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Demographic Inequalities in Customers' Adoption of Electronic Banking Services: Empirical Evidence from An Emerging Economy

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Abstract

In Nigeria, bank customers are compelled to use the Automatic Teller Machine or mobile banking irrespective of their demographic profile. Hence, attributing the usage of ATM or mobile banking to age and level of education does not capture the peculiarities of emerging markets. This study investigated innovation adoption in the electronic banking world. It addresses the prevalent view in the literature, which spotlights age and education as the two strongest factors that influence customers' adoption of technology. While this might be accurate in Western economies, applying this model in less advanced countries appears over-generalized. The objectives of the study were to verify the extent to which age and level of education significantly influence customers' decisions to electronic banking services. A cross-sectional survey was carried out across some selected states in Nigeria, and validated copies of the questionnaire were distributed to respondents conveniently drawn from the sample frame across the various age and educational level categories within the study area. Both descriptive and inferential analyses of the data were performed, and binomial logistic

regression was used to test the hypotheses. The study has not found any relationship between age and level of education and customers' adoption of E-banking services in Nigeria, as there are diverse outcomes of customers' level of usage of these facilities across the various demographic measures. The study, however, recommends that a comparative study be conducted to examine demographic influences and the performance of telephone and agency banking in a post-crisis era in emerging economies.

Keywords: electronic banking; customer; demographics; inequalities; emerging economies

JEL Classification: G21; L8; N3

Introduction

The banking system in Nigeria has experienced remarkable changes in operations within the last decade as a result of the rapid trend in globalization and technological advancement, which has resulted in higher quality service delivery and profit maximization (Ohiani, 2021). Given the introduction of electronic banking (E-banking) services and the cashless policy mandate by the Central Bank of Nigeria (CBN) (Ikpefan et al., 2018; Taiwo et al., 2016), banks have witnessed a paradigm shift from manual to automated service delivery processes. This has made E-banking a viable option for interaction between financial service providers and customers, coupled with quality service improvements and better documentation of banking records (Aduba, 2021; Henry, 2018; Olurin, 2021). Some of these services include Internet banking, mobile banking, telephone banking, Automated Teller Machine (ATM) banking, agency banking (point of sale), etc. However, after the bank consolidation exercise by the CBN in 2005, the use of the ATM became commonplace in Nigeria consequent to its affordability and convenience made it increasingly the most used E-banking channel before the COVID-19 crisis (Central Bank of Nigeria Annual Report, 2017; Oteh et al., 2017; Sokari, 2017).

Moreover, since ATMs are located within bank premises, it becomes easier for customers to find their way into the banks if they encounter difficulties such as card trapping or network disruption. At the very least, this assures them that the situation will be properly handled. Besides, it provides them with other alternatives, such as doing over-the-counter transactions when the ATM fails to function as expected. Several personal (Ololade & Ogbeide, 2017; Enegbu, 2023), demographic (Owolabi et al., 2019), situational (Tijani et al., 2021), and product (Odutolu & Fallon, 2023) factors have been attributed to the adoption of new products and services. Of all these factors, age and level of education are specifically considered the two strongest factors (Lee & Lee, 2001; Howcroft et al., 2002) that encourage the adoption or non-adoption of technology.

Unfortunately, Izogo et al. (2012) observed that though, quite a great deal of studies has been conducted on the rate of adoption of E-banking services and the factors influencing it (with more emphasis on the impetuous factors), the demographic variables influencing customers' adoption of this innovation have rather attracted the limited attention of researchers in less advanced countries. He stressed further that while numerous studies exist in this area in technologically advanced economies around the world, the African continent and Nigeria specifically have suffered a dearth of literature in this aspect. Although the literature is replete with accounts focusing on several multi-dimensions of E-banking adoption, issues relating to customers' eventual rejection of the technology still appear to be sparse.

While it is a practice to incorporate demographic information about respondents as part of research during the data collection process, anecdotal evidence, however, shows that this information is mostly used for descriptive purposes only. Apart from studies that are meant to establish a relationship between demographics and certain outcomes (like this study), the inclusion of a section on 'personal data' is only conventional without any intention of drawing further inferences. This study will go beyond including demographics for the mere description of the target population to establish a logical relationship between the demographic variables of interest and customers' adoption of the E-banking services under consideration. Arguably, most studies on E-banking have concentrated on ATM banking with less focus on other E-banking services such as Internet banking, mobile banking, agency banking, and telephone banking in emerging economies. Against this backdrop, this study examined customers' adoption of these other E-banking services in addition to ATM banking. The figure below illustrates the ruling framework depicting the relationship between the demographic variables of interest in this study (age and education) and the adoption of E-banking services.

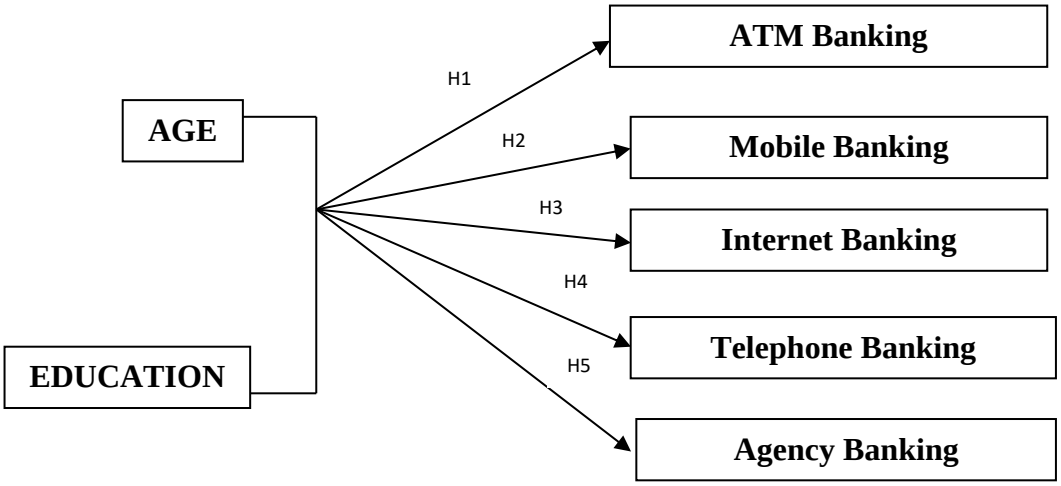

Figure 1: Researcher's conceptual framework

Literature Review

The Concept of Electronic Banking

In Sub-Saharan Africa generally, advancement in Information and Communication Technology (ICT) has led to great transformation in the banking sector. In Nigeria specifically, quality service delivery with the aim of satisfying customers is paramount (Okolo et al., 2024). Thus, ICT advancement has made it possible for banks to massively transform from manual to automated systems, with the introduction of electronic banking services. Consequently, technological advancement in the banking industry has provided a leeway for banks to achieve profit maximization as more advanced electronic means of service delivery have been introduced into the system. However, E-banking is a system that enables banks to offer their customers access to their accounts to transact business and obtain information via electronic communication channels such as ATMs, electronic waves, and the Internet (Daniel, 1999; Osuji et al., 2022; Pikkarainen et al., 2004). These banking services include accessing accounts, transferring funds, making financial payments, purchasing financial products or services online, etc. (Okafor, 2021; Sathye, 1999), and are purely customer self-service technology-driven (Zeithaml et al., 2018). This implies that a customer would have to maintain regular interaction with additional technology, i.e., a computer and an internet connection (Kolodinsky et al., 2004; Patrick & Stephen, 2020). E-banking has been used in varying forms to refer to several other platforms, such as personal computer (PC) banking, internet banking, virtual banking, online banking, home banking, and phone banking (Aduba, 2021; Imiefoh, 2012).

E-banking has become a key medium for delivering enhanced financial services to individuals, especially the modern and time-constrained ones who would prefer to spend their time on more valuable activities. The proliferation of internet expansion and computer usage has made it much more ideal for banks to meet customers' expectations through electronic service delivery (Emeka, 2019; Wai-Ching, 2008). Some of the popular services offered via the E-banking platform include internet banking, mobile banking, telephone banking, ATM Banking, and Point of Sale (POS). No doubt, E-banking generally improved the quality of services rendered to customers and encouraged better documentation of banking records. Many online systems have increasingly become user-friendly, and computer interfaces are less tasking, thus making it easier to navigate around the options (Yaghoubi & Bahmani, 2010). Most companies in the financial services sector have been quick to implement Internet capabilities, and electronic service has become a viable option for interaction between financial service providers and their customers. Components and products of E-banking services, as earlier indicated, have all become self-service delivery channels that allow banks to provide information and offer services to their customers with more convenience via web services technology (Ayo et al., 2010; Peppard, 2000; Rotchanakitumnuai & Speece, 2004; Sreenivasan & Noor, 2010).

Innovation Adoption

Adoption refers to the psychic process that an individual passes through having heard about the innovation first, to a decision to finally use it (Kotler et al., 2018). Consequently, adoption is related to usage. Before an individual decides to begin using a particular product, some mental steps are involved, known as the consumer-adoption process (Moreau et al., 2001; Pratt et al., 2021). These mental steps, as described by Kotler and Keller (2012), begin from a stage of awareness through interest, evaluation, and trial, and culminate in adoption.

The prominence of E-banking notwithstanding, customer preferences still pose a major challenge to the adoption of the technology due to the variation of preferences among different consumer groups (Thornton & White, 2001). Some previous studies conducted in more advanced economies opine that a person's age is inversely related to the level of adoption of technology, while a person's education is said to have a direct relationship (Clemes et al., 2012; Muzividzi et al., 2013; Wai-Ching, 2008). While this may hold to a significant extent in those countries, it is necessary to mention that the technological scape of advanced economies is far different from that of emerging economies. Studies done in developing countries reveal diversified results. While some studies show that some demographic factors significantly influence the adoption of E-banking services, other studies done in the same countries or similar regions show the reverse (Abenet, 2010; Annin, 2014; Ayrga, 2011; Azouzi, 2009, Beza & Dhiraj, 2017; Fonchamnyo, 2013; Ismail & Osman, 2012; Margaret & Ngoma, 2013; Muzividzi et al., 2013).

The general assertion is that an electronic facility is more likely to be adopted if the perceived risk associated with it is low, while the reverse is the case if the perceived risk is high. Because the risk associated with using technological innovations is high, Saaksjarvi (2003) suggested that consumer education about such services and usage of such facilities be encouraged as it is likely to reduce the perceived uncertainty of adopting the innovation. Risk factors are very critical to the adoption of E-banking services by bank customers. Perceived risk is considered an important risk attribute that impacts the consumer decision-making process when consuming some services. Consumers' perception of risks can affect their willingness to either adopt or not adopt an electronic innovation (Bauer et al., 2005). Risks involved in E-banking are of different forms including strategic and business risks, operational (functional) risks, financial (economic) risks, physical risks, and social risks (Neal et al., 2004).

In emerging economies, strategic risk could arise as a result of the fact that E-banking is still relatively new compared to other more advanced regions. As such, there could still be some strategic gap in understanding among senior management about its design and proper structure. So, the conditions and modalities revolving around the system may not attract the type of customers they expected (Okoye, 2013). Physical risks refer to harm to a person or property as a result of using an innovation while economic risks refer to the cost of acquiring and maintaining an innovation – usually,

the higher the cost of an innovation, the higher the economic risk. Social risk is the risk associated with the feeling of being odd among one's peer group as a result of adopting an innovation (Ram & Sheth, 1989), and functional risk is the failure of the innovation to function as expected (Poon, 2008). Also, they are a powerful explanatory factor in consumer behavior as individuals appear to be more motivated to avoid mistakes than to maximize purchasing benefits. The perceived risk associated with online transactions may reduce perceptions of behavioral and environmental control, and this lack of control is likely to negatively influence its use irrespective of age or educational category. Since E-banking is a technology-enabled channel, consumers perceive its use as a risky decision because technology-enabled services exhibit technological, unfamiliar, and indefinite stimuli (Belkhamzi & Wafa, 2009; Davidow, 1986; Mitchell, 1999; Mitchell & Batel, 1998).

While technologically advanced nations have sufficient resources and skills to execute and manage these technological cyber-security risks and concerns, most emerging economies like Nigeria are still fraught with how to mitigate these concerns ranging from interconnectivity issues (Ezeoha, 2005), cyber threats, security issues (Adewuyi, 2011) and other risks (Okoye, 2013). Unfortunately, the inability and incompetence on the part of the E-banking service providers greatly dissuade people from being willing to adopt these technologies. Consequently, this negatively impacts on the level of adoption of these technologies across the various demographic categories within this region.

Innovation Diffusion

The introduction of an innovation forms the starting point of that product's life cycle, which usually begins to spread as time passes from one stage of its life cycle to another. The process of an innovation spreading across an existing social system within a particular time through specific channels is what Rogers (1995) refers to as the diffusion of an innovation. Electronic banking is an innovation in financial service delivery and is still spreading among customers at present, especially in emerging economies like Nigeria. It has been a contention over the years that products introduced in recent times diffuse quicker than those of previous years. However, the rate of diffusion of innovation of any product is affected by certain factors such as the nature of the product itself, economic conditions, demographics, individual factors, the environment within which the unit of adoption operates, means of communicating with the target users, etc. In addition, of significant interest is the nature of the product itself, because when an innovation is introduced, certain factors are responsible for it to either catch on immediately or take a longer time to gain wide acceptance.

The development and introduction of computer technology are indeed foreign to Nigeria, however, it is a welcome development in this present era. Yet, widespread ignorance of the appropriate use of technology by the average (unlearned) Nigerian makes it more difficult to embrace the technology. Usually, people are averse to

technology because they fear the risk of losing their hard-earned money as a result of a technical fault or a mistake in making entries into the machine. And, since many people are not used to operating computers (especially older people and unenlightened ones across various age groups), they find it a lot more incompatible with their traditional lifestyles (Olatokun & Igbinedion, 2009).

Empirical Reviews

E-banking has been studied from different perspectives including customer loyalty, bank performance, quality service delivery, customer satisfaction; adoption and inhibition, etc. The literature has also shown that in evaluating customers' adoption of E-banking services, several studies have concentrated mainly on using the constructs of the Technology Acceptance Model (TAM) and extended versions of it such as trust factors, perceived usefulness, perceived ease of use, demographics and other related factors (Ayo et.al., 2012; Izogo et al., 2012; Okechi & Kepeghom, 2013; Olalekan, 2011; Popoola, 2013; Olowookere & Olowookere, 2014). Despite the prominence of E-banking, customer preferences still pose a major challenge to the adoption of the technology due to the variation of preferences among different consumer groups (Thornton & White, 2001). According to Adesinasi (2012), the major causes of differences in customers' attitudes toward the adoption of E-banking services are motivation, demography, and other individual factors. Howcroft et al. (2002) pointed out that demographic characteristics that sufficiently distinguish technology-competent customer categories are young, affluent, and highly educated customers.

Adewoye (2013) thinks that several banks in Nigeria have already launched mobile banking services that enable customers to carry out simple transactions based on Short Messaging Service (SMS) technology, with customers' mobile phones serving as the medium. Naturally, one would expect that, given the benefits that mobile banking offers coupled with the explosive rate of mobile phone usage in Nigeria, mobile banking would experience uncommon acceptance. It is, however, surprising that the growth and spread of mobile banking about its usage and popularity is yet to be fully adopted in Nigeria as far as customer adoption is concerned (Adesina, 2010). The KPMG (2014) survey report on Internet banking in Nigeria states that among customers who are aged 30 years, eight in every ten never used Internet banking. It is quite sad that even this group of individuals who are presumed to have a high interest in the use of internet technology, portray negative attitudes toward it.

The situation is quite alarming because literature has shown that the younger age group is more likely to accept and use technology than the older age group. Nevertheless, this makes research of this nature more interesting as the study would not only focus on the younger age group but also the older group so that it would be possible to understand the relationship that exists between the different age groups and their use of technology for banking activities. A KPMG (2013) survey reports customers' perceptions and choices about their preference and use of branch banking

and E-banking (ATM, internet, social media, contact center, mobile, and POS). The report observed that despite that branch banking is only one option out of the seven channels provided, it still took the highest percentage of consumers' choice over the other E-banking channels all put together. In the same vein, Burke (2002) established a positive relationship between an individual's level of education and his possession of internet literacy, given that education is seen to enhance a person's understanding of new technology (Muzividzi et al., 2013). Similarly, Clemes et al. (2012) stressed that customers who are less educated are less likely to adopt electronic banking services because of a lack of computer education and skills and may thus, find E-banking too complex to operate.

Additionally, while it is one thing to invent a technology, it is absolutely another thing for it to be adopted and used by those for whom it was designed. Wang et al. (2008) emphasized succinctly the need to understand the influencing factors that influence adoption of an innovation. They added that marketers of new products and services have long attempted to understand why, despite having indications of positive intentions to adopt, consequent upon the notion that some individuals fail to turn their stated intentions into actual purchases at the time when the opportunity arises to acquire or use the new product or service. Similarly, the diffusion of electronic banking is more determined by customer acceptance of its value, than by the seller's offerings (Mols et al., 1999; Rotchanakitumnuai & Speece, 2003). This implies that the success of Internet banking does not purely rely on the banks' strategies but rather on customers' adoption of them (Jose, 2020; Lockett & Littler, 1997). Incidentally, in ensuring a fast diffusion of E-banking and widespread adoption of the technology, banks could identify different categories of customers and design a structure that would best serve them.

Furthermore, Chiemeke et al. (2006) surveyed issues negating the adoption of Internet banking in Nigeria and reported that inadequate telecommunication facilities, inadequate electricity supply, and insecurity were the key factors. In Mauritius, a research report revealed that though, their banking sector was well-developed, they still lagged in terms of internet banking (Carranza et al., 2021; Khan &Emmambokus, 2011). In addition to perceived ease of use, perceived usefulness, perceived risk, perceived benefit, behavioral intention to use, users' attitude and trust, and IT acceptance, several theories have been employed and extended to offer new insights into users' acceptance of E-banking (Akinyemi et al., 2013; Alsheikh & Bojei, 2014; Ayo et al., 2010; Chauhan et al., 2022; James & Jeffrey, 2018; Lee, 2009; Rahmath et al., 2011).

Methodology

Operationalization of Variables

In this study, adoption is measured based on actual usage. Adoption is a process that begins with a state of awareness and culminates in the actual use of technology (John

Paul, 2023). In essence, an individual is said to have adopted a technology when he or she uses it. Therefore, in measuring adoption, actual usage of an E-banking service was used. This involved asking questions that required either of two categorical responses (yes or no), where yes represents 1 and no represents 0. In measuring the level of adoption, the rate of use of E-banking services was used using a 5-point Likert scale ranging from 'never' (0) to 'always' (5). By combining the responses to the sub-items in each question that falls within a category, we obtained an indicator that measures the rate of customers' adoption of E-banking services. Consequently, a sum score of the scale is calculated for each subject, ranging from 0 (never used a certain E-banking service) to 5 (always used a certain E-banking service). Moreover, Pam (2002) noted that the classification of nominal variables into categories depends on the author's interest. In this study, we classify individuals' level of education into two distinct groups: the more educated (individuals with at least a higher degree qualification) and the less educated customers (customers with less than a higher degree qualification). We also classify individuals into younger (less than 18 years) and older (18 years and above) categories.

Validity and Reliability of Research Instrument

A pilot study involving the distribution of 40 copies of the questionnaire to sample respondents was executed to test the validity of the instrument using the face, convergent, and discriminant validity methods before full-scale use. The research instrument was subjected to review by experts within academia and the banking industry to ensure that the instrument (questionnaire) comprehensively captured all issues relevant to the scope of E-banking services covered in this study. By constructively critiquing the instrument, improvements were made repeatedly on the test until the instrument was deemed suitable enough to measure what it purported to measure. The Cronbach's alpha statistical tool was used to test for consistency. With a score of 0.8, the research instrument indicates a high level of reliability.

Data Collection

This study was carried out in South-Eastern Nigeria, comprising: Abia, Anambra, Ebonyi, Enugu, and Imo States. The major reason for the choice of this area was to enable the researcher to gain greater control over the data collection exercise. The population of the study comprised all the customers who have an account with all the banks operating within South-Eastern Nigeria. Since population involves the aggregate of individual persons or objects for investigation, that is, the total of the units of analysis (Ikeagwu, 1998); the total population of this study was an aggregate of all bank customers within South-East, Nigeria. However, because it was almost practically impossible to get an accurate total number of bank customers operating within these states as there was no comprehensive record available, the population of this study was thereby considered unknown.

Since the population is unknown, the sample size was estimated by using the formula for an unknown population by Rose et al. (2015). Therefore, with a confidence level of 95% (1.96), a p-value of 0.5, q-value of 0.5 at a 5% (0.05) margin of error, the sample size was estimated at 384. Thereafter, 384 copies of the questionnaire were distributed to respondents within the selected region using the convenience sampling technique. As not all bank customers were willing to spend time responding to the survey within and around the banking premises to avoid staying longer at the banks, the researcher had to resort to identifying bank customers who were within reach and were willing to be interrogated.

Data Analysis

Descriptive analysis was done using frequencies and percentages, and binomial logistic regression was used to test the hypotheses. While logistic regression generally shows the nature of the relationship between categorical variables, binomial logistic regression specifically predicts the probability that an observation falls into one of two categories of a dichotomous dependent variable based on one or more independent variables that can either be continuous or categorical. The research instrument was structured in such a way that it would succinctly capture whether customers used one form of E-banking services or not by asking direct questions concerning customers' use of E-banking services. As these questions were dichotomous and required a form of binary statistical tool to aid the analysis, binary (binomial) logistic regression was considered appropriate for the analysis.

The logistic regression equation is given as:

$$\text{logit}\,[p(x)] = \log p(x) = a + b1x1 + b2x2 + \ldots\ 1 - p\,(x)$$

Where: p = probability that a case is in a particular category

a = constant of the equation

b = coefficient of the predictor variables

x = predictors

The fitness of the model was based on the goodness-of-fit statistics produced by the Hosmer &Lemeshow tests carried out. A model fit with a value of 0.05 or lower indicates a poor fit, meaning that the predictors do not have a significant effect on the variable(s) in question, thereby essentially creating a different model.

Results

A logistic regression analysis was conducted to predict bank customers' adoption of E-banking services using age and educational categories as predictors. A two-predictor logistic model was fitted to the data to test the research hypotheses regarding the causal relationship between the likelihood that the actual use of E-banking services is significantly a function of the age and educational level of

customers. The data below captures the values of the predictive demographic variables against the outcome variable. The outcome variable, which represents the actual use of E-banking services, required a categorical response (1 = yes, 0 = no). The two predictors are customers' age and educational level.

Table 1: Logistic Regression Analysis of E-banking Adoption

ATM Banking						
Predictor	B	S.E	Wald	Df	Sig.	Exp(β)
Constant	-2.091	0.786	7.076	1	0.008	0.124
Age	0.094	0.804	0.014	1	0.907	1.099
Educ. Level	-1.014	0.584	3.019	1	0.082	0.363
Test				χ^2	Df	Sig.
Overall Model Evaluation of Coefficients				2.870	2	0.238
Goodness of fit (Hosmer &Lemeshow test)				2.097	2	0.351
Telephone Banking						
Predictor	B	S.E	Wald	Df	Sig.	Exp(β)
Constant	-3.180	1.100	8.363	1	0.004	0.042
Age	1.039	1.055	0.970	1	0.325	2.826
Educ. Level	-0.166	0.608	0.074	1	0.785	0.847
Test				χ^2	Df	Sig.
Overall Model Evaluation of Coefficients				1.324	2	0.516
Goodness of fit (Hosmer &Lemeshow test)				2.401	2	0.301
Agency Banking						
Predictor	B	S.E	Wald	Df	Sig.	Exp(β)
Constant	0.421	0.408	1.064	1	0.302	1.524
Age	-0.122	0.431	0.080	1	0.778	0.885
Educ. Level	0.627	0.381	2.710	1	0.100	1.872
Test				χ^2	Df	Sig.
Overall Model Evaluation of Coefficients				2.980	2	0.225
Goodness of fit (Hosmer &Lemeshow test)				0.9	1	0.343
Mobile banking						

Predictor	B	S.E	Wald	Df	Sig.	Exp(β)
Constant	-1.662	0.356	21.750	1	0.000	0.190
Age	-0.53	0.837	0.004	1	0.949	0.948
Educ. Level	0.524	0.555	0.892	1	0.345	1.689
Test				χ^2	Df	Sig.
Overall Model Evaluation of Coefficients				0.874	2	0.646
Goodness of fit (Hosmer &Lemeshow test)				0.013	2	0.993
Internet banking						
Predictor	B	S.E	Wald	Df	Sig.	Exp(β)
Constant	-2.631	0.355	54.969	1	0.000	0.072
Age	-0.382	0.791	0.233	1	0.629	0.682
Educ. Level	0.884	0.536	2.220	1	0.099	2.420
Test				χ^2	Df	Sig.
Overall Model Evaluation of Coefficients				2.743	2	0.254
Goodness of fit (Hosmer &Lemeshow test)				2.198	2	0.333

H1: ATM banking adoption = -2.091 + (0.094) * Age + (-1.014) * Education

The Goodness-of-fit statistics assessed the fit of the model against the actual outcomes (whether ATM banking adoption is based on the predictors). The Hosmer & Lemeshow test that yielded a χ^2 (2) of 2.097 suggested that the model fit well with the data. The statistical significance of individual regression coefficients (βs) is tested using the Wald chi-square statistic. As indicated in the table above, both age and educational level indicators were not significant ($p > 0.05$). From the analysis, the age predictor for ATM banking adoption shows χ^2 (1) = 0.014, p = 0.9 (greater than 0.05) while the education predictor shows χ^2 (1) = 3.019, p = 0.08 (greater than 0.05). Based on this, we do not reject H1 and hereby maintain that age and educational status do not significantly influence customers' adoption of ATM banking.

H2: Mobile banking adoption = -1.662 + (-0.53) * Age + (0.524) * Education

The test of model fitness which assessed whether adoption of mobile banking services is based on the predictors using the Hosmer & Lemeshow metrics shows that the model fit well to the data with a χ^2 (2) of 0.013. The influence of these predictors is insignificant as both age and educational level were greater than 0.05, p = 0.949 (age) and p = 0.345 (education). From the analysis, the age predictor for mobile banking adoption shows χ^2 (1) = 0.004, p = 0.949 (greater than 0.05), while the education predictor shows χ^2 (1) = 0.892, p = 0.345 (greater than 0.05). Based on this, we do not

reject H2 and hereby maintain that age and educational status do not significantly influence customers' adoption of mobile banking.

H3: Internet banking adoption = -2.631 + (-0.382) * Age + (0.884) * Education

The test of the fitness of the model assessed whether adoption of internet banking services is a function of the predictors using the Hosmer & Lemeshow metrics, and showed that the model fit well to the data with a χ^2 (2) of 2.198. The influence of these predictors cannot be said to be significant as both age and educational level were greater than 0.05, p = 0.629 (age) and p = 0.099 (education). As shown in the analysis, the age predictor for Internet banking adoption shows χ^2 (1) = 0.233, p = 0.629 (greater than 0.05), while the education predictor shows χ^2 (1) = 2.220, p = 0.099 (greater than 0.05). Based on this, we do not reject H3. Thus, we maintain that age and educational status have no significant influence on customers' adoption of Internet banking.

H4: Telephone banking adoption = -3.180 + (1.039) * Age + (-0.166) * Education

The Goodness-of-fit statistics assessed the fit of the model against the actual outcomes (whether telephone banking adoption is based on the predictors). The Hosmer & Lemeshow test that yielded a χ^2 (2) of 2.401 suggested that the model fit well with the data. The influence of these predictors is insignificant as both age and educational level were greater than 0.05, p = 0.325 (age) and p = 0.785 (education). The analysis shows the age predictor of telephone banking as χ^2 (1) = 0.970, p = 0.325 (greater than 0.05), while the education predictor shows χ^2 (1) = 0.074, p = 0.785 (greater than 0.05). It is on this basis that we do not reject H4, and hereby maintain that age and educational status do not significantly influence customers' adoption of telephone banking.

H5: Agency banking adoption = 0.421 + (-0.122) * Age + (0.627) * Education

The Goodness-of-fit values which assessed the fit of the model against the actual outcomes (whether POS adoption is based on the predictors) tested by the Hosmer & Lemeshow metrics yielded a χ^2 (1) of 0.343 and is an indication that the model fit well to the data. The influence of these predictors is insignificant as both age and educational level were greater than 0.05, p = 0.778 (age) and p = 0.100 (education). As shown in the analysis, the age predictor for agency banking shows χ^2 (1) = 0.080, p = 0.778 (greater than 0.05), while the education predictor shows χ^2 (1) = 2.710, p = 0.100 (greater than 0.05). Based on this, we do not reject H5 and hereby maintain that age and educational status do not significantly influence customers' adoption of the POS.

Discussion

The study shows that age does not significantly influence customers' adoption of E-banking services in Nigeria. While the analysis shows that older customers are more inclined towards ATM banking and telephone banking than younger customers,

younger customers,' however, show more inclination toward agency banking, mobile banking, and internet banking services than older customers. Yet, age does not in any way show any significant influence on the usage rate difference between the two categories of customers. As such, the evidence is still not strong enough to claim that age significantly influences customers' adoption of E-banking services in Nigeria. Mobile banking and Internet banking services offer alternative means of conducting certain transactions that could be equally done using the ATM, such as account balance inquiries, viewing bank account statements, fund transfers, bill payments, phone recharges, etc. Younger customers' inclination towards mobile banking and internet banking services reduces their rate of use of the ATM because they would prefer to save time and energy by utilizing mobile banking and internet banking services at their convenience to carry out whatever transactions could be done using those platforms. Since older customers are less inclined towards mobile banking and Internet banking services, they are left with fewer options for bank transactions other than the ATM. This undoubtedly explains their increased rate of use of the ATM compared to younger customers. And since the banks operate with policies of ensuring that certain transactions are not done over-the-counter (such as balance inquiries, withdrawals, and transfers below a specified amount, etc.), older customers who have less inclination towards other alternative channels like mobile banking and internet banking would have no choice but to constantly keep utilizing ATM banking for transactions that they would not be allowed to carry out within the banking halls.

Similarly, the level of education does not significantly influence customers' adoption of E-banking services in Nigeria. The data analysis shows that less educated customers are more inclined towards ATM banking and telephone banking than the more educated customers. While the analysis also shows that more educated customers are more inclined towards E-banking services than less educated customers, there is no sufficient evidence yet that it significantly influences adoption between the two categories of customers.

However, concerning the findings, some studies opine that age and level of education significantly influence customers' adoption of E-banking services (Ehiedu et al., 2021; Ighomereho et al., 2018). They reiterated that younger customers adopt E-banking services more than their older counterparts and that the more educated customers adopt E-banking services more than the less educated ones, just as it is the case in advanced countries where internet technology can be said to be an 'everybody's thing.' This study shows a different result, as the findings show that age and level of education do not mutually exclusively influence their adoption of E-banking services to a significant extent. Their responses point out that, irrespective of their age and level of education, their adoption of E-banking services is dependent on certain other conditions. For example, age cannot be said to significantly influence customers' use of ATMs because customers are mostly compelled to use the ATM to perform transactions within some defined limits, irrespective of their age and their level of education. So, in this situation, it is not a function of whether a person is young or

educated. Whether young or old, educated or not, customers are compelled to conform to banks' policies.

This study refutes the stance that age and educational level significantly influence customers' adoption of E-banking services in Nigeria in a mutually exclusive manner. Izogo et al. (2012) pointed out that while some other demographic factors do not have any significant effect on customers' adoption and usage of E-banking, age and level of education are core determinants. Agwu et al. (2014) also argued that consumers' level of education and ICT knowledge impacts their acceptance or otherwise of E-banking services. Contrarily, in this study, it is clear that neither age nor educational status significantly influences bank customers' use of E-banking services such as ATM banking, telephone banking services, POS, mobile banking services, and Internet banking in Nigeria.

Given the non-disparity between the rate of use of ATM banking services among older and younger customers, we cannot claim to have detected any significant effect. While this may be true in other foreign or developed countries, there is no sufficient empirical evidence that this is applicable in Nigeria. The findings of this study support the claim of Abubakar and Ahmed (2013) who stressed that apart from ATM banking, there is no sufficient evidence in the literature that age significantly influences customers' use of electronic banking services in Nigeria. However, while it is not faulting the claim that younger and more educated customers use certain E-banking services more than the older and less educated ones, it differs a bit in its tone of finality. The standpoint here is that the above claim does not justify age and educational level as strong influencers of E-banking service adoption, otherwise, most young and highly educated people should be at ease with the use of E-banking services. Yet, in reality, this is far from the truth. This study validates the survey carried out by EYGM (2017) which disclosed relatively low scores for telephone banking use by customers with different educational qualifications thereby affirming that telephone banking services are the least utilized E-banking services even among customers with different educational qualifications, as customers display a general aversion towards the use of call centres.

Moreover, the use of the term 'level of education' in some research surveys appears contradictory because the relationship that they try to establish between the level of education and individuals' ability to use technology is misconstrued. They are referring to the level of ICT education. Thus, it is pertinent to emphasize that an individual's level of education differs from ICT education. Many researchers in Nigeria have taken for granted that individuals with a high level of education (such as a Bachelor's degree or above) automatically have a high level of competence in the use of ICT. As a result, they draw a direct link between a high level of education and a higher adoption of technology, such as E-banking services. Unfortunately, this assumed standpoint does not follow. This report consolidates the findings of Yousuf et al. (2013) who asserted that demographics (age inclusive) do not have any

significant impact on customers' willingness to use E-banking systems. Therefore, instead of claiming that the more educated an individual is, the higher the adoption of E-banking services, it would be more logical to maintain that the more ICT-compliant an individual is, the greater the likelihood of E-banking service adoption.

Furthermore, the results of this study show that 65.5% of customers who are less than 20 years of age considered over-the-counter transactions very important to them, while 58.2% of customers between 20 and 30 years of age have the same view. These are customers regarded as 'younger customers.' Yet, the fact that they are young still does not rule out their strong need for face-to-face contact in banking transactions, which, of course, should not be much mentioned where E-banking practice prevails. The results also show that 59.1% of customers who possess a Master's degree and above consider in-branch banking very important, and 60.0% of first-degree holders have the same opinion. Based on this, it does not sound convincing enough to consider this category of the population inclined towards E-banking services. Many customers who possess very strong educational qualifications have never tried or do not just want to use E-banking services. If educational level is a strong determining factor, then it is expected that, on average, a reasonable number of highly educated customers will be using E-banking. Surprisingly, this same category of customers uses the Internet for other educational, recreational, and social purposes (e.g. networking), but neglects the use of the Internet for banking purposes. This study verifies the KPMG (2016) survey which reported that out of 148 million mobile telephone subscribers in Nigeria, out of which 92 million have access to internet services, two-thirds of this population has never tried using the online banking platform; even though 77% of the Nigerian banking customers utilize their mobile devices for other purposes such as chatting, browsing, shopping, etc.

Interestingly, this study supports the claim of Oyeleye et al. (2015) who asserted that the level of education of customers may be regarded as secondary and has no direct influence on customers' adoption of electronic banking services. The argument here is that instead of researchers recommending that a system that focuses more on ensuring that their citizens obtain more education, the emphasis should be on enlightening their citizens on the use of ICT and technology empowerment. Even those who possess higher educational qualifications may equally need this empowerment to improve their level of ICT compliance. It is believed that this would have a stronger and more favorable direct influence on customers' behavior towards adopting E-banking services, rather than just attaining a high level of education.

From the foregoing, it is clear that there is a need for banks and banking regulating bodies in emerging markets to implement some veritable strategies to improve the state of E-banking use. In Nigeria specifically, the Central Bank of Nigeria (CBN) which is the apex regulatory banking agency could incorporate the following mandates as a way of ensuring the reduction of E-banking risks to the barest minimum, thereby improving bank customers' willingness to use these E-banking facilities.

Conclusion

A cursory look at the statistics again reveals some inherent conditions that affect the extent to which these demographics can influence customers' adoption of E-banking services. In this study, 42.7% of the younger customers admitted that their reason for not using mobile banking services is because they do not know the mobile banking codes. This invariably means that customers within this group, though young, may never utilize mobile banking services because of the above-stated reasons. So, even though they are young, it does not automatically make them favorably inclined toward mobile banking. Rather, they would want to explore other alternative options. In the same vein, 39.5% of the younger customers admitted that they do not have the Internet banking application on their devices (either mobile phones or computer systems) because they are simply not interested, while 26.7% acknowledged that they do not have Internet facilities on their mobile phones. This implies that aside from age, other factors also play a significant role in customers' adoption of E-banking services. As such, young individuals in Nigeria may just lack interest in using E-banking services.

Moreover, a cumulative total of 67.8% of younger customers admitted that their non-adoption of telephone banking services is because the telephone lines do not get through easily and that their complaints would not be taken seriously if presented using the telephone banking platform. These factors inadvertently influenced their decision to adopt telephone banking services. Therefore, the fact that they are young does not automatically make them favorably inclined towards telephone banking adoption. Nigeria as a whole is reported to have several million mobile telephone subscribers, out of which many have access to internet services. Many of these subscribers have never tried using the online banking platform however, they use their mobile devices for other purposes such as chatting, browsing, shopping, etc. Yet, this group of persons never felt the need to utilize it for banking purposes with the same desire that they do for other personal purposes.

Surprisingly, this large chunk of the population is inclusive of young individuals. The same applies to customers' level of education. This study shows that many individuals do not use some E-banking platforms, despite how well-educated they are. For instance, a cumulative total of 76.4% of the more educated customers admit that they have not adopted mobile banking because they either do not know the mobile banking codes or are simply not interested. This invalidates further the claim that the level of education significantly influences customers' adoption of E-banking services, and that a higher level of education makes customers favorably inclined towards mobile banking as many studies argue. While this may hold in other advanced economies of the world, we cannot claim that the same applies here in Nigeria because the technological, legal, and regulatory conditions existing in Nigeria are not the same. As such, researchers in Nigeria may want to reconsider their assertions backed up by this foreign evidence.

Interestingly, this research finding indicates that banks have lots of improvements to make and considerations to guide them as they deliver banking services through electronic platforms. Firstly, they could consider making mobile banking codes easier to remember. To achieve this, they should consider the use flash cards (like GT bank uses a flash card that could also serve as hand fans, and customers could take them everywhere). First bank's use of the small space at the back of deposit slips for noting their mobile banking codes is not commendable; as the prints are very small and most customers dispose of those slips the moment they leave the bank and do not exercise patience enough to go through them. In addition to mounting display boards containing mobile banking codes at the bank counters within the banking halls, they could also be mounted in front of the banking halls and it should be close to ATM stands. This would encourage customers who may not have the patience to wait in the event of a long queue at the ATM stands, to try this option on sighting the codes; instead of outrightly refusing to use mobile banking simply because they do not know the codes.

Mobile banking codes should also be inscribed on the back of ATM cards so that customers can easily retrieve them whenever they need to do certain transactions without going to the bank or ATM stands. This would further help customers who find it difficult to remember the codes to easily use them without fear of using the wrong codes. Thus, evaluating the benefits and realizing that it works could lead to the eventual adoption of mobile banking by customers.

This study evaluated some demographic factors of interest concerning their influence on customers' adoption of E-banking services, with these factors acting as independent variables. The study however discovered that these variables play a more valid role as mediators rather than sole independents. It therefore suggests that further research be replicated within Nigeria and other emerging economies within Africa however, delineating these demographic factors as mediators rather than independent variables. The results obtained from the studies can thereafter be compared as a basis for proving or refuting the argument that this study has put forward in this regard.

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