

Biometric Security In Business Organisation: An Assessment Of Its' Impact On Checking Corporate Crime In Business Organizations In Cross River State Nigeria

Ukwayi, Joseph K¹., Akintola, Abayomi² & Angioha, Pius U³.

Department of Sociology, University of Calabar, Nigeria

DOI: 10.29322/IJSRP.9.05.2019.p8966

<http://dx.doi.org/10.29322/IJSRP.9.05.2019.p8966>

Abstract- This study examines the use biometric security in business organization and its impact on checking corporate crime in Cross River state, Nigeria. In carrying out this study adopts the descriptive survey research method was adopted in selecting three hundred and eighty one (381) samples from four corporate organizations in Cross River state, using the purposive, proportional stratified and simple random sampling technique. The instrument of data collection is the questionnaire. Data collected from the field was analyzed using tables, frequency distribution and ANOVA (one way analysis of variance). Findings revealed that biometric security helps in checking corporate crime in business organizations in Cross River State, Nigeria. Organizations should undertake training for all its personnel's as a way of equipping them with the necessary biometric technology.

Index Terms- Biometric security, corporate crime, Business organization,

I. INTRODUCTION

The smooth running of the day to day operations of business organizations is of great concerns to managers, supervisors and management. With the adoption of information technologies by business organization to enhance productivity and to meet up with the needs of the modern market; management are now concerned with new security treats "hackers and computer criminals" these criminals have devised techniques and means to break into organization that make use of computers and network security systems with hacking software such as crackers, rootkits, sniffers and many others, which can be found fee in the world wide web. These treats are on the rise and have become a major challenge of management of organizations (Bidgoli, 2012).

The rise of sophisticated hacking devices in the financial industry has increased the demand for a more secure means identifying employees and customers that services are provided for. This is because lack of adequate securities and protection of technological equipment used in business organizations often cause devastating financial and transactional data breaches and lead to great financial loses, loss of data and large regulatory fines by regulatory agencies. Hence, the adaptation of biometric technology by business organization. This study examined the

biometric security in business organization: an assessment of its' impact on checking corporate crime in business organizations in cross river state Nigeria.

1.2 objective of the Study

The objective of the study is to investigate the relationship between biometric systems and crime control in Calabar Metropolis, Cross River State, Nigeria.

1.3 Hypothesis Statement

There is no significant relationship between biometric systems and crime control in Calabar Metropolis, Cross River State, Nigeria.

II. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Literature Review

2.1.1 Meaning of Biometric Security

The word biometrics is derived from the Greek words bios meaning life and metrics meaning measurement. It refers to an automated method of recognizing an individual based on measurable biological and behavioral characteristics. This recognition is through the measurement and analysing the behavioural and psychological characteristics of human. Uludag, Pankanti, Prabhakar and Jain (2004) see biometric technology as an automated methodology for the recognition of a person based on behavioral or physiological characteristics. These characteristics include features such as hand geometry, handwriting, face, fingerprints, vein, voice, retina, and iris. It is a pattern recognition device that acquires physical or behavioral data from an individual, extracts a salient feature set from the data, compares this feature set against the features set stored in the database and provides the result of the comparison. Therefore, a biometric system is composed of four modules (Jain, Flynn & Arun, 2007).

According to Al-Raisi and Al-Khour (2008), the desired biometric system should be capable of scanning all incoming arrivals and provide positive or negative hit feedback.

- i. The ability of identifying a single person from a large population of people.
- ii. Ease of use.

- iii. Does not change over time.
- iv. Quick response time.
- v. Suitable for mass transit locations,
- vi. Safe and no medical side effects (disease control)

2.1.2 Empirical review of Literature

Research on biometric methods has gained renewed attention in recent years brought on by an increase in security concerns. The recent world attitude towards terrorism has influenced people and their governments to take action and be more proactive in security issues. This need for security also extends to the need for individuals to protect, among other things, their working environments, homes, personal possessions and assets. Many biometric techniques have been developed and are being improved with the most successful being applied in everyday law enforcement and security applications. Biometric methods include several state-of-the-art techniques. Among them, fingerprint recognition is considered to be the most powerful technique for utmost security authentication.

Uludag, Pankanti, Prabhakar, and Jain (2004) defined biometric technique as an automated methodology for the recognition of a person based on behavioral or physiological characteristics. These characteristics include features such as hand geometry, handwriting, face, fingerprints, vein, voice, retina, and iris. The authors concluded that biometric technologies are now the key to an extensive array of highly secured identification and personal verification solutions. Welzl (2004) states that the biometric system is a pattern recognition technology that makes personal identification of an individual by determining the authenticity of a specific physiological or behavioral characteristics possessed by the user. Burrows, Hopkins, Hubbard, Robinson, Speed and Tilley (2005) suggests forensic evidence is the main source of evidence in securing around one quarter of primary detections of volume crimes. Studies have shown the impact biometric technology on crime (Peterson, Mihajlovic & Gilliland, 1984; Ukwaiyi, Okpa, Adewoyin, Angioha, & Udom, 2017; [Morosan](#), 2012; Angioha & Ugal, 2019; Joseph, Angioha, & Ojong-Ejoh, 2017; Ukwaiyi, Obafaye & Akintola, 2019)

Peterson, Mihajlovic and Gilliland (1984) undertook a major study based on the examination of 2,700 investigations drawn randomly from police and biometric files in four US jurisdictions: cases involving biometric evidence were over-sampled (1,600 cases were examined where biometric evidence was collected and examined. The biometric evidence cases covered homicide, rape, aggravated assault, robbery and burglary; 'the analysis of the study revealed that biometric evidence cases generally had higher rates of prevention and detection of crime. [Morosan](#) (2012) carried out a study analyze the applicability of biometric systems in travel and explain how they can be used in response to today's increasing security problems, this research is conceptual. Its analysis is based on an extensive review of literature on biometric systems. findings revealed that Biometric systems can improve travel security without compromising consumer value, convenience, and privacy. Deployment of various applications of biometric systems (i.e. immigration/visitor management systems, trusted traveler programs) improves specific aspects of travel security.

2.2 Theoretical Foundation

The study adopts the Diffusion of Innovation theory. Credited to the works of Rogers in (1962, 1995). The theory introduced several factors that determines the decision to adopt a new technology (i.e. new innovation). By the help of empirical research, Rogers (1995), identified relative advantage, compatibility, technical complexity, trialability and observability as the key factors that shapes the decision process considering adoption of new technology. Rogers' diffusion of innovation theory postulate that diffusion of innovation occur as potential users become aware of the innovation, judge its relative value and make a decision based on their judgment, to either implement or reject the innovation. The theory consists of three components: 'the innovation decision process, characteristics of an innovation and adopter characteristics (Bates, Manuel & Oppenheim, 2007).The 'innovation decision process' categorizes the steps an individual or organization takes from awareness of an innovation, through the formulation of an attitude to the innovation, on to the decision as to whether to implement or adopt such innovation.

In adapting this theory to this study, this study sees diffusion of Innovation as there being a new innovation (Biometric security) available that can help in preventing crime, organisations become aware, come in contact with such technology and recognise that this new innovation will help in preventing crime and providing security, make a conscious decision to adopt these new innovation.

III. METHODS AND MATERIALS

3.1 Research design

The study made use of the descriptive research design. The descriptive research design allows a researcher to the gather of data and information about prevailing conditions or situations for the purpose of interpretation and description. It is not simply gathering and tabulating facts but includes proper analyses, interpretation, comparisons, identification of trends and relationships (Aggarwal, 2008).the researcher adopted the descriptive design because it not only concerned with with the characteristics of individuals in this study but with the characteristics of the whole sample understudy.

3.2 Population and Sampling

The population of this study is staffs of business organization in Cross River State, Nigeria. The business organizations selected are banks, Lafarge Nigeria LTD, and Flower Mill Nigeria LTD in Cross River State, Nigeria. The list of business organizations are highlighted in the table below. The sample used for the study was 381.in selecting the sample for the study; the purposive sampling technique was used in selecting the organization to be studied. The proportional stratified sampling technique was used to the number of staffs to be selected from each organization. The proportional stratified sampling technique is appropriate in selecting a given sample in an organization when the population of such organization is given. From this, the simple random sampling technique was used in selecting the needed sample from the organization.

S/N	Institution	Population Size (N)	Proportion of Staff	Sample Size (n)
1	First Bank	308	0.28	108
2	Zenith Bank	148	0.14	52
3	Lafarge	428	0.39	150
4	Flower Mill	204	0.18	71
Total		1088		381

3.3 Instrumentation

A structured questionnaire was adopted as the instrument for data gathering. The questionnaire was made up of three sections, with section A containing the bio data of the respondents. Section B contains questions on the independent variable and the section C containing questions on the dependent variable.

3.4 Ethical Considerations

The researcher sought each organization's management and employees consent before involving them in the research. This included briefing them about the research objectives and roles of the respondents and how they were going to benefit from the research. The Researcher also assured the respondents about the degree of confidentiality in the information that was gathered from them

3.5 Method of data analysis

In analysing the data, The variables of each hypothesis were identified followed by the statistical tool employed. Each hypothesis were analysed and tested at 0.05 level of significance.

IV. RESULTS AND FINDINGS

4.1 Demographic distribution of Respondents

Out of the 381 respondents used in this study, 278 representing 70% were male, while 118 respondents representing 30% were female. Respondents description based on age reveal that, 74 (19.4%) are between below 25 years; next in the list 137 (35.9%) are between 26 – 35 years; followed by 121 (31.8%) who are between 36 – 45 years, while 49 (12.9) are 46 years and above. Respondents description based on marital status shows that 122 (32.0%) are single, while 188 (49.3%) are married, 41 (10.8%) are divorced, 24 (6.3%) widow, and 6 (1.6%) widowers.. Respondents description based on religious affiliations reveal that, 255 (66.9%) are of the Christian religion, 34 (8.9%) are Islam, while 81 (21.2%) are of the traditional religion, and only 11 (2.9%) subscribe to other forms of religion not mentioned here.

Table 1
Demographic data of Respondents

Variable	Category	N	%
Gender	Male	263	70.0
	Female	118	30.0
	Total	381	100
Age	25 and below	74	19.4
	26-35	137	35.9

	36-45	121	31.8
	46 and above	49	12.9
	Total	381	100
Marital status	Single	122	32.0
	Married	188	49.3
	Divorced	41	10.8
	Widow	24	6.3
	Widower	6	1.6
	Total	381	100
Total		381	100

Source: Field Survey 2019

4.2 Data Analysis

There is no significant relationship between biometric security and corporate crime control in business organizations in Cross River State, Nigeria. The independent variable in this hypothesis is biometric security, while the dependent variable is corporate crime control. Simple linear regression statistics was used to test this hypothesis at 0.05 level of significance and the result is presented in table 1

Simple linear regression analysis of Biometric security and corporate crime control

Variables	Std. Deviation						
	Mean	on					
Biometric security	16.2564	3.7578					
Corporate crime control	17.4461	8					
Model	3.6680	9					
		R	Adjus	Sig			
		Squared	R				
		e	Squar				
			e				
Regression	2021.137	1	23.51	.253 ^a	.064	.061	.000 ^a
Residual	29563.03	344					
Total	31584.17	345					
		3					

p < 0.05

Source: Field Survey, 2019

The result of analysis as presented in table 1, revealed that the R-value of 0.253 is significant at 0.05 alpha level (p-value of 0.000 is less than 0.05) hence the stated null hypothesis is rejected. This implies that there is a significant relationship between biometric security and corporate crime control in business organizations in Cross River State, Nigeria.. Also, the R^2 -value of 0.064 implies that 64% of total variance of corporate crime control is accounted for by predictor variable (biometric security). Furthermore, the regression ANOVA revealed that, there was a moderate joint linear association (contribution) of the predictor variables (biometric security) and corporate crime control given by the F-ratio (1, 344) = 23.518; $p < 0.05$. The adjusted R^2 (0.061) shows some shrinkage of the unadjusted value (0.064) indicating that the model could be generalized on the population. Based on the result, it was concluded that biometric security helps in checking corporate crime in business organizations in Cross River State, Nigeria.

V. CONCLUSION AND RECOMMENDATION

This study examined the biometric security in business organization: an assessment of its' impact on checking corporate crime in business organizations in cross river state Nigeria. Result from the analysis of the data gathered from the field revealed that biometric security helps in checking corporate crime in business organizations in Cross River State, Nigeria. this is because R-value of 0.253 is significant at 0.05 alpha level (p-value of 0.000 is less than 0.05). With this finding, we can conclude that biometric technology increases overall security in organizations. However, biometric identification is not perfect - it is never 100% certain, it is vulnerable to errors and it can be hacked. Organizational management need to understand the level of security guaranteed through the use of biometric systems and the difference that can exist between the perception and the reality of the sense of security provided. The biometric system is only one part of an overall identification or authentication process, and the other parts of that process will play an equal role in determining its effectiveness. Hence, organizations should undertake training for all its personnel's as a way of equipping them with the necessary biometric technology. Also organizations should provide other security measures aside biometric technology that will help their organization to be more secured.

REFERENCES

- [1] G. O. Young, "Synthetic structure of industrial plastics (Book style with Adewole, K. S., Abdulsalam, S. O., Babatunde, R. S., Shittu, I. M. & Oloyede, M. O. (2014). Development of finger print biometric attendance

system for non-academic staff in tertiary institutions computer engineering and intelligent system (IISTE), 5(2).

- [2] Al-Raisi, A. & Al-Khoury, A. (2008). Iris recognition and the challenge of homeland and border control security in UAE. *Journal of Telematics and Informatic*, 25(2): 117-132.
- [3] Angioha, P. U. & Ugal, B. U. (2019). Information and Communication Technology and Youth Employment in Calabar Municipality, Cross River State, Nigeria. *International Journal of Research and Innovation in Social Science (IJRISS)* 3(2), 2454-6186
- [4] Bates M., Manuel S. and Oppenheim C. (2007) "Models of Early Adoption of ICT Innovations in Higher Education" *Ariadne Issue 50*, January, Available at: <http://www.ariadne.ac.uk/Issue50/oppenheim-et-a>
- [5] Bidgoli, H. S. (2012). The introduction of biometrics security in organisations: A management perspective. *International Journal of Management*, 29(2),
- [6] Gunaji, S. & Pramau, K. S. (2010). Internet banking: Risk analysis and application of biometric technology for authentication. *International Journal of Pure and applied Sciences and Technology*, ISSN 2229-6107.
- [7] Jain, A. K., Flynn, P. & Arun, A. R. (2007). *Handbook of biometrics*. Springer.
- [8] Joseph, K. U. Angioha, P. U. & Ojong-Ejoh, M. U. (2017). Youth empowerment: A criminological approach for crime prevention and control in Cross River State, Nigeria. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)*, 22(12) PP 73-81
- [9] Morosan, C. (2012). "Biometric solutions for today's travel security problems", *Journal of Hospitality and Tourism Technology*, Vol. 3 Issue: 3, pp.176-195,
- [10] Peterson, J.L., Mihajlovic, S. & Gilliland, M. (1984). *Forensic evidence and the police: the effects of scientific evidence on criminal investigations*. Washington DC: US Government Printing Office
- [11] Rogers, E. M. (1962). *Diffusion of innovations* (1st ed.). New York: Free Press.
- [12] Rogers, E. M. (1995). *Diffusion of innovations* (4th Ed.). New York: Free Press.
- [13] Uludag, U., Pankanti, S., Prabhakar, S. & Jain, A. K. (2004). Biometric cryptosystems: issues and challenges, *Proceedings of the IEEE*, vol. 92, no. 6, pp. 948-960.
- [14] Ukwayi, J. K., Okpa, J. T., Adewoyin, S. A., Angioha, P. U. & Udom, H. T. (2017). Security Equipment and Policing in Central Senatorial District of Cross River State, Nigeria. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)* 22, 2(5), pp 06-14
- [15] Ukwayi, J. K., Obafaye, I. S. & Akintola, A. (2019). Information and Communication Technology and Crime Control in Calabar Metropolis, Cross River State, Nigeria. *European Journal of Social Sciences Studies*. 4(1).

AUTHORS

First Author – Ukwayi, Joseph K, Department of Sociology, University of Calabar, Nigeria, E-mail: jukwayi@gmail.com
Phone: +2348037279540

Second Author – Akintola, Abayomi, Department of Sociology, University of Calabar, Nigeria, angiohapius@gmail.com

Third Author – Angioha, Pius U, Department of Sociology, University of Calabar, Nigeria