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Revolutionizing Law Enforcement through the Adoption of Cutting-Edge Security Equipment in Nigeria

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Abstract

Nigeria, like many other countries, is facing a growing need for modern security infrastructure to address various security challenges such as terrorism, kidnapping, armed robbery, and other criminal activities. The study examines the relationship between modern technology and policing in Cross River State, Nigeria. Specifically, the study assesses the relationship between the utilization of biometric technology, social media policing, tracking devices, and policing. Using qualitative and quantitative methods, data were generated from 384 respondents through multistage sampling technique. The quantitative data were analyzed using version 20 of Statistical Package for Social Sciences (SPSS) and frequency distribution tables and percentages were used to present the results. Simple linear regression was used to test the hypotheses; while, the qualitative data collected were analyzed in themes as complement to the quantitative data. Findings from this study revealed that there is a significant relationship between the utilization of biometric technology, CCTV cameras, tracking device and policing in Calabar Metropolis. The study, therefore, recommended among others that there is an urgent need to improve the general conditions of service of police officers in Nigeria, this will motivate them to discharge their constitutional responsibilities efficiently and effectively. In addition, government should provide increased funding in equipping officers of the NPF with renewed emphasis on modern policing techniques including training on forensic science, psychology and the use of DNA and Ballistics techniques.

Keywords*: Modern security equipment, policing, biometric technology, social media policing, & tracking device.*

Introduction

Modern technology has become crucial in contemporary policing, transforming the way law enforcement agencies operate and interact with the public. These technological advancements have provided officers with powerful tools for gathering evidence, monitoring public spaces, and improving communication within their organizations (Chika, 2014). According to Clarke (2014), law enforcement agents have embraced an array of new mobile and stationary technologies in a quest to keep up with, as well as stay well ahead of criminals. Harris (2017) and Hendricks (2013) posit that public surveillance cameras, the use of deoxyribonucleic acid (DNA) fingerprinting, criminal tracking device, in-vehicle computers, license plate readers, facial recognition technologies, and even mobile consoles for fingerprint reading, are among the top tools that are gaining rapid adoption among law enforcement agents globally. Technology and policing have been interconnected for decades, dating back to the advent of telephone, automobile, and the two-way radio. Technology seems to be advancing at an ever-accelerating pace, as seen through the propagation of mobile and wireless technology, high-powered computing, visual and audio technology, advanced analytics, and other technological advancements. Many departments are implementing these and other technologies to increase efficiency and to improve outcomes, especially, in times of diminished resources and enhanced public attention to and scrutiny of law enforcement tactics and outcomes (Longe, Ngwa, Wada & Mbarika, 2009).

As technology is used globally to commit more sophisticated crimes, law enforcement officers are increasingly using modern tech-tools to combat crime. Modern technologies, such as video cameras, social media policing, data mining systems, face recognition, heat sensors, surveillance drones, biometrics, GPS tracking, internet, and telecommunication systems are being used for the detection, investigation, prosecution and prevention of crime in human society (Johnston, 2007; Garicano, & Heaton, 2010). Today, information and communication technology (ICT) provides analytical power that is necessary for conducting trade, managing businesses and providing security at global level with much ease, to coordinate world-wide network of trading, carrying out businesses and security in society. It has revolutionized every aspect of human endeavours (McQuail, 2005).

Recent global statistics highlighted that more traditional crimes, such as burglary, theft, and street violence have dropped dramatically over the past couple of decades, but technology-enabled crimes such as fraud and cyber-crime are increasing exponentially. Modern technology has grown to become a powerful tool for finding and following criminals and stolen items, as it has been used to present evidence in court against suspected criminals (Garicano, & Heaton, 2010). In extreme cases, criminals are leaving a trail of evidence in the form of Facebook posts and tweets, sharing their illegal behaviour and flashing stolen goods and money. The rising use of social media has also led to increased engagement by the public and victims, who are able to use online resources to communicate with law enforcement agents. Equipping law enforcement officers with new digital technologies will help prevent crime, crack criminal syndicates and in the arrest of criminals. Criminals are harnessing digital technology to expand the reach and increase the impact of their crimes. However, Arase (2013) observes that advances in technology also present law enforcement agencies with an enormous opportunity to transform how they tackle crime. In the light of above, this study intends to examine the relationship between modern technology and policing in Cross River State, Nigeria.

Theoretical framework

Technology determinism theory

The theory is associated with Smith and Mark (1994). The theory posits that expansion in social and cultural standards, social structure, as well as, historical events are driven by technology. The theory views technology as a key governing force in the social system, it believes that social progress is motivated by technological innovation. In addition, the theory asserts that technical forces determine both social and cultural change. According to technological determinists, technical developments, communication technologies or media, or most broadly, technology in general are the prime antecedent causes of change in society, and technology is seen as the fundamental condition underlying the pattern of social organization (Chandler, 1995).

Most interpretations of technological determinism share two general ideas: that the development of technology itself follows a predictable, traceable path largely beyond cultural or political influence, and that technology in turn has "effects" on societies that are inherent, rather than socially conditioned or produced because that society organizes itself to support and further develop a technology once it has been introduced. Strict adherents to technological determinism do not believe the influence of technology differs based on how much a technology is or can be used. Instead of considering technology as part of a larger spectrum of human activity, technological determinism sees technology as the driver of society's progress.

The theory has implication for this study. Adequate provision of ICT equipment has the capacity to boast the crime prevention and also aids police officers to effectively discharge their duties. Security equipment such as CCTV, walkie-talkie, facial recognition and GPRS, influence the prevention and control of crime. Based on the thesis of the theory, social problem such as armed robbery, kidnapping, arson, fraud, cybercrime, among others, can be contained through adequate

supply of functional ICT equipment. This will bring about growth and development in the society. Based on this theory, the rate of crime can be determined by the quality and quantity of ICT equipment that are at the disposal of the law enforcement agencies with which to tackle crime and criminality in the society. The theory has been criticised for reductionism and simplicity of social issues.

Methodology

Research design

The study adopts the cross-sectional survey research design. A cross-sectional survey research design is a study conducted over a wide and large area with a view to determining what exists as at the time of the research, in their original state. This design is applied when ascertaining the spreading and interconnection between variables under study (Obasi, 1999; Osuala, 2001; Ofuebe, 2002; Ndiyo, 2005; Isangedeghi, Joshua, Asim & Ekuri, 2014). The choice of this design is because it allows the researcher to make inferences about the population by studying the sample as well as the generalization of the research findings.

Study area

The study area is the Calabar Metropolis of Cross River State, Nigeria. It has an area of 274.429sq. km and with a population of 371,022 by the 2006 census, of which the Efiks, Ejaghams and Bekwarras are the major ethnic groups (Agbor, 2007; National Population Census, 2006).

Population of the study

The study population were drawn from selected law enforcement agencies operating in the Calabar Metropolis, Cross River State, Nigeria. The selected law enforcement agencies are the Nigeria Police Force, DSS, Custom Services, Immigration and the Nigeria Correctional Service. The population of this study consists of all male and female law enforcement officers aged 20 years and above serving in the Calabar Metropolis, Cross River State, Nigeria. The population of the study comprised rank and files, as well as Senior Officers (SOs). The researcher believes that this population are in better position to supply relevant information on the relationship between modern technology and crime control, as being employed and utilized in the study area.

Sampling technique

Two methods of sampling techniques were adopted namely, simple random and purposive sampling techniques. In stage one, the simple random sampling technique was used to select three (3) security outfits from five (5) selected law enforcement agencies in the Calabar Metropolis, Cross River State, Nigeria. These security agencies were selected using the balloting methods of the simple random sampling technique. This was achieved by writing down names of the five selected law enforcement agencies in a piece of paper and put in a small basket where the researcher objectively and randomly selects three. From this activity, the following law enforcement agencies were selected: The Nigeria Police Force, DSS, and the Nigeria Immigration Service. These three (3) security outfits formed the three (3) clusters of the study. In stage two, the researchers purposively select one hundred and twenty-eight respondents from each of the three selected security organisations in the Calabar Metropolis, Cross River State, Nigeria. This suggest that a total one hundred and twenty-eight respondents were selected from the Nigeria Police Force, another one hundred and twenty-eight respondents were selected from the DSS and Nigeria Immigration Service respectively, to give a total of 384 respondents.

Sample size

The sample comprised of male and female officers who are currently serving with the Nigeria Police Force, DSS, Customs, Immigration and the Nigeria Correctional Service in the Calabar Metropolis, Cross River State, Nigeria. Since the population of the study is unknown, Cochran sample determinant was adopted in determining the sample size. To determine the sample size for officers serving in the Calabar Metropolis, Cross River, Cochran's formula (1963) was adopted. The formula for Cochran sample size determinant is stated thus:

$$n = \frac{Z^2(pq)}{e^2}$$

Where:

n = Required sample size
Z = Confidence level (put at 95% or 1.96)
p = Proportion of officers serving in the Calabar Metropolis, Cross River state age 20 years and above (given in this study as 50%). That is 0.5
q = Compliment of p (put at 50%, i.e, 1 - 50%). That is 0.5
e = Level of accuracy or margin error (put at 0.05).

Applying the formula therefore,

$$n = \frac{1.96^2(0.5)(0.5)}{0.05^2}$$

$$n = \frac{3.8416\ (0.25)}{0.0025}$$

$$n = \frac{0.9604}{0.0025}$$

$$n = 384.16$$

$$n = 384$$

Instrumentation

Questionnaire and in-depth interview were adopted as instrument for data collection. The questionnaire consists of 32 items, and it is entitled "Questionnaire on Modern Technology and Policing (QMTP)". The questionnaire was divided into two main sections. Section A, generates information on the respondents' personal demography such as sex, age, marital status, educational level, level of experience, and place of residence. Section B, consists of 25 items designed to measure the relationship between modern technology and crime control; each require the respondent to indicate the frequency of their responses on a four point Likert-scale – Strongly Agree[SA], Agree [A], Disagree [D], and Strongly Disagree [SD] scale. The in-depth interview in like manner covers similar questions as contained in the research objectives.

Validity of the instrument

The research instrument was presented to experts in the Field of Measurement and Evaluation, Faculty of Education, University of Calabar; who carefully study the tool vis-a-vis the research questions and the hypotheses. The instrument was submitted to the supervisor after effecting the necessary corrections made by the measurement and evaluation experts.

Reliability of the instrument

The reliability of the instrument which is the appraisal of the internal regularity of the research tool was established using the Cronbach Alpha method. Twenty-five (25) copies of the

questionnaire were distributed to 25 persons drawn from the study population. Generated data were subjected to Cronbach Alpha method. The reliability coefficient obtained ranged from .64 to .89. Therefore, the reliability coefficient was considered high enough to justify the use of the scale in the study. According to Nenty and Umoinyang (2004), reliability value of 0.50 and above is suitable to guarantee the reliability of an instrument. This means that modern technology and policing questionnaire is reliable.

Method of data analysis

The statistical tool adopted for this study is linear regression. This is because it shows the relationship between the variables under study.

Results

Out of three hundred and eighty-four (384) questionnaires administered, three hundred and fifty-eight (358) were recovered and therefore used for analysis. Results of analysis of demographic data of respondents as presented in table 4.1 and figure 4.1 to 4.7 for greater impression revealed that; out of the 358 accessible respondents', 241 respondents representing 67.31% are males, while 117 representing 32.68% are females. As for age distribution of respondents', 71 (19.83) are below 20 years, 111 (31.00) are between 30 – 39 years, 146 (40.78) are between 40 – 49 years, 30 (8.37) are 50 years and above. As for security organization; 195 (54.46) are from NPF, 78 (21.78) are from DSS, 39 (10.89) are from NCS, while 46 (12.48) are from NIS. For number of years in their respective organization; 87 (24.30) have worked for their organization for between 11-20years, 104 (29.05) have worked for their organization for between 21-30years, 93 (25.97). For respondents' marital status, 137 (38.26) are single, 155 (43.29) are married, 28 (7.82) are divorced, 22 (6.14) are widows, 16 (4.46) are widowers. For respondents' educational qualification; 27 (7.54) have FSLC, 61 (17.03) have secondary SSCE, 82 (22.90) have OND/NCE, 168 (46.92) have HND/BSC and 20 (5.58) have M.Ed/Ph.D.

Also, mean and standard deviations of study variables as presented in table 4.2 are as follows; Biometric (M = 15.4246, SD = 7.72487), CCTV (M = 12.5084, SD = 3.60651), social media (M = 19.8352, SD = 6.21268), Tracking devices (M = 14.6927, SD = 4.44518) and Crime control (M = 24.8436, SD = 9.85881).

TABLE 1
Respondents' demographic data

Variable	Category	N	Percent (%)
Sex	Male	241	67.31
	Female	117	32.68
	Total	358	100
Age	Below 20years	71	19.83
	30 – 39 years	111	31.00
	40 – 49years	146	40.78
	50 years and above	30	8.37
	Total	358	100
Name of security organization	NPF	195	54.46
	DSS	78	21.78
	NCS	39	10.89
	NIS	46	12.84
	Total	358	100
How long have you been working in the organization	Less than 10years	74	20.67
	11 - 20years	87	24.30
	21 - 30years	104	29.05
	31years and above	93	25.97
	Total	358	100
Marital status	Single	137	38.26
	Married	155	43.29
	Divorced	28	7.82

	Widow	22	6.14
	Widower	16	4.46
	Total	358	100
Educational qualification	FSLC	27	7.54
	SSCE	61	17.03
	OND/NCE	82	22.90
	HND/BSC	168	46.92
	M.Ed/Ph.D	20	5.58
	Total	358	100
Religion	Islam	112	31.28
	Christianity	234	65.36
	African Traditional Religion	12	3.35
	Total	358	100

Source: Field survey, 2022

Test of hypotheses

Hypothesis one

Utilisation of biometric technology does not significantly contribute to policing in the Calabar Metropolis. The result of analysis as presented in table 2, revealed R-value of 0.260[a]. Correlation coefficient is a standardized measure of an observed degree of relationship between variables, it is a commonly used measure of the size of an effect, and that values of ±.1 represent a small effect, ±.3 is a medium effect and ±.5 is a large effect. Also, the R^2 –value of .068 imply that 68% of total variance is accounted for by predictor variable (utilization of biometric). Furthermore, the regression ANOVA revealed that the F (1, 356) = 11.424; $p < .05$, is significant. Thus, the null hypothesis was rejected. This implies that there is a significant linear association (contribution) of the predictor variable (utilization of biometric) on policing in the study area. The adjusted R^2 (.067) shows some shrinkage of the unadjusted value (.068) indicating that the model could be generalized on the population. Based on the result, it was concluded that utilization of biometric significantly contributes to policing in the study area.

TABLE 2: Summary simple linear regression analysis of the contribution of biometric technology to policing

Variables	Mean	Std. Deviation
Utilization of biometric	15.4246	5.72487
Policing	24.8436	9.85881

Model	Sum of Squares	df	Mean Square	F	R	R Square	Adjusted R Square	Sig
Regression	167.717	1	167.717	11.424	.260[a]	.068	.067	.000[a]
Residual	41927.524	356	117.774					
Total	42095.240	357						

Source: Field survey, 2022

Hypothesis two

There is no significant relationship between utilization of CCTV cameras and policing in the Calabar Metropolis. The result of analysis as presented in table 3, revealed R-value of 0.244[a]. Correlation coefficient is a standardized measure of an observed degree of relationship between variables, it is a commonly used measure of the size of an effect, and that values of ±.1 represent a small effect, ±.3 is a medium effect and ±.5 is a large effect. Also, the R^2 –value of .060 imply that 60% of total variance is accounted for by predictor variable (utilization of CCTV). Furthermore, the regression ANOVA revealed that the F (1, 356) = 14.608; $p < .05$, is significant. Thus, the null hypothesis was rejected. This implies that there is a significant linear association (contribution) of the predictor variable (utilization of CCTV) on policing in the study area. The adjusted R^2 (.058) shows some shrinkage of the unadjusted value (.060) indicating that the model could be generalized on the population. Based on the result, it was concluded that utilization of CCTV significantly contributes to policing in the study area.

TABLE 3: Summary simple linear regression analysis of the contribution of CCTV to policing

Variables	Mean	Std. Deviation
CCTV	12.5084	7.60651
Policing	24.8436	9.85881

Model	Sum of Squares	df	Mean Square	F	R	R Square	Adjusted R Square	Sig
Regression	537.934	1	537.934	14.608	.244[a]	.060	.058	.000[a]
Residual	41557.306	356	116.734					
Total	42095.240	357						

Source: Field survey, 2022

Hypothesis three

Utilization of tracking device has no significant relationship with policing in the Calabar Metropolis. The result of analysis as presented in table 4, revealed R-value of 0.233[a]. Correlation coefficient is a standardized measure of an observed degree of relationship between variables, it is a commonly used measure of the size of an effect, and that values of ±.1 represent a small effect, ±.3 is a medium effect and ±.5 is a large effect. Also, the R^2 –value of .054 imply that 52% of total variance is accounted for by predictor variable (utilization of tracking devices). Furthermore, the regression ANOVA revealed that the F (1, 356) = 22.110; $p < .05$, is significant. Thus, the null hypothesis was rejected. This implies that there is a significant linear association (contribution) of the predictor variable (utilization of tracking devices) on policing in the study area. The adjusted R^2 (.054) shows some shrinkage of the unadjusted value (.052) indicating that the model could be generalized on the population. Based on the result, it was concluded that utilization of tracking devices significantly contributes to policing in the study area.

TABLE 4: Summary simple linear regression analysis of the contribution of tracking device to policing

Variables	Mean	Std. Deviation
Tracking device	14.6927	4.44518
Policing	24.8436	9.85881

Model	Sum of Squares	df	Mean Square	F	R	R Square	Adjusted R Square	Sig
Regression	248.048	1	248.048	22.110	.233[a]	.054	.052	.000[a]
Residual	41847.192	356	117.548					
Total	42095.240	357						

Source: Field survey, 2022

Discussion of findings

Biometric technology and crime control

The findings of the first hypothesis revealed that the utilization of biometric technology significantly relate to crime control in Calabar Metropolis, Cross River State, Nigeria. The implication of this result is that increasing number of security agencies like the police force, DSS, Immigration service is relying on biometric technology in the discharge of their security duties. This important security equipment is receiving a lot of attention among security organisations because of the potential to increase the accuracy and reliability of identification and authentication functions, especially in crime detection and control. Through the deployment of this technology, which consists of cameras, fingerprint scanners, and DNA analysers, stationed at strategic places in the state likes borders and airports, government institutions, and schools, criminal investigation has been made easy, criminals are deter from operating in those places for the fear of being easily identified and apprehended. The findings further revealed that although the presence of these sophisticated security equipment has not stop crime completely, it has reduced the rate of crime occurrences, enabled law enforcement agents to efficiently and effectively carry out their statutory responsibility, which is to investigate and apprehend criminal offenders.

CCTV camera and crime control

The result of the second hypothesis indicates that there is a significant relationship between the utilization of CCTV cameras and crime control in Calabar Metropolis, Cross River State, Nigeria. This is to say that the installation of CCTV cameras by corporate entities, and shops has helped prevent crime by reducing the number of criminal opportunities and increasing the perceived risk of offenders being apprehended with easy in the study area. Corporate organisations in the state are encouraged by law enforcement agents to install CCTV camera in other to deter criminal elements from attacking them. The study shows that CCTV has the potential to assist police after the commission of crimes, specifically by improving the response of personnel to emergencies

(Ratcliffe, 2006), providing visual evidence for use in criminal investigations (Ashby, 2017), and securing early guilty pleas from offenders (Owen, Keats, & Gill, 2006). Put differently, CCTV is considered to be the triggering of a perceptual mechanism that impacts an offender's choice structuring properties in a manner that persuades them to abstain from crime (Ratcliffe, 2006).

Tracking device and crime control

The result of the statistical analysis for hypothesis four reveal that the utilization of tracking device has a significant relationship with crime control in Calabar Metropolis, Cross River State, Nigeria. The findings of the study shows that tracking device enables police personnel to plan effectively for emergency response, determine mitigation priorities, analyse historical events, and predict future events (Chan, Brerton, Legosz, & Doran, 2001). According to Chainey and Ratcliffe (2005) tracking device helps identify potential suspects to increase investigators suspect base when no leads are evident. Bond and Braga (2013) reported that the ability to access and process information quickly while displaying it in a spatial and visual medium allows agencies to allocate resources quickly and more effectively. The findings of the study reveal that tracking device helps co-ordinate vast amounts of location-based data from multiple sources. It enables the user to layer the data and view the data most critical to the particular issue or mission (Ariel & Sherman, 2012).

Conclusion and recommendations

Conclusion

Conclusively, modern security equipment has been used all over the world by various law enforcement agents to respond to, detect, and prevent crime. Particularly, the Police force, DSS, and Immigration service daily depend on different modern security equipment in adapting and responding to unexpected or unknown situations, as well as recognized situations, such as theft or other severe criminal attacks. Modern security equipment enables law enforcement agents to carry out routine patrol, criminal investigation, intelligence gathering, surveillance, as well as enhance service delivery to the public. This suggests that, the quality and quantity of security equipment at the disposal of law enforcement agents significantly influences their performance during operations and responses to emergency. The implication of operating with obsolete security equipment include but not limited to inability of law enforcement agents to effectively and efficiently response to distress call and unravel criminal incident at record time. Increase in criminal activities especially violent crime involving armed robbery, ritual, murder, political assassinations, kidnapping, ethno-religious violence, and electoral violence explains why law enforcement agents should be empowered with modern security equipment. This is because an ill-equipped and ineffective law enforcement agent cannot guarantee the security of citizens.

Recommendations

Based on these findings, the following recommendations were made:

(i) There is an urgent need to improve the general conditions of service of police officers in Nigeria, this will motivate them to discharge their constitutional responsibilities efficiently and effectively.
(ii) Government should provide increased funding in equipping officers of the NPF with renewed emphasis on modern policing techniques including training on forensic science, psychology and the use of DNA and Ballistics techniques.
(iii) Government should establish good diplomatic relationship with countries with well-equipped security forces with the aim of these nations helping the Nigeria security outfits

in training and developing necessary skills to handle and operate sophisticated modern security equipment.

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