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EFFECT OF ELECTRONIC BANKING SERVICES ON CUSTOMER SATISFACTION OF SELECTED DEPOSIT MONEY BANKS: EMPIRICAL EVIDENCE FROM GUSAU METROPOLIS

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Abstract: **This study investigates the influence of electronic banking services on customer satisfaction in Gusau metropolis, Nigeria focusing on three core digital banking channels: mobile banking, point of sale (POS), and automated teller machine (ATM) services. Guided by a quantitative research approach, the study adopted a cross-sectional survey design. The target population comprised of customers of United Bank for Africa (UBA), Guaranty Trust Bank (GTB), and Access Bank who actively use electronic banking services. A sample size of 384 respondents was determined using the Krejcie and Morgan Sample Determinant Table and purposive sampling was also employed to select participants. Data were collected using a structured, self-administered questionnaire designed around a five-point Likert scale. Instrument validity was ensured through expert review and pilot testing, while reliability was confirmed via Cronbach's alpha coefficients. The data collected were analysed using multiple linear regression with the help of SPSS version 27. The findings reveal that mobile banking, POS, and ATM services each have a significant positive influence on customer satisfaction, with mobile banking exerting the strongest influence. The results underscores the importance of robust, reliable, and user-friendly electronic banking infrastructure in meeting customers' expectations and driving satisfaction. Based on these insights, the study recommends that banks should enhance mobile banking performance, improve POS network coverage and transaction stability, and ensure consistent ATM service availability and maintenance to sustain high levels of customer satisfaction.**

Keywords**: Electronic Banking, Customer Satisfaction, Mobile Banking, POS, ATM.**

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1. INTRODUCTION

Nowadays, banks use modern techniques in place of conventional ones (Chumo, 2022). Electronic banking is one of these practices that is quite significant (Sisay, 2022). It is one of the most popular services provided by traditional banks, and it is aimed at providing the online banking users with services that are both quicker and more reliable (Bambore&Singla, 2017). The provision of electronic services helps banking industry in Nigeria to reduce operational costs and gain access to the largest segment of customers (Burodo, Adeniran, & Ibrahim, 2022). Due to the low rate of human error, electronic banking services offer higher accuracy and reliability in the delivery of banking services, resulting in increased effectiveness and efficiency in service delivery (Musenga&Phiri, 2023).

Customer satisfaction is a transient emotion or a predisposition that can be influenced by a number of factors (Ahmed, Burodo& Suleiman, 2022). It is a feeling or judgment by customers towards products or services after they have used them. Adeniran et al., (2022) stated that being customer-driven is essential for achieving a competitive advantage in the banking sector. Therefore, in order to guarantee customer satisfaction, banks must employ several techniques, such as task-focused strategies and service re-engineering (Syed &Khaliquzzaman, 2016).

Nevertheless, customers ran into issues while utilizing electronic banking services for transactions such as wireless network failures, receiving fake short service messages (SMS), falling victim to scams, virus and malware attacks, unsecured gateways, and lack of customer awareness. These problems invariably affect customer satisfaction on the usage of electronic banking services (Diwan, 2021&Birhanu, 2021). This study aims to examine the effect of electronic banking services on customer satisfaction in Gusau metropolis, Zamfara State-Nigeria. The selection of Gusau as the case study was made due to the fact that Gusau is the largest metropolis in Zamfara state and has the highest number of banks. To achieve this, the following research questions were raised: i.Does mobile banking service have any significant effect on customer satisfaction in Gusau Metropolis? ii. Does POS service have any significant effect on customer satisfaction in Gusau Metropolis? iii. Does ATM service have any significant effect on customer satisfaction in Gusau Metropolis?

The study is divided into four sections. Section one is the introduction, section two reviews related literature, section three presents the research methodology, section four presents the results while the last section concludes the study.

2. LITERATURE REVIEW

Electronic banking refers to the use of digital technologies to deliver banking services and conduct financial transactions remotely, without the need for customers to physically visit a bank branch. According to Khan and Karim (2022), electronic banking is "the delivery of banking products and services through electronic channels, such as the internet, mobile applications, and automated teller machines (ATMs)," emphasizing its role in enhancing accessibility and convenience. This definition underscores the transformational impact of technology on the banking sector, especially in areas like Gusau metropolis where customers may face security challenges or infrastructural limitations that discourage in-person and in-branch transactions. Similarly, Salehi and Alipour (2020) define electronic banking as the integration of information technology with traditional banking operations to enable customers to conduct activities such as fund transfers, bill payments, and account inquiries anytime and anywhere. These perspectives illustrate that electronic banking not only streamlines banking processes but also empowers customers to maintain control over their finances, which is particularly valuable in regions with limited banking infrastructure.

Moreover, the Central Bank of Nigeria (CBN, 2023) describes electronic banking as "a system of banking where transactions are completed electronically without direct human intervention from bank staff, highlighting its potential to reduce queues, enhance transaction speed, and minimize operational costs. This efficiency contributes to customers' trust and satisfaction, as users can rely on seamless, fast and error-free services regardless of their location. Supporting this view, Yao, Liao, and Wang (2021) note that electronic banking platforms incorporate security protocols such as encryption and two-factor authentication to safeguard users' information, thereby reinforcing confidence in digital transactions. This security assurance is especially important in the Nigerian context, where fraud concerns have historically hindered digital adoption. In addition, Narteh (2013) emphasizes that electronic banking facilitates financial inclusion by extending banking services to underserved population who may not have access to brick-and-mortar branches. Therefore, electronic banking represents a modern approach to financial service delivery that combines technological innovation, customer empowerment, and operational efficiency, which together play a critical role in shaping user perceptions of service quality.

Mobile banking has transformed how individuals interact with their financial institutions by enabling anytime, anywhere access to banking services. According to Wikipedia (2024), mobile banking refers to financial transactions performed via a mobile device, typically using Applications Software provided by banks. This includes balance inquiries, fund transfers, bill payments, and remote check deposits (Wikipedia, 2024). Deloitte and Forrester (2014) highlight that mobile banking adoption has been driven by the demand for convenience and reduced branch visits, with over 60% of customers preferring digital channels over physical branches. Bátiz-Lazo & Wood (2019) note that services like Kenya's M-Pesa have significantly advanced financial inclusion by offering affordable banking access to unbanked populations, demonstrating that mobile platforms can extend financial services to low-income and rural communities.

Moreover, the International Finance Corporation (IFC, 2021) estimates that over 1.2 billion people globally use some form of mobile banking, highlighting its role as a driver of cashless economies. The COVID-19 pandemic further accelerated mobile banking usage, with McKinsey (2020) reporting a 20–50% increase in active digital banking users across many markets. The shift to mobile banking has also spurred competition among banks and fintech firms in a bid to offering seamless user experience, robust security measures, and expands their service portfolios (Mastercard, 2023). According to Reines (2023) security remains a significant concern, as mobile banking platforms must protect sensitive data from cyber threats through encryption, multi-factor authentication, and biometric verification.

In addition to enhancing customer convenience, mobile banking reduces operational costs. Deloitte *et al.* (2014) report that each mobile transaction costs banks just a fraction of branch-based transactions, translating into significant cost savings and improved profitability. MasterCard (2023) argues that mobile banking not only increases customer loyalty but also provides critical analytics insights to personalize services and detect fraud more effectively.

Point of Sale (POS) systems are digital solutions that facilitate retail transactions by integrating hardware and software to process payments, manage inventory, and track sales performance. According to Wikipedia (2024) a POS system typically includes a computer or tablet, barcode scanner, receipt printer, and payment terminal, all connected to a central software platform that records transaction data. TechRadar (2022) explains that modern POS solutions such as Square and Shopify have transformed retail operations by enabling businesses to accept a variety of payment methods, including credit cards, contactless payments, and QR codes.

MasterCard (2023) reports that contactless payments grew by 150% globally between 2019 and 2022, driven largely by POS systems that support Near-Field Communication (NFC) technology. This shift reflects consumer preferences for faster, safer, and more hygienic transactions, especially during the COVID-19 pandemic (Mastercard, 2023). TechRadar (2022) emphasizes that cloud-based POS systems also offer real-time inventory management and sales analytics, enabling small and medium-sized enterprises (SMEs) to make data-driven decisions. The Faster Payments Council (2022) highlights that QR code-enabled POS terminals embed payment and loyalty information in a single scan, enhancing customer engagement and streamlining checkout experiences.

According to Investopedia (2023), the integration of POS systems with Customer Relationship Management (CRM) tools allows retailers to collect valuable customer data, personalize promotions, and build brand loyalty. Additionally, modern POS solutions improve operational efficiency by automating tasks such as stock replenishment and reporting (Investopedia, 2023). However, security remains a critical concern, as POS systems are often targeted by malware designed to steal credit card information (Mastercard, 2023). To mitigate these risks, industry standards such as the Payment Card Industry Data Security Standard (PCI DSS) have been established to protect cardholder data (PCI Security Standards Council, 2023).

In a nutshell, POS systems are essential for businesses seeking to modernize their operations, improve transaction accuracy, and enhance customer experiences (TechRadar, 2022). As digital payments continue to evolve, the role of POS technology is likely to expand, integrating advanced features such as biometric authentication, AI-powered recommendations, and omnichannel capabilities (Mastercard, 2023).

Automated Teller Machines (ATMs) are self-service banking devices that enable customers to withdraw cash, deposit funds, check balances, and transfer money without human assistance. Britannica (2023) defines an ATM as an electronic banking outlet providing 24-hour access to essential financial services. The first ATM was installed by Barclays in

London in 1967, followed by the U.S. launch in 1969 (Wired, 2010). According to Investopedia (2023), ATMs have become a cornerstone of modern banking, with over 3 million machines operating worldwide as of 2022.

Wikipedia (2024) notes that ATMs are connected to interbank networks such as Cirrus and Plus, allowing customers to access their accounts globally. McKinsey (2020) emphasizes that ATMs have significantly reduced reliance on branch visits, enhancing convenience while lowering operational costs. Nonetheless, ATM usage has declined in some regions due to the rise of mobile and internet banking (McKinsey, 2020). Despite this trend, ATMs remain vital for cash-dependent economies and rural areas lacking reliable internet access (Britannica, 2023).

Investopedia (2023) highlights that security remains a persistent issue, as ATMs are targets for skimming devices and card fraud. To combat these threats, banks have adopted measures such as EMV chip technology, PIN encryption, and video surveillance (PCI Security Standards Council, 2023). ATM fees are another consideration: out-of-network transactions in the U.S. average $4.73 per withdrawal (Britannica, 2023). Wired (2010) points out that despite the fees, the convenience and accessibility offered by ATMs ensure their continued relevance in the banking ecosystem.

Emerging innovations include biometric authentication and contactless withdrawals, which further improve security and customer experience (Investopedia, 2023). Overall, ATMs remain a critical delivery channel for financial services, bridging the gap between physical and digital banking (Britannica, 2023).

Customer satisfaction is the overall evaluation of a customer's experience with a product or service, reflecting the extent to which expectations are met or exceeded. Kotler and Keller (2016) define customer satisfaction as "a person's feeling of pleasure or disappointment resulting from comparing a product's perceived performance to expectations," emphasizing its psychological dimension. This definition highlights that satisfaction is subjective and can be influenced by perceptions of service quality, responsiveness, and reliability, which are essential considerations in electronic banking. Similarly, Zeithaml, Bitner, and Gremler (2018) describe customer satisfaction as "a customer's fulfillment response," indicating that it arises from cumulative experiences across multiple service encounters rather than isolated interactions. This perspective underscores the importance of maintaining high performance across all digital touchpointssuch as mobile apps, ATMs, and online portals to build sustained satisfaction among users.

Furthermore, Hansemark and Albinsson (2004) assert that customer satisfaction encompasses both cognitive and emotional reactions to service delivery, meaning that technical efficiency and empathetic support must work in tandem to create positive experiences. This is particularly relevant for electronic banking, where prompt issue resolution, clear communication, and secure platforms collectively shape perceptions. According to Parasuraman, Zeithaml, and Berry (1988), satisfaction is closely linked to service quality dimensions such as reliability, responsiveness, and assurance, suggesting that banks operating in Gusau must prioritize robust systems and responsive customer support to maintain trust. In addition, Oliver (1999) emphasizes that satisfaction is a precursor to customer loyalty, which is critical for competitive advantage in the banking sector. By exceeding expectations whether through 24-hour access, faster transactions, or personalized services banks can foster lasting relationships with customers. Finally, Fornell (1992) observes that measuring customer satisfaction provides valuable feedback for service improvement, enabling institutions to identify gaps and develop targeted strategies to enhance user experiences. Therefore, customer satisfaction is a multifaceted construct involving perceptions, emotions, and expectations, all of which are crucial to understanding how electronic banking influences customer behavior in Gusau metropolis.Customer satisfaction is a critical metric for businesses, and it is typically measured using both qualitative and quantitative methods. These metrics provide insights into different aspects of customer experience such as overall satisfaction, loyalty and ease of interaction.

Mobile Banking and Customers Satisfaction

Nzabirinda, Ndahimana, and Mugiraneza (2019) investigated the effects of mobile banking on customer satisfaction within COPEDU PLC, a microfinance institution operating in Kigali, Rwanda, where they administered structured questionnaires to 61 active users of mobile banking platforms. Through descriptive statistics and correlation analysis, the researchers found that mobile banking significantly improved satisfaction by enhancing convenience, lowering transaction costs, and reducing queuing time, thereby reinforcing the value proposition of digital financial services. Nevertheless, despite the relevance of these findings, the study was limited in scope as it focused exclusively on a single institution in an urban area and did not apply regression techniques to quantify the relative importance of different satisfaction drivers,

nor did it stratify respondents to capture differences across demographic groups. To address these shortcomings, this study employs stratified sampling to capture diverse customer perspectives across different deposit money banks and using regression analysis to measure which service quality factors most strongly predict satisfaction in a region with varying levels of digital banking awareness.

Khadim and Islam (2022) undertook a comprehensive meta-analysis synthesizing findings from over 30 empirical studies spanning Asia, Africa, and Europe to identify consistent determinants of mobile banking satisfaction, ultimately categorizing these factors into technological, functional, and emotional dimensions. Their review revealed that ease of use, perceived security, and interface quality repeatedly emerged as the most critical variables influencing satisfaction and sustained usage across multiple banking environments. Furthermore, the authors emphasized that user-centered application design and robust security mechanisms are fundamental for fostering trust and loyalty. Although this meta-analysis contributed valuable aggregated insights, it did not generate any primary data or focus on any specific country context, thereby limiting the practical applicability of its conclusions to localized settings with different infrastructural, cultural, and regulatory conditions. Thus, the present study aims to fill this gap by collecting primary data directly from mobile banking customers in Gusau, Zamfara State, and employing stratified sampling and regression analysis to generate context-specific evidence that will help Nigerian banks adopt global best practices to the unique expectations and challenges of their customers.

On the other hand, Felix and Sugiati (2024) explored the influence of various service quality dimensions namely cost, security, responsiveness, and convenience on satisfaction and loyalty among Indonesian mobile banking users, where they applied Structural Equation Modeling, Partial Least Squares (SEM-PLS) to analyze survey data from 250 customers across multiple commercial banks. Their findings demonstrated that all four dimensions significantly and positively affected satisfaction, with cost and convenience exerting indirect effects on loyalty mediated by overall satisfaction. Consequently, the study recommends reducing transaction fees and enhancing application responsiveness to strengthen customer retention. Nevertheless, while this study offered advanced analytical rigor, it was situated within the Indonesian banking sector and did not consider Nigeria's distinctive economic, technological, and regulatory environments, nor did it assess customer experiences using stratified sampling techniques that could capture segment-specific insights. Consequently, the current research addresses this gap by applying stratified sampling and regression analysis in Gusau, Zamfara State, to reveal how these same services attributes operate in Nigeria's deposit money banks, thereby generating localized knowledge to guide more effective customer satisfaction strategies in Nigeria.

Lastly, Jalani and Easwaramoorthy (2024) evaluated how security, service quality, technological attributes, and convenience influence mobile banking adoption and satisfaction among 152 customers in Malaysia, applying correlation analysis and multinomial logistic regression to identify the strongest predictors. The results revealed that security and convenience were particularly significant in determining both adoption and ongoing satisfaction, which led the authors to advocate for strengthening authentication processes and simplifying the user interface to improve customer experiences. Nevertheless, this research primarily concentrated on the predictors of adoption rather than examining sustained satisfaction post-adoption, and it did not account for diverse customer demographics or the infrastructural challenges specific to low-income or developing regions. As such, the present study intends to fill this gap by utilizing stratified sampling to capture experiences across different demographic segments in Gusau, Zamfara State, and applying regression analysis to rigorously identify which service quality factors has the most effect on customer satisfaction among Nigerian deposit money bank customers, thereby providing actionable insights for banks seeking to improve digital service delivery in resource-constrained environments.

Point of Sale (POS) and Customers Satisfaction

Mbamalu and Okeke (2024) investigated e-service quality and customer satisfaction on point of sale (POS) services in Anambra State, Nigeria. The study used primary research instrument designed to assess electronic service quality dimensions such as reliability, responsiveness and assurance and their effect on customer satisfaction with POS systems. 380 bank account holders who use POS were sampled and PearsonProduct Moment Correlation was used to test hypothesis. The study found that only 45.2% of respondents agreed that POS systems are user-friendly, indicating that ease of use remains a potential area for improvement. Reliability and trust of POS services are strongly and positively related to customer satisfaction. However, this study was conducted in the South-Eastern region and may not be

generalized with other parts due to differences in ICT infrastructural developments. To bridge this geographical gap, the present study was conducted in Gusau, Zamfara State, for different customer groups in a region where infrastructural reliability and financial inclusion vary widely.

Again, Oluyemisi and Abba (2024) examined the relationship between POS terminal service quality and customer satisfaction among 132 customers of First City Monument Bank (FCMB) in Nigeria, deploying structured surveys to gather primary data on key service dimensions such as transaction speed, channel availability, and transaction fees. Their analysis demonstrated that efficient processing speed and widespread channel accessibility substantially improved customer satisfaction, whereas high transaction charges had a negative effect, pointing to cost sensitivity as a major determinant of perceptions. The study recommends that banks should enforce standardized service quality benchmarks and implement regular monitoring to sustain customer trust and loyalty in POS services. However, while the study contributed important practical insights, it was limited to a single bank, did not apply stratified sampling to account for demographic heterogeneity, and relied primarily on descriptive statistics without conducting inferential statistics e.g. regression analysis to isolate and rank the effect of each factor. To overcome these limitations, this study uses stratified sampling technique to ensure representation of customers with diverse backgrounds across several deposit money banks and applying regression technique to quantify the relative effect of different POS service attributes on satisfaction outcomes in a context characterized by variable access to banking infrastructure.

Adamu, Kawugana, and Abdullahi (2025) conducted a mixed-methods study on the impact of POS transactions on bank operations and customer satisfaction in selected deposit money banks in Bauchi Metropolis, Nigeria, combining surveys administered to customers and interviews with bank staff to explore both quantitative and qualitative dimensions. Their findings revealed that POS adoption facilitated faster transactions and reduced congestion in banking halls, which in turn enhanced customer satisfaction; however, persistent challenges such as network failures, high transaction charges, and fraud risks were identified as significant deterrents to positive customer experiences. While the study effectively highlighted operational benefits and challenges, it did not stratify the sample to capture variation in satisfaction across demographic groups, nor did it apply regression analysis to determine which specific factors exerted the strongest predictive effect on satisfaction outcomes. To address these shortcomings, the current study captures a broad range of customer perspectives across different banks and employs regression analysis to rigorously assess the relative contributions of transaction reliability, cost, and convenience to satisfaction among customers in a region with diverse levels of banking technology awareness.

Automated Teller Machine (ATM) and Customers Satisfaction

Olatokun and Igbinedion (2009) investigated the impact of ATM service quality on customer satisfaction in Nigerian banks by surveying 200 respondents across several commercial banks in Ibadan, employing structured questionnaires and descriptive statistics. The study found that ease of use, speed of transactions, security of ATM cards, and system reliability were the most critical factors influencing satisfaction, with 75% of respondents reporting that frequent network failures and cash shortages significantly reduced their trust in ATM services. However, the researchers primarily applied descriptive analysis without regression modeling to quantify the relative strength of each predictor and did not stratify customers by demographics, which limits understanding of how different segments perceive ATM services. To overcome these limitations, the present study in Gusau, Zamfara State, will uses stratified sampling technique across multiple deposit money banks and regression analysis to identify the ATM service factors that has the most effect on satisfaction for different customer groups in a region where infrastructural reliability and financial inclusion vary widely.

Adesina and Ayo (2010) examined ATM adoption and its effect on customer satisfaction among Nigerian bank customers, utilizing the Technology Acceptance Model (TAM) framework and surveying 250 respondents across Lagos. Their results showed that perceived usefulness and perceived ease of use strongly predicted customer satisfaction and intention to continue using ATMs, with perceived ease of use having a standardized beta coefficient of 0.64 in their regression analysis. While the study successfully integrated TAM constructs and regression techniques, it did not stratify its analysis by customer demographics such as age, education, or urban versus semi-urban settings, making it difficult to generalize findings to other regions with different infrastructural and socio-economic profiles. To address this gap, the present study uses stratified sampling to capture variations across customer segments and deposit money banks in Gusau and applies regression modeling to determine the effect of perceived usefulness, ease of use, and security on customers satisfaction in a less urbanized Nigerian context.

Ayo, Adewoye, and Oni (2010) explored the adoption and satisfaction levels of ATMs among Nigerian bank customers by surveying 400 respondents in Lagos and applying the Unified Theory of Acceptance and Use of Technology (UTAUT) framework along with descriptive and inferential statistics. The study found that performance expectancy and facilitating conditions were the most significant predictors of satisfaction and usage intention, with performance expectancy explaining 47% of the variance in satisfaction levels. Despite providing robust theoretical grounding and valuable insights, the study focused primarily on urban centers and did not stratify its sample or apply regression analysis to identify differences across demographic groups, limiting its applicability to less urbanized settings. To address this gap, the current research in Gusau, Zamfara State uses stratified sampling to ensure that rural, semi-urban, and urban customers are proportionately represented and applies regression techniques to identify the strongest predictors of ATM satisfaction within a context marked by infrastructural and literacy diversity.

Adewoye (2013) evaluated the impact of information and communication technology including ATMs on service delivery in Nigerian banks, using a sample of 180 customers and bank staff in Oyo State and applying descriptive statistics to analyze the data. The study concluded that ATMs significantly improved service convenience, transaction speed, and overall customer satisfaction, with over 80% of respondents indicating that ATMs reduced queuing time and improved access to funds. However, despite these important findings, the study did not employ regression analysis to measure the effect of each service factor individually and did not stratify the sample to identify variations in perceptions across different demographic groups. To address this limitation, the present study uses stratified sampling across selected deposit money banks and regression modeling to ascertain the effect of transaction speed, reliability, security, and convenience on customer satisfaction in a region with distinct infrastructural challenges.

Oyewole, Abba, El-Maude, and Gambo (2013) assessed electronic banking and ATM service quality in Nigerian banks by surveying 150 First Bank and United Bank for Africa customers in Maiduguri, using descriptive statistics and Chi-square analysis to evaluate factors such as transaction speed, security, accessibility, and reliability. Their findings indicated that accessibility and transaction speed were the most significant drivers of satisfaction, while security concerns were the most frequent cause of complaints among respondents. Nonetheless, the researchers did not perform regression analysis to estimate the strength of each factor's effect on satisfaction and did not segment respondents by demographic characteristics, which limits insights into subgroup differences. To fill this gap, this research in Gusauutilizes stratified sampling to include varied customer profiles and applies regression techniques to quantify which ATM attributes most strongly predict satisfaction across demographic and socio-economic segments in Gusau, Zamfara State.

This study hinges on Technology Acceptance Model (TAM). Davis (1989) was the first person to conceptualise this model which is grounded in the psychology research Theory of Reasoned Action (TRA). The TRA's hypothesis, states that individual behaviour is driven by behavioural intention. In other words, it asserts that a person's attitude towards a certain behaviour and their thoughts about that behaviour play a role in both the person's behaviour as well as their purpose to behave in a certain way. The behavioural intention of an individual is a result of his/her attitude towards the behaviour he/she attempting to do as well as the subjective norms that surround the performance of the action. Because of this, behaviour is the result of both attitudes and beliefs working together (Fishbein &Ajzen, 1975).Thus, TAM considers two behavioral beliefs: perceived usefulness (PU) and perceived ease of use (PEOU), which impact an individual's intention to use technology. Perceived usefulness refers to process expectancy, while perceived ease of use refers to outcome expectancy (Liaw, 2002).

3. METHODOLOGY

This study examines the relationship between Electronic Banking Services (Independent Variable) and Customer Satisfaction (Dependent Variable). The independent variable is measured through three proxies**:** Mobile Banking**,** Point of Sale (POS) Services**,** and Automated Teller Machine (ATM) Services**.**

These proxies were selected because they are the most widely adopted and influential channels in Nigeria's banking sector. Mobile Banking allows convenient, real-time transactions via smartphones, enhancing customer experience and service accessibility (Shaikh &Karjaluoto, 2015). POS Services facilitate cashless payments in retail settings, supporting faster transactions and contributing to Nigeria's cashless policy (Adewoye, 2013). ATM Services provide essential self-service functions such as withdrawals and balance inquiries, and are consistently linked to customer satisfaction and perceived reliability (Khan, 2010).

Their combined inclusion ensures a comprehensive understanding of the effect of electronic banking on customer satisfaction across multiple service touch points. This framework is justified by existing research showing that these channels are primary determinants of perceived service quality, trust, and loyalty in banking (Al-Hawari & Ward, 2006; Laukkanen, 2007). Accordingly, the conceptual model positions Electronic Banking Services (Mobile Banking, POS, ATM) as the predictor of Customer Satisfaction, which captures how customers evaluate their banking experience.

Electronic Banking Services (IV)

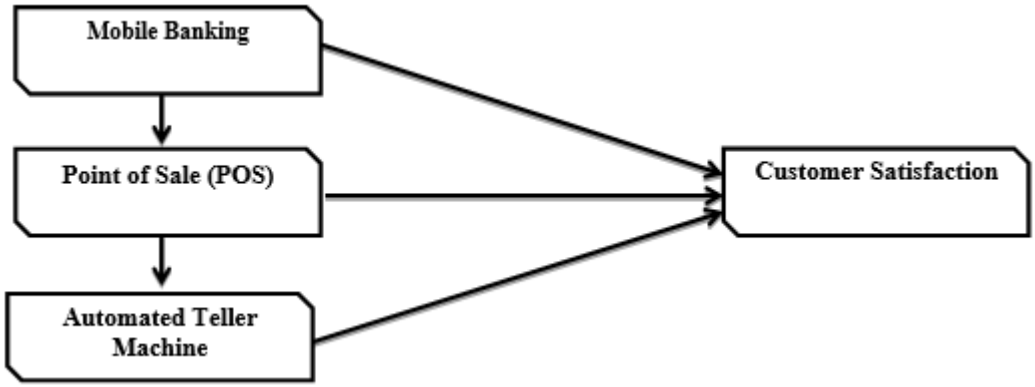

Figure 1: Research Model

This study adopts a quantitative research approach to investigate the research problem systematically and objectively. The target population comprises all customers of United Bank for Africa (UBA), Guaranty Trust Bank (GTBank), and Access Bank who utilize electronic banking services within Gusau Metropolis. The justification for choosing these banks is the fact that they are always at the fore of championing technological and electronic innovations in the banking industry. Additionally, the three banks were selected conveniently based on their prominence and customer base within the study area. However, the exact population size is unknown because Nigerian banks allow customers from other banks to use electronic banking platforms interchangeably via mobile devices, making it impossible to establish a precise sampling frame. To ensure adequate representation, a sample size of 384 respondents was determined using the Krejcie and Morgan (1970) table for an unknown (infinite) population, applying a 95% confidence level and a 5% margin of error.

The study employs a purposive sampling technique to select respondents who specifically use mobile devices to access electronic banking applications, aligning with the research objectives. Furthermore, self-administered structured questionnaire served as the primary instrument for data collection. The questionnaire was designed to capture information related to the study objectives and was organized into sections measured on a five-point Likert scale. To ensure validity, the instrument underwent pre-testing through expert review and pilot administration, while reliability was assessed using Cronbach's alpha coefficients.

Data analysis involved both descriptive and inferential statistical techniques**.** Specifically, multiple linear regression analysis was employed to test the study hypotheses and examine the influence of electronic banking services represented by mobile banking, point of sale services, and automated teller machine services on customer satisfaction – represented by Customer Satisfaction Score (CSAT) measured by customer experience, service quality and prompt issue resolution rated on a Likat scale of 1 to 5 from Strongly Agree to Strongly Disagree for this study. The analysis was conducted with the help of the Statistical Package for Social Sciences (SPSS) version 27 to ensure accuracy in the interpretation of results.

4. RESULTS

Out of the 384 copies of the questionnaire distributed, 350 were valid, representing a response rate of 91%. This response rate is deemed appropriate for analysis, as recommended by Hair, Black, Babin and Anderson (2010), who considered a response rate above 50% adequate for research purposes. Furthermore, Sekaran (2003) asserts that a response rate of 30% is sufficient for survey-based studies, which further validated the adequacy of the obtained response rate for this research.

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Table 1: Coefficients of Multiple Regression Analysis on Electronic Banking Service and Customer Satisfaction

Predictors Variables(IV)	**B**	**Beta**	**T**	**Sig**	**P-Value Threshold**	**Decision**
Mobile Banking	.673	.712	13.650	.000	0.05	Rejected
Point of Sale	.285	.305	4.532	.000		Rejected
Automated Teller Machine	.325	.412	5.352	.000		Rejected
a. Dependent Variable: Customer Satisfaction						

Table 1 presents the coefficients of the multiple regression assessing the effect of electronic banking service predictors on customer satisfaction in selected deposit money banks in Gusau, Zamfara State-Nigeria. The results indicate that Mobile Banking has the strongest and most significant positive effect on customer satisfaction ($\beta = 0.712$, $p = 0.000$), suggesting that improvements in mobile banking services substantially enhance customers' overall satisfaction levels. Similarly, Point of Sale (POS) services also exhibit a significant positive influence on customer satisfaction ($\beta = 0.305$, $p = 0.000$), indicating that reliable and accessible POS channels play an important role in satisfying customers' banking needs. All three predictors recorded p-values below the 0.05 significance threshold, leading to the rejection of the null hypotheses that electronic banking services have no significant effect on customer satisfaction. The regression coefficients further demonstrate that among the predictors, Mobile Banking contributes the highest standardized effect ($\beta = 0.712$), followed by ATM services and POS services, respectively.

The study found that mobile banking significantly influences customer satisfaction in Gusau Metropolis. Specifically, the result implies that the use of mobile banking services, such as fund transfers, bill payments, and balance inquiries, enhanced their convenience, reduced the need to visit bank branches physically, and increased their overall satisfaction with banking services. This finding aligns with the submission of Mermod and Savasci (2014) who found that mobile banking adoption was positively correlated with customer satisfaction because it offered accessibility and ease of use at any time and from any location. Similarly, Khan et al. (2015) reported that mobile banking significantly improved customer experience by reducing transaction costs and wait times. In the same vein, Laukkanen (2007) emphasized that the time-saving aspect of mobile banking was a critical factor enhancing customer satisfaction in the banking sector. Likewise, Ayo et al. (2016) in their study in Nigeria confirmed that the convenience and speed of mobile banking transactions substantially contributed to increased customer satisfaction.

Again, the study found that Point of Sale (POS) services significantly influence customer satisfaction in Gusau metropolis as it facilitated cashless payments, reduced the risks associated with carrying cash, and made transactions faster and more secured in retail outlets and other service points. This has led to higher perceived value and satisfaction among banking customers. This finding is consistent with the work of Adeoti and Oshotimehin (2012), who observed that POS terminals positively affected customers' perception of convenience and reliability of banking services. Agwu and Carter (2014) also established that the availability and reliability of POS infrastructure enhanced customer satisfaction by providing seamless payment experiences. Similarly, Oyewole et al. (2013) noted that POS adoption in Nigeria increased customer confidence in cashless transactions and contributed to better service satisfaction. In a related study, Auta (2010) emphasized that POS technology improved the efficiency of payment systems and promoted higher customer satisfaction in banking services.

Finally, the study found that automated teller machines (ATMs) significantly influence customer satisfaction in Gusau metropolis. This mean that ATMs provided 24-hour access to cash withdrawals, account inquiries, and other banking services, which increased convenience and reduced the time required to complete transactions in banking halls. This round-the-clock availability was a major factor driving their satisfaction. This result is in agreement with the findings of Joseph and Stone (2003), who noted that ATM services contributed greatly to customer satisfaction by offering accessibility and self-service capabilities. Similarly, Ramachandran and Chinchu (2012) reported that ATMs improved banking convenience and positively influenced customer satisfaction in the Indian banking sector. According to Adesina and Ayo (2010), the widespread adoption of ATM technology in Nigeria has enhanced customers' perception of banks' service quality. Additionally, Al-Hawari and Ward (2006) demonstrated that ATM reliability and ease of use were crucial determinants of customer satisfaction with electronic banking channels.

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5. CONCLUSIONS AND RECOMMENDATIONS

The study concludes that a robust mobile banking platforms, efficient ATM networks, and widespread POS service availability enhance customer satisfaction with electronic banking services. Based on the findings of the study, the following three recommendations are proposed:

i. Enhance Mobile Banking Functionality and Reliability: Since mobile banking significantly influences customer satisfaction in Gusau metropolis, deposit money bank managers should prioritize improving the performance, user interface, and reliability of their mobile applications. Reducing login errors, increasing transaction speed, and ensuring 24/7 accessibility will further boost customer satisfaction.

ii. Improve POS Network Coverage and Transaction Stability: Given the positive impact of POS on customer satisfaction, banks should expand POS deployment across more businesses and locations. Emphasis should be placed on resolving issues related to network failures, delayed receipts, and unsuccessful transactions to ensure a smoother customer experience.

iii. Ensure Consistent ATM Service Availability and Maintenance: As ATMs also significantly enhance customer satisfaction, deposit money bank in Nigeria should invest in routine maintenance, cash replenishment, and increasing ATM availability in underserved areas. Minimizing service outages and transaction failures will maintain customer confidence in ATM services.

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