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Forensic Technology and Crime Management in Nigeria: A Study of Rivers State

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Abstract
In Developed Countries (DCs) of the world adoption of scientific sophistication in crime management and investigation has advanced tremendously. This has led to unravelling of criminal syndicates and all forms of crime, and has also established incontrovertible act and legally admissible evidences before the court. Unfortunately the reverse is the case in Nigeria, following the inability of the government to provide the security agencies with modern equipment, such as a more functional and efficient database for criminal records and enough trained professionals. The Country's Central Criminal Registry (CCR) still makes use of outdated manually kept records, thus making it difficult to assess the fingerprints of more than one hundred and fifty million people. It is therefore, in the interest of the researchers to critically examine the roles, challenges and prospects of forensic technology in crime management and control in Nigeria with a focus on Rivers State as well as to proffer relevant solutions to the already biting situation. The study found it necessary to adopt explorative and descriptive design since it is used in obtaining data/information related to the current status of the phenomena to be described or under investigation. The study adopted "Social Constructionist Theory" and "The Role Theory" to evaluate the relationship between the variables in the study. The findings showed that combating crime through forensic technology is eminent and sacrosanct but in Nigeria the reverse is the case hence protracted crime, insurgency and insecurity. It recommends that in view of technological advancement, government should integrate technology and specialist field training into crime management programme that will place security personnel ahead of criminals which will definitely create a robust national security and development.
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1.1 Introduction

There is no doubt that in the developed countries of the world, scientific aspects of criminal investigation have advanced tremendously unlike in some states of the developing nations of Africa particularly in Nigeria in which functional equipment is a fallacy. The adoption of scientific aspects of criminology and expertise to the investigation and control of crimes in recent years has become a necessity considering the fact that criminals have equally adopted more clever methods and sophistication in perpetrating criminal acts, couple with the complicated processes and sometimes the difficulty involved in resolving crimes through confessional statements (*archaic means*) obtained from suspects. For these reasons Solomon and Iheanyi (2007), opines that police departments in this modern era particularly in developed countries of the world have shifted their emphases from conventional methods of police investigations to scientific methods with forensic technology as a necessary and effective alternative. In essence, modern day policing depends solely on technological advancement in tackling all manners or forms of crimes, and where crime has already been committed, to promptly fishes out the offenders and exonerates the innocent. This means that the adoption of forensic technology in criminal investigation by the police has tremendously contributed to the detection and control of crimes; improved the level of legitimacy that police receives from the public and other government agencies; and enhanced police professionalism (Miller, 2000; Gary, 2007).

Unarguably, in real sense, technology in recent time is transforming policing in all ramifications. It has been playing pertinent and crucial role in the daily work of police officers particularly in the area of equipment that could possibly enforce investigation of crimes. It has also empowered police officers in the field to acquire the professional skills to access and query expanding arrays of databases that could possibly assist them in determining the identity of the individual(s) under investigation. In other words, technology made officers to be more efficient, more effective, knowledgeable and professional in carrying out their duties (Bing, 2010).

More importantly, technological advances have equally expanded the ability of the police force in establishing and verifying the identities of the individuals with biometric precision. The emergence of Automated Fingerprints Identification System (AFIS) and live scan fingerprints capture devices have also assisted the law enforcement agents to easily identify suspects and unravel cases that would have been ordinarily difficult to resolve. More so, modern technology has also enables police officers to capture digital fingerprints

impressions to enable them establish and verify the identity of suspects. Since the early 1970s, forensic laboratories have multiplied in large numbers in both the developed and underdeveloped nations of the world because of increased crime rates and sophistication adopted by criminal gangs. Tilley (2003) opines that technology has made intelligence to become an essential feature of contemporary crime management practice since the early 1990s. It helps in ascertaining who the main offenders are. Transnational crimes such as drug trafficking, terrorism, piracy, financial crime, etc are of increase in recent times. This made it mandatory for the police, other security agencies and justice system (i.e. the courts) to increase their reliance on more efficient and effective means to obtain evidences to unravel critical cases, most notably was the breakthrough in the field of DNA (Deoxyribonucleic acid) testing and forensic services (Peterson et al., 2010). This shows that forensic science can facilitate the resolution of problems that were initially difficult to unravel.

In spite of this advancement and growth of forensic science services in the area of criminal investigation, crime control and management across the world, little success has been recorded in its development and application in Nigeria. The inability of the police in most cases to unravel critical cases of armed robbery, murder, ritual killings, assassination, kidnapping and other forms of criminal vices attracted wide spread criticism from the general public, intelligence community and scholars. Considering the complexities following the commission of these crimes, the victims argued that the police in particular should adopt modern or new culture of crime management since the most significant development in criminal investigation or crime management/strategies is not the transformation of the criminal justice institutions as often experienced in the country but rather the development of a more sophisticated means of identifying crimes and perpetuators of these crimes.

Wright and Barrie (2001) were of the view that the only way to control criminal conducts in any society is to introduce modern technology into criminal investigation since technology plays essential role in modern days policing and provides the investigator lots of opportunities to detect crime. It also provides them effective and robust communication system, traffic management intelligence gathering, dissemination and administration of solutions (Wright & Barrie 2010:21). Although, certain forms of crimes are often difficult to unravel particularly those committed by organized criminal networks which have international connections or those perpetrated by non-state actors or sponsored by state actors such as terrorism. With the introduction of modern technologies in crime detection and control, these forms of crimes are sometime managed or detected.

Much as the exciting era of technological advancement provides us with efficient and effective tool for crime management and criminal investigations, it also provides criminal gangs, the needed sophistication in perpetrating criminal acts. This has provided new challenges to the police and other security agencies since criminals now have a similar advantage provided by technological advancement to carry out their nefarious activities that are often inimical to national security and the masses. Nevertheless, investigators and experts have effectively utilized technology to identify, gather and elevate evidence, and unravel critical cases. The law enforcement agents have also utilized technological advancements to target criminal groups and exploit their vulnerabilities in order to detect, deter and reduce their activities. In line with this achievement, Senna and Larry (2008:76) urged the law enforcement agencies including the police, private and the general public to embrace the modern methods ushered in by technological innovations to report, investigate and proffer ways to reduce threats.

Apparently, the adoption and application of forensic technology in line with modern days policing has not been fully implemented and practiced in Nigeria. The state of forensic investigation in the country is very poor at the moment due to lack of trained personnel and modern equipments. There is also no or insufficient computerized database for criminal records in the country. Presently, the Country's Central Criminal Registry still make use of outdated manually kept records. According to Solomon and Iheanyi (2007:124) this situation Nigeria found itself is better imagined than described considering the high rate of insecurity in the country occasioned by the activities of criminal networks such as Boko Haram Terrorist Organization, kidnappers, drug traffickers, and the most recent of all, the Fulani Herders attacks on farmers across the country.

Lamentably, the government of the day is yet to provide effective automated system where crimes of different magnitude can be reported and where sufficient and detail information are recorded and stores and where recorded information can be distributed and circulated with a mere press of a button. Essentially too the government seen to be uninterested in modern technology used in tackling of the varieties of crimes and emergent criminal organization in the country. This study, therefore, is posed to examine the roles, challenges and prospects of Forensic Technology in crime management and investigation in contemporary Nigeria State with a focus in Rivers State.

1.2 Aim and Objectives of the study

The main aim of this study is to examine the roles, challenges and prospects of forensic technology in crime management, control and investigation in contemporary Nigeria State using River state as a focus, while the specific objectives are to:

i. Identify the usefulness of forensic technology as modern policing equipment,

ii. Identify the effects of non-use of modern forensic equipment by the police in crime management in the country,
iii. Examine the non flexibility of policing in line with the changing crime patterns,
iv. Determine the effectiveness of in-services training and retraining of security personnel in crime management, through technological innovation, and
v. To proffer solutions or recommendations that will boost the prospect/effect of forensic technology in the country.

1.3 Research Questions

The following research questions were raised to give direction to this study:

i. How useful is forensic technology in modern day crime management?
ii. To what extent could the non-use of modern forensic equipment by the police affect crime management in the country?
iii. How would new technological innovations curb rapidly evolving crimes patterns in the country?
iv. What is the training rate of officers after the recruitment exercise through technology innovation?
v. What are the possible solutions to the problems of non use of modern technology in crime management in the country?

1.4 Research Hypotheses

This study was guided by the following hypotheses:

i. The application of forensic technology in modern day policing would not contribute to effective crime management in Nigeria.
ii. The non use or acquisition of modern forensic equipment by the police would not affect crime management in the country.
iii. Technological innovations would not curb rapidly changing crime patterns in the country.
iv. Training and retraining of security personnel in line with modern policing equipment would not contribute effectively to crime management in the country.

1.5 Research method

This study employed descriptive research design which according to Jackson (2009) is used to obtain information concerning the current status of the phenomenon to describe "what exists" with respect to variables or condition in a situation. This presupposed that the study adopted both primary and secondary sources of data. While questionnaire was the primary source, journal articles, textbooks, internet materials, etc were the secondary source. Simple percentage was used to analyze the research questions, while Chi-square test was employed to determine the relationship of variables in each of the hypotheses.

1.6 Theoretical framework

This study adopted two theories "Social Constructionism theory" and "Role theory" to x-ray the relation between the variables under examination or discussion.

1.6.1 Social Constructionism Theory: Social Constructionism theory which is a sub-strand of Symbolic Interactionism was developed from the work of George Herbert Mead. It is concern with explaining social actions in terms of the meanings that individuals give to them. In Mead's view, human thought, experience and conduct are essentially social. They owe their nature to the fact that human beings interact in terms of symbols. A symbol does not simply stand for an object or event; it defines it in a particular way and indicates a response to it (Haralambos and Hulborn, 2008). However, Social constructionism as postulated by Berger and Luckmann (1966) opines that, it is an idea based on factor or fiction that constructs another concept. To them, the concepts are constructed rather than discovered. The major concern of Berger & Luckmann was the nature and construction of knowledge: how it emerges and how it comes to have the significance for society. Hence, they view knowledge as that which is created by the interactions of the individuals within the society which is central to constructionism (Berger & Luckmann, 1991:19).

Typically, this classical view of constructionism has aligned with empiricism. Human views or beliefs are often based upon witnessed account. Many human beliefs are not based upon factual witnessed accounts, but upon information learned from others. Social constructionists, thus, attempt to understand how people assign meaning to their world (Harrigan, 1995:33; Mallon, 2008). In line with Berger and Luckmann proposition, Surette (2011:30) states that social constructionists view knowledge as something that is socially created by people and that create an individual's reality, or what they believe to be reality. Surette (2011) goes on to state that people primarily have two sources in which to create their reality: experienced reality and symbol reality. In essence, these two sources combine to create an individual's socially constructed reality. Experienced reality is one's own knowledge gained from one's own experience. This is likely one of the most limited sources of one's

own experience. People often credit indirect versus direct sources of knowledge when forming their socially constructed reality.

Notably also, the symbolic sources of knowledge include other people, institutions, and technology. These sources can collectively form one's symbolic reality. The symbolic reality is formed from all the events an individual did not witness but believe occurred; all the facts about the world an individual did not personally collect but believe to be true. Technology can also help to create a symbolic reality because people that apply technology have a tendency to hold on what they witnessed (Podlas, 2006:445).

Burr (2003:16) posits that the major focus of social constructionists is to uncover the ways in which individuals and groups participate in the construction of their perceived social reality. It involves looking at the ways social phenomena are created, institutionalized, known and made into tradition by humans. The social construction of reality is an ongoing, dynamic process that is (and must be) reproduced by people acting on their interpretations and their knowledge of it. Because social constructs as facets of reality and objects of knowledge are not given by nature, they must be constantly maintained and re-affirmed in order to persist. This process also introduced the possibility of change. Social constructionism has been applied to human emotions, gender studies, natural science, technology studies and many others. Specifically, in the area of technology studies, social constructionism attempts to understand the relationship between facts, truth, human nature and reality (Bing, 2010:21).

From the position of constructionists, knowledge emerges as a result of interaction and informal interchange of thoughts that modify and construct reality that are shared with other individuals in the society. From this stand point, crime management agencies and government officials are expected to have gained operational knowledge and experience on how best to manage crime owning to their participation and involvement in international missions and summits on crime management that enable them to interact with agents and officials of other nations of the world, particularly the developed world. It is a general believe that, such missions and summits provides agents of crime management and government officials valuable operational experience and greater awareness that should be applied to crime management techniques in order to strengthen and boost domestic agencies ability to manage crime.

Furthermore, since this theory is concern with how knowledge is constructed and understood, it places great emphasis on everyday interactions between the people and how they use language to construct their reality. It regards the social practices people engaged in as the focus of enquiring. This also form the basis of its criticism since it does not provide explanation on how such knowledge and experience gained by people in the cause of their interactions are put to practice in line with their positions as defined by the system.

1.6.2 Role Theory

Role theory on the other hands was propounded by Ralph Linton in 1936. He asserts that role represents the dynamic aspect of status. When one puts into effect the rights and duties which constitute status, one performs a role. Thus, there are no roles without statuses or statuses without roles. An individual may have many statuses and many roles in the expression of a number of patterns and corresponding to the various statuses, one has a series of roles. He asserts further that the status of an individual is the sum total of the entire statuses one occupies. Hence, it is one's position with relation to the total society. Similarly, the roles represent the sum total of all the various role of an individual and determine what one does for the society and what one may expect from it. To him, role provides cohesiveness for society and promotes order and stability which permit individuals to live in relative harmony (Turner, 2001:233).

According to Turner (2001:235), role theory contains six major underlying propositions. Firstly, the division of labour in society takes the form of the interaction among heterogeneous specialized positions that we call roles. Secondly, social roles included appropriate and permitted forms of behaviours, guided by social norms, which are commonly known and hence determine expectations. Thirdly, roles are occupied by individuals who are called "actors". Fourthly, when individuals approve of a social role (i.e. they consider the role legitimate and constructive), they will incur costs to conform to role norms, and will also incur cost to punish those who violate norms. Fifthly, changed conditions can render a social role outdated or illegitimate, in which case social pressures are likely to lead to role change. Sixthly, the anticipation of rewards and punishment, as well as the satisfaction of behaving in a pro-social way, account for why agents confirm to role requirements. Theorists from different fields have made different assumptions about role theory.

Robert Merton (1957) cited in Biddle (1986:51) deviated from Ralph Linton perception and introduces the concept of *"role-set"* by which he means that each social status involved not a single role but an array of associated roles. For Merton, a role-set denotes a complement of social relationships in which persons are involved simply because they occupy a particular social status. He distinguishes it from multiple roles which refers to the complex of roles associated not with a single social status, but with the various statuses (often, in differing institutional spheres) in which individuals find themselves- the roles. In other words, the complement of social statuses of an individual is his/her status-set, each of the statuses in turn having its distinctive role-set. Merton posits the notion of *role-set* and *status-set* which lead to the task of that social structure confront men

with the task of articulating the components of countless role-set. That is, the functional task of managing to organize so that an appreciable degree of social regularity obtains, sufficient to enable people to go about their business without becoming paralyzed by extreme conflicts in their role-sets.

Sanford (1977:95) in relation to status (as position) opined that social role is a collection of rights and duties, or is the behaviour that is attached to a position. When status is a label, and role is a cluster of norms, in the sense of the activities expected of the people in certain or specific roles, an additional concept called role behaviour, role performance or role enactment, is applied to behaviour. Though role behaviour or role performance may be spoken to any behaviour performed while a person is in role, or only of those activities that are performed by all or most people in the same social role, in the final analysis, role behaviour is limited just to those activities that are consistent with, or conform to, the cluster of norms that define the role. In essence, there can be a status or role without somebody filling that position or role at a particular time. When a social role is defined as a behaviour that is attached to a position, it is impossible to have a root without incumbent. For there to be behaviour in a role, a person is obviously required.

Nisbet (1977:117) asserts that social roles are certain fundamental attributes: pattern of behaviour, correspondence to social norms, relation to a social circle or structure, the felt sense of duty and authority. For Nisbet, roles are ways of behaviour, distinctive, prescribed and handed down from generation to generation. That social role embodies norms. Every recognized role is linked to normative order. Implicit in any role is set of norms that define and give it identity. And these norms are evaluative points of reference by which we asses ourselves. Social role, thus, is invariably a part of a structure or system of interactive relationship. The identity of any role is taken from interactive, complementary, or reciprocal relation to other roles in society (Nisbet, 1977).

In every social role there is the strong element of duty- that is perceived duty, whether with respect to oneself or another person. The idea of duty is a manifestation of the larger system of authority that exists in any social aggregate. The vitality of any social role is in large measure correlated with the degree of duty or obligation one feels in the performance of the role. Many social relationship are kept going indefinitely on the account of strong sense of duty. Not infrequently duty consciousness urges role players to rise up to the occasion. That legitimacy is a very strong element in any established social role and acceptance is easily granted to a conduct that proceeds from a role that is legitimate.

Extrapolating from the perceptions of the various scholars on “role theory”, there is absolutely no doubt that law enforcement agencies are the actors of the management of crime in any society. As actors, their role is to make social order possible and ensure regularity. Law enforcement personnel by virtue of their status and defined role, have the sole responsibility to maintain law and order in the society, so that the people can go about their normal and daily activities without any form of molestation. In essence, social role provides cohesiveness for society and promote order and stability when individuals with statuses perform their roles as defined by the system. From this stand point; law enforcement agencies should be provided with modern forensic equipment and trained in line with this equipment as to enable them performs their defined role as crime management agencies.

The government and its other actors on the other hands should ensure that their role as providers of basic equipment to law enforcement for the management of crime is played. It will upset our senses if the government fails in her defined role of providing equipment in line with modern day crime management. Since the government and the crime management agencies are two actors in the same social system with specialized roles, each of them should work in conformity with the role requirement as expected by the system in order to ensure stability. The law enforcement agencies cannot manage crime properly without adequate material support from the government and the government on the other hand cannot function properly without social order, thus, both the government and crime management agencies must perform their distinctive roles for society to be in a state of homeostasis. In view of the above, the role theory expresses the underpinnings and provides the contextual capacity within the praxis, sufficiently adequate to examine the issues involved in our society.

2.1 Empirical Review

2.1.1 Forensic Technology and Crime management

The term “forensic technology” has taken diverse forms since its introduction to crime control and management. Solomon and Iheanyi (2007) perceived it as the application of a broad spectrum of sciences to answer questions of interest to legal system in relation to a crime or civil action. In its simplest form, it is seen as the science used in the detection and prosecution of crimes; or as the application of scientific skills of examination and evaluation to the resolution of social and legal issues; or in its broadest sense, the application of science to law and crime management. Basically, it is the adoption of scientific methods either in establishing the facts or corroborating pieces of evidence gathered from other sources by detectives in relation to a case under investigation (Solomon & Iheanyi, 2007). McCartney (2006) defined forensic technology as the identification, collection and processing of evidence that may be used in the investigation of a crime or accident. For Saferstein (2010), it is the application of science to criminal and civil laws that are enforced by police and other agencies in a criminal

justice system. According to him, as society grows more complex, it becomes more dependent on the rule of law to regulate the activity of its members, therefore, forensic technology applies the knowledge and science for the definition and enforcement of such laws (Saferstein, 2010).

In a broader perspective, it is seen as the application of science and technology for collection of evidence, at all stages of the investigation process, so that it can be located, recovered, analysed and interpreted for the purpose of impacting on crime and criminality in a way that supports the effective administration of justice and inspires public confidence. Its primary objectives, thus includes bringing offenders to justice, exonerating the innocent, detecting crime ensuring efficient and effective crime investigation, and gaining better understanding on criminality, for example by understanding criminal behaviour, links and associates via information provided through forensic data such as fingerprints, footwear marks, drug composition, tool mark, etc. (Public Service, 2009).

In addition, the expanding uses of technology in criminal investigation and information gathering have been pivotal to the operational implementation of intelligence in crime management. For instance the National Intelligence Model (NIM) in England and Wales developed by the National Criminal Intelligence Services and adopted by Association of Chief Police Officers (ACPO) in 2000, makes technology or what is term system products, central to successful intelligence-led investigations. The National Intelligence Model described in the National Policing Plan 2005-2008 as a cornerstone of crime management in England and Wales, provides a model of policing which attempts to ensure that all potentially useful information is fully researched and analyzed to develop intelligence capable of providing strategic direction within police investigations.

According to Robin and Paul (2008), the need for implementing this model was heightened by the Richard inquiry's examination of police intelligence system following the murder of two school girls in Soham, Cambridgeshire. This inquiry was set up to access the effectiveness of intelligence-based record keeping and information sharing across state agencies. The inquiry particularly recommended and introduced a national technology for the police intelligence system, the improvement of the police national computer, and a new code of practice on information management (Robin & Paul, 2008:107). In 1991, the United Kingdom generally, made significant efforts to find ways in exploiting the significance of forensic technology in order to manage crime through a joint research funded by Forensic Science Services (FSS) and Crime Committee of Association of Chief Police Officers (ACPO) (Saulsbury, Hibberd & Irving, 1994).

The role of forensic technology in crime management in our contemporary era cannot be overemphasized. Its introduction to crime management and control entered into the police system at a time when it becomes necessary owing to increased sophistication adopted by criminal elements. Its uses from the late 1990s remained predominantly proactive, case-based and corroborative. Since its introduction into crime management, series of changes and modifications have taken place especially in the last decade of the 20th century. In particular, the establishment of electronically searchable fingerprint and DNA data bases containing the trace biometrics of potentially recidivist offenders was easily characterized as offering powerful forensic intelligence for proactive use. Complementing effort was also made in expanding collection and speculative searching of unidentified crime scene marks and stains supported by investment in forensic technology (Robin & Paul, 2008:108).

2.1.2 Crime Management

Having attempted a succinct explanation of the concept "Forensic technology", it is essential at this junction to attempt a conceptual explanation of the concept "Crime management" to point out the relationship or link between the two concepts. According to Sherman et al. (1997) the concept of crime management has been applied in several ways to the problem of crime. It has been used to refer to both activities (e.g. crime management programs and/or strategies) and outcomes (e.g. lower levels of crime in communities and/or lower level of offending/re-offending by individuals). In essence, understanding crime management often requires studying the intentions, as well as consequences. The number of harm prevented or the number of victims harmed are essential tool in the management of crime or assessing the extent to which crime has been managed or controlled. In other words, crime management is concerned with maintenance of fewer crimes in a society, or prevention of re-offending by targeted group offenders (Sherman et al., 1997:76).

Chan (2001:143), identified the fact that the efforts to manage crime underscores the point that technology or more precisely, *technological advances*, has been the driving force that led to the reform in crime management strategies by both the individual citizens, concern groups and by formal police agencies. Technological innovations and information-based technologies have been linked to the changes in crime or sophistication adopted by criminal elements to perpetrate crime and which also led to changes in the organization of policing or the police force, particularly at the turn of the last century. This has also impacted on crime management strategies generally (Reichert, 2001:63).

The first technology revolution in the United States that actually changed the way the police was organized and how it operated was centred on three technological innovations that were incorporated into crime management: the telephone, the two-way radio and the automobile. With the proliferation of telephone in the early twentieth century, policing changed. Citizens called and in fact were encouraged to call the police to deal

with a multitude of problems, and the police responded to those calls from dispatch via a two-way radio, and sped quickly to such location via patrol cars. These technological advances, along with changes in police administrative procedures helped the police to manage and control crime (Harris, 2007:153).

Between 1995 and 2002, the USA office of Community Oriented Policing Services (COPS) program provided grants to the law enforcement agencies to acquire and implement technology in support of efficient police operations such as Mobile Data Centres (MDCs) or Laptops, followed by Automated Field Reporting Systems (AFRS), Record Management System (RMS), Personal Computers, Computer-Aided Dispatch (CAD) System and Automated Fingerprint Identification System (AFIS). In recent years, hard technological innovations including new or modern weapons, less-than-lethal force technologies, body armour, CCTV Systems, gunshot location technology and new patrol car technology were added to improve policing and crime management and control in USA and other developed countries (Stroshine, 2005:11; Groff & McEwen, 2008:8). Moreover, the role of technology in policing and crime management particularly DNA forensic technology has changed the landscape of policing. It has also improved criminal justice system, and has also assisted the police department to efficiently and effectively identify previously unknown criminal suspects and adjudication of innocence or guilt in court. Though forensic investigation faces some challenges but recent years have seen considerable developments in investigative methodologies that recognized the above challenges and ensure that forensic technology is an effective part of any investigation. The introduction of the use of DNA and new biometrics has also improved police investigation and crime management in the developed systems in the global world with less improvement and recorded achievements in the developing countries such as Nigeria, etc. In Nigeria, these innovations are hardly found in the police headquarters located in the 36 states of the federation and which are predicated on the assumption that Nigerian government fail to use forensic technologies; which are precursors to the perturbing situations Nigeria find herself as enunciated by Adagba et al (2012: 97) that clearly shows that Nigeria state of insecurity in the polity has assumed a frightening dimension. What look rather strange in our situation is the seemingly inability of our government to tackle head-long challenges that have transformed into serious security challenges across the state. In response to these, the work is poised to provide and address these challenges through the adoption of forensic technology.

2.2 Empirical Analysis of Data obtained from the Field

It is imperative to note that two types of data analytical techniques; the simple percentage and the "chi-square statistical methods were adopted to analyse data obtained from the field. The first is used to analyse the attributes of the respondents and the research questions, while the second is used to test the research hypotheses that were formulated for the study. For effective analysis, a total of one thousand and seventy one (1,071) questionnaires were distributed to the respondents in the study area to determine the effectiveness of forensic technology in modern day crime management in River State, Nigeria. Of the 1,071 questionnaire administered to the targeted respondent, 995 copies were filled and returned which formed 93% of the total copies administered. A total of 76 copies of the questionnaire were invalid as a result of wrong filling and failing to return owing to intra and interstate transfer.

Table 2.2.1Distribution of Questionnaire to Officers of Rivers State Police Command according to Rank

Respondents	Copies Administered	Copies Received	Percentage (%)
PC-S/Major	417	398	95.44
Insp-C/Insp	335	316	94.32
ASP-DSP	186	165	88.71
SP-CSP	133	116	87.22
Total	1,071	995	93

2.3 Data Analysis/Presentation

Question 1:How Effective is Forensic Technology in Modern Day Crime Management?

Table 2.3.1Forensic Technology in Modern Day Crime Management

Response	Number	Percentage %
Very Effective	757	76.08
Effective	181	18.19
Not Effective	57	5.73
Total	995	100

In this table, the response revealed that seven hundred and fifty seven (757) representing 76.08% of the respondents were of the view that forensic technology is very effective in crime management; one hundred and eighty one (181) representing 18.195 of the respondents and it is effective, while fifty seven (57) representing 5.735 of the respondents said it is not effective. This shows that the most of the respondents see forensic technology as a better response of crime management.

Question 2:To what extent would the non-use of modern policing equipment affect crime management?

Table 2.3.2 Non-Use of Modern Policing Equipment affects Crime Management?

Response	Number	Percentage %
Highly	639	64.22
Lowly	356	35.78
Total	995	100

This table the response rate to the question that, to what extent would the non use of modern policing equipment affect crime management. The data revealed that six hundred and thirty nine (639) representing 64.22% of the respondents were of the view that the non use of modern policing equipment affects crime management highly. According to the respondents, the non-use is as a result of lack of government commitment and financial constraints, while three hundred and fifty six (356) of the respondents representing 35.78% were of the view that it affects crime management lowly and that commitment on the part of officers would have played a role despite the non use.

Question 3: How would new technological Innovations curb rapidly evolving crimes patterns?

Table 2.3.3 Technological Innovations and Rapidly Evolving Crimes

Response	Number	Percentage %
Quickly	647	65.03
Slowly	348	34.97
Total	995	100

When asked to assess the tackling rate of rapidly evolving crime with advent of technological innovations, the response shows that six hundred and forty seven (647) representing 65.03% of the respondents were of the stand point that new technological innovations will respond to evolving crimes quickly. Respondents, however, attributed the non tackling of these evolving crimes by officers to unavailability of modern policing equipment and went further to say that criminals to a large extent are more sophisticated compared to them, while three hundred and forty eight (348) representing 34.97% of the respondents averred that new technological innovations tackle evolving crimes slowly.

Question4:What is the training rate of officers after the recruitment exercise?

Response	Number	Percentage %
Regular	112	11.26
Nor Regular	883	88.74
Total	995	100

This table shows the response rate of how officers are trained after their recruitment exercise. The data shows that one hundred and twelve (112) of the respondents representing 11.26% were of the view that there is regular training after their recruitment exercise, but they are not technology based, while eight hundred and eighty three (883) of the respondents representing 88.74% were of the view that there is no regular training of officers despites efforts made by officers owing to the prevailing crime problem.

3.4 Testing of Research Hypothesis

Hypothesis 1: Null hypotheses (H_o) and alternative hypothesis (H_1)

H_o: The application of forensic technology in modern day policing would not contribute to effective crime management.

H_1: The application of forensic technology in modern day policing would contribute to effective crime management.

Table 3.4.1 Application of Forensic Technology

Responses	Effective Crime Management		
	Yes	No	Total
Necessary	350 (321.83)	267 (295.17)	617
Not Necessary	169 (197.17)	209 (180.83)	378
Total	519	476	995

X^2 calculated value = 13.57

Table value of X^2 at 0.05 level of significance at 1df = 3.84

Since the calculated value of X^2 is 13.57 and the table value is 3.84, the null hypothesis is rejected and the alternate hypothesis is accepted. This lay credence to the alternate hypothesis that the application of forensic technology in modern day policing would contribute to effective crime management. We therefore conclude that forensic technology is a vital tool in modern day crime management. This is because the use of biometrics, CCTV, new forensic techniques, including the development and use of DNA databases are some examples of

technologies used in management and fight against crime and it also changes the investigative techniques and modus operandi of crime management agencies.

Hypothesis 2: Null and alternative hypothesis (H_o & H_2)

H_o: The non use or acquisition of modern policing equipment would not affect crime management.

H_2: The non use or acquisition of modern policing equipment would affect crime management.

Table 3.4.2 Non use of acquisition

Responses	Modern Policing Equipment		
	Yes	No	Total
Affects	357 (330.96)	262 (288.04)	619
Affects not	175 (201.04)	201 (174.96)	376
Total	532	463	995

X^2 calculated value = 11.63

Table value of X^2 at 0.05 level of significance at 1df = 3.84

Since the calculated value of X^2 is 11.63 and the table value is 3.84, the null hypothesis is rejected and alternate hypothesis is accepted. This simply means that the inability of crime management agencies to combat crime is as a result of non use or acquisition of modern policing equipment. Therefore, the alternate hypothesis which states that the non acquisition of modern policing equipment would affect crime management should be accepted. What this means, is that for crime management agencies to be proactive in the fight against crime they must acquire and make use of modern policing equipment, because failure to acquire or put to use of modern policing equipment will operationally stampede crime management. We therefore conclude that there is a significant relationship between availability of modern policing equipment and adequate management of crime.

Hypothesis 3: Null and alternative hypothesis (H_o & H_3)

H_o: Technology innovations would not curb rapidly changing crime patterns.

H_3: Technology innovations would curb rapidly changing crime patterns.

Table 3.4.3 Technological Innovations

Responses	Changing Crimes Patterns		
	Yes	No	Total
Curb	355 (330.6)	261 (285.4)	616
Curb not	175 (203.4)	200 (175.6)	379
Total	534	461	995

X^2 calculated value = 10.19

Table value of X^2 at 0.05 level of significance at 1df = 3.84

Since the calculated value of X^2 is 10.19 and the table value is 3.84, the null hypothesis is rejected and alternate hypothesis is accepted. This implies that the ability of crime management agencies to curb rapidly changing patterns depend largely on technological innovations. Therefore, the alternate hypothesis which state that technological innovations would curb rapidly changing crime patterns should be accepted. What this means is that, technological innovations enable agencies of crime management to have easy access to data that could make them to meaningfully engage in the problem-solving process, thereby reacting to rapidly growing crime patterns swiftly. We therefore conclude that crime management agencies need to defend largely on technological innovations in order to be flexible in line with changing crime patterns.

Hypothesis 4: Null and alternative hypothesis (H_o & H_4)

H_o: Training and retraining of security personnel in line with modern policing equipment would not contribute effectively to crime management.

H_4: Training and retraining of security personnel in line with modern policing equipment would contribute effectively to crime management.

Table 3.4.4 Training and Retraining of Security Personnel

Responses	Modern Policing Equipment		
	High Result	Low Result	Total
Adequate training	352 (325.79)	269 (295.21)	621
Inadequate training	170 (196.21)	204 (177.79)	374
Total	522	473	995

X^2 calculated value = 11.8

Table value of X^2 at 0.05 level of significance at 1df = 3.84

Since the calculated value of X^2 is 11.8 and the table value is 3.84, the null hypothesis is rejected and alternate hypothesis is accepted. This simply implies that training and retraining of security personnel in line with modern policing equipment contributes to operative crime management, therefore, the alternate hypothesis which states that training and retraining of security personnel in line with modern policing equipment would contribute effectively to crime management should be accepted. What this means is that training and retraining of security personnel helps to improve law enforcement knowledge and expertise on both crime trends and the use of new instruments to reduce and prevent high tech and all kinds of crimes. It also helps to promote and improved the knowledge of prosecutors on high tech crimes and all the related legal issues.

3.5 Discussion of Findings

From the discussions above, there is no doubt that crime management in our contemporary or modern states rely more on forensic technology to increase effectiveness and efficiency. A critical assessment of the activities of the Nigeria Police Force revealed that factors such as costs, security sector corruption, mismanagement, financial constraint and lack of political will, are impediment to acquisition of modern policing equipment in the country, hence the non use of these equipment in the management of crime in River State, Nigeria. In other words, the non flexibility of policing patterns in line with changing crime pattern in the country, particularly in Rivers State is as a result of government's ineptitude. There are also no trained agents of crime management in the use of various technologies to investigate or combat crime in the state. This is attributed to high cost of acquiring modern policing equipment, training and retraining of agents and its associated maintenance.

Police officers and security agents trained in this respect have learnt to create high-tech forensic laboratories (labs) that can help to identify suspects involved in theft and other forms of crime. Application of sophisticated electronic gadgets, computers, cell phones, and digital communication devices has enhanced criminal investigation and control. In developed countries, the police and security agents are becoming more and more sophisticated in their use of forensic technology to identify and convict criminals. Some trained agents have also adopted forensic science to conduct analysis to behaviour pattern, a process called "Data Mining", in an effort to identify crime patterns and link them to suspects by discovering patterns in crime, especially those involving multiple offenders (Senna & Larry, 2008).

Roman et al. (2008) noted that forensic technology has empowered crime management agencies to collect and process DNA evidence that has great potential for improving criminal investigation, given both the strong experimental evidence for its effectiveness and efficiency in clearing cases and its use in violent crime cases due to its expense, and evidences on its effectiveness is largely anecdotal. Other technologies such as biometric technology, mobile fingerprint readers and significant others have also improved suspect identification and improved operations (Roman et al., 2008).

Findings also revealed that technology supports crime management owing to its increase use in various forms of cameral surveillance, ranging from individual cameras in patrol cars or on officers' uniforms to wireless networks of cameras providing live coverage of numerous area of a city simultaneously. Some evidence suggests that cameras are effective in reducing some forms of crime; they are even more effective if coupled with emerging biometric technologies for subject identification. Crime management agencies are also empowered with technologically advances surveillance equipment such as "see through the wall" devices in cases of hostage situation (Police Executive Research Forum, 2009).

The challenges of forensic technology and crime management in the country particularly in Rivers State, from our stand point revealed that financial constraints, security sector corruption and mismanagement, and lack of government support, are the main constraints. Lack of government support in particular has been identified as the major barrier to the acquisition of modern policing equipment, evident in the non use of this equipment in the management of crime in River State, Nigeria. This is because, for crime management to be proactive, agencies must be provided with modern crime fighting equipment that will boost their effort and performance.

The review provided justification for the second objective in the study which is "to examine the non flexibility of policing in line with the changing crime patterns". It is no longer in doubt that the non flexibility of policing patterns in line with changing crime patterns in River State, Nigeria is as a result of the non acquisition or unavailability of modern policing equipment to tackle the rapidly growing crime rate in River State, hence rendering the agencies of crime management directly or indirectly of not being proactive or not being flexible in pursuit of the current crime rate.

The study finally revealed that there are no trained agents of crime management in the use of various technologies to investigate or manage crime in the state. Even when it is found, there are no equipment for the officers to function. This is attributed to high cost of acquiring modern policing equipment, training and retraining of agents and its associated maintenance. Personnel training and retraining in line with modern policing equipment provides officers the skills to recognized, investigate and document crimes committed using electronic or other devices and to collect evidence from crime scene and other sources for proper investigation

and prosecution, this is rightly not available in Rivers State, Nigeria.

4.1 Conclusion

Crime management no doubt is undergoing a period of great change, caused in large part by the advancement of new forms of technologies that have increased efficiency and effectiveness. Today's officers can instantly pull information about suspects on computers in their patrol cars or on smart phones. They can even analyze data about crimes, offenders and neighbourhood demographics to the point where it becomes possible to predict the likelihood of crimes being committed at certain locations and certain times.

The technological advances have also played a crucial role in the daily work of frontline officers of crime management by equipping them with enforcement investigative tools that have the potentials to make the officers better informed and more effective as they are able to access databases that can greatly assist in determining the legal status of the person they are dealing with. The rapid availability of new technologies in the world of crime has not only provided law enforcement officials with greater tools and new methods of crime management but it has also provided them with new challenges, as criminals have similar opportunities for exploiting, disrupting and harming society despite the degree of convenient it has provided. The exploitation of existing technologies by criminals and terrorists also posed a serious threat to society due to perceived inability of officers to cope with the increasing complex threat.

Apparently, the rapid change in society is also driven by high level if technological advancement, creating greater and powerful innovations for crime management agencies. It is proven that forensic technology has a dramatic impact on crime management, creating innovative techniques for combating crime and other related offences. The management and timely termination of crime depends on the ability of officers to process and analyze available data and take immediate action base on the technological training. Crime management agencies, therefore, need to acquire and understand and the usage and application of forensic technology in modern day crime management and to know the technologies that will emerge in the coming years in order to be ahead of criminal and terrorist groups.

5.1 Recommendations

The findings and conclusion drawn from this study leads us to make the following suggestions to improve the future of crime management in Rivers State, Nigeria.

1. That Government should establish forensic laboratory in the state, because the science of crime-scene evidence is forensic, it is where science and crime solving intersect and determine the evidentiary value of items found during a criminal investigation.
2. That in view of recent technological advancements in crime management, Government should integrate various technology based and specialist field trainings into crime management programmes that will always place security personnel ahead of criminal or terrorist groups.
3. That Government should embark on legislations that will protect and empower crime management agencies, particularly the police to taken and retain DNA samples from all those arrested on suspicion of involvement in any recordable offense and to retain samples regardless of whether the individual in question is subsequently charges or convicted of the offense in question.

References

Adagba, O., Ugwu, S. C. & Eme, K. I. (2012) Activities of Boko Haram and Insecurity Question in Nigeria. *Arabia Journal of Business and Management Review (OMAN Chapter)* Vol. 1, No. 9, April 2012: 77- 99.

Berger, P. & Lukmann, T. (1991) *Social Construction of Reality*. London: Penguin Books.

Biddle, B. L. (1986) Recent Development in Role Theory. Annual Review in Sociology. 12: 67-92.

Bing, R. L. (2010) *Race, Crime and the Media*. New York: McGraw-Hill.

Burr, V. (2003) *An Introduction to Social Constructionism*. (2nd Edition). London: Routledge.

Chan, J. (2001) The Technology game: How Information Technology is Transforming Police Practice. *Journey of Criminal Justice, 1: 139-159*.

Gary, M. T: (2007) Technology and Social Control. The search for the Illusive Silver Bullet. UK: Elsevier Academic Press.

Groff, E. & McEwen, T. (2008) Identifying and Measuring the effects of Information Technologies on Law Enforcement Agencies: The making officers Redeployment Effective Program. Washington DC. US Development of Justice, Office of Community Oriented Policing Programs.

Haralambos, M & Hulborn, M. (2008) *"Sociology" Themes and Perspective 7th edition*. London: Harper Collins Publishers Limited

Harringan, J. A. (1995*) Environmental Sociology: A Constructionist Perspective*. New York: Routledge.

Harris, C. (2007) Police and Soft Technology: How Information Technology Contributes to Police Decision making. The New Technology of Crime, Law and Social Control: Monsely, NY; Criminal Justice Press.

Jackson, S. L. (2009) *Research Methods and Statistics: A Critical Thinking Approach*. (3rd Edition). Belmont, USA: Wadsworth.

Mallon, R. (2008) Naturalistic Approaches to Social Construction. The Stanford Encyclopaedia of Philosophy. Edward N. Zalta (ed).

McCartney, C. (2006) *Forensic Identification and Criminal Justice. Forensic Science, Justice & Risk*. Cullompton, UK: Willan Publishers.

Miller, W. (2000) The Good, the Bad and the Ugly. History Today, 50, 29-35.

Nisbet, R. (1977) The Social Bond: An Introduction to the study of Society. 2nd Edition. Randon House Inc.

Peterson, J., Sommer, I., Baskin, D & Johnson, D. (2010) The Role and Impact of Forensic Evidence in the Criminal Justice Process. National Institute of Justice #2006 – DNBX – 0094. [Online] available: https://www.ncjrs.gov/nij/grants. (6 October 2010).

Podlas, K. (2006) CSI Effect: Exposing the Media Myth. Fordham Intellectual Property, Media and Entertainment. *Law Journal, 16:429-465*.

Police Executive Research Forum, (2009) Law Enforcement Technology Needs Assessment: Future technologies to address the operational needs of law enforcement. Washington DC.

Public Service, (2009) Forensic plays a significant Role in Crime fighting. UK.

Reichert, K. (2001) Use of Information by Law Enforcement, Promising approaches to Addressing Crime Series. University of Pennsylvania, Jerry Lee Centre of Criminology, Forum on Crime and Justice.

Robin, W. & Paul, J. (2008) *Genetic Policing: The use of DNA in Criminal Investigation*. USA: Willan Publishing.

Roman, J. K., Reid, S., Reid, J., Chalfin, A., Adms, W. & Knight, C. (2008) The DNA field experiment: Cost-effectiveness analysis of the use of DNA in the investigation of high-volume crimes. Washington DC, the Urban Institute.

Saferstein, R. (2010) *Criminalistic: An Introduction to Forensic Science:* 10th International Edition. USA: Prentice hall.

Sanford, L. (1977) *An Introduction to Sociological Concepts*. New York: John Wiley & Sons.

Saulsbury, W., Hibberd, M. & Irving, B. L. (1994) Using Physical Evident: An Examination of Police Decision Making. London: The Police Foundation.

Senna, J. J. & Larry, J. S. (2008) *Essentials of Criminal Justice*. (5th Edition). Belmont, USA: Thompson Wadsworth.

Sherman, L. W., Gottfredson, D. C., Mackenzic, D. L., Eck, J. E., Reuter, P., & Bushway, S. D. (1997) Preventing Crime: What works, what doesn't, what's Promising. Washington DC: National Institute of Justice U.S. Department of Justice.

Solomon, A. E. & Iheanyi, P. O. I. (2007) *Policing Nigeria in the 21st Century*. Nigeria: Spectrum Books Ltd.

Stroshine, M. (2005) Information Technology Innovation in Policing. In R. Dunham & G. Alperi, eds; *Critical Issues in Policing* (5th Edition). Longrove: Waveland Press.

Surette, R. (2011) *Media, Crime and Criminal Justice: Images Realities and Policies* (4th Edition). Belmont, CA: Wadsworth.

Tilley, N. (2003) Community Policing, Problem-Oriented and Intelligence-Led Policing. Handbook of Policing. Cullompton: Willan.

Turner, R. H. (2001) *Handbook of Sociology Theories*. USA: Springer.

Wright, P. & Barrie, S. (2010) *Policing Matters: Policing and Technology*. UK: Learning Matters Ltd.