EVALUATING THE EFFECTIVENESS OF DIGITAL IDENTITY SYSTEMS IN ENHANCING ACCESS TO PUBLIC SERVICES IN NIGERIA

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PSC2105369

DEPARTMENT OF COMPUTER SCIENCE

FACULTY OF COMPUTING

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BY

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DEPARTMENT OF COMPUTER SCIENCE,

FACULTY OF COMPUTING,

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NOVEMBER, 2025

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CERTIFICATION

This is to certify that this project work titled **"EVALUATING THE EFFECTIVENESS OF DIGITAL IDENTITY SYSTEMS IN ENHANCING ACCESS TO PUBLIC SERVICES IN NIGERIA"** was carried out by **OGBEIDE FAITH EBOSETALE** with Matriculation Number **PSC2105369** and submitted to the Department of Computer Science, Faculty of Computing, University of Benin, Benin City, under the supervision of **MR. I. E. OBAYAGBONA**.

MR. I. E. OBAYAGBONA
Project supervisor

Date

APPROVAL

This project work titled **"EVALUATING THE EFFECTIVENESS OF DIGITAL IDENTITY SYSTEMS IN ENHANCING ACCESS TO PUBLIC SERVICES IN NIGERIA"** by **OGBEIDE FAITH EBOSETALE** with Matriculation Number **PSC2105369** ha been approved as meeting the requirements for the award of Bachelor of Science (B.Sc.) Degree in Computer Science, Faculty of Computing, University of Benin, Benin City.

MR. I. E. OBAYAGBONA Project supervisor	**Date**
DR. ROSEMARY USIOBAIFO Head of Department	**Date**

DEDICATION

This project is dedicated to God Almighty for giving me the strength and wisdom to see it through to completion, and even throughout my stay in the University of Benin (UNIBEN). It is also dedicated to my parents, Mr. and Mrs. Ogbeide and my amazing siblings, for their love, support and guidance throughout my academic journey.

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ABSTRACT

This study examines the degree to which digital identity systems have enhanced access to public services in Nigeria. In recent years, initiatives such as the National Identification Number (NIN), Bank Verification Number (BVN), and digital voter registration platforms have been introduced to improve identification, reduce fraud, and streamline service delivery. Despite these developments, many Nigerians still experience delays, verification challenges, and limited access to essential services. This study, therefore, investigates the level of awareness, usage, benefits, and challenges associated with digital identity systems.

A quantitative research design was adopted, and data were collected using a structured questionnaire administered to 100 respondents across different sectors, including banking, education, health, and government services. Data was analyzed using descriptive statistics such as frequency and percentage distribution. The findings revealed that a majority of respondents have registered for at least one digital identity and frequently use it for accessing services such as account verification, SIM registration, and online transactions. The results further show that digital identity has improved service delivery by reducing manual processes, enhancing security, and increasing convenience. However, challenges such as network failures, long enrollment queues, data errors, and system downtime still limit efficiency.

The study concludes that digital identity systems play a significant role in improving access to public services, but greater investment in infrastructure, public awareness, and system integration is required. It recommends improved government funding, periodic system upgrades, and better data management policies to enhance effectiveness and public trust.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

In recent years, digital identity systems have emerged as vital components of modern governance, enabling more efficient and inclusive access to public services. These systems are designed to provide a secure and verifiable means of identifying individuals electronically, thereby facilitating their engagement with various governmental and non-governmental services (Gelb & Clark, 2013). According to the World Bank (2018), over 100 million Nigerians lacked foundational identity documents as of 2017. This lack of a unified and effective digital identity system also poses security risks and inefficiencies in service delivery, where a significant portion of the population lacks formal identification. Digital identity has been proposed as a tool to bridge this gap and promote inclusion. These systems offer a reliable means of verifying identity electronically, which is crucial for accessing services such as healthcare, education, social welfare, and financial systems.

Identity plays a vital role in how individuals participate in society, especially when it comes to accessing services provided by the government. Currently, many countries have turned to digital identity systems to make it easier, faster, and more secure for citizens to prove who they are. These systems allow individuals to confirm their identity using digital means such as biometrics, mobile phone numbers, or unique identification numbers. In Nigeria, the government has introduced systems like the National Identification Number (NIN), Bank Verification Number (BVN), Permanent Voter Card (PVC), and National e-ID cards to improve access to public services. These initiatives are aimed at helping citizens gain access to essential services, reduce fraud, improve governance, and build a more inclusive digital economy. Despite the progress made, there are still major concerns about the effectiveness of these systems and when people cannot prove their identity, they are often excluded from

benefits and opportunities that could improve their quality of life. This creates a gap between those who are digitally included and those who are not.

However, a large number of Nigerians, particularly those in rural areas or with low levels of education, still face serious challenges in obtaining or using digital identification making it difficult to access services like healthcare, education, banking, and welfare support. A major reason for this is the lack of a valid and recognized form of identity which could be as a result of poor network coverage, limited access to registration centers, long delays, and lack of awareness have limited the success of these efforts.

Understanding how digital identity systems are working in Nigeria is important to know whether they are helping to improve access to these services or not. Furthermore, there is a need to evaluate whether digital identity systems in Nigeria are helping to reduce corruption, promote efficiency, and reach the people who need public services the most. While the idea behind digital identity is sound, the real question is whether these systems are working as intended on the ground.

This study, therefore, seeks to explore the actual impact of digital identity systems in Nigeria. It will look at how they have improved or failed to improve access to public services, and what can be done to make them more effective and inclusive, and what challenges may still exist.

1.2 STATEMENT OF PROBLEM

One of the major issues in Nigeria is that many people are unable to access public services due to the absence of reliable identification systems even though digital identity platforms like National Identification Number (NIN) and Bank Verification Number (BVN) have been introduced. However, despite the rollout of these systems, many people are still excluded from services due to problems such as poor network infrastructure, low digital awareness, slow registration processes, and lack of integration between government platforms. Some

individuals have registered but are unable to use their digital identity effectively due to system failures or outdated records. While digital ID systems have the potential to reduce exclusion, their effectiveness in ensuring equitable service delivery is still uncertain (UNDP Nigeria, 2021).

These problems make it hard for digital identity systems to work as planned. In some cases, people may register for these systems but still face difficulties when trying to use public services. One of the major reasons for this is the lack of a valid and verifiable means of identification. To address this issue, the Nigerian government introduced digital identity systems to help identify citizens and improve service delivery.

As a result, it is unclear whether digital identity systems in Nigeria are truly solving the problem they were created for. This study seeks to assess how effective these systems have been and to identify what challenges remain in using them to improve access to public services.

1.3 AIM AND OBJECTIVES

The main aim of this study is to assess how effective digital identity systems are in improving access to public services in Nigeria. The objectives include:

1. To assess the level of awareness and adoption of digital identity systems such as the National Identification Number (NIN) and Bank Verification Number (BVN) among Nigerian citizens etc.
2. To examine the impact of digital identity systems on access to public services such as healthcare, education, social welfare, and banking.
3. To identify the main problems citizen's face when using digital identity systems.
4. To suggest practical recommendations for improving the effectiveness, accessibility, and inclusiveness of digital identity systems in Nigeria.

1.4 SCOPE OF RESEARCH

The study will focus on the use of digital identity systems in Nigeria, especially the NIN and BVN. It will examine their effect on access to services such as healthcare, education, banking, and welfare. Additionally, it will investigate the challenges encountered by users during registration and verification processes, as well as areas where improvements can be made.

1.5 RESEARCH QUESTIONS FOR THE STUDY

1. How familiar are respondents with digital identity systems in Nigeria?
2. Which digital identity credentials are most commonly used among respondents (e.g., NIN, BVN, voter's card, etc.)?
3. How frequently do respondents use digital identity systems to access public services?
4. Which public services do respondents most commonly access using digital identity systems?
5. What challenges do respondents encounter when using digital identity systems in Nigeria?
6. How satisfied are respondents with the performance of digital identity systems in enhancing access to public services?

1.6 RESEARCH SIGNIFICANCE

This research is important because it will help understand whether digital identity systems are truly making a difference in how Nigerians access public services. The findings may be helpful for:

1. Government agencies, to improve identity systems and reach more citizens.
2. Policy makers**,** to design better identity and service delivery strategies.
3. Public service workers**,** to better understand user challenges and improve their systems.
4. Students and researchers**,** as it contributes knowledge to the field of digital governance and public administration.

1.7 DEFINITION OF KEY TERMS

1. Digital Identity System: A digital identity system refers to a technology-based method used to identify and verify individuals electronically. It often uses biometric data (such as fingerprints or facial recognition), digital numbers (like NIN or BVN), or mobile-based platforms to confirm a person's identity for accessing services.

2. Public Services: Public services refer to essential services provided by the government for the benefit of its citizens. These include healthcare, education, transportation, banking access, social welfare, and other government-administered programs.

3. Service Delivery: This refers to the process through which public services are provided to the people. It includes the systems, staff, and resources used to ensure that citizens receive the services they are entitled to in a timely and efficient manner.

4. Effectiveness: Effectiveness in this context means the degree to which digital identity systems are achieving their intended goals, such as improving access to services, reducing fraud, increasing transparency, and making it easier for citizens to engage with government programs.

5. Access: Access refers to the ability of citizens to reach, use, and benefit from public services they are entitled to, especially through the use of digital identification.

CHAPTER TWO

LITERATURE REVIEW

This chapter presents a review of existing literature relevant to digital identity systems and their impact on public service delivery. It explores conceptual frameworks, previous studies, key theories, and research gaps related to identity management in Nigeria and globally. The goal is to understand the extent to which digital identity can improve service accessibility and how it has been implemented in various contexts.

2.1 CONCEPTUAL REVIEW

2.1.1 DIGITAL IDENTITY

Digital identity is the electronic representation of an individual, organization, or device used to verify and authenticate access to digital services, enabling authentication in online and electronic transactions. It includes a combination of personal data attributes such as names, dates of birth, photographs, biometric details (like fingerprints or facial scans), and unique identifiers like usernames, email addresses, or digital ID numbers used to verify individuals electronically. According to the World Bank (2019), a foundational digital ID is intended to provide legal identification for the population and is critical for accessing services such as healthcare, education, and financial inclusion. These elements collectively form a virtual identity that enables individuals to be recognized and authenticated within digital systems. Unlike physical IDs, digital identity systems enable secure and remote authentication for accessing services, making them essential for modern governance and service delivery. In Nigeria, digital identity is central to government strategies for reducing fraud, improving service efficiency, and promoting inclusion.

In today's increasingly digital world, traditional means of identification such as physical ID cards, passports, and birth certificates are often insufficient for accessing online or electronically delivered services. Digital identity serves as a secure and scalable solution that

enables individuals to prove their identity remotely, eliminating the need for physical interaction. This innovation is especially relevant for governments, financial institutions, healthcare systems, and educational bodies that require accurate identity verification to deliver services effectively.

2.1.2 KEY DIGITAL IDENTITY SYSTEMS USED IN NIGERIA

1. **National Identity Number (NIN):** This digital identity system used in Nigeria was officially introduced with the establishment of the National Identity Management Commission (NIMC) in 2007**,** through the NIMC Act No. 23 of 2007**.** The current digital identity framework officially began in 2007 with the formation of NIMC, and the actual registration of citizens through digital means started in 2012. It serves as a unique identifier for all Nigerian citizens and legal residents. It uses biometric data (fingerprints and facial image), and demographic data (name, birthdate, etc.) for registration. The National Identification Number (NIN) consists of 11 non-intelligible digits randomly chosen and assigned to an individual after enrolment in the National Identity Database (NIDB). Use cases include SIM registration, passport application, government services, and financial transactions.

Figure 1*: NIN slip, card, and mobile app*

2. **Bank Verification Number (BVN):** The Bank Verification Number (BVN) was officially launched in February 2014 by the Central Bank of Nigeria (CBN) in collaboration with the Bankers' Committee. The BVN initiative, introduced in 2014, was a major milestone in Nigeria's efforts to secure financial transactions and prevent identity fraud (Central Bank of Nigeria, 2015).

   The BVN was introduced to uniquely identify every customer across all banks in Nigeria and to curb fraud, identity theft, and multiple account manipulation. It captures biometric data (fingerprints and facial image) and is linked to bank accounts. On October 31, 2015**,** BVN enrolment was made mandatory, and any customer without it was restricted from operating their bank account. BVN is one of the most widely adopted digital identity tools in Nigeria's financial sector. It is required for loans, account opening, and mobile banking. The government is working to harmonize BVN with NIN as part of its digital identity integration plan.

3. **Permanent Voter's Card (PVC):** The Permanent Voter's Card (PVC) was introduced by the Independent National Electoral Commission (INEC) in 2011, ahead of the 2015 general elections. The PVC was designed to replace the temporary voter's card issued during previous elections and to combat electoral fraud, ensuring only registered and verified voters could vote.

   The PVC contains: biometric data (fingerprints and facial recognition), embedded chip technology, voter's name, age, gender, and polling unit information, and it works with smart card readers to authenticate voters with their voter identification number at polling stations during elections. Nigeria has over 90 million registered voters as of the 2023 elections.

***Figure 2**: Permanent voter's card*

4. **Driver's License:** The driver's license system in Nigeria has evolved significantly over the decades. Initially introduced during the colonial era, driver's licenses were issued at the state level, often without a standardized format or centralized database. This decentralized approach persisted for many years, resulting in a system that was vulnerable to forgery, duplication, and poor verification processes. The major shift came in 1988 with the establishment of the Federal Road Safety Corps (FRSC) through Decree No. 45, which later became the FRSC Act Cap 141 of 2007 (the Nigerian law that established the Federal Road Safety Commission (FRSC) as the lead agency for road safety management, traffic regulation, and driver licensing in Nigeria). The FRSC was tasked with regulating road safety and standardizing the issuance of driver's licenses across the country. By 1990, it officially assumed responsibility for the centralized management of the licensing system.

   A major modernization phase occurred between 2006 and 2012 when the FRSC introduced a biometric, smart-card-based driver's license that incorporated fingerprint

capture, digital photographs, and machine-readable security features. This reform aimed to enhance data integrity, eliminate fraud, and harmonize the licensing process with global standards. Today, the Nigerian driver's license is not only a requirement for legal driving but also functions as a widely accepted form of identification across public and private sectors. The license is typically valid for either three or five years and is often linked to other identity databases such as the National Identity Number (NIN) for verification and authentication purposes (Federal Road Safety Corps, 2013).

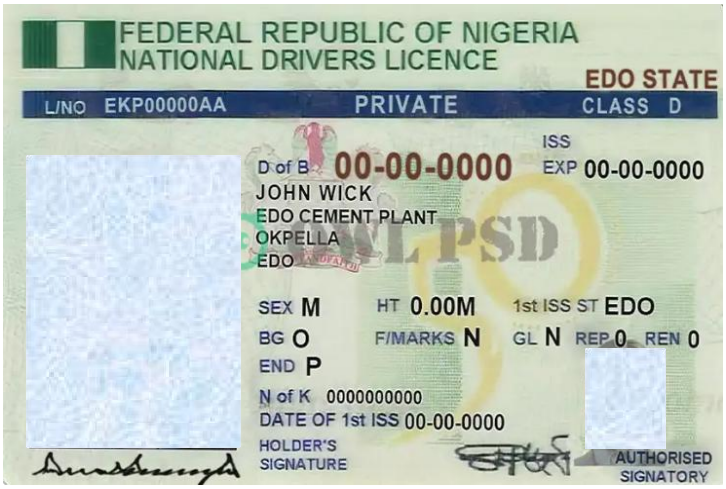

***Figure 3**: Driver's license*

5. **International Passport:** The Nigerian international passport is an official travel document issued by the Nigeria Immigration Service (NIS) under the supervision of the Ministry of Interior. It serves both as a means of identification and a travel permit for Nigerian citizens intending to travel outside the country. The modern biometric passport was introduced in 2007, aligning with the standards of the International Civil Aviation Organization (ICAO). It contains personal data, biometric features (including fingerprints and digital photographs), and a machine-readable zone, which enhances its security and global acceptance.

   There are different categories of Nigerian passports, including the Standard Passport (for ordinary citizens), the Official Passport (for government officials), and the Diplomatic

Passport (for diplomats and high-ranking officials). In 2020, Nigeria launched the enhanced e-passport**,** which offers improved security features and longer validity options (five or ten years). The passport is also being linked with the National Identity Number (NIN) as part of the country's digital identity integration strategy.

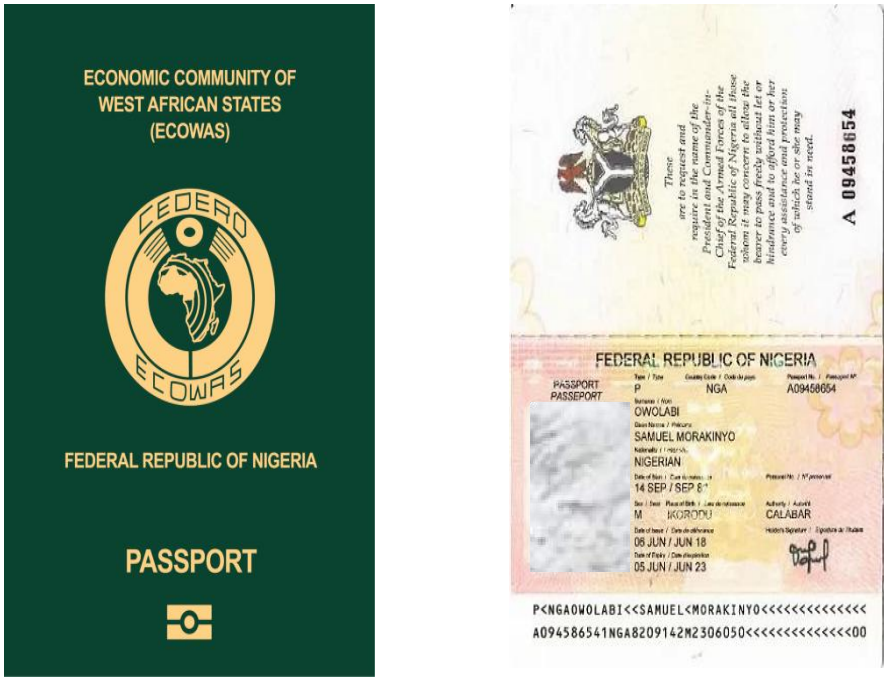

Figure 4*: International passport*

6. **Tax Identification Number (TIN):** The Tax Identification Number (TIN) is a unique number assigned to individuals and businesses in Nigeria for tax purposes. It is issued by the Federal Inland Revenue Service (FIRS) and is used to track taxpayers' financial activities, ensure compliance with tax obligations, and improve revenue collection. The TIN system was introduced in 2008 as part of the government's effort to modernize the tax administration process and formalize the economy.

   Each TIN is linked to either a personal or corporate profile and is now integrated with the National Identity Number (NIN) and the Corporate Affairs Commission (CAC**)** database. The TIN is mandatory for opening corporate bank accounts, applying for government

contracts, and engaging in official financial transactions. It plays a key role in Nigeria's digital identity ecosystem by helping to uniquely identify taxpayers and reduce tax evasion.

2.1.3 COMPONENTS OF DIGITAL IDENTITY

1. **Identifiers:** Identifiers are unique data elements that distinguish one individual from another within a system. They serve as the foundation of digital identity because they ensure that no two individuals are confused or duplicated in records. Identifiers must be unique, consistent, and permanent, ensuring long-term traceability while preventing duplication and impersonation (World Bank, 2021). Examples include: National Identification Number (NIN), Bank Verification Number (BVN), SIM Registration Numbers, etc.

2. **Attributes:** Attributes are descriptive information linked to an identifier. In Nigeria, biometric capture has become a central part of digital identity systems because it strengthens the accuracy of identification, especially in eliminating "ghost" identities in electoral rolls, pension schemes, or subsidy programs (NIMC, 2023).

   They provide context about the individual and are often categorized into biographic and biometric data:

   - **Biographic attributes:** Name, gender, date of birth, nationality, address, and occupation.
   - **Biometric attributes:** Physical and biological characteristics such as fingerprints, facial recognition, iris scans, and voice patterns.

3. **Credentials:** Credentials are the evidence or proof presented by an individual to assert ownership of an identity. They link the user to prove the identifier and attributes securely. Strong credential systems must strike a balance between security and usability. For

instance, while multi-factor authentication enhances security, it should not exclude less digitally literate populations. Credentials include:

- **Physical credentials:** National ID card, driver's license, or international passport.
- **Digital credentials:** PINs, passwords, smart cards, OTPs (One-Time Passwords), or cryptographic keys.
- **Biometric credentials:** Fingerprint verification or facial recognition used for authentication at ATMs or service points.

4. **Authentication Mechanisms:** Authentication mechanisms verify that a person attempting to use an identity is indeed the rightful owner. They are critical in preventing fraud and unauthorized access. Authentication Mechanisms include:

   - **Single-factor authentication (SFA):** Relies on one proof, such as a password.
   - **Two-factor authentication (2FA):** Combines two proofs, such as a password and a fingerprint.
   - **Multi-factor authentication (MFA):** Uses a combination of what the user knows (PIN), what the user has (smart card/phone), and what the user is (biometrics).

   In Nigeria, MFA is increasingly used in e-banking, SIM registration, and government portals to improve trust and reduce fraud risks (Central Bank of Nigeria, 2022).

5. **Infrastructure:** Infrastructure refers to the technological backbone that supports digital identity systems. This includes hardware, software, databases, servers, and networks that store and process identity data. Key infrastructure elements include:

   - **Databases and Registries:** Centralized systems like the National Identity Database (NIDB).
   - **Networks:** Connectivity platforms enabling interoperability between agencies.

- **APIs and Middleware:** For integration across service providers (e.g., linking NIN with BVN).
- **Cybersecurity Protocols:** Firewalls, encryption, and intrusion detection systems to protect sensitive data.

6. **Governance and Legal Framework:** A reliable digital identity system requires institutional, legal, and regulatory frameworks that define:

   - Who manages the system (e.g., NIMC in Nigeria).
   - Standards for data collection, sharing, and interoperability.
   - Safeguards for privacy, consent, and redress mechanisms.
   - Laws against misuse, identity theft, or data exploitation.

   For instance, Nigeria's National Identity Management Commission Act (2007) provides the legal basis for establishing and managing the NIN system, though privacy advocates argue for stronger data protection and accountability mechanisms (Paradigm Initiative, 2022).

7. **User Experience and Accessibility:** Although often overlooked, the usability and accessibility of digital identity systems determine their adoption and effectiveness. Systems must be simple to use, even for less digitally literate populations; enrollment points must be geographically accessible, especially in rural and underserved communities and interfaces must support multiple languages and formats (e.g., text-based, biometric, voice recognition). If systems are difficult to use, citizens may be excluded, undermining the goal of inclusivity (Martin & Taylor, 2020).

2.1.4 TYPES OF DIGITAL IDENTITY MODELS

1. **Centralized Identity Model:** A centralized identity model refers to a digital identity framework in which a single body, commonly a government institution or, in some cases, a

large organization, oversees the issuance, storage, administration, and validation of all digital identities within the system. This model represents the earliest and most commonly adopted approach, particularly in national identification schemes. It also simplifies verification and administration, but can pose single-point-of-failure and privacy risks.

Under this structure, every individual's information is maintained in one central registry or database, which serves as the definitive reference point for identification and verification (World Bank, 2021). A good example of a centralized identity model used in Nigeria is the National Identification Number (NIN) system managed by the National Identity Management Commission (NIMC). Where every Nigerian is expected to register once and receive a unique number and this number is then used across different services (banking, telecom, government programs).

2. **Federated Identity Model:** A Federated Identity Model is a digital identity framework in which responsibility for issuing and managing identities is distributed across several trusted organizations, often referred to as identity providers *(*IdPs*)*. Under this arrangement, credentials created by one identity provider can be recognized and accepted by other independent platforms, agencies, or services within the federation. This eliminates the need for users to maintain multiple accounts across different systems, allowing them to access a wide range of services with a single set of credentials (Curry & Coretti, 2020).

   This model functions based on mutual trust agreements between organizations and relies on globally recognized interoperability standards, including Security Assertion Markup Language (SAML), OAuth 2.0, and OpenID Connect, to securely exchange authentication and authorization information between systems. These technical standards ensure that identity information can be verified across different entities without requiring every service provider to create and store its own user database (Mahalle et al., 2021).

The federated approach is especially relevant in contexts where users frequently interact with multiple service providers, such as in banking, telecommunications, education, or government e-services. For example, in Nigeria, the Bank Verification Number (BVN) issued by commercial banks serves as a federated identity that can be used across all financial institutions regulated by the Central Bank of Nigeria. Similarly, SIM card registration conducted by various mobile operators functions within a federated structure, since the registration data is centrally verified by the Nigerian Communications Commission (NCC).

3. **Decentralized Identity Model (Self-Sovereign Identity, SSI):** The Decentralized Identity Model, commonly referred to as Self-Sovereign Identity (SSI), is a digital identity approach that grants individuals complete authority over their personal identity information. Unlike centralized or federated models, where data is controlled by governments or institutional bodies, the decentralized framework removes dependence on a single managing entity. Instead, identity credentials are maintained through emerging technologies such as blockchain, distributed ledgers, and advanced cryptographic protocols (Allen, 2021; W3C, 2022).

   Within this system, users create and securely store their credentials, such as identification documents, certificates, or health records, in a digital wallet located on their own devices. Verification processes rely on cryptographic techniques (e.g, a private key or wallet addresses, which act as the ultimate proof of control over the assets associated with that address), including verifiable credentials and public–private key cryptography, which allow individuals to disclose only the specific information required for authentication. For instance, rather than presenting a complete identity card to confirm their age, a user can provide a cryptographic proof demonstrating that they are above 18 without exposing additional personal details (Toth & Anderson-Priddy, 2021).

2.1.5 PUBLIC SERVICES IN NIGERIA

Public services in Nigeria encompass essential services provided by government institutions at the federal, state, and local levels to meet the basic needs of citizens, such as healthcare, education, banking, social welfare, and national security. Access to these services is often hindered by a lack of reliable identity verification, especially among underserved and rural populations. This has led to inefficiencies, corruption, and exclusion of vulnerable groups. These services are typically funded through public revenue and are meant to promote national development, protect public welfare, and ensure social and economic inclusion.

In Nigeria, access to public services is a major development challenge, especially in rural and underserved communities. Many citizens face barriers such as poor infrastructure, inadequate staffing, corruption, and, most critically, a lack of proper identity documentation. These issues make it difficult for people to access services they are entitled to and limit the government's ability to plan, deliver, and monitor service provision effectively.

2.1.6 KEY AREAS OF PUBLIC SERVICES IMPACTED BY DIGITAL IDENTITY

1. **Healthcare Services:** In Nigeria, identification is frequently necessary to access healthcare, particularly in tertiary and federal hospitals where digital systems and identity verification are increasingly in use. Possessing a valid National Identification Number (NIN) allows individuals to register for national health insurance schemes and monitor their medical records. Nevertheless, people living in rural or informal areas who lack digital identification often struggle to obtain affordable healthcare services (UNDP Nigeria, 2023). Public healthcare in Nigeria includes hospitals, clinics, vaccination programs, maternal care, and disease control efforts managed by the Federal Ministry of Health and state health agencies. However, access to healthcare remains unequal, with rural populations often underserved.

2. **Education Services:** Many Nigerian tertiary institutions now require candidates to provide their NIN or JAMB-linked identification for admission and registration purposes. Digital ID helps in tracking student data, disbursing scholarships, and preventing impersonation or fraud during exams. However, students in underserved areas who lack NIN registration may be denied enrolment or delayed in accessing these services (NIMC, 2024). Nigeria's public education system includes primary, secondary, and tertiary education. Despite efforts to promote free and compulsory basic education, many children remain out of school due to poor infrastructure, teacher shortages, or lack of identification required for registration.

3. **Financial and Banking Services:** The adoption of digital identity systems in Nigeria's financial and banking sectors has greatly reshaped how people access and utilize financial services. These systems facilitate the secure identification of individuals during processes such as opening bank accounts, conducting transactions, applying for credit, and enrolling in financial inclusion initiatives. By doing so, they help tackle issues like identity theft, money laundering, and limited access to banking.

   A key example of this in Nigeria is the Bank Verification Number (BVN). The BVN collects details and connects them to a customer’s accounts across multiple banks. This ensures that each person has a unique and verifiable identity within the financial system (CBN, 2020).

   Digital identity systems also make financial services more accessible, especially for individuals without previous access to formal banking. Public financial services include access to government-backed loans, grants, and social benefit schemes. Without a verifiable identity, citizens may be excluded from banking and financial programs, including government cash transfers and subsidy initiatives.

The use of digital identity has also strengthened compliance with regulations like Know Your Customer (KYC) and Anti-Money Laundering (AML) by making it easier to verify customers' identities.

4. **Social Welfare and Protection:** Social welfare and protection schemes aim to assist vulnerable members of society by offering support such as pensions, unemployment support, poverty reduction programs like conditional cash transfers, financial aid, food relief, medical services, and other vital resources. In countries like Nigeria, the success of these programs often depends on the ability to correctly identify and authenticate the individuals who are entitled to benefit from them, and digital identity systems have become instrumental in making this possible.

   These identity systems help governments ensure that assistance reaches only the right people, reducing instances of fraud and double registration. By utilizing biometric verification and centralized identity records, authorities can confirm recipients' identities with accuracy and prevent identity misuse or impersonation (World Bank, 2021).

   The outbreak of COVID-19 further exposed the weaknesses of Nigeria's identity infrastructure, as many people, especially in remote communities, were left out of emergency relief efforts due to their absence from official identity databases (GSMA, 2022). This underscored the urgent need for a reliable and inclusive identity framework to facilitate social assistance delivery.

   As a result, programs like the National Social Safety Nets Programme (NASSP) have begun to prioritize the use of digital identity, especially the National Identification Number (NIN), for the registration and authentication of beneficiaries. This integration enhances the fairness, efficiency, and traceability of social welfare distribution (NIMC, 2023). Through such systems, the government can better monitor the reach and outcomes of its interventions and make informed decisions for future support strategies.

5. **Civil Registration and Vital Statistics (CRVS):** This involves the official recording of life events like births, deaths, marriages, and divorces. It plays a vital role in national planning, legal identity, and access to services. Digital identity systems enhance CRVS by linking vital records to unique identifiers, facilitating the tracking of individuals throughout their lives (World Bank, 2019).

   In Nigeria, integrating birth registration with the National Identification Number (NIN) helps children gain early access to services like healthcare and education (NIMC, 2023). Recording deaths also ensures accurate population data and prevents fraud in social programs. Digital identity also reduces manual work, enables real-time data sharing, and improves service delivery and policy planning (UN DESA, 2021). However, issues like low infrastructure, weak legal systems, and limited awareness must be addressed to make CRVS more effective and inclusive.

6. **Security and Public Safety:** Digital identity systems contribute significantly to improving national security and public safety by offering reliable methods for verifying individuals' identities. With the use of biometrics and centralized databases, security agencies can more effectively identify individuals, track criminal activity, and reduce cases of impersonation or identity-related crimes (World Bank, 2021).

   In Nigeria, integrating identity systems like the National Identification Number (NIN) and Bank Verification Number (BVN) into security operations has helped in tackling issues such as cybercrime, kidnapping, and terrorism financing. These systems assist in verifying identities during investigations and controlling access at borders and voting centers (NIMC, 2023).

   Additionally, digital identity makes it easier for authorities to monitor people's movements and ensure that access to restricted areas or sensitive information is limited

to authorized individuals, unlike traditional paper-based identification, which can be easily forged.

2.2 THEORETICAL FRAMEWORK

The theoretical framework provides the academic foundation upon which this study is anchored, outlining the key theories that shed light on how digital identity systems are adopted, implemented, and utilized to improve access to public services in Nigeria. The study draws on three main theories: the Technology Acceptance Model (TAM), the Diffusion of Innovation (DOI) Theory, and the Institutional Theory.

2.2.1 TECHNOLOGY ACCEPTANCE MODEL (TAM)

The Technology Acceptance Model (TAM), introduced by Davis (1989), explains the factors influencing users acceptance of new technologies. It emphasizes two main determinants: Perceived Usefulness (PU) - the extent to which individuals believe a system will improve their performance and Perceived Ease of Use (PEOU) - the belief that the system is straightforward and requires minimal effort.

Applied to Nigeria's digital identity context, TAM implies that citizens are more inclined to adopt technologies such as NIN registration or BVN when they view them as beneficial for accessing public services and when the enrollment and verification processes are simple and convenient (Venkatesh & Bala, 2008).

2.2.2 DIFFUSION OF INNOVATION (DOI) THEORY

The Diffusion of Innovation (DOI) Theory, proposed by Rogers (2003), explains how new technologies or ideas spread within a social system over time. Adoption is influenced by factors such as relative advantage, compatibility with existing practices, complexity, trialability, and visibility of results.

In relation to Nigeria's digital identity systems, DOI highlights differences in how innovations like biometrics, mobile authentication, and digital wallets are embraced across

social groups. For example, adoption may be slower in rural areas due to infrastructure gaps, low digital literacy, or cultural barriers. This perspective helps policymakers understand how to design inclusive identity programs that encourage widespread adoption (Rogers, 2003).

2.2.3 INSTITUTIONAL THEORY:

Institutional Theory focuses on how rules, norms, and social expectations shape organizational behavior (Scott, 2004). It argues that institutions often adopt certain practices not only for efficiency but also to gain legitimacy and align with regulatory or societal pressures.

In Nigeria, this theory explains government initiatives such as the National Identity Management System (NIMS) and the Bank Verification Number (BVN). These programs are driven not only by efficiency goals but also by the need to comply with global governance norms, improve transparency, and meet international development commitments like the United Nations' Sustainable Development Goal (SDG) 16.9, which promotes legal identity for all (United Nations, 2015).

2.3 EMPIRICAL REVIEW

Empirical evidence highlights both the promise and challenges of digital identity systems. Globally, programs such as India's Aadhaar have demonstrated how digital IDs can expand access to welfare and financial services, though concerns of exclusion remain (World Bank, 2018; Khera, 2017). In Africa, adoption has been uneven, with progress in countries like Nigeria but also persistent challenges tied to weak infrastructure and regulatory gaps (Makulilo, 2020; Mhlanga, 2021).

Nigeria's experience provides more direct insights. Studies show that the Bank Verification Number (BVN) has strengthened trust, reduced fraud, and enhanced financial inclusion (Abubakar & Bala, 2019). The National Identity Management System (NIMS) was designed to streamline service delivery but has faced duplication and weak inter-agency coordination

(Okunola, Rowley & Johnson, 2017). More recent analyses reveal that while the National Identification Number (NIN) and SIM registration have supported surveillance and access to services, bureaucratic delays, low awareness, and limited infrastructure continue to hinder effectiveness (Oluwatobi & Akinola, 2021; Igbinedion & Omoyibo, 2022).

Administrative data underscores the scale of progress. By June 2025, over 121 million Nigerians had been issued NINs, with the World Bank–supported ID4D program helping to prioritize poor and vulnerable households. BVN enrollment exceeded 66 million, strengthening Know Your Customer (KYC) processes and broadening access to formal financial services (World Bank, 2025). However, exclusion risks remain, as access is shaped by mobile coverage, affordability, and digital literacy, leaving marginalized groups vulnerable without alternatives such as offline or agent-led enrollment (GSMA, 2022).

In summary, Nigeria's digital identity ecosystem demonstrates that combining foundational ID (NIN) with financial rails (BVN) creates strong preconditions for efficient service delivery. Yet challenges of inclusion, infrastructure, and trust persist, while rigorous Nigeria-specific impact studies remain limited. This underscores the need for inclusive design and stronger evaluations to fully realize the potential of digital identity in enhancing access to public services.

2.4 SUMMARY OF LITERATURE REVIEW AND RESEARCH GAP

This chapter reviewed existing literature on digital identity systems with a focus on their role in enhancing access to public services.

Within Nigeria, empirical studies highlight notable progress. The National Identification Number (NIN) and Bank Verification Number (BVN) have expanded coverage, improved Know Your Customer (KYC) compliance, and enhanced access to banking and public services. Research also indicates that these systems have reduced fraud and supported

targeted welfare distribution. However, challenges remain significant, including duplication of functions across agencies, limited awareness, infrastructural constraints, digital literacy gaps, and weak regulatory enforcement. Recent administrative reports further document rapid enrollment growth, yet rigorous Nigeria-specific evaluations of digital identity's direct impact on service delivery outcomes are still scarce.

From the reviewed literature, key gaps emerge. First, while many studies document the expansion of NIN and BVN, few evaluate their effectiveness in enhancing citizen access to public services. Second, most available evidence relies on administrative data rather than systematic impact assessments. Third, there is limited research addressing inclusion dynamics, particularly how vulnerable groups such as rural residents, women, and the poor experience digital identity systems.

This study therefore seeks to fill these gaps by evaluating the effectiveness of Nigeria's digital identity systems in improving access to public services. By focusing on both opportunities and challenges, the research contributes context-specific insights that can guide policy reforms and the design of more inclusive digital identity ecosystems in Nigeria.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter presents the research methodology employed in the study. It outlines the research design, population, sampling techniques, data collection methods, and data analysis procedures. The methodology was structured to ensure objectivity and reliability in evaluating the effectiveness of digital identity systems in enhancing access to public services in Nigeria.

3.2 RESEARCH DESIGN

The study adopts a quantitative survey research design. This design was considered appropriate because it allows the collection of numerical data from a large sample, enabling the researcher to identify patterns, relationships, and trends regarding the use of digital identity systems such as the National Identification Number (NIN) and Bank Verification Number (BVN) etc., in accessing public services.

3.3 POPULATION OF THE STUDY

This population was chosen because it directly reflects the users of digital identity systems in Nigeria. The population figure for the study was 100 respondents. The target population consists of:

1. Nigerian citizens who possess a digital identity system.
2. Service users accessing public services such as banking, telecommunications, education, etc.

3.4 SAMPLE SIZE AND SAMPLING TECHNIQUE

Due to the large population of Nigeria, the study focuses on a manageable sample. 100 respondents will be selected from different states to ensure diversity in age, gender, education, and location.

3.5 METHOD OF DATA ANALYSIS

Data collected were analyzed using descriptive statistics, including frequency counts, percentages, and cumulative percentages. The results were presented in tables and interpreted based on the research questions.

3.6 RESEARCH INSTRUMENT

The instrument used for the collection of data for this research was a questionnaire. The questionnaire also had sections A to E, with relevant questions that will assist in understanding the relationship between the variable factors in the hypothesis and in the eventual analysis.

3.7 VALIDATION OF THE INSTRUMENT

To ensure the content and face validity of the instrument, the draft copy of the questionnaire was given to the project supervisor for proper modification. Based on the supervisor's corrections, the final draft was prepared and used for data collection.

3.8 ETHICAL CONSIDERATIONS

The researcher obtained informed consent from all participants. Respondents were assured of the confidentiality of their responses and informed that participation was voluntary.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

The presentation, analysis, and interpretation of the data acquired during the course of this study are the main topics of this chapter. The quantity of completed and returned questionnaire copies by the respondents serves as the basis for the statistics. The analysis of the data are displayed in tables.

4.2 DATA PRESENTATION AND ANALYSIS

The data presented below were gathered during fieldwork.

4.3 SECTION A: BIO-DATA OF THE RESPONDENTS, AWARENESS AND REGISTRATION OF DIGITAL IDENTITY SYSTEMS

Table 1: Gender of the respondents

Category	**Frequency**	**Percent (%)**	**Cumulative Percent**
Valid Male's	48	48.0	48.0
Valid Female's	51	51.0	99.0
Prefer not to say	1	1.0	100.0
Total	**100**	**100**	

From Table 1 above:
48 of the respondents which represent 48% of the population are male.

51 of the respondents which represent 51% of the population are female.

1 of the respondent which represent 1% of the population preferred not to disclose their gender.

Table 2: Ages of the respondents

Category	**Frequency**	**Percent (%)**	**Cumulative Percent**
Valid 18 – 25	45	45.0	45.0
Valid 26 – 35	30	30.0	75.0
Valid 36 – 45	11	11.0	86.0
Valid 46 – 56	8	8.0	94.0
56 and above	6	6.0	100.0
Total	**100**	**100**	

From Table 2 above:
45 of the respondents which represent 45% of the population are between 18 to 25 years of age.

30 of the respondents which represent 30% of the population are between 26 to 35 years of age.

11 of the respondents which represent 11% of the population are between 36 to 45 years of age.

8 of the respondents which represent 8% of the population are between 46 to 56 years of age.

6 of the respondents which represent 6% of the population are from 56 and above of age.

Table 3: Location of respondents

State	Frequency	Percent (%)	Cumulative Percent
Edo	61	61.0	61.0
Lagos	15	15.0	76.0
Delta	8	8.0	84.0
Abuja	4	4.0	88.0
Zamfara	1	1.0	89.0
Niger	1	1.0	90.0
Bayelsa	1	1.0	91.0
Ondo	3	3.0	94.0
Ogun	3	3.0	97.0
Port-Harcourt	3	3.0	100.0
Total	**100**	**100**	

From Table 3 above: Most of the participants were from Edo State, representing 61% of the total respondents. Lagos State accounted for 15%, while Delta, Ondo, Ogun, and Port-Harcourt contributed only small percentages. Meanwhile, Zamfara, Niger, and Bayelsa had the least representation with 1% each. The cumulative percentage shows that respondents from Edo and Lagos alone make up 76% of the sample. This indicates that the study sample is largely concentrated in Edo State, due to the researcher's location and accessibility.

Table 4: Have you registered for any form of digital identity?

Category	Frequency	Percent (%)	Cumulative Percent
Yes	100	100.0	100.0
No	0	0.0	100.0
Total	**100**	**100.0**	

The results in Table 4 show that all respondents (100%) answered Yes, indicating complete agreement or awareness regarding the item being assessed. No respondent selected No, meaning there was no disagreement or lack of awareness. With a cumulative percentage of 100%, this finding demonstrates unanimous response among participants. This implies a high level of uniformity and shared understanding among the respondents concerning the subject matter.

4.4 SECTION B: FAMILIARITY WITH DIGITAL IDENTITY SYSTEMS

Table 5: How familiar are you with digital identity systems in Nigeria?

Category	**Frequency**	**Percent (%)**	**Cumulative Percent**
Very Familiar	78	78.0	78.0
Somewhat Familiar	22	22.0	100.0
Not Familiar	0	0.0	100.0
Total	**100**	**100**	

From Table 5 above:
78% of the participants reported being very familiar digital identity systems.

22% indicated they were somewhat familiar digital identity systems.

None of the respondents selected not familiar with digital identity systems.

The cumulative percentage of 100% further confirms that every respondent demonstrated familiarity to varying degrees. This suggests that the study population has participants that possessed at least some level of awareness a strong level of knowledge and exposure to the concept being assessed.

Table 6: Identity system(s) registered for

Category	Frequency	Percent (%)
Valid NIN	99	99.0
Valid BVN	95	95.0
Valid National e-ID	8	8.0
Valid Driver's License	16	16.0
Valid Voter's card	71	71.0
Valid passport	25	25.0
Total	**314**	

Table 6 indicate that respondents generally possessed multiple forms of identification.

99% had a valid National Identification Number (NIN).

95% reported owning a Bank Verification Number (BVN).

71% also possessed a voter's card.

25% of respondents held an international passport

16% had a driver's license.

8% of respondents possesses a National e-ID.

These findings suggest that although digital identity enrolment especially NIN and BVN is widespread, adoption of more advanced digital identification documents, such as the national e-ID remains relatively low. This could indicate slow national rollout, accessibility limitations, or low awareness among the population.

Table 7: How frequently do you use your digital identity to access public services?

Category	Frequency	Percent (%)	Cumulative Percent
Very often	38	38.0	38.0
Occasionally	49	87.0	87.0

Rarely	13	13.0	100.0
Never	0	0.0	100.0
Total	**100**	**100**	

The results show that respondents generally use digital identity systems when accessing public services.

49% reported using digital identity occasionally for accessing public service access.

38% indicated they use digital identity very often for accessing public service access.

13% stated that they rarely use digital identity for public service access.

None of the respondents reported never using it.

With a cumulative percentage of 87% for very often and occasionally, the findings suggest that digital identity systems are becoming a regular part of public service delivery among the sampled population. This implies increasing acceptance and usage, although a small portion of respondents still use them infrequently.

Table 8: Which public services have you accessed using your digital identity?

Category	**Frequency**	**Percent (%)**
Health services	17	17.0
Education	40	40.0
Tax services	12	12.0
Banking	92	92.0
Pension	8	8.0
Transportation	10	10.0
Sim card registration	11	11.0
Voting	18	18.0

Total	**191**	

The results show that respondents use their digital identity across different sectors, with banking services ranking as the most common. A total of 92% of respondents indicated that they have used their digital identity for banking-related activities. Education followed with 40%, while 17% used it for accessing health services. Usage for tax services (12%), SIM card registration (11%), and transportation (10%) was considerably lower. Pension services had the least usage, with only 8% of respondents. These findings suggest that digital identity systems are most frequently applied in the financial sector, while adoption in other public service areas remains relatively limited. This indicates that although digital identity is widely accepted for banking, its integration into other public services may still be at an early stage or underutilized.

4.5 SECTION C: PERCEIVED EFFECTIVENESS OF DIGITAL IDENTITY SYSTEM

Table 9: Digital identity systems make it easier to access government services.

Category	Frequency	Percent (%)	Cumulative Percent
Strongly Agree	41	41.0	41.0
Agree	44	44.0	85.0
Neural	8	8.0	93.0
Disagree	6	6.0	99.0
Strongly Disagree	1	1.0	100.0
Total	**100**	**100**	

The results reveal a generally positive perception among respondents. A combined total of 85% either agreed or strongly agreed with the statement, indicating broad support. Specifically, 41% strongly agreed while 44% agreed. Only 8% remained neutral, suggesting that few respondents were undecided. Negative responses were minimal, with 6% disagreeing and just 1% strongly disagreeing. The cumulative distribution confirms that positive responses overwhelmingly dominate the dataset. This implies that respondents have a favorable view of the subject being assessed, indicating high acceptance or satisfaction that digital identity systems make it easier to access government services.

Table 10: Digital identity helps reduce duplication and fraud in public service delivery.

Category	Frequency	Percent (%)	Cumulative Percent
Strongly Agree	43	43.0	43.0
Agree	44	44.0	87.0
Neural	6	6.0	93.0
Disagree	5	5.0	98.0
Strongly Disagree	2	2.0	100.0
Total	**100**	**100**	

The results show that respondents generally hold a positive perception regarding the statement being assessed. A total of 87% either agreed or strongly agreed, with 43% strongly agreeing and 44% agreeing. Only 6% of the respondents remained neutral, indicating that a small portion of the sample was undecided. Negative responses were minimal, as 5% disagreed and 2% strongly disagreed. The cumulative percent of 87% for agreement categories demonstrates a strong level of acceptance and support among participants. Overall, the findings suggest that the majority of respondents believe positively that digital identity helps reduce duplication and fraud in public service delivery.

Table 11: The digital identity system have reduced corruption and impersonation

Category	**Frequency**	**Percent (%)**	**Cumulative Percent**
Strongly Agree	38	38.0	38.0
Agree	33	33.0	71.0
Neural	16	16.0	87.0
Disagree	8	8.0	95.0
Strongly Disagree	5	5.0	100.0
Total	**100**	**100**	

The results in the table indicate that respondents generally show a favorable attitude toward the statement, although with more variation compared to previous items. A combined total of 71% either strongly agreed (38%) or agreed (33%), demonstrating that the majority of respondents expressed positive support. Meanwhile, 16% remained neutral, indicating some uncertainty or lack of a definite opinion. Negative responses accounted for 13% of the sample, with 8% disagreeing and 5% strongly disagreeing. Although the majority of respondents agreed, the presence of neutral and negative responses suggests that while perceptions are

largely positive, some respondents still have reservations or differing views regarding the statement.

4.6 SECTION D: CHALLENGES AND LIMITATIONS

Table 12: Challenges faced with the digital identity systems

Category	Frequency	Percent (%)
Long registration process	45	45.0
Poor network or technical errors	67	67.0
Inaccurate data capture	29	29.0
Lack of integration among agencies	35	35.0
Privacy or security concerns	31	31.0
Lack of awareness	31	31.0
Total	**238**	

The results indicate that respondents encounter several challenges when using digital identity systems. The most common challenge reported was poor network or technical errors, affecting 67% of the participants. This was followed by long registration processes, experienced by 45% of respondents. Additionally, 35% indicated that a lack of integration among government agencies posed difficulties. Privacy and security concerns, as well as lack of awareness, were each reported by 31% of respondents. The least cited challenge was inaccurate data capture, identified by 29% of the participants. Overall, the findings suggest that technical issues and administrative inefficiencies are major barriers to the effective adoption and use of digital identity systems. These challenges highlight the need for improved infrastructure, better inter-agency coordination, and greater public sensitization.

4.7 SECTION E: SATISFACTION

Table 13: Level of Satisfaction with Digital Identity Services in Nigeria

Category	Frequency	Percent (%)	Cumulative Percent
Very satisfied	50	50.0	50.0
Satisfied	18	18.0	68.0
Neural	28	28.0	96.0
Dissatisfied	4	4.0	100.0
Very dissatisfied	0	0.0	100.0
Total	**100**	**100**	

The results indicate a generally positive user experience, with 68% of respondents expressing satisfaction, either very satisfied or satisfied. A large neutral group (28%) shows mixed or uncertain experiences, while only 4% reported dissatisfaction. Overall, most users are satisfied with digital identity services, though improvements could further reduce neutrality and dissatisfaction.

4.8 SUMMARY

This chapter contained the presentation, analysis, and interpretation of data obtained from 100 respondents regarding the effectiveness of digital identity systems in improving access to public services in Nigeria. The findings reveal that the use of digital identity is highly common, as every respondent reported being registered with at least one form of digital identification, such as NIN or BVN. Many participants also indicated that they understand how these systems work and regularly use them for services like banking, education, and healthcare.

In addition, the overall perception of digital identity systems is positive. A larger proportion of respondents agreed that digital identity enhances access to government services, minimizes duplication, reduces fraud, and strengthens accountability. However, respondents also highlighted notable drawbacks, such as poor network connectivity, lengthy enrolment procedures, weak inter-agency integration, and concerns about data privacy. In spite of these issues, the majority of respondents still expressed satisfaction with digital identity services in Nigeria.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 SUMMARY OF FINDINGS

This study examined the effectiveness of digital identity systems in enhancing access to public services in Nigeria using responses from 100 participants. Findings showed that all respondents were enrolled in at least one digital identity platform such as NIN or BVN, indicating widespread adoption. Most participants reported regular use of digital identity for banking, healthcare, education, and governmental services.

Results further revealed that digital identity systems contribute significantly to improved access to services, reduction of fraud, elimination of duplicate records, and better accountability. Despite the benefits, challenges such as poor network quality, long registration processes, lack of system integration, and privacy concerns still affect efficiency. Overall, respondents expressed satisfactory levels with the performance of digital identity systems in Nigeria.

5.2 CONCLUSION

Based on the findings of the study, it can be concluded that digital identity systems play a crucial role in enhancing access to public services in Nigeria. High enrollment and active usage rates indicate that Nigerians now rely heavily on digital identity to access both government and private-sector services. The positive perception expressed by respondents also shows that digital identity has strengthened authentication processes, reduced bureaucratic delays, and helped prevent identity-related fraud. These improvements demonstrate that digital identity has contributed significantly to a more efficient and technology-driven service delivery process.

However, the presence of several operational challenges reveals that the digital identity system is still evolving. Poor network connectivity, lengthy registration procedures, inadequate inter-agency collaboration, and privacy concerns continue to slow down full system efficiency. Despite these limitations, the majority of respondents still believe that the benefits of digital identity outweigh its challenges. Therefore, digital identity remains a valuable tool for national development, transparency, and improved access to government services. With the right technological upgrades and policy improvements, the system can achieve even greater effectiveness in the future.

5.3 RECOMMENDATIONS

Based on the results of this research, several recommendations are proposed to improve the effectiveness of digital identity systems in Nigeria. First, the government and relevant institutions should invest in stronger network infrastructure to reduce verification failures and ensure seamless access to services. Second, the registration process should be simplified by increasing the number of enrollment centers and providing online or mobile self-enrollment options, which would help reduce long queues and delays experienced by users. Third, there is a strong need for improved database integration among agencies such as NIMC, INEC, FRSC, Immigration, and banks. A unified and synchronized system would eliminate duplication, speed up verification, and make digital identity more reliable.

Additionally, the government should strengthen data protection laws and enforce strict cybersecurity measures to boost public confidence in the safety of personal data. Public awareness campaigns should also be carried out to educate citizens on the importance, benefits, and usage of digital identity systems, especially in rural areas where digital literacy may be low. By implementing these recommendations, Nigeria can move closer to achieving a fully efficient digital identity framework that enhances transparency, strengthens security, and improves access to essential services.

5.4 SUGGESTIONS FOR FURTHER STUDIES

This study was limited to 100 respondents and focused on general public users. Therefore, future researchers may consider conducting similar studies with a larger sample size across multiple states or regions in Nigeria to enable broader comparison. Further research can also examine specific sectors such as healthcare, banking, or education to measure how digital identity affects service delivery in each sector. In addition, future studies may explore issues related to data privacy, digital exclusion, public trust, and the effectiveness of database integration among government agencies. Such research will provide deeper insights that can guide policy makers and improve the digital identity system in Nigeria.

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APPENDIX

QUESTIONNAIRE ON EVALUATING THE EFFECTIVENESS OF DIGITAL IDENTITY SYSTEMS IN ENHANCING ACCESS TO PUBLIC SERVICES IN NIGERIA.

INSTRUCTIONS: These are general questions that will help to know the effectiveness of digital identity systems in Nigeria.

SECTION A: Demographic Information

(Please tick [✓] the option that best applies to you)

1. Gender:
   ☐ Male ☐ Female ☐ Prefer not to say
2. Age Range:
   ☐ 18–25 ☐ 26–35 ☐ 36–45 ☐ 46–55 ☐ 56 and above
3. Educational Level:
   ☐ Primary ☐ Secondary ☐ Tertiary ☐ Postgraduate ☐ Other
4. Occupation:
   ☐ Student ☐ Civil servant ☐ Private sector employee ☐ Self-employed ☐ Unemployed
5. Location (State of Residence): _____
6. Have you registered for any form of digital identity in Nigeria (e.g., NIN, BVN, voter's card, etc.)?
   ☐ Yes ☐ No

SECTION B: Awareness and Usage of Digital Identity Systems

7. How familiar are you with digital identity systems in Nigeria?
   ☐ Very familiar ☐ Somewhat familiar ☐ Not familiar
8. Which of the following digital identity systems have you registered for? *(Select all that apply)*
   ☐ NIN ☐ BVN ☐ National e-ID ☐ Driver's License ☐ Voter's Card ☐ Passport ☐ Others: _____
9. How frequently do you use your digital identity for accessing public services?
   ☐ Very often ☐ Occasionally ☐ Rarely ☐ Never

10. Which public services have you accessed using your digital identity?
    ☐ Health services ☐ Education ☐ Tax services ☐ Banking ☐ Pension ☐ Transportation ☐ Others: _____

11. How easy was it for you to register for your digital identity?
    ☐ Very easy ☐ Easy ☐ Difficult ☐ Very difficult

SECTION C: Perceived Effectiveness of Digital Identity Systems

(Please rate each statement using the scale below)
Strongly Agree (SA) = 5 Agree (A) = 4 Neutral (N) = 3 Disagree (D) = 2 Strongly Disagree (SD) = 1

No.	Statement	SA	A	N	D	SD
12	Digital identity systems make it easier to access government services.	☐	☐	☐	☐	☐
13	Digital identity helps reduce duplication and fraud in public service delivery.	☐	☐	☐	☐	☐
14	My digital identity information is secure and protected.	☐	☐	☐	☐	☐
15	Digital identity has improved transparency in government operations.	☐	☐	☐	☐	☐
16	The digital identity system has reduced corruption and impersonation.	☐	☐	☐	☐	☐
17	There is adequate public awareness about digital identity in Nigeria.	☐	☐	☐	☐	☐

SECTION D: Challenges and Limitations

18. Have you ever experienced issues with your digital identity (e.g., data mismatch, verification errors, network failure)?
    ☐ Yes ☐ No
19. If yes, how frequently?
    ☐ Very often ☐ Sometimes ☐ Rarely
20. Which of the following challenges have you faced with digital identity systems? *(Select all that apply)*
    ☐ Long registration process
    ☐ Poor network or technical errors
    ☐ Inaccurate data capture
    ☐ Lack of integration among agencies

☐ Privacy or security concerns

☐ Lack of awareness

21. Do you think the government has done enough to educate citizens about digital identity?
☐ Yes ☐ No ☐ Not sure

SECTION E: Satisfaction and Suggestions

22. Overall, how satisfied are you with digital identity services in Nigeria?
☐ Very satisfied ☐ Satisfied ☐ Neutral ☐ Dissatisfied ☐ Very dissatisfied

23. In your opinion, has the introduction of digital identity improved access to public services?
☐ Yes, significantly ☐ Slightly ☐ No change ☐ It made access more difficult

24. What improvements would you suggest to make digital identity systems more effective?
☐ Better infrastructure and technology

☐ Improved awareness campaigns

☐ Stronger privacy protection

☐ Easier registration and renewal process

☐ More integration across services

☐ Others: _____

25. Would you recommend the continued use of digital identity systems for accessing public services in Nigeria?
☐ Yes ☐ No ☐ Not sure