CYBER SECURITY AS AN EFFECTIVE DETERMINANT TOOL FOR POLICE INVESTIGATION IN NIGERIA

SULAIMAN USMAN DAN-GHANI; SAHALU BALARABE JUNAIDU; A.A. OBINIYI; & MUSTAPHA AMINU BAGIWA

Department of Computer Science, Ahmadu Bello University Zaria, Kaduna State, Nigeria.

ABSTRACT

Crime is an inevitable part of human behavior, Crime is an act of omission or commission which renders the person involve in the act liable to punishment under any order in council, ordinance and law. The phenomenon, "crime" has been a major subject of private and public concern throughout human history, no society is free of crime. However, the question is how much of it can a society tolerate.

INTRODUCTION

Background to the Study

The phenomenon, "crime" has been a major subject of private and public concern throughout human history. No society is free of crime. However, even if crime is part of and an inevitable human behavior, the question is how much of it can a society tolerate. Crime is generally known as an act or omission or commission which renders the person involved in the act liable to punishment under any order in council, ordinance and law (Onoge,2013). Schemallenger (2015) views crime as a conduct violating the criminal laws of a state, federal government, or a local jurisdiction, for which there is no legally acceptable excuse. The recent upsurge in violent crimes in Nigeria has created enormous uncertainty in the security of lives and property of individuals and of social stability in general (Udoye, 2012). The incidents of traditional crimes such as armed robbery, arson, drug trafficking and abuse, murder, kidnapping, rape, assassinations and ritual killings are examples of the most serious and violent crimes which have been on the

This paper focused on cyber security as effective determinant tools for police investigation in Nigeria. The study was guided by two research questions and descriptive survey design was used. The data used was a primary data collected through structured questionnaire. The population of the study consists of 1,172 male and 1,128 female police officers across the selected Police Station in the six geopolitical regions in Nigeria. The sample data was analyzed using Taro Yamen formular. The findings revealed that Cyber security system have a significant effect on crime investigation in Nigeria and that Cyber security system have a significant effect on crime reduction in Nigeria. From the analysis, the researcher recommends that Nigerian police should make use of cyber security system in order to reduce crime in the society.

Keywords: Crime, Cyber, security, Police, Investigation, Revolution.

increase in the recent past. Correspondingly, White Collar Crimes in the form of Advance Fee Fraud (popularly, known as 419), contract deals, embezzlement and mismanagement in both the public and private sectors are also on the increase. According to Aluforo (2011) the problem of insecurity in the country seems to have grown beyond government capacity. This is because the efforts of the government have not yielded enough positive result. Egwu (2011) expressed the fact that the primordial tendencies of various eruption of various ethnic militias and the pre-ponderant religious fundamentalism in places, given expression to by some sections of the dominant religious establishments in Nigeria, this have inevitably aggravated the scale and propensity of insecurity and widened its scope in various ramifications. Odekunle, (2014) opined that the response of the Nigerian state to the crisis of the mass unemployment and fuel crisis have led to the worsening of the crime situation in Nigeria. Also, poverty, unemployment declining income and low savings, which pushed many retrenched people into a struggle for survival, high rate of inflation, political intolerance on the part of the ruling party as pointed out have contributed in no small measure to the rate of insecurity in the country.

One of the primary purposes of government of any nation is the provision of security. The role is emphasized in the 1999 constitution of the Federal Republic

of Nigeria that "the security and welfare of the people shall be the primary purpose of the government" (Section 14(2) (b). In performing this role, the government delegates the duty of maintenance of internal security to the Nigeria police. The Nigeria police is by law saddled with the responsibility of preventing and detecting crime, preserving peace and order and enforcing all laws and regulations and is expected to perform these roles efficiently and effectively (Tope, 2009).

Nigerian Police has been under intense criticism, by both the general public and the mass-media over its apparent inability to effectively prevent and control crimes in the country, especially this time Nigeria is facing serious security problems. So many socio-economic forces have been blamed for such failed situation. They include among others: absence of professionalism which affects the quality of the man-power; poor training and training facilities available to Nigerian Police trainees; corruption that has engulfed the entire society, police extortion syndrome, general poor attitude to work, indiscipline, colonial legacy and mentality of the Nigerian Police to mention but a few (Ugwu, 2010).

Although it is the duty of the Nigeria Police Force to protect every citizen as well as foreigners in our land, however, there has been public distrust of the Nigerian Police, apparent loss of confidence in them, hatred and suspicion; and the feeling of intimidation by Police presence. Most Nigerians, these days, are no longer prepared to provide or share information that will help expose criminals, or get involved in identifying them. Sometimes, they deliberately act against the efforts of the Police to track down criminals. Instead of reporting criminals or handing them over to the Police for possible prosecution, people prefer to take laws into their hands and burn or machete an apprehended suspected criminal to death or incapacitate him or her for life (Balogun 2009).

Often times the officers of the force are accused of brutality, violating fundamental human rights, extra judicial killings, aiding and abetting criminal activities, of engaging in bribery and corruption (Daily Champion, 2011). Conversely, the police officers complain of poor salaries which are irregularly paid, absence of life insurance policy, indecent and insufficient barracks, lack of equipment, absence of motivation packages et cetera, in the face of hazardous duty they perform and are expected to perform (Ugwuoke, 2011:1). Similarly, policemen face challenges and constraints from the powers that be in the process of law enforcement. The point being made is that officers and men are not usually

granted free hand in the execution of their job. Irrespective of the nature and dimensions of crime, what is important is what the stakeholders in the society do in controlling, managing or preventing crime situations. This therefore leads to the introduction of cyber security for effective investigation. To this effect this paper focused on cyber security as effective determinant tools for police investigation in Nigeria a study of selected Police Station in the six geopolitical regions in Nigeria. The study was guided by two research questions a descriptive survey design was used in this research. The data used was a primary data collected through structured questionnaire. The population of the study consists of 1,172 male and 1,128 female police officers. The sample data was analyzed using Taro Yamen formula. The findings revealed that Cyber security system have a significant effect on crime investigation in Nigeria and that Cyber security system have a significant effect on crime reduction in Nigeria at large.

Objective of the Study

The main objective of this study is to examine effect of effective cyber security tool as determinant of police investigation in Nigeria using selected Police Station in the six geopolitical regions in Nigeria as a case study. Specifically, the study seeks to;

1. Examine the impact of cyber security on crime investigation in Nigeria
2. Examine the impact of cyber security on crime reduction in Nigeria.

Research Questions

The following research questions guided the study
1. How does cyber security affect crime investigation in Nigeria.
2. How can cyber security help in crime reduction in Nigeria

Hypotheses

The following null hypothesis guided the study

H_{01}: Cyber security system does not have a significant effect on crime investigation in Nigeria

H_{02}: Cyber security system does not have a significant effect on crime reduction in Nigeria.

Significance of the Study

This section looks at both the theoretical and practical significance of the study. Theoretically, the study will be of immense benefit to the society as it will reveal the importance of security thereby making the society to put in more effort in eliminating crime by working hand in hand with the police. The study will also contribute to the existing knowledge of the society as it will reveal the factors hindering the police in carrying out their duties with regard to crime control. This study shall lead to the evaluation of existing sociological theories regarding crime prevention and control. This study will help us acquire knowledge about ability of the police to control and prevent crime in Nigeria.

Practically the study will be of great benefit to the government as it will help the government to carry out a remedy on the challenges facing the police force in crime control. The study will also be of immense benefit to the police force as it will reveal to them the loop hole in the police force thereby making the superior officers to adjust and seek possible solution so as to reduce crime. The findings generated from this study will help the government in finding acceptable ways of improving the condition of the police. The study will help to acquaint us with the patterns of crime prevention and control employed by the police in Nigeria. This research study will also serve as a reference material to future researchers who will embark on similar study.

REVIEW OF RELATED WORK

Conceptual Review

Challenges facing Nigerian police

The problems of Nigerian police in exercising its duties are both logistical and moral. Over the years in logistical terms, the force as maintained by the Federal Government has not had enough equipment. The quantity and quality of weapons, arms and ammunition available in most mobile squadron units in the country are hardly enough. There are some instances where the force cannot stand the counter firepower of armed bandits. In terms of human resources and strength, the Nigerian police is yet to have the strength that can adequately contain crime in the country. Recruitment into the force has been epileptic. With regard to the standard laid by the United Nations ratio of one policeman to 400 citizens, Okunola (2005) estimated the ratio of one policeman to about 641 Nigerians, which is not much improvement on ratio 1:980 as at 2001 (Danmadani, 2011). The

reward and pay structure of the force is also not encouraging compared to what it takes for one to lay down his/her life, and the benefits are not attractive. Within the force, there is no job satisfaction among the officers and men. This is, however, a function of low and inadequate remuneration, delayed promotion, and low rating of members of the force in the society.

Cyber Security

Cyber security is the practice of protecting systems, networks, and programs from digital attacks. These attacks are usually aimed at accessing, changing, or destroying sensitive information; extorting money from users; or interrupting normal business processes. Implementing effective cyber security measures is particularly challenging today because there are more devices than people, and attackers are becoming more innovative. Cyber security is the protection of internet-connected systems, including hardware, software and data, from cyber attacks (Ngbokwe, 2012). In a computing context, security comprises cyber security and physical security -- both are used by enterprises to protect against unauthorized access to data centers and other computerized systems. Information security, which is designed to maintain the confidentiality, integrity and availability of data, is a subset of cyber security (Tonge, & Kasture, 2013).

Cyber Security Techniques
   a) **Access control and password security**
   The concept of user name and password has been fundamental way of protecting our information. This may be one of the first measures regarding cyber security.

   b) **Authentication of data**
   The documents that we receive must always be authenticated be before downloading that is it should be checked if it has originated from a trusted and a reliable source and that they are not altered. Authenticating of these documents is usually done by the anti virus software present in the devices. Thus a good anti virus software is also essential to protect the devices from viruses.

   c) **Malware scanners**
   This is software that usually scans all the files and documents present in the system for malicious code or harmful viruses. Viruses, worms, and Trojan

horses are examples of malicious software that are often grouped together and referred to as malware.

d) **Firewalls**

A firewall is a software program or piece of hardware that helps screen out hackers, viruses, and worms that try to reach your computer over the Internet. All messages entering or leaving the internet pass through the firewall present, which examines each message and blocks those that do not meet the specified security criteria. Hence firewalls play an important role in detecting the malware.

e) **Anti-virus software**

Antivirus software is a computer program that detects, prevents, and takes action to disarm or remove malicious software programs, such as viruses and worms. Most antivirus programs include an auto-update feature that enables the program to download profiles of new viruses so that it can check for the new viruses as soon as they are discovered. An anti virus software is a must and basic necessity for every system.

The Influence of the Investigative Strategy of the Nigerian Police on Crime Control in Nigeria

Investigative police work is mostly about the recovery, analysis and interpretation of information about criminal offenses (Osterburg and Ward, 2007). As Luen and Al-Hawamdeh (2001) states, timely and accurate information is critical to the success of policing. In order to increase the probability of generating quality information, the police employ information technologies. Information technologies appear as important instruments of criminal investigations because they facilitate creation, storage, retrieval, transfer, and application of investigation-related information (Gottschalk, 2007). Moreover, information technologies may help produce effective use of time devoted to criminal investigation by automating some routine investigative tasks. Despite the huge amounts of money spent on information technology (IT) each year, its contribution to organizational goals is not clear.

As Nobel Laureate Robert Solow stated, computers are everywhere except in the productivity statistics (as cited in Brynjolfsson, 2013). In accordance with that claim, the link between information technologies and the outcome of criminal investigations is not an explicit one. Generally, criminal investigation is viewed as

a 'truth finding' process at the end of which the crime is solved, and offenders are caught (Maguire, 2013). This is evident in the most common definitions of criminal investigation. For example, in the Department of Justice's "Managing Criminal Investigations Manual," criminal investigation is defined as: "The total police effort to: 1) collect facts leading to the identification, apprehension, and arrest of an offender, and 2) organize these facts to present the evidence of guilt in such a way that successful prosecution may occur" (Cawley, 2008).

However, the truth-finding view of criminal investigation is criticized for being unrealistic. Empirical studies of criminal investigation showed that instead of trying to uncover 'truth' by focusing on the crime scene of each offense, detectives usually pursue a suspect-centered approach in which they try to construct a case against the suspects known by the police. According to this view, criminal investigation is not a truth-finding process, but an interpretive activity in which police try to construct the truth by continuously collecting and analyzing available information (Tong & Bowling, 2006).

An important common point in the truth-finding and construction of truth approaches is the centrality and importance of information for the investigative work. Due to the important role information plays in the investigative process, Innes (2013) defined criminal investigation as: "The identification, interpretation and ordering of information with the objective of ascertaining whether a crime has occurred, and if so, who was involved and how". The information work approach emphasizes the importance of information for the success of criminal investigation and implies that technologies helping police to better process information may be an important factor for solving crimes.

Theoretical framework
Theory of Model of IT Implementation Process (MIIP)
The theory of Model of IT Implementation Process (MIIP) was first introduced by Kwon and Zmud (1978) and later extended by Cooper and Zmud (1990). The model proposed a framework for directing and organizing research based on innovation, changes in organizations and technological diffusion. Kwon and Zmud's (1987) initial model proposed six stages: (i) initiation, (ii) organizational adoption, (iii) adaptation, (iv) acceptance and adoption, (v) routinisation, and (vi) diffusion. MIIP appears to be a much more embracing model than most of the models so far considered. Apart from focusing on the six stages from adoption to diffusion of

IT, it also examines intervening variables such as the technology being used, the organization, the environment, the task in focus, and the users' community characteristics. MIIP appears to be a good theoretical underpinning for ICT adoption and usage studies. However, it is doubtful if MIIP can be used to sufficiently provide a theoretical framework for a study involving electronic fraud prevention and detection.

METHODOLOGY

Research Design
A descriptive survey design was adopted for this study. Descriptive survey research is centered on people, attitude, belief, motivation, behavior and opinions. According to Nworgu (2015) descriptive survey is appropriate especially for studies seeking individual's opinions, attitudes and perceptions in their natural setting.

Area of the Study
This study was carried out in selected Police Station in the six geopolitical regions in Nigeria. The population of the study consist of 1,172 police men and 1,128 police women (intelligent squared).

Sampling Procedure
The sample size was obtained through the use of Yaro Yamane formula for determining the sample size. This is given by:

$$n = \frac{N}{[1+N(e)^2]}$$

Where: n= sample size.
N= population of interest, (which is 1,172)
e= error estimate/level of significance, which is normally 5%
Solving:

$$n = \frac{1,172}{[1+1,172(0.05)^2]}$$

n   = 298

Method of Data Analysis
The data collected will be analysed using Z-test with the aid of Statistical Package for Social Science (SPSS, Version 23)

DATAPRESENTATION AND ANALYSIS
TEST OF HYPOTHESES USING STATISTICAL PACKAGE FOR SOCIAL SCIENCE (SPSS, VERSION 23)

Decision rule: Weaccept the null hypothesis when the probability value is greater than the alpha value, otherwise we reject it.

Hypotheses I

H_0:Cyber security system does not have a significant effect on crime investigation in Nigeria

H_1:Cyber security system have a significant effect on crime investigation in Nigeria

One-Sample Kolmogorov-Smirnov (Z-Test)

		Cyber security/crime investigation
N		5
Normal Parameters[a,b]	Mean	24.000
	Std. Deviation	13.030
Most Extreme Differences	Absolute	.014
	Positive	.014
	Negative	-.229
Kolmogorov-Smirnov Z		.011
Asymp. Sig. (2-tailed)		.030
a. Test distribution is Normal.		
b. Calculated from data.		

The analysis above shows that the probability value (0.030) is less than the alpha value (0.05), the researcher therefore accept the alternative hypothesis and conclude that Cyber security system have a significant effect on crime investigation in Nigeria.

Hypotheses II

H_0:Cyber security system does not have a significant effect on crime reduction in Nigeria.

H_1:Cyber security system have a significant effect on crime reduction in Nigeria.

One-Sample Kolmogorov-Smirnov (Z-Test)

		Cyber security/crime reductions
N		5
Normal Parameters[a,b]	Mean	24.00
	Std. Deviation	14.10
Most Extreme Differences	Absolute	.201
	Positive	.201
	Negative	-.239
Kolmogorov-Smirnov Z		.192
Asymp. Sig. (2-tailed)		.001
a. Test distribution is Normal.		
b. Calculated from data.		

The analysis above shows that the probability value (0.001) is less than the alpha value (0.05), the researcher therefore accept the alternative hypothesis and conclude that Cyber security system have a significant effect on crime reduction in Nigeria.

CONCLUSION AND RECOMMENDATION

Having done the analysis, the researcher conclude that Cyber security system have a significant effect on crime investigation in Nigeria and that Cyber security system have a significant effect on crime reduction in Nigeria. From the analysis, the researcher recommends that Nigerian police should make use of cyber security system so as to reduce crime.

REFERENCES

Abati, R. (2009). Ransom Kidnapping, Hostage-Taking and a Bewildered Lagos. Nigeria Village Square.The Punch Newspaper. Retrieved from http://www.punchng.com

Aluforo, O. I. (2011). Activities of Boko Haram and Insecurity Question in Nigeria.Arabian Journal of Business and Management Review, 1, (9), 77-99.

Balogun, E. (2009). The Political Construction of Collection Insecurity from Moral Panic to Blame Avoidance and Organised Irresponsibility. Centre for European Studies Working Paper series 126.

Danmadani, U. (2011). Extrajudicial Killing and Police Brutality, The Way out. The Nations Newspaper, August, 27, 2013. Retrieved from http://www.thenationonlineng.net

Gottschalk , C. (2007). Corruption in Nigeria; Terrorism in Nigeria. University of Ibadan Press, Ibadan

Inne, F (2013).Overview of Policing in Nigeria; Problems and Suggestions in Crime and Policing in Nigeria; Challenges and Options. CLEEN foundation, Lagos

Maguire, A.M (2013). Nigeria; Security challenges and the Crisis of Development. Towards a New Framework for Analysis. *International Journal of Developing Societies,*. 3, 107- 116

Ngbokwe, ,A (2012). The challenge of insecurity in Nigeria; Athematic, Exposition. Interdisciplinary *Journal of Contemporary Research in Business*, 3 (8). 2011

Ngbokwe, T. (2012). Vulnerability assessment of cyber security for scada systems. IEEE Transactions on Power Systems, 23(4):1836–1846, 2008.

Nigeria Police Force (2008). Annual Report of the Nigeria Police Force,. Ikeja 'F' Department of the Nigeria Police.

Nworgu, B.G. (2015). Educational research: Basic issues and methodology. Enugu: University Trust Publishers.

Odekunle, N (2014). Kidnapping, Security Challenges and Socio-economic Implications to the Niger Delta Region of Nigeria. Central Point Journal: *A Journal of Intellectual Scientific and Cultural Interest*. 16, (2). 205-216.

Okunola, O. (2005). memorandum submitted to the presidential committee on national security in Nigeria.

Onoge, M. B (2013). Measuring Police Effectiveness in Nigeria; An Evaluation of Input and Output in Crime and Policing in Nigeria; Challenges and Options. CLEEN Foundation, Lagos. Pp 111-115

Osterburg, M& Ward, C.I. (2007). Security Challenges and Economy of the Nigerian State (2007 – 2011).American International Journal of Contemporary Research, 2 (6),244- 258.

Tonge, R.& Kasture, A (2013). Threats to security in Nigeria Global journal of political science, vol10, No3, July 2013.

Tope, B. (2009). The Nigeria Police Law with Police Act and Code of Conduct. Lagos, Ikeja, Princeton and Associates Publishing Company Limited. Pp 33.

Udoye, O. M (2013). Security Challenges in Nigeria and the Implications for Business Activities and Sustainable Development, *Journal of Economics and Sustainable Development* , l4, (2), 79-99

Ugwu, E.E.O. (2010). Police Community Relation in Nigeria; What Went Wrong? Paper Presentation at the Seminar on Role and Function of the Police in a Post Military Era, organized by the Centre for Law Enforcement Education in Nigeria (CLEEN) Lagos and the National Human Commission.

Ugwuoke, J (2011). Security Challenges in Nigeria and the Implications for Business Activities and Sustainable Development Journal of Economics and Sustainable Development. Vol. l4, (2), pp 79-99