Age and Educational Correlates of Cybercrime in Umuahia Municipality of Abia State, Nigeria: A Cross-Sectional Study

Goodluck Nwaogwugwu[1*] and Uduma Ulu Eke[2]
[1]Department of Sociology, Coal City University, Enugu Nigeria
[2]Department of Sociology, Abia State University, Uturu, Nigeria
E-mail: wembuduma@yahoo.com
*Corresponding Author: goodluck.nwaogwugwu@ccu.edu.ng

Abstract - One of Nigeria's emerging challenges is cybercrime. However, we discovered that no empirical research has investigated the influence of age and educational correlates on individuals who commit cybercrimes, particularly in the Umuahia municipality of Abia State, Nigeria. This investigation was necessary to address this gap. The general purpose of the study is to analyze cybercrime in Umuahia Municipality, Abia State, Nigeria, with a focus on age and educational correlates. Data were collected using a cross-sectional survey design from 600 adult residents of Umuahia municipality. The study found a significant association between the proportion of highly educated and less educated respondents and the rate of cybercrime in their location ($\chi^2 = 22.2$, df = 2, N = 600, p < .05). It also found a significant association between the proportion of older and younger respondents and the rate of cybercrime in their location ($\chi^2 = 101$, df = 2, N = 600, p < .05). The findings have policy implications for Nigeria's cybercrime control efforts.
Keywords: Cybercrime, Age Correlates, Educational Correlates, Umuahia Municipality, Nigeria

I. INTRODUCTION

Cybercrime is quickly becoming a serious issue around the world. According to Eya (2016), cybercrimes pose a threat to a country's social and economic well-being. Despite law enforcement efforts to combat cybercrime, it has become a rising social concern in Nigeria (Ribadu, 2007). In fact, cyberterrorism has emerged as one of the most serious threats to humanity's survival. News of cybercrime has become a global concern (Oluwafemi, Adesuyi, & Abdulhamid, 2013; Egbo, Akan, Owoseni, & Oluwafemi, 2022). It is also worth noting that cybercrime has become a global threat to both developed and developing countries. According to Okeshola and Adeta (2013), various forms of crime are being witnessed in most Nigerian states, including cybercrime, robbery, sexual abuse, assaults, and cultism. Other forms of cybercrime include website cloning, false representations, internet purchases, and other forms of e-commerce fraud (Suleman, Olatunji, Ayo, Edward, & Geoffrey, 2023; Adedeji, 2024).

According to a 2009 Internet Crime Report, Nigeria has become a major hotspot for cybercrime, placing third among the top ten countries worldwide (Balogun & Obe, 2010). The gravity of this issue can be better understood by examining the various efforts made by both the Nigerian government and non-governmental organizations to combat cybercrime, such as Microsoft's collaboration with the EFCC in Nigeria and the Nigerian government's implementation of cybercrime legislation to protect the country's computer systems and networks. Regrettably, the nation's image has been badly harmed due to some Nigerians' unscrupulous use of the internet for illicit spamming activities (Asokhia, 2003). A significant consequence of Nigerian society's unconscious acceptance of this problem is a high level of indifference in education and the proliferation of touting among young people (Kirwan & Power, 2012). Today, many people, particularly youths, engage in this type of anti-social activity to live a lavish lifestyle. Nigeria has recently been labeled as a corrupt nation, underscoring the urgent need for the Nigerian government to address the issue of cybercrime more effectively (Michael, Boniface, & Olumide, 2014). Despite existing policies and laws, these measures are insufficient to combat the growing problem of cybercrime in the country.

Cybercrimes constitute a significant threat to national security in all countries, including technologically advanced ones such as the United States (Hadlington, Lumsden, Black, & Ferra, 2021; Yuchong & Qinghui, 2021; Magutu, Ondimu, & Ipu, 2011). This threat is exacerbated by the frequent targeting of both inexperienced and knowledgeable internet users. The problem of cybercrime is further worsened by the apparent inability of law enforcement agencies to effectively prosecute offenders and keep pace with technological advances, which impedes their ability to deter or prevent cybercrime (Gargi & Sandeep, 2023; Akhilesh & Melissa, 2020; Choi, 2006; Rahman & Korobi, 2024).

Chiemeke and Longe (2008) investigated how exposure to the internet can increase criminality among youth and adolescents. Kunnuji (2014) also examined young adulthood and internet use in Nigeria. Adeniran (2008) suggested that the introduction of internet technology in Nigeria has modernized fraud among youths, especially college and university students (Adeniran, 2011; Egbo, Akan, Owoseni, & Oluwafemi, 2022). However, little to no

research has been conducted on cybercrime in Nigeria, particularly regarding age and educational correlates. This study aims to address this gap. Therefore, we seek to ascertain the age and educational correlates of cybercrime in Abia State, Nigeria, using Umuahia municipality as the study area through the following questions: (1) Does age affect one's engagement in cybercrime in Umuahia municipality? (2) Does the educational level of residents in Umuahia municipality influence engagement in cybercrime?

II. THEORETICAL FRAMEWORK

This study's theoretical foundation is based on social learning theory. Albert Bandura's research is most commonly associated with social learning theory in psychology and communication, which posits that human behavior is learned through observing others, interacting with peers, confronting consequences, and cognitive modeling. Essentially, people absorb information from a variety of sources, including other people and media, and use this information to form their own ideas about occurrences, which in turn influences their assumptions and opinions (Cockcroft, Shan, Khuda, Schreuders, & Trevorrow, 2021). Bandura argues that without this capacity for learning, human evolution would have been significantly slower and more laborious. This theory is well-suited for the study because it explains how people can acquire new behaviors by observing others, potentially leading to changes in behavioral patterns and altering perceptions of cybercrime among youth (Gargi & Sandeep, 2023).

III. METHODOLOGY

A. Study Area

The study is located in the Umuahia urban area, with coordinates ranging from 5°26′ to 5°37′ N latitude and 7°24′ to 7°35′ E longitude. Umuahia was chosen as the research location because it is the capital city of Abia State, a small state in southeastern Nigeria. It is a prominent city in the southeastern region, alongside Aba, a commercial metropolis located at coordinates 4°40′ N and 6°14′ E, covering a total area of 5,243.7 square kilometers in the eastern part of the country. Abia State's climate is tropical, characterized by hot and humid conditions. The rainy season extends from May to December, while the dry season lasts from December to April. Annual rainfall can reach up to 495 cm, with Umuahia receiving the highest amount, over 3,500 milliliters. Umuahia municipality consists of five areas: Umuopara, Ibeku, Olokoro, Ubakala, and Ohuhu. The population is 2,833,999 (National Population Commission, 2006). The city serves as Abia State's economic, financial, and cultural center.

B. Sampling Procedure

The researchers collected data using a cross-sectional survey design. A multi-stage sampling technique was employed, involving the sequential selection of streets, housing units, and respondents. In the first stage, Umuahia municipality was divided into five clusters based on its five areas (Umuopara, Ibeku, Olokoro, Ubakala, and Ohuhu). A simple random sampling approach was used to select housing units from these clusters. In the second stage, each selected housing unit or compound was numbered, and a sample of 24 housing units was drawn using the systematic sampling technique, totaling 130 housing units. In the third stage, respondents were selected using a purposive sampling strategy. Respondents were chosen based on their availability at home until the required number of 120 respondents was reached.

C. Data Collection

The method of data collection was quantitative, involving the use of a questionnaire. The questionnaire was both self-administered and other-administered due to varying levels of education among respondents in the study area.

D. Data Analysis

This study employed a quantitative method for data analysis. Data from the questionnaire were entered into the computer using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, such as percentages and frequency tables, were used to characterize respondents. The chi-square statistic (χ^2) was used to test the hypotheses formulated in the study, helping to determine the relationships between variables.

IV. FINDINGS OF THE STUDY

Here, we present the demographic features of the respondents and the results addressing the research questions.

A. Demographic Characteristics of Respondents

This section discusses the socio-demographic characteristics of the study's respondents

TABLE I DISTRIBUTION OF RESPONDENTS BY AGE

| Age Group	Frequency (N= 600)	Percentage
18-27 yrs	170	29.3
28-37 yrs	127	20.9
38-47 yrs	112	18.4
48-57 yrs	104	17.1
58 & above	87	14.3
Education		
No formal education	68	11.3
Completed primary education	210	35.0
Completed post-primary education	240	40.0
Tertiary education	82	13.6

Source: (Survey, 2019)

The data in Table I show the distribution of respondents according to their age category. The results from the table indicate that the ages of respondents are spread across each category, with 28.3% in the 18-27 years' category, 21.1% in the 28-37 years category, 18.6% in the 38-47 years category, 17.3% in the 48-57 years category, and 14.5% in the 58 years and above category.

A closer look at the table also shows that the proportion of respondents decreases as the age category increases.

Additionally, over a quarter of the respondents belong to the youngest age category (18-27 years).

Regarding the level of education, the results indicate that 40.0% of respondents have completed their post-primary education, while 35.0% have completed their primary education. Thirteen point six percent have either attained or completed their tertiary education, and 11.3% have no formal education. This result suggests that, in general, respondents have completed their secondary education.
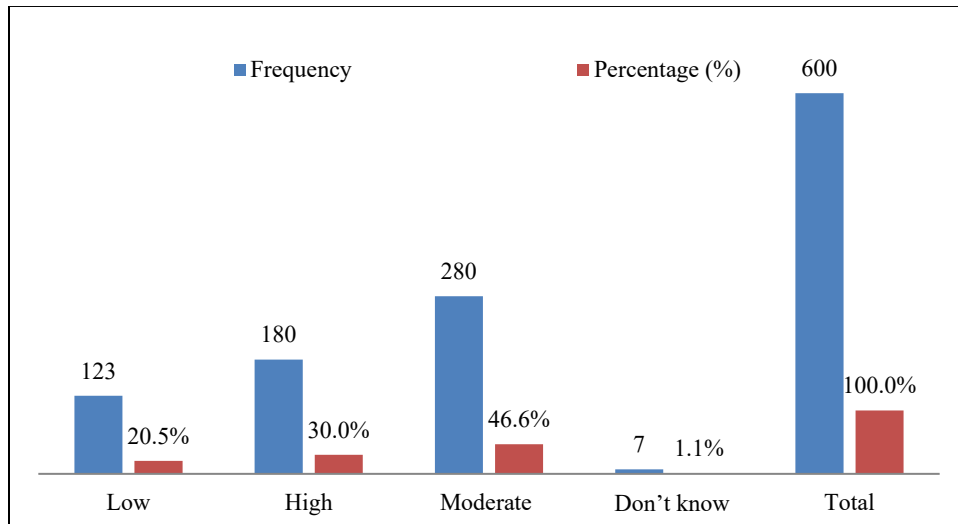
Source: (Survey, 2019)

Fig. 1 Distribution of Respondents by their Assessment of the rate of cybercrime in their area (N=600)

The data in Figure 1 show the distribution of respondents by their assessment of the rate of cybercrime in their area. The data reflect that about half (46.6%) of the respondents reported that the rate of cybercrime in their area is moderate, while 30.0% reported it as high and 20.5% reported it as low. Additionally, a small percentage (1.1%) of respondents indicated that they could not assess the rate of cybercrime in their area due to lack of knowledge. In summary, these results reveal that the highest percentage of respondents believe that cybercrime is moderate in their area.

Hypothesis 1
H_1: The views of older and younger respondents are likely to be related to the incidence of cybercrime in Umuahia Municipality.

H_0: The views of older and younger respondents are not likely to be related to the incidence of cybercrime in Umuahia Municipality.

To test this hypothesis, data from Tables I and III were cross-tabulated. The data in Table I were re-categorized, with respondents aged 18 to 47 years labeled as younger and those aged 48 and above labeled as older. In contrast, the data in Table III were re-categorized into 'high,' 'low,' and 'moderate' rates. Respondents who could not ascertain the rate of cybercrime (i.e., 'don't know' category) were included in the 'low' rate category. Responses in Table II served as the independent variable, while responses in Table III served as the dependent variable. The cross-tabulation of these variables is presented in Table IV below.

TABLE II AGE OF RESPONDENTS AND THEIR OPINION ON THE RATE OF THE INCIDENCE OF CYBERCRIME IN THEIR AREA

Age Category of Respondents	Rate of the Incidence of Cybercrime			
	High (%)	Low (%)	Moderate (%)	Total
Younger	78(19.0)	116(28.3)	215(52.5)	409(100)
Older	111(58.1)	14(7.3)	66(34.6)	191(100)
Total	189(31.5)	130(21.6)	281(46.8)	600(100)

X^2=101, df=2, N=601, p< .05

Source: (Survey, 2019)

As shown in Table II, of the 410 younger respondents who answered this question, over half (52.5%) expressed the view that the incidence of cybercrime is moderate, while 28.3% believed that the incidence is high. A smaller portion of respondents (19.0%) indicated that the incidence of cybercrime is low. In contrast, more than half (58.1%) of the older respondents were of the opinion that the incidence of cybercrime is high, whereas 7.3% thought it was low, and 34.6% believed the rate of cybercrime was moderate. These results suggest that older respondents were more likely than younger respondents to perceive the incidence of cybercrime as high. However, there appears to be some similarity in perception, as both younger and older respondents indicated, with minor differences, that the rate of cybercrime is moderate. This highlights the significance of age in shaping perceptions of cybercrime in the study area.

The chi-square results indicate a strong association between the proportion of older and younger participants and the incidence of cybercrime in their location ($X^2 = 101$, df = 2, N = 601, p < .05). Simply put, an X^2 score of 101 suggests a significant relationship between the observed discrepancies in proportions and what might be expected from random chance. To assess the significance of this relationship, further analysis was conducted, and it was found that the computed X^2 value of 101 exceeded the critical X^2 value of 3.841. Therefore, the alternative hypothesis-namely, that "the views of older and younger respondents are likely to be related to the incidence of cybercrime in Umuahia Municipality"-is upheld, while the null hypothesis is rejected.

Hypothesis 2

H_1: The views of educated and less educated respondents are positively related on the incidence of cybercrime in Umuahia Municipality.
H_o: The views of educated and less educated respondents are not positively related on the incidence of cybercrime in Umuahia Municipality.

In testing the above hypothesis (Hypothesis 2), data from Table II were cross-tabulated with Table III. Responses from Table II were re-coded and labeled as "highly educated" (for those who completed tertiary or secondary education) and "less educated" (for those with primary or no formal education). Responses from Table III were re-categorized as "high," "low," and "moderate" rates, with respondents who were unsure about the rate of cybercrime (i.e., "don't know" category) grouped with those who indicated that the rate of cybercrime was low. The educational status of the respondents is the independent variable, while the perceived rate of the incidence of cybercrime in their area is the dependent variable. The distribution of respondents in this regard is presented in Table III below.

TABLE III EDUCATIONAL LEVELS OF RESPONDENTS AND THEIR OPINION ON THE RATE OF THE INCIDENCE OF CYBERCRIME IN THEIR AREA

Educational Levels of Respondents	Rate of the Incidence of Cybercrime			
	High (%)	Low (%)	Moderate (%)	Total
Highly Educated	120(37.2)	49(15.2)	153(47.5)	322(100)
Less Educated	69(24.8)	87(31.2)	122(43.8)	278(100)
Total	189(31.5)	130(21.6)	289(48.1)	600(100)

X^2=22.2, df=2, N=601, p< .05
Source: (Survey, 2019)

As shown in Table III, of the 336 respondents classified as highly educated, nearly half (47.5%) rated the incidence of cybercrime as moderate, while 37.2% and 15.2% rated the incidence of cybercrime in the study area as high and low, respectively. Similarly, 43.8% of the less educated respondents rated the incidence of cybercrime as moderate. However, 29.8% rated the incidence as low, while the remaining 24.8% rated it as high. Although these results suggest a relationship between the views of highly educated and less educated respondents-particularly regarding the perception that the rate of cybercrime is moderate-there were more highly educated respondents who believed that the rate of cybercrime in the study area is high.

Following the analysis of the data, the chi-square output is statistically significant when considering the relationship between the highly educated and less educated respondents regarding the rate of cybercrime in their area ($X^2 = 22.2$, df = 2, N = 608, p < .05). In other words, the X^2 value of 22.2 indicates a significant relationship between the observed proportion variances and what would be expected by random chance. To assess the significance of this relationship, appropriate measures were taken, and the X^2 value of 22.2 exceeded the critical value of 3.841. Therefore, the alternative hypothesis-that "the views of educated and less educated respondents are likely to be related to the issue of cybercrime in Umuahia Municipality"-is upheld, while the null hypothesis stating the opposite is rejected.

V. DISCUSSION

The study found that respondents' age is related to their views on cybercrime. According to Odo (2016), "on the issue of demographic characteristics, age is a key determinant of public perception of the causes of

cybercrime, with respondents in older age groups perceiving that overall crime levels had increased." It is also evident that younger age groups (ages 16 to 24) are more concerned about specific types of crime, particularly violent and cybercrime. Haines and Case (2007) found that in a study conducted in Swansea, individuals from younger age groups tended to overestimate the extent of violent and cyber-related crimes in their area. This overestimation may stem from a belief among younger people that they are at a higher risk of becoming victims of these types of crimes.

The study's findings also revealed a relationship between respondents' levels of education and their views on cybercrime. Lovbakke and Moley (2007) noted that educational level is a significant factor influencing young people's perceptions of cybercrime. They stated that the better educated individuals are, the more knowledgeable they are about cybercrime. According to their statistics, 83% of university graduates are more likely to engage in cybercrime due to the perceived benefits associated with it. Eya (2016) further supported this view, suggesting that university graduates are more prone to engage in cybercrime due to a desire for wealth. He noted that many graduates are impatient with starting from smaller jobs and instead aspire to achieve significant financial success quickly. This desire is often fueled by their exposure to information and communication technology (ICT), which they may believe prepares them for cybercriminal activities. This assumption could be considered valid or invalid depending on the research analysis.

VI. CONCLUSION

The study found no statistically significant association between age and cybercrime among males and females, high and low-educated individuals, or younger and older adults. Computer technology has made significant advances throughout human history, particularly in communication and information technology (ICT). Nonetheless, despite various benefits to the inhabitants of Umuahia Municipality, the adoption of the internet has elicited a wide range of emotions. In Nigeria, individuals are often respected based on their wealth and economic status. Those who have not achieved economic success are undervalued, and the pressure to succeed is exacerbated by harsh economic conditions, such as unemployment. This pressure compels some individuals to devise survival strategies and achieve economic success through cybercrime. The perpetrators of cybercrime are not imaginary; they are our siblings, friends, colleagues, distant cousins, and neighbors who, under the right conditions, can be guided and rehabilitated through proper communication, direction, education, and empowerment. The study's findings suggest that many young individuals involved in cybercrime are still students in tertiary institutions, while others have graduated. Therefore, the study recommends that secondary and tertiary institutions that do not currently offer entrepreneurship and business management courses should incorporate these subjects into their curriculum. For

institutions where these courses already exist, they should be strengthened to address the issue of unemployment, identified as a leading cause of cybercrime. Additionally, the government should focus on educating the police force, the Economic and Financial Crimes Commission (EFCC), the Independent Corruption Practices Commission (ICPC), and other security personnel on how to detect and prevent cybercrime using technology. Telecommunication regulatory bodies in Nigeria should enhance security measures on internet service providers' servers to detect and trace cybercrime. Introducing entrepreneurship and business management courses into secondary and postsecondary schools where they are not currently taught is also recommended.

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