to Which Information Technology Has Enhanced Security of Police Officers in the Process of Intelligence Gathering**

<b>Type of Security to police officers</b>	<b>No Extent</b>	<b>Small Extent</b>	<b>Moderate Extent</b>	<b>Great Extent</b>	<b>Very Great Extent</b>	<b>Total (N) Percent</b>
Extent to Which Information Technology Has Enhanced the Anonymity of Intelligence Gathering Police Officers	(11) 14.7%	(5) 6.6%	(21) 28.0%	(18) 24.0%	(20) 26.7%	(75) 100%
Extent to Which Information Technology Has Enhanced the Covertness of Intelligence Gathering Police Operations	(7) 9.3%	(10) 13.3%	(17) 22.7%	(21) 28.0%	(20) 26.7%	(75) 100%
Extent to Which Information Technology has enhanced the Anonymity of Pre-Emptive Intelligence Gathering Police Officers	(7) 9.3%	(8) 10.7%	(20) 26.7%	(21) 28.0%	(19) 25.3%	(75) 100%

In crime intelligence gathering missions, there was a high response rate of positive feedback in regard to the issue of crime intelligence gathering and processing by the police. Majority of the respondents agreed that information technology had led to an improvement in the quality of intelligence gathered. Similarly most respondents of the

study were of the view that the security of information and the information gathering process had improved.

#### **4.5 Impact of Information Technology on Crime Intelligence Mapping and Analysis**

The study sought to examine the extent to which information technology has increased crime intelligence mapping and analysis within the Directorate of Criminal Investigations. Using a 5-point matrix, the study sought to examine the degree to which information technology impacted on crime intelligence mapping and analysis. The findings of this examination are presented in the table below and the findings discussed afterward.

**Table 4.7 Impact of Information Technology on Crime Intelligence Mapping and Analysis**

<b>Type of mapping and crime analysis</b>	<b>No Extent</b>	<b>Small Extent</b>	<b>Moderate Extent</b>	<b>Great Extent</b>	<b>Very Great Extent</b>	<b>Total Percent(N)</b>
Extent to Which Information Technology Has Enhanced Police Crime Intelligence Mapping Operations	(10) 13.3%	(8) 10.7%	(20) 26.7%	(19) 25.3%	(18) 24.0%	(75) 100%
Extent to Which Information Technology Has Enhanced the Clarity of Police Crime Intelligence Maps	(7) 9.3%	(11) 14.7%	(19) 25.3%	(18) 24.1%	(20) 26.7%	(75) 100%
Extent to Which Information Technology Has Enhanced Crime Analysis	(5) 6.7%	(11) 14.6%	(20) 26.7%	(18) 24.0%	(21) 28.0%	(75) 100%

The majority of DCI officers in the survey thought that information technology had made a great difference to policing by introducing applications that increased the

preciseness and clarity of policing operations. Majority of the respondents argued that the use of crime reporting and analysis systems was an integral part of their daily work. Majority of the respondents were positive in their assessment of the impact of information technology on policing operations. They argued that information technology had allowed them to operate more effectively through the use of precise and accurate crime heat maps and hotspots' analysis. This made their work easier and helped them cope with the amount of information police received on a day to day basis .

#### **4.6 Impact of Information Technology on the Quantity and Quality of Evidence against Crime Suspects**

The study sought to examine the extent to which information technology has increased the quality and quantity of evidence against crime suspects within the Directorate of Criminal Investigations. Using a 5-point matrix, the study sought to examine the degree to which information technology impacted on crime intelligence gathering. The findings of this examination are presented in the table below and the findings discussed afterward.

**Table 4.8 Impact of Information Technology on the Quantity and Quality of Evidence against Crime Suspects**

<b>Type of evidence</b>	<b>No Extent</b>	<b>Small Extent</b>	<b>Moderate Extent</b>	<b>Great Extent</b>	<b>Very Great Extent</b>	<b>Total (N) Percent</b>
Extent to Which Information Technology Has Enhanced the Quantity of Evidence against Suspects	(16) 21.3%	(6) 8.0%	(21) 28.0%	(15) 20.0%	(17) 22.7%	(75) 100%
Extent To Which Information Technology Has Enhanced The Quantity Of Evidence Against Organized Criminal Groups	(11) 14.7%	(10) 13.3%	(21) 28.0%	(17) 22.7%	(16) 21.3%	(75) 100%
Extent To Which Information Technology Has Enhanced The Quality of Evidence Against Suspects	(15) 20.0%	(7) 9.3%	(22) 29.4%	(16) 21.3%	(15) 20.0%	(75) 100%

The respondents of the study were generally positive about the impact of information technology on the quality and quantity of evidence that information technology helped in gathering on suspects and organized criminal groupings. Majority of the respondents thought that information technology had led to improved evidence gathering and improved police response to crime. These opinions varied somewhat by rank and by department. Junior officers were more likely to agree that information technology has improved police service and response to crime than their seniors .

#### **4.7 Impact of Information Technology on Crime Prevention**

The study sought to examine the extent to which information technology has increased the crime prevention within the Directorate of Criminal Investigations. Using a 5-point

matrix, the study sought to examine the degree to which information technology impacted on crime prevention. The findings of this examination are presented in the table below and the findings discussed afterward.

**Table 4.9 Impact of Information Technology on Crime Prevention**

<b>Type of crime prevention</b>	<b>No Extent</b>	<b>Small Extent</b>	<b>Moderate Extent</b>	<b>Great Extent</b>	<b>Very Great Extent</b>	<b>Total (N) Percent</b>
Extent To Which Information Technology Has Enhanced The Police Crime Prevention	(8) 10.6%	(7) 9.3%	(20) 26.7%	(20) 26.7%	(20) 26.7%	(75) 100%
Extent to Which Information Technology has enhanced the Ability of the Police to Reduce and Disrupt Crime	(12) 16.0%	(19) 12.0%	(17) 22.7%	(16) 21.3%	(21) 28.0%	(75) 100%
Extent To Which Information Technology Has Enhanced The Police Investigations Strategy To Aid In Crime Prevention	(13) 17.3%	(5) 6.7%	(20) 26.7%	(18) 24.0%	(19) 25.3%	(75) 100%

The DCI officers surveyed were of the view that information technology had led to a better proactive policing which led to better crime prevention success. These was aptly captured in the in-depth interviews whereby DCI officers pointed out the massive potential harnessed from intelligence-driven patrols as well as hot spots' mapping. In

addition, repeat-offender analysis and proactive crime investigations enhanced crime prevention as well as chances of repeat crimes.

However, not all officers were optimistic of the potential of information technology in crime prevention. Some middle and high ranking officers were critical of a number of issues within the DCI in particular and the National Police Service in general.

#### **4.8 Extent to Which Information Technology Impacts on Information Sharing**

The study sought to examine the extent to which information technology has impacted on information sharing within the Directorate of Criminal Investigations. Using a 5-point matrix, the study sought to examine the degree to which information technology impacted on information sharing. The findings of this examination are presented in the table below and the findings discussed afterward.

**Table 4.10 Extent to Which Information Technology Impacts on Information**

**Sharing according to specified crime related statements.**

<b>Statements</b>	<b>No Extent</b>	<b>Small Extent</b>	<b>Moderate Extent</b>	<b>Great Extent</b>	<b>Very Great Extent</b>	<b>Total (N) Percent</b>
Extent to which information Technology has enhanced Information Sharing Across up the Police Ladder	(18) 24.0%	(3) 4.0%	(20) 26.7%	(15) 20.0%	(19) 25.3%	(75) 100%
Extent to which Information Technology has Enhanced Information Sharing between Different Agencies of the DCI	(17) 22.7%	(7) 9.3%	(17) 22.7%	(15) 20.0%	(19) 25.3%	(75) 100%
Extent to which Information Technology has Enhanced the Quality and Accuracy of Data Shared	(20) 26.7%	(3) 4.0%	(20) 26.7%	(13) 17.3%	(19) 25.3%	(75) 100%
Extent to which Information Technology has Enhanced the Timely Sharing of Information	(10) 13.3%	(7) 9.3%	(22) 29.4%	(18) 24.0%	(18) 24.0%	(75) 100%
Extent to which information technology has eliminated the Sharing of redundant or Superfluous Data	(5) 6.6%	(12) 16.0%	(20) 26.7%	(18) 24.0%	(20) 26.7%	(75) 100%

Information technology, the respondents of the study argued, improved the communication between DCI officers as a result of the availability of e-mail services, better ICT enabled communication tools, better real time intelligence and evidence sharing networks and command and control interfaces which facilitated teamwork, information gathering and information sharing in effect creating a better work

atmosphere at the DCI. The respondents of the study highly rated the impact of information technology on information sharing and communication both horizontally (across departments as well as with other law enforcement and security agencies) and vertically (across the rank and file of the DCI). The majority of the respondents (<65%) were of the view that information technology had led to improved information sharing and improved communication between the law enforcement agencies and among departments, law enforcement and security agencies. In addition, the respondents were of the view that information technology had allowed DCI officers to be more cooperative.

This was aptly captured in the in-depth interviews where a senior officer argued;

*“Information technology has had a great impact in information sharing and information sourcing as opposed to the earlier computer intensive methods. For those of us in the signals department, it has improved how we disseminate information by enhancing its sourcing from the public and improving how it is disseminated to law enforcement agents thus improving the DCI’s response to crime.”*

Another officer of the rank of Inspector quipped that *“information sourcing and sharing procedures have become more transparent and allowed us to give better direction and source faster feedback on the progress of cases from our junior officers.”*

Most law enforcement agencies are paper-intensive organizations in which substantial amounts of time are spent on completing reports, and considerable organizational resources are expended on administering paper flows and storing and maintaining records. The incorporation of information technology in policing has helped streamline



administrative processes by eliminating the need for multiple forms and multiple entry of data. This has made information easier to retrieve. In addition, it has reduced the number of hard copy records that must be generated and maintained by the DCI .

#### 4.9 Cross tabulation of Data on Information Technology and Intelligence Gathering for Law Enforcement Agencies

The study cross-tabulated the data to examine the recurrent themes in regard to intelligence sourcing, information sharing and general view of information technology on policing against issues such as gender, rank as well as number of years within the police force. The level of education was also used as a control test.

**Table 4.11 Usefulness of Information Technology and Intelligence Gathering at the Departmental Level**

			No Extent	Small Extent	Moderate Extent	Great Extent	Very Great Extent	Total (N) Percent					
Department of Work at the Directorate of Criminal Investigations	Land Fraud Unit	(2)	22.2%	(3)	42.9	(3)	15.8%	(1)	5.3%	(12)	16%		
	Special Crime Prevention Unit	(1)	11.1%	(1)	14.3%	(4)	19.0%	(2)	10.5%	(4)	21.1%	(12)	16%
	Anti-Narcotics Unit	(0)	0%	(1)	14.3%	(2)	9.5%	(2)	10.5%	(2)	10.5%	(7)	9.3%
	Serious Crime Unit	1	11.1%	(0)	0%	(2)	9.5%	(4)	21.1%	(4)	21.1%	(11)	14.6%
	Anti-Banking Fraud Unit	(1)	11.1%	(1)	14.3%	(3)	14.3%	(2)	10.5%	(1)	5.3%	(8)	10.7%
	Cyber Crime Unit	(0)	0%	(1)	14.3%	(2)	9.5%	(3)	15.8%	(3)	15.8%	(9)	12%
	Forensic Department	(2)	22.2%	(0)	0%	(2)	9.5%	(2)	10.5%	(2)	10.5%	(8)	10.7%
	Ballistics Unit	(2)	22.2%	(0)	0%	(3)	14.3%	(1)	5.3%	(2)	10.5%	(8)	10.7%
<b>Total</b>		<b>(9)</b>	<b>100%</b>	<b>(7)</b>	<b>100%</b>	<b>(21)</b>	<b>100%</b>	<b>(19)</b>	<b>100%</b>	<b>(19)</b>	<b>100%</b>	<b>(75)</b>	<b>100%</b>

**4.9.1 Information Technology Usefulness by Law Enforcement Agents Based on Their Years of Service at an Agency**

**Table 4.12 Information Technology Usefulness by Law Enforcement Agents Based On Their Years of Service at an Agency**

		<b>No Extent</b>	<b>Small Extent</b>	<b>Moderate Extent</b>	<b>Great Extent</b>	<b>Very Great Extent</b>	<b>Total (N) Percent</b>
Number of Years Worked in the Directorate of Criminal Investigations	0-5 Years	(0) 0%	(1) 14.3%	(5) 23.8%	(6) 31.6%	(5) 26.3%	(17) 22.5%
	5-10 Years	(1) 11.1%	(2) 28.6%	(4) 19.0%	(10) 52.6%	(4) 21.1%	(21) 28.0%
	10-15 Years	(2) 22.2%	(1) 14.3%	(4) 19.0%	(2) 10.5%	(6) 31.6%	(15) 20.0%
	15-20 Years	(1) 11.1%	(1) 14.3%	(6) 28.6%	(1) 5.3%	(3) 15.8%	(12) 16.0%
	20+ Years	(5) 55.6%	(2) 28.6%	(2) 9.5%	(0) 0%	(1) 5.3%	(10) 13.5%
<b>Total</b>		<b>(9) 100%</b>	<b>(7) 100%</b>	<b>(21) 100%</b>	<b>(19) 100%</b>	<b>(19) 100%</b>	<b>(75) 100%</b>

**4.9.2 Information Technology Usefulness by Law Enforcement Agents Based On Their Rank**

**Table 4.13 Information Technology Usefulness by Law Enforcement Agents Based on their rank**

		<b>No Extent</b>	<b>Small Extent</b>	<b>Moderate Extent</b>	<b>Great Extent</b>	<b>Very Great Extent</b>	<b>Total (N)Percent</b>
Rank in the Police Force	Top Level Officer	(1) 11.1%	(0) 0%	(1) 4.8%	(0) 0%	(2) 10.5%	(4) 5.3%
	Middle Level Officer	(2) 22.2%	(0) 0%	(2) 9.5%	(3) 15.8%	(4) 21.1%	(11) 14.7%
	Bottom Level Officer	(6) 66.7%	(7) 100%	(18) 85.7%	(16) 84.2%	(13) 68.4%	(60) 80%
<b>Total</b>		<b>(9) 100%</b>	<b>(7) 100%</b>	<b>(21) 100%</b>	<b>(19) 100%</b>	<b>(19) 100%</b>	<b>(75) 100%</b>

### 4.9.3 Information Technology Usefulness by Law Enforcement Agents Based On Their Education Level

**Table 4.14 Information Technology Usefulness by Law Enforcement Agents Based on their Education Level**

		No Extent	Small Extent	Moderate Extent	Great Extent	Very Great Extent	Total (N) Percent
Highest Level of Education	University	(1) 33.3%	(1) 10%	(3) 15%	(6) 30%	(7) 31.9%	(18) 24%
	College	(0)	(3)	(1)	(0)	(3)	(7)
	Diploma	0%	30%	5%	0%	13.6%	9.3%
	Secondary School/"O" Levels	(2) 66.7%	(6) 40%	(15) 75%	(14) 70%	(12) 54.5%	(49) 65.4%
	Primary School	(0) 0%	(0) 0%	(1) 5%	(0) 0%	(0) 0%	(1) 1.3%
<b>Total</b>		<b>(3) 100%</b>	<b>(10) 100%</b>	<b>(20) 100%</b>	<b>(20) 100%</b>	<b>(22) 100%</b>	<b>(75) 100%</b>

With regard to the ease of use of information technology and its ability to help police officers, the study found out that the ease of use and beneficial capability is influenced by age, rank and level of education. For the younger officers who have worked for lesser years at the DCI, they are able to effect maximum use of the information technology hence their responses (Very Great Extent to Moderate Extent). For the more educated officers, they are more tech-savvy and better able to harness the intelligence gathering potential offered by information technology. Across departments however, there was no

correlation between the department of work and the ease of use or benefits accrued from the use of information technology in crime intelligence gathering.

The cross-tabulated data also shows that information technology has imposed new constraints on policing. This is due to the fact that technology has redefined the knowledge and skills required for policing whereby information is now technologically entered, stored and retrieved. For those not able to cope with the new technology, the risk has been redundancy . This phenomenon has favored the younger crop of law enforcement agencies than the older ones who see the effect of threatening the hierarchical structure that power relations within the disciplined forces are hinged on.

#### **4.9.4 Relations among Variables**

The study established that information technology is beneficial to the Directorate of Criminal Investigations due to a number of reasons. First, the use of information technology by this law enforcement agency has enhanced the quality and quantity of information and evidence gathered due to the ability to analyze and process large amounts of information and sieve out information that can guarantee a conviction. In addition, crime intelligence gathering by the DCI virtual tools such as crime mapping applications that are at the disposal of DCI officers as well as digital analytical tools which help collect information as well as sieve out information that is helpful.

Furthermore, information technology has collapsed time and space creating a small virtual and physical geographical zone which helps in the real time collection of crime

intelligence. This was later established in the key informant interviews as being driven by the inter-connective nature of the information technology between departments and agents as well as the interface provided by information technology to collect critical criminal intelligence.

With regard to the ease of use of information technology and its ability to help police officers, the study found out that the ease of use and beneficial capability is influenced by age, rank and level of education. For the younger officers who have worked for lesser years at the DCI, they are able to effect maximum use of the information technology. For the more educated officers, they are more tech-savvy and better able to harness the intelligence gathering potential offered by information technology. Across departments however, there was no correlation between the department of work and the ease of use or benefits accrued from the use of information technology in crime intelligence gathering.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter forms the final part of this research on the influence of information technology on crime intelligence gathering in law enforcement agencies. The chapter sought to present a summary of the research findings, and craft the recommendations as well as the conclusions of the study. The chapter analyzed the whole study and thus seeks to sum up the findings of the study. It borrows from the standard social research practice across the world, where every social research must offer a thesis and recommendations with a view to endeavor for the betterment of society. This is why knowledge is incremental in nature; building on what others have researched on, analyzing their works critically, always looking for fault lines for the well-being of all. Indeed, solid research is of great import in policy formulation.

#### **5.2 Summary of Findings**

The research data analyzed in chapter four aptly shows that information technology will enhanced the effectiveness of the Directorate of Criminal Investigations through the use of information systems to sieve out useful and non-useful intelligence. Indeed, different departments such as the cyber-crime and the forensics unit increasingly (<60%) employed applications within their information systems to source intelligence. The study found out that information technology will increase crime intelligence mapping and analysis within the Directorate of Criminal Investigations.

The DCI officers surveyed were of the view that information technology will lead to a better proactive policing and crime prevention success. This was aptly captured in the in depth interviews whereby DCI officers pointed out the massive potential harnessed from intelligence-driven patrols as well as hot spots' mapping. In addition, repeat-offender analysis and proactive crime investigations enhanced crime prevention as well as chances of repeat crimes. Information technology, the respondents of the study argued, will improved the communication between DCI officers as a result of the availability of e-mail services, better ICT enabled communication tools, better real time intelligence and evidence sharing networks and command and control interfaces which facilitated teamwork, information gathering and information sharing in effect creating a better work atmosphere at the DCI.

### **5.3 Conclusion of the Study**

Within the DCI, the investigators lacked proper training on information technology and they could state that technology will make a great difference to police intelligence gathering mechanisms particularly for law enforcement agents who had had been in service for a lesser amount of time as well as those in higher ranks. It is no wonder then that the findings were generally positive with regard to the impact of information technology in regard to the improvement in the quality of intelligence gathered.

Information technology has also increased computer literacy as well as information sharing among law enforcement agents, improved communication between law enforcement agents and enhanced the professional status of the DCI in general and the National Police Service in particular .

Information technology has also made a great difference to policing by introducing applications such as crime reporting and analysis systems have increased the preciseness and clarity of policing operations. In addition, this has allowed them to operate more effectively through the use of precise and accurate crime heat maps and hotspots' analysis. This made their work easier and helped them cope with the amount of information police received on a day to day basis as well as the overall improvement in evidence gathering and improved police response to crime .

#### **5.4 Recommendations of the Study**

In law enforcement agencies, information is key and pivotal in ensuring that the agency in question keeps a tab of all its activities with a view to not only identifying trends but also connecting dots with a view to preventing crime. With the advent of information technology, law enforcement agencies are in a prime position of using information technology in ways that are unique in ensuring criminal justice. Below is a list of recommendation from the researcher to improve services to the public through policing.

##### **➤ Training of investigators on information technology**

Law enforcement technology officers receive both formal and informal training all over the world. The researcher recommend that DCI To train its officers on information technology. They should attend seminars and conferences to stay up-to-date on police and other technologies. They can also attend specific computer and information technology-related training programs to improve their skills and working knowledge



There is a need to invest in the training of information technology usage by police officers to make the DCI a tech-savvy law enforcement agency. This study notes the success of the use of a suite of online tools at the disposal of the DCI that has enabled it to track and predict individuals' behavior and thus prevent crime and increase chances of criminal convictions. Training of investigators has to be continuous because technology is changing every day.

➤ **Decentralization of cyber labs**

The researches recommend the need of DCI to decentralize cyber labs to the region to ease investigation on white collar crimes and collection of intelligence by the investigators. This will enhance quality of evidence collected by officers in the regions.

➤ **Improvement of investigators salary**

Technological systems and infrastructure are critical to any modern police department. Because of this, technology officers need to have the unique know-how to understand what needs to be done and the authority to make it happen . Technology officers often hold high ranks within their departments and enjoy higher salaries, there is need of DCI to recruit this kind of officers with good technological know-how and pay them well for continuity.in many other tech savvy countries there officers are bonded to ensure that they stay within the organization.

➤ **Predictive-Analytics Software**

It is clearly important to see police predict how, where and when a crime is likely to occur using this kind of technology. This is through checking behaviors and patterns of

the likelihood of a crime to take place in a certain place to enables them plan for instance send police at the place of likelihood crime.

➤ **Brain Fingerprinting**

It is possible to detect a criminal using or rather engaging a certain technology where a number of suspects are taken through such a process of brain fingerprinting to ascertain if they actually committed the said crime in question. This thus helps police to be able to tell and eliminate those who shows that pattern of criminal occurrence through answering some questions and being detected through brain.

➤ **Handheld Fingerprint Scanners**

It is in the public knowledge that police use those scanners they walk around with to help them fingerprint and those persons identified to face the law. This brings efficiency in form of time and therefore police can easily perform well in their duties. It can also reduce those instances where wrong people and arrested thereby wasting their time.

➤ **Google Glass**

The violation in traffic is captures using a camera and they rely the very information to a central place system. This includes time, and also date and place and also the car number. This therefore has brought about people interesting in the profession of policing since it involves creativity and thinking hard on how to use and improve the technology in the effort to ensuring perfect and accurate policing takes place.

➤ **Robotic Cameras**

It can be recommended to police to apply robot cameras since it is not possible for the police to appear everywhere at the same time and also there are places deemed risky for any police officer to appear.

The hard areas can now be managed easily without physically being there through use of these robots where they are thrown and monitored at a certain place to do search in suspected homes, and even vehicles since it can move freely w-using electric motor.

➤ **Handheld Lasers**

The devices are able to reveal those chemicals deemed dangerous immediately before any harm occurs. There is safety associated with such to police officers and also police officers are able to have more time to work and avoid offices.

➤ **Automatic license plate recognition**

This makes it easier for police to know if there is theft involved or owners wanted. This is through an integrated database where once a number is captured; it undergoes a process to determine any stored information concerning the car. This brings efficiency in arresting those who broke the law.

➤ **Use of Computers and Tablets**

There is need for officers to communicate easily using computers and tablets with those in field or investigators. This makes it easy to get information and act on them faster from any location. They do not need to be in office to communicate vital information. There

should be filing of incidents information anywhere and be accessed to any station of work if need be. This gives officers more time to work and patrol as they rely information.

➤ **Gunshot detection systems**

This is able to determine where there has been gun shot and since it shows exact place, officers are able to move faster and reach such place for action. Suspects are therefore apprehended faster to bring things to normalcy. It is thus safer to community to operate without much police patrol.

**5.5 Recommendation for further studies**

Given that the current study focused on impact of information technology on policing by investigators based at DCI Headquarters Nairobi, a wider study involving the regions, Kenya police and administration police is highly recommended in future.

## REFERENCES

- Brynjolfsson, E. (1993). The Productivity Paradox of Information Technology: Review and Assessment. *Communications of the ACM, Vol. 36, No. 12*, 66–77.
- Byrne, J., & Marx, G. (2011). Technological Innovations in Crime Prevention and Policing. A Review of the Research on Implementation and Impact. *Cahiers Politiestudies Jaargang 2011, Vol. 3, No. 20*, 17-40.
- Carter, D. L. (2009). *Law Enforcement Intelligence: A Guide for State, Local, and Tribal Law Enforcement Agencies*. Washington, DC: U.S. Department of Justice.
- Dunworth, T. (2000). Criminal justice and the IT revolution. In R. P. J. Horney, *Policies, processes, and decisions of the criminal justice system*. Washington, D.C.: National Institute of Justice.
- Jackson, B. A., Greenfield, V. A., Morral, A. R., & Hollywood, J. S. (2015). *Police Department Investments in Information Technology Systems Challenges Assessing Their Payoff*. Santa Monica, California, United States: RAND Corporation.
- Koper, C. S., Lum, C., Willis, J. J., Woods, D. J., & Hibdon, J. (2015). *Realizing the Potential of Technology in Policing A Multisite Study of the Social, Organizational, and Behavioral Aspects of Implementing Policing Technologies*. Fairfax, VA: George Mason University.
- Lindsay, R., Cooke, L., & Jackson, T. (2009). The impact of mobile technology on a UK police force and their knowledge sharing. *Journal of Information and Knowledge Management, Vol. 8, No. 2*, 101-112.

- Lock, Peter (1998). Military Downsizing and Growth in the Security Industry in Sub-Saharan Africa. *Strategic Analysis, Vol. 22, No. 9*, 1393-1426
- Manning, P. K. (2003). *Policing Contingencies*. Chicago, IL: University of Chicago Press.
- Mateescu, A., Brunton, D., Rosenblat, A., Patton, D., Gold, Z., & Boyd, D. (2015). Social Media Surveillance and Law Enforcement. *Data & Civil Rights*.
- Nyongesa, R. A. (2013). *Challenges of Strategy Implementation at the Kenya Police Service*. Nairobi: University of Nairobi.
- Peterson, M. (2005). *Intelligence-Led Policing: The New Intelligence Architecture*. Washington, DC: U.S. Department of Justice.
- Solar, P. J. (2015, December 8). *How Technology is Changing Law Enforcement*. Retrieved from Police: The Law Enforcement Magazine: <http://www.policemag.com/blog/technology/story/2015/12/how-technology-is-changing-law-enforcement.aspx>
- Stroshine, M. S. (2004). Information technology innovations in policing. In R. G. Dunham, & G. P. (Eds.), *Critical issues in policing* (pp. 172-183). Longrove, IL: Waveland Press.

## APPENDICES

### APPENDIX I: Research Authorization Letter

  
**UNIVERSITY OF NAIROBI**  
DEPARTMENT OF SOCIOLOGY & SOCIAL WORK

Fax 254-2-245566  
Telex 23095  
University Nairobi Kenya  
Tel. 216262/5 Ext. 38167

P.O. Box 30197, Nairobi  
Kenya  
E-mail: dept.sociology@uonbi.ac.ke

8/11/2017

**TO WHOM IT MAY CONCERN**

**RE: CHARITY JIBET ROP SIGILAI- CS0/60535/2013**

Through this letter, I wish to confirm that the above named is a bonafide postgraduate student at the Department of Sociology & Social Work, University of Nairobi. She has presented her project proposal entitled: **"Impact of Information Technology on Policing in Kenya: The Case of Crime Intelligence Gathering in the National Police Service (2011-2016)."**

Charity is required to collect data pertaining to the research problem from the selected organization to enable her complete her thesis which is a requirement of the Masters degree.

Kindly give her any assistance she may need.

Thank you.



Prof. C.B.K. Njoki  
Chairman, Department of Sociology & Social Work

## APPENDIX II: Structured Questionnaire

My name is Charity Jebet Rop, a Masters student in Criminology and Social Order at the University of Nairobi. I am currently conducting a research entitled **“Impact of information technology on policing in Kenya, A case of crime intelligence gathering in the National Police Service”**. You have been targeted for this study as one of the respondents to provide information which I believe will be resourceful in understanding the impact of information technology in the National Police Service. The questionnaire is **not** supposed to bear your name and therefore the information will not only be treated as confidential but will be used for academic purposes of this study only. Thankyou in advance for taking your precious time to fill this Questionnaire.

### Section A: Demographic information of the respondents

1. What is your gender?

Male

Female

2. Which Department do you work at of the Directorate of Criminal Investigations?

Land Fraud Unit

Anti-Banking Fraud Unit

Special Crime Prevention Unit

Cyber Crime Unit

Anti-Narcotics Unit

Forensic Department

Serious Crime Unit

Ballistics Unit

3. Number of years have worked in the Directorate of Criminal Investigations

0-5  5-10  10-15  15-20  20+

4. What is your Rank?

Top level

Middle level

Bottom level



5. What is your highest level of education?

University

College Diploma

Secondary

Primary

Others (specify).....

**SECTION B:** Kindly respond to the following statement in relation to your perspective on the extent to which information technology has increased crime intelligence gathering (Tick only one box for each item)

	<b>Extent To Which Information Technology Has Increased Crime Intelligence Gathering</b>	<b>Very Great Extent (5)</b>	<b>Great Extent (4)</b>	<b>Moderate Extent (3)</b>	<b>Small Extent (2)</b>	<b>No Extent (1)</b>
<b>7.</b>	To what extent has information technology enhance the collection of prompt crime intelligence?					
<b>8.</b>	To what extent has information technology enhance the collection of pre-emptive crime intelligence?					
<b>9.</b>	To what extent has information technology enhance the collection of actionable crime intelligence?					

10. In your opinion, what is the overall impact of information technology in crime intelligence gathering in the National Police Service?

.....

.....

.....

.....

11. Any additional information to section B above?

.....

.....

.....

.....

**SECTION C:** Kindly respond to the following statement in relation to your perspective on the extent to which information technology has enhanced security of police officers in the process of intelligence gathering. (Tick only one box for each item)

	<b>Extent To Which Information Technology Has Enhanced Security Of Police Officers In The Process Of Intelligence Gathering</b>	<b>Very Great Extent (5)</b>	<b>Great Extent (4)</b>	<b>Moderate Extent (3)</b>	<b>Small Extent (2)</b>	<b>No Extent (1)</b>
<b>12.</b>	To what extent has information technology enhanced the anonymity of intelligence gathering police officers?					
<b>13.</b>	To what extent has information technology enhanced the covertness of intelligence gathering police operations?					
<b>14.</b>	To what extent has information technology enhanced the anonymity of pre-emptive intelligence gathering police officers?					

15. In your opinion, how does information technology enhance overt and covert security operations by DCI officers?

.....

.....

.....

.....

16. Any additional information to section C above?

.....

.....

.....

.....

**SECTION D:** Kindly respond to the following statement in relation to your perspective on the extent to impact of information technology on crime intelligence mapping and analysis. (Tick only one box for each item)

	<b>Impact of information technology on crime intelligence mapping and analysis</b>	<b>Very Great Extent (5)</b>	<b>Great Extent (4)</b>	<b>Moderate Extent (3)</b>	<b>Small Extent (2)</b>	<b>No Extent (1)</b>
<b>17.</b>	To what extent has information technology enhanced police crime intelligence mapping operations?					
<b>18.</b>	To what extent has information technology enhanced the clarity of police crime intelligence maps?					
<b>19.</b>	To what extent has information technology enhanced the action ability of crime analysis?					

20. In your opinion, how does a crime mapping and analysis application enhance the crime coordination efforts in the National Police Service?

.....

.....

.....

.....

22. Any additional information to section D above?

.....

.....

.....

**SECTION E:** Kindly respond to the following statement in relation to your perspective on the extent to which information technology affect quantity and quality of evidence against crime suspects. (Tick only one box for each item)

	<b>Information technology and quantity and quality of evidence against crime suspects</b>	<b>Very Great Extent (5)</b>	<b>Great Extent (4)</b>	<b>Moderate Extent (3)</b>	<b>Small Extent (2)</b>	<b>No Extent (1)</b>
<b>23.</b>	To what extent has information technology enhanced the quantity of evidence against suspects?					
<b>24.</b>	To what extent has information technology enhanced the quantity of evidence against organized criminal groups?					
<b>25.</b>	To what extent has information technology enhanced the quality of evidence against suspects?					

**SECTION F:** Kindly respond to the following statement in relation to your perspective on the extent to which information technology prevents crime commission. (Tick only one box for each item)

	<b>Extent to which information technology prevents crime Commission</b>	<b>Very Great Extent (5)</b>	<b>Great Extent (4)</b>	<b>Moderate Extent (3)</b>	<b>Small Extent (2)</b>	<b>No Extent (1)</b>
<b>26.</b>	To what extent has information technology enhanced the police crime prevention?					
<b>27.</b>	To what extent has information technology enhanced the ability of the police to reduce and disrupt crime?					
<b>28.</b>	To what extent has information technology enhanced the police investigations strategy to aid in crime prevention?					

**29.** In your opinion, what is the overall impact of information technology in enhancing the success and efficient evidence gathering capabilities of the National Police Service?

.....

.....

.....

.....

**30.** Any additional information to section F above?

.....

.....

.....

.....

**SECTION G:** Kindly respond to the following statement in relation to your perspective on the impact of information technology on Crime intelligence sharing. (Tick only one box for each item)

	<b>Impact of information technology on crime intelligence sharing</b>	<b>Very Great Extent (5)</b>	<b>Great Extent (4)</b>	<b>Moderate Extent (3)</b>	<b>Small Extent (2)</b>	<b>No Extent (1)</b>
<b>31.</b>	To what extent has information technology enhanced information sharing across up the police ladder					
<b>32.</b>	To what extent has information technology enhanced information sharing between different agencies of the DCI					
<b>33.</b>	To what extent has information technology enhanced the quality and accuracy of data shared?					
<b>34.</b>	To what extent has information technology enhanced the timely sharing of information?					
<b>35.</b>	To what extent has information technology eliminated the sharing of redundant or superfluous data?					

**THANK YOU FOR COOPERATION.**

### **APPENDIX III: Key Informant Interview Guide**

1. What is extent to which information technology has increased pre-emptive crime intelligence gathering?
2. What is extent to which information technology has increased post-crime crime intelligence gathering?
3. What is extent to which information technology has enhanced security of police officers in the process of intelligence gathering?
4. What is extent to which information technology has enhanced the security of police intelligence gathering patrols?
5. What is the impact of information technology on crime intelligence mapping?
6. What is the impact of information technology on crime intelligence analysis?
7. What is the extent to which information technology has improved the quantity of evidence against crime suspects?
8. What is the extent to which information technology has improved the quality of evidence against crime suspects?
9. What is the extent to which information technology prevents crime commission?
10. What is the impact of information technology on horizontal crime intelligence sharing?
11. What is the impact of information technology on vertical crime intelligence sharing?