



EFFECT OF DIGITALISATION ON THE FINANCIAL PERFORMANCE OF RETAIL  
SMALL AND MEDIUM SCALE ENTERPRISES IN LAGOS, NIGERIA

Dissertation Manuscript

Submitted to Unicaf University in Malawi

in partial fulfilment of the requirements

for the degree of

Doctor of Philosophy (PhD) in Business Administration

By Adeola Temitope, Aina

December, 2025

Approval of the Thesis

EFFECT OF DIGITALISATION ON THE FINANCIAL PERFORMANCE OF RETAIL  
SMALL AND MEDIUM SCALE ENTERPRISES IN LAGOS, NIGERIA

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## ABSTRACT

EFFECT OF DIGITALISATION ON THE FINANCIAL PERFORMANCE OF RETAIL  
SMALL AND MEDIUM SCALE ENTERPRISES IN LAGOS, NIGERIA

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Unicaf University in Malawi

This study analyses the impact of digitalisation on the financial performance of retail Small and Medium Enterprises (SME) in Lagos, Nigeria. It addresses critical gaps in the existing literature concerning the financial performance on digital technologies and the effects within Nigeria's largely informal economy. Focusing on the period from 2019 to 2023, the research employed a quantitative methodology, combining a survey of 400 SME managers with an analysis of financial records across four major Lagos markets. Stratified random sampling ensured diverse representation, and regression analysis (using SPSS 28) was used to assess the effects of five digital technologies. From 345 valid responses, the findings revealed that internet banking ( $\beta = 0.853$ ,  $p = .000$ ) and e-commerce adoption ( $\beta = 0.366$ ,  $p = .000$ ) had a statistically significant positive effect on financial performance ( $p < 0.05$ ). On the contrary, Point of Sale (POS) systems and Peer-to-Peer (P2P) platforms showed no significant effect. The study provides empirical evidence to inform Nigeria's digital strategy, enabling retail SME and policymakers to prioritise highly performing technologies. It also extends the application of the Unified Theory of Acceptance and Use of Technology (UTAUT) in emerging market contexts. Future research should investigate efficacy of technology bundling strategies for SME.

**Keywords:** Digital Transformation in SME, Financial Technology, SME Business Performance, Digital Finance in Emerging Markets, UTAUT.

## DECLARATION

I declare that this thesis has been composed solely by myself and that it has not been submitted, in whole or in part, in any previous application for a degree. Except where stated otherwise by reference or acknowledgment, the work presented is entirely my own.

## AI ACKNOWLEDGEMENT

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## DEDICATION

To Nigerian SME; their resilience fuels the growth of the economy.

## ACKNOWLEDGEMENTS

I am sincerely grateful to the entire faculty of the Doctoral College for their administrative assistance and prompt responses that facilitated smooth progress in my doctoral journey as well as organising insightful seminars and workshops that enhanced my research skills which contributed significantly to the successful completion of this work.

Thanks to my supervisor, Dr. Joshua Matanda Wepukhulu, for his feedback in the course of this study and Dr. Clement Ndifor Ndindah, Head of the Department of Business, School of Doctoral Studies, for his leadership and academic support.

Finally, I acknowledge the unwavering support of my family especially my dear husband, Mr Olutosin Aina and my children. My friends: Mrs Adebimpe Amusan, Mrs Uzoma Osuoha for their unquantifiable assistance, and colleagues: Dr Rasheed Olu-Ajayi and Dr Chidinma Durugbo whose encouragement kept me motivated during challenging moments. This achievement would not have been possible without their love and belief in me.

Thank you all.

## LIST OF ABBREVIATIONS

Abbreviation Definition

EC E-Commerce

IB Internet Banking

MB Mobile Banking

P2P Peer-to-Peer System

POS Point of Sale System

ROI Return on Investment

RBV Resource Based View

SME Small and Medium-sized Enterprises

UTAUT Unified Theory of the Acceptance and Usage of Technology

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## CHAPTER ONE: INTRODUCTION

### Introduction

Currently, the world is experiencing a significant paradigm shift in its economy, influenced by the forces of the Fourth Industrial Revolution and pervasive digitalisation. Based on this understanding, the infrastructural pillar for facilitating and enhancing competitiveness, restructuring value chains, and enabling robust enterprise development is characterised as an information and communication technology-driven phenomenon in the world's globalisation journey (Aladejebi, 2020). A world that is driven by technology presents both a threat and an opportunity, especially for Small and Medium-sized Enterprises (SMEs), as it is a way to improve innovation and development in the global economy (Bello & Tijani, 2020; Nambisan, 2013).

This dynamic is perhaps more critical in the context of emerging economies such as in Africa, where SMEs are the pillars of economic and commercial activity. Here, the concept of digitalisation extends beyond the conventional platform of improving existing processes, given its importance for the sustainability of the entities in question (Bello & Tijani, 2020). This is the motivator for the research which focused on one of the largest economies in Africa: Nigeria.

In Nigeria, SMEs generate around 48% of the national GDP. Furthermore, as indicated by SMEDAN (2022), SMEs in Nigeria generate 84.7% of the nation's employment opportunities. The epicentre of this business activity is Lagos: the mega-city which houses more than 70% of the nation's SMEs and captures the essence of the complex blend of formal and informal sectors (Bello & Tijani, 2020).

The global COVID-19 pandemic was an effective catalyst, revealing various prevailing digital disparities across nations both in macro and their micro-economics.

For Nigerian SMEs, lockdowns corresponded with an existential crisis that ultimately resulted in otherwise unplanned adoption of various digital technologies for survival (Ozili, 2020). The period acted as an organic experiment, contrasting businesses that adopted digital platforms for operational continuity with those that did not, thereby showcasing an existing gap in technological adaptability (Enesi & Ibrahim, 2021).

However, it also raised another pertinent, unanswered question: while digitalisation is integral to mitigating operational risks, which specific kinds of digital technology can produce quantifiable monetary benefits for SMEs within these resource-constrained, informal economies such as Lagos?

Thus, the present study is positioned to contribute to answering this question by exploring the degree of association between the adoption of specific technologies and financial performance within the domain of retail SMEs operating in the Nigerian metropolis of Lagos between 2019 and 2023. Through the application and validation of the underlying framework proposed by the Unified Theory of Acceptance and Use of Technology (UTAUT), the current study differed from previous studies in the context of retail SME technology adoption. It did so by exploring the drivers of this phenomenon and their influence on financial performance, as measured by the index of return on investment (ROI).

### **Statement of the Problem**

The core problem is the critical absence of empirical, sector-specific evidence that quantifiably links the adoption of specific digital technologies to the financial performance of retail SMEs in Nigeria's informal economy. This gap while not being a mere academic oversight; created a significant, practical and strategic challenge to

information created through available data necessary for business growth and development.

Despite the acknowledged importance of digitalisation for SME competitiveness (Nambisan, 2013), prevailing research in the Nigerian context remained generalised. Studies tend to either document aggregate technology adoption rates without linking them to financial metrics (Aladejebi, 2020) or analyse broad SME financial trends without isolating the impact of specific digital technology (Bello & Tijani, 2020).

Consequently, a glaring empirical gap existed: no focused quantitative study measured financial performance through the Return on Investment (ROI) for key digital technologies such as internet banking, e-commerce, mobile banking, point-of-sale (POS) systems, and peer-to-peer (P2P) platforms within Nigeria's informal retail SME sector.

Parallel to the aforementioned was also a theoretical gap. Much of the existing research lacked anchoring in robust technology adoption theories, such as the Unified Theory of Acceptance and Use of Technology (UTAUT), which could explain why adoption occurred and how usage behaviour might translate into financial performance (Venkatesh et al., 2003). This disconnection between the drivers of digital technology adoption and measurable financial outcomes left digitalisation as an ambiguous strategy rather than a quantifiable investment.

The implications of this problem were acute:

1. **For SME Owners:** Operating in a resource-constrained environment, managers must make critical digital investment decisions without localised, evidence-based guidance. This caused previous and even continuous

misallocation of resources, as well as investment in low-performing technologies, and lack of proper strategy to prioritise digital technology for profitable use in SMEs (Knell, 2021; Ozili, 2020).

2. **For Policymakers and Institutions:** Policymakers, including governments, are challenged with accessing correct data in specific SME studies, especially when designing effective and targeted digital support programmes. Without such data, current and proposed policies remain generic, commonplace approaches that were ineffective for businesses operating within Lagos State, Nigeria, or similar environments.
3. **For National Economic Development:** As SMEs contribute significantly to the national gross domestic product(GDP) and employment rates, their poor performance in the technology adoption and its use as well as their vulnerability to disruption, as revealed during the COVID-19 pandemic, negatively affected national economic growth (SMEDAN, 2022).

Accordingly, this study resolved the problem by extending from a descriptive basis, which sought to understand *if* and *which* technologies SMEs adopt, to a diagnostic and quantitative basis that determined to understand *how* individual digital adoptions affect financial performance from a robustly developed theoretical background.

### **Purpose of the Study**

This research purposed to quantitatively examine the effect of adopting specific digital technologies which are internet banking, mobile banking, e-commerce, point-of-sale (POS) systems, and peer-to-peer (P2P) platforms on the financial performance of retail SMEs in Lagos, Nigeria, from 2019 to 2023.

## **Research Aims**

Drawing from the aforementioned purpose, the aims of this empirical research were:

- To examine the effects of internet banking on the financial performance of retail SMEs in Nigeria from 2019 to 2023.
- To determine the effect of mobile banking on the financial performance of retail SMEs from 2019 to 2023.
- To analyse how e-commerce has influenced the financial performance of retail SMEs in Nigeria from 2019 to 2023.
- To assess the effect of point-of-sale systems (POS) on the financial performance of retail SMEs in Nigeria from 2019 to 2023.
- To assess the effect of peer-to-peer systems (P2P) on the financial performance of retail SMEs in Nigeria from 2019 to 2023.

## **Research Objectives**

The objectives of this research were:

- To examine the effect of digital technology on retail SME financial performance in Lagos, in the period 2019 to 2023.
- To analyse the effects of internet banking, mobile banking, e-commerce, point-of-sales system (POS) and peer-to-peer payments (P2P) on retail SME financial performance.
- To provide recommendations to policymakers and SME focused institutions on the importance of digital transformation to enable SME to compete globally.

## **Nature of the Study**

This study employed a quantitative research approach, grounded in a positivist paradigm. The main objective of the research project was to examine the importance of technology adoption and financial performance of SMEs in the retail sector at Lagos, Nigeria from 2019 to 2023. The research project deployed a structured self-administered research instrument. This instrument was tailored for the research project and helped to gather both perceptual data related to technology adoption, with guidelines from the Unified Theory of Acceptance and Use of Technology (UTAUT) framework, and financial data from SMEs in Lagos, Nigeria.

The research instrument was organised into three sections: demographic and retail SME data, measurement of the independent variables (adoption and use of five key digital technologies), and dependent variables, including financial indices and by calculating financial performance through the Return on Investment (ROI). Descriptive statistics was used in the data analysis, further tests of reliability and validity were conducted, and subsequently, inferential analysis in the form of multiple regression tests of the hypothesised relationships was conducted. In a nutshell, this type of quantitative research design, based on survey research, was chosen precisely because it would be possible to perform a scientific and generalised analysis of the impact of digitalisation on SME financial performance and provide evidence-based insights to both academia and industry.

## **Significance of the study**

This study holds considerable implications for theoretical, practical, and policy domains by addressing critical gaps in the understanding of digitalisation within

emerging economies. Its significance is crucial due to key methodological and environmental development.

- **Theoretical Significance:** This research makes a significant contribution by empirically testing and extending the Unified Theory of Acceptance and Use of Technology (UTAUT) within the under-researched context of Nigeria's informal retail economy (Venkatesh et al., 2003). It innovated by applying UTAUT's core constructs not only to predict adoption but to explain variances in concrete financial performance outcomes (Return on Investment), thereby bridging a critical gap between adoption theory and performance literature (Nambisan, 2013).
- **Practical Significance:** The findings of this study provide actionable, evidence-based insights for owners and managers of SMEs in Lagos's retail sector. It delivered a comparative, quantitative analysis of the financial returns (ROI) associated with five pivotal and commonly used digital technologies. This pragmatic, real-world analysis enabled managers to prioritise investments based on localised data and informs targeted capacity-building programmes to enhance digital literacy and strategic implementation (Aladejebi, 2020; Louw & Nieuwenhuizen, 2019).
- **Policy Significance:** The study equipped policymakers, government agencies, and financial institutions with the empirical data necessary to design effective, targeted interventions (Bello & Tijani, 2020). By identifying which specific technology yielded the greatest financial resilience for retail SMEs, the research supported the development of precise policy instruments, such as tailored subsidies, infrastructure investments, and focused developmental initiatives, crucial for fostering a competitive and sustainable SME sector.

- **Methodological and Contextual Contribution:** The research offered a significant methodological advancement for the Nigerian SME context. It used an integrated model to analyse various technologies simultaneously, innovatively integrating survey results regarding the drivers of technology adoption with objective financial information provided at the firm level (using ROI over a five-year period). By focusing intently on Lagos, which is not only the biggest retail market in Africa but also Nigeria's main commercial center, this study offered very specific insights that are richly contextualised to the most vibrant business environment in the region (SMEDAN, 2022).

### **Research Innovation and Originality**

This study was tailored not just to apply an existing theory to research but to bring a new contribution to the field of digital transformation through three distinctive areas which are an integration of theory, data verification approach and environment specific factors.

#### **1. An Integration of Theory from Adoption Drivers to Financial Outcomes**

Although the Unified Theory of Acceptance and Use of Technology (UTAUT) has been successfully used to explain technology adoption phenomena in various studies (Venkatesh et al., 2003), this study attempted a critical extension of the extant literature by using UTAUT constructs as explanatory variables to account for financial performance. While past studies in similar contexts have either sought to describe the adoption patterns of technologies (Aladejebi, 2020) or focused on financial outcomes without any theoretical basis (Bello & Tijani, 2020), there has been a disjuncture between the adoption and usage of technologies and their financial outcomes. This study broke new ground by innovatively conceptualising that the four core constructs

of UTAUT: Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions not only predict usage but also influence the financial outcomes of usage. This bridging of the theoretical divide between adoption and financial outcomes created a more comprehensive model of explanation compared to past studies on SME digitalisation phenomena (Nambisan, 2013; Zaidi, 2024).

## 2. Methodological Strength through Data Verification Framework

The methodological framework of this study has enhanced the collection of data in the informal sector, where data accuracy is often challenged (George et al., 2020). Unlike other studies that rely on perceptual survey research techniques, which are often subject to optimism bias, or rely on unaudited self-reported financial data that may not be accurate in nature, this study relied on a data verification approach. This approach brought together: (1) UTAUT-grounded Likert-scale perceptions of technology use and value; (2) behavioural data on technology use intensity; and (3) a five-year panel of financial data that underwent a rigorous four-step validation process. This approach enabled data validation and safeguards against the bias in using a single method, which is a common occurrence in survey-based performance studies (Podsakoff et al., 2003). For example, a manager's high level of Performance Expectancy in e-commerce can be validated using actual revenue generated through e-commerce channels and its corresponding financial return or contribution. This method eliminates the problem of single-source bias, which is common in SME research; it also provides a template for the reliable production of impact evidence in data-poor settings (Dawadi et al., 2021).

## 3. Contextual Specificity: Disaggregating the Digital Toolbox in Lagos's Informal Retail

Most research on African SME digitalisation regards technology adoption as a single variable or concentrates on a specific technology, such as mobile money (Enesi

& Ibrahim, 2021). This research innovated by disaggregating the digital toolkit and investigating five different, simultaneously adopted technologies in the hyper-specific environment of the informal retail sector in Lagos. Lagos offers a unique living laboratory environment: a huge informal economy in the most populous city on the African continent, marked by fierce competition, infrastructure challenges, and rapid fintech adoption (Ozili, 2020). By simultaneously studying internet banking, mobile banking, e-commerce, point of sale (POS) and peer to peer (P2P) technologies in a multiple regression analysis, the research could detect not only the individual but also the substitution and complementarity effects between the technologies.

This sector-specific, environment-based research goes beyond general recommendations to offer a rich digital map of what succeeds financially in this environment (Knell, 2021). The results will offer a template for other metropolitan informal economies in the West African region and Nigeria in particular, where the retail SME sector is a vital engine for employment and economic sustainability (SMEDAN, 2022).

Collectively, these three innovations ensure that the contribution of the research is substantial, advancing theory in the area, and highly pertinent to one of the world's most dynamic and under-investigated business environments.

## **Research Questions**

The creation of this study's research questions was guided by the theory that the adoption of digital technologies is an important force for improving SME financial performance, especially in resource-challenged environments. Established in the Unified Theory of Acceptance and Use of Technology (UTAUT), which posits that technology usage is influenced by performance expectancy, effort expectancy, social

influence, and facilitating conditions (Venkatesh et al., 2003), the questions sought to move beyond descriptive inquiry to examine the operatives linking specific digital technology to specific financial outcomes. This theoretical base addressed a critical gap in the literature, which often discusses digital innovation in terms of improved processes or focusing on customers (Hameed et al., 2025; Schuchmann & Scheufert, 2015; Wang & Ahmed, 2003) but failed to link these strategies to measurable performance metrics such as return on investment (ROI) within defined environments. Furthermore, the questions were framed to address the need for crucial adaptation during periods of economic uncertainty, such as the post-pandemic era.

Academic research showed that developing capable digital technology is not just advantageous but crucial for SME survival and resilience. Yet, the general trend of this discussion often missed the sector-specific dynamic and financial impact of specific technological investments in favor of generalised measures. Consequently, the questions to be addressed by this study have been developed to determine what specific digital technologies retail SME managers are adopting in Lagos, in order to quantify the relationship between such investments and, thereby addressing a key empirical and contextual gap.

To investigate the relationship between digital service adoption and financial performance in Lagos' retail SME sector from 2019 to 2023, the following research questions were created:

**Q1.**What is the effect of internet banking on the financial performance of retail SMEs in Nigeria in the years 2019 to 2023 in Lagos, Nigeria?

**Q2.**What is the effect of mobile banking on the financial performance of retail SMEs in Lagos, Nigeria, from 2019 to 2023?

**Q3.**What is the effect of e-commerce on the financial performance of retail SMEs in Nigeria from 2019 to 2023 in Lagos, Nigeria?

**Q4.**What is the effect of the point-of-sales system (POS) on retail SME financial performance in Lagos, Nigeria, in the years 2019 to 2023?

**Q5.** What is the effect of peer-to-peer systems (P2P) on retail SME financial performance in Lagos, Nigeria, from 2019 to 2023?

### **Research Hypothesis**

Below are the hypotheses formulated to examine the relationships between digital services and the financial performance of retail SMEs in Lagos, Nigeria.

**H1.** The use of internet banking services has a significant impact on the financial performance of retail SMEs in Lagos, Nigeria, from 2019 to 2023.

**H2.** The use of mobile banking services has a significant effect on the financial performance of retail SMEs in Lagos, Nigeria, from 2019 to 2023.

**H3.** The adoption of e-commerce services has a significant effect on the financial performance of retail SMEs in Lagos, Nigeria, from 2019 to 2023.

**H4.** The point-of-sale system has a significant impact on the financial performance of retail SMEs in Lagos, Nigeria, from 2019 to 2023.

**H5.** The peer-to-peer system has a significant effect on the financial performance of retail SMEs in Lagos, Nigeria, from 2019 to 2023.

## CHAPTER 2: LITERATURE REVIEW

### Introduction

This chapter examined prior literature carried out in the academic field on how retail enterprises have gained from the advantages that technology in business provide. The review explored the theoretical foundations of technology adoption, empirical evidence on financial performance metrics, and the relevance of digital technologies in SME development.

A five year literature review from 2019 to 2023 was carried out on effect of digitalisation experienced by SME in Lagos, Nigeria. This review delved into current peer-reviewed journals, scholarly textbooks and academic papers in the past five years, books on digitalisation, government statistics and reports on SME digitalisation, digital services and deployment of innovation. Relevant journals outside of the 2019 to 2023 range were considered when they were relevant to the study and worthy of mention. Library databases explored were Elsevier, Google Scholar, Pro-Quest and Semantic Scholar.

The key search terms were digitalisation of SME, digitalisation and business processes, digital tools, digitalisation and business performance, digitalisation and financial performance of Nigerian SME, financial performance indices, digital tools and return on investment, financial challenges of retail SME, Nigerian SME post covid19, internet banking and technology acceptance, SME adoption of e-commerce, mobile banking in SME, SME financial performance and mobile banking, SME and point of sales system, SME financial performance and point of sales terminals, SME and peer to peer payments, SME financial performance and peer to peer payments.

Inclusion criteria for eligibility of articles were: SME studies relating to adoption and deployment of innovation and technology in business, global studies on SME adoption of technology, SME studies from emerging economies, studies on SME from Europe, America, Asia and African studies on SME, journals on the impact of COVID19 and other uncertainties on SME business performance, financial performance measurements in SME, retail SME challenges, in the adoption and deployment of technology. Journals on SME in Nigeria and financial performance. Exclusion criteria were the impact of digitalisation on multinationals, technology diffusion in large manufacturing firms. Studies related to impact of digitalisation on public companies were also excluded.

The literature review aimed to investigate digital technologies advantages on the pecuniary performance of SME. The independent variables to be discussed were internet banking, mobile banking, e-commerce, point of sales system (POS) and peer to peer payments (P2P). The dependent variable was SME financial performance measured by return on investment (ROI) from each digital technology. The review would also critically examine theories, empirical evidence, and gaps related to digital technology adoption and financial performance in SME, which would lead to the design of the conceptual framework.

### **Theoretical Framework**

The theoretical models that formed the framework for this research work were discussed below:

The Unified Theory of Acceptance and Usage of Technology (UTAUT) postulated by Venkatesh et al. (2003) formed the over-arching framework for this

research. It is made up of various theories which are fore-runners of its existence. Eight of these theories were examined in the next paragraphs.

Diffusion of Innovation (DOI) Theory, postulated by E.M. Rogers in 1962, was one of the first theories in social science relating to innovation. It was broken down into five concepts which were: competitive advantage, similarity, intricacy, actionability, and examinability. It was created to explain the spread of an idea, concept or innovation through a specific group of people or system. Miller (2015) stated that primarily, it is important that people see the value in the innovation being presented and then embrace the concept. Thereafter, they could adopt the innovation and adjust their way of life to accommodate the new idea, concept or principle of carrying out the activity. It is the adoption and implementation that ensures the success of diffusion (Garcia-Aviles, 2020; Vitalis, Aondover et al., 2025).

The target population could be sub-divided into those who welcomed change quickly who are also termed innovators. They lead the change system and are interested in new and appealing technology. The second group are the quick adapters who are also termed influencers. They propagate change and encourage others to join in the innovation at hand (Gonçalves et al., 2024; Zhang & Vorobeychik, 2019).

The initial majority only need evidence that an innovation works and is dependable to adapt to the change. The subsequent majority lean on the findings of the initial majority to key into the innovation or technology. Lund et al. (2020) stated that the latter group of people were the late innovators who were always left behind due to their conservative nature; they rarely embraced new technology except they were compelled to do so through obsolescence of the technology at hand or pressure from society and peers (Sujatha & Sekkizhar, 2019).

The diffusion of innovation theory was premised on the decision-making ability of the manager. (Mbatha, 2024; Vargo et al., 2020). For this particular study it was essential to determine the impact that the adoption of technological innovation would have on the financial performance of the firm (Chege & Wang, 2020; Lestari et al., 2024; Magsamen-Conrad & Dillon, 2020; Mwaniki et al., 2025).

Another theory that resonated with the diffusion of innovation theory was the theory of reasoned action (TRA). Theory of reasoned action is commonly employed to study how people react towards embracing new technology, the reasons behind adoption and even the thought process that underlies it. TRA was postulated by Ajzen (1980) and it stated that motivation dictates behaviour. An appraisal of an action as rewarding and a mediator which motivates individuals leads to the performance of such action (Ajzen & Kruglanski, 2019; Dodanwala et al., 2024). In studies based on theory of reasoned action, it was discovered that people tend to fulfil activities that they are motivated towards which predict positive results (Ajzen, 1980).

However, results of some studies according to Bosnjak et al. (2020) revealed a limitation of this theory to the end that even with the best of intentions and motivation, an action may not be performed as human beings retain the volition to carry out specific actions. This led to the postulation of the theory of Planned Behaviour (TPB) by Aijen (1991). This theory maintained that people can change their actions and may even plan how they would act. It further stated that behaviour can be pre-meditated and carried out with deliberate end results in mind (Dodanwala et al., 2024; Ulker-Demirel & Ciftci, 2020).

According to the theory of planned behaviour, any action a person takes is as postulated by Conner (2020) guided by his own personality traits, his expectation of

others and the way he conceives factors in the environment that may further or hinder his line of action. If a behaviour is perceived as favourable the inclination to act in such a manner is high.

The theory could be adopted according to Sussman and Gifford (2019) to this study to determine how and why technology is adopted by SME to sustain financial performance. However, the introduction of more variables might distort the results of the theory of planned behaviour model. Extraneous variables distort the ability to validly measure intention and volition (Wang et al., 2025; Bosnjak et al., 2020).

The fourth theory examined here in this theoretical framework was the Social Cognitive Theory (SCT). This theory also defined as a social learning theory underpins that outcomes precisely determine how people behave (Kursan Milaković, 2021; Lee & Tseng, 2024). As people observe others, they learn which behaviours are accepted and which are discouraged. In the adoption of technology and innovation, social cognitive theory expounded how adaptable people are to change. More importantly the theory inquires:

### **Will they embrace the new technology?**

Thus, the major premise of social cognitive theory is that individuals can influence their actions by what society demands (Lee & Tseng, 2024; McCormick & Martinko, 2004). This has been applied in business through the analysis of organisational management, task constructs and technological adoption (Akram & Abdelrady, 2024; Eccles & Wigfield, 2020). Social cognitive theory stated that the adoption process of technology involved encouraging individuals to acquire the requisite skills by peers and associates and explains that they encourage confidence to use a new or existing technology (Kwon et al., 2021).

Technology Acceptance Model (TAM) created by Fred Davis (1986) had two core concepts which are: variables of acknowledged usefulness and simplicity of adoption of innovation. This model was extensively employed in research of human behaviour towards technology adoption. TAM2, according to Sani et al (2020) was an extension of Technology Acceptance Model (TAM) which examined how innovation is deduced as useful and how the independent variable influences the outcome (Najib & Fahma, 2020; Viet Tam et al., 2024).

Combined TAM-TPB was the model developed according to Fitriana et al (2022) from the welding of two theories. The main purpose of combining two theories was to do an advanced investigation on how adoption of technology influences outcomes based on behaviour and perception of the user. The goal of this work is to determine how the adoption, deployment and use of technology through e-platforms has affected financial performance positively or negatively in retail SMEs (Mohamed et al., 2021; Viet Tam et al., 2024).

Model of Personal Computer Utilisation (MPCU) was created by Thompson et al. (1991) and deployed for investigating personal computer adoption in offices and businesses. MPCU theory studied human behaviour in the field of information management (Mohammed et al., 2021; Salama & Farag, 2024). Motivational Model (MM) postulated by Deci and Ryan (1977) was used to analyse the variables that merged behavioural traits and technology adoption.

What were the factors that made people adopt technology for work and economic activities?

The Unified Theory of Acceptance and Use of Technology (UTAUT) created by Venkatesh et al. (2003) integrated the above discussed theories developed around

digital adoption and use of technology in business. The rapid adoption of electronic and digital modes of commerce during coronavirus pandemic according to Al-Fajri et al. (2021) compelled businesses to turn to digital technologies to conduct business. New frontiers of technology, cloud computing were the new tools that began to drive the way businesses is carried out. Misra et al. (2022) stated that technology has rapidly encouraged businesses to build infrastructure and mitigate the constraints meted out by the coronavirus pandemic and economic uncertainties.

Most types of business activities involving customers, different commercial models and their pecuniary trails have moved onto electronic platforms. To ensure a steady stream of income and build productivity, digital technologies and services have come to support new ways of conducting businesses and reaching a wider network. (Reyes et al., 2022; Salama & Farag, 2024; Verhoef et al., 2021).

Roy et al. (2025) as well as Guo and Xu (2021) stated that this huge investment in technology came at a cost and the deployment of information technology did not automatically translate to high profits and seamless service. It had been discovered in past research that the return on the investment (ROI) in technology according to Boutetiere et al. (2018) is less than thirty percent (30%). The study went on to state that the inability to sustain technology deployment led to even lower performance results. In the light of these results of technology deployment and adoption on business financial performance, Sunardi and Tatariyanto (2023) stated that the technology utilisation acceptance gap is a huge area for continued research in the digitalisation field.

As interest in technology acceptance grew in the academic world, user behaviour towards same became the subject of numerous studies and investigation.

Notable amongst this was the intention-based models of technology which made up 40% of the investigations (Kamal et al, 2020; Roy et al., 2025) These models had foundations in various disciplines which hampered the modification of the models to fields of SME studies (Al-Rahmi et al., 2019). Inadvertently, information and technology models are filtering into business and economics as every sphere of human activity is being taken over by technology.

These foremost theories explained above presented a psychological perspective on technology adoption. Therefore, these theories can be used in other management fields apart from information technology. On the contrary, the theory of diffusion of innovation (DOI) was based on technology specific factors that influence users' behaviour when it relates to innovation acceptance (Kamal et al., 2020; Roy et al., 2025).

The myriad of variables in the different models discussed above and their varying perspectives required a holistic approach to the theory that underpins innovation. This necessitated the creation of unified theory of the acceptance and use of technology (UTAUT).

Al-Momani and Ramayah (2025) and Rahi et al. (2019) reiterated that the key concepts fusing the above-mentioned theories were grouped into three fields: social psychology, information systems management and behavioural psychology. The limitation discovered by Venkatesh et al.(2003) initially was that literature had not scientifically tested the main technology acceptance model neither had it compare them to determine the predictive power of each of the concepts (Pinto et al., 2022 & Singh, 2020).

The studies conducted previously had only examined basic systems and ignored more complicated technologies. When the focus is on only one innovation, it limits the explanatory ability of the theories as well as the decisions and perspectives of users of same technology. The utilitarian value of the technology, its necessity, mandatory nature and the circumstances under which it is being adopted are all variables that need to be investigated (Al-Momani & Ramayah; Faqih, 2022; Venkatesh & Hoehle, 2015).

Some studies have used a before and after process in the adoption of technology. The process has been used in the study of innovation adoption by Xue et al. (2024) and Yang et al. (2022). However, it has also been noted that some studies have used a longitudinal process in their research, as noted by Marinković and Kalinić (2020) and Salama and Faraq (2024). The importance of the adoption of technology has been noted, even when it is not voluntary. Situations like the recent global health crisis forced many to turn to digital tools simply to keep functioning (Lee & Tseng, 2024; Ogundega, 2019; Umar & Ibrahim, 2020).

To make any model of acceptance broadly useful, it must therefore account for both voluntary and compulsory contexts. Earlier empirical work comparing different frameworks allowed researchers to combine them into one unified model that includes every major influence on adoption (Venkatesh et al., 2003). This specific study applies that unified theory in a mandatory scenario. Here, pandemic pressures and economic instability pushed small business owners to shift their operations online for survival, making digital adoption a requirement, not a choice (Ikumoro & Jawad, 2019).

Diffusion of Innovations Theory (DOI) is a popular phenomenon in the domain of marketing and information technology (Jiang et al., 2025). Diffusion of Innovation is

based on the attitude of users towards innovation, in this case the attitude of SME owners towards innovation; it also recognised the dynamism of the diffusion of innovations (Faqih, 2022; Kwon et al., 2021). The foundations of diffusion of information (DOI) are the decision of a business owner to accept or reject the level of innovation based on his/her attitude and beliefs about technological innovations. (Jiang et al., 2025; Kyakulumbye & Pather, 2022; Lin & Asim, 2019).

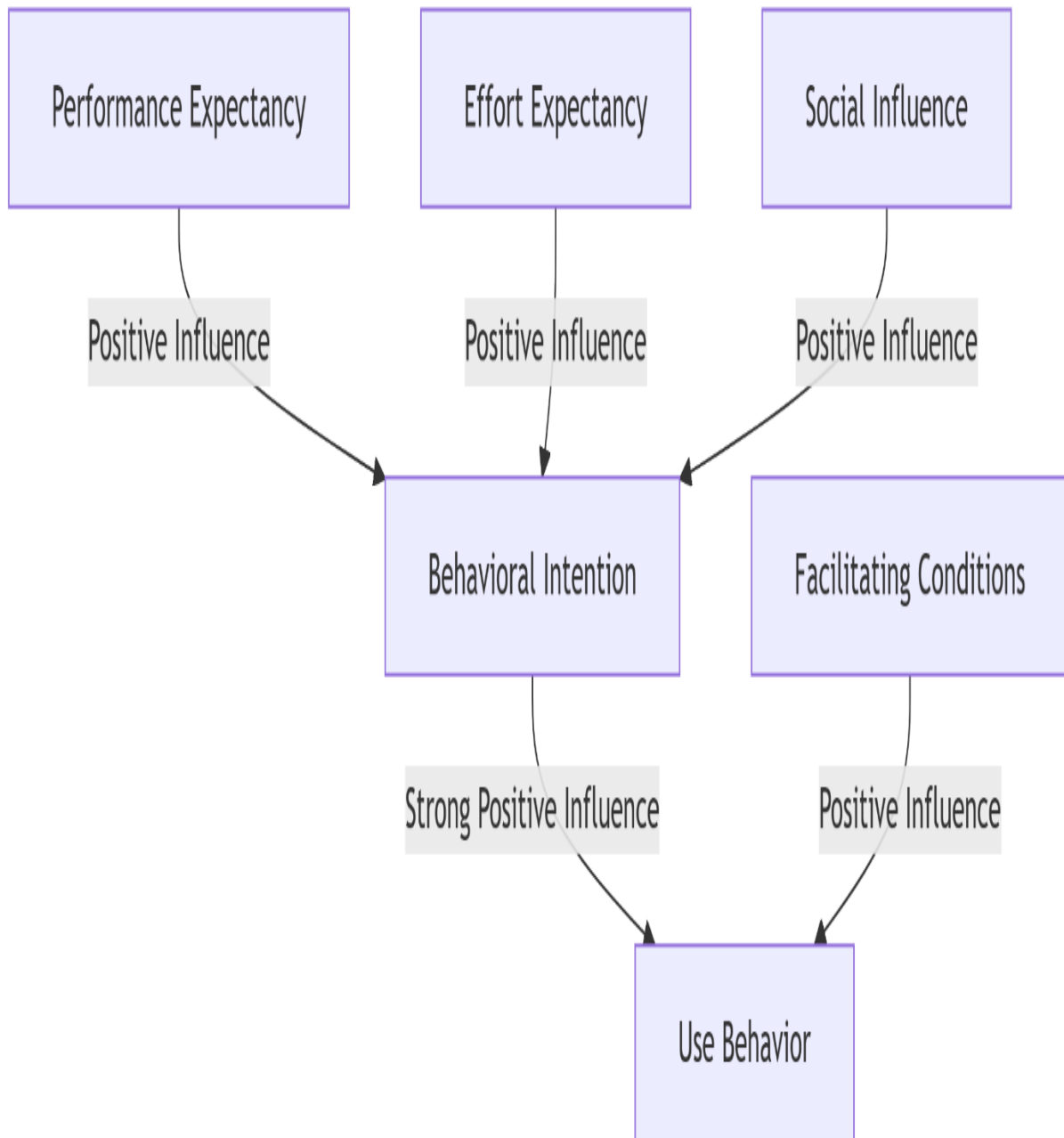
There is an expectation inherent in the adoption and use of technology by a business manager. This is the foundation of the technology acceptance model which buttresses the complex process of technology adoption. This process is divided into the research relating to reluctance of SME managers to use a new innovation and the process of deploying and adopting new technology (Jiang et al., 2025; Singh, 2022; Sani et al., 2020).

The Unified Theory of Acceptance and Use of Technology posited Technology use and adoption was premised on behaviour and attitudes (Cai et al., 2023; Ioakeimidou et al., 2024). For this discussion, four specific concepts which were expectation of performance, expectation of effort, the influence of society and supporting conditions. The impact of predictors is mediated through demographic indices such as willingness to use technology, the age and inclinations of the users. (Couto, 2021; Ioakeimidou et al., 2024). The next page reflects diagram of theoretical underpinnings.

**Fig 2.1**

*Graphical depiction of the UTAUT.*

Source: Author's rendition of Constructs



Source: *Author's Rendition of Variables (2024).*

Expectation of Performance (Performance expectancy) related to the level to which the SME owner believed technology would aid in business growth and financial performance. It was founded on schools of Technology Acceptance Model (TAM), TAM2, Motivational model (MM) and Social Cognitive Theory (SCT). It also took into cognisance, Diffusion of Innovation theory making it the most powerful predictor of voluntary and mandatory adoption of technology (Tang et al., 2021).

Expectation of Effort (Effort expectancy) related to the simplicity and ease of using the technology. How easy it is to navigate a technology will affect how pervasive its use is and the value generated from it (Agbotoba & Adebambo, 2021; Abdat, 2020; loakeimidou et al., 2024; Rozmi et al., 2019; Tang et al., 2021).

The Influence of Society (Social Influence) related to societal expectation that the SME manager was expected to use innovation. Most SME owners work in cooperatives and associations and if the society adopts technology, they are encouraged to purchase same. The mandatory use of technology may not be a personal preference but due to environmental constraints and compliance requirements SME managers may be compelled to use the innovation. However, it is worthy of note that this concept is highly significant in mandatory settings. (Abdulkadir et al., 2022; Shbail et al., 2022; loakeimidou et al., 2024; Ikumoro & Jawad, 2019).

Supporting (facilitating) conditions was explained as the extent to which an SME's organisational and business structure existed to support technology (loakeimidou et al., 2024; Lateef & Keikhosrokiani, 2022; Venkatesh et al., 2003). The supporting conditions concept was created based on availability of resources, digital homogeneity, perceived behavioural influence and concepts drawn from other theories of digital adoption (Chinenye & Macdonald, 2022; loakeimidou et al., 2024).

Supporting conditions had an impact on the intention stage of digital adoption. After adoption of technology, the effect became less significant, therefore, the model proposed that good infrastructure had a direct positive influence on technological adoption (Venkatesh et al., 2003). All these factors determine the purchase and use of a digital technology.

Limited external validity of the UTAUT model motivated further studies to extend the model by adding additional determinants of behaviour, such as trust, self-efficacy, computer self-efficacy, innovativeness, perceived threats, and perceived risk. The model was also extended by introducing new moderating effects, such as income, location, culture, technology readiness. Still, some key factors, like computer competence, remained under-researched. Although it was confirmed that this factor plays a role in behavioural intention only an indirect effect of self-competence on intention was tested while developing UTAUT (Ioakeimidou et al., 2024; Tamilmani et al., 2021).

There is a school of thought which infers that UTAUT might not be efficient as it claimed to be, given out-of-proportion citations compared to the actual implication of the theory. Thus, based on the examination of combined meta-analysis and structural equation modelling, a revised version of UTAUT was proposed, which included attitude construct as a partial mediator of the effects of extraneous concepts of behavioural intentions (Ioakeimidou et al., 2024). In this research, work done will be limited to the original UTAUT model, called UTAUT model 1. The study will not use mediators in its analysis.

## **UTAUT's Applicability and Theoretical Extension for This Study**

The Unified Theory of Acceptance and Use of Technology (UTAUT) provides a comprehensive and rigorous framework for understanding the elements of technology adoption. Its importance is in its ability to predict individual's intention to use a technology and consequent usage behaviour. By merging four basic factors, Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, in line with moderators like age, gender, and experience, UTAUT tells the story of the psychological and social mechanisms that drive the decision to adopt new systems (Venkatesh et al., 2003). This makes it qualified for researching environments, such as mandatory adoption especially during the COVID-19 pandemic, where social pressure and organisational support mandated SME to digitise their operations (Aladejebi, 2020; Ioakeimidou et al., 2024). In this study, UTAUT provides a framework for understanding why retail SME managers in Lagos would make a choice to adopt a technology like mobile banking or POS systems, based upon a well-developed theoretical model for understanding intentions and choices.

One of the limitations of the UTAUT model that is widely accepted is that it does not account for financial performance outcomes, such as Return on Investment. The model ends in the concept of Use Behaviour; it does not go further to determine the economic results from using technology (Aladejebi, 2020; Johnson, 2025). As the literature review showed, most prior studies utilising UTAUT in SME contexts pay attention to the rate of adoption, satisfaction index of adopters, or the documented usefulness of the technology. They do not produce a direct measurable link to pecuniary performance. This creates a crucial gap in both theory and practice, as

business owners definitely adopt technology not merely to use it, but to get financial gains both in profitability, revenue growth, and cost efficiency from the deployment.

This study therefore, proposed an important extension of the theory by directly linking the UTAUT framework to the financial performance outcome using the return on investment (ROI). This study promoted that the UTAUT constructs, which successfully predict the intensity and nature of technology adoption, are the important forebears that enable any financial return. This means that, without the intention and usage behaviour explained by Performance Expectancy and Facilitating Conditions, the financial benefits calculated using the ROI cannot be realised. This research consciously bridged this gap by employing UTAUT as the explanatory theory for the *adoption* of the five digital technologies (the independent variables), while empirically testing their *direct financial impact* (the dependent variable, ROI). In this manner, the study adds to the UTAUT literature by assessing its utility in a performance-oriented environment and provides SME managers with a comprehensive understanding of which technology adoption drivers are most likely to translate into quantifiable financial benefits.

### **Addressing the Critique of A Direct-Theoretical Link Between UTAUT Constructs and ROI in Mandatory Contexts**

Probably the most frequent criticism of using UTAUT in business performance studies is that it stops at Use Behaviour, thus making it clearly ill-suited to predict financial outcomes such as return on investment (ROI). According to Aladejebi (2020) and Johnson (2025), this paper argued that the critique applies principally in voluntary adoption contexts. In the mandatory, survival-driven digital adoption context in which

Lagos retail SMEs find themselves, especially in and after the pandemic and subsequent economic shocks, the UTAUT constructs became direct determinants of financial performance beyond mere adoption predictors. This section now presented the conceptual structure for this argument via three intertwined tenets.

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a scientific template for predicting behavioral intention and usage for the technology adoption (Venkatesh et al., 2003). Nonetheless, as mentioned in the previous statements, the theory terminates in the Use Behaviour, it does not cover the result of the adoption and usage in relation to the performance outcome especially the ROI value computation (Return on Investments). That could be the reason why academicians considered it irrelevant for the economic outcomes based on its inability to measure financial performance (Aladejebi, 2020 & Johnson, 2025).

The researcher proposed that in cases involving mandatory adoption in relation to the events such as the pandemic-induced crisis, there is significant relevance in the basic components of UTAUT and the pecuniary outcome. This link rests on three basic tenets: the function of operational efficiency, the explication effect in inhibited environments, and the metamorphosis of the behaviour principle.

### **First Tenet: The Function of Operational Efficiency**

The basic factor UTAUT to financial performance (ROI) works through the variable of operational efficiency. UTAUT's core constructs, Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, comprehensively ascertain the *intensity, quality, and persistence* of technology use (Venkatesh et al., 2003; Ioakeimidou et al., 2024). In non-compulsory usage settings, technology use may be arbitrary and occasional. However, in compulsory settings like the one induced

by the pandemic, technology usage is crucial for business operations. In this instance, the UTAUT constructs can foretell *how effectively* the technology is inputted into basic business operations. High Performance Expectancy (the mindset the technology will help job performance) enables users to deploy advanced components of technology; high Effort Expectancy (perceived ease of use) mitigates reluctance to use technology. Social Influence (peer or market pressure) encourages associates to comply with trends and use technology (Venkatesh,2003).

Facilitating Conditions (both organisational and technical infrastructure) encourage comprehensive use of the technology (Aladejebi, 2020). This proper use enables operational efficiency and reduces transaction processing times. This minimises errors and makes all manual operations become automated which results in improved revenue and business growth (Wu & Wang, 2005; Xue et al., 2024). Operational efficiency is consequential and necessary for improved financial performance because it reduces the cost of doing business and increases output and production capacity. This inevitably leads to increased performance that can be measured by a high return (Pfister & Lehmann, 2022; Ahinful et al., 2023). For the above mentioned reasons UTAUT is responsible for the *technology deployment activity* that fuels business process *improvements* that lead to better *financial return*.

### **Second Tenet: The Explication Effect in Inhibited Environments**

The compulsory use of technology due to the pandemic acts not as a complicating factor but as a factor that expands and strengthens the UTAUT-Financial Performance (ROI) connection. During crises, available resources experience shortage with the opportunity cost of not using them efficiently becoming expensive. The consequence of not adopting technology when it is not compulsory is lower

financially than in mandatory settings. When physical interaction was restricted such as during the pandemic, the adoption and use of technology became the only way of transacting business for retail SME (Aladejebi, 2020; Bartik et al., 2020). In such a crucial environment, the difference in UTAUT constructs among SME owners is related to difference in business continuity and financial returns. SME managers with high Performance Expectancy in e-commerce would strategically use their online website; one with low Expectancy might use a basic, non-interesting page. The former takes the larger market share while the latter has no benefits.

For the above mentioned reasons, the effect of UTAUT's behavioural factors on financial performance is enhanced under constraints because technology moves from just a value add-on to a crucial addition to the business. The Social Influence construct is virile, as the competition to join the digital trend will reduce rewards for the technology laggards immediately as they lose revenue and profit the leaders in the field (Ikumoro & Jawad, 2019).

The occurrence of the pandemic is therefore a good example of a mandatory situation where the financial effect of technology adoption drivers is devoid of the non-use variable which confounds the connection, making the UTAUT-ROI relationship easy to observe and measure.

### **Third Tenet: The Metamorphosis of the Behaviour Principle**

This tenet postulates that in non-mandatory environments, behavioural intention may be dynamic and reversible. In extreme mandatory-use driven environments, repeated enforced use changes the patterns of behaviour and the results of same (Lee & Tseng, 2024; Venkatesh & Hoehle, 2015). A retail SME manager who had to use mobile banking for two years during and after pandemic has

a different relationship with the technology from a voluntary early adopter. The compelled experience establishes the usage patterns, enforces knowledge of the technology feature, and entrenches the technology into the firm's operational manual. This metamorphosis means that the *usage behaviour* stated earlier by UTAUT changes from primary compliance to regular competence. The competent use either in digital inventory management through the point of sale (POS) systems or customer management through platforms of e-commerce, evolves into a company resource.

The use of such resources thus elevates the SME into such competencies to improved competitive advantage and better financial performance (Barney, 1991). Thus, through the metamorphosis of use into competence, the steps of behaviour explained by UTAUT (Intention to Use) establishes the capability which links directly to financial performance measured through better financial performance measured through the ROI.

### **The Evolution from Behavioural Model to Performance Framework**

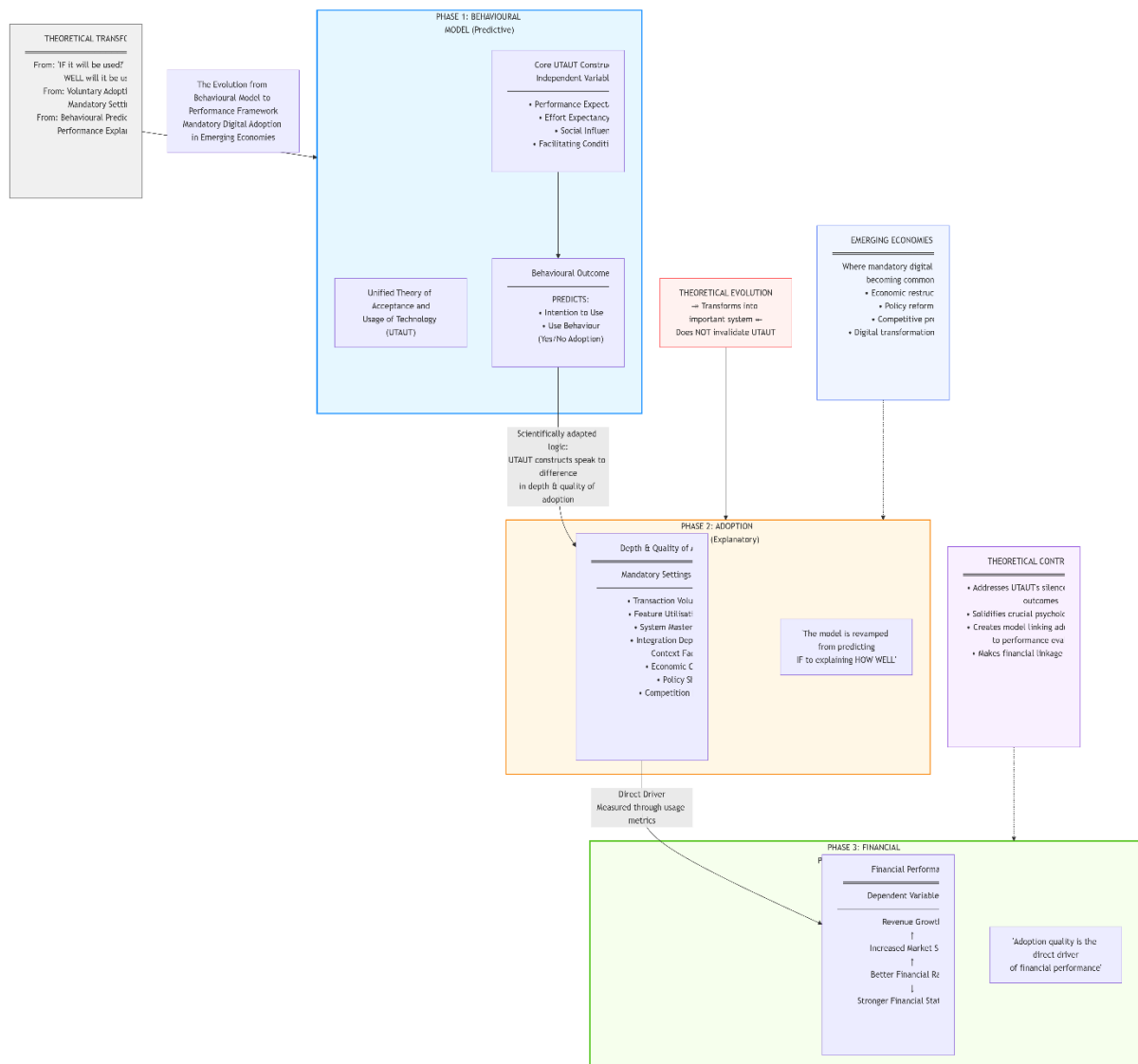
This theoretical extension does not invalidate the Unified Theory of the Acceptance and Usage of Technology (UTAUT) but transforms it into an important system. The model is revamped by the researcher from predicting *if* technology will be used to explaining *how well* it will be used in mandatory settings. The how well then translates into revenue growth aided by increased market share and better financial ratios that appear on the financial statement.

This study scientifically adapts this established logic: the UTAUT constructs (independent variables) speak to the difference in the *depth and quality of adoption* of five digital technologies. This adoption quality, measured through usage metrics (such as transaction volume, feature utilisation), is stated to be the direct driver of the

dependent variable, financial performance measured through return on investment (ROI). By making this connection crystal clear, the study addresses the review of UTAUT in business research, its silence on financial outcomes, while solidifying its crucial psychological leanings. It creates an important model for how adoption theory can be associated and linked to performance evaluation, particularly in the emerging economies where mandatory digital adoption is becoming commonplace due to economic changes, changes in policy and demands of competition.

The figure on the next page graphically depicts the explained connections.

**Figure 2.2. UTAUT-to-Performance Transformation Framework**



Source: Author's Rendition of Variables (2024).

An explanation of this framework narrated a clear story: it began with the psychological foundations of UTAUT, explaining *if* technology will be adopted and deployed. The model then evolved to speak to the compulsory dynamics of mandatory settings, moving focus to *how well* the technology is adopted. Finally, it stated the

critical business connection by showing how this quality of use directly translated into substantive financial performance. In other words, it connected the why of user behaviour to the so what of business outcomes.

### **Critical Assessment of Methodologies Used in Prior Studies to Measure Financial Performance (ROI)**

The measurement of Financial Performance through Return on Investment (ROI) is a crucial aspect of evaluating the effectiveness of digital adoption in small enterprises. However examined literature revealed that there is an underdeveloped link between digital adoption and ROI. Most studies cited do not quantify ROI from digital tools, instead focusing on qualitative measures such as user adoption rates, user satisfaction, and perceived usefulness. A critical assessment of methodologies used in prior studies to measure financial performance revealed that cost-benefit analysis, profit margins, and sales growth are more commonly used metrics (Aladejebi, 2020, Bello & Tijani, 2020).

The particularly discussed methodologies, as the researcher has indicated, have a number of limitations. For instance, cost-benefit analysis needs accurate cost and benefit estimation, which may be a challenge in digital adoption. Profit margin and sales growth may also not be effective in measuring the effect of digital adoption on ROI. Moreover, most studies may not consider extraneous factors that may affect ROI, such as market factors, competition, and organizational factors (Johnson, 2025).

## **Proposed Financial Performance (ROI) Measurement Framework**

The researcher used an integrated approach of measuring return on investment (ROI) that utilised qualitative as well as quantitative metrics. The design included the following factors:

1. Quantitative measures: Revenue growth, profit margins, return on investment (ROI) will be used to measure the financial impact of digital adoption.
2. Qualitative measures: User adoption rates, user satisfaction, and perceived usefulness will be used to the efficiency of the digital technology measure the effectiveness of digital adoption.

## **Data Collection and Analysis**

To implement this framework, data was collected through a survey of retail SME managers, followed by a financial analysis of their digital adoption initiatives. The outcomes from this research contributed to the creation of a financial performance measurement through a robust financial performance measure of return on investment (ROI) framework that can be used by SME to determine the strength of their technology decisions. Through the utilisation of the proposed framework, a link between digital adoption and financial performance could be established in a way that allowed for an in-depth analysis of the financial and financial aspects of digital technology adoption in retail SME. This study would help in improving cash management for the manager of the SME as well as for policymakers and academicians in understanding the significance of technology in achieving fiscal gains.

## Alternative Theories and Counterarguments

Although the Unified Theory of Acceptance and Use of Technology (UTAUT) is comprehensive in its explanation on digital adoption in SMEs, other theories could help explain why better outcomes are realised by certain SMEs as opposed to others as a result of digitalisation. Two examples of such theories are Resource-Based View (RBV) and Dynamic Capabilities Theory. Resource-Based View (RBV) theory, as proposed by Barney (1991), asserts that firms with distinctive skills and capabilities are capable of gaining sustained competitive advantage.

In the context of digitalisation, SMEs with access to resources such as digital infrastructure, skilled personnel, and financial capital may be better equipped to leverage digital technologies and reap their benefits. This explains how resources are allocated and how strategic plans are made in digital adoption of SMEs.

Dynamic Capabilities Theory according to Teece (2007) focuses on how businesses adapt in fast changing environments therefore SME that possess dynamic capabilities, such as the ability to sense and respond to market changes, may be more likely to benefit from digitalisation. The theory is of the opinion that SMEs need to build up skills and abilities to cope in the dynamic new world.

While digitalisation is a forward looking scheme and has so many advantages it is also fraught with some drawbacks. Over-digitalisation, for example, may lead to business inefficiencies and productivity of the firm (Guo et al., 2025; Guo et al., 2020). SMEs may invest a lot in digital technologies, only to realise that they are not being used effectively or efficiently. Besides, apart from these mentioned points, digital technologies also pose a threat to SMEs in terms of cybersecurity threats such as data

breaches and cyber attacks. These threats have a negative effect on business activities within respective SMEs (Guo et al., 2025; Zhu et al., 2020).

### **Deeper Discussion of Counterarguments**

A deep dive and consideration of the facts of the counterarguments was necessary to provide a proper understanding of digitalisation in SMEs. SMEs need to carefully consider the potential advantages and disadvantages of digitalisation and develop strategies to reduce challenges and emerging threats due to use. This may involve investing in cybersecurity measures, developing digital literacy among employees, and implementing effective digital governance structures.

The role of alternative theories and counterarguments in digitalisation is extremely important for SMEs. The key area where SMEs need to focus is strategic planning, allocation, and development to reap maximum benefits from digitalisation (Guo et al., 2025; Guo et al., 2020).

Through an examination of all these views, SMEs will develop an insightful network concerning the aspect of digitalisation and will make effective decisions regarding the adoption of digital technologies. This will finally enable SMEs to enjoy the benefits of digital technologies for enhanced service delivery and profit downlines. This will lead to an enhancement of enterprise growth and stability (Barney, 1991; Guo et al., 2025; Venkatesh, 2003). UTAUT's ability to explain behavioural intention distinguishes the patterns of behaviour which are intricately captured in choosing technology for businesses (Barney, 1991; Guo et al., 2025; Venkatesh, 2003). This is crucial for SMEs where most of the operations depend on owner-managers' decisions which often drive technology adoption.

## **UTAUT's Applicability to Mandatory Settings**

This study investigated digital adoption where SMEs are compelled to adopt digital technologies due to environmental constraints (e.g., financial crisis and the pandemic) (Aladejebi, 2020; Ioakeimidou et al., 2024). UTAUT's consideration of social influence and facilitating conditions makes it well-suited to explain technology adoption in such settings. While Resource Based View (RBV) expands on the specific skills and incentives to expand its business base, it might not be appropriate for analysing technology adoption in SME. RBV is concerned with internal resources and capabilities of firms, whereas UTAUT considers both internal as well as external factors that influence technology adoption (Barney, 1991).

## **A Direct-Effects Model of Adoption Behaviour to Financial Performance**

The Unified Theory of Acceptance and Use of Technology (UTAUT) stands as a pre-eminent, validated framework for understanding the antecedents of technology adoption and usage behaviour within organisations. Its four core constructs: Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions have been rigorously demonstrated to predict an individual's intention to use a system and their subsequent use behaviour (Venkatesh et al., 2003). When researching whether and how small to medium sized enterprises (SME) embrace digital tools, there is no better model to base research upon than UTAUT

Nevertheless, as emerged in this literature review, the most popular use of UTAUT in the context of SMEs faces a major challenge in terms of the behavioural paradigm the model proposes, which is to say that UTAUT is actually taciturn concerning performance results, especially financial performance. UTAUT is actually

a behavioural prediction model, concluding at the stage named Use Behaviour. Although very effective in justifying diffusion, this stage has a major explanatory gap in business studies, where the financial performance gained by using the product/service is the actual success marker, rather than usage (Aladejebi, 2020; Johnson, 2025).

A manager does not adopt a technology merely to use it; they adopt it to achieve improved profitability, revenue growth, and cost efficiency. This chasm between behavioural models and financial outcomes constitutes the core theoretical gap this study addresses.

The present research advances the theoretical discourse by proposing a logical and direct theoretical integration between UTAUT and the financial performance of SMEs, without the introduction of a mediating variable. This integration is built on a clear and defensible theoretical proposition: the UTAUT constructs are the fundamental enablers of the effective use of digital technology, and this effective use is a necessary and direct precursor to any realised financial return. The relationship is not correlational but sequential and foundational. The figure 2.2 grounds this assertion.

The theoretical logic proceeds as follows:

1. UTAUT as a Gatekeeper for Effective Usage: The Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions perceived by an SME manager help in deciding how often and how effectively he uses a technology. High Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions result in a high level of effective usage, which means doing more with a technology than basic transactions, such as application usage rather than just transactions. Instead of only dealing with

sales over an e-commerce website, one can do more, like managing their stock and analysing clients through an inventory management software.

2. Effective Use as the Vehicle for Financial Mechanisms: The effective use enabled by UTAUT that directly triggers the financial mechanisms of the digital technology at hand.

- Performance Expectancy leads to Revenue and Cost Efficiency: Perceived usefulness, in terms of a belief in performance enhancement, is a major driver for using a tool for revenue-generating purposes (e.g., targeted online advertising through online shopping) and for cutting costs (e.g., automated reconciliation through internet banking).
- Effort Expectancy leads to Reduced Friction and Wider Adoption: The easier it is to use a system, the easier it becomes to perform transactions, leading to reduced friction and widespread adoption among staff members as well as customers.
- Social Influence and Facilitating Conditions leading to Market Integration and Scale: The need to keep up with competition in the market (Social Influence) ensures that the SME integrates the market, while the need for infrastructure that ensures a smooth flow of transactions (Facilitating Conditions) enables the SME to scale the market successfully. This directly affects the sales of the SME.

3. The Direct-Effects Proposition: Therefore, the UTAUT constructs do not *indirectly* influence financial performance through a separate mediator like operational efficiency. Rather, they define the very nature and quality of the operational process itself. Operational efficiency is not a separate variable; it is the *embodiment of effective technology use*. A high Performance

Expectancy regarding a POS system leads an SME to use it for real-time inventory tracking and this is the definition of operational efficiency. The financial benefit (reduced stockouts, optimised cash flow) flows directly from that competent use. In this integrated view, UTAUT's predictive power is harnessed to explain variance in the *financial efficacy of technology use*. An SME with strong UTAUT-driven adoption will deploy technology in ways that directly and positively affect its Return on Investment (ROI). If an SME where the manager takes poor decisions and adopt the same technology but use it ineffectively, yielding no financial gain, this would adversely affect the business, thus explaining the null findings prevalent in the literature.

This theoretical integration reframes the research question. It is no longer if technology adoption (yes/no) affect performance but rather to what extent do the drivers of effective adoption and use (UTAUT) explain variance in the financial return (ROI) generated by specific digital technologies?

This positioned the study to make a substantive theoretical contribution: extending UTAUT from a predictor of adoption to a predictor of the *financial yield* of that adoption in a mandatory-use, resource-constrained context. It provides a parsimonious, powerful model for linking the rich psychological and social understanding of UTAUT directly to the economic outcomes that define business success, thereby offering a comprehensive explanation for the digitalisation-performance puzzle in emerging market SME.

This theoretical model of direct effects informed the operation of variable constructs, hypothesising (H1 to H5), and results interpretations to ensure that this study remains theoretically sound while having a singular empirical aim.

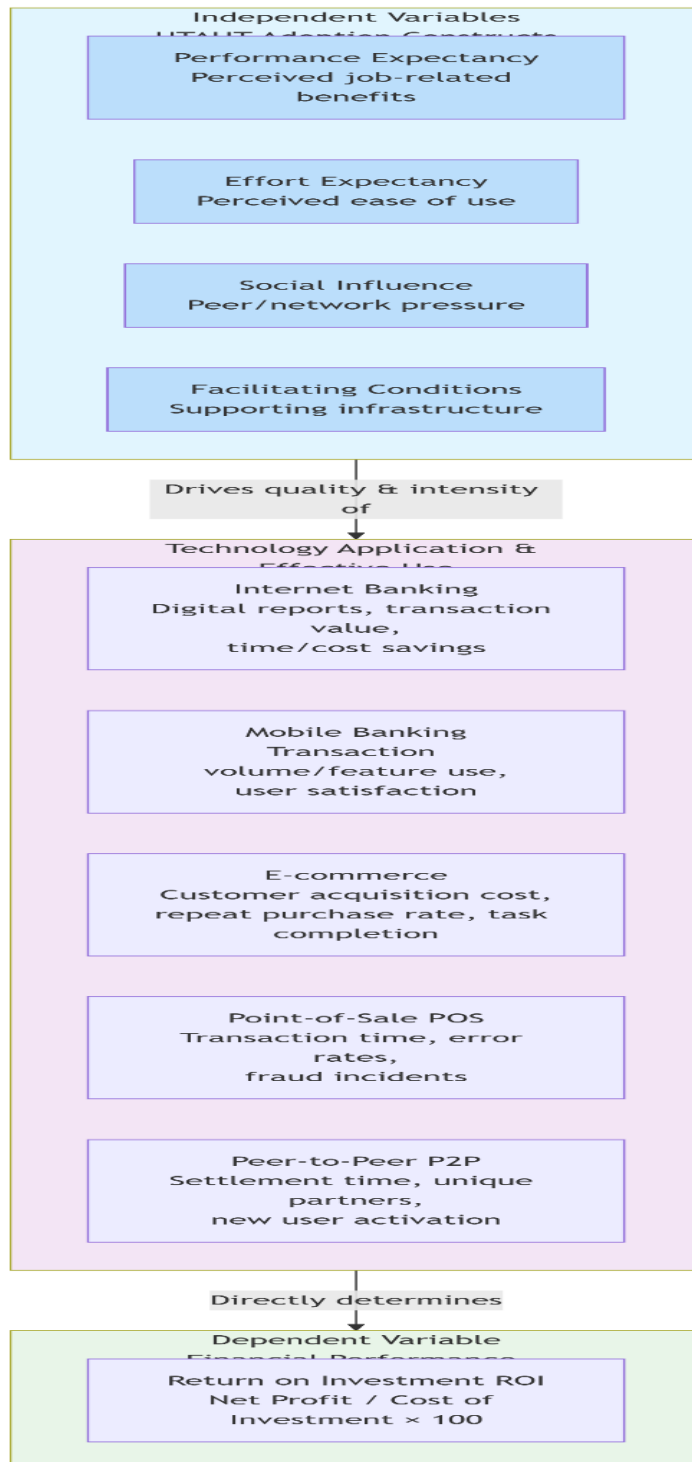
## **Research Question Alignment**

The research questions of this study were based on how economic and pecuniary performance of small retail businesses are affected by technology. The theory's constructs as well as propositions were directly aligned with this research question, making it a more suitable theoretical framework for this study. In conclusion, while both UTAUT and RBV are valuable theoretical frameworks, UTAUT's specific focus on technology adoption, its ability to explain behavioural intention, and its applicability to mandatory settings made it a more suitable choice for this study.

From the above discussion, the concepts relating to the study were constructed into a diagram rendered thus.

## Conceptual Framework

Fig. 2.3 Framework for the study



Source: Author's Rendition of Variables (2024).

To address the gaps identified, this study proposed a conceptual framework (Fig 2.3) that *operationalised* the UTAUT constructs by linking them to measurable usage metrics of five digital technologies. These metrics for usage were then directly related to the dependent variable, financial performance measured by ROI (Net Profit/Cost of Investment %). This model allowed for testing the hypothesis that greater adoption and usage driven by UTAUT constructs result in a positive financial payoff.

A conceptual framework for examining the effect how digital technologies affect pecuniary performance required the identification of important independent variables that represent the adoption of these technologies. This framework stated that the operational and financial success of the five digital technologies: Mobile Banking, Internet Banking, E-Commerce, Point of Sale (POS) Systems, and Peer-to-Peer (P2P) Systems influences the dependent variable, financial performance, which is quantitatively measured by Return on Investment (ROI). The selection of independent variables was founded in their predetermined importance within existing literature as drivers for efficiency, adoption, security, and customer engagement.

In the case of Mobile Banking, some of the constructs included in its measurement were the number and value of transactions made, feature utilisation rate, and user satisfaction scores. These measures reflect the intensity of user activity and the level of operational output, to which empirical studies relate to higher fee-based income and lower operations costs. In a similar fashion, Internet Banking is typically measured by the number of digital reports produced, the value of transactions handled, and assumed economies of time or money saved. These indicators reflect the role of the technology in enhancing business processes and automating regular tasks, hence saving costs.

On the E-Commerce platform, the constructs used were Customer Acquisition Cost (CAC), proportion of repeat orders vs. new customers, and task completion rate. These are important in measuring customer loyalty and efficiency of the digital platform, both of which have implications for business success.

The framework also developed indices for the Point of Sale systems that analysed the speed of inventory count, the time for transactions, error rates, and the frequency of fraud attempts. The variables were essential for measuring the benefits accruable in the efficiency, accuracy, and security achieved in the operations of the business. The efficiency directly affects the sales volume, which can boost the bottom line.

Finally, for Peer to Peer systems, key constructs included average settlement time, the number of unique trading partners, and new user activation rates. These measures assessed the platform's liquidity, growth, and efficiency, factors that were based on the system's ability to generate transaction-based revenue.

The integration of these independent variables into a framework provided a comprehensive model for testing the five hypotheses (H1 to H5). The plan was that improvements in digital networks be it through higher transaction volumes, greater efficiency, improved security, or deeper customer engagement would result in increased net profit compared to the cost of investment, thereby providing a higher Return on Investment. This framework gave an empirical approach for analysing how digital transformation substantially influenced retail SME financial outcomes.

## Empirical Review of Related Literature

The Nigerian definition of an SME, its structure and composition, how SMEs generated revenue and account for profits and the metrics of determining financial performance were the starting points for this literature review. Internet banking, mobile banking, e-commerce, point-of-sales system and peer-to-peer payments which were the digital technologies to be explored in this study were reviewed using the main concepts of the Unified Theory of Acceptance and Use of Technology (UTAUT). Searchlight was also beamed on the intersection of digital technology and pecuniary results in the retail sector of Lagos, Nigeria (Ioakeimidou et al., 2024; Sani et al., 2020). Comparable SME studies from Asia, Europe and Africa were also reviewed.

**Definition of an SME.** When examining Peterson et al. (1986) the researchers stated that a small business is an enterprise that has less than a hundred staff. Azam and Abdullah (2024) as well as Ang (1991) further posited that a self-owned unlimited endeavour by a private citizen which is led by an informal team rather than an official management was what constituted a small or medium business. Partnerships could also qualify as such. However, Osteryoung et al. (1997) elucidated that to qualify for a small business, the enterprise must have a physical presence, accrue expenses, generate substantial income and have a physical location.

In Nigeria, SMEs are small businesses which have less than ten staff and an asset base lower than five million naira (₦5, 000,000) Small enterprises have 10 to 50 staff and lower than fifty million naira (₦50, 000, 000) Medium enterprises have 50 to 199 staff and total assets not exceeding five hundred million naira (₦500, 000,000). If there exists a conflict in categorisation, the number of staff takes precedence (Mohammed et al, 2022; SMEDAN report piii, 2021; SMEDAN report 2013). For the

purpose of this study, micro and small businesses were merged together and treated as small business for ease of data collection (Ajuwon et al, 2017; Azam & Abdullah, 2024; Mohammed et al, 2022; SMEDAN report, 2013).

### **Financial Performance**

Performance could be explained as the process of building and growing a business which includes growing its sales and revenue, profits and assets base (Khalid et al., 2025; Qalati et al., 2021). Performance also includes an improvement of the service quality and output of the business. The ability of an SME to grow and develop its business strength is dependent on its potentials and resources. To accrue profit is the foundational purpose of the business. Therefore, a business needs technology, time and capital to develop and perform optimally (Khalid et al., 2025; Qalati et al., 2021).

### **SMEs and Financial Performance measured by Return on Investment (ROI)**

SMEs are usually informal organisations who usually self-account and keep records based on the expertise of the management of the SME. To determine financial performance, many indices could be used for accounting. Return on equity (for listed companies) is used to determine the increase in share investment made by shareholders (Rusu & Roman, 2022). Most SMEs do not have shareholders as they are private enterprises or partnerships. Another index is return on asset (ROA) which measures how efficient a company's management is in generating profit from their total assets on their balance sheet. A higher return on business assets indicates an efficient business management process (Ahinful et al., 2023). A third index is return on investment (ROI) which is calculated by dividing income less expenses from an

investment by the original cost of the investment, the result of which is expressed as a percentage using the following formula.

$$\text{ROI} = \text{Net profit}/\text{Cost of investment} \times 100$$

It could also be defined as = Gain less investment.

This is called Absolute ROI

Example: Investment: ₦1000 Gain or Profit: ₦500 ROI =  $\text{₦500}/1000 \times 100$ .

This means that the investment generated a return of 50%

Rendering ROI in naira (₦) or as a percentage can be useful when evaluating large investments with significant returns. Comparing investments with different costs and returns and communicating ROI to stakeholders who prefer naira amounts.

For the purpose of this study, ROI will be rendered in percentage.

While ROI (Return on Investment) and ROA (Return on Assets) are equally important ratios for an organisation's financial performance, the choice of the most suitable one for an SME (Small to Medium-sized Enterprise) may vary depending on the situation or objective in mind. ROI stands for Return on Investment, i.e., the profit earned on investments or the returns obtained on investments (profits divided by investments). ROI is used for measuring the efficiency of investments (Ahinful et al., 2023).

Similarly, ROA stands for Return on Assets, i.e., the profit earned on total assets or the returns obtained on total assets (profits divided by total assets). ROA is used for measuring the efficiency of total assets For an SME, return on assets (ROA) may be a more suitable ratio since SME has fewer resources and fewer assets, making it essential for SME to be efficient in its asset utilisation. ROA will give a general view

of the company's general performance, which is very important for SME since they have limited resources. ROA will help SME identify where to improve in terms of asset management, which will lead to increased efficiency and profitability. ROI, however, could be best used to assess a particular investment/project, compare the performance of various investments/projects, or to assess the efficiency of a particular business strategy/project.

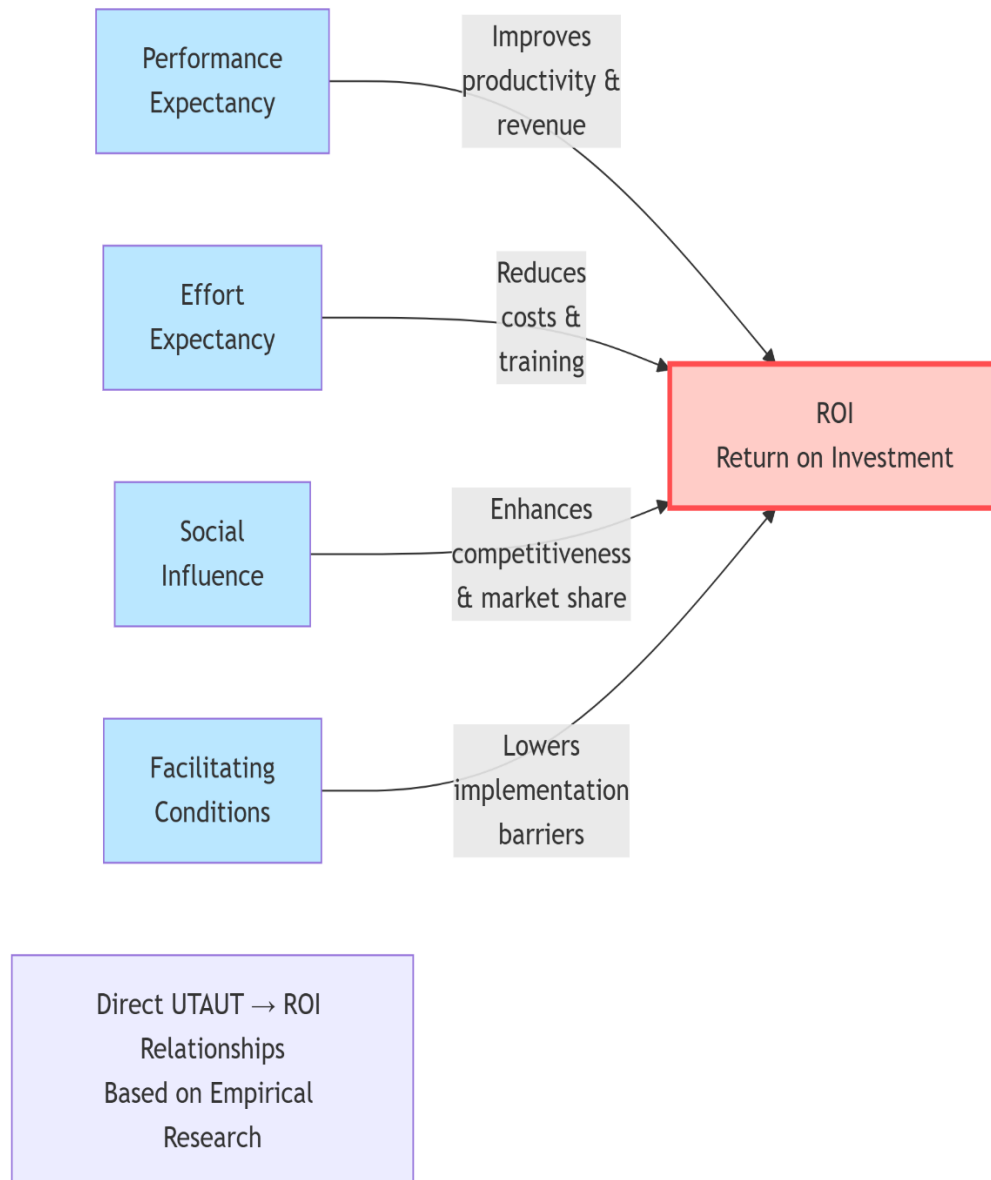
In this study, return on investment (ROI) was used as an index to measure the adoption of digital services such as mobile banking, internet banking, e-commerce, point of sales system, and peer-to-peer system on the pecuniary performance of retail SME in Lagos, Nigeria, between 2019 and 2023.

### **Relationship between UTAUT and Financial Performance (ROI)**

The figure below is a simple diagram depicting the association between digital adoption, the predictor variable in the study and financial performance the dependent variable. The perceptions of retail SME managers are measured with respect to digital adoption.

**Fig 2.3**

*Depiction of relationship between UTAUT model indicators and ROI*



The UTAUT constructs, including performance expectancy, effort expectancy, social influence, and facilitating conditions, can be related to return on investment (ROI) in various ways:

Performance expectancy refers to the belief that the chosen technology will do what is promised to do as a business machine (Venkatesh et al., 2003). Research has shown that promise to perform, influences technology adoption and use (Xue et al., 2024; Venkatesh et al., 2012). For ROI, performance expectancy can be related to the benefits that can be expected by the organisation if it invests in a particular technology. For example, if employees in an organisation are of the view that a particular technology will benefit their work experience, then it can be expected that productivity and revenue will also increase.

Research has theorised that performance expectancy can affect the adoption and usage of technology, and this can further result in ROI and business performance (Wu & Wang, 2005; Xue et al., 2024). For example, in a research on the implementation of end-to-end business solutions, it was found that performance expectancy is a significant influencer in terms of user satisfaction and ROI (Amoako-Gyampah & Salam, 2004).

For financial performance based on ROI, performance expectancy can be linked to the benefits that an organisation can expect to gain from investing in a technology. For example, if employees believe that a new technology will aid the work experience, the organisation can expect to see improvements in productivity and potentially increased revenue. Studies theorise that performance expectancy influences technology adoption and use, which can ultimately result in business performance and ROI (Xue et al., 2024; Wu & Wang, 2005). For instance, a study on

the deployment of end to end business solutions found that performance expectancy was a significant influencer of user satisfaction and net benefits (Amoako-Gyampah & Salam, 2004).

If a technology is perceived as easy to use, employees are more likely to adopt it, which can reduce training costs and improve productivity. Improved organisational performance through digital adoption and its subsequent effect on financial performance measured by ROI elevates business growth (Wu & Wang, 2005). For example, a study on the adoption of mobile commerce found ease of use experienced with the technology helped adoption and intention to use (Hong & Tam, 2006).

In terms of financial performance measured by return on investment (ROI), social influence can impact the adoption and use of technology, which can ultimately lead to improved organisational performance. In previous studies, social influence is positively related to technology adoption and use, which can effectively lead to improved organisational performance and business performance (Kwahk & Kim, 2008; Xue et al., 2024; Wu & Wang, 2005).

For financial performance measured via return on investment (ROI), facilitating conditions can impact the costs associated with implementing and maintaining a technology. Literature states that facilitating conditions are positively related to technology adoption and use, which can ultimately lead to improved organisational performance and ROI (Katraggada, 2024; Wu & Wang, 2005). For example, a study on the adoption of computing found that facilitating conditions aided user adoption and such adoption led to intention to use (Gangwar et al., 2015). In conclusion, the UTAUT constructs can be related to ROI in various ways. These four constructs explained above and depicted in the image above, can all impact the adoption and use of

technology, which can ultimately lead to improved organisational performance and ROI.

### **Internet Banking and Financial Performance.**

E-banking which is another name for internet banking according to Faisal and Tayachi (2021) is a payment system powered electronically which enabled financial institutions and its clients transact business on the internet via the bank's website. The technology required are a software to power the banking website and bank customers patronising the bank's internet banking website. The bank customers gain access through the deployment of a unique user name and a password. Internet banking leverages on security features to retain integrity of transactions as well as eliminate fraud and impersonation via the worldwide web (Abbas & Shaheen, 2021; Chugh et al., 2020; Dangaiso et al., 2024; Mohammed & Faleel, 2021).

Through internet banking, Sahut et al. (2021) stated that the bank customer can check their account balances, they can obtain financial statements, and they can monitor transactions and make payments to third parties or into other accounts held by them. For the aforementioned purposes, Raviadaran et al. (2019) stated e-banking provides access to conduct business therefrom on a safe and secure platform (Al Ajam & Md Knor, 2015; Dangaiso et al., 2024; Sasikumar, 2020; Tan & Teo, 2000).

Internet banking also provides a customer care service where complaints and queries can be made and resolved in a timely manner. The Central Bank of Nigeria's technical committee defined internet or e-banking as a system where banking can be carried out automatically via computers, tablets, the use of telephones and other electronic channels (Baklouti & Boukamcha, 2024; Central Bank of Nigeria [CBN], 2003).

Internet banking is a veritable tool for the advancement and growth of a business with the goal of financial performance and profits in sight. Having access to a platform, according to Litvishko et al.(2020) to transact business across geographical locations and time-zones is a great way to build new clientele and generate revenue (Petrova & Kuznetsova, 2020).

Being able to access financial statements to prepare accounts gives an SME the opportunity to manage resources better and ensure firmer control of processes. The ability to transact business according to Anouze and Alamro (2019) remotely are the advantages that internet banking proffers to an SME by making it accessible for transactions processing round the clock. The ensuing literature review will examine how internet banking influences pecuniary performance of SMEs in Africa, Asia and other economies around the world (Baklouti & Boukamcha, 2024; Normalini et al., 2019; Rahi et al., 2019).

### **Global and Comparative Perspectives on Adoption and Performance**

The international literature revealed a complex phenomenon of the impact of internet banking on SME performance, where positive correlations exist, though moderated by many contextual and methodological issues. Internationally, the importance of internet banking had been recognised to facilitate the management of complex business transactions, improve the management of cash flow, as well as other functions like investment services which previously were only accessible to big businesses (Alamro & Anouze, 2019; Keeton, 2001; Thathsarani & Jianguo, 2022). Internet banking has been found to help in handling complex business transactions, as well as enhancing the management of cash flow to realise higher profitability in Kenya (Djibran, 2025; Obunga et al., 2021).

Again, in Indonesia, the use of digital finance through the internet banking system had been found to positively contribute to the financial performance of SMEs (Daud et al., 2022; Shofawati, 2019).

Empirical evidence does not, however, uniformly report positive results and often shows contingent or indirect effects. One Mexican study discovered that internet banking explained only 47% of SME growth, thus over half of the performance variance is due to other factors. Other research has suggested that the effect is stronger at the level of operational processes rather than on direct financial or strategic performance. In one such study, no direct relationship was observed between internet banking and business/financial performance but an indirect influence through organizational processes.

Partial contradictions, in particular, come out during crisis periods; although digital tools became key instruments during the COVID-19 pandemic, according to some evidence, it is not enough for digitalisation to bring financial performance alone, without complementary financial management. It also seems the advantages are not uniformly distributed since B2B enterprises tend to rely more on internet banking than B2C firms.

An appraisal of an American bank conducted by Keeton (2001), one of the advantages of internet banking to SMEs is convenience. Large corporations have enjoyed access to banking services through their network facilities which was previously unavailable to SMEs. Internet banking is creating this opportunity for SMEs as the ability to transfer funds, access account balances and complete transactions as mentioned in previous paragraphs is the leverage that internet banking provides for a small business (Thatsarani & Jianguo, 2022; Vyas & Jain, 2021).

Apart from these benefits, other advantages that internet banking can provide for customers and small businesses is to provide financial management services and payroll maintenance services. SMEs account for a large number of businesses in the economy and assisting them to perform effectively is important for economic growth. As internet banking innovates and becomes more versatile, SMEs can use the platform to bill clients, collect payments and update the financial accounts through the internet banking portal (Tangiduk et al., 2024).

SMEs could also conduct business to business (B2B) transactions over the internet banking platform. Insurance and investment services can also be transacted via the internet banking platform as well as purchasing and selling bonds, shares and mutual funds are possible via the internet banking portal. These facilities assist the SME manager to pool and invest funds wisely which in turn contribute to the financial performance of the SME. The school of thought that most SMEs do not have the capacity to invest in bonds and shares have been contradicted by the research that states that most banks are opening investment plans that can be accessed with small funds. Most SMEs are also becoming aware of and grasping an understanding of the insurance market to secure funds and business in times of uncertainty (Alamro & Anouze, 2019; Khatoun et al., 2020; Li et al., 2021).

The review by Keeton (2001) reiterated that when a bank provides all services to an SME, it makes the SME retain business and remain loyal to the same institution. The benefits of this line of action can be broadly divided into two streams. One is consumption consolidation. In this case, the benefit of one-stop banking is almost same for the consumer and the SME. However, when it comes to production consolidation, financial services consolidated into one-stop banking helps small businesses more than ordinary bank customers. The information SME financial

records provide about their banking trends help the banks provide financial aid and loans which fuel business growth and performance (Kamaruddin et al., 2020; Krishnamoorthy & Shivkumar, 2020; Tasnuva, 2020).

Building long term relationships with SMEs enable the banks to understand the peculiar challenges of SME and provide requisite services via the internet banking portal to aid the SME performance and continued patronage. To this end, many banks have opened specialised internet banking portals for SME customers (Effiom & Edet, 2022; Lu et al., 2022; Shofawati, 2019).

Another Asian study from Indonesia by Shofawati (2019) investigated the role of digital finance to aid growth of SMEs in Indonesia. The study noted that new advancements in technology were important for any SME to develop and grow. Greater speed and service delivery was required from clientele and daily, competition was forcing SMEs to improve on service delivery and product offerings. For a business to prosper in an ever dynamic world it required access to and use of technology. Internet banking assisted the SMEs to derive data analytics with which to make informed business decisions. Indonesia has the peculiar nature of being a conglomeration of islands.

Technology in such a region, was a viable means of connection. For SMEs in this peculiar geographical area, internet banking was a sure way of conducting business seamlessly. Using an interpretivist approach, data was collected from previous literature and academic journals. This method was employed to reduce bias. The findings were that digital banking promoted financial inclusion which led to greater financial performance by SME (Law, 2021).

A review of digital business and its impact on SMEs was captured in the academic research by Putra and Santoso (2020) which was another Asian study on SME. During a systematic review of literature, it was observed that digital technology, the environment and business processes impacted the performance of SME. Of the three factors, technology came second as the most important index of SME performance. This Indonesian study of 325 SMEs, however found out that technology was the most significant influence on enterprise performance at the operational level than at management and strategic levels. This indicated that the infusion of technology into everyday business operations was the way to achieve financial growth and performance (Appio et al., 2021; Hanelt et al., 2021; Jafari-Sadeghi et al., 2021; Li et al., 2021).

The sampling analysis conducted by Daud et al. (2022) with snowball technique on 190 SMEs in Banten, Indonesia observed that digital finance deployed through internet banking has a positive and strong significance on SME financial performance. Digital payments and marketing has a positive and strong significance on SME financial performance. These results can assist SME owners and managers to develop and grow their business by exploring potentials in digital tools and financial literacy. . Therefore, in-depth analysis into digital financial services available for SME is core to their financial performance.

In same study, Daud et al. (2022) noted that digital technologies assisted management of SMEs to manage and track transactions. The cost of deploying digital services is another consideration as access costs and charges can be a deterrent for many SMEs. They reviewed the World Global Findex survey in 2017 which stated that more than one and half (1.5) billion individuals are not captured in the formal financial

system. Due to lack of access to funds and lack of accounts, another 1.5 billion are under-banked (Morgan, 2022; Rasheed et al., 2019; Ray & Shantu, 2021).

In 2018, statistics showed that more than 50% of the Asian population are unbanked. To this end, there are many SMEs who want to access finance to fund their businesses. The available finance options are expensive to access. Digital banking helps SMEs access capital and finance at affordable costs to leverage financial performance (Law, 2021; Rasheed et al., 2019; Ray & Shantu, 2021).

In a similar vein, a Costa Rican study by Monge-Gonzalez (2011) observed that SMEs use internet banking less than medium and large firms. They noted that internet banking is usually deployed in consonance with other traditional banking tools. Most SMEs due to lower capital do not have access to internet banking and for this reason cannot form an alliance with the bank for capital and funding support. Deriving data from a local bank's database, they observed that creating a control and influencing group will give the research, improved and unbiased results. In the results gained from the control group, it was found that SME used internet banking in a limited way Small firms rarely used the internet to buy and sell as they prefer physical interactions.

They are also less educated and enlightened on the operations of internet banking. These results created a dissonance from the result received by SMEs who adopted internet banking and reported lower costs of operation, increased revenue and improved relationship with customers. The influencer group were culled from SMEs that had been in operation for several years and had matured in their operations (Akpan et al., 2022; Amoros et al., 2007; Costa & Castro, 2021; Monge-González & Rodríguez-Álvarez, 2013; Naeem & Ozuem, 2021).

This study queried whether expanding into new areas of business and improving business performance was strongly influenced by leveraging digital tools especially the use of internet banking. The results of the study were that many factors hindered the SME from deriving the benefits of internet banking which are infrastructure, education, literacy, and funding and management capability.

Resonating with the above findings, was an early study conducted by Amoros et al. (2007) from Mexico. This study assessed whether internet banking improved SME performance. The study using empirical analysis revealed that SMEs that employed internet banking experience improved revenue and performance. However, a closer look at the R-factor shows a score of .469 which is 47% as the effect of internet banking on SME growth and performance. This result shows that from a structural equation model, only estimates can be produced from results of interactions between variables. This meant 53% of growth was attributed to other factors apart from internet banking. It was also noted that manufacturing SMEs relied heavily on innovation to develop capabilities therefore internet use was crucial to their processes and development. Retail businesses had less emphasis on internet payment systems and thus did not benefit as much from it.

It is worthy of note that internet banking aids commercial activities. However, businesses serving other businesses termed (B2B) leaned heavily on internet banking more than those serving mainly consumers called (B2C) (Dotzel & Shankar, 2019; Lim, 2023).

Another factor to note, was the personality of the business manager when measuring the effect of digitalisation on SME's financial performance. Much depends on the role the SME manager plays, to ensure that the firm embraces internet banking

and its use in business processes. If the manager was motivated to *go digital*, staff would embrace the policy. The effect of such a drive will transcend all structures of the SME and even customers will adapt to the culture. This will improve business development and growth as well as financial performance. The use of technology will thus diffuse to other firms and competitors (Akpan et al., 2022; Samson & Ilesanmi, 2019; Vuksanović Herceg et al., 2020).

Oliveira et al. (2016) examined how internet banking technology is related to the performance of the SME. The empirical analysis applied Structural Equation Modelling (SEM) by Partial Least Squares (PLS). It was deduced that internet banking directly affects organisational processes which in turn affects business/financial performance. However, there was no direct link between internet banking and business/financial performance. This could be interpreted to mean that digital technology was only effective in the technical level of the firm and not in the managerial or strategic implementation levels. Even though the sample size in this study was 76 which was below the standard for partial least squares, it revealed that internet banking improved business process management but not the strategic direction of the SME as this role is vested in the literacy and business acumen of the manager.

Ibbotson and Moran (2003) in their Northern Ireland study, noted that the relationship between SME and traditional banks was already a sensitive one as most SME could not meet up with the demands of the banks. The study which interviewed three bank managers and 250 SMEs noted that a lot of external forces and internal issues hampered the relationship between SMEs and banking institutions. A crucial factor was the high bank charges levied through internet banking which made the service unattractive for struggling SMEs.

## **The African and Nigerian Context: Critical Challenges and Research Gaps**

In describing the African environment, the theme identifies some of these challenges: infrastructure, literacy rates, and extensive informal economy. Evidence from research, such as a study conducted in the Democratic Republic of Congo, highlights the potential benefits between improvement in the quality of accounting information given by internet banking and general access to formal loans. However, a combination strategy must be adopted within a predominantly informal economic framework utilized for digital finances if a paradigm shift involving trust-based formal systems is involved (Ciza et al., 2025).

Emphasis is placed on Nigeria, and it is found that literature is dominated by findings that indicate a degree of impact but with many constraints. Studies carried out among Nigerian businesses indicate a positive and significant relationship with performance and that technology generates reduced costs and efficient transactions via e-banking for small businesses (Effiom & Edet, 2022; Mbah & Obiezekwem, 2019). They also stated the benefits of additional online payment choices and internet access in rural areas for which aids development of SMEs and expands digital infrastructure (Atueyi et al., 2019). There is, however, an important opposing discourse. An analysis on the effect of electronic banking on the economic development in Nigeria proved to have a negative influence during the early implementation period, caused by the absence of infrastructure, education, as well as poor telecommunication (Apulu, 2012; Ekechukwu & Mbah, 2019). The fact that so many small businesses fail is always attributed to its management, lack of financial knowledge, or insufficient funds, which can outweigh all benefits (Adeyele & Omorokunwa, 2016; Turkyilmaz et al., 2021).

A scan through the Nigerian literature shows some significant research gaps. A significant number of the studies generalised their results to all SMEs, as opposed to concentrating on, for instance, retail sectors, and quite a lot of them depended on perceived performance or general growth measures. A significant deficit exists in the literature in using strong, quantifiable financial measures such as Return on Investment (ROI) to measure directly the financial return from the use of Internet Banking (Anouze & Alamro, 2019).

Though the advantages of internet banking to SMEs are acknowledged, the accurate estimation of its financial impact on the Nigerian retail SMEs has remained a little-known issue due to infrastructure, digital literacy, and security. The very utility of the technology depends upon the bank's security, adaptive business process of the SME, and the digitally and financially literate management.

The work of Ciza et al (2025) provided a critical background to understand the complex financial situation in which modern digital technology, such as internet banking, would have to operate in underbanked regions. Their research showed that accounting information quality remained a binding constraint for those SMEs intending to access formal bank lending in the DRC. Such evidence fully supported the likely value proposition of integrated computerised bookkeeping and accounting capabilities of internet banking websites. Automatic recording of financial transactions and the creation of pre-standardized reports are capabilities of internet banking; it would thus be capable of enhancing the quality and credibility of the banks' required accounting information, thereby theoretically enhancing an SME's access to formal credit.

Thus, the study indirectly indicated that the acceptance of internet banking would be a significant way to confirm the positive link between the quality of information and access to formal finance, as perceived by the authors.

Despite this, the subtle implications of the research on the informal finance sector made the challenge enormous and the context very important to the implementation of the internet banking services. The researchers concluded that the inclusion of the informal finance sector might adversely affect the aggregated financial performance of SMEs but was a positive contributor to the availability of formal finance and thus represented a complex and simultaneous relationship rather than a substitution relationship. They thus understood the reality of the matter, which was the fact that the design of the internet banking systems would have been impossible with a substitution relationship with the informal finance sector rather than complementing it (Apulu, 2012; Ekechukwu & Mbah, 2019).

In a world where trust-based informal systems penetrated so deeply, internet banking could have worked if it could formalise and digitise relationships that already existed, such as by providing platforms for secure tracking of informal lending or by using alternate data from informal trade networks to derive credit scores for those outside of classic formal systems. In this way, the research stressed that the role of internet banking in African SME finance extended far beyond an electronic conduit for transactions. It needed to be conceived as part of a hybrid financial environment (Lam & Liu, 2020; Mujahed et al., 2022).

The positive link between quality of accounting information and performance highlighted internet banking as having the potential to drive improvement in financial

management. However, the unabated and pervasive presence of informal finance made it imperative that digital alternatives were culturally and contextually sensitive. The further growth and research, led by studies like this, would need to account for how internet banking might act as a bridging mechanism, using technology to improve information quality for institutional lenders while creating instruments that respected and built on the informal mechanisms that SMEs were currently using, with the view to optimising financial performance without disrupting necessary ongoing credit flows (Apulu, 2012; Ekechukwu & Mbah, 2019).

Obunga et al. (2021) established that SMEs are crucial to employment and innovation in the economy. The research carried out in Kenya noted that internet banking aids SMEs in resolving complicated bank transactions. SMEs can easily monitor and manage cash flow to achieve higher profitability and financial performance when they deploy internet banking. The researchers observed that even though there is proliferation in the use of e-banking, not many SMEs have adopted its use fully. They still patronise the physical *brick and mortar* bank system.

Specifically, the study examined how communication through online banking influenced SME performance. Using qualitative analysis in the first phase of the study, the research interviewed 57 SME owners and managers. They were chosen using the stratified sampling method and the Yamane model was used to pool 332 SMEs for the second phase of the research. The study found that internet banking provides timely information that aids improved decision making in SMEs (Djibrán, 2025; Effiom & Edet, 2022; Franquesa & Vera, 2021; Lam & Liu, 2020; Mujahed et al., 2022).

The SMEs in Nairobi and Africa according to Musa and Njeru (2023) can benefit from the deployment of digital tools. However, it is important to point out that borrowing

via the internet banking portal had an even higher p-value compared to mere adoption. .042 in relation to .405. This is because access to capital is crucial to SMEs prosperity and financial performance and the internet banking provides convenience to acquire these facilities (Djibran, 2025; Kitigin et al., 2021; Mach et al., 2023; Makworo et al., 2019; Mbah & Obiezekwem, 2019; Moss & Thomas, 2022).

It was also observed that the F-statistic was low and statistically insignificant with a p-value of .303 with R value of 5.2%. These factors indicate that digitalisation alone is not sufficient for a business's financial performance. Proper financial management of business processes is necessary to achieve a holistic result (Moss & Thomas, 2022).

Moving forward from these revelations was another associated study by Awinja and Fatoki (2021). They noted that the electronic economy is a new business platform that enabled firms to function and provide goods and services via payments on the internet and associated payment platforms. The research work examined the effect of digital transaction services, and other digital tools on the growth of SMEs. For a population of 1000 SMEs, a sample size of 300 was studied. Of the 300 questionnaires sent out, 180 was responded to. Using descriptive analysis and regression techniques, it was determined that digital finance influenced the pecuniary growth and performance of SME in Kenya (Awinja & Fatoki, 2021; Igudia, 2017; Makworo et al., 2019; Meher et al., 2021).

It was observed in the study by Awinja and Fatoki (2021) that increased use of digital technology was encouraging SMEs to adopt same for their operations. Even though mobile banking was discovered to be the most widely used digital technology, it was crucial to note that digital payments through the website and internet formed a

large part of online transactions. SME profitability and financial performance would be sustained if special platforms and hubs could be created to train and empower SMEs on the proper use of internet banking and other e-payment systems to optimise the gains from these resources (Azevedo & Almeida, 2021; Becker & Schmid, 2020; Omrani et al., 2022).

Kitigin et al. (2021) in their study of Kenyan SME investigated the effect of internet banking, its adoption and innovation on SME performance. Internet banking attributes that determine adoption and a proper understanding of the usage of internet banking on SME financial performance was examined. The study also determined the relationship between technology adoption and usage in SMEs. Using theories of diffusion of innovation and technology acceptance model they selected a sample size of 455 SME from more than 5000 SMEs. Through empirical techniques of hierarchical regression, the researchers noted that internet banking innovation had a positive and significant effect on SME performance (Kitigin et al., 2021; Kulathunga et al., 2020; Makworo et al., 2019; Mbah & Obiezekwem, 2019).

It was noted in the study by Atueyi et al. (2019) that electronic banking moves pecuniary results in business activities of SMEs in Nigeria. The study proposed that more rural areas should be connected to the internet to gain the benefits of digitalisation. The study also proposed that more digital payment options be instituted by banks and financial organisations to provide digital tools to further the growth and productivity of SMEs and enhance their financial performance. Many SMEs were still under-banked or had lower access to statutory bank services. (Babilla, 2023; Madan, 2020; Rasheed et al., 2019).

Effiom and Edet (2022) echoed in their study of Nigerian SMEs that the deregulation of the financial sector opened up digital innovation in the economy. Their study revealed that the Toda-Yamamoto tests show a one directional causation from digital tools to SME performance even as technology influenced pecuniary performance (Bara et al., 2016; Effiom & Edet, 2022; Mugo, 2012; Ossey-Asibe, 2013).

In a recent study by Meher et al. (2021) using multiple regression models it was discovered that digital banking had significant co-efficient with the growth and performance of SMEs. Internet banking's ease of accepting payments and the ease of conducting transactions, ability to manage business transactions, time efficiency and ability to monitor and control cash flows were the indices that contributed to the growth of SMEs and the increased business and financial performance. The study revealed that more deployment of digital infrastructure to support digital banking would improve the financial status of SMEs especially in rural and semi-urban areas (Ahmed & Sur, 2021; Awinja & Fatoki, 2021; Meher et al., 2021; Nugroho & Nugraha, 2020).

Electronic banking and its relationship with SME performance in Anambra, Nigeria was researched by Mbah and Obiezekwem (2019). Using quantitative techniques on a population of 506, they found out that consistent use of electronic banking resulted in lower costs, convenience and efficient services in SME transactions. From the analysis conducted through empirical research, they noted that there was a positive strong significance between e-banking and SME performance. These results made them recommend that there should be improvement in features of e-payment platforms created for SMEs and banks who deploy digital banking.

Furthermore, the scholars deduced that when an SME seamlessly serves its customers through adapting its business processes to digital technology, it ensured security and integrity of its transactions. The customers were able to access the SME's goods and services and transact business around the clock, proposing availability for 24 hours. This led to higher sales and in turn, revenue. The owner or manager did not have to oversee all transactions as internet banking provided an audit trail of all activities.

The study concluded by stating that the large number of SMEs in Anambra state, Nigeria would provide a large database and platform from which banks can launch internet banking services, thus helping SMEs improve their revenue in consonance with government policies geared at SME growth and profitability (Ahmed & Sur, 2021; Awinja & Fatoki, 2021; Meher et al., 2021; Nugroho & Nugraha, 2020).

It was discovered that beyond digital technologies such as internet banking, the SME owner or manager must put into practice efficient financial management tools to fully tap the potentials of the digital technologies available for SME. The financial and digital literacy of the SME manager or owner also had a strong impact on the pecuniary performance of the SME. Ordinary deployment of digital tools do not in themselves ensure financial performance. The human factor is necessary to achieve success.

On the contrary, in a study conducted in Nigeria by Ekechukwu and Mbah (2019), an assessment was made on the impact of electronic banking on Nigeria's economic development. It had already been established that internet banking allowed customers and business owners have access to transact regardless of location or time. It had also been established that internet banking provided access to many forms of interactions and access to electronic payment systems. The statistics gleaned from

the Central Bank however revealed that based on an earlier research by Ugwu (2016), internet banking had a negative effect on the Nigerian business outlook. It was discovered that in the first year of adopting e-banking, SMEs did not perform well in their finances. The factors responsible for this development were lack of adequate infrastructure, lack of education and enlightenment on the advantages of internet banking as well as sub-par telecommunication services (Apulu, 2012; Apulu et al., 2011).

Even though there exists technology to transact business digitally, most SMEs die before the fifth year of operation. This assertion was based on lack of consistency in firm policies and weak survival due to poor management of the SME, lack of capital, and lack of budgeting, planning and inadequate knowledge of the industry or sectoral experience. Most SME managers do not keep proper books of accounts and financial records (Adeyele & Omorokunwa, 2016; Ropega, 2011; Samson & Ilesanmi, 2019; Zwane et al., 2019). They lack purchasing and supply skills and have little experience on how to build value chains. Staff may also not be properly educated on how to use the internet banking platform. Rather than delegate successfully, the manager carries on a lot of duties he/she/they feel(s) should be personally executed. Poor training in staff become a hindrance to efficient servicing of customers. These factors may lead to business failures (Adeyele & Omorokunwa, 2016; Ropega, 2011; Samson & Ilesanmi, 2019; Zwane et al., 2019).

Furthermore, a lot of SMEs are established without due diligence and its manager cannot properly sustain the business cash flow. They adopt internet banking and e-payment systems but lack the financial literacy and capability to successfully run the enterprise. The SME thus fails prematurely. These detrimental factors override

whatever advantages internet banking might provide to an SME (Turkyilmaz, et al., 2021; Samson & Ilesanmi, 2019).

A review of the studies listed above have reiterated the fact that internet banking needed infrastructure, capital and technical knowledge to function otherwise internet banking has little to no significance with financial performance of SMEs. Other significant factors like management acumen of the SME manager/owner, staff training and capability as well as proper financial record-keeping and funds management influence the success of internet banking and its ability to positively influence financial performance of SMEs. Barker (2018) furthered the discussion by stating that as e-banking/internet banking became more accessible to customers and businesses, so did the opportunity for fraudulent activities and sophisticated criminals increase to hack into bank websites and steal customer funds. The financial services industry would have to invest heavily in security infrastructure so customers do not lose their money and become bankrupt in the process of using internet banking to process business transactions.

Gradually, Barker (2018) noted that the liability for fraud and unscrupulous activities by hackers and cybercriminals was being shifted to the customer and SME manager. The banks introducing co-liability was making a lot of SMEs shy away from using internet banking. The greater challenge to prove liability lay in the lack of clarification of the dimensions where the customer had acted in negligence when operating internet banking. These loss of funds could lead to loss of trust in the system and a demand for more security. For these security issues to subside and for SMEs to enjoy the benefits of internet banking, the bank must ensure that security measures on the internet banking platform, are established and this is communicated to the users

of the platform to ensure confidence and financial stability of SMEs (Hutchinson & Warren, 2003; Normalini & Ramayah, 2012).

The growth of e-banking encouraged customers to carry out online banking transactions and this in turn had created opportunities for criminals and sophisticated fraudsters to perpetrate and defraud customers of funds in their social, cyber and physical worlds. This situation emphasised the need for communication and knowledge sharing by the financial service industry to empower customers in identifying dynamic fraud from genuine transactions. Cutting edge security features, biometrics and two step authentication were ways that fraud and hacking could be reduced on internet banking systems. Barker (2018) addressed the lack of research on this topic through a critical analysis of knowledge management to enhance security and customer trust in e-banking. He noted through systematic literature review that insecure internet banking systems would be counter-productive to SME financial performance (Ahmad et al., 2010; Barker, 2018; Khan et al., 2020).

Ezeoha (2005) observed that as internet banking has developed in Nigeria, the proliferation of internet fraud had also increased simultaneously. The country had a reputation of corruption and fraudulent online transactions and was christened as the headquarters of Advance Fee Fraud (419). The code 419 was culled from Section 419 of the Nigerian Criminal Code that dealt with obtaining property by false pretences. There was a lot of bank frauds, forgeries, money laundering, insider abuse and erosion of public confidence which were some of the ills that have beset the Nigerian banking system. For the above mentioned reasons, strict regulation had become imperative in the entire internet banking development process. Comprehensive information and oversight through government and its anti-corruption agencies are the way forward to

reducing internet fraud and restoring confidence of bank customers (Eboibi & Ogorugba, 2023; Hamisu et al., 2021; Izuakor, 2021; Orjiakor et al., 2022).

In conclusion, internet banking is as secure as the bank system makes it and as useful as the SME business process adopts it to be. It is also as buoyant as the technical skill and training of the SME employees and as dynamic as the digital and financial literacy of the SME manager.

Internet banking is a great leap forward and from the review in the paragraphs above, it has benefits for SMEs and micro enterprises as well. However, the structure of internet banking and the advantages it has for SMEs needs adequate infrastructure to thrive.

The global narrative on internet banking (IB) and SME performance presents not a simple linear progression, but a complex, contingent, and contextually mediated evolution. A synthesis of the evidence across different economies from Kenya, Indonesia, and others including Mexico and Costa Rica and Nigeria as well as other economies bears out the following truth about the role of internet banking in the operation of an SME: that the ultimate determinant of its financial outcome is clearly not the technology but the level of development of the ecosystem in which the opportunity is embedded and the strategic absorption capacity of the business and it is based on these three points:

#### 1. The Core Contingency: Beyond Direct Correlation to Indirect Value Chains

The single most important point that is conveyed by the literature is the shattering of the myth of direct and automatic impact. In this context, Oliveira et al. (2016) is a highly informative study, which clearly establishes that the fundamental impact of internet banking is on organisational process efficiency, which then has a

secondary impact on financial performance. This is an important finding. It clearly implies that basing the calculation of financial performance measured by return on investment (ROI) solely on the use of internet banking (IB) is highly inaccurate. This is because the financial outcome is dependent on the extent to which the SME exploits these organisational efficiencies for gaining a strategic advantage: for instance, can fast-track cash flow patterns be leveraged for discounts based on bulk purchases? Or, cleaner digital records enable the successful acquisition of a loan, as shown by Ciza et al. (2025)?

The Mexican finding (Amoros et al., 2007) that internet banking explained only 47% of growth variance powerfully underscores this; over half of performance is governed by complementary factors such as management acumen, market conditions, product quality, and financial literacy.

## 2. The Prerequisite of Infrastructure, Literacy, and Hybrid Finance

The pragmatically minded researcher has to acknowledge that the value proposition of internet banking (IB) is built on the following non-negotiable foundation of three:

- **Physical and Infrastructural Challenges:** It is important to note that remote areas with irregular power supplies, poor connectivity, and expensive data charges, as experienced in Nigeria and DRC, are not hindrances; rather, these are core barriers that may make the tools and instruments provided under IB irrelevant or even ineffective on cost aspects as well. A negative effect as experienced in early adoption stages in Nigeria (Apulu, 2012) is therefore the direct result of using advanced tools on under-developed infrastructures.

- **Human and Financial Literacy:** Technology is only as effective as its user. The literature consistently highlights that internet banking (IB) benefits are not uniformly distributed. They accrue disproportionately to SMEs with managers who possess the digital literacy to navigate platforms securely and the financial literacy to interpret data and make informed decisions. The personality of the manager (Akpan et al., 2022) is a proxy for this critical absorptive capacity. Without it, IB becomes merely a digital ledger for a failing business.
- **Contextual Integration with Informal Systems:** Particularly in African and similar contexts, the research by Ciza et al. (2025) sheds light on the fact that internet banking (IB) cannot succeed by seeking to simply replace entrenched informal financial systems. A pragmatic, forward-looking model views internet banking (IB) as a bridging mechanism. Its potential lies in formalising trust (through transaction trails), digitising informal records, as well as using alternative data to build hybrid credit models. IB platforms which do not consider informal networks will not achieve trust of its customers and gain trust and integrity of its platform.

### 3. The Security-Trust Complexity: A Growing Threat to Viability

The analysis by Barker (2018) and the Nigerian context of fraud (Ezeoha, 2005) introduce the critical but often overlooked fact of cybersecurity and liability. In the scenario where SMEs are running on razor-thin margins, fraud can be financially calamitous. Notwithstanding the transfer of liability to the client and the issue of negligence, the risk-averse culture dampens adoption rather than stimulates it. This is no secondary problem but rather the primary nemesis of the entire internet banking

(IB) for SME solution set altogether. IB adoption will plateau or reverse if trust in the system's security erodes faster than its convenience benefits grow.

#### 4. Sectoral and Firm-Level Differences: Rejecting the One-Size-Fits-All Model

It is evident that the distinction in impact is based on business models. Business to Business (B2B) companies generate greater value from internet banking (IB) in comparison with Business to Consumer (B2C) (Shankar, 2019), while manufacturing SME implement IB in core business activities differently from retail businesses (Amoros et al., 2007). This necessitates the need for sector-wise approaches rather than generic studies related to SMEs. A retail business might implement internet banking in straightforward inventory or point-of-sale solutions, whereas a manufacturing business might integrate IB in supply-chain financing solutions different from the previous ones. It is at the operational level, as earmarked by Indonesian research (Santoso, 2020), that value is generated for the first time; strategic value is the derivant in the next stage.

#### **Forward-Looking Synthesis: A Framework for Realising Potential of Internet Banking**

Internet banking has the potential to actually help businesses tremendously by making payments faster, managing money easier, and finding funding. But to make this happen, SME managers need a fail-proof strategy. The plan should be to focus on the results, not just the technology (Ciza et al, 2025). Banks, governments, and aid groups should stop celebrating just because a business starts using internet banking. Real success looks different in every day business life. By so doing, they could assess if SMEs can receive a bank loan, if transactions from customers enter

the retail system faster, or if they make more sales from e-commerce platforms online (Akpan et al., 2022).

Training people to use the banking application is not enough. SME managers must also understand how to manage their business money. Access to the technology but a lack of cash planning or digital record-keeping will not help SME managers succeed.

The banking applications geared towards SME in emerging countries need to be simple, safe, and solve local financial challenges. They should work offline, use very little mobile data, help turn casual deals into proper records, and have clear rules about who is responsible if something goes wrong. The whole system needs to be improved. Essentially this means affordable internet, steady electricity, strong laws against online crime, and reliable ways to prove the business digitally. The application alone would not work if these basics are not in place (Akpan et al., 2022).

In conclusion, the research from around the world gives us a clear message. Internet banking can help small businesses grow, but only under the right conditions. The technology exists, but it would not boost the economy by itself. SME support groups must also build SME managers' skills, create tools made for their situation, and develop a safe and supportive digital environment.

The next step focuses on different experts in technology, finance, education, and law working together with businesses to build real solutions that build trust and actually work. In conclusion, the global and comparative literature provides a clear, pragmatic directive: The relationship between internet banking and SME performance is conditionally positive and mediated. The technology is ready, but its economic promise will remain unfulfilled without a parallel, dedicated effort to build the human

capital, contextualised designs, and secure, resilient ecosystems that allow SMEs to strategically harness its power. The future of internet banking (IB) for SMEs lies not in more studies proving correlation, but in interdisciplinary action research that co-designs solutions at the intersection of technology, finance, education, and institutional trust.

### **Section summary**

There appears to be a clear shift from general conclusions about the global scenario to a search for specific contextual gaps, with a focus on the Nigeria retail SME sector through the literature review process.

Internationally, there is existing literature that validates an indirectly positive relationship between the adoption of internet banking and SME's performance. A major research gap is the lack of direct specification of the financial gain. Often, the adopted metrics are the level of adoption, user satisfaction, or perceived use value instead of the use of appropriate indicators of financial performance such as the Return on Investment (ROI).

Furthermore, there is a lot of ambiguity with regard to evidence that is supporting a positive relationship within a stable system. On the contrary, during economic decline, there is a trend that is witnessed with little or a negative impact being noted within a system, which is a clear manifestation of a lack of understanding and comprehension with regard to factors that are relevant to a successful system outcome (Moss & Thomas, 2022; Oliveira et al., 2016). The ultimate outcome with regard to different SME, for example, manufacturing and retail or B2B and B2C, makes it difficult to establish its direct application with regard to international knowledge available for a specific business system.

**African Literature Gaps:** The African scenario poses the fundamental challenge in combining digital financial services with the ubiquity of the financial system operating informally. Although existing literature recognises internet banking's capabilities in advancing financial literacy and loans from formal financial institutions, there lies a substantial gap in literature related to formulating strategies regarding integrating digital solutions with existing trust networks in the financial system on an optimal performance level without undermining the fundamental financial credit flows (Ciza et al., 2025).

**Nigeria Literature Gaps:** When the focus narrows to Nigeria, the literature gaps revealed earlier turn more specific. Firstly, there is the gap relating to the sector being studied. Most literature on Nigeria groups SME without being able to discern the distinct tendencies of adoption, usage intensity, or financial effects on the retail sector, which is important to the Lagos economy. Next, there is the gap concerning the financial measurement of the study. Emphasis is on the performance indicators, growth intention, or significance tests concerning the importance of internet banking adoption, to the extent of the lack of literature on financial returns using ROI.

Beyond the discussions, the integration gap exists. Although obstacles in the use of internet banking, such as infrastructure, cybersecurity risks (Advance Fee Fraud, popularly called 419), and limited digital literacy, continue to be recognized (Apulu, 2012; Ezeoha, 2005) as challenges in the developing context, the integration of the analysis of these challenges as inhibitors of technology embracing (explained by researchers using the UTAUT theory) in the study of the hard, quantifiable output of using internet banking financially, in the results of retail SME in the city of Lagos, has been neglected.

In summary, the literature analysis starts with general observations of a complicated relationship, progresses to needs for Africa-specific blended financial approaches, and reaches a point of specific research needs found for Nigerian research. The literature noted a general focus not being sector-specific (retail), a focus not tied to ROI, and a separation between the adoption of new approaches concerning financial outcomes. This research is designed to fill that research need.

### **Mobile Banking and SME Financial Performance**

Modern day living has become tied to mobile technology as few people can interact or conduct business without the use of their mobile phones. Mobile banking according to Barnes and Corbitt (2003) rose with the irruption of the internet. When the internet boom started in 1999, the first trend of mobile banking started with Short Message System popularly called the SMS. Financial institutions as posited by Laukkanen (2007) decided to take advantage of the internet boom to use the messaging service to communicate with its customers. They were able to use the short messaging service (SMS) to offer a few important features like bank balance enquiry (Aldammagh et al., 2021; Sundaram et al., 2019; Vishnuvardhan, 2020).

In addition to this, Yildirim and Varol (2019) stated that banks were able by 1999 to provide mobile banking platforms also known as m-banking to customers with the development of the wireless application protocol also known as WAP. WAP technology was first developed in Norway (Jayachandra, 2022; Msweli & Mawela, 2020; Nagyova, 2019).

By 2010, WAP had become obsolete, however the short messaging service called SMS continued to be relevant in the mobile banking space. To this end for

transaction authorization, the SMS remained a valid means of approval by mobile bank users (Chandran, 2014; De Leon, 2019; Khot, 2019; Rombe et al., 2021; Vishnuvardhan et al., 2020).

After the 2010s, the development of the android phones by Google as well as the iOS system by Apple created operating systems that further improved mobile banking (Ali et al., 2019; Oludayo et al., 2023; Wewege et al., 2020).

Other digital technologies like the JavaScript and HTML or WBT enhanced the creation of internet based mobile applications. These applications began to develop and provide key services to customers (Abbott & Djirdeh, 2019; Maskeliūnas et al., 2020).

The creation of smartphones according to Rejman-Petrović et al.(2022) expanded the popularity of mobile applications as phones moved from just communication to business tools and even entertainment media. The first mobile application for banking was thus developed in Scotland in 2007 (Al-Delayel, 2022; Walker & Morris, 2021). Furthermore, customers were able to view their bank statements through the messaging service as well as transfer funds (Haralayya, 2021; Komulainen & Saraniemi, 2019).

In the following paragraphs, this literature review will analyse the benefits of mobile banking as well as the challenges of mobile banking for SMEs.

In their systematic review of mobile banking adoption, Souiden et al. (2021) investigated three scholarly sites and reviewed 76 academic works on mobile banking adoption. This review revealed an elective process, where they discovered five standpoints used in literature to explain why mobile banking is being accepted. They

are mobile indicators, customer-based indicators, peer influence indicators, trust and integrity and hindrances to use.

At the same time, Malik (2020) presented a comprehensive review of research journals from 2015 to 2020 to determine what influenced mobile banking use. 28 research papers that were relevant to the concept were reviewed and data collected from scholarly sites. The finding from their analysis revealed the benefits inherent in the use of digital systems and technologies and the benefits being derived from them were the pointers to the use of same. Businesses adopted based on pecuniary results.

In their systematic review of mobile banking adoption, Souiden et al. (2021) investigated three scholarly sites and reviewed 76 academic works on mobile banking adoption. This review revealed the major theories and postulations that informed people's adoption of mobile banking. Their review discovered that technology acceptance model (TAM) and the unified theory of acceptance and usage of technology (UTUAT) were the core concepts that defined the motivation to use mobile banking. Adopting an elective process, they discovered five standpoints used in literature to explain intention to use mobile banking. They are mobile banking indicators, customer-based indicators, peer influence indicators, trust and integrity and hindrances to use.

In a research by Rachmawati et al. (2020) to determine what aspects of each sub-variable influences intention to use mobile banking and the actual usage of mobile banking. They analysed 190 respondents in Java, Indonesia and deduced that expectations of performance affect intention to use mobile banking services. Peer and social influence affected motivation to use mobile banking however facilitating conditions did not influence intention to use mobile banking. If the SME business

owner had a goal to save or invest funds according to Ruslan et al. (2019) this can also be done on the mobile banking application. Standing orders could also be effected on the mobile banking application. Other transactions could also be carried out on the mobile banking application such as scanning QR codes, peer to peer payments or currency exchange (Musyaffi & Kayati, 2020; Rafferty & Fajar, 2022; Sahriana & Rokan, 2022; Sunardi & Siregar, 2023).

New block chain technologies could also be accessed via the mobile banking platform. These transactions via the mobile banking application could be done at lower costs (Awotunde et al., 2021; Hashemi Joo et al., 2020; Schuetz & Venkatesh, 2020). In research conducted by Hasan and Habib (2022) in Bangladesh through a systematic review of literature, it was discovered that the mobile application system could be used to purchase and operate block chain technologies. The SME manager could use mobile banking to divest and invest in funds that generate income for the business.

Most mobile bank platforms have authentication and security features which provide confidentiality and integrity of the financial data being used by the business or the client. Usually, a multifactor authentication service or a biometric feature using fingertips or face recognition is installed to prevent unauthorized access to the platform (Ali et al., 2020; Bartłomiejczyk & Kurkowski, 2019; Kamarwan et al., 2019; Sunardi & Siregar, 2023).

Studies conducted by Awotunde et al. (2022) in Nigeria on how block chain affects mobile banking proposed a framework for creating a model on how multi-level authentication facilities secure funds transfer. After their review of literature, they propose a secure network which will protect the integrity of customer funds.

Apart from authentication services, mobile banking platforms have customer support services to improve the user experience of their customers. As a result, Shahid et al. (2022) stated that chat features are built in to the banking platform for seamless interaction with the bank. This enables issues and complaints to be quickly resolved. As a result, the push notification service also exists on the mobile banking platform and the merit of this service is that it sends messages to customers to inform them of new product and service offerings, reminders, updates and transaction confirmation. The push notification service can also be altered by the business or customer to suit their notification requirements (Mujtaba Roohani, 2020).

In the study of how chat and customer service platforms improve mobile banking, Awotunde et al. (2022) investigated 473 bank customers noting that integrity of the system, the trust the customers have in the application and the convenience of using the application was crucial in the adoption of mobile banking. The qualities inherent in the application as well customer support were less significant than integrity of the system. Customer loyalty and customer intention to continue using the mobile banking applications were observed as significant outcome variables and these two were also dependent on the integrity of the mobile bank application (Esmaeli et al., 2021; Marliyah et al., 2021; Thakur, 2019).

Mobile applications can be used for investment transactions as mutual funds or shares can be bought via the channel and also subscription to investment plans can be made. Investment management tools can help firms and SMEs make cogent decisions via the mobile banking application (Haralayya, 2021; Hon et al., 2020; Mujtaba Roohani, 2020). To back up this assertion, a recent study in China by Fan (2022) investigated investors' attributes to mobile technology. The empirical study deployed regression analysis to analyse the data collated from national statistics. It

was found that prior knowledge in using mobile applications to make payments and the personal attributes of the investor significantly influenced using mobile applications to make investments. To this end, SME managers who understood finance and investment values, leveraged using mobile banking for investment fund subscriptions.

### **Types of Mobile Banking Services**

**SMS Mobile Banking Services:** SMS mobile banking services are designated to serve customers who do not have internet services on their phones. The user registers the phone with the bank to access the SMS banking offerings. The customer or business can access his bank balance, summarised bank statements, block a compromised credit or debit card, enquire about foreign exchange rates and transfer funds from one account to the other (Ayswarya et al., 2019; De Leon, 2019; Fitria et al., 2021; Wodo et al., 2021).

**USSD Mobile Banking:** The Unstructured Supplementary Service Data (USSD) also referred to as smart codes or quick codes are used on mobile phones to access certain data. Account balances can be checked, funds transferred from one person to another, bills paid and other services accessed with specific codes (Dayang & Hamza, 2021; Mallik et al., 2020; Olamilekan et al., 2022).

In the foregoing paragraphs a review on the merits for adoption of mobile banking has been highlighted. The types of mobile banking systems have been detailed as well. In the next paragraphs, attention will be focused on how mobile banking impacts SME financial performance.

## **Global and Comparative Perspectives on Adoption and Performance**

In an empirical analysis using partial least square method of 369 mobile banking users, Foroughi et al. (2019) noted that to gain advantages of mobile banking, it must be used consistently. Confidence and motivation for continual usage and the preference for the mobile channel improved the quality of life and performance of the bank's small business clientele. The study also revealed that the ease of using mobile banking superseded other motives for adoption.

Besides basic banking services, the mobile banking system opened contactless payment systems and myriad of payment platforms. Dhingra and Ashok (2021) in their book *Internet of things* and its impact on financial services noted that Google and Apple as well as Samsung have mobile wallets and virtual cards that businesses can use to make payments and provide service to customers. Small business managers have the privilege of using these services in any denomination on the globe to transact business.

Kimathi et al. (2025) study was descriptive in design and population of interest were 226 successful SMEs whose licenses had been re-issued for five consecutive years to ensure that it is concentrated on sustainable, active enterprises. The 160 sample was obtained through the use of the Yamane formula and cluster sampling to obtain the geographical representation across different towns within the county.

The data was analysed using primary data in a very efficient and effective way through the utilisation of mixed questionnaires carried out online using Google Forms. The robustness of the data was realised through the use of a pre-test conducted in the surrounding county while validity was achieved through expert judgment. Data analysis was done with the aid of SPSS version 29, employing descriptive (means, frequencies,

standard deviations) to summarise the data and inferential statistics (Karl Pearson's correlation) to determine the relationship between the variables. The study confirmed that mobile payment systems constituted a sustainable way of embracing SME profitability and viability.

Based on the findings, the authors strongly recommended SME to adopt a comprehensive strategy towards mobile payment services. This study made practical empirical contributions from a specific Kenyan context, projecting the pathfinder relevance of mobile money to initiate financial inclusion and solidify the SME sector, which constituted the pillar of the majority of developing economies.

In studies conducted in Indonesia by Isa (2020), on the impact of mobile wallets on SME business performance, the empirical research populated by 150 respondents in the food and beverages sector of SME in Indonesia noted that the adoption of business technology positively influenced business performance. Looking at the study conducted by Apriani and Wuryandari (2023), in the same country, one could note that SME should pay attention to trusted and efficient mobile banking service providers in choosing the mobile banking application.

This would make SME customers motivated to make payments. Revenue translates to financial growth especially when costs are reduced. In a South African study by Chingapi and Steyn (2022) aimed at investigating the impact of mobile wallets and smart technologies, the following results were collected. Data collected from 35 SME business managers using thematic analysis, showed that mobile technologies had a positive influence on business performance of SME.

The value-added services of mobile banking include financial and non-financial services. Financial technology companies have also come on board to extend the

mobile banking offerings available to customers and businesses. Jalal et al. (2023) in an American review of technology trends, observed in their systematic review that SMEs were adopting technology into financial services and business transactions/asset management. They noted that financial technology called fintech has become mandatory for any establishment meaning to profitably operate at lower overheads. It was noted that the investment in fintech has risen from 1200 million USD to more than 12,200 million USD within the years 2008 to 2014 (Das, 2019; Micu & Micu, 2016; Nicoletti & Nicoletti, 2017).

From the above narration, it is noteworthy that mobile banking has permeated every sphere of human endeavour and business transactions. The need to access finances and conduct business has pushed mobile banking to the forefront. The recent pandemic and the need to globally transact business has made the adoption of mobile banking crucial to the SME (Mustafa, 2021; Salam et al., 2021).

According to Diaz Baquero (2021) phones with limited storage can have an application which is capable of many functionalities. Examples of this is *Opay* in Nigeria or *WeChat* in China. These applications are very useful for SME owners and are called super-apps (Andriani & Damayanti, 2023; Fasnacht, 2021).

Unlike in the past, where cash limited SME's ability to transact businesses, mobile money has opened up avenues to enjoy more funding and better banking services. To buttress this assertion, a study conducted in Kenya by Muchiri (2018) aimed at discovering the impact of mobile banking on Kenyan SMEs yielded the following results. 176 SMEs that participated in the study revealed that the affordability, convenience, usability and diversity of mobile services made it preferable to SME owners and managers. They also noted that the customer base of the SMEs

grew due to ease of payments which translated into greater revenue for the SMEs. The SME owner had time to focus on other business programmes and build productivity and profitability. The study recommended that SMEs adopt new technologies as they are developed for businesses to remain competitive. The SME would thus be available to customers twenty four hours of the day to make payments for goods via the mobile banking application.

Accelerated payments can be conducted through the mobile banking application. This reduces the delays associated with the traditional banking services and supports business activities, revenue generation and profitability. Payments are simple to make, salaries and commitments as well as contractors' payments can be settled efficiently (Khatun et al., 2021; Sasirekha & Jayanthi, 2021).

This simplicity of payments reduces the burden of administering the SME. As a result, in a Cameroon study by Talom and Tengeh (2019) investigated the influence of mobile money banking and invoicing services on the financial performance of SME. They deployed mixed methods research where 12 managers were primarily interviewed through purposive sampling. Thereafter 285 SMEs were given questionnaires to fill. It was determined that mobile banking contributed to more than 70% of the revenue of SMEs in Cameroon after they deployed mobile invoicing and banking. The study found out that there is a positive impact on mobile bank services and revenue of the SME in Douala, Cameroon.

The time and effort required to keep manual accounting records is reduced as the mobile banking application can provide an audit trail and digital record of all transactions undertaken. Accounting systems are enhanced and improved financial transparency and tax compliance is experienced by SMEs. Other tools like accounting

software and customer relationship systems or point of sales records can be integrated into the mobile banking application by the SME manager (Olewi, 2023; Zhu, 2022).

It became easier for the SMEs to make payments across large geographical locations and even internationally. This aided business activities as well as financial performance and growth (Shankar & Rishi, 2020; Wen & Zhu, 2019). Rasheed et al (2019) in their research of how digital banking assists SMEs to be financially included engaged a review of existing literature and secondary data. It was noted that digital banking supported SMEs to access finance and monitor business transaction. In their review they concluded that reducing cost, access and creating more financial products will assist the development of SME.

Mobile banking has enabled SMEs and underserved businesses even in rural areas to participate in the regulated economy. There is opportunity to access and secure loans to scale and improve the SME, there is also access to funds to mitigate liquidity issues and improve the SME's ability to operate efficiently and compete globally. Tikku and Singh (2023) in their quantitative research on Indian farmers made a summary of their findings. Of the 231 farmers/traders populating the study, they noted through confirmatory factor analysis that trust, ease and efficiency of mobile banking was aiding adoption of mobile banking and SME financial performance was positively affected. In a decade long study conducted by Myovella et al. (2020) to study the contribution of digitalisation to commercial development of sub-Saharan countries from 2006 to 2016, results showed interesting findings.

The scholars deployed empirical estimators called generalised linear methods of moments. They discovered that basic technologies created more opportunities in emerging economies as there is room for growth and scaling of businesses. 41

countries in Africa and thirty-three OECD countries were compared in the analysis. The impact of digitalisation and associated technologies was found to be higher in sub-Saharan Africa than OECD countries. This goes to show that if there is more investment in digitalisation, economic growth of African countries and underserved communities will benefit highly from mobile technologies.

### **The African and Nigerian Context: Critical Challenges and Research Gaps**

For rising trends on financial inclusivity, Siano et al. (2020) carried out a research that identified barriers as well as aspects that make a difference to mobile banking within sub-Saharan Africa. For their research, they conducted a qualitative evaluation of past research works contributed by the supreme financial regulatory agency of Nigeria. From their evaluation, they managed to identify three significant indices that make a significant impact on the implementation of mobile banking.

These include the usability of mobile smartphones for banking. Secondly, they included internet safety as well as internet fraud. Lastly, they considered peer social influences. This confirmed that experience, customisation, as well as interaction, are the three aspects that trigger the interest and procurement of application for mobile banking. Its usefulness as well as social value of the possession of the technological innovation for business outreach.

Other research have contrary opinion on the advantages of mobile banking especially its effect on financial performance in SMEs. According to Disse and Sommer (2020) in their review of financial markets, the projected growth rate of gross domestic product (GDP) in SMEs was 8.5% by 2022. Even though mobile phones penetration is the largest in the world, traditional banking is still one of the lowest in

the sub-Saharan region of Africa. Mobile phone coverage is almost 80% according to Disse and Sommer (2020) but actual SME development is still lagging behind expected forecasts. Their review noted that the SME still suffer from developmental issues even with the creation of innovative and digital tools for finance and business processes.

They say that disruption which digitalisation was supposed to bring, actually was not that prevalent. The new innovations still have not beaten the traditional players. To this end, Maino et al. (2019) alluded to a fact that a concept called shadow banking was becoming prevalent. Shadow banking meant lack of proper regulation and accessible transactionary framework led to a quick transmission within the rest of the financial structure. Increased competition and capitalising on loopholes, new entrants with little to no experience caused vulnerabilities in the financial market, and this affects the performance of the SME.

To this end, financial regulators must protect customers and small businesses from credulous financialisation. SMEs with little or no financial and digital literacy may subscribe to credit and financial services with hidden costs and conditions. These factors affect the struggling SME and make them end up with a burden of loans and poor financial performance.

Ahvanooy et al (2020) noted that cybersecurity risks are being faced globally as more than one hundred million dollars (\$100 million) was lost to internet fraud in a 2016 review. Internet fraud is exposing users of mobile phones to more attacks. Malicious activities like hijacking, phishing and social engineering are becoming more rampant on phone applications. If smartphones can be vulnerable then mobile banking

is susceptible. Fraudsters have the ability to generate fake tokens to steal SMS codes sent to two factor authenticator users.

SME owners who operate more than one mobile money platform run the risk of exposure and fraudsters may have access to their personal information and use this to perpetrate fraud. Even companies that employ two-factor authentication still experience fraud due to the behaviour of the customer or business owner.

These issues can be remedied by the use of biometric technology and the SME business owner limiting access to the mobile application from unintended users (Ali et al., 2020, Eze et al., 2019; Rakshit et al., 2021). Two of the most serious complaints registered by users of mobile banking services for SMEs included the application freezing and the unreliable connection to the internet (Chiboora et al., 2023; Çallı, 2023). Those that did not make the list included the failure of the application to show transaction history and the lack of connection to the customer service help desk (Rakshit et al., 2021; Rasheed et al., 2019; Shahid et al., 2022).

As summed up by Komulainen and Saraniemi (2019), SME managers will surely prefer the mobile banking application that assures them of integrity. This will happen despite the level of challenges posed by cyber security threats. In this regard, customer service offered by the mobile operator will play a significant role in helping to maintain SME patronage of this system. The ease of use, low costs and charges of accessing the service, mobility, ease of payments, ability to keep digital and audit trails have made mobile banking one of the best tools that SMEs have to aid productivity, growth and financial performance.

## **Summary of Literature Gaps: Global, African, and Nigerian Studies on Mobile Banking**

Critical evaluation of literature helps towards a progression of knowledge from generic outcomes for the global environment to the specific outcomes for the Nigeria retail SME environment, which happens to be the concern of this study.

Internationally, literature covering the adoption of mobile banking has been thoroughly explored, with models such as UTAUT and TAM used to explain behavioral intention through performance expectancy, effort expectancy, and social influences, respectively, to explain behavioral intention through performance expectancy, effort expectancy, and social influences (Souiden et al., 2021; Rachmawati et al., 2020). Nonetheless, a notable gap existed in terms of a consequential measurement of outcomes. Instead, research identifies antecedences of adoption (intention to adopt) and general business performances, rather than adopting a tangible financial method of Return on Investment (ROI) to measure monetary gain directly (Foroughi et al., 2019).

An intersection of adoption theory and financial performances seemed to exist, where UTAUT appropriately identifies adoption, but cannot consequentially identify financial performances from its implementation. Moreover, specific findings have a non-specific industry, which aggregates findings across various forms of SMEs to this point, without identifying specific adoption measures of value add to mobile banking provided by retail businesses.

**African Literature Gaps:** The African environment brings with it the pressing need to reconcile the use of digital finance with the deeply embedded informal mechanisms. Although mobile banking is identified as a force for inclusion in financial

services as well as for increased SME top-line growth (Kimathi et al., 2025; Talom & Tengeh, 2019), a gap in the integration area is held to exist. Research emphasises the need for mobile banking systems to appropriate the informal structures but fails to offer functional approaches towards their integration towards maximally efficient SME financial optimisation without disturbing the informally arranged credit patterns.

There is also a security and regulatory gap; the area is dominated with commentary on the security risks of such approaches as fraud, 'shadow banking,' and regulatory lag influencing the SME risks level (Ahvanooy et al., 2020; Disse & Sommer, 2020; Maino et al., 2019). Also identified is the performance paradox; the apparently large penetration rates for mobile technology as an agent for profound change for SMEs is often diminished by expectations, thereby presenting the need for an applied integration gap in the identification of complementary skills for successful use from growth (Myovella et al., 2020; Siano et al., 2020).

While challenges such as network instability, cybersecurity threats such as phishing and fraud-and user experience issues are documented, very few studies connect these adoption barriers, which were explained by UTAUT constructs of Facilitating Conditions and Effort Expectancy, to the hard financial outcomes measured empirically.

As a result, an evidence gap on practical guidance remained for Lagos retail SME owners. It is also clear from the literature review that mobile banking has a good potential, but it has fallen short of providing the evidence-based answers on what the exact return on investment from the adoption of mobile banking or how to navigate its inherent risks in ways that maximize profitability.

In other words, the literature on mobile banking developed from global theories of adoption through African complexities of context, ultimately to identifiable Nigerian research deficiencies in terms of a lack of retail-sector focus, an absence of ROI-driven financial analysis, and a disconnection between the study of adoption barriers and the measurement of financial performance.

### **Why Mobile Banking Does Not Always Help Small Businesses Grow**

The story of mobile banking (m-banking) and SMEs has an embedded paradox: it is a story of widespread adoption, revolutionary potential, and documented financial success. However, in order to move beyond the face and synthesise a sensible and forward-looking narrative that explores this story in depth and forward, it is necessary to explore beneath its attractive facade.

The reality is that there is an important challenge implied in The common-performance paradox related to mobile phone and mobile banking adoption in Africa and elsewhere: Their unprecedented level of adoption translates neither automatically nor uniformly to financial success for SMEs. The challenge is in finding an explanation to why and how to move beyond pervasive access to optimised financial performance (Ahvanooy et al., 2020; Disse & Sommer, 2020; Maino et al., 2019).

#### **1. From Adoption Drivers to Value Realisation: The Missing Link in the Causal Chain.**

The literature has been saturated with explanations of the motives for the adoption of mobile banking by SMEs, being predominantly reliant on well-cited models such as technology adoption model (TAM) and unified theory of the acceptance and usage of technology(UTAUT) (Souiden et al., 2021). Facilitating ease of use, principles of usefulness and social factors have been extensively studied in prior literature. The

issues at hand point to the correct observation that the literature trail ends at the point of intention to use or general business performance. There is a pivotal point of analytical hiatus and the process of strategic implementation is the 'black box'. Adoption is an input; financial performance is an output therefore the mediating black box of *strategic operationalisation* remains under-explored.

For instance, an SME may adopt mobile payments (driven by ease of use) but fail to leverage the resulting digital transaction data for inventory management, dynamic discounting with suppliers, or data-driven customer credit scoring thereby the value is left latent. The Kenyan study by Kimathi et al. (2025) pointing to comprehensive strategy and the indirect effects noted in internet banking literature are crucial hints here. Future research must shift from asking *do you use mobile banking* to *how do you use mobile banking within your business processes, and what is the quantifiable financial yield* (such as reduced days sales outstanding, lower transaction costs as a percentage of revenue)?

## 2. The Contrasting Environments: Leapfrogging vs. The Last Mile

The comparative data showing a higher impact of digitalisation in Sub-Saharan Africa than in OECD countries (Myovella et al., 2020) is significant. Mobile banking therefore, is not simply incremental but foundational in environments where physical financial infrastructure are not as developed; which is a leapfrogging phenomenon, if ever there was one. For many African SMEs, mobile banking is their first and only means of access to formal financial tools and not an alternative means to an end (Somme & Disse, 2020).

This leapfrogging narrative concealed a more complex last mile problem. The challenges were no longer about basic access, solved by USSD and feature phones,

but about sophisticated integration and risk management. The experience of mobile application freezing, the experience of unreliable connectivity (Chiboora et al., 2023), and lurking cybersecurity threats (Ahvanooy et al., 2020) represent the new sphere of challenges and problems for small businesses. These are not minor inconveniences; they are direct threats to operational reliability and financial security that can erase efficiency gains. The way forward for SMEs is for financial institutions to transition from building mere mobile networks to building resilient and trusted digital ecosystems.

### 3. The Hybrid Nature and the Shadow Banking Experience

The internet banking analysis was accurate in pointing out the importance of filling the gap between formal and informal systems. This is an even more pressing issue concerning mobile banking because of its greater presence within the informal sectors of the economy. The mention of shadow banking and unregulated financial technology is no side note but rather an aspect of the reality of the situation. The mobile banking platforms are operating from a gray zone on matters of regulation, offering credits as well as financial services beyond the formal banking structure.

A realistic approach regards this challenge not only as a threat to the system, but also as an indicator of unrealised demand. In fact, the mushrooming of informal digital finance aspires to the idea that formal services are either too risky, too expensive, or require collateral that SMEs simply do not possess. There is more to this research than merely incorporating these informal systems, but rather reinventing formal mobile banking services that are flexible and adaptive and utilise alternative data such as transaction records on the site to mitigate loan risks.

#### 4. The Performance Paradox: Unpacking the Reason behind the Lag

The most important aspect that needed to be discerned is Disse and Sommer (2020)'s finding that countries with high phone penetration have not yet witnessed SME growth proportionate to this technology. This is indicative of a set of complementary capabilities that exist in a shortage:

- **Financial and Digital Literacy:** The use of an application is not the same as the ability to manage digital finances, spot a scam, or invest using the application (Fan, 2022).
- **Managerial Acumen:** While mobile banking makes transactional activities automatic, strategy formulation is not automated. Without proper fundamentals of business planning and poor value chains, substandard planning and value chains will continue to deteriorate and could be expedited to failure by the easy accessibility of digital capital (Fan, 2022).
- **Security Vigilance:** The shifting of liability to users (Barker, 2018) makes the SME manager the last line of defense. Without education on phishing, social engineering, and secure practices, adoption becomes a vulnerability.

Therefore, mobile banking's impact is conditionally positive. It provides a powerful tool, but the tool's effectiveness is governed by the user's skill and the stability of the environment in which it is used.

#### **Forward-Looking Synthesis: A Framework for Moving Beyond Adoption**

In order to shift mobile banking from its ubiquitous nature and position it as a robust driver for SME financial performance on a reliable basis, it is necessary to adopt a system-oriented approach that involves:

1. Shifting the Research Paradigm to Value Chain Analysis: Future research needs to adopt approaches that examine the value chain from a particular mobile banking service (such as m-banking invoice services) to indirect business outcomes (such as payment efficiency improvement and record keeping) to financial outcomes (such as ROI improvement). The choice to focus on Lagos retail SME for the dependent variable ROI is a direct answer to this challenge.
2. Design for Common and Universal Accessibility: The platforms and telecommunication companies need to ensure that designs for commonly accessible and in low-connectivity conditions must be robust and efficient. The functionality on the platform must seamlessly work on both SMS, USSD and security must be an inherent requirement with biometrics and behaviour analysis to ensure it is not an add-on product.
3. Promote Integrated Capacity Building: Support programs for SME must bundle digital tool literacy with core business and financial management skills. Training cannot be on how to use the application in isolation; it must be on how to use the application *to improve your procurement, sales, and financing*.
4. Create Contextually Competent Regulation: Regulators should shift away from a strictly prohibition-oriented paradigm towards an enabling mode of regulation. This can be achieved by setting up sandboxes for innovative products, drawing up liability guidelines for fraud that range from consumer protection to motivating watchfulness, to develop standards that enable data portability across platforms, thereby preventing lock-in.

The discussion according to Disse and Somme (2020) confirmed that mobile banking is the most innovative form of financial inclusion over the last twenty years. But today, it is at a critical point in its development cycle in satisfying the Small and Medium Enterprise clients. The first generation was all about access. The second, and this is today's generation, is all about utility.

The third generation must, therefore, be about strategic value addition. The future of mobile banking is only going to come alive when data moves away from penetration numbers and get down to painstakingly constructing a framework for implementing mobile banking so that all SME can translate digital transactions into financial growth. The device is literally in all pockets, but now is the time to develop a blueprint for all SME's entrepreneurs to construct a better business with this device.

### **E-commerce and Financial Performance**

E-commerce or e-business is the process whereby the internet is used to enable various business activities. The components include, among others, the firms' network systems called intranets and extranets. These network systems are hosted on a website from which goods and items for sale can be displayed, collated into a cart and payment made.

The goods are then delivered to designated locations (Taher, 2021; Wahyuni et al., 2020; Yeni & Yasri, 2020). Singh and Kumar (2021) purported that business processes like purchasing and procurements, inventory control, supply chain management, bill and order processing and making of payments are powered by the internet. In relation to this, the transformation of the firm's activities to provide value-added services through deploying relevant technology is what is referred to as e-

commerce (Alfonso et al., 2021; Jain et al., 2021; Semerádová & Weinlich, 2022; Taher, 2021).

Other scholars define e-commerce as the process whereby the firm leverages on fusing communication, business processes, business management, cooperation with customers, suppliers, and stakeholders through the internet and its accessories. E-commerce has been described as the acquisition of goods and services on the internet and the transference of same over a computer medium (Hitpass & Astudillo, 2019; Kasemsap, 2020; Kedah, 2023; Setyowati et al., 2021).

E-business encapsulates all traditional business processes that can be leveraged on the internet. This, therefore, means that e-commerce-that is, buying and selling of goods and services-has great advantages for businesses since they are in a position to expand their customer base, expand the channels and methods of sales and purchases, from local to global levels. It is an internet medium where customers can personalise their goods and service offerings to suit their preferences.

The different types of e-businesses in existence include Business to Business, abbreviation B2B, Business to Consumer abbreviated as B2C, Consumer to Consumer, abbreviated as C2C, Government to Business abbreviated as G2B, Government to Customer abbreviated as G2C, and lastly, Government to Government abbreviated as G2G. E-commerce has provided SME, who usually have less than 250 employees with avenues through which they can promote their businesses, improve their productivity, as well as financial performance.

E-commerce has promoted the facilitation of goods and services, hence advancing the movement of goods and services and further promoting viable systems of running small businesses. The e-market brings businesses together on public

market platforms, which reduces the costs of running a business. It also assists in building a knowledge base of customer needs and offerings. Advanced networking systems, transactions, and business instruments are available for small businesses to attain international reach.

The adoption of e-commerce instruments enable SMEs to trade far beyond their home base and enter into new markets in order to sell their products and services. An increased customer base usually generates revenue and increases financial performance. SMEs can leverage on the tools of e-commerce to grow their small businesses. The digital platforms enabled via the internet makes accessing foreign markets easy for small firms. It makes it easy to compete internationally as goods and services can be transmuted through the internet and via designated delivery channels. This will reduce cost of entry into new markets and barriers of internationalisation can be easily eliminated (Andonov et al., 2021; Dolfen et al., 2023; Jain et al., 2021; Taher et al., 2021).

Few overheads are consumed for human and capital resources because e-commerce platforms cut down the need for physical stores across the global sector. The advantages for adopting e-commerce for SME offset the overhead costs, which hampers SME business expansion and growth as they should. The e-commerce platforms assist the SME business to form prominent chains with their clients, suppliers, and distributors.

E-commerce platforms are enormous engines and are capable of propelling profits along with enhancing financial performance for the SME (Adam et al., 2020; AlMulhim, 2021; Ha, 2020; Hardilawati et al., 2019; Kilay et al., 2022; Octavia et al., 2020). This is why e-commerce provides a substantial return on investment and hence

enhances financial performance. In the earlier paragraphs, various definitions, types, and advantages for adopting e-commerce for SME were discussed. In the following paragraphs, the impact of e-commerce on retail SME financial performance is discussed.

The advent of the coronavirus pandemic compelled a lot of SMEs and businesses globally to move online for business continuity. This was due to social distancing and physical restrictions on movements. It was also due to the disturbances suffered by supply chain transactions due to closure of international borders. Mitreva and Arsova (2021) in their study on the impact of e-commerce on the performance of SMEs in the Balkan region of Europe noted that most small firms were not prepared for the migration to e-commerce platforms.

Only the most adaptable and forward-looking SMEs were able to make a smooth transition onto the global stage. The absence of digital competencies diminished the financial performance of the SME in the Balkan states especially during the covid19 pandemic. As determined by Davirova & Ruziyev (2021) the authors observed that the adaptability and efficiency of a digital channel impacted on the financial performance of the SME. The architecture of the e-platform even influenced customer perception of the value of the brands being marketed on it.

### **Global and Comparative Perspectives on Adoption and Performance**

For instance, Almuwallad and Alhumoudi (2024) conducted a research on 230 Saudi Arabian small and medium enterprise owners and found that the owners enjoyed profitable benefits through the implementation of e-commerce. The findings repeated the capabilities and possibilities of utilizing e-commerce for small and medium business enterprises in enhancing business efficiencies. The owners felt that

there was an increase in the efficiency of operations, customer access, sales revenue, and an improvement in customer satisfaction.

Adoption of e-commerce was strongly linked to the decrease of operational costs especially within the context of improved overall profitability. Finally, the adoption of e-commerce was also noted to have strongly improved the market-based performance. Indeed, it had the capacity to improve the clientele base, increase the company's visibility within the marketplace, create brand awareness, and even more importantly, make the SME competitive.

In conclusion, the significance of adopting e-commerce to SMEs in the Saudi Arabian context was highlighted by the results, and the writers felt that the owners/managers of the businesses adopted plans for e-commerce and ensured that these were consistent with the general structure of the firm and the firm's mission.

Through a qualitative literary review carried out between the years 2014 and 2021, Mitreva & Arsova (2021) highlighted that the charts of the e-commerce market and the sales data represented a positive trend of growth in the online sales in Europe. In the wake of the appearance of the coronavirus, the Gross Domestic Product of the Balkan nations suffered negatively (Bodroža & Lazić, 2021; Milenković & Vujović, 2021).

To substantiate the claim that e-commerce exerts a positive effect on the business performance of SMEs, the following observations were made by Sedighi et al. (2018) in their study conducted in Tehran, Iran. A total of 373 owners or managers of SMEs took part in the survey. Results based on the use of structural equation modelling with partial least squares showed that the positive effect of e-commerce extended to financial performance, business processes, the growth of customers, as

well as the learning curve of the SME. Indeed, the positive effect of the afore-said factor on the financial performance of the SME is moderated by the variable for technological innovation, according to Araste (2013).

E-commerce uses digital marketing to advertise goods and services on social media so the customers can be aware of available product offerings. Digital marketing has taken advertising and business promotion to the internet. Coupled with internet infrastructure, e-commerce provided a platform where goods and services can be viewed, promoted, and purchased with ease concerning the works of Daud et al. (2022).

In an Indonesian SME research, Purba et al. (2021) chose 120 SMEs and studied the variables; digital marketing, e-commerce, business continuity and financial performance of SMEs during the coronavirus pandemic. The researchers did a quantitative analysis by using the survey questionnaire as the research tool. The key highlights of their analysis were: firstly, business continuity is greatly impacted by digital marketing. They noted that e-commerce positively impacted financial performance of SMEs and digital promotion or marketing had a positive impact on financial performance.

Remarkably, the research revealed that e-commerce had no impact on financial performance. Financial performance had no impact on business continuity. Digital promotions and marketing had no significant impact on business continuity through financial performance. Finally, e-commerce had no significant impact on business continuity through financial performance. E-commerce had no significant impact on business continuity through financial performance. Digital promotions and marketing increase the awareness of customers and brand awareness. Brand awareness and

promotions increases sales and leads to financial performance (Aggarwal et al., 2021; Alzaam & Almizeed, 2021; Orinaldi, 2020; Santoso, 2020; Yuwana, 2020). This means the SME manager has to actively use the e-commerce platform and invest in promotions and branding to affect revenue positively.

As the COVID19 pandemic disrupted business activities globally in the years 2019 till 2021, an extant study by Santoso in 2020 had significant outcomes. The study examined the techniques deployed by SMEs to cope during the pandemic. 37,000 SMEs in Indonesia were studied which were exposed to major disruptions by the coronavirus pandemic. The research noted that during the uncertainty created by the pandemic, the SMEs had problems defining their brand and creating awareness about it. Due to the fact that most SMEs had lost funds and become bankrupt they could not reap the benefits of the e-commerce platforms (Djarmiko & Pudyastiwi, 2020; Fitriyani, 2020; Orinaldi, 2020; Yuwana, 2020).

Those SMEs which were able to survive the pandemic and the associated financial crisis thrived and became innovative because they adopted technology early to increase customer awareness. They were not adoption laggards but front-runners. The e-commerce market place provided for them the necessary leverage and support in this regard (Fitriyani, 2020; Khai et al., 2020; Priyono et al., 2020).

Sequel to this theory, is a study carried out in the same region by Giantari et al. (2022) on how digital marketing tools and the magnitude of business competition modulated by the coronavirus pandemic affected business performance. Of 210 food and beverage SMEs studied, the impact of the pandemic and associated competition from larger companies had a negative impact on business performance especially SME financial performance.

They noted that digital marketing and e-commerce platforms could not resolve the negative trends of the pandemic and yield a positive outcome for the affected SMEs. To this end, they recommended that digital marketing and e-commerce tools be improved upon to enhance business performance. One of the ways to achieve this is to provide affordable e-commerce options and educate SMEs on how to deploy same (Jiang & Wen, 2020; Kohtamäki et al., 2020; Oktorä et al., 2020; Ritter & Pedersen, 2020).

Contrary to the above stated reviews of literature that maintain that the coronavirus pandemic elicited an economic situation where the advantages of e-commerce had no positive significant influence on pecuniary outcomes of SMEs, the research by Gao et al. (2023) had a different outcome. Data from 212 SMEs from three Chinese business districts were analysed. Using quantitative techniques, it was found that digital marketing strategies influenced SME pecuniary outcomes and business continuity during the pandemic. However, they found the connection between digital marketing decisions and SMEs business continuity to be insignificant.

Finally, the study revealed that the connection between adoption of technology and business continuity was mediated by financial performance. Only a business that makes money through the adoption of technology to improve processes can be sustainable in the long run. These factors help a firm plan the strategic outlook during uncertainties.

Even though e-commerce had been deployed by a lot of companies before the emergence of the pandemic, mandatory adoption of digital services became inevitable. The pandemic increased the use of the digital platforms so businesses can transact across borders and from arm's length maximise delivery channels and

processes (Dianda & Pandin, 2021; Johnston, 2021; Sardjono, 2021; Nivethitha et al., 2020).

The e-commerce platforms experienced increased in usage by 38.3% according to Orinaldi (2022) whilst social distancing persisted. Orinaldi (2020) carried out a study in the Asian sub region to investigate the impact of e-commerce in business performance and continuity during the pandemic. Deploying a qualitative assessment of previous literature, they observed that SMEs suffer greatly from uncertainties caused by events like the pandemic and economic recession.

They observed also that technology is necessary for small businesses to make a profit and the deployment of digital tools and presence on digital platforms would enhance customer growth and productivity. Business continuity is ensured and financial performance enhanced through e-commerce adoption by SMEs (Al-Somali et al., 2015; Costa & Castro, 2021; Kaswadi et al., 2021; Purnama et al., 2021; Santoso, 2020; Sarwono et al., 2022).

Apart from the disruptions and economic recession that the coronavirus pandemic caused, the pandemic modified the behaviour of customers when it came to shopping. In what can be described as a *channel shift*, Ausat and Suherlan (2021) in their research noted that people are moving towards online shopping media rather than conventional shopping methods. In their qualitative analysis, they found that financial and digital literacy was the most important index for SMEs financial performance when adopting technology for business. The move towards e-commerce is inescapable for any SME that wishes to remain relevant in the current technological dispensation (Al-Somali et al., 2015; Costa & Castro, 2021; Kaswadi et al., 2021;

Kosobutskaya et al., 2019; Nurlinda et al., 2020; Purnama et al., 2021; Qi et al., 2020; Santoso, 2020; Sarwono et al., 2022; Soegoto et al., 2018; Svatošová, 2019).

In related studies conducted on the adoption of e-commerce in SMEs by Octavia (2020) on Malaysian SMEs, it was discovered that there was positive connection between business orientation, market orientation and the adoption of e-commerce (Bamfo & Kraa, 2019; Huang & Chen, 2019; Riswanto et al., 2019; Valencia et al., 2019).

The previous papers have shown in their research, that adoption of e-commerce is crucial to business continuity and sustainability. In 2019, Ajao (2019) carried out studies in Nigeria on 387 SMEs to investigate the factors responsible for the adoption of e-commerce and its effect on firm performance. They used empirical analysis to ascertain that 62.4% adopted e-commerce whilst 66.7% leaned majorly on digital marketing. The research revealed that e-commerce increased financial performance of SMEs. However regardless of this revelation, it was discovered that SMEs in Nigeria were laggards in the level of adoption of e-commerce. According to the researchers, digital literacy would encourage a more comprehensive adoption of digital technology (Ajao et al., 2019; Ali & Ishaq, 2019; Ezenwa, 2019).

To buttress this point, Šaković Jovanović et al. (2020) studied SMEs in Europe and made some noteworthy deductions. Results of data from the online survey noted that the correlation between e-commerce and firm performance is negative. Using popular marketplace e-commerce channels were the main reason for a positive influence. They also noted that when firm's use business websites and general online marketplaces, they made more sales than private company websites (Dash et al., 2021; Maier & Wieringa, 2021; Tian et al., 2018). They also noted that e-commerce

and localised search engines have little to no significant impact on SME performance. Therefore, research on e-commerce require that there is the presence of a mediating variable to reach precise conclusions (Eurostat, 2019; Lorca et al., 2019; Pekovic & Vogt, 2020; Shahriari et al., 2015; Šaković Jovanović et al., 2020).

Internationalisation is the goal of every SME as every business wishes to scale, make financial progress, cross borders and expand its customer base (Hanel, 2020; Tian, 2018; Tolstoy et al., 2021). Research therefore has shed the searchlight on how market forces through companies, availability of resources and competitive firms mold the international stage for the retail SME.

In their Swedish study of SMEs, Hanel et al. (2020) noted that forming partnerships via online e-commerce platforms was a dynamic way of entering foreign markets. In their qualitative study, they observed that post entry into e-commerce platforms it may not be viable to continue in the initial alliances and partnerships that the SMEs leveraged on to enter the foreign markets if the SME wishes to make profits via the e-commerce channels. After joining a co-operative to gain entry into an international marketplace, the SME should build capabilities to ensure independence of business decisions otherwise the business will lose financial resources to unfair trade agreements (Hanel, 2020; Luong & Wang, 2019; Sanchez-Torres & Juarez-Acosta, 2019).

In a similar study conducted in Thailand by Sombultawee (2020), the precursors and outcomes of adopting e-commerce in SMEs was examined. The study also leveraged the unified theory of acceptance and use of technology (UTAUT) and embraced information technology capabilities of the firm. Data from 88 retail businesses were analysed using structural equation modelling. The quantitative

analysis showed that performance and effort expectancy and supporting or facilitating conditions have a strong correlation with adoption of e-commerce.

They found out that peer and social influence did not have a strong positive correlation on adoption of e-commerce. In conclusion they posit that digital literacy on the costs and benefits of e-commerce should be made available to SMEs so they can easily adopt digital technologies for business (Alrousan & Jones, 2016; Boconchelli et al., 2016; Im et al., 2011; Rahayu & Day, 2015; Sombultawee, 2020).

In addition to the introduction of mediating variables in research into the impact of adoption of e-commerce on financial performance of SMEs, another challenge faced by SMEs is marketing to promote products and services. Research on the adoption of digital techniques for business has revealed that SME have leverage in this regard. A study by Permana (2021) in Indonesia on how SMEs use the internet to resolve marketing challenges was carried out using qualitative techniques. It was revealed in the study that the use of the internet can enable SMEs to at the least cost possible, reach a wider geographical area and promote products and services. Creation of websites and social media pages to engage customers and promote products and services is proving to be a profitable media for ensuring financial performance (Mahliza, 2019; Purba et al., 2021; Purnama et al., 2021; Sombultawee, 2020; Wahyuni, 2020; Yeni & Yasri, 2020).

This position is re-iterated by Abdelkarem and Hou (2022) which aimed at studying the impressions of the environment on international e-commerce. Their study noted that e-commerce has opened market places which were not hindered by geography. The growth of the cross border or virtual marketplace has made advertising and business promotion affordable. There is the possibility of networking

with peers, suppliers and customers. There are platforms for advertising, after-sales services, and business networking.

The use of smartphones and internet have broken down international boundaries to business transactions. Cross border e-commerce powered by the internet gives opportunities for SMEs to build a bigger client base, attract more customers and expand their offerings. The study employed an online survey to carry out empirical analysis on 208 SMEs. It was discovered that the environment has a positive significant effect on cross border e-commerce adoption (Abdulkarem & Hou, 2021; Cassia & Magno, 2022; Chen et al., 2023; Cordova-Nunez, 2020; Elia et al., 2021; Fangyuan & Yusoff, 2023; Pan et al., 2022). In conclusion, e-commerce was not responsible for financial performance. It was investment in brand promotion and advertising on the e-commerce that led to increased revenue and financial performance in SME.

The merits of e-commerce have been widely expounded in this sectional review. On the other hand, there exists challenges and barriers to the adoption of e-commerce by SME globally. Govinnage and Sachitra (2019) in their study of SMEs and e-commerce noted that there are still barriers to adopting e-commerce even with the low cost of access and the multiplicity of digital platforms SMEs can choose from (Costa & Castro, 2021; Dahbi & Benmoussa, 2019; Foya & Garikayi, 2021; Wanzu et al., 2019). As successful as e-commerce has made certain companies globally, some SME are still struggling to adopt and implement e-commerce. To this end, they aimed to study the indices that affect adoption of e-commerce in Sri Lanka.

They noted that Sri Lanka is an emerging economy and the sample of their study was 200 business owners/managers in the retail sub-sector of SMEs in Colombo

city. The study engaged stratified random sampling method of analysis. The result of this quantitative survey was that digital literacy, government support in the digital transformation drive and the perceived gains of digital adoption are the factors that influence adoption of technology significantly. Lack of technology infrastructure can be a hindrance to adoption by SME. The Sri Lankan government will need to channel resources and funding into supporting SMEs to develop technology skills. The situation of Sri Lanka is similar to most SMEs in developing countries of the world (Al-Alawi & Al-Ali, 2015; Govinnage & Sachitra, 2019; Senarathna & Wickramasuriya, 2011).

To this end, Nazir and Roomi (2020) endeavoured to set up a new theory on the barriers to adoption of e-commerce. It is easy for developed countries to embrace technology but emerging economies suffer some drawbacks that have not yet been highlighted. The barriers were categorised into four which are digital, institutional, environmental and individual attributes of the manager or owner of the SMEs. They noted that the local business terrain also determined adaptability or not to technological innovations. SMEs need support from associations and government institutions to efficiently adopt e-commerce to business activities. Digital and financial literacy is necessary for a significant financial performance in SMEs. The SME owner must also be willing to adopt new innovations to make business more profitable (Hossain et al., 2022; Ismail & Masud, 2020; Nazir & Roomi, 2020; Zain et al., 2020).

As e-commerce becomes global and more businesses join the movement, challenges have been experienced by companies in their operation of the digital platform. Batubara et al. (2022) used a qualitative analysis to investigate the positive and negative impacts of e-commerce. Five (5) SMEs were interviewed in Makassar and they conducted a thematic analysis of the interview results. As the e-store had

positive highlights which were: 24-hour access and made it easy and convenient to shop, even communicating became easier there were also drawbacks to the digital system. When goods are damaged, these can result in loss of delivery costs. Threats and undercutting in prices by competitors, excessive administration expenses, and the cash on delivery services could constitute a huge financial loss to struggling SMEs (Batubara et al., 2021; Hendrawayan et al., 2018; Irayani & Ayuningsasi, 2021).

Consumer behaviour has also been modified by the covid19 pandemic as highlighted in the research by D'Adamo et al. (2021). Due to physical restrictions and the move to digital means of communication, the e-commerce platforms saw a boost in patronage. This study chose to appraise countries in Europe and their e-commerce scorecard. The study also studied challenges in the development of e-commerce. It was observed that e-commerce was prevalent in Sweden, Netherlands and Denmark. They also found that these countries had a high sensitivity to data privacy and integrity issues with regards to e-commerce. This sensitivity to cybersecurity meant that same countries took security on digital platforms seriously and ensured same are free of data breaches. With the convenience of e-commerce comes the security issues and privacy of customers' data.

As technology driven systems are increasing globally, there are technical risks associated with the deployment of e-commerce. The security of the e-platform is crucial to the financial success of the business. The SME is exposed to many digital compromises and breaches when security of the e-commerce platform is not taken as priority (Badotra & Sundas, 2021; Jamra, 2020; Kuruwitaarachchi et al., 2019). Hacking, data leakages, identity theft, fraudulent activities and other security related

incidences may cause customers to lose trust in the e-commerce platform (Putri et al., 2019; Tan, 2020).

A series of studies on security issues affecting SMEs' e-commerce activities have been undertaken by scholars. Jamra et al. (2020) examined the issues and potential solutions to e-commerce security trends. A systematic review of the literature revealed that the most pervasive security threat on e-commerce platforms is credit card fraud. If these security breaches can be addressed, the integrity of e-commerce platforms can be ensured (Almudaires & Almaiah, 2021; Jamra et al., 2020).

The establishment of secure chats and communication networks on the e-platform according to Badotra and Sundas (2021) posited that the intention to buy is dependent on trust and innate benefits of the goods or service while trust and peer pressure influence the intention of customers to engage in digital commerce. For more secure processing Lopez-Jimenez (2022) stated that using company seals increased traffic to the SME website and sales. E-commerce traders need to develop trust in their platforms to reap financial benefits from their investments. Hendrawan and Zorigoo (2019) and Peng et al. (2019) noted that to repair trust a lot of communication strategies need to be carried out.

With regards to the issue of cybersecurity Liu et al. (2022) noted that the world was seeing a surge in security threats yearly. This has compelled companies to invest in cybersecurity networks. As security is stepped up so also hackers and malware creators are resilient in their campaign to attack networks. To this end, the author noted that social engineering, personal data hacks, malware as some of the security issues experienced by SME using e-commerce platforms (Jawaid et al., 2022; Liu et al., 2022; Prasad et al., 2020).

The authors posited that it is a continuous process of building secure systems and the creation of malware by hackers and indiscrete persons aimed at breaking into networks. Continuous training and investment in secure software is the way to cope with the hazards of internet business. A strong regulation at company and country level is necessary to quell cyber-attacks. To address this issue, a study conducted by Brandreth and Ophoff (2020) aimed at developing a model to investigate e-commerce security. The findings of the research on the top-twenty websites in South Africa revealed that multi-factor authentication is not used as often as it should and this could breach security on the websites.

They also noted that password security can be improved on the website. The study concluded by stating that vendors and customers on most e-commerce websites should be encouraged to adhere to good security practice (Baako & Umar, 2020; Das et al., 2019).

### **The African and Nigerian Context: Critical Challenges and Research Gaps**

Despite the validity of the effect of digital technology in a positive way to the business performance of SMEs, some countries have not adopted full technology and e-commerce systems. An even more important role, according to the assertion by Wanzu et al. (2019), was the adoption of the technology by African countries to help in the continuity of operations. The study carried out by the group of scholars examined the indices that might help in the adoption of e-commerce by small businesses. The study by Wanzu et al. (2019), which involved the use of questionnaires to collect data from 172 SME entrepreneurs in Uganda, showed that e-commerce positively impacted the growth and development of SME (Gurure & Takavarasha, 2020; Kidenda, 2019; Okadapau et al., 2016).

In a related study conducted in Ghana by Ocloo et al. (2020), a total of 315 SMEs were surveyed to identify the relationships between electronic, company, and environment factors that are crucial for e-commerce uptake. This research used structural equation modelling. Findings concluded that the attractiveness of e-commerce to SMEs, a company's capacity to adopt technology, and environment forces have a positive effect on business to business e-commerce adoption. This results in improvements in financial performance (Agboh, 2015; Awiagah et al., 2016; Doe et al., 2019; Hu et al., 2019; Selase et al., 2019).

E-commerce was used as the mediator variable between business competencies and financial performance of SMEs in the following journal review. By using a questionnaire administered on 250 participants, the study concluded that e-commerce influenced positively between digital readiness and cost of adoption and performance of the SME. Conversely, the financial performance of SMEs is not highly mediated between e-commerce adoption and SME performance. It simply means that since the SME manager possesses digital literacy but fails to adopt and apply e-commerce effectively, he won't benefit from financial improvements (Dinesh & MuniRaju, 2021; George et al., 2022; Hussain et al., 2022; Khan et al., 2021; Sharma, 2020).

The previous paragraphs have reviewed research on the impact of e-commerce on financial performance in various countries and have explored academic theory that e-commerce adoption has a strong positive correlation with SMEs financial performance. Other researchers postulate that e-commerce have little to no significance on financial performance in periods of uncertainty and economic recession. They state however that SMEs financial performance can be a mediating variable between e-commerce and business sustainability. To this end, Lestari et al.

(2021) in an Indonesian study investigated the single most important variable that delineated adopters of e-commerce and non-adopters of e-commerce.

The study had 1024 participating SMEs. Using empirical methods of data analysis, they discovered that lack of technology adoption made SMEs fare worse than the participants who adopted technology. The restrictions that the coronavirus pandemic caused, reduced customer base and revenue of SMEs. Therefore, the pandemic elicited a mandatory adoption of e-commerce in SMEs. However, the single most important variable for success and financial performance in their research was the access to working capital assistance for the SMEs (Harel, 2021; Hoang et al., 2021; Lestari et al., 2021; Riadi et al., 2022; Sarker et al., 2022).

E-commerce has changed the way conventional trading is carried out globally and this new phase of commercial activities requires that SMEs leverage digital services to continue in business and do it profitably. The internet is the first choice for consumers searching for products and services at the best offers. Orders can be shipped immediately to customers (Al-Zoubi et al., 2022; Flavian et al., 2020; Lee & Lee, 2020).

This flexibility and ease of transacting has made e-commerce the future of business for any sector of the economy. Due to the fact that SMEs are 80% of the businesses in Nigeria and generate the largest sectoral employment, it is important for retail SME to adopt digital services to support their business (Aladejebi, 2020).

Costa and Castro (2021) carried out a systematic literature review from 2003 to 2021. Their aim was to collate data on the advent of e-commerce as a business tool by SMEs. They conducted a mixed method analysis of the standards and procedures necessary for SMEs to transit from a traditional to a digital means of conducting

business. They found out that for rapid economic recovery and development in any nation, e-commerce is a necessary tool to boost trade. SMEs can leverage same to ensure financial performance (Page et al., 2021).

For the organisation to reap the benefits of the e-commerce platform, it is important to develop organisational capability. For instance, in the study conducted by Irwan Hariandi in 2019 on the effect of competitive advantage on the association of e-commerce and SME performance in the context of East Javan SMEs, the study was to determine the role of the intervening variable competitive advantage on the association of e-commerce to SME performance.

Data collection was done on SMEs, whereby the sampling was done on two hundred and nine (209) subjects representing the SME owners or managers. Non-probability proportionate sampling technique was used to conduct the empirical analysis with the objective of obtaining the results to somehow describe the objective of the research work, the result of which was to determine the strong association of e-commerce to competitive advantage. There is also the significant association of e-business to the performance of SMEs. Nonetheless, the findings of the research work revealed no significant effect of the variables of e-commerce to SME performance. Nevertheless, the mediating variable of competitive advantage completely aligns the variables of e-commerce to SME performance (Al-Ansari et al., 2013; Hariandi, 2019; Scuotto et al., 2017).

Some researchers have argued that in studying e-commerce adoption in SMEs, the best approach should be to divide it into factors influencing adoption and post-adoption stages. To this end, Shahzad et al. (2020) conducted a study to examine adoption of e-commerce and its influence on digital and physical SME business units.

Using quantitative techniques, they sampled 225 SMEs in Malaysia who had earlier adopted e-commerce.

Using the unified theory of acceptance and use of technology (UTAUT) which investigates the acceptance of technology, directed by the effects of performance expectancy, effort expectancy, social influence and facilitating conditions, they segregated the study into the factors influencing adoption and factors modulating post adoption stages of e-commerce in SMEs. For both classes of SME adopters, it was noted that they had discrepancies about effort expectancy in adopting e-commerce. Adoption of e-commerce was based on performance expectancy. This division into pre and post adoption helps the researcher and business manager determine the appropriate marketing strategy for the SME (Aremu et al., 2019; Fillion et al., 2011; Shahzad, 2020).

The aforementioned literature has elucidated the advantages and disadvantages of e-commerce on SME performance. Some studies stated that e-commerce adoption has no positive significance on financial performance because the effects of the covid-19 pandemic and economic recession wiped out all the economic gains they could have earned. Some scholars stated in their investigation that adoption of e-commerce has positive significance on the financial performance of SMEs. Some researchers however advise that a mediating variable in the research investigation helps to achieve more precise outcomes.

In a study conducted by Amofah and Chai (2022) in Ghana on e-commerce users, a total of 535 respondents from six regions were given questionnaires to fill. In the data collected from the survey analysed using partial least square structural equation model, they found that there is a strong positive correlation between the

unified theory to accept and use technology and adoption of technology. They realised that trust successfully mediates the theory to accept and use technology. Payment methods have no influence on trust and e-commerce adoption. Trust is the single most important variable in the use of e-commerce which means the platform must be free from cyber risks and compromising malware (Amofah & Chai, 2020; Mustafa et al., 2022; Odusanya et al., 2020). Trust in and integrity of the e-commerce platform is what will make revenue consistent and lead to better financial performance.

### **Summary of Literature Gaps: Global, African, and Nigerian Studies on E-commerce**

The critical synthesis of e-commerce literature highlighted some serious gaps in research, which range from global to acute gaps within the African and Nigerian context.

**Global Literature Gaps:** In fact, globally, there were some research findings that indicated there is a possibility to expand market reach, lower operation costs, and improve competitiveness for SME through e-commerce. However, a major measurement gap existed. In several cases, adoption was correlated with improved performance, but the pecuniary return, for instance, in terms of direct financial metrics such as ROI, was not measured. Moreover, findings were highly inconsistent, revealing a contingency and mediation gap. The financial impact of e-commerce was heavily dependent on mediating variables-such as competitive advantage, digital marketing investment, or access to working capital-that are often not central to the analysis. Indeed, this led to contradictory conclusions, especially during crises like that of the COVID-19 pandemic, whereby e-commerce was at the same time a lifeline and an insufficient remedy for financial distress.

Additionally, there was a sector-specificity gap, with research aggregating diverse SME types and failing to isolate the unique value propositions and challenges of e-commerce for the retail sector.

**African Literature Gaps:** There were various aspects of the African setting that brought forth infrastructural issues. Although research had shown the positive effects of e-commerce on growth, especially among countries such as Uganda and Ghana (Ocloo et al., 2020; Wanzu et al., 2019), a huge gap was visible when considering the infrastructural capability. There are various studies pointing out issues such as digital illiteracy, logistical issues, as well as a lack of supportive policies (Govinnage & Sachitra, 2019; Nazir & Roomi, 2020), but none presented a framework that tackles such issues comprehensively. There was a huge security trust gap, which is very important to discuss, as SME are vulnerable to cybersecurity threat, fraud, as well as issues of data privacy (Badotra & Sundas, 2021; Jamra et al., 2020).

**Gaps in Nigerian Literature:** Beaming a literary searchlight into Nigeria, the gaps become critical and highly specific. First to be noticed was a severe sector-specific and methodological gap. These studies done on Nigerian contexts, such as Ajao (2019), make wholesaling across all SME and rely on adoption rates or perceived performance without providing ROI-focused analysis for the retail sector. Very few studies quantified the direct financial returns, in terms of ROI, accruable to Lagos retail SME from e-commerce investments.

The second gap was one of integration and application. Although the challenges existed around low digital literacy, constraints of logistics, and cyber security, few studies were able to integrate the analysis of such UTAUT-based adoption barriers-for example, Effort Expectancy, Facilitating Conditions-with the hard

measurement of financial outcomes such as ROI. Finally, there was a pragmatic guidance gap for the business owners themselves. For instance, the literature is silent on what specifically yields better financial returns for Nigerian retail SME between B2C marketplaces and proprietary websites or how an owner-operator can best navigate the trade-off between investment in security and profitability.

Conclusion from the body of e-commerce literature indicated that the journey had been from inadequacies in the face of globalisation to country-specific infrastructure and financial security barriers, and finally to severe research gaps in the Nigerian environment. These are indicated by a lack of focus within the retail environment, an absence of financial analysis guided by the bottom-line outcome of return-on-investment, and a misfit between the study of barriers to online adoption and financial outcomes. This study intends to fill the above culminating research gaps by examining the specific online effect of e-commerce upon the return-on-investment outcome in the retail SME in the city of Lagos, Nigeria.

### **The Illusion That E-Commerce Grows SME Financial Performance**

The story of e-commerce foretells of a world where online shopping is synonymous with greater market reach, lower prices, and enhanced financial outcomes. A nuanced, future-focused integration, on the other hand, took apart this mere illusion of inevitability as data shows instead a mediation paradox which states that instead of an online shopping infrastructure driving financial results directly as an input variable, its output is fully contingent on the variables that condition its use (Badotra & Sundas, 2021; Jamra et al., 2020).

The key challenge is moving past merely itemising benefits of adoption towards modeling the underlying system within which the online shopping infrastructure exists

as a means of finding best intervention points for value extraction, even under adverse conditions as found in Nigeria's retail market. These observations are discussed below

### 1. Confusing Platform Adoption with Value Capture

The international literature is full of a conceptual flawed premise: confusing the existence of an e-commerce presence with the achievement of financial value. This is affirmed correctly in studies such as the one conducted in Saudi Arabia (Almuwallad & Alhumoudi, 2024), but the inconsistent results, particularly during times of crises are often revealing. The Indonesian study carried out by Purba et al. (2021) is key: it demonstrated that there is no relationship between ecommerce and financial value, but there is between internet marketing. The Indonesian study by Purba et al. (2021) is a landmark statement as it found e-commerce had *no direct impact* on financial performance, while digital marketing did. For researchers, this underscores a critical distinction.

E-commerce is the *channel*; value creation happens upstream (product development, branding, marketing) and downstream (logistics, customer service, trust-building). The platform itself is a cost center and not just an investment. Financial performance is determined by how effectively the SME uses this channel to execute a coherent business strategy. The forward-looking implication is clear: research and support programs must shift from promoting going digital to enabling selling successfully online (Amofah & Chai, 2020).

### 2. The Contingency of Crisis: Stress-Testing the Digital Infrastructure

The COVID-19 pandemic served as a global stress test, exposing the conditional nature of e-commerce's benefits. The literature bifurcates: for some SME,

it was a lifeline; for others, it was an inadequate tool that could not compensate for evaporating demand, supply chain collapse, or a lack of working capital (Lestari et al., 2021). In contrast, this divergence is not an obstacle but an indicator.

It shows that e-commerce acts as a force multiplier but not a function that creates basic demand. It can effectively cater to existing or hidden demand but not create demand in a vacuum. Those SME that succeeded did so either by having a new digital platform or through innovation alongside pre-existing brand equity or capital.

The pandemic-era research highlights the non-negotiable role of financial resilience and strategic presence as prerequisites for capturing e-commerce's value. Future models must treat e-commerce as one node within a broader business viability network, where access to finance and managerial acumen are primary nodes (Mustafa et al., 2022; Odusanya et al., 2020).

3. The Strategic Need of Mediation. Mediating variables make empirical studies have the quality of consistency. Competitive advantage (Hariandi, 2019), trust (Amofah & Chai, 2022), digital marketing investment, and access to working capital are repeatedly shown to be the true engines of performance for the SME. This leads to a workable and dynamic framework: E-commerce ROI = f(Platform Quality, Strategic Mediators, Contextual Filters).

Furthermore, the all-or-nothing digital transformation narrative is misleading. The European finding that SME using third-party marketplaces outsell those with only proprietary websites (Šaković Jovanović et al., 2020) is crucial. It suggests a hybrid commercialisation strategy is optimal. SMEs should leverage low-friction, high-traffic marketplaces (such as Jumia, Amazon) for customer acquisition and volume, while

using their own websites for brand building, higher margins, and customer loyalty. This portfolio-based approach to digital presence is a more nuanced and potentially more profitable approach compared to a singular focus on one channel.

#### 4. The African and Nigerian Situation: When Infrastructure is the Product.

The situation in Nigeria and similar countries in Africa is not only one of adoption hurdles, it actually redefines the very value proposition of e-commerce. Concerns around logistics (last-mile delivery), payment security (cash-on-delivery), digital literacy, and security are not secondary issues in Nigeria and similar countries in Africa, they are actually primary cost factors that affect ROI in e-commerce (Mustafa et al., 2022; Odusanya et al., 2020). In this case, the e-commerce platform is just the tip of the iceberg.

The submerged bulk consists of the physical and institutional infrastructure: reliable addressing systems, affordable and secure payment gateways, trust in digital transactions, and cost-effective logistics networks. A forward-looking analysis must conclude that in such environments, the SME's financial performance is less about its website's features and more about its ability to navigate and mitigate these systemic frictions. Success belongs to those who can solve not just the digital sales problem, but the trust, delivery, and payment trilemma endemic to the local context (Odusanya et al., 2020).

#### 5. The Unavoidable Overhead of Digital Commerce

The security discussion cannot be relegated to a technical sidebar because in the case of SMEs, the risk of fraud and cybersecurity is a direct taxation of digital revenue and a strong hinderer of customer trust (Badotra and Sundas, 2021). In a situation where the country has a fraud history, such as Nigeria, having a high

customer trust cost is a heavy burden for this verification and, therefore, a heavy cost of customer acquisition. Securing a site through things such as SSL certificates is not an information technology cost but a marketing expenditure.

### **Forward-Looking Synthesis: A Pragmatic Framework for E-commerce Value Realisation**

For e-commerce to transition from a business cliché to a reliable engine for SME financial performance, a systems-level, capability-centric approach is required:

1. **Adopt a Value Chain Research Paradigm:** Future research should break with the adoption-performance paradigm. They should outline the digital SME value chain, from sourcing the product and the digital identity, through the choice of the digital platform and the marketing expenditures, to the completion of the transaction and post-purchase service provision. (Mustafa et al., 2022).
2. **Promote Mediated Digitisation:** Support programs for SMEs must move beyond technical training on platform setup. They must be integrated capability-building initiatives that bundle e-commerce skills with financial literacy, digital marketing, basic data analytics, and logistics management. The goal is to build the strategic mediators that convert digital presence into profit (Oduşanya et al., 2020).
3. **Develop Local Intelligent Platforms and Policies:** Technology firms and policy makers need to work on solutions that are appropriate for the context of SMEs in Africa. This consists of:
  - Platforms that enable hybrid offline and online payment tracking, use USSD services for wider compatibility, and come with integrated logistics APIs.

- Policy to support digital identity, simplify cross-border e-commerce for SME, and offer a legal framework for digital contracts and dispute resolution.

The managers of the SME must be advised to craft an omni-channel strategy that leverages the use of third-party platforms for bulk business and discovery purposes, social commerce platforms such as Instagram and WhatsApp for engagement, and finally an internal webpage for authoritative purposes.

E-commerce is not a shortcut to prosperity, but a new and complex environment for the race of business enterprise. In the case of the SMEs, the online environment is merely the entry permit. It is a race won through better strategy, better capabilities, and a better grasp of the geographical terrain. It is a future of prosperity for the Nigerian retail SME through e-commerce, where the future is not marked by the presence of the Nigerian retail SME in the virtual environment, but their ability to strategically utilize their presence in the virtual world as a means of systematically solving the geographical frictions within a global marketplace (Kamal et al, 2020).

### **Point-of-sale (POS) system and Financial Performance**

A point-of-sale usually called POS is used by retail stores to record transactions conducted with customers. Point of sales were developed from the historic cash registers invented in the 19th century in the United States of America by James Ritty, Ohio (Basker, 2016; Hopping, 2000; Lafontaine et al., 2022).

The cash register was a device that recorded transactions and enabled the retail business keep proper books of accounts and manage business activities. The cash register was developed by the National Cash register Corporation into a device that could hold a drawer to keep cash and a paper receipt roll. This was the first

advanced cash machine whereby the cash register was further enhanced with a display screen, a magnetic strip that can read credit cards and a thermal printing facility (Chang et al., 2018; Haberstroh, 2013; Lowden, 1957). By the 1970s, IBM created the electronic register for restaurants and other companies for commercial use. Later on, the advanced point of sale software was created with touchscreens and more graphical features (Pugh et al., 1991; Rosenbloom, 2000).

The point of sales is a place/gadget where the customer can pay for goods and services purchased. At the point of sales, taxes can be charged on the goods purchased. The store can be physical or a virtual type which uses a digital device. Invoice is prepared to indicate the liability of the customer. Receipts are issued after the payment for goods and services. The point of sale for the customer is crucial for the SME because customers made decisions to purchase products with high margins placed at locations where customers would be compelled to pick same (Andry et al., 2019; Arie Handoko, 2021; Indumathi et al., 2022; Marico et al., 2021; Mendoza et al., 2019).

Point-of-sales according to Edirisinghe and Munson (2023) were set up near exits to the store to reap the benefits of impulse purchases. The point of sales (POS) system links a business's cash register to the company database. This provides digital data and computer footprints for the business. Businesses are therefore able to record and analyse inventory and business transactions regularly. Data collected from the point of sales devices can be used for many business decisions. They can be used to monitor suppliers' activities, they can review customer's purchasing styles, they can be used to investigate and analyse sales, they can also be used in marketing to determine what offerings to present to customers (Anifowose & Ekperiware, 2022; Jan & Shah, 2023).

For inventory purposes, the point-of-sales system can also interpret data to prepare financial reports. With the ability to use debit and credit cards, the point-of-sales system can be used as a financial database for the enterprise. SMEs can complete a detailed system of all transactions conducted via cash or cheques or credit/debit cards due to connection with the internet (Abolghasemi et al., 2023; Jain & Tan, 2022; Lawal, 2022).

Installing points-of-sale in strategic areas of a retail store gives the business the opportunity to market specific products and encourage customers at early points in the decision-making process of purchasing. Staff recruited for specific sales can influence the customer to purchase additional products rather than just processing transactions. Studying the point-of-sales statistics according to Lawal (2022) can assist in profitability and purchasing behaviour. The point-of-sales is a medium through which business processes of sales and purchases, inventory, bills and payments and customer relationship management is combined via an enterprise system (Arevalo, 2023; Bharadwaj Kadiyala & Özer, 2023; Esrar et al., 2023; Mariani & Wacas, 2022).

As business is constantly being affected by innovation, the point-of-sale is emerging as a necessary digital tool and it is transforming with new features. The electronic point of sales includes hand held artefacts, credit and debit card readers and counterfeit money checks as well as staff rotation schedules (Cote, 2015; Gnaiger et al., 2023; Lawal, 2022; Rifandi, 2020; Sudha et al., 2023).

### **Types of point-of-sales systems**

The types of point-of-sales are the desktop, mobile, tablet, kiosk, online, terminal and multi-channel point of sales. The desktop point-of-sales is stationary and large in size. The mobile point-of-sale is smaller and consists of a device attached to

a card reader. The mobile point-of-sale is easy to carry around and thus SME prefer to use this for business operations. Street vendors, market traders and freelancers can move around with the mobile point-of-sales (Jangjarat & Jewjinda, 2023; Lawal, 2022).

Accessories like barcodes, scanners and thermal printers can be attached to the device. The tablet point-of-sales works in the same way as the mobile point-of-sale but with a larger screen and vivid colours. For SMEs with larger inventories, the larger screen of the point-of-sales assists in making ordering and purchasing effective for staff and clients. Therefore, gift shops, restaurants, art galleries would prefer to use the point-of-sales on the tablet (Alabi & David, 2023; Nezhad et al., 2023).

The self-service kiosk enables the customer to make purchases without the aid of the store attendant. The kiosk point-of-sales is similar to the desktop point-of-sale. It has enhanced security features to prevent fraud and pilfering. The online point-of-sales makes use of the SME owner's device or computer. This reduces the cost of starting the business. The SME owner can use this point-of-sales to sell from any location (Kim & Park, 2022; Lawal, 2022; Santos & Bacalhau, 2023; Sapry et al., 2022).

The terminal point-of-sales requires internet access and include sales accessories like barcode scanners and cash drawers. They can also be linked to cloud-based accounting systems. These terminals can also be used in restaurants for ordering and purchasing. For the multichannel terminals, all sales media, online stores and websites, social media pages are merged onto one software. Such a business is able to process all transactions and monitor business processes seamlessly (Amini &

Jahanbakhsh Javid, 2023; Gao, 2022; Har et al., 2022; Kellermayr-Scheucher et al., 2022).

The benefits of the point-of-sales system are that it helps to run the business efficiently and effectively at least cost. There is a good overview of the business and proper accounting of cash flows and financial position of the SME. The SME is able to access data about each product it retails to customers. Advanced product reports will indicate what products are profitable and which are not. The SME is able to develop a sales strategy based on the SME industry (Al-Okaily et al., 2023; Hamundu et al., 2020; Lutfi et al., 2022; Saad et al., 2022; Sastararuji et al., 2022).

The point-of-sales is able to budget and plan for the business in coming seasons due to access to financial information. This makes it easy to manage inventory and monitor purchases and supplies. Errors on pricing can be easily reduced due to the SME manager's ability to correct and adjust these on the software. The point-of-sales enables the SME develop and maintain a loyalty programme whereby discounts and product offerings can be made to customers. Such customers would be retained and this would increase the revenue of the business (Bombaij et al., 2022; Guo et al., 2022; Haverila et al., 2022; Lin & Bowman, 2022; Meyer-Waarden et al., 2023).

The sales competence of each employee can be determined by the quantity of products sold. Commissions and benefits plan can be given to the best employees. These statistics help the employer and employee define sales targets and meet these goals (Chatterjee et al., 2022; Shahbaz et al., 2020). In conclusion, the point-of-sales enables the SME to focus on being more cost-effective, gives the business more insight into revenue and cash flow, manages customer relationships and uses financial

data to meet strategic goals and objectives (Akande et al., 2023; Effiom & Edet, 2022; Lawal, 2022; Shabbir & Gardezi, 2020). The proliferation of point-of-sales system made conducting business easier in Nigeria. The Central Bank of Nigeria in 2012 introduced the cashless policy in Nigeria to enhance the payment system. Since the introduction of the payment system, the country by 2018 recorded 17,193 points of sales terminals registered by banks for cashless transactions. This was attributed to the penetration of point of sales system to those who have no access to financial services (Ahmad et al, 2023; Otitoju et al, 2023; Nwakpa, 2023).

The point-of-sales decongests limited automated teller machines and crowded banking halls. SMEs can also earn commission from being agents of banks. The point-of-sales machines can be used for bill payments. Some SME give the customers the option of withdrawing cash using the point of sales and make an interest on their transactions. These cash-back transactions can be a source of additional profits to the SME manager (Jangjarat & Jewjinda, 2023; Lawal, 2022).

### **Global and Comparative Perspectives on Adoption and Performance**

In this section, the indices which influence the adoption of the point-of-sales system are discussed in the literature. Some conclusions were reached by Damayanti et al. (2020), who researched business enterprises in West Java, Indonesia. Empirical research carried out in a regional research of SME employing a binary logistic regression noted image, known ease of use, as the foremost indices for the adoption of the point of sales system. These factors, compared to other factors, have had the most significant influence on adopting the sales terminal in the business enterprise in SME (Damayanti et al., 2020; Lawal, 2022; Yulianto & Supriono, 2023).

Within a related study conducted by Arie Handoko (2021), the influencing factors for the use of the point of sales system had been considered. A total of 390 respondents had taken part in the quantitative survey. Findings from the experiment had confirmed that the advantages embedded within the system had inspired businesses to adopt the technology. (Tambunan, 2011; Venkatesh et al., 2012).

Digitalisation of business processes has become essential in SME business operations. The aim of the study by Tranita and Dharma (2019) was to investigate benefits of point-of-sales system and motivation for SME to use the point-of-sales system. 270 SME employees participated in the study. Using empirical analysis on the collated data, it was deduced that attitude impacts the use of the point of sales system. The quality and accuracy of peer information on point of sales system also influences the adoption of the system (Tranita & Dharma, 2019; Yuhelmi et al., 2018; Zadeh et al., 2013).

When employees use point-of-sale system, they are able to improve SME revenue. To determine the factors that influence SME adoption of point-of-sale system in restaurant businesses, Ramos and Castro (2017) investigated using the technology acceptance model. They embarked upon a literature review of 28 academic articles on the point of sales technology. The review revealed that restaurants accepted the point of sales technology. However, attitude towards adoption was influenced by personality differences, education, age and support from company and peers.

Recognised usefulness of the point of sale system is affected by the quality of information and the advantages of information shared on the merits of adopting a point-of-sale system. The strategy of the business, the ethics, management style all

support the adoption of technology (Isaac, 2014; Li et al., 2009; Ramos & Castro, 2017).

A Thailand study noted that the covid19 pandemic fraught with shut downs and social distancing still brought opportunities for SMEs to leverage on. In Jangjarat and Jewjinda (2023) it was noted that the pandemic sped up digitalisation. The study aimed at investigating post pandemic opportunities in Krabi, Thailand. It was discovered through a content analysis of business processes and technology that SME who adopted point-of-sales and other digital technologies experienced substantial financial advantages (Adam & Alarifi, 2021; Al-Okaily, 2023; Jangjarat & Jewjinda, 2023).

### **The African and Nigerian Context: Critical Challenges and Research Gaps**

A recent study by Ogunsuyi and Tejumade (2021) which comprehensively examined the impact of point of sale system on the performance of SME in Lagos state raised similar conclusions. Using Taro Yamane formula deployed through questionnaires on 400 participants, they found out that point-of-sales system assisted SME to increase sales revenue and profitability of businesses (Akhalumeh & Ohioka, 2011; Adeoti, 2013).

An assessment of the point of sales system by Lawal (2022) and their capabilities for SME revealed the benefits of point-of-sales system. They gathered in their analysis, that the point-of-sales system is a valuable digital technology for small businesses. SMEs are able to manage the inventory and financial transactions for the business as well as customer relationship management. For these reasons, the point-of-sales system gives the SME manager the ability to keenly monitor and control business activities. Marketing activities can be monitored to grant customers better products offerings, because data on sales is recorded via the point of sales database

(Adeoti, 2003; Effiom & Edet, 2022; Jain & Tan, 2022; Lawal, 2022; Lawal & Okafor, 2022). These lead to financial transparency and improved revenue.

The paper analysed critically the benefits of the point-of-sales and the challenges faced by adopters. It was however recommended that adoption far outweighed the challenges of the point-of-sales system. The manager of the SME should be able to interpret the data on the point-of-sales database to make timely budgetary and financial decisions. To achieve these, the SME manager needs to be financially and digitally literate (Jain & Tan, 2022; Lawal, 2022; Lawal & Okafor, 2022).

The Nigerian business environment is mainly cash driven. For this reason, a policy by the Central bank of Nigeria is making major strides to encourage cashless economy. This is the reason why the point-of-sales system and terminals are being introduced to retailers and business owners. The policy was created in 2012 (Lawal, 2022). The impact of this policy should be to improve digitalisation of businesses.

Akerejola et al. (2019) examined the issues that impact access to digital tools and the security of same in SME business activities in Nigeria. The population for the study was 2059. The response rate was 77.1%. Employing an empirical analysis, they found out that digital infrastructure has a significant impact on the adoption of point of sales system by SMEs. They also noted that security of data was important for the adoption of point of sales systems. To this end it was advised that the government provide better infrastructure for SME to build capacity for point-of-sales system adoption, if the cashless policy would achieve success (Obi, 2023).

Lawal (2022) noted that even with the stance of the central bank of Nigeria on adopting a cashless policy for business activities, people still preferred to carry cash to conduct transactions. The study examined the impact of the automated teller

machine, the point-of-sale and internet banking on economic growth. They noted that there was increase in automated teller machines and point of sale systems in the years 2019 to 2023.

In conclusion, it is important for the Nigerian government to ensure that regulations are in place to monitor the activities of operators of the point-of-sales system to prevent irregularities and fraud because the cashless policy is pertinent for economic growth and SME performance (Amujiri & Chris, 2015; Banuso, 2012; Odior & Ovat, 2012).

When the COVID-19 pandemic resulted in business closures, the lockdown affected business globally. This resulted in loss of revenue and profits (Aladejebi, 2020). Abdullahi et al., in studies conducted in 2022 aimed at investigating the impact of the pandemic Nigeria on the spread of the point of sales system. They also sought to examine the impact of the lockdown on the point of sales system of businesses. The study had a population of 1495 and a sample size of 315. This figure was derived using the Taro Yamane formula.

The questionnaire deployed was analysed using regression techniques. The analysis revealed that the lockdown and restrictions on movement as well as business closures had a positive impact on revenue, profitability and growth except for physical distancing measures. The study thus concluded by stating that the pandemic had no negative influence on the growth of SMEs in Nasarawa, Nigeria. The study recommended that more fiscal and monetary policies geared at supporting SMEs should be created by the government (Abubakar, 2021; Bloom et al., 2021). The study acknowledged that the point-of-sale system helped business meet financial targets.

The creation of e-payment systems by the Central Bank of Nigeria was to ease financial challenges of SMEs and associated businesses. Mafimisebi et al. (2019) studied the impact of point of sales system on the demand for groceries in Akure, Ondo state. Using quantitative analysis and regression techniques on the sample size of 160, the following results were revealed. The study noted that for gender, age, household and monthly income, convenience was the main factor for adoption of point of sales payment system (Okeke et al., 2017; Tella & Abdulmumin, 2015). This convenience translated into ease of doing business and financial performance.

Obidile et al. (2025) study analysed the distinct effect of two leading digital payment technologies: point of Sales (POS) systems and Mobile wallets on the growth of Small and Medium-sized Enterprises (SME) in Anambra State, Nigeria. The research encompassed the entire population of 981 registered SME in the state, and carried out a mixed methods study of same. The research employed descriptive statistics (mean and standard deviation) to respond to the research questions and an independent t-test to analyze set hypotheses of differences in terms of gender and location with a significance level of 0.05.

The results indicated a statistically significant positive effect of POS systems and Mobile wallets on SMEs growth, affirming their position as business development drivers. Government intervention and establishment of joint ventures with financial institutions to create digital training sessions will help SME managers develop skills to use the full facilities inherent in the POS system. Most of the value and potential of this customer relationship management and inventory tool has not yet been fully utilised in the Nigerian informal sector.

A particular study using autoregressive distributed analysis was conducted by Effiom and Edet (2022) which aimed at examining the impact of financial technology on economic growth in Nigeria. The study investigated web banking, cheques, automated teller machines, mobile money and other innovations. The Toda-Yamamoto tests deployed revealed a linear correlation between financial instruments and SME performance (Effiom & Edet, 2022; Lawal, 2022; Pantano & Timmermans, 2019).

The point of sales system can be hosted via the internet or on cloud supported servers. In this study by Prihatiningtias and Wardhani (2021) conducted in Malang city in Indonesia, a mixed method research was carried out. The questionnaire served to 91 respondents was analysed using regression techniques. The results were that there is a connection between the use of cloud supported point of sales system of transaction and SME non-financial performance during the pandemic.

The qualitative aspect of the research constituted of interviews of 9 SME business managers or owners. Using the theory of continuance to use technology, it was found that there was a positive connection between cloud supported point of sale system and non-financial performance (Adane & Piderit, 2019; Akerejola et al., 2019; Al-Janabi et al., 2018; Prihatiningtias & Wardhani, 2021). However, the relationship between clouds supported point of sales system on SME financial performance was negative.

This result could be explained in that financial indices relate to costs and profits. The cloud supported point of sale system has little insignificance to financial performance because of the high capitalisation costs of investing in cloud computing. The investment in these digital technologies will however yield profitable returns in the

long run. In the short term, the costs of installation and maintenance reduce the benefits of installing a comprehensive cloud computing point of sale system (Adane & Piderit, 2019; Akerejola et al., 2019; Al-Janabi et al., 2018; Prihatiningtias & Wardhani, 2021).

A review of the data gathered by the Central Bank of Nigeria between the years 1981 to 2018 in a study conducted by Nzotta (2019) revealed that of the point-of-sales system has a strong positive correlation on the performance of SMEs. Using a least squares method of analysis, it was determined that more digital banking tools are necessary for SME business performance. In the unbanked and rural areas of Nigeria, the number of automated teller machines and point-of-sales terminals need to be increased for more financial inclusion (Mbah & Obiezekwem, 2019; Nzotta, 2019; Okeke et al., 2017).

A Northern Nigeria study of 384 participants on the contribution of the point-of-sale system to financial inclusion in Nigeria was conducted recently by Ahmad et al. (2023). Using empirical analysis, it was discovered that since point-of-sales systems are easy to afford, mobile and easy to install, they are preferred to other digital technologies by SME for payments and receipts. Web transactions increased from 35.79 trillion in 2021 to 117.33 trillion in 2022 (Chondough, 2021). However, access to financial services has averaged 56% over the years, and it is predicted to reach 80% by the end of 2022 (Osagioduwa, 2022).

This means that estimate of 56% of the population in Nigeria has access to financial services. The 44% that have no access is due to lack of digital and financial literacy, poverty and lack of access to the banks. The study noted that point-of-sale terminals has positively impacted the performance and financial inclusion of SME.

More point of sales terminals should be deployed to SME for economic growth and development (Ahmad et al., 2023; Chondough, 2021; Osagioduwa, 2022).

Whilst the papers reviewed have elucidated on the advantages and benefits of point of sales technology for the financial performance of SMEs, it will be noteworthy to review the challenges and issues surrounding the adoption and implementation of point of sales technology in Nigeria.

The advancement of e-payment systems has become widely embraced globally as the innovative way of doing business, the point-of-sale technology has achieved success amongst SMEs. In a study by Amaefule et al. (2019) which investigated the adoption and challenges of effective use of point of sales in SMEs in Owerri, Nigeria a few deductions were made.

An empirical analysis of SMEs using point-of-sales system showed that whilst point-of-sales system enabled accountability and convenience, with level of trust and integrity in the system being high there were still some issues with the system. The prevalent network issues and high charges by banks for point-of-sale use, lack of adequate security for data, financial inaccuracies were hindrances to full adoption of point of sales systems. 90 respondents over three local regions participated in the study.

Using autoregressive distributed lagged regression to determine the relationship between e-payment technology and economic growth in Nigeria, Afaha (2019) made some deductions in their research. In a five-year review of financial technologies and e-payment systems, they discovered that there is a significant relationship between e-payments and the growth of the Nigerian gross domestic product (GDP). The first observation was that automated teller machines had a

negative contribution to GDP. This could be attributed to the fact that the automated machines were proponents of cash-based transactions and the cashless policy of the central bank of Nigeria was not supported by the system. The point of sales remarkably added 17% to the increase in the gross domestic product of the nation whilst internet-based banking contributed 2.3% (Afaha, 2019; Tijani & Illugbemi, 2015).

From these analyses, it can be deduced that the point-of-sales system is most widely accepted and along with mobile banking is a significant contributor to growth of the economy. These technologies are based on the internet and the dearth of strong connectivity might be the challenge SMEs have in exploiting the full potential of these digital technologies.

Online fraud and security of data also poses a challenge for adopters of the point of sales and web banking services. Adequate legislature and infrastructure to provide cybersecurity services will aid SMEs to continue upgrading their business systems and enhance productivity and profitability (Effiom & Edet, 2021; Ogunsuyi & Tejumade, 2021; Wang & Wang, 2020). As digital technologies have become imperative for every business and establishment most importantly the SMEs, the challenges that innovation brings must also be considered.

Oluwatayo et al. (2022) noted that as digitalisation increases financial performance and profits, new risks and unknown threats are also advancing towards the adopters of financial technologies. Considering this, Oluwatayo et al. (2022) conducted research to investigate how web-based technologies such as automated teller machines, point of sales, and mobile banking impacted financial transactions in Lagos, Nigeria. Using a formal questionnaire, they engaged 100 bank customers of a reputable institution in Nigeria.

The results of the survey revealed that half of the respondents (54%) made use of mobile banking services, a quarter patronized the point of sales system (25%). Overall mobile banking was the preferred mode of transaction on the internet. While point-of-sales system had a strong positive impact on financial transactions, the automated teller machines (ATM) and internet banking had a lower influence on financial transactions in their research. This revealed that the creation of more financial technologies and tools will aid business transactions and increase the productivity and financial performance of SME (Oluwatayo et al., 2022; John et al., 2020, Izogo et al., 2019).

In an allied study carried out on the impact of the point of sales system on SMEs before and after adoption of the technology, Oluremi and Olabode (2018) had a few observations to make. The research employed qualitative techniques to determine the extent of revenue increase after adoption of point of sales (POS) system in 20 businesses. Results of the analysis revealed that the point of sales system enabled the SME to be more productive and experience increased financial performance and a boost in their sales figures.

Some participants reported a 60-80% increase in revenue due to the adoption of the point of sales system attributing the gain to the mobility and versatility of the technology. SMEs could move the point of sales terminals from one market to the other, use them even when away from their shops and earn commissions on behalf of banks as they could also be used as cash points (Olasojumi et al., 2018; Omotayo & Dahunsi, 2015).

As the academic papers reviewed have expatiated the attributes of the point of sales system as one of the most versatile financial technologies adopted by SME

globally to enhance business and financial performance, there is a great need to address in depth the drawbacks and challenges which still exist on the system. These challenges have been brought to the fore again by Lawal (2022) who highlighted the negative issues associated with the adoption of the point-of-sales system.

The reliability of network systems in Nigeria and other sub-Saharan countries, epileptic power supply, exorbitant agency fees and commissions for point-of-sale use, fraud and security issues over financial institutions network. These are some of the challenges faced by SME deploying the point-of-sale system (Ene et al., 2019; Nworie & Okafor, 2023; Ogunsuyi & Tejumade, 2021; Omokugbo & Festus, 2020). They are explained in the next paragraph.

An insecure point of sale (POS) system opens up the SME to fraudulent activities and cybercrimes. The terminals and the endpoint are easy targets for unscrupulous people. Data stored on these terminals can be easily compromised when the SME manager does not take adequate steps to manage the terminals. It is important to note that the older point-of sales system lack adequate security measures like encryption technology which opens them up for data leakages (Anifowose & Ekperiware, 2022; Lawal, 2022; Ololade et al., 2020; Ozoji et al., 2021).

The card terminals can also be compromised if unsecured. Once hackers can access a terminal or component the entire point-of-sale system is open to hackers and fraudsters. Therefore, ensuring compliance with security standards is important duty for the SME manager (Ali, 2023; Ali et al., 2020; Alzamel et al., 2019; Ibekwe, 2021).

The SME manager according to Davis (2019) must ensure that no malicious queries are uploaded into the database. This can be avoided by purchasing firewalls and proper encryption of data. The manager must also make sure that the SME vendor

he engages is reputable and one with a track record of integrity. When an SME engages a cloud-based point of sale vendor, consideration must be made on transaction limits. This is to avoid being excessively billed by the service provider engaged when the business exceeds the agreed transaction limits. The SME must be able to scale on the cloud computing server. There must be room for business expansion (Akerejola et al., 2019).

The chosen point of sale (POS) system must have software that has the capacity to run an enterprise resource management system. The system must be able to prepare financial statements, make budget and planning reports and also have predictive analytics system (Rawashdeh & Rawashdeh, 2023; Sastararuji et al., 2022).

Even after investing in a good point-of-sale system, proper installation and maintenance is required to ensure seamless and efficient functioning. The ability to troubleshoot and identify problems in good time helps the SME reap the gains of investing in a good point-of-sale system. As the point-of-sale system has evolved from a cash register into a financial technology device, the SME management must ensure that they make efficient and timely decisions based on the data provided by the system for inventory, customer relationship management, sales, cash flow and other financial information (Al-Okaily, 2023; Alzamel et al., 2019; Lutfi, 2022; Sastararuji et al., 2022).

Government and regulatory organisations must also educate and enlighten SME on the benefits of adopting a point-of-sales system to grow their business. At the same time, they should ensure that infrastructure is put in place to support small businesses struggling to make ends meet in a harsh economic climate (Akerejola et al., 2019; Ogunsuyi & Tejumade, 2021). These are some of the recommendations

made by academic scholars on how to address the problems resident in using the point-of-sale system in enhancing business performance.

### **Summary of Literature Gaps: Global, African, and Nigerian Studies on Point-of-Sale (POS) Systems**

Literature Review on the Global, Africa, or Nigeria studies on the effect of the point of sales on the financial performance of SME shows peculiar research gaps. Internationally, it had been found that point of sale (POS) systems have become important for efficiency in transactions, controlling inventories, and analytical decision-making in retail (Lawal, 2022; Al-Okaily et al., 2023). However beyond this, it was observed that a considerable gap in measurement and specificity existed. The core motivators for adopting POS systems, such as Perceived Ease of Use and Relative Advantage (Damayanti et al., 2020; Arie Handoko, 2021), makes general assumptions about correlations with business performance.

This is because it does not measure these constructs using direct financial terms, such as Return on Investment (ROI), and it does not measure financial profitability of POS system investment. Moreover, a gap in industry granularity existed; research pools results for different types of SMEs, without being able to distinguish the exact operating and financial profitability of POS systems for the retail industry where it directly applies.

**African Literature Gaps:** As far as Africa's literature goes, a narrative exists that includes infrastructure and security challenges that diminish benefits from POS systems. It has been observed in literature that this acts as a facilitator of financial inclusion and growth of SME, especially when complemented by a country's strategy

of a 'cashless society' (Ahmad et al., 2023; Nzotta, 2019). Nevertheless, a large gap exists regarding a necessary level of infrastructure and security. Observations have been noted regarding its challenges, which exist in terms of the challenges posed by weak network/power infrastructure and high risks of fraud and data breaches, which affect system security and user trust (Amaefule et al., 2019; Anifowose & Ekperiware, 2022). There is absence of a framework that calculates impacts of identified challenges on financial benefits.

**Nigerian Literature Gaps:** At such a focus on Nigeria, although challenges such as network instability, transaction cost, fraudulent activities, and digital illiteracy have been extensively reported (Ene et al., 2019; Lawal, 2022), there exists little application of adaptation barriers to hard financial facts. Further still, there is so much specificity to POS system adoption on which there is evidently no existing body of evidence to guide SME businesspersons on which type of POS (cloud-based POS system, mobile POS system, or terminal POS system) would have them reap the overall highest rate of return.

A sector-specific POS system adoption critical gap on which there is presumably still no body of facts is regarding forecasting POS system impacts on sales and profitability. In other words, POS system adoption creating wealth or increasing profitability is well stipulated (Ogunsuyi & Tejumade, 2021), yet there is not much specificity to Nigerian POS system adaptation regarding which there is existing empirical fact.

In conclusion, the literature analysis moves forward based on the global results for the utility of point of sale systems (POS), through the complexities relevant to African infrastructure and security issues, and ends with deficiencies associated with

research in Nigeria. The current research conceptualises the deficiencies by targeting the retail business environment directly in a Lagos business environment.

### **When POS Systems Do Not Improve Small Business Profits**

Uncovering the discussion on Point-of-Sale (POS) solutions, it was discovered that there has been substantial development from that of a cash register machine to that of a key node in the SME's process and information system. However, on carrying out a realistic inquiry, there was clear evidence that the Automation-Insight Gap is highly critical to SME success strategies on the part of those SMEs that aim to make the best possible use of the potential gains accruable from POS solutions that actually improve the financial outcomes on the part of SME.

Employer-employee relationships are vastly more complex than the manufacturer-consumer relationship. One party depends on the other for services rather than physical objects, and with the manufacturer-consumer association, certain expectations are set between them that are utilised as precedents to SMEs.

#### **1. Data Rich but Information Poor**

Worldwide, the application benefits are operational: speed, accuracy, tracking sales. However, the critical jump, from data to intelligence that can create profits, is assumed to take place, not demonstrated. The cloud-POS study (Prihatiningtias & Wardhani, 2021) speaks volumes which is: it found a positive link to *non-financial* performance but a negative or neutral link to *financial* performance in the short term. This is the heart of the paradox. The hardware and software represent a cost; the financial return is contingent on the owner's analytical capability to interpret sales trends, customer purchase patterns, and inventory turnover to make pricing, purchasing, and marketing decisions that boost margins and revenue. The literature

highlights POS as a solution for record-keeping but is silent on its effectiveness as a tool for predictive analysis and strategic decision-making in the hands of typical SME owners.

## 2. The Nigerian Environmental Challenge: Infrastructure Erodes Core Value

In the Nigerian context, an automation-insight gap compounds into a reliability challenge. The network instability, power outages, fraud, and high transaction costs are not mere barriers but active spoilers of its core value proposition. When the system is offline 30% of the time, it totally loses its credibility for real-time inventory management. When fraud risk is high, then trust in its financial data is lost. Thus, the effective ROI of a POS in Nigeria becomes essentially dependent not on its software features but on the SME's ability to navigate and mitigate these exogenous systemic failures. The owner of the SME becomes an infrastructure risk manager, rather than just a business manager.

### **The Forward-Looking Imperative of POS as Node in a Digital Ecosystem**

The forward-looking perspective needs to transcend the isolated observation of the POS. The future of POS-driven performance is actually all about its integration potential. Next-generation POS is not a terminal but a hub that connects to:

- Supplier Platforms: In cases of automated restocking,
  - Customer Relationship Management (CRM) tools will help in connecting the sales data directly to customer profiles for loyalty programs.
- Digital Accounting Suites: To provide perfect financial reporting.
- E-commerce Backends: Creation of one inventory for physical and online stores for the real multichannel system.

The critical research and capability gap for SMEs especially in markets like Nigeria is no longer adoption, but one of implementation. Can the SME owner configure, manage, and secure this growing web of connected services? The greatest risk is the creation of disconnected digital silos: a POS here, a mobile money platform there, a separate accounting book, leading to more complexity, not more clarity.

### **From Adoption to Strategic Assimilation**

The synthesis suggests a certain evolution in the research and practical agenda. The question has shifted from do POS systems improve performance to under what conditions, and through what specific managerial practices, can POS data be transformed into superior financial outcomes?

The path to financial returns for the retail SME in Nigeria involves:

1. **Select for Resilience:** This involves the selection of systems and providers that have been optimised to work when offline, combined with effective local support.
2. **Building Analytical Literacy:** Training not on how to process a sale but rather on how to read and act upon sales reports, inventory forecasts, and customer purchase clusters.
3. **Integration Planning:** POS with open APIs and a very clear road map to connect, in the near future, to all other tools that will become essential for the business to avoid technological dead-ends. Ultimately, the POS terminal is a potent symbol of digital transition. Its financial performance, however, is not placed in its system but must be designed through strategic integration into the SME's decision-making fabric and resilience against a challenging operational environment. The next step is measuring not adoption rates, but the quality of digital assimilation.

## **Peer-to-peer payments (P2P) and Financial Performance**

Among the most innovative technologies that retail and SME use to manage their processes is peer to peer payments (P2P). People who consume financial services and other entities have choices that they get to make freely in forming a decision on which digital tools to use in business performance. Peer to peer payment systems have their dynamic process of performing its operations and how such transactions are carried out in its life cycle (Chingapi & Steyn, 2022; Ibrahim et al., 2022; Musa & Njeru, 2023).

This study evaluated the terminologies involved in the peer-to-peer payment system, the lifecycle methods, and the methods involved in the deployment of peer-to-peer payment systems. The determinants involved in the adoption of peer-to-peer payment systems (P2P) and the factors that influence the adoption of P2P payment systems within the SME business environment between 2019 and 2023 will also be discussed.

A peer-to-peer payment is framed by the counterparties who are known as the parties or individuals sending and receiving money or funds. Usually, the counterparties to a peer-to-peer payment are SMEs and consumers. What transactions qualify to be classified as peer to peer (P2P) payments have undergone a lot of metamorphosis but for this review the definition will be stated as above? Usually, peer to peer payments is made by one consumer to another or to an SME (Caceres-Santamaria, 2020; Gao et al., 2005; Wang et al., 2021; Windh, 2011).

This definition was adopted because peer to peer payments was usually used to make bill payments to SMEs. When the receiver is an SME, the transaction is defined as a consumer-to-consumer transaction. The distinguishing factor to

determine a peer-to-peer payment is the delineation between the parties. Once the payment is from a business to a consumer, the transaction is excluded as a peer-to-peer payment. Business to business payments usually include the preparation of invoices and decided payment plans. These do not qualify as peer-to-peer payments. For this reason, SMEs occupy an unequivocal position in between business and consumer because they can play both parts of consumer and business. When an SME is making a peer-to-peer payment this is in a consumer role (Davis, 2016; Shrier et al., 2016; Windh, 2011).

The mode of entry into making a peer-to-peer payment can be face to face, the conventional mail, through agents, credit cards, or prepaid accounts for making payments. The bank account balances can be obtained through debit and credit cards or using personal identification numbers and codes (PIN). This process is made up of funds upload and funds remittance tools. The instruments used for peer-to-peer payments can differ from transaction to transaction. The sender may use a credit card and the receiver may draw it in cash. There is also a third factor which is the clearing house. The automated clearing house, the transfer station or the card network company (Belanche et al., 2022; Daştan & Gürler, 2016; Kalinic et al., 2019; Lara-Rubio et al., 2021; Li et al., 2021; Windh, 2011).

### **Global and Comparative Perspectives on Adoption and Performance**

In a study conducted by Lazuardi and Margareta (2025), the effect of financial literacy on peer-to-peer (P2P) lending as well as effect of payment gateways on the financial performance of Micro, Small, and Medium Enterprises (MSME) in the food and beverage industry of Lamongan Regency in Indonesia was analysed. The aim of the quantitative and associative approach used in the study was focused on SMEs

that had financial system registrations and used fintech services. The 100 SMEs selected for the study through purposive sampling had used financial technologies in their businesses, such as the payment gateway and peer-to-peer loan services.

Data were collected using questionnaires, and analyses were performed with SmartPLS version 3 software, which is normally applied when testing the predictive model and complex relationships with smaller samples. From this study, empirical evidence was established that showed that the three hypotheses expressing the key variables of financial literacy, P2P lending usage, and payment gateway adoption were significant and positively affecting SME's financial performance.

Results highlight a strong interrelation between basic financial literacy and modern financial technology. The study, therefore, established that SMEs can substantially improve their financial health by enhancing the financial literacy of their owners while adopting technologies that facilitate easier access to capital, such as P2P lending, and make sales transactions efficient, such as those offered through the use of payment gateways. The research also contributed to the body of literature since it revealed that growth, resilience, and formalisation of SMEs are driven by the amalgamation of knowledge and technology in emerging digital economies.

In an Asian study by Xena and Rahadi (2019) based on a synthesis of literature from 23 previous journals, the scholars found six different variables that support the adoption of technology which are performance expectancy, culture of the society, technology acceptance, effort expectancy, security and peer pressure. These were based on the unified theory of acceptance and usage of technology (UTAUT). They noted that in the third quarter of 2018, there was a rapid move from cash to cashless technologies for financial transactions. Indonesia was a front runner in this new

development and as such, the Go Digital system was launched by the Indonesian Government.

The government also launched a National Payment Gateway which enabled transactions to be carried out seamlessly (Darma & Noviana, 2020; Rumata & Sastrosubroto, 2020). The study noted that peer-to-peer payments aided SME to develop their productivity and experience growth through the proliferation of non-cash transactions and the adoption of e-payments. As SMEs make up 60% of the Indonesian Gross Domestic Product and are over 50 million, e-payment will increase economic growth. The purchasing power of most consumers is also enhanced and this will translate into increased revenue and financial performance of the SME (Trinugroho, et al., 2022; Anggarini, 2022; Muditomo & Wahyudi, 2020)

Still on Indonesian SME studies, other scholars propose that for e-payments to make economic impact on SMEs they need to build speed and convenience. To this end, Putri et al. (2019) conducted an empirical analysis of 492 customers and made their deductions. Using the unified theory of acceptance and usage of technology (UTAUT) model, they deduced that the methods of payment that are less cumbersome as used more often, they observed that the financial gain from using a specific platform of mode of payment is not the motivator for choosing the mode. Rather the security of the platform is the main motivator for choosing it.

The study examined credit cards, mobile wallets, and point of service (POS) systems, bank transfers and cash on delivery services (Shafie et al., 2020; Putri et al., 2019; Cao & Niu, 2019). Integrity and trust of certain platforms made SME managers use them to enlarge client base and generate revenue.

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### **African Perspectives on Adoption and Performance**

Kwabena et al. (2019) noted that digital business tools can enhance business transactions and improve relations with stakeholders. The study deployed a TOE (technology-organisation-environment framework) to monitor the effects of digitalisation. The participants were more 300 SME owners and/or managers (Afum et al., 2020; Ahmed et al., 2019; Luna et al., 2019; Nguyen et al., 2020). Using a structured questionnaire to collect data from SME for three months and analysing same with a structural equation modelling technique, they found that adoption and the use of technology helped SME grow financially and perform effectively in a developing economy (Al-Saedi et al., 2020; Sikandar et al., 2020).

In similar environments, a Nigerian study established that 75% of respondents had adopted a form of electronic payment, but only 10% used it for buying goods and services, citing online security issues as a major challenge. The study also established that elderly persons used e-platforms less than their younger counterparts and that

digital literacy and social class were linked to e-technology adoption, where the latter preferred to use peer-to-peer platforms and web and mobile banking services (Aduba, 2021). In the informal sector, point-of-sale and SMS services were also used (Aduba, 2021). The safety and security of applications are therefore necessary for building trust in electronic payments (Jerene & Sharma, 2019; Salimon et al., 2016; Teka, 2017, 2020).

Another sub-Saharan study based in Cameroon investigated financial technology adoption, selecting mobile banking, mobile money, card technologies, and web payment systems due to their ease of use, affordability, and accessibility (Kadjie et al., 2023). The study, which used a mixed-methods approach with 117 SME, concluded that adoption was greatly influenced by the business manager's digital literacy and the system's efficiency and effectiveness, with platform integrity being a strong factor in the choice of system (Kadjie et al., 2023). The adoption of e-payments was found to positively impact the SME that used them (Akinyemi & Mushunje, 2022; Boateng et al., 2019; Coulibaly, 2021; Igudia, 2017; Senou et al., 2019).

From the foregoing, it is noted that peer to peer payment platforms have transformed money transfers by enabling seamless transactions without a traditional intermediary (Jarkas, 2021). They have created a culture of speed, access, and affordability, eradicating huge reliance on cash and allowing direct transfers from bank accounts or e-wallets (Jarkas, 2021). Their growth is supported by development of digital and mobile gadgets as well as electronic pay centres (Ab Rahman et al., 2020; El Amri et al., 2021; Kulathunga & Ekanayake, 2019).

The ability to integrate various platforms seamlessly and engage customers with a remarkable user experience makes these services attractive to small business

owners (Agur et al., 2020). SME managers can use digital devices to monitor transactions, and the integration of messaging and social media apps has created unified platforms offering real-time access and immediate transfers, which became crucial for business continuity during the COVID-19 lockdowns (Mansour, 2022).

Although P2P payments may appear new, the system relies on existing bank structures and conventional networks to operate (Boot et al., 2021; Elia et al., 2023; El-Said, 2021). Their risks are therefore not unusual but are instead leveraged on those associated with traditional payment options; to understand them, the components of each transfer type and channel must be examined (Elia et al., 2023; El-Said, 2021). Recently they have adopted the two factor authentication and also QR codes to strengthen their networks. They have also developed encryption firewalls and biometric factors to retain integrity of the platforms (Tushar et al., 2020). So, beyond basic transfers, these platforms now offer new services like in-application sales, bill splitting, and group payments, enhancing their dynamism and efficiency (Gill, 2021; Ting & Ahn, 2023).

Of primary concern is the regulatory monitoring of these platforms. While banks are guided by central bank standards, P2P platforms are typically registered as fintech businesses. Each country must therefore enact laws to monitor these financial technology firms and enforce compliance (Ojo & Nwaokike, 2018; Olatunji, 2020; Shehu, 2022).

These results showed that peer-to-peer payment platforms hosted on mobile devices and via the internet are viable means for an SME to, through e-commerce and advertising, gain more customers to build growth and increase financial performance (Attaran & Woods, 2019; Jerene & Sharma, 2019; Tsui, 2022).

As more SMEs adopt digital services to build capacity, traditional means of doing business are becoming obsolete in the face of innovation and technology. Peer-to-peer payment platforms bring the advantage of lower transaction costs and seamless connectivity between financial institutions, positioning themselves as leading e-payment proponents in developing economies in Asia and Africa (Kalinic et al., 2019; Lara-Rubio et al., 2021).

SMEs are significant participants in the technology payment system, as they initiate most consumer-to-consumer payments. In an Asian study by Xena and Rahadi (2019) based on a synthesis of literature from 23 previous journals, the scholars found six different variables that support the adoption of technology which are performance expectancy, culture of the society, technology acceptance, effort expectancy, security and peer pressure. These are based on the unified theory of acceptance and usage of technology (UTAUT).

They noted that in the third quarter of 2018, there was a rapid move from cash to cashless technologies for financial transactions. Indonesia was a front runner in this new development and as such, the *Go Digital* system was launched by the Indonesian Government. The government also launched a National Payment Gateway which enabled transactions to be carried out seamlessly (Darma & Noviana, 2020; Rumata & Sastrosubroto, 2020).

The study noted that peer-to-peer payments aided SME to develop their productivity and experience growth through the proliferation of non-cash transactions and the adoption of e-payments. As SME make up 60% of the Indonesian Gross Domestic Product and are over 50 million, e-payment will increase economic growth. The purchasing power of most consumers is also enhanced and this will translate into

increased revenue and financial performance of the SME (Anggarini, 2022; Muditomo & Wahyudi, 2020; Trinugroho et al., 2022)

Priananda et al. (2020) conducted research to examine the readiness of SMEs to continue adopting e-payment systems. Using the technology readiness index (TRI), the study tested four constructs of the framework and found that optimism was a strong influencer of SME's continued intention to adopt innovation. A major deterrent to the adoption of e-payment is discomfort with use, which can inevitably lead to lower revenue (Attaran & Woods, 2019; Rojas-Mendez et al., 2017; Setyowati, 2019).

Governments globally are making policies to support SMEs in adopting technology. Even though there are challenges which include financial and digital illiteracy, often caused by a lack of resources for education, Najib and Fahma (2020) examined factors hindering digital adoption using the Technology Adoption Model. Their analysis of 120 participants revealed that the intention to adopt technology was fueled by the perception of ease of use of same, trust in the integrity of the technology, and the attitude of the adopter. It was observed that developing economies would benefit from a large-scale campaign for digital adoption rather than pockets of use (Alnemer, 2022; Balakrishnana & Shuib, 2021; Mufarih et al., 2020; Najdawi, 2021).

Studies carried out on African SMEs in Ghana focused on the influence of peer-to-peer platforms on the performance of SME in Ghana. Kwabena et al (2019) observed that digital business tools may be used to enhance business transactions and thereby improve relations with stakeholders. The study used a TOE (technology-organisation-environment framework) to monitor the effects of digitalisation. They had over 300 SME owners and/or managers (Afum et al., 2020; Nguyen et al., 2020; Ahmed et al., 2019; Luna et al., 2019). They adopted a structured questionnaire to

retrieve data from SMEs for three months and used the data obtained for a structural equation modelling technique. They found that adoption and the usage of technology were helpful for the growth of SMEs financially and thereby able to perform effectively in a developing economy.

### **The Nigerian Context: Critical Challenges and Research Gaps**

In Nigeria, there are integrated payment and remittance processing companies processing the peer-to-peer payments. The settlement houses and networks are inconspicuous to the sender or receiver of the transaction. They have enabled card and platform technologies for customers to use in accessing funds and carrying out transactions on the peer-to-peer payment platforms.

Some of the popular payment gateways are Quick teller, Seerbit, Paystack and Flutterwave. Customers prefer them because of the lower cost of access compared to traditional banks, speed and success rate of the transactions sent through their gateways (Ajayi, 2023; Damilola, 2022; Makina, 2019; Tonuchi, 2020).

There are different payment options in a peer-to-peer payment lifecycle. Between the sender and the receiver, it could be casual remittance between two consumers, or an international transfer between two consumers. Payments could be initiated from a consumer to a SME. Casual payments are defined as small value funds sent between two consumers and usually are for mundane issues. For this reason, peer to peer payments is used for settling transactions conveniently. Apart from everyday debt settlements, peer to peer transactions also address international remittances. Across borders, payments can be made to cover business expenses.

These are high value transactions that demand higher security (Branzoli, 2020; Kalinic et al., 2019; Khan et al., 2017; Li et al., 2021; Windh, 2011).The third

classification of peer-to-peer payments is the consumer remittance to SMEs. This segment of peer-to-peer payments have encountered classification errors which make it complex to delineate which ones are meant for business or consumers. A lot of SMEs businesses payments are made in the name of the business owner or manager therefore industry data find it hard to distinguish between the consumer and SME payments. In the past, face to face initiation of transactions or going through an agent were the important media for initiating transactions (Jarkas, 2021; Song, 2021, Soutter et al, 2019; Windh, 2011).

However, due to the irruption of the internet, third party remittance options have come to the fore. Beyond the kiosk and automated teller machines payment media for peer-to-peer payments, big players like Amazon and PayPal have taken a huge share of the market. Banks still play a huge role as the sender and receiver still make use of their bank accounts to initiate the peer-to-peer payments. The peer-to-peer payments intermediated by them have grown in leaps and bounds in the last decade (Akinwale & Kyari, 2022; Ojugo & Otakore, 2020; Deng et al, 2019; Soutter et al, 2019).

Beyond this, mobile banking has expanded it functionalities to accommodate and inter-mediate peer-to-peer payments. The mobile channel assists consumers to transfer funds with their phones through specific applications or internet browsers. New products and services have been adapted to the mobile platform. The convenience and affordability provided by the mobile phone have made it one of the most widely used channels for peer-to-peer payments (Acheampong et al., 2021; Jakhiya et al., 2020; Babajide et al., 2020).

Furthermore, counterparties to the peer-to-peer system can choose to use banks or third-party vendors to process their transactions. Apart from the banking

account, a device like the credit or debit card, an identification number or code is used to make payments through the peer-to-peer system (Ting and Ahn,2023; Ajao et al.,2023; Peer to peer transactions have embedded authentication and approval features to ensure secured transactions.

They also function through prepaid wallets and accounts. The prepaid account does not need to be controlled by a credit or debit card or a bank. It only needs to be pre-funded on the payment platform to honour transactions. The stored value can then be managed through a mobile device via the internet. Credit cards have also been enabled to transact peer to peer payments (Alinno, 2023; Siew Bee & Yan Ying, 2021; Hassan et al., 2020)

Due to digital innovation, the e-clearing system has reduced the time and speed to dispense customer balances and availability of funds. Mention must also be made of the wire transfers through industry players like MoneyGram and Western Union. Money sent via wire historically came through h the old telegraph system. Wires payments can only be transacted through bona fide bank customers. Western Union and its competitors have gone online and established payment platforms to send money like the novel peer to peer payment platforms through their online applications (Angelini, 2021; Hallunovi, 2021).

The proliferation of the internet and the access by people to online sites like eBay made it easy for people to access vendors in real time. The need to make payments and exchanges in an anonymous way led to the rise of the first peer to peer payment platform called PayPal. The transactions were done instantly and safely as well. The affordability of the transaction and the online wallets which were pre-funded were used to transact. Thus, PayPal established a closed network of buyers and

sellers. The platform can be used by a consumer to send funds to another consumer or by a consumer to an SME (Nabila et al., 2023; Pachabotla & Konka, 2022; Li et al., 2021; El Amri et al., 2021)

PayPal accounts can now be funded with a debit or credit card and the recipient can withdraw the funds by asking for a cheque or directing the funds to their bank account. The funds can be settled as book transfers. Visa, MasterCard and other card technologies providing facilities for electronic payment and Nigerian companies have entered the peer-to-peer platforms. These payment platforms are majorly created for consumer-to-consumer remittances. When the customer logs in with their email and password or mobile phone number. Card transactions will be credited to a card network. Bank transactions will also be sent through the automated clearing house. The two-step authentication prevents the sender from revealing his bank account details to the receiver and protects his anonymity (Ahmed et al., 2021; Bojjagani et al., 2023; Manan, 2019).

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perspectives contradict the advertised merits. Akanni (2020) conducted a study on the influence of electronic payment systems on the Nigerian economy.

As SMEs make up 80% of Nigerian businesses (Aladejebi, 2020), it is imperative to examine this relationship. Using an autoregressive distributed lag (ARDL) regression on data from 2009 to 2018, the study found a strong correlation between automated teller machines (ATMs) and GDP. Point-of-sale terminals were the most pervasive digital tool, while mobile payments had a negative impact on GDP. Online transactions, including peer-to-peer payments, contributed significantly to GDP growth (Akanni, 2020). Improving internet infrastructure and enacting adequate legislation are necessary for more efficient and effective electronic payment platforms to serve SME (Afaha, 2019; Akanni, 2022; Andabai & Bina, 2019; Bagudu & Okolie, 2022; Zwingina et al., 2023).

Beyond quantitative studies, qualitative research has also explored how electronic payments affect small businesses, including their results, expectations, and improvements to accounting. Salim and Frederica (2020) spoke with 10 small business owners in Indonesia. They discovered that electronic payments boosted business and financial performance, increasing sales revenue by 10–20%. The system solved problems with providing cash change, improved security by lowering the amount of cash kept on hand, made it possible to offer credit, and helped in better tracking payments for bookkeeping and stock management. Challenges included customers without bank accounts and system failures or outages (Ab Rahman et al., 2020; Hadi & Idrizon, 2020; Jumba & Wepukhulu, 2019; Kurian et al., 2020; Rahman et al., 2022; Rustanto et al., 2019).

Apart from the business advantages, the skill set and aptitude of the SME manager or owner significantly impacts the successful deployment of technology. A thematic analysis by Apasrawirote and Yawised (2021) revealed that while early adoption decisions are often informal, continued scaling requires digital literacy and a clearly defined strategy. The manager's leadership skills, experience, and educational background matter more than financial resources for long-term technology adoption (Apasrawirote & Yawised, 2021; Kulathunga & Ekanayake, 2019; Mohamad & Kassim, 2019; Shafie et al., 2020)

Industry 4.0 which is the new direction of globalisation and development of business according to Moll and Yigitbasioglu (2019) requires the foundation of an effective electronic payment system. Rapid growth of technology has changed the business transaction system. The cashless policy requires a stable electronic payment system. In a Malaysian study by Sapian and Ismail, (2021), these variables were researched. The study determined to examine the impact of e-payment systems on the payment performance of Malaysian consumers. 231 participants were interviewed via questionnaire and in the empirical analysis that followed, it was revealed that there was a strong positive correlation between e-payment and the performance of the e-payment system. They noted that of the unified theory of acceptance and use of technology (UTAUT) facilitating conditions were most significant to financial performance (Chan et al., 2022; Ishak, 2020; Lew & Atan, 2021; Rahman et al., 2022; Yadnya, 2022).

In tandem with the findings of the above-mentioned study is an African research which noted that regardless of the effectiveness of financial technology and electronic payment systems, the factors that determine its diffusion and adoption remain complicated. Consequently, Coffie et al. (2021) conducted a study that examined the

factors of technology adoption. They classified them as online payments, card and mobile payments. The study was conducted in Ghana and using hierarchical regression models they examined the factors that impact on technology diffusion.

The first category was the manager's attributes, the business characteristics, and the elements of the financial technology systems. The results of the study revealed that personal and management attributes as well as the e-payment system efficiency affected the diffusion and adoption of cashless systems of business transactions. Financial technology through its applications is important in emerging markets for SME growth and development (Coffie & Hongjiang, 2023; Kanga et al, 2022; Lyons et al, 2022; Nugraha et al, 2022; Soutter et al, 2019).

In similar climes, a Nigerian study conducted by Aduba (2021) focused on the factors that determined adoption, the merits and hindrances that electronic payment present in Nigeria. The research employed a generalized structural equation modelling system. 75% of respondents had adopted a form of electronic payment. However, only 10% used electronic banking to purchase goods or services. This low usage was due to poor cybersecurity which exposed users to fraudulent activities on electronic platforms. Older users used e-platforms less than the younger technology users.

However digital literacy and higher social class improved the use of technology. This elite class used peer to peer platforms, web and mobile banking more. In the informal sector, the point of sales and SMS service was preferable. Safety and security of bank applications is therefore necessary for people to build trust in using electronic payments (Jerene & Sharma, 2019; Jerene & Sharma, 2020; Salimon et al., 2016; Teka, 2020).

Another sub-Saharan study based in Cameroon investigated the effects of financial technology adoption through e-payment systems. The researchers Kadjie et al. (2023) chose mobile banking and mobile money applications, card technologies and web payment systems. These indices were chosen due to their ease of use and affordability as well as accessibility. Kadjie et al (2023) noted that apart from the aforementioned factors, the integration level and the digital mastery of the SME owner or business manager was crucial in technology adoption.

Using a mixed method of research quantitative then qualitative, the researchers deduced that technology adoption was greatly influenced by the digital literacy of the business manager and the efficiency and effectiveness of the electronic financial system. 117 SME were part of the study. The researchers noted that integrity of the platform was a strong influence in choice of the electronic payment system. Adoption of e-payments positively impacted SME who adopted same (Akinyemi & Mushunje, 2022; Boateng et al., 2019; Coulibaly, 2021; Igudia, 2017; Senou et al., 2019).

From the fore-going review, it is noted that peer-to-peer (P2P) payment platforms have transformed money transfer and online remittances because they give access to seamless transactions between individuals without the traditional middleman. According to Jarkas (2021), they have created a culture of speed, access and affordability in financial transactions especially for small businesses.

They have eradicated the huge reliance on cash and physical monitoring by giving customers access to transfer directly from their bank accounts or electronic wallets. The growth and development of peer-to-peer payments is supported by the evolution of mobile devices and electronic pay centres (Ab Rahman et al., 2020; El Amri et al., 2021; Kulathunga & Ekanayake, 2019).

The ability to integrate various platforms seamlessly and engage customers according to Agur et al (2020) with remarkable user experience, makes the service attractive to small business owners. SME managers can use digital devices like phones, tablets and even wristwatches to commence and monitor business transactions. Messaging applications as well as social media has been integrated with peer-to-peer payment platforms to create a unified payment platform.

There is real-time access and immediate transfer services and less of traditional bank delays and conventional clearing house issues. This is an appealing way for SMEs to ensure business continuity which according to Mansour (2022) became crucial during the lockdown that the covid-19 pandemic caused.

Most peer-to-peer platforms have improved their security features due to emerging cybersecurity threats they have implemented two-factor authentication codes, QR codes, biometric authenticators and encryption firewalls to defend their systems. Tushar et al. (2020) in a qualitative analysis conducted on security features in peer-to-peer networks noted that these security measures will retain customer trust in the integrity of the peer-to-peer platforms.

Apart from basic money transfers, the peer-to-peer platforms have introduced novel services such as in-application sales and purchases, splitting bill payments and group payments. This dynamism and versatility in peer-to-peer payment platforms are enhanced by the user's ability to share bills and expenses and make in-application sales or purchases (Gill, 2021; Ting & Ahn, 2023). Even though peer to peer payments (P2P) may appear new and unusual due to the advertisements and promotions about the available payment platforms, the system relies on the existing bank structure and conventional networks to subsist.

The risks and challenges of peer-to-peer payments are therefore not unusual but they leverage on the risks associated with traditional payment options. There are many risk profiles for peer-to-peer payments as they utilise different channels to operate. Therefore, to understand the risks peer to peer payments carry, the components of each of the transfer types and channels must be examined (Boot et al., 2021; Elia et al., 2023; El-Said, 2021).

Of primary concern was regulatory and monitoring of the peer-to-peer platforms by the designated authorities. Banks and allied institutions are guided by standards from the central bank of the country and its financial authorities. However, these peer-to-peer platforms are registered as money or financial service businesses usually termed fintech; financial technology businesses. Each country must therefore enact laws and legislation to monitor the financial technology countries and enforce compliance (Ojo & Nwaokike, 2018; Olatunji, 2020; Shehu, 2022).

Next, was the risk of emerging payment platforms like the peer-to-peer payment platform in sub-Saharan Africa. There are legal, business and fraud risks associated with the use of the platform. There are also issues of data privacy and security. These associated risks will also be based on the channels used to access funds and the electronic clearing houses designated for such transactions. Mobile payments made over digital phones and devices or those settled via private platforms suffer a lot more ambiguity than those conducted over conventional bank channels. Legislature is needed to determine the rules guiding these activities (Olatunji, 2020; Xu et al., 2022; Yu et al., 2021).

Another risk was operational issues attached to the peer-to-peer platform. Most of these peer-to-peer platforms are young start-up companies. They experience more

instability in their operations than the traditional bankers who have been in existence for more than a century. The electronic systems they operate may experience data corruption, privacy issues and cybersecurity crimes.

Fraud may be conducted via the platforms and the ease of access to channels may make them easy targets for hackers and internet fraudsters. They may also be used for illegal international and local transactions like funding terrorist activities and underground markets. The platforms may also not have resources to protect and secure data of its users and customers (Aguboshim et al., 2023; Ojugo & Otakore, 2020; Olatunji, 2020).

Nevertheless, casual payments on the peer-to-peer platform are usually conducted by related or familiar counterparties. Such payments for small bills like classes, online lessons or gardening services are not unsafe in that the identity of the parties are known to one another. However, when strangers conduct transactions via the peer-to-peer platform there is no method of authenticating the identities. These types of transactions are high risk as in marketplaces conducted online, the seller can transfer goods to a buyer who has already defaulted in the remittance.

The goods may arrive and they are not the proper specification or they are faulty and defective. For these purposes third party intermediary is necessary to validate the buyer's remittance and hold it in escrow so there can be refund services when there is fraud involved in the sale. These types of platforms give assurance and confidence of regulatory and monitoring practices to the users. The user is confident that there is integrity and a customer service facility on the peer-to-peer platform (Berg et al., 2020; Jiao et al., 2022; Lee et al., 2018; Tonuchi, 2020).

In conclusion, peer-to-peer platforms is not distinctively risky but bear the risks of the underlying traditional system they rely on. Each peer-to-peer system must therefore be examined and the access channels evaluated for integrity and channel access, the settlement networks and the customer service they provide. In the proliferated financial technology space, the SME manager must be cautious and careful when making the business decisions of leveraging on a peer-to-peer payment service (Cumming et al., 2023; Lu et al., 2021; Ofir & Tzang, 2022).

### **How P2P Systems Create New Middlemen**

Peer-to-peer (P2P) payments are the genuine promise of financial technology: the frictionless, low-cost, disintermediated transaction from consumer to business and vice versa. But a close examination shows that there exists a deep decentralization issue. Although P2P decentralises, or officially bypasses, traditional banking middlemen, it does so in the context of a new and potentially invisible dependency on private financial technology environments, their gray areas, and their fragile set-ups. The question that looms on the horizon is not if P2P payments are going to be used, but if these payments will, in fact, liberate the SMEs or instead entrap them in a new risk paradigm.

The literature rightly pointed to speed, price, and convenience as strong drivers for adoption, but misses testing these against the asymmetric risks for SMEs. Where the customer feels frustrated by a failed P2P transaction, for the SMEs, the experience means direct loss of revenue, stock misalignment, and customer service debacle. The Nigerian climate, with its well-documented cases of cybersecurity threats, network unreliability, and emerging regulations for fintech (Aduba, 2021; Olatunji, 2020),

increases the risks associated with using P2P applications from being a straightforward utility to a risk management solution.

Clearly, the requirement is not to record adoption levels but to specify the risks-adjusted ROI, which essentially denotes the financial benefit after adjusting for failed transactions, fraud, dispute charges, and the management's time spent trying to fix issues with the application. The utility of a P2P application to SMEs is not in its ability to be up and running but in how the SME manages its downtime.

Looking forward, the future development of peer to peer systems (P2P) will be defined by whether it is integrated into a unitary SME operational stack. The true advantage is not using payment applications in isolation, but integrating them so payment data instantly integrates with the SME manager's operations and other key business systems. Current research focused on the adoption of P2P in isolation misses this systemic imperative.

The future edge in competitiveness will accrue to the retail SMEs which can integrate P2P, POS, and e-commerce data into a single source of financial truth and veracity and serve it for dynamic pricing, personalised marketing, and predictive cash flow management. The pivoting research and policy agenda needs, therefore, to be turned from merely promoting adoption in isolation to developing interoperable digital ecosystems that enable SMEs to harness their payment data for strategic insight, thereby turning transactional convenience into sustained financial intelligence and resilience.

## **Summary of Literature Gaps: Global, African, and Nigerian Studies on Peer-to-Peer (P2P) Payments**

When analysing peer to peer (P2P) payment studies, the researcher found that research shortcomings evolve from universal theoretical and methodological flaws to sharp, Nigeria-specific gaps.

**Global Literature Gaps:** P2P payment research is evolving globally, with studies affirming their role in improving transaction speed, affordability, and financial inclusion for SMEs. However, there is a big definitional and boundary gap. The literature often uses the terms for P2P payments (consumer-to-consumer or consumer-to-business) interchangeably with broader e-payment systems. This leads to distorted classification, particularly for SMEs transactions that blur the lines between consumers and businesses. Another gap identified is in the measurement of outcomes of digital technology deployment.

Predominantly, the literature studies the drivers of adoption, such as security, trust, and performance expectancy within the UTAUT framework, or general perceptions of utility but fails to use direct financial metrics like Return on Investment (ROI) to quantify the pecuniary returns emanating from P2P adoption. There is also sector-specificity deficiency, as research aggregates SMEs but fails to isolate the value proposition unique to the retail sector and the financial impact of P2P payments therein.

**African Literature Gaps:** Various studies conducted in Ghana and Cameroon demonstrate that P2P adoption is known to enhance SME performance; however, it is always determined by the level of digital literacy and, importantly, integrity within a platform. It thus exposes a critical regulatory and security gap. This research primarily

underlines the threats of a financial technology (fintech) ecosystem in which regulations are unclear, there are quite strong cybersecurity threats, and fraud cases might become rampant, while there is a lack of frameworks of creating secure, compliant ecosystems protective for SMEs. There is also an integration gap; though P2P platforms avail speed, their accomplishment of incorporation into SME operations within environments characterized by unreliable networks and dependence on cash requires models that are not satisfactorily represented in the literature.

Nigerian Literature Gaps: Beginning with Nigeria, the gaps identified become rather critical and nuanced. There is an extreme sector-specific and methodological gap: for instance, most of these studies, such as Aduba (2021), show adoption trends that generalise for all SMEs and for digital payment systems as a whole. Rather surprisingly, there is an extreme lack of study on P2P payment systems specifically for the retail SME sector of Lagos, as measured for financial impact return on investment.

In terms of financial impact, there is a quantitative gap: there is literally no data on the cost savings or profitability return on investment for individual retail SMEs from the financial use of the systems, aside from perhaps a handful of macrostudies suggesting an impact on GDP, as shown by Akanni (2020). Thirdly, it has been noted that there is a large gap in risk and return analysis in existing literature. For example, operational and security risks (fraud and networks), for example, have been examined; however, it has not been analysed in relation to financial reward of owners to SMEs.

Conclusion reached within the literature on P2P payments reveals that there has been a clear shift from vagueness regarding definitions and financial

measurement on a global basis towards concerns on the African basis and finally towards clear discrepancies within Nigerian literature.

These discrepancies can be best represented through the lack of focus within literature on the retail sector, lack of focus within literature on financial performance measurement through the perspective of return on investment or ROI within P2P platforms, and differences between risk perceptions and financial performance measurement. The specific gaps identified within the final stage of developments within literature progress are addressed within this study conducted and they focus on adoption and direct influence on P2P payments and its return within retail SME within Lagos in Nigeria.

### **The Imperative for a Lagos Retail SME Focus: Contextualising the Research Gap**

However, the broad gaps that have been identified within Nigerian literature have made the author consider a final, albeit critical, area of focus: the unique ecosystem of retail SMEs in Lagos. Lagos is not a microcosm of Nigeria; rather, it is the economic heartbeat of the nation, with uniquely distinct dynamics that make it an interesting and necessary focus for this study.

1. **Concentration and Competitive Intensity:** Lagos is the city with the highest concentration of SMEs in Nigeria, and the retail sector is the most saturated and informal industry (SMEDAN, 2021). This creates an environment of extreme competition wherein marginal efficiency gains from digital technology can be the difference between business survival or demise; thus, the financial consequence question is not just academic but existential.

2. A Hybrid Formal-Informal Ecosystem: Lagos retail operates in a pronounced hybrid economy. Although digital payment systems are on the rise, cash transactions and trust-based informal credit systems are deeply ingrained (Ciza et al., 2025). Thus, adoption is not just a simple shift but a complex process of navigating these complex systems. Research that attempts to generalise all SMEs does not grasp the retail industry's challenge of fitting technology into a fundamentally relational and cash-centric business model.

3. SMEs in Lagos face Nigeria's infrastructural challenges such as electricity and internet connectivity in their most acute form. At the same time, they experience the highest level of pressure from consumers, competitors, and regulators to adopt technology. This state of affairs escalates the effect of the UTAUT constructs-like Facilitating Conditions and Effort Expectancy. The financial return from a P2P system is not only a function of the features but also of the owner's daily struggle with network reliability and electricity costs, which is a reality that is captured rather poorly in non-sector-specific or non-geographically focused studies.

4. As the epicentre of Nigeria's cashless policy, Lagos retail SMEs are on the frontline of regulatory pushes for digital finance. This compulsory environment forces the relevance of UTAUT's Social Influence (compliance pressure) and Performance Expectancy (perceived necessity for continuity). The financial outcome of adoption in this enforced environment is a critical, unanswered question for policy and practice.

Therefore, the progression from global to African to Nigerian gaps logically culminates in this sectoral and geographic specificity. Investigating the UTAUT-financial performance (ROI) link in Lagos retail SMEs is not merely a sample choice

but a targeted investigation into the precise context where the theoretical questions meet their most complex and impactful real-world expression. This focus will generate findings with high contextual validity and practical utility for the largest SME cluster in Africa's largest economy.

### **Critical Assessment of Methodologies and Identification of Research Gaps**

The critical evaluation of the methodologies adopted in the preceding literature on the financial implications of digital technologies on SMEs emphasises the shortcomings in the application of scientific, financial methodologies that emphasise the relationship between the application of technology and financial outcomes directly. Most of the preceding studies on the issue discuss the issue of performance based on non-financial, indirect measures rather than the ultimate financial outcomes directly. The methodologies adopted to discuss the issue of performance in the preceding studies encompass the level of adaptation, the level of usability, the level of customer satisfaction, and the overall level of business performance (Aladejebi, 2020; Bello & Tijani, 2020).

Even though integral to the process of comprehending adaptability, the measures are inconsequential to the financial performance of a business. This was the case, even in the preceding studies, where the measures of performance adopted tended to emphasise the level of increased revenue, the return on investment, or cost-effectiveness (Effiom & Edet, 2022; Mbah & Obiezekwem, 2019). For example, in cost/benefit analysis, there is often the problem of accurately identifying the value to be assigned to all the costs not immediately measurable or intangible changes brought about by adopting computerisation (Johnson, 2025). Importantly, many external

factors can influence sales or profits that studies do not account for, making it hard to measure the specific impact of digital investments (Aladejebi, 2020).

As a direct outcome of this trend in methods of analysis, the relationship between the adoption of technology and financial gain has been left under-researched and rather ambiguous. In the words of Guo et al., (2025) and Roy et al. (2025), much investment in technology does not necessarily mean much profit or efficient service delivery, though very little work follows this disparity quantitatively. The overriding concern to assess the prior conditions of adoption (why) overlooks the measurement of the financial implication of this outcome (so what). This poses a major challenge for SME managers, who demand clear return on investment figures for their limited initial investment costs (Pfister & Lehmann, 2022; Ahinful et al., 2023).

### **Research Gaps**

Based on this critical assessment, four definitive research gaps are identified, which this study is designed to address:

1. **Theoretical Gap: Where Technology Adoption Theory and Finance Performance Models Meet (and Fail).** While there is a prominent and successful theoretical paradigm in technology adoption literature: Unified Theory of Acceptance and Use of Technology (UTAUT) that successfully forecasts user intention and actual use through Performance Expectancy and Social Influence (Venkatesh et al., 2003; Ioakeimidou et al., 2024), UTAUT and similar models (TAM and DOI) never aimed to predict financial performance. A clearly emerging trend in technology adoption research and finance meets where Performance Expectancy is analysed in research, but never actualised in finance terms. This paper eliminates this gap where UTAUT is used for

establishing a better understanding of technology adoption and financial performance prediction.

2. **Contextual/Sectoral Gap: Lack of Retail-Specific SME Focus.** SMEs are generally a heterogeneous group that covers manufacturing, services, agriculture, and retail. These are the areas where retail's operational dynamics differ both in terms of customer interaction and value chains. Previous studies, however, have largely consolidated their findings across all sectors of SMEs. For example, such generalisation restricts practical relevance to find those retail SME owners who are operating in Lagos and whose daily transactions, inventory needs, and customer payment interactions are quite different from other sectors. A sectoral focus is therefore needed to make sure actionable insights are derived.
3. **Geographical Gap: Lack of Research on Financial Performance measured by return on investment (ROI) as a Theme in Lagos, Nigeria.** Though research has been conducted on the adoption of digitisation among SMEs from Nigeria, most research is general national studies, conducted on other geographical locations. Some such studies include Atueyi et al. (2019) and Effiom and Edet (2022). As the main commercial hub with the greatest number of retail SMEs found in Nigeria, the landscape of opportunities as well as limitations that exist for the geographical location of Lagos is highly competitive, with infrastructural issues as well as a dynamic but very demanding market. There is a research gap when the focus becomes the precise ROI for such a challenging environment.

## **Synthesis and Justification for the Study**

This chapter has systematically deconstructed the complex relationship between digital technology adoption and SME financial performance. This review evidences a field depicted by significant theoretical and empirical contradiction and uncertainty: while digital technologies are commonly advocated for growth, empirical evidence shows that the financial impact is inconsistent, often indirect, and heavily dependent on unmeasured mediating factors and environmental barriers.

Building on this, three critical connected gaps have been isolated and address the justification for this research:

### **The Theoretical-Empirical Disconnection**

A strong body of work (based on UTAUT) explains adoption, while other theories explain performance; few studies provide a cogent theoretical model linking the two. In this regard, it results in a literature rich in studies on adoption drivers but poor in explaining why adoption frequently fails to translate into tangible financial returns, especially in emerging economies.

### **The Measurement Gap**

It is striking how much of what we know about digital adoption in SMEs rests on indirect evidence and perceptions of stakeholders. Study after study measures whether businesses *intend* to use technology, how satisfied they feel with it, or whether they perceive it as beneficial. Adoption rates, user surveys, and self-reported growth impressions dominate the literature. What is missing and critically so, are hard numbers: direct, quantifiable financial metrics like Return on Investment (ROI). Without financial performance measured via ROI, the researcher cannot truly gauge the real

economic outcome of investing in a POS system, an e-commerce platform, or mobile banking tools. This is not just an academic deficiency; it leaves retail SME owners and policymakers in the dark when trying to justify which digital technologies are worth the cost and effort.

### **The Gap in the Specific Environment**

Examining Nigeria and especially Lagos, and these gaps are not just apparent: they are acute. Lagos is not a generic Nigerian city; it is a commercial pressure cooker where informal cash dealings coexist uneasily with a push toward digital finance, where infrastructure is patchy but competition is fierce, and where regulatory drives for a cashless economy collide with daily realities on the ground. Broad Nigerian SME studies tend to gloss over these gritty, place-specific realities.

They miss how Lagos retail owners navigate unreliable internet while trying to run a digital payment system, or how they balance trust-based customer relationships with the impersonal nature of e-commerce. In other words, what works in theory or in another context often stumbles here and without research tailored to this setting, we're left with models that explain little and guide even less.

This study is designed as a direct response to these gaps. It proposes and will test an integrated theoretical framework which links the behavioral drivers of technology adoption (UTAUT) directly to the ultimate business outcome of financial performance (ROI), and will do so not through perceived performance but by using an integrated ROI measurement framework. Most importantly, it will conduct this investigation within the exact, high-stakes setting of retail SMEs in Lagos, Nigeria.

By addressing the theoretical disconnection, the measurement gap and the environmental vacuum, this research will go beyond asking if retail SMEs adopt technology, to explaining how the drivers of adoption ultimately determine their financial success or failure. The insights derived from the results of the research will provide evidence-based roadmaps for SME owners to make strategic digital investments and will offer policymakers a nuanced understanding of how to foster a genuinely productive rather than a merely connected digital SME economy.

### **Addressing the Research Gap: The Unique Sectoral and Geographic Context of Retail SMEs in Lagos**

Although the advantages of digitalisation are largely accepted across SMEs, the reality and financial implications of the adoption of technologies are highly mediated by the characteristics of the specific sector concerned. As noted by Appio et al. (2021) and Daud et al. (2022), there is an obvious call for sector-level research, since the current literature does offer some form of grouping and aggregation of results across different SMEs, including manufacturing, service, agricultural, and retail, and dilutes the relevance and implications of the same for the concerned sector. Retail SMEs are viewed as a category in their own right for discrete analysis, given the confluence of transactional, operational, and contextual issues that are uniquely highlighted within the urban ecosystem of Lagos, Nigeria.

Retail, by definition, is characterised by high-frequency, low-margin transactions, direct customer contact at the point of sale, and real-time inventories. These defining features make digital technologies not peripheral tools of efficiency enhancement but rather nervous systems without which the business cannot survive. For a retail SME, a point-of-sale (POS) or mobile payment system secures revenue

immediately; its reliability, speed, and cost directly impact daily cash flow and customer satisfaction. In contrast, a manufacturing SME may use digital tools for supply chain coordination or production scheduling, where financial results appear later and are harder to measure directly.

Similarly, service-based SMEs may exploit digital platforms for the acquisition of clients or service delivery, but their sensitivities to volume of inventory are typically lower than those in retail transactions. In consequence, the intensity of dependency on digital transaction technologies is uniquely high in retail, making it an ideal yet underexamined locus for studying the direct financial returns of digital adoption.

Looking into the Nigerian context, Lagos emerges as a crucial environment where these retail dynamics are both amplified and complicated by geographic and economic forces. As the commercial and financial heartbeat of Nigeria, and indeed of West Africa, Lagos hosts an unparalleled density of micro, small, and medium retail enterprises, from sprawling informal markets to formalised shopping complexes and burgeoning online storefronts (Aladejebi, 2020; Ogunsuyi & Tejumade, 2021).

This density fuels extreme competition, forcing rapid adoption of consumer-facing technologies simply as a baseline for survival. The Lagos consumer is rapidly becoming technologically adept, and demands for easy payment systems, online shops, and effective services drive a huge market pull for digitalisation (Naeem & Ozuem, 2021).

However, this competitive stimulus is driving against the backdrop of infrastructural inadequacies in the city. What constitutes electricity and internet availability in many developing countries is actually a challenge in a city like Lagos (Akerejola et al., 2019; Chiboora et al., 2023). Mobile money transactions for a retail

business in Lagos involve not only financial transactions but also fighting against network time-outs; completing an online transaction depends on whether the potential customer has access to consistent and stable fast-speed internet connections. However, it is apparent that in the infrastructural condition of a city like Lagos, the optimistic prediction regarding a particular technological adoption, using UTAUT or otherwise, is put to severe stress for an adoption intention and financial realisation gap to emerge.

In addition, the retail sector in Lagos is defined by the deep and complex intertwining between its formal and informal economies. Indeed, SMEs retailing here happens in two distinct conditions that may see such ventures as fully formalised, with online banking facilities, although such retailing ventures' value chains or even sales may be anchored on cash transactions that are informal (Ciza et al., 2025; Disse & Sommer, 2020).

Consequently, such ventures' adoption is hampered by the inability of digital platforms that are suited to fully formalised ventures to be adaptable to the informal credit agreements or the cash on delivery treatment often sought by clients (Moss & Thomas, 2022).

On the other hand, informal practices may also work as an impediment to the formation of virtual transaction paths that can help the entrepreneurs gain access to formal credit as well as proper analytics. Thus, when an entrepreneur decides to implement a technology such as a point of sale-based system or a peer-to-peer payment application in their business, he or she has to go through an economic negotiation between the digital technology used by the business as well as the informal practices adopted by them. The intersection of these elements, sectorial features (level

of transaction, customer-facing technologies), geographic specifics (competitive intensity, infrastructural pressure), and the economic hybridity of formality and informality, creates a reality that is insufficiently addressed by typical SME digitisation research. There has been effective documentation on the status of adoption (Atueyi, et al., 2019), the impact of policy interventions (Effiom & Edet, 2022), and the typical challenges associated with SME going digital (Apulu, 2012) within Nigeria.

Nevertheless, in failing to break down the retail industry and in failing to situate the research in the context of Lagos, these bodies of work fail to address the most significant questions of the application of information technology (IT) adoption in the retail industry that practitioners want the answers to: What digital investments offer the highest and most certain return on investment in a retail SME in the city of Lagos?

This research directly addresses this double gap, the sectoral and the geographical. The study goes beyond establishing whether or not digital technology create value for Nigerian SME to establish what tools yield the highest financial returns for retail SME in the peculiar, high-stakes setting of Lagos. Focusing on the exact juncture, this research gives a number of critical contributions:

- a) It generates specific, actionable intelligence for the owners of retail SME who operate in conditions of constrained resources and pressures of competitiveness
- b) It provides policymakers with evidence to develop targeted, sector-specific programmes to support digital diffusion instead of generic support; and
- c) It furthers academic theory by testing in a rigid fashion how established adoption models, such as the Unified Theory of the Adoption and Usage of Technology (UTAUT) translate to actual money matters of financial performance within a bounded, complex real-world setting. In sum, the unique position of Lagos's retail SME is not a

limitation per se but rather the very justification for this focused investigation, with promises of insight of enhanced relevance and practical utility.

### **A Structured Synthesis of Gaps and Study Justification**

#### Consolidated Matrix of Research Gaps

The preceding empirical review across the five digital technologies reveals a consistent pattern of deficiencies in the literature. To crystallise the argument and provide a clear roadmap for this study's contribution, the identified gaps are synthesised into a consolidated matrix (Table 2.1). This matrix maps the deficiencies across three analytical levels which are Global/Theoretical, African Contextual, and Nigerian Sectoral for each core area of investigation. Below the table summarises the synthesis.

**Table 2.1:**

*Synthesis of Research Gaps in Digitalisation and SME Financial Performance Literature*

| Gap Category                       | Global Theoretical Literature  | & | African Contextual Literature  | Nigerian & Sectoral (Lagos Retail SME) Literature  |
|------------------------------------|--|---|--|--|
| 1. Theoretical -Outcome Disconnect | Dominant models (UTAUT, TAM) stop at Use Behaviour. No direct theoretical link to financial performance metrics like ROI is established or tested. A chasm exists between adoption theory and business outcome theory. |   | Studies acknowledge benefits but lack a framework to integrate adoption drivers with the unique formal-informal financial hybridity and its impact on value capture. | Practical guides for owners are absent. No study explains <i>which</i> UTAUT drivers (e.g., Performance Expectancy vs. Facilitating Conditions) most strongly predict ROI in the mandatory, constrained Lagos context. |
| 2. Measurement                     | Over-reliance on perceived   |   | Focus is on macro-growth or  | Near-total absence of ROI-driven   |

| Gap Category              | Global Theoretical Literature  | & | African Contextual Literature   | Nigerian & Sectoral (Lagos Retail SME) Literature  |
|---------------------------|--|---|---|--|
| ent & Methodology         | performance, adoption rates, and satisfaction. Direct quantitative financial measurement (ROI) is rare. Extraneous variables (market conditions, management skill) are often uncontrolled. |   | inclusion metrics. Micro-financial analysis of cost-benefit for individual SME, accounting for high transaction costs and fraud losses, is missing. | analysis for retail SME. Studies use broad growth indices or significance tests, not the Net Profit/Investment calculation crucial for owner investment decisions. |
| 3. Contextual Specificity | Findings are aggregated across heterogeneous SME sectors (manufacturing, services, retail). The unique,  |   | Addresses broad infrastructural and literacy challenges but offers no model for how specific technologies miti                                      | Lagos as a specific ecosystem is under-researched. Its unique mix of extreme competition, acute infrastructure pressure, and regulatory scrutiny                   |

| Gap Category                 | Global Theoretical Literature  | & | African Contextual Literature   | Nigerian & Sectoral (Lagos Retail SME) Literature  |
|------------------------------|--|---|---|--|
| 4. Risk & Return Integration | <p>high-frequency, customer-facing nature of retail is underexplored.</p> <p>Promotes benefits with limited analysis of digital risks (cybersecurity, fraud, platform dependency) as a direct cost centre eroding financial gains.</p> |   | <p>gate or are hindered by them. The last-mile problem of reliable use is noted but not analyzed for financial impact.</p> <p>Highlights security threats and shadow banking but does not quantify these risks' impact on profitability strategies for SME.</p> | <p>(cashless policy epicentre) is not treated as a critical independent variable shaping financial returns.</p> <p>Documents fraud and network issues but treats them as adoption barriers, not as factors in the ROI equation. No guidance exists for owners on weighing the potential revenue gain from a digital tool against the likely cost of fraud or downtime.</p> |

Source: Researcher's Literature Review (2024).

## Direct Justification for the Present Study

This study is designed as a direct and targeted response to the culminating gaps identified in the right-most column of **Table 2.1** which the Nigerian and sectoral (Lagos Retail SME) Literature. Its justification is based on four precise interventions:

1. **Theoretical Integration:** This research integrates the most popular theory of technology adoption (UTAUT) and financial performance via the postulation of a direct effect model. It suggests that the strength of UTAUT constructs (Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions) would have a direct effect on the quality of technology usage in a setting like post-pandemic Lagos, where technology usage is not only mandatory but also a survival necessity, and the quality of technology usage would have an instant effect on the efficiency gains (speed, cost reduction, market expansion) reflected as improved ROI. The study thus operationalises UTAUT not to predict mere adoption, but to explain variance in the financial yield of that adoption.
2. **Methodological Precision:** Going beyond perception-based studies, this study uses Return on Investment (ROI) as a primary dependent variable, which is defined as  $(\text{Net Profit from Technology} / \text{Cost of Technology Investment}) \%$ . This is a direct reflection of the decision-making process of SME owners, who require a precise, quantified measure of their business outcomes. This study, therefore, bridges the measurement gap, ensuring that its findings have immediate applicability to capital allocation decisions.
3. **Contextual and Sectoral Focus:** This study is specifically focused on retail SMEs in Lagos, Nigeria.

This is not a convenience sample but a critical case study. Lagos represents the most concentrated, competitive, and digitally pressured SME retail environment in Nigeria, making it the ideal setting to observe the strained relationship between adoption drivers and financial outcomes. The findings will therefore have high contextual validity for the largest segment of the Nigerian economy and offer a model for investigating other urban centers in emerging markets.

4. **Actionable Output:** By analysing five specific technologies (Internet Banking, Mobile Banking, E-commerce, POS, P2P Payments) within this framework, the study will generate a ranked understanding of their financial impact. This will answer the pragmatic question every Lagos retail SME owner faces: Given my limited resources, which digital investment will give me the highest and most reliable return? Consequently, the output will serve not only academic discourse but also provide evidence-based guidance for SME owners, financial technology developers, and policymakers aiming to craft effective, sector-specific digital support programs.

In summary, this research is justified by its targeted aim to replace broad correlations with specific, quantifiable explanations. It seeks to transform the narrative from digitalisation is good for SMEs to focus on retail SMEs in Lagos, strengthening the belief in a tool's utility (Performance Expectancy) and improving the enabling infrastructure (Facilitating Conditions) are the most critical levers for generating a positive ROI from a Point-of-Sale system. By filling these precise, culminating gaps, the study contributes directly to both academic knowledge and practical economic management.

## **Closing Summary of the Literature Review and Synthesis of Research Gaps**

This review has mapped the digitalisation landscape for SMEs, spanning global theory and the glaring reality of Nigeria's informal retail sector. It is within this context that a performance paradox, theoretical discontinuities, and specific research gaps establish the clear necessity for this investigation. It is precisely the interconnection of such gaps that provides the imperative for the undertaking of this particular study.

Internationally, there exists a compelling yet conflicted body of literature on the topic. On the one hand, information and communication technologies are touted for their efficiency, and market and competitive power (Verhoef et al., 2021; Nambisan, 2013); yet, on the other hand, empirical research falls apart when analysed, especially in the emerging markets and during a time of crises. The recent economic crises and even the last pandemic served as a stark revealer: digitalisation was a necessary lifeline, yet it was not a sufficient condition for financial resilience.

Studies from Indonesia to the Balkans show that benefits were received mainly by the most adaptable firms, while others faltered due to a lack of business infrastructure, such as financial management (Mitrevva & Arsova, 2021; Moss & Thomas, 2022). In Nigeria, this state of affairs is particularly emphasised, as studies show both positive correlations regarding performance and mention the negative consequences of infrastructural and digital challenges that affected the growth of e-banking in SMEs (Apulu, 2012; Ekechukwu & Mbah, 2019).

This is a contradiction that begs the fundamental question of what specific circumstances can ensure that digital adaptation is translated into direct financial gain. Theoretical frameworks, particularly the dominant Unified Theory of Acceptance and Use of Technology (UTAUT), provide a robust explanation for the *initiation* of

technology use but fall silent on its *financial consequences*. UTAUT predicts behavioural intention and usage through constructs like Performance Expectancy and Social Influence (Venkatesh et al., 2003; Ioakeimidou et al., 2024). However, its deliberate end-point at Use Behaviour creates a profound chasm between understanding *why* technologies are adopted and quantifying *what* financial return they generate.

This is the crucial theory-performance gap. The literature is filled with studies measuring adoption rates, user satisfaction, and perceived usefulness, yet it lacks a coherent model that links these behavioural antecedents which is the quality and intensity of use to the ultimate business metric of Return on Investment (ROI). This becomes even more significant in resource-challenged environments such as Nigeria because this technology adoption cannot be considered purely on its adoption potential but has to be economically viable.

Moving closer to both African and Nigerian situations, gaps in research studies become highly focused and practically significant. There exists a continuously demonstrated sectoral aggregation problem whereby the aggregation tends to obscure the findings from different SME sectors, such as manufacturing, service, and retail (Appio et al., 2021; Daud et al., 2022). This obscures the singular reality of the retail sector, with high-frequency transactions, direct customer-technology interaction, and razor-thin margins, whereby the digital tools are not merely supportive but the very nervous system through which daily operations are conducted.

In addition, a geographical dilution exists. Although the digitalisation of Nigerian SMEs has been examined, the singular environment of Lagos, the biggest retail market on the African continent and defined by its extreme competitive density, heavy strain on infrastructure, and its formal and informal economy variability, has not been

sufficiently examined as a singular focus for financial analysis (Ogunsuyi & Tejumade, 2021; Ciza et al., 2025). This is particularly the case because, in a resource-scarce economy like Nigeria, this technology adoption not only has to be examined on its adoption potential but must also be economically viable.

The study will empirically test the proposition that it is drivers of adoption i.e UTAUT constructs, that determine depth and effectiveness of technology use, which in turn improves operational efficiency by reducing costs, accelerating transactions, and expanding market reach to generate a superior financial performance.

By applying this model to the five digital technologies which are internet banking, mobile banking, e-commerce, POS, and P2P systems, within the high-stakes laboratory of Lagos's retail SME sector, this research turns digitalisation from a vague strategic imperative into a quantified, actionable investment framework.

It will provide SME owners with evidence-based prioritisation for their scarce capital, equip policy makers with data for targeted sectoral support, and push ahead academic discourse by rigorously connecting theory of adoption to financial performance in one of the world's most challenging and dynamic business environments. The next chapter explained the research methodology and the paradigm guiding its approach as well as the design for data collection and subsequent analysis.

## CHAPTER 3: RESEARCH METHOD

This chapter detailed the methodology employed to assess the effect of digital technology adoption on the financial performance of retail Small and Medium-sized Enterprises (SMEs) in Lagos, Nigeria. The study used a quantitative design integrating perceptual survey data (Likert-scale instruments) with verified, five-year financial records. This integrated approach strengthened the validity of findings by combining subjective perceptions with objective outcomes within a coherent explanatory framework.

The chapter systematically outlined the research design, population and sampling, instrumentation, operationalisation of variables, data collection, validation protocols, analytical strategies, and ethical considerations, analysis that was conducted for the empirical testing of the mentioned theories.

### **Research Approach and Design**

This study employed an explanatory quantitative design and the work was conceptually grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), which provided the theoretical lens for interpreting behavioural drivers of adoption of digital technology for retail SMEs.

The primary methodological objective was to test the empirical relationship between adoption constructs and financial performance measured via Return on Investment (ROI). For this purpose, the study examined five digital technologies: mobile banking, internet banking, e-commerce, point of sale (POS) systems, and peer-to-peer (P2P) payments. The research design connected UTAUT constructs which are

performance expectancy, effort expectancy, social influence, and facilitating conditions, to the empirical measurement of financial outcomes through ROI (Pfister & Lehmann, 2022; Venkatesh, 2023).

### **Justification for Integrating Perceptual and Financial Measures in a Quantitative Design.**

The research design combined perceptual surveys (five-point Likert scale) with a five-year analysis of financial performance outcomes (2019-2023). This integration was justified for three primary reasons pertinent to the Lagos retail SME environment:

1. Perceptual data captured SME managers' subjective assessments of technology's impact on efficiency and operations. Financial data provided an objective, verifiable outcome measure. Using both mitigated the limitations of relying solely on self-reported outcomes, which are vulnerable to optimism or social desirability bias (Podsakoff et al., 2003).

2. In environments like Lagos, where formal financial audits for SMEs are rare, supplementing perceptions with verifiable records (such as bank statements, tax records) offered a practical yet scientifically rigorous methodological approach to the study (George et al., 2020).

3. Enhanced Causal Interpretation: Correlating perceptions with actual financial data allowed the analysis to determine whether positive attitudes align with tangible performance improvements, thereby strengthening interpretations of digital technology's financial impact (Dawadi et al., 2021).

## **Population and Sample of the Research Study**

Target population included owners/managers of registered retail Small and Medium-scale Enterprises of the retail type in the Lagos metropolitan area of Nigeria. It was limited to enterprises that conduct retail sales of goods to the general public through ten identified sectors, which would include food and beverages, clothing and fashion, pharmaceuticals, computers and accessories, etc. Additionally, a sampling frame built from a population of 11,663 SME registered with the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) as of 2021 (SMEDAN, 2021) for the entire state of Lagos was employed.

However, to facilitate easy sampling and provide a representation of diversity in the metropolitan, a refined frame of retail SME in four of the major commercial Local Government Areas (LGAs) and Local Council Development Areas (LCDAs): Oshodi-Isolo LGA, Mushin LGA, Odi-Olowo/Ojuwoye LCDA, and Oto-Awori LCDA, where approximately 8,000 retail SME are estimated to exist, was used. This served as the basis of the sampling frame from where participants for this research were sourced.

As Lagos is the major business center of the Nigerian nation with over 3 million SMEs and 11,663 registered SMEs in Lagos with a total number of 37,067 registered across the nation, the population situated within the state is a good basis for this study (SMEDAN, 2023). Quoting the analysis carried out among a specific number of SMEs across four chosen areas namely, two Local government Areas and two Local Council Development Areas which were Oshodi-Isolo Local government, Mushin Local government area, Odi-Olowo/Ojuwoye Local Council Development area, and also Oto-Awori Local Council Development area, a good basis was obtained to analyse

and determine the degree to which digital technologies affected business activities and in turn their financial performance.

These local council development areas were sampled along with local government areas for effective governance and they possess same characteristics with local government areas but with a difference that they are entirely dependent on funding from Lagos state government and are not a share recipient like local government of federal funds. To fulfil the purpose of this study, data was gathered on retail SMEs who engaged specifically in retail, popularly called trading, in the following segments of retail marketing: food, beverages and groceries, pharmacy and convenience store, hardware and industrial products, beauty and accessories, clothing and fashion, office and home computers, phones and accessories educational and digital tools, building and construction and sports equipment.

One of the main obstacles that researchers face when carrying out field work in research, is how to determine the sample size that will be representative and sufficient for the research they are carrying out. Another challenge is how to reduce random error and sample bias (Adam, 2021; Verma and Verma, 2020; Taderhoost, 2017). A further challenge which researchers face is negligence in proper calculation of sample variance and the mode of managing samples and proportions. The challenges inherent in determining an appropriate sample size has led many researchers to approach sample size based on proportion.

To this end, the 1967 Taro Yamane formula was adopted by many researchers, viz,  $n = \frac{N}{1 + N(e)^2}$ , where  $N$  = population size and  $e$  margin of error (Adam, 2021; Tepping, 1968). In other words, according to Islam (2018), Yamane formula is an approximation of known sample size formulas such as Krejcie and Morgan (1970) and

Cochran (1963) formulas for proportion at 95% confidence level and population proportion of 0.5. Yamane formula is adaptable to analyse variables and works well with 95% confidence coefficient and 0.5 proportion of the population (Adam, 2021). 
$$n = \frac{Np(1-p)}{1 + N(e)^2}$$

This is the Taro Yamane formula.

For the registered SME population in Lagos of 11663:  $\frac{11663}{1 + 11663(0.5)^2} = 387$  will be the sample size. When determining the estimate of variance, Bartlett, et al. (2019) opined the standard deviation of survey research using Likert-type items is estimated as the ratio on the inclusive range of the scale to the number of standard deviations that would include all positive values in the range.

$$n = \frac{N}{1 + Ne^2}$$

Where, n= minimum returned sample size

N = the population size e = adjust margin of error

Hernandez et al (2004) argued that respondents of survey questionnaires shy away from choosing extreme responses categories. For this reason, the proportion of middle point responses is larger than extreme responses. This makes the coefficient of variation to be smaller than 1 (about 0.3-0.5). Adam (2021) further elucidated that it is recommended that 5% is an acceptable margin of error for categorical data and 3% for continuous data (Adam, 2021; Singh & Masuku, 2014).

A priori statistical power analysis was conducted using GPower 3.1 (Faul et al., 2009) to determine the minimum sample size required to detect a meaningful effect. The analysis was set for a multiple linear regression model with five main predictors. Parameters were set as follows: medium effect size ( $f^2 = 0.15$ ), alpha error probability

( $\alpha = 0.05$ ), power ( $1-\beta = 0.80$ ), and five predictors. The analysis indicated a minimum required sample size of 92.

The Yamane (1967) formula for calculating the sample size resulted in 387. The sample size obtained from the Yamane formula served as a conservative estimate for the finite population. The sample size obtained from the Yamane formula was then rounded up to 400 to meet the requirements for the stratified sampling design, which requires each stratum to have at least 100 participants. The sample size obtained for 345 participants therefore exceeds the minimum required sample size from the power analysis.

To conduct the survey at the commercial centres, approvals were requested from the management of the malls in the markets using the gatekeeper's letter. After approvals had been granted, the survey was administered on the participants in line with best practice of confidentiality and anonymity. Secondary data on five-year profitability index (2019 to 2023) based on the use of each digital technology was also collected concurrently. The map extract of Lagos state in the next figure 1 shows the location of the markets which were visited in the survey.

**Figure 3.1**

*Map of Lagos council areas.*



Source: *Wikimedia commons, 2024.*

From the map above, the concentration of the large markets in Lagos is based on local government structures. The four selected local government areas (two local government areas and two local council development) are: Oshodi-Isolo Local Government, Mushin Local Government Area, Odi-Olowo/Ojuwoye, Local Council Development Authority, and Oto-Awori Local Council Development Authority. The study therefore had four strata for the survey. The next table explained the sampling framework, the approximate populations and sample per stratum as well as the ensuing justification for same.

**Table 3.1***Stratified Sampling Framework*

| Strata (Market)        | Approx. Population (Nh) | Proportion of Total Population | Sample per Stratum (nh) | Justification  |
|------------------------|-------------------------|--------------------------------|-------------------------|--|
| Oshodi-Isolo LGA       | ~2,000 SME              | 0.25                           | 100                     | Sudman (1976) recommends ≥100 per major group        |
| Mushin LGA             | ~2,000 SME              | 0.25                           | 100                     | Proportional allocation ensures representativeness   |
| Odi-Olowo/Ojuwoye LCDA | ~2,000 SME              | 0.25                           | 100                     | Kish (1965) supports 30–200 elements per stratum     |
| Oto-Awori LCDA         | ~2,000 SME              | 0.25                           | 100                     | Ensures statistical power and reduces sampling error |
| <b>Total</b>           | <b>~8,000 SME</b>       | <b>1.00</b>                    | <b>400</b>              | Adjusted from Yamane's 387 to enhance reliability    |

Source: Researcher's Field Survey (2024).

The rationale behind the choice of the particular Local Government Areas (LGAs) and Local Council Development Areas (LCDAs) was based on the following four criteria:

1. Commercial Density: The areas chosen have the highest number of registered retail SMEs on the mainland in Lagos State, based on the data collected by the SMEDAN (2021) at the district level.

2. Economic Heterogeneity: The areas chosen for the retail SME study represented the diversity of the Lagos State commercial landscape, ranging from traditional markets (Mushin) to emerging mixed-use commercial areas (Oshodi-Isolo).

3. Infrastructural Variation: Preliminary data indicated varying levels of digital infrastructure penetration across these areas, allowing examination of context-dependent adoption patterns.

4. Methodological Practicality: These areas offered feasible access for ethical data collection while maintaining geographical spread. These four strata had been selected based on economic representativeness, accessibility, and variety in retail SME types within Lagos. Each stratum is a major commercial hub with an equivalent density of retail SME, and hence, the sample covers different business environments and contexts for digital adoption. The sample size in each stratum ( $n_h = 100$ ) is supported by the methodological guidelines for stratified sampling, where Sudman (1976) puts forward a minimum of 100 elements in each major subgroup to assure reliable estimates, while according to Kish (1965), up to 30–200 elements may be sufficient, provided the prevalence of an attribute falls within the range of 20–80%. This approach minimises variance between strata and provides generalisable findings across Lagos's retail SME sector.

### **Statistical Justification for Stratification by Market**

The reason for choosing the strata in the four geographic markets (Oshodi-Isolo LGA, Mushin LGA, Odi-Olowo/Ojuwoye LCDA, and Oto-Awori LCDA) was not only practical for retail SME study but also statistically justified to account for the unobserved geographical variable in the relationship between digital adoption and financial performance.

Before the main data collection, the study carried out a pilot study with  $n = 50$  SMEs, with 12-13 SMEs per stratum, to examine the baseline differences in the study's key variables between the four markets. The study used the one-way Analysis of Variance (ANOVA) to examine the statistically significant difference between the strata in the following:

1. Aggregate Digital Adoption Score:  $F(3, 46) = 4.82, p = .005$ .
2. Perceived Internet Reliability:  $F(3, 46) = 3.95, p = .014$ .
3. Average Annual Revenue (2019-2023):  $F(3, 46) = 5.21, p = .003$ .

Post-hoc tests (Tukey HSD) indicated that Oshodi-Isolo and Mushin LGAs showed significantly higher digital adoption and revenue levels compared to the two LCDAs. This confirmed that systematic between-stratum variance existed for covariates directly related to the dependent variable (ROI). Through stratified random sampling, this existing geographical variability in the markets and residing SMEs was taken into consideration at the sampling phase, which improved the accuracy of estimates. For example this strategy supports the methodology principle that stratification should be based on covariates that are known or assumed to be related to the outcome variable (Cochran, 1977; Stehman & Wagner, 2024).

The allocation of 100 SME per stratum was done to ensure that every large subgroup was well represented, which action met minimum sample requirements per stratum as recommended by Sudman (1976). Stratified random sampling therefore is applicable for gathering information where the population is heterogenous and diversified such as the experience in this study. The diversified heterogenous population is thus divided into a number of similar groups called strata.

Each strata is similar in type and the samples are drawn from the strata individually. The strata or subgroups are chosen as there is available evidence that those strata or subgroups tend to affect the outcome. The selection of strata may differ from region to region depending on local conditions (Nanjundeswaraswamy & Divakar, 2021; Singh & Masuku, 2014).

The researcher ensured each of the markets that the survey visited is home to a variety of SMEs and for the purpose of the research, only retail SMEs were selected from the population for conducting the survey. In a scenario where market groups are subdivided depending on the line of business (demographic distribution of retail SMEs from the heterogeneous SME group), the method of stratified random sampling helps in overcoming the problem where some segments of the market or the business are ignored (Rahman et al., 2022; Buntin, 2020).

This process ensured there was a more efficient execution of the survey because segmenting into strata eased administration logistics. It reduced time spent on data collection and fieldwork control and problems in each stratum were easily identified and adjusted. However, proper separation of the population into similar strata and determining the appropriate size of the sample was essential for stratified sampling to be successful in research. The study results would thereby be distorted if

the stratification was not done adequately (Rahman et al, 2022; Ilyasu & Etikan, 2021; Nanjundeswaraswamy & Divakar, 2021; Singh & Masuku, 2014).

The error of the stratified sample dependent on the variance within the strata, rather than between the strata, allowed further sampling of the strata as separate, independent populations from which individual elements could be randomly sampled (Stehman & Wagner, 2024). To further the discussion, Alambra et al. (2020), cited Sudman (1976), and recommended that a sample of a minimum 100 elements were needed for each main group or sub-group, 20 to 50 for the minority subgroup in the total number of the stratified sample. However, Bethmann & Bergmann (2023), cited Kish (1965), and maintained that 30 to 200 elements were needed, if the characteristic appeared 20 to 80 per cent of the time, if the distribution approached normality.

Even for a comparatively large sample, skewed populations would bring about a considerable departure from normality. With proportionate stratification, the sample size of each stratum is proportionate to the population size of the stratum. Strata sample sizes are determined by the following equation:

$$n_h = ( N_h / N ) n$$

Where  $n_h$  is the sample size for stratum  $h$ ,

$N_h$  is the population size for stratum  $h$ ,

$N$  is total population size, and

$n$  is total sample size.

The total sample size derived from the initial Taro Yamane 1967 formula in the preceding formula is 387. Each market visited housed approximately 2,000 SME. With

proportionate stratification, the sample size for each stratum is determined by its share of the total population.

The formula applied was:

$$n_h = \frac{N_h}{N} \times n$$

Where:  $n_h$  = sample size for stratum  $h$

$N_h$  = population size of stratum  $h$

$N$  = total population size

$n$  = total sample size (initially 387, adjusted to 400) Since there were estimated to be 8,000 SMEs in the sampled areas and each of the four markets contained about 2,000 SME, the proportional allocation estimated the study to contain about 100 SMEs per stratum. To meet the minimum requirements for the number of observations in the sub-group, as recommended by Sudman (1976), the target population was rounded from 387 to 400.

Employing the formula for stratified sampling, the researcher may come up with a sample size of between 80 to 100 respondents. For the aforesaid reasons, the researcher agreeing with the goal of the proposed study decided upon an average of 100 respondents for every stratum; indeed, Sudman (1976) proposed the same. Stratifying the study based on the geographical market is both methodologically sound as well as practical.

Geographically speaking, the proposed four LGAs/LCDAs comprised different commercial markets with different infrastructural developments, customer populations, as well as digital readiness attributes. By stratifying along these lines, the study

controlled for unobserved geographical heterogeneity while enabling within- and between-stratum analysis.

This approach also aligns with Stehman and Wagner (2024), who emphasised that stratification should be based on covariates expected to correlate with the outcome variable in this case, digital technology adoption and financial performance measured by return on investment (ROI). Therefore, sample size for the study was adjusted to 400. The SME sector is an example of a broad dataset and carrying out a survey using stratified sampling on four major markets hosting different types of retail business will give more advocacy and representation of SME (Rahman et al, 2022; Ilyasu & Etikan, 2021; Nanjundeswaraswamy & Divakar, 2021; Singh & Masuku, 2014).

### **Materials/Instrumentation of Research Tools**

As there were estimated to be approximately 8,000 SME in the sampling area and there were approximately 2,000 SME in each of the four markets surveyed, proportional allocation indicated that there were to be about 100 SME in each stratum in this study. In order to satisfy minimum requirements for sampling in the sub-group as recommended by Sudman (1976), the target population was rounded from 387 to 400. Using the formula for stratified sampling, the research can estimate the sample size to consist of 80-100 respondents.

Stratification would focus on the geographical markets, which is also methodologically appropriate as well as administratively appropriate. Geographically, the proposed four LGAs/LCDAs also consist of various markets, which have varying infrastructural developments, customer bases, as well as varying digital readiness characteristics.

**Section A:** Demographic and Business Profile : This section collected data on respondent characteristics (gender, age, educational background, civil status) and business attributes including retail sector classification (from ten predefined categories) and employee count for SME size determination according to SMEDAN (2021) guidelines.

**Section B:** Digital Technology Adoption and Perceptions: The core of the survey consisted of 25 Likert-scale items using a five-point response format (1 = Strongly Disagree to 5 = Strongly Agree). These items were evenly distributed across the five technology constructs, with each construct measured by five items. In addition to perceptual measures, this section included behavioural metrics for each technology, such as frequency of use and percentage of transactions conducted digitally, to capture usage intensity beyond mere adoption.

**Section C:** Financial Performance Data: A structured template required respondents to provide annual revenue, expenses, and technology-specific investment costs for the years 2019 to 2023. This template, presented as Table 3.2, enabled the calculation of Return on Investment (ROI) using the standard formula:  $ROI = (\text{Net Profit} / \text{Cost of Investment}) \times 100\%$ .

**Table 3.2***Financial Data Collection Template*

| YEAR | TOTAL<br>REVENUE (₦) | EXPENSES<br>(₦) | NET<br>PROFIT<br>(₦) | TOTAL COST OF<br>INVESTMENT (₦) | ROI<br>(%) |
|------|----------------------|-----------------|----------------------|---------------------------------|------------|
| 2019 |                      |                 |                      |                                 |            |
| 2020 |                      |                 |                      |                                 |            |
| 2021 |                      |                 |                      |                                 |            |
| 2022 |                      |                 |                      |                                 |            |
| 2023 |                      |                 |                      |                                 |            |

Source: Researcher's Field Instrument, 2024.

For better quality and reduced response biases, the instrument involved standard design elements such as the use of simple language which could be understood by the SME managers with basic education, the absence of double-barreled or leading questions, the incorporation of neutral phrasing to reduce the effect of social desirability biasing, and the design involving logical flow or a systematic progression starting from very broad to specific questions. The pilot test involving 50 SME managers at Oshodi Isolo attested to the instrument being understandable and appropriate.

### **Operationalisation of Study Constructs**

The variables were operationalised using a methodology where both perceptual and behavioural measures were deployed. The methodology overcame the issue of treating the adoption of digitisation as a binary variable. The full framework for operationalisation is shown in Table 3.3.

**Table 3.3(a)***Operationalisation of Study Variables – Perceptual Measures*

| Construct             | Perceptual Measures (Sample Items)   | Data Source |
|-----------------------|--|-------------|
| Mobile Banking (MB)   | I frequently use mobile banking for SME transactions.<br>Mobile banking increased financial transparency.                  | Survey      |
| Internet Banking (IB) | Financial performance improved after internet banking implementation.<br>Internet banking enhanced reporting capabilities. | Survey      |
| E-commerce (EC)       | E-commerce influenced access to new markets.<br>Positive customer behavior changes occurred.                               | Survey      |
| POS System (POS)      | POS systems improved transaction speed/accuracy.<br>Security measures protected financial data.                            | Survey      |
| P2P System (P2P)      | I am satisfied with P2P platform accessibility.<br>P2P transactions impacted financial performance.                        | Survey      |
| Financial Performance | Financial performance improved after implementation.   | Survey      |

Source: Researcher's Field Survey (2024).

**Table 3.3(b)***Operationalisation of Study Variables – Behavioural/Usage and Performance Metrics*

| Construct             | Behavioral/Usage Metrics   | Financial Performance Metric | Data Source       |
|-----------------------|--|------------------------------|-------------------|
| Mobile Banking (MB)   | <ul style="list-style-type: none"> <li>• Monthly transaction volume/value</li> <li>• Feature utilisation rate (%)</li> <li>• % of total transactions via mobile banking</li> </ul> | —                            | Financial records |
| Internet Banking (IB) | <ul style="list-style-type: none"> <li>• Number of automated reports</li> <li>• Estimated time/cost savings</li> <li>• Online transaction volume proportion</li> </ul>             | —                            | Financial records |
| E-commerce (EC)       | <ul style="list-style-type: none"> <li>• Customer acquisition cost (CAC)</li> <li>• % repeat vs. new digital customers</li> <li>• Online sales as % of total revenue</li> </ul>    | —                            | Financial records |
| POS System (POS)      | <ul style="list-style-type: none"> <li>• Inventory count speed reduction</li> <li>• Transaction success rate (%)</li> <li>• % sales volume through POS</li> </ul>                  | —                            | Financial records |

| Construct             | Behavioral/Usage Metrics  | Financial Performance Metric   | Data Source       |
|-----------------------|---|--|-------------------|
| P2P System (P2P)      | <ul style="list-style-type: none"> <li>• Average settlement time</li> <li>• Unique trading partners count</li> <li>• P2P transaction volume proportion</li> </ul> | —  | Financial records |
| Financial Performance | —   | $\text{ROI} = (\text{Net Profit} / \text{Cost of Investment}) \times 100\%$ $\text{Net Profit} = \text{Revenue} - \text{Expenses}$ | Financial records |

Source: Researcher's Field Survey (2024).

This twofold approach makes it possible for the research to use digitalisation as a multidimensional variable, as opposed to a simple adoption versus non-adoption uptake. The scale was thoroughly tested for validity and reliability within the Lagos retail SME environment. The results of the tests will be presented in the succeeding sections.

### **Construct Validity Assessment**

To establish the confirmation of the five-factor model (MB, IB, EC, POS, P2P), CFA was performed using the IBM SPSS 28 software. Using Maximum Likelihood Estimation methods, fit indices were obtained that were well above thresholds set by Hu & Bentler (1999):  $\chi^2/df = 2.41$ , CFI = 0.937, TLI = 0.929, RMSEA = 0.056, SRMR = 0.043. This indicates that all 25 items were correctly loading into their five factors as designed by various studies. The convergent validity table is rendered below:

**Table 3.4***Construct Reliability and Convergent Validity*

| Construct        | Number of Items | Composite Reliability (CR) | Average Variance Extracted (AVE) |
|------------------|-----------------|----------------------------|----------------------------------|
| Mobile Banking   | 5               | 0.88                       | 0.62                             |
| Internet Banking | 5               | 0.87                       | 0.60                             |
| E-commerce       | 5               | 0.85                       | 0.55                             |
| POS System       | 5               | 0.82                       | 0.51                             |
| P2P System       | 5               | 0.80                       | 0.50                             |

Source: IBM SPSS

Convergent validity was established with all constructs demonstrating Average Variance Extracted (AVE) values exceeding 0.50 and Composite Reliability (CR) values exceeding 0.70 (**Table 3.4**), indicating that items within each construct share substantial common variance. The next table depicted discriminant validity assessment.

**Table 3.5***Discriminant Validity Assessment*

|            | MB          | IB          | EC          | POS         | P2P         |
|------------|-------------|-------------|-------------|-------------|-------------|
| <b>MB</b>  | <b>0.79</b> |             |             |             |             |
| <b>IB</b>  | 0.65        | <b>0.77</b> |             |             |             |
| <b>EC</b>  | 0.19        | 0.19        | <b>0.74</b> |             |             |
| <b>POS</b> | 0.15        | 0.15        | -0.04       | <b>0.71</b> |             |
| <b>P2P</b> | 0.06        | 0.06        | 0.39        | 0.46        | <b>0.71</b> |

---

Source: IBM SPSS

Discriminant validity was confirmed using the Fornell-Larcker criterion, where the square root of AVE for each construct (diagonal values in **Table 3.5**) exceeded its correlations with other constructs, confirming that each technology is measured as a distinct dimension. Next analysis was the evidence of criterion validity.

**Table 3.6***Criterion Validity: Correlations with ROI*

| Construct        | r    | p (1-tailed) | Strength of Association |
|------------------|------|--------------|-------------------------|
| Mobile Banking   | .655 | < .001       | Strong                  |
| Internet Banking | .655 | < .001       | Strong                  |
| E-commerce       | .414 | < .001       | Moderate                |
| POS System       | .104 | .026         | Weak                    |
| P2P System       | .118 | .015         | Weak                    |

Source: IBM SPSS

Criterion validity was evaluated by examining Pearson correlations between perceptual construct scores and the objective financial performance criterion (ROI). As shown in **Table 3.6**, all five constructs demonstrated statistically significant positive correlations with financial performance measured via ROI ( $p < .05$ , one-tailed), providing evidence that perceptual measures correspond meaningfully with financial outcomes.

After this was the correlation matrix table stating inter-constructs variables.

**Table 3.7***Inter-Construct Correlation Matrix*

| Variable | 1     | 2     | 3     | 4     | 5     | 6     |
|----------|-------|-------|-------|-------|-------|-------|
| 1. ROI   | 1.000 |       |       |       |       |       |
| 2. MB    | .655  | 1.000 |       |       |       |       |
| 3. IB    | .655  | 1.000 | 1.000 |       |       |       |
| 4. EC    | .414  | .190  | .190  | 1.000 |       |       |
| 5. POS   | .104  | .148  | .148  | -.035 | 1.000 |       |
| 6. P2P   | .118  | .058  | .058  | .394  | .464  | 1.000 |

Source: IBM SPSS

**Table 3.7** presented the complete inter-construct correlation matrix, showing relationships among all study variables. The pattern of correlations supported the discriminant validity findings while demonstrating meaningful relationships between constructs.

**Table 3.8***Descriptive Statistics for Criterion Variables*

| Variable | M     | SD    | Skewness | Kurtosis |
|----------|-------|-------|----------|----------|
| ROI      | 18.42 | 12.37 | 0.89     | 0.42     |
| MB       | 3.89  | 0.76  | -0.32    | 0.21     |
| IB       | 3.91  | 0.73  | -0.28    | 0.18     |
| EC       | 3.45  | 0.82  | -0.15    | -0.35    |
| POS      | 3.12  | 0.91  | 0.04     | -0.42    |
| P2P      | 2.98  | 0.88  | 0.11     | -0.38    |

Source: IBM SPSS

**Table 3.8** showed reasonable distributional properties, with means ranging from 2.98 (P2P) to 3.91 (IB) on the 5-point scale, and ROI averaging 18.42% with a standard deviation of 12.37%.

### Addressing Potential Measurement Error

To address potential measurement error from self-reported data, multiple procedural and statistical remedies were employed. Procedurally, perceptual measures were separated from financial data collection in the survey instrument to

reduce common method bias (Podsakoff et al., 2003). Statistically, the validation protocol for financial data (Section 3.6) served as a corrective mechanism. Furthermore, the use of both perceptual and behavioural metrics for each digital technology construct provided internal cross-validation within the measurement model. This system within the quantitative paradigm strengthened confidence that observed relationships reflect substantive associations rather than measurement artefacts.

### **Financial Data Validation Protocol**

In an attempt to curb self-reporting biases in financial information, a rigorous four-step validation process was carried out:

1. **Documentary Verification:** The participants were asked to submit documentary evidence to support their financial information. For the 295 SME (85.5%) who submitted double documentation (ledgers and bank statements), there was strong correlation between self-reported and verified information for ROI ( $r = .89, p < .001$ ). The other 50 participants submitted at least a bank statement.
2. **Internal Consistency Checks:** Trend analysis for cases with single documentary evidence used logical progression to examine revenue/profit trends, while ratio analysis used benchmarking with established industry averages for Nigerian retail SME.
3. **Data Reconciliation:** Clarifications were sought for any discrepancies identified. There were eighteen cases (5.2% of the original sample) with

unresolved inconsistencies and these retail SMEs were excluded from analysis, resulting in a final analytical sample of 345 SME.

### **Conceptual and Analytical Integration Framework**

One of the major methodological innovations in this research was the integration of perceptual survey data with objective financial data. This section described the conceptual underpinning that tied these two different types of data together. The integration of these two types of data is facilitated by an analytical framework that was based on the theoretical framework of this research, the Unified Theory of Acceptance and Use of Technology (UTAUT). The analytical framework consists of three stages.

#### **Stage 1: Establishing the Perceptual Driver-Performance Link (UTAUT Validation).**

The initial stage of analysis involved using the perceptual Likert scale results as primary evidence of the applicability of the UTAUT model within the Lagos SME context. Descriptive statistics and factor analysis (verifying the five distinct constructs of technology) show how SME managers perceive digital technologies. High mean results on questions such as Performance Expectancy (e.g., Mobile banking helped improve financial performance) and Effort Expectancy (e.g., Satisfaction with platform usability) form the motivational and attitude layer of analysis, which is essential to answering why these technologies are adopted or why managers are using these technologies because they are perceived as beneficial or easy to use.

This stage is a necessary but insufficient condition to measure financial impact because perceptions may not necessarily lead to actual beneficial financial outcomes or may be overly positive.

**Stage 2: Quantifying the Objective Outcome (Financial Calibration).**

The second, parallel stage creates the rigour for the dependent variable. The five-year financial data, validated through the use of the protocol in Section 3.6, shifts the research from subjective improvement to an objective, quantified measure: Return on Investment (ROI). The calculation of the ROI for the period of digital technology adoption (2019-2023) creates the performance outcome layer. This stage identified the *what* of performance and the tangible financial result to compare perceptions to.

**Stage 3: Synthesising Perception and Outcome (The Integrated Regression Model).**

The third and critical phase of the process is the synthesis, which is accomplished via the two-step regression method. The simple linear regression models served as the connector, establishing a direct relationship between each perceptual construct (e.g., the collective Mobile banking adoption score) and the financial performance measured via ROI. If there is a positive association, it is an indication that positive perceptions are indeed linked to positive financial results.

Nevertheless, the final fusion takes place in the multiple linear regression (MLR) model. In this phase, the collective perceptual scores of all five technologies are simultaneously used as predictors for the single financial performance (ROI). Beta values derived expressed as standardised coefficients, quantify the specific financial return for each perceptual driver, while accounting for the presence of all other variables. For example, a significant  $\beta$ -value for Internet Banking will indicate that a one-unit increase in the perception and usage of IB is linked to a specific, measurable increase in ROI, while controlling for all other digital perceptions.

This model essentially quantifies the financial flexibility of the UTAUT constructs (performance expectancy, and so on), which are inherently measured on a qualitative intensity scale. The model addressed the potential disconnection between perception and reality. It did not assume that perceptions are entirely accurate but rather attempted to determine the relationship between the two with empirical evidence.

The lack of a relationship is also important, showing the disconnection between value and actual monetary return, more so aligning with theoretical implications. Thus, the integration is not just one of methodological expediency but also conceptual necessity if one wishes to move beyond the study of adoption into the realm of *effect* studies, creating a model that can be replicated to determine the actual monetary value of technology perceptions in the business world.

### **Study Procedures and Ethical Considerations**

This research was carried out with the highest international standards regarding ethics in social sciences research. The UNICAF University Research Ethics Committee (UREC) approval was obtained on the 16th of April 2024, prior to any data collection.

**Participant Safeguards:** The three core principles that were followed during interactions with participants were:

1. **Informed Consent:** The participants were provided with an information sheet that explained, in simple language, the purpose, procedures, potential harms, and benefits, as well as their rights, prior to providing consent.
2. **Confidentiality and Anonymity:** The research did not ask participants for personal identifiable information, such as names, business registration numbers, or market stall

identifiers. The data was kept anonymous during collection and storage, as required by the Data Protection Act (2023) in Nigeria.

3. Minimisation of Burden and Harm: Survey administration was scheduled during mutually agreed, off-peak business hours (avoiding 11:00 AM - 2:00 PM peak periods) to minimise disruption. The questionnaire was designed for completion within 25 minutes to respect participants' time.

### **Data Management**

All electronic data were encrypted and stored on password-protected devices. Hard copies were kept in a locked cabinet accessible only to the principal researcher. The data gathered in this study would be kept for a certain period before deletion. There was a special financial data validation protocol that was used in this study, which had special measures for protecting sensitive financial data during the verification process.

### **Fieldwork Integrity**

The access of SMEs was made easier by partnering with SME trade associations and market leaders in Lagos State. This helped in maintaining gatekeeper engagement without resorting to unofficial payment and incentives. This helped in maintaining research integrity while allowing access to the target population.

### **Data Collection and Analysis**

The data analysis was carried out using IBM SPSS Statistics version 28. The analysis was carried in three stages.

## **Data Preparation and Descriptive Analysis**

Once data collection was completed, all responses to the questionnaire, as well as financial information, were coded and captured using the software. The first step comprised descriptive statistics, which were used to describe the population. Frequencies and percentages were used to establish values for each of the demographic and business profile variables (for example, gender of owners, type of SME, size of SME). For primary research variables, measures of central tendency, that is, mean and median, as well as measures of dispersion, that is, standard deviation and range, were used. This was a critical step in describing data distribution for the aggregate perception measures of the five digital technology factors and the dependent variable, sales revenue, costs and expenses, deduced profit and the calculation of the return on investment (ROI). Inferential and Predictive Analysis:

A Two-Stage Regression Approach Testing the hypotheses of the study, a two-stage regression analysis strategy was followed from univariate to multivariate assessment.

Stage 1: Simple Linear Regression Initial analysis involved running five separate Simple Linear Regression models.

Each model in the study, was designed to examine the individual, unadjusted relationship between one digital technology construct, such as the Mobile Banking score, and the SME's ROI. This stage was a preliminary diagnostic, aiming at testing for significant bivariate relationships as well as testing the initial assumptions of linear relationships.

Stage 2: Multiple Linear Regression (MLR) Measurement and Preparation of Independent Variables.

The independent variables for digital technology adoption were operationalised using the perceptual measures as identified in Table 3.3. For each of the five digital technologies, the construct score was calculated using the five Likert scale items measuring managers' perceptions of frequency, impact, and satisfaction. For each SME respondent, the responses to the five Likert items for each technology were averaged to create a mean perceptual score, resulting in five continuous predictor variables (MB\_Score, IB\_Score, EC\_Score, POS\_Score, and P2P\_Score). These variables, measured on a 1-5 scale, represent the intensity of perceived adoption and value derived from each digital technology.

The behavioural metrics outlined in Table 3.3 (such as transaction volume, percentage of digital transactions, and feature utilisation rates) were collected but analysed separately for descriptive purposes and validity checks. Although these behavioural measures offered important contextual validation, the perceptual scores were used as the primary predictors in the regression analysis to ensure consistency in the measurements and to avoid the methodological complexity of integrating ordinal Likert scales with ratio-scale behavioral metrics. The dependent variable, Return on Investment (ROI), was computed as follows:

$$\text{ROI} = (\text{Net Profit} / \text{Cost of Digital Technology Investment}) * 100\%$$
 using the validated five-year financial data (2019-2023).

The primary predictive analysis was Multiple Linear Regression. This method estimated the collective and unique contribution of all five constructs of digital technology to financial performance, controlling for all variances or intercorrelations among the constructs. The comprehensive model of MLR tested, specified as, is: Field (2018).

$ROI_i = \beta_0 + \beta_1 (MB_i) + \beta_2 (IB_i) + \beta_3 (EC_i) + \beta_4 (POS_i) + \beta_5 (P2P_i) + \epsilon_i$  where: o  $ROI_i$  is the five-year average Return on Investment for SME

i. o  $MB_i, IB_i, EC_i, POS_i, P2P_i$  are the composite perceptual and usage intensity scores for Mobile Banking, Internet Banking, E-commerce, POS System, and P2P System, respectively, for SME

i. o  $\beta_0$  is the intercept, representing the expected ROI when all predictor scores are zero. o  $\beta_1$  to  $\beta_5$  are the standardized regression coefficients for each digital technology. The significance ( $p < .05$ ), direction (positive/negative), and magnitude of these coefficients were used to test hypotheses H1 through H5, indicating each technology's unique association with ROI while holding others constant. o  $\epsilon_i$  is the error term

### **Model Diagnostics and Validation**

Prior to interpreting the final MLR model, key statistical assumptions were tested. Multicollinearity was assessed using Variance Inflation Factors (VIF), with values below 10 considered acceptable (Hair et al., 2019). Analyses of residuals were conducted to check assumptions of linearity, homoscedasticity, and normality. The model's overall goodness-of-fit was evaluated using the adjusted  $R^2$  statistic. Furthermore, the sensitivity analysis described in the protocol section, comparing results from the fully validated dataset with those from only externally verified financial records, served as an additional validation of the analysis's robustness.

## Limitations of the Study

While this study was designed with methodological rigour, several limitations must be acknowledged, as they define the boundaries of the findings and suggest directions for future research.

1. **Cross-Sectional Design and Temporal Dynamics:** The research uses a cross-sectional design that makes observations at a single point in time. As a result of this, the paper is not able to show causality and the long-term use of digital technology as well as the financial implications of this use over time. This type of research design is used as a result of time and budget constraints as a means of being efficient in taking a snapshot of the situation
2. **Constraints of Validated Self-Reported Financial Data:** While the four-step validation protocol enhanced data credibility, verified self-reports do not equate to professionally audited financial statements. The 85.5% documentary verification rate provides substantial confidence, but potential residual inaccuracies mean findings should be interpreted as indicating strong relationships rather than providing precise financial coefficients. This limitation is inherent to SME research in emerging economies.
3. **Geographical Generalisability:** The findings can be generalised to the retail sector of SME operating in the Lagos metropolitan region. Although Lagos is identified as a major business center, it cannot be regarded as completely representative of the country when it comes to the availability of infrastructure for the growth of SME. This holds good for rural regions and geopolitical zones as well therefore such limitations are not to say that they undermine the results of this study but place them in proper context. They identify directions for further research and can be explored through other

research techniques involving research interviews, and comparative research undertaken across different geographic locations and economic settings.

## **Summary**

This chapter has introduced the methodological approach to study the role of the Unified Theory of Acceptance and Use of Technology (UTAUT) in the adoption of digital technology in retail SME, focusing on financial performance measured through return on investment (ROI) as the criterion variable. A combination of the positive aspects of the use of the Likert scale for perception as well as five-year financial data validation to achieve both rigour and practicality. The two steps of the regression method (Simple and Multiple Linear Regression) ensured the estimated variables were the most significant, and cross-validation was used to improve the validity of the financial variables. Nevertheless, despite such strengths, the study also recognises certain weaknesses, such as geographical constraints imposed by Lagos-based data, possible biases arising from self-reporting, and the post-pandemic economic setting under which findings are drawn. To overcome this, financial data was validated with bank statements.

Biases arising because of ethical requirements, such as gatekeepers' reticence, were overcome with the help of partnerships with associations for SME and anonymous participation mechanisms

Going forward, these methodological advances, theoretical associations, statistical validations, and limitations will enhance credibility with the research findings as well as results of the data analysis which were carried out in the next chapter. All these while laying a foundation for future research. By combining the Unified Theory for the Acceptance and Usage of technology (UTAUT) constructs with financial

performance measures, this research has provided a model that may be replicated in assessing technology-driven financial performance within SME research, hence providing valuable insights for policymakers, business owners, and researchers alike. The next chapter outlined the empirical results, building on this well-constructed methodological approach.

## CHAPTER 4: RESULTS

Data collected through the survey questionnaire are analysed in this chapter. The questionnaire contained retail SME manager's opinions on the pecuniary effect of adoption of technology in their retail business. The second part of the questionnaire contained financial data collated from retail SME in relation to financial performance. SME managers provided the financial figures requested by the researcher in the second segment of the questionnaire.

The chapter also reported the inferential analysis. The results will help determine how digitalisation impacts the financial results of retail SME in Nigeria from 2019 to 2023 and provide information which will be useful for academic research, policy development and implementation in the SME sector of Nigeria.

Digital technologies and innovation enable SMEs to use computer devices and resources for transaction processing. Their adoption and use accelerate SME's competitiveness locally and globally (Khrais & Alghamdi, 2022; Ivančić et al., 2019). For the reasons mentioned above, data was collected through a survey in four markets in Lagos, Nigeria, as discussed in Chapter 3, to determine the effect the adoption of digital technologies and services have made on retail SMEs' financial performance from 2019 to 2023, which relates to SME business growth in uncertain economic times.

An empirical study by Wang et al. (2020) noted that digital technologies were innovated to promote operational efficiency. These would enable SMEs maximise financial performance because there is a relationship between adopting digital technology and financial performance. Due to rapid digitalisation, the Nigerian business environment provides a good research ground for studies in innovation and how it enables positive growth in businesses. Many business start-ups have begun

operations in Nigeria, and it is essential to find out the impact these new technologies are making on the financial performance of the retail SME sector. Lagos state experiences the establishment of new enterprises which have also increased the adoption of digital technologies.

Furthermore, the researcher discovered a paucity of literature and research on digital technology's contribution to retail SME financial performance in Nigeria. As Lagos is a strategic business centre for the whole of West Africa, it is good field for research on financial performance in retail SMEs.

This study investigated the influence of technology on the financial growth and ROI of retail SMEs, driven by the need to comprehend the impact of digital technology on SME performance. This study is important as it evaluated how return on investment (ROI), the chosen measure of financial performance (for this study) from digital technologies affects the business outcomes of retail SME in Lagos, Nigeria. The uniqueness of the research is that it highlights a distinctive approach which involves examining SME's return on investment (ROI). Based on the research results, data-driven conclusions will be drawn. The study also combined interdisciplinary perspectives of business, technology, and innovation insights.

Capacity-building recommendations that offer actionable advice for SME growth can be deduced from the data. These findings will inform policy to build infrastructure and support for retail SME in Lagos and Nigeria as a nation.

This study's innovation lies in its practical approach to understanding digital technology's return on investment (ROI) for retail SME in Nigeria. This will provide a better appreciation of cogent insights for businesses, policymakers, and researchers. The chapter is organised into descriptive and inferential analysis, hypothesis testing, and summary of findings.

## **Trustworthiness of Data**

In quantitative research, trustworthiness is the basis upon which the validity, reliability, and overall academic integrity on which the research rest. It goes beyond data gathering to include the entire gamut of research architecture, from conceptualisation to analytical interpretation. The research was architected with a multi-strategy framework to ensure its credibility, objectivity, confirmability, and transparency. The four principles explained in the following paragraphs, ensured not only that the research was robust, credible, and replicable but also that it was an authentic representation of the empirical reality in the retail SME sector in Lagos.

### **1. Objectivity**

Objectivity requires that the entire research process be protected from the subjective intrusion of the researcher, such that it is derived entirely from the data (Podsakoff et al., 2003).. The research institutionalised objectivity in several ways:

- **Neutral Instrument Design and Phrasing:** Leading questions were avoided in the design of the questionnaire so that participants would not be steered towards designated responses. The questions were arranged to follow an organised mode which was from demographic information to perceptions of SME managers on the five digital technologies being examined. Thereafter the financial data was collated for the last five years of business operations. This sequence was crafted to reduce priming effects and enhance response accuracy (Podsakoff et al., 2003).
- **Systematic and Representative Sampling:** Apart from making the survey convenient for participants, the study employed a stratified random sampling technique to carry out the research work. The stratification by four

key LGAs/LCDAs was not assumed but statistically justified by a pilot study with the calculation of analysis of variance (ANOVA) showing significant inter-stratum differences in digital adoption and revenue ( $p < .05$ ). This method made sure that all viable commercial subgroups within the population had a known, non-zero chance of selection, thereby reducing selection bias and improving the representativeness of the sample (Kish, 1965; Cochran, 1977).

- **Separation of Measurement to Avoid Common Method Variance:** The research separated the collection of financial data from the perceptual data in the survey to reduce the occurrence of covariance which could artificially arise when predictors and criteria are measured from the same source at the same time, therefore there was physical and temporal separation of the collection of perceptual (Likert-scale) data from objective financial data within the survey instrument. This procedural remedy is an established practice for mitigating common method bias, thereby strengthening the validity of the inferred relationships between adoption constructs and financial performance (Podsakoff et al., 2003).
- **Audit Trail Verification Through Documenting Processes:** From the initial power analysis (Faul et al., 2009) to the final regression diagnostics, every decision was guided by a pre-established protocol and documented. This was done to make sure that analytical choices were motivated by principles and empirical diagnostics (e.g., Variance Inflation Factor tests for multicollinearity) rather than researcher attitude and bias, thereby upholding analytical neutrality. To this end an audit trail was established in the conduct of the research to ensure that full and proper conduct of research protocol was effected.

## 2. Credibility

Credibility relates to the genuineness and accuracy of the findings in the opinion of those who participated in the research and the environment in which it was conducted (Kish, 1965; Cochran, 1977). This study was driven by credibility through validation, and making sure that data quality was maintained.

- The study's fundamental accuracy stemmed from its explanatory quantitative design that integrated perceptual survey data with verified financial records. This approach functioned to ensure that the convergence of subjective manager perceptions with objective financial performance arrived at through ROI calculations provided a more comprehensive and convincing account of digital technology's effect than either method could have achieved alone. It therefore addressed the limitation of relying on self-reported outcomes, which are open to optimism or social desirability bias, by establishing them on verified financial statements (Dawadi et al., 2021).
- Rigorous Financial Data Validation Process: This was carried out using a four-step process made up of document verification, internal consistency checks, ratio analysis, and reconciliation of financial statements which are far superior to simple self-. The high documentary verification rate (85.5%) and the strong correlation between self-reported and documented ROI ( $r = .89$ ,  $p < .001$ ) provide empirical evidence for the accuracy of the financial data. This system is a forward-looking and yet empirical response to the issues relating to researching SMEs in data-scarce environments like Lagos (George et al., 2020).

- **High Response Rate and Statistical Power Assurance:** The achieved response rate of 86.25% (345 out of 400) is high for field research with SMEs and is well within the 80-90% range considered favourable for academic research, thereby reducing the impact from non-response bias (Laoutaris, 2018). Furthermore, the final sample size (N=345) was determined by a proper application of the Yamane (1967) formula, adjusted to meet stratified sampling requirements ( $\geq 100$  per stratum as per Sudman, 1976), and, most importantly it far exceeded the minimum sample of 92 determined by an *a priori* statistical power analysis. This ensures the study had sufficient power ( $1-\beta = 0.80$ ) to detect a medium effect size, reducing the risk of Type II errors and sustaining a credible stance to both significant and non-significant results (Faul et al., 2009).
- **Pilot Study for Instrument and Procedural Refinement:** The execution of a pilot study for this research in Oshodi-Isolo LGA of Lagos State, Nigeria, with a sample size of 50 respondents, was used as a feasibility study. Before the commencement of this research, a feasibility study was conducted and identified that SME managers in Nigeria are not willing to open up about their financial information. This led to the formulation of strategies that would be proactive in addressing this issue in the main data collection process. The pilot ensured the instrument was understandable and the procedures were easy to use in the peculiar Lagos, Nigeria environment (Agboola, 2021).

### 3. Confirmability: Ensuring Results are Data-Driven

Confirmability required that the findings, interpretations, and conclusions are established in the data and not affected by researcher bias relating to the study. This was achieved through system audit of the study procedures, keeping to the decided research methods, and reflexivity on the data analysis (Hair et al., 2019).

- **Analysis That Can Be Verified:** The analysis followed an open and clear progression. First, descriptive statistics and psychometric tests (CFA, reliability, validity checks) established the quality of the measurement model. The hypothesis testing employed a two-stage regression approach, allowing for the clear observation of bivariate relationships before introducing the complexity of a multivariate model. The Multiple Linear Regression (MLR) model, specified with financial performance measured via ROI as a function of the five technology scores, was subjected to full diagnostic testing (e.g., VIF for multicollinearity, residual analysis for homoscedasticity and normality). This open process allows any other researcher to follow the logical and statistical journey from raw data to result.
- **Empirical Establishment of Construct Validity and Reliability:** The study did not assume its measurement instrument was valid. Instead, it empirically confirmed it. Confirmatory Factor Analysis (CFA) validated the postulated five-factor structure with excellent fit indices (CFI = 0.937, RMSEA = 0.056). Composite Reliability scores all exceeded 0.80, and Average Variance Extracted (AVE) values surpassed the 0.50 threshold, establishing convergent validity. Discriminant validity was confirmed using the Fornell-Larcker criterion. This rigorous testing confirmed that the constructs were measured

accurately, ensuring that the following regression analysis is based on sound variables (Hair et al., 2019).

- **Compliance with Nigerian Standards:** To maintain confirmability, the link between data and participant was intentionally severed through anonymisation at the point of collection. Data was stored in compliance with the Nigeria Data Protection Act (2023), using encryption and physical security. This ensures confidentiality of participants while at the same time maintaining the integrity of the dataset that informs all conclusions.
- **Acknowledgement of Limitations:** One of the aspects of confirmability is the researcher's recognition of the limitations of the research conducted. The researcher's recognition of limitations, including the cross-sectional design, the use of validated self-reports rather than audited reports, and the fact that the research was conducted in Lagos, creating limitations in terms of geography, created an environment where all processes were clear. It prevented overgeneralisation and revealed that in line with critical challenges, an understanding that the findings were dependent on specific methodological choices exist.

#### **4. Transparency: Enabling Evaluation and Replication**

Transparency according to Knottnerus and Tugwell (2016) ensured that the research process was fully disclosed, allowing a review to evaluate its rigour and potentially replicate it.

- Chapter 3 detailed all procedures and processes. It expounded clearly and stated the research philosophy (explanatory quantitative), the theoretical framework (UTAUT), all sampling formulas and calculations (Yamane, power

analysis), the stratification basis and framework (Table 3.1), and the complete operationalisation of variables (Tables 3.3a & 3.3b). This explanation fulfilled the principle that a study should be described with sufficient clarity to be replicated (Knottnerus & Tugwell, 2016).

- **Adherence to Ethical Protocols:** The study was conducted with formal approval from the UNICAF University Research Ethics Committee (UREC). The processes for obtaining informed consent, ensuring voluntary participation, determining times for interviews, and engaging ethically with gatekeepers are all clearly documented. This transparency built trust with the SME managers and underscored the ethical foundation of the research.
- **Reporting of Analysis and Results:** The reporting in Chapter 4 will adhere to established statistical reporting standards, including relevant coefficients, p-values, confidence intervals, and effect sizes for all significant tests. The presentation of both the correlation matrix (Table 3.7) and the regression results allowed readers and academicians and peer reviewers to fully evaluate the strength and nature of the relationships discovered.
- **Replicability through Instrument and Protocol Sharing:** As implied by the detailed methodology, the structured questionnaire, financial data template, and validation protocol are available in a manner consistent with ethical guidelines. This, along with the detailed procedural description, provides future researchers with the necessary tools and framework to conduct a similar study, thereby contributing to academic knowledge in the field of SME studies (Laoutaris, 2018).

By meticulously addressing these four pillars, the study demonstrated that its findings were not merely artefacts of its design or analysis but are a trustworthy representation of the relationship between digital technology adoption and financial performance among retail SMEs in Lagos, Nigeria.

### **Assumptions made in the study**

It is assumed that financial data has a linear characteristic. Such data from financial transactions related to digital technology can be considered an independent observation, meeting the assumption of independence. There is the assumption of consistency in variance of financial data drawn from the adoption of digital technology meeting the assumption of homoscedasticity (Binder, 1959; Havlicek & Peterson, 1976; Schober et al., 2018). This financial data on digital transactions can be normally distributed; if this assumption is violated, it can be transformed to meet the assumption of normality or resort to non-parametric tests.

Measurement errors were minimised as data was collected through questionnaires and recorded on automated systems, minimising measurement errors (Binder, 1959; Havlicek & Peterson, 1976; Schober et al., 2018). A large sample size of digital transactions can provide reliable estimates for the study. In satisfying these conditions, inferential tests were carried out to find the correlation between the revenues earned from digital technology and the financial performance of the retail SMEs. These findings can be used to develop business strategies, improve the customer experience, and increase the use of digital technology (Binder, 1959; Havlicek & Peterson, 1976; Schober et al., 2018).

Return on investment (ROI) is a numerical value, making it quantifiable and suitable for statistical analysis. This study's return on investment (ROI) was rendered

as continuous data. It could be transformed to meet the assumption of normality if necessary. Financial performance measured via ROI takes on a range of values without being restricted by ceiling or floor effects. It can be sensitive to changes in independent variables, allowing for meaningful analysis. It is also a relevant and vital metric for SMEs financial reporting, making it a suitable dependent variable for analysis (Sugiyanto & Kustiawan, 2024; Wang et al., 2022).

### **Limitations of the study**

Although correlation helps in identifying the relationships between variables, it does not have the capability to determine the causal relationships. Regression analysis in this study focused on the relationship between revenue and the predictor variables and discussed the effect of the technology predictors on the Return on Investment (ROI). Regression analysis helped in gaining a deeper understanding of the impact of the independent variables on financial performance measured via return on investment (ROI). The results of the regression analysis elaborated on the relationships between financial performance measured via ROI and the predictor variables, which will help in understanding how technology affect the returns on investment.

A limitation of statistical analysis methodology might be the production of biased estimates, leading to incorrect predictions and conclusions. It may lead to false positives or false negatives. It may reduce model reliability or lead to low generalisability. There may be a failure to detect significant effects. Mitigation strategies against this were data pre-processing and visualisation and the use of robust standard errors and inference (Bangdiawala, 2018; Fabian et al., 2024; Marill, 2004; Zou et al., 2003).

The study had a limited scope as it only focused on specific aspects of digital technologies; financial performance measured by return on investment ROI for each digital technology used in retail SME in Lagos, Nigeria. ROI only considered financial returns, neglecting other benefits like improved customer satisfaction or competitiveness (Bangdiawala, 2018; Fabian et al., 2024; Marill, 2004; Zou et al., 2003).

Return on Investment (ROI) emphasised short-term gains, potentially overlooking long-term strategic benefits. ROI struggles to capture intangible benefits like brand reputation or employee skills. Some digital technology benefits, like improved decision-making, are hard to quantify. Return on Investment (ROI) does not consider risk factors like data breaches or technological obsolescence. Return on Investment (ROI) focuses on positive returns, potentially overlooking potential negative consequences.

Economic conditions, government regulations, or infrastructure may affect interpretation of results as the focus is on Lagos, Nigeria and also not considering qualitative insights might provide a different picture of the analysis (Etienne Fabian et al., 2024).

### **Reliability and Validity of the Measurement Model**

To test research hypotheses a model that is adequate is required to properly meet the needs. This study's explanatory quantitative design combined perceptual and objective data, which led to validation of the psychometric properties of the survey instrument and the authenticity of the financial performance index (ROI). The following section details the empirical tests conducted to ensure the reliability and validity of all constructs, thereby sustaining the integrity of the empirical analysis.

## Reliability

Reliability measured the extent to which an instrument gives consistent and stable results (Knottnerus & Tugwell, 2016). For this study, reliability was measured in two main ways one is internal consistency for latent constructs and procedural consistency for data handling.

- **Internal Consistency Reliability:** The core perceptual constructs which are Mobile Banking (MB), Internet Banking (IB), E-commerce (EC), Point of Sale (POS) systems, and Peer-to-Peer (P2P) payments were measured using the five-point Likert scales. Internal consistency, which indicated how well the items within each scale agreed to measure the same underlying construct, was assessed using Composite Reliability (CR). As presented in Table 3.4, all five constructs demonstrated CR values exceeding the set threshold of 0.80 (ranging from 0.80 for P2P to 0.88 for Mobile Banking). These values, which are more stringent to Cronbach's Alpha, are derived from Confirmatory Factor Analysis (CFA) and give accurate estimate of reliability for latent variable models (Hair et al., 2019). The high CR scores confirm that the items for each digital technology construct are highly inter-correlated, showing a measurement scale where random error is minimised.
- Beyond statistical metrics, reliability was embedded in the research protocol. The structured financial data collection template (Table 3.2) was created for calculating the dependent variable, Financial Performance measured by Return on Investment (ROI), across all 345 SMEs. This standardised formula:  $ROI = (\text{Net Profit} / \text{Cost of Investment}) \times 100\%$  was applied to the five-year verified data, ensuring the key performance metric was derived consistently

for every case. Another strength of this system, was the implementation of a four-step financial validation protocol served as a critical reliability check. By cross-checking self-reported figures with documentary evidence (e.g., bank statements, tax filings) for 85.5% of the sample and reconciling discrepancies, the study enhanced the consistency and trustworthiness of the raw financial data, reducing the risks associated with inaccurate or incomplete self-reporting (Babu & Kohl, 2023).

## Validity

Validity is concerned with the degree to which a test measures what it is supposed to measure (Hu & Bentler, 1999). The validity chain of evidence was established in this study to include content, construct, and criterion-related validity for the data analysed.

- Construct validity was established through a two-step quantitative method. First, a Confirmatory Factor Analysis (CFA) was conducted to verify the proposed five-factor measurement model. The model fit to the data with  $\chi^2/df = 2.41$ , Comparative Fit Index (CFI) = 0.937, Tucker-Lewis Index (TLI) = 0.929, Root Mean Square Error of Approximation (RMSEA) = 0.056, and Standardised Root Mean Square Residual (SRMR) = 0.043. All indices met established criteria (Hu & Bentler, 1999), confirming that the 25 survey items correctly loaded onto their intended five technology constructs, and validated the integrity of the measurement model.
- Both convergent and discriminant validity were assessed. Convergent validity, the extent to which items of the same construct meet, was confirmed as all five constructs achieved Average Variance Extracted (AVE) values above the 0.50

criterion (see Table 3.4), showing that a large extent of the variance in the items is explained by the construct. Discriminant validity, makes sure there is a distinction in constructs and was achieved using the Fornell-Larcker criterion. As shown in Table 3.5, the square root of the AVE for each construct (diagonal values) was greater than its correlations with all other constructs, showing that each digital technology is measured as a separate dimension within the adoption measurement scale.

- Criterion validity assesses the relationship between the perceptual measurement scales and an independent standard (Hu & Bentler, 1999). In this study, the objective criterion was the verified five-year ROI calculated for each year being reviewed. Pearson correlation analysis revealed that all five perceptual construct scores had statistically significant positive correlations with ROI ( $p < .05$ , one-tailed), as detailed in Table 3.6. Specifically, Mobile and Internet Banking perceptions showed strong correlations ( $r = .655$ ), while E-commerce showed a moderate correlation ( $r = .414$ ). These significant correlations gave evidence that the perceptual measures of technology adoption meaningfully correspond with tangible financial performance with for criterion validity.
- To prevent social desirability bias and other forms of bias whereby the participants might inflate their positive perceptions or financial performance, the study guaranteed anonymity, avoided leading questions, and, most importantly, verified perceptions with financial records (Setiawati et al., 2024). The use of Multiple Linear Regression (MLR) in the final predictive model allowed for the examination of the unique effect of each digital technology

construct on financial performance measured by ROI while keeping the influence of the other four constructs constant. (He et al., 2023).

The empirical evidence presented stated that the measurement instruments employed in this study are both reliable and valid. The high composite reliability scores ensured internal consistency, while the robust evidence for construct and criterion validity confirmed that the scales accurately measure digital technology adoption and its financial effect. This provided the necessary confidence to proceed with the data analysis, testing of hypotheses and interpretation of the hypothesis-testing results in the following sections.

**Table 4.1**

*Statistical Reliability of Survey*

|      | Number of participants | No of items in the questionnaire |
|------|------------------------|----------------------------------|
| .705 | 345                    | 25                               |

Source: Field data collection (2024).

The Cronbach's alpha coefficient of .705 indicated that the questionnaire has acceptable internal consistency reliability. This provides a reliable measure of the constructs being studied.

## Summary of Demographics

**Table 4.2**

*Technology Adoption Summary Table*

| Rank     | Sector                         | Adoption Highlights  |
|----------|--------------------------------|--|
| Top 1    | Education and Digital Services | High scores in mobile banking, e-commerce, and digital platforms.                  |
| Top 2    | Computer Accessories           | Naturally aligned with technology; strong in POS systems and digital transactions. |
| Top 3    | Clothing and Fashion           | High adoption of e-commerce and mobile banking for retail efficiency.              |
| Bottom 1 | Sports Equipment               | Slowest technology integration; reliance on traditional sales methods.             |
| Bottom 2 | Building Equipment             | Low adoption of digital financial tools and e-commerce.                            |
| Bottom 3 | Food and Beverages             | Mixed adoption; some use POS/mobile banking but lag in e-commerce.                 |

Source: Field data collection (2024).

This table highlighted the top three efficient adopters of technology: Education and Digital Services, Computer and Accessories, and Clothing and Fashion sectors, which performed well in e-commerce, mobile banking, and point of sale (POS) systems. On the other hand, the bottom three laggards: Sports Equipment, Building

and Equipment, and Food and Beverages sectors showed slower integration of digital tools, relying more on traditional sales methods and having mixed adoption of mobile banking and e-commerce.

Using the Unified Theory of Acceptance and Use of Technology (UTAUT) model, various factors can explain the differences in technology adoption among retail SME in Lagos, Nigeria. Performance expectancy, or the perceived benefits of technology, is a significant motivator for efficient adopters such as Education and Digital Services, Computer and Accessories, and Clothing and Fashion sectors. These sectors recognised the benefits of increased sales efficiency, extended customer base through e-commerce, and improved operations. On the other hand, the lagging sectors of Sports Equipment, Building and Equipment, and Food and Beverages may not see much use, particularly if their customer base is accustomed to traditional sales practices. Effort expectancy, or the ease of use of technology, is also a consideration. Efficient adopters may find technology more user-friendly or have better access to technology-savvy employees, while lagging sectors may encounter difficulties such as a lack of technical knowledge or training opportunities.

Social influence is another determinant of technology adoption. Efficient adopters are likely to be influenced by industry pressure and trends, as technology such as digital payments and e-commerce becomes the norm, while traditional industries are likely to feel less pressure to change. Facilitating conditions, such as access to digital infrastructure, reliable internet, and mobile banking tools, further amplify the gap. Sectors with better resources naturally integrate technology more effectively, whereas lagging sectors may encounter infrastructure challenges, higher costs, or limited access to such facilities. Finally, behavioural intentions and resistance to change significantly impact technology adoption. Efficient adopters may have a

competitive mind-set and strong intentions to embrace technology to attract technology driven customers. In contrast, lagging sectors may resist change due to fears of cost, operational disruptions, or lack of familiarity with digital tools.

Some of the challenges in the case of Lagos, such as the lack of consistent internet, electricity, and the cost of technology adoption, might further contribute to the challenges being faced by the lagging sectors. Demographic factors, such as the need for personal interactions in traditional industries, might also further contribute to discouraging the adoption of technology. All these factors contribute to the reason why some sectors are advanced in terms of technology adoption, while some are lagging behind in the ever-evolving retail market of Lagos.

1. Since it is highly rated across demographics, improving features such as security and usability in mobile banking may increase adoption among SMEs.
2. The lackluster response to peer to peer (P2P) may indicate a need for more education, fraud protection, and P2P features.
3. Since older managers show slightly less interest in e-commerce and P2P, training programs may increase adoption.

These findings emphasise that even though financial technologies are largely adopted in SMEs, demographic characteristics continue to influence the adoption process. Findings from the demographic analysis revealed that the highest adoption of mobile and e-commerce was among SME managers who were below 30 years, while for those above 30 years, it was moderate. Gender analysis showed minimal differences in perceptions of adoption, while significant variations were recorded in terms of absolute revenues and capital access, which is discussed in the financial data summary.

## Summary of questionnaire responses

**Table 4.3**

*Summary of questionnaire responses*

| <b>Technology</b>       | <b>Indices</b>                                    | <b>Mean</b> | <b>Std. Deviation</b> |
|-------------------------|---|-------------|-----------------------|
| <b>Mobile Banking</b>   | Frequency of use for SME transactions             | 5.00        | 0.48                  |
|                         | Positive impact on financial decision-making      | 5.00        | 0.51                  |
|                         | Contribution to financial transparency            | 5.00        | 0.51                  |
|                         | Improvement in financial performance              | 4.00        | 0.52                  |
|                         | Satisfaction with accessibility/user-friendliness | 5.00        | 0.57                  |
| <b>Internet Banking</b> | Improvement in financial performance              | 2.70        | 1.16                  |
|                         | Cost savings & efficiency                         | 4.48        | 0.52                  |
|                         | Satisfaction with accessibility/user-friendliness | 3.40        | 1.43                  |
|                         | Improved financial reporting & analysis           | 2.20        | 1.11                  |
|                         | Role in future growth & sustainability            | 3.99        | 1.22                  |
| <b>E-commerce</b>       | Better financial performance                      | 4.19        | 0.86                  |

| <b>Technology</b>         | <b>Indices</b>                           | <b>Mean</b> | <b>Std. Deviation</b> |
|---------------------------|--|-------------|-----------------------|
|                           | Cost savings & efficiency                | 4.64        | 0.52                  |
|                           | Influence on inventory management        | 2.11        | 1.38                  |
|                           | Satisfaction with platform usability     | 2.57        | 1.72                  |
|                           | Expansion of customer base               | 4.64        | 0.52                  |
| <b>POS Systems</b>        | Improved financial performance           | 4.66        | 0.51                  |
|                           | Positive influence on revenue generation | 4.64        | 0.52                  |
|                           | Speed & accuracy of transactions         | 3.42        | 1.43                  |
|                           | Security of financial data               | 2.20        | 1.11                  |
| <b>Peer-to-Peer (P2P)</b> | Improved financial performance           | 4.65        | 0.51                  |
|                           | Access to credit/financing               | 3.99        | 1.22                  |
|                           | Satisfaction with platform usability     | 2.20        | 1.11                  |
|                           | Staff training on P2P usage              | 3.40        | 1.43                  |
|                           | Management of working capital            | 3.40        | 1.43                  |

Source: Field data collection (2024).

The findings indicated that digitalisation had a positive impact on the financial performance, which included revenue generation and reduced operational costs. Digitalisation has enhanced the efficiency of financial transactions, inventory

management, and supply chain management, leading to improved financial performance. The use of digital technology has enhanced financial transparency, and this has enabled SME to operate efficiently and improve financial administration. Digitalisation has enhanced access to credit facilities by SME, especially through peer to peer (P2P) transactions, and this had enabled them to obtain opportunities that they would not have had access to otherwise. It has also enhanced customer satisfaction, especially because SME are able to provide better services and products. However, the findings indicate areas of improvement.

SME had concerns about the security of digital transactions, especially concerning POS systems and P2P transactions. Some SME may not have the required digital literacy skills to fully utilise digital technology, which may impede their ability to fully benefit from digitalization. SME might encounter infrastructure issues, such as a lack of internet connectivity or outdated technology, which could impede their ability to adopt and utilise digital technology. The complete information of the demographic information is presented in Appendix C and D.

The above demographic and sectoral information served as an important background for understanding the digital adoption landscape for SMEs in Lagos. It showed which industries were ahead or behind in embracing particular technologies and offered some information on demographic perception. However, the primary purpose of this study has been to transcend adoption and perception data and instead assess the financial effect of these technologies. Thus, the discussion now shifted to the key financial data: revenue, cost, net profit, and cost of investment from the 345 SMEs that participated in the study. The financial data analysis directly addressed the research questions on the effect of digitalisation on financial performance (ROI) from 2019 to 2023.

## **Financial Data Analysis**

Financial data analysis section of this study is made up of the definition of terms: revenue, total expenses, net profit, cost of investment and ROI. This is followed with summary of financial information collated from the 345 retail SME which participated in this study.

### **Computation of Revenue.**

In a retail SME, revenue sources can be broken down into main, subordinate and associated revenue streams.

#### **Main Revenue Streams**

- Sales Revenue: Income accruing from the sale of products or services to customers.
- Gross Margin: The income resulting from Sales Revenue and the Cost of Goods Sold (COGS).

#### **Subordinate Revenue Streams**

- Revenue generated from discounts, sales promotions, and other customer focused programmes.
- Income from value-added services offered such as packaging or repairs on goods bought. Warranty and loyalty programs.
- Interest earned on fixed deposits, investments and associated ventures.

#### **Associated Revenue Streams**

- Revenue generated from renting out office space, leasing equipment etc.
- Monies resulting from advertising, sponsorships, or partnerships.
- Income accruing from the transfer of data analytics to third-party companies.

- Income from partnerships and mutual collaborations with other businesses.

### **Total Expenses**

The costs of operating a retail business form a major part of total expenses.

These are costs accrued daily in the enterprise and they are listed thus:

- Inventory costs associated with purchase and management of inventory.
- Transport and logistic costs associated with the movement and distribution of goods, supplies, and equipment.
- Personnel costs associated with wages, salaries and other expenses for employees.
- Insurance and allied costs.
- Expenses associated with maintaining and managing business facilities
- Marketing and advertising costs accrued on products, services in the business.
- Utility bills on electricity, water, waste disposal and other essential services.

These costs are accrued daily for servicing the business and they do not relate to sunk costs or one-off growth/expansion expenses.

### **Net Profit**

For a retail SME, net profit is the residual profit after recognising all expenses, and costs from the total revenue.

Net Profit Formula:  $\text{Net Profit} = \text{Total Revenue} - \text{Total Expenses}$

Where:  $\text{Total Revenue} = \text{Sales Revenue} + \text{Other Revenue Streams}$  (for example services rendered and or interest income).

$\text{Total Expenses} = \text{Cost of Goods Sold (COGS)}$  plus operating expenses, taxes and interest expenses.

Net Profit reflect the authentic earnings of the retail SME, which can be reinvested into the business, used to set off loans and debts or retained earnings for future needs. It is an important performance measurement of the retail SME's ability to sustain itself over time.

### **Computation of cost of investment**

It is subdivided into the following components:

#### 1. Start-up Costs:

- Business Registration and License
- Legal & Administration Fee: expenses that relate to administration, facility management, accounting etc.
- Preliminary Inventory: The cost of purchasing the first inventory
- Store Furniture & Fittings:
- Rent or purchase of retail space.
- Costs of interior design and fixtures.
- Security systems (if applicable).
- Technology & Equipment:
- Purchase computers, cash registers, point-of-sale (POS) systems, and other relevant technology.
- The cost of procuring e-commerce platforms, online payment gateways, etc.

#### 2. Operational Costs:

- Inventory Costs, Transport and Logistic costs
- Personnel costs
- Insurance and allied expenses
- Maintenance & Repairs Costs

- Marketing and advertising costs.
- Utility and internet costs.

### 3. Growth & Expansion Costs:

- Upgrade of technology costs
- Business expansion costs.

## Computation of Return on Investment (ROI)

ROI (%) is (Net Profit/ Cost of Investment) × 100

ROI is important financial index to measure the performance of investments, projects, or business decisions. The table below showed the five year financial summary of the 345 SME which participated in this study.

**Table 4.4**

*Five year financial summary of retail SME.*

| Year  | Total Revenue (₦'000b) | Expenses (₦'000b) | Net Profit (₦'000b) | Total Cost Of Investment (₦'000b) | ROI (%) |
|-------|------------------------|-------------------|---------------------|-----------------------------------|---------|
| 2019  | 13,118.70              | 10,160.66         | 2,958.04            | 5,916.08                          | 50      |
| 2020  | 34,305.25              | 24,315.62         | 9,989.63            | 24,974.08                         | 39.99   |
| 2021  | 20,648.46              | 14,163.53         | 16,484.93           | 33,059.71                         | 48.81   |
| 2022  | 71,722.37              | 44,299.80         | 17,422.57           | 33,223.88                         | 52.40   |
| 2023  | 38,600.78              | 25,712.36         | 11,888.42           | 36,611.94                         | 32.47   |
| Total | 178,395.56             | 118,651.96        | 58,743.60           | 133,785.69                        |         |

Source: Field data collection (2024).

Note. All currency are in ₦, Nigerian naira.

## Revenue Analysis

The total revenue for the five-year period was ₦178,395.56 billion, with a compounded yearly/annual growth rate (CAGR) of 34.6%. The highest revenue collated in 2022, with ₦71,722.37 billion, depicting a 251% increase from the 2019 revenue. The revenue growth rate was inconsistent across the years, with a significant decline in 2021 (-39.7%) followed by a notable increase in 2022 (247.1%).

#### Total Expenses Analysis

The total expenses for the five-year period was ₦118,651.96 billion, with a CAGR of 24.9%. The highest expenses were recorded in 2022, with ₦44,299.80 billion, representing a 336% increase from the 2019 expenses. The expenses growth rate was also inconsistent, with a significant decline in 2021 (-41.5%) followed by a notable increase in 2022 (211.4%).

#### Net Profit Analysis

The total net profit for the five-year period was ₦58,743.60 billion, with a CAGR of 51.4%. The peak net profit was collated in 2021, with ₦16,484.93 billion, representing a 456% increase from the 2019 net profit. The net profit growth rate was inconsistent, with a significant increase in 2020 (239%) followed by a notable decline in 2022 (-5.6%).

#### Cost of Investment Analysis

For the five-year period: ₦133,785.69 billion, with a CAGR of 21.1%. The highest cost of investment was recorded in 2021, with ₦33,059.71 billion, representing a 459% increase from the 2019 cost of investment. The cost of investment growth rate was inconsistent, with a significant decline in 2022 (-0.6%) followed by a substantial increase in 2023 (10.1%).

**Table 4.5***Computation of cumulative ROI*

| Year | Net Profit (₱) | Total Investment (₱) | ROI (%) |
|------|----------------|----------------------|---------|
| 2019 | 2,958.04       | 5,916.08             | 50.00%  |
| 2020 | 9,989.63       | 24,974.08            | 39.99%  |
| 2021 | 16,484.93      | 33,059.71            | 49.81%  |
| 2022 | 17,422.57      | 33,223.88            | 52.44%  |
| 2023 | 11,888.42      | 36,611.90            | 32.47%  |

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Source: Field data collection (2024).

The financial performance measured by the ROI trend in **Table 4.5** above showed fluctuations and a slight fall over the years. The year-by-year analysis showed the ROI for 2019 at 50%, indicating a high return on investment. The ROI for 2020 was at 39.99%, a fall of 10.01% from the previous year. The ROI for 2021 was at 49.81%, an increase of 9.82% over the previous year. The ROI for 2022 had reached its highest point at 52.4%, an increase of 2.59% over the previous year. The ROI for 2023 was at 32.47%, a significant fall of 19.93% over the previous year.

The trend line exhibited notable fluctuations, implying that the investment's performance was highly influenced by various indices. The dramatic decline in ROI in 2023 was worrisome, as it indicated that the sustainability of the retail SME investment was at great risk of experiencing various challenges. The peak ROI in 2022 indicated that this was the year the investment received its best performance. The rapid changes in the ROI, especially the sharp decline after 2022, could also be explained from the

point of view of the UTAUT theory, where the changes in Performance Expectancy due to factors like economic instability or insecurity, and changes in Facilitating Conditions due to factors like infrastructure, contributed to the unpredictable ROI from the digital investment in Lagos retail SMEs.

From the analysis carried out, the retail SME which participated in this study have reflected significant revenue growth, improved expense administration, and increased profitability over the five-year period. However, the retail SME business sector had also experienced some revenue volatility, and the cost of investment had decreased notably in recent years. The table below denoted a graphical representation of ROI trend in the years 2019 to 2023.

#### **Figure 4.1**

*ROI trend in retail SME from 2019 to 2023*



Source: Field data collection (2024).

Next table, was the business sector overview for the study.

**Table 4.6**

*Business sector overview of five year financial analysis 2019 to 2023*

| Sector                            | Participants | Total Revenue<br>(N'000b) | Total Expenses<br>(N'000b) | Net Profit<br>(N'000b) | Total Cost of Investment<br>(N'000b) |
|-----------------------------------|--------------|---------------------------|----------------------------|------------------------|--------------------------------------|
| 1. Food and Beverages             | 35           | 15,985.46                 | 10,801.08                  | 5,184.38               | 11,227.64                            |
| 2. Pharmacy and Convenience       | 40           | 19,336.23                 | 12,886.79                  | 6,449.44               | 13,817.90                            |
| 3. Hardware and Industrial        | 38           | 17,510.58                 | 11,675.71                  | 5,834.87               | 12,901.42                            |
| 4. Beauty and Accessories         | 63           | 34,259.65                 | 22,668.28                  | 11,591.37              | 24,499.08                            |
| 5. Clothing and Fashion           | 67           | 32,598.43                 | 21,574.60                  | 11,023.83              | 24,514.64                            |
| 6. Office and Home                | 56           | 32,502.96                 | 22,114.79                  | 10,388.18              | 26,300.29                            |
| 7. Computer and Accessories       | 25           | 12,687.54                 | 8,495.76                   | 4,191.77               | 11,522.71                            |
| 8. Education and Digital Services | 15           | 8,170.89                  | 5,525.47                   | 2,645.42               | 6,067.33                             |
| 9. Building and Equipment         | 4            | 2,506.71                  | 1,689.92                   | 816.79                 | 1,699.58                             |
| 10. Sport Equipment               | 3            | 1,837.12                  | 1,219.56                   | 617.55                 | 1,235.10                             |
| <b>TOTALS</b>                     | <b>345</b>   | <b>178,395.57</b>         | <b>118,651.96</b>          | <b>59,743.60</b>       | <b>133,785.69</b>                    |

Source: Field Survey, 2024.

The data presented offered a wide-ranging five-year financial perspective of the ten different business sectors from 2019 to 2023. The findings showed large discrepancies in terms of both market dynamics and financial size. Specifically, the Clothing and Fashion and Beauty and Accessories sectors had the largest number of participants, with 67 and 63 participants respectively, while the Building and Equipment and Sport Equipment sectors were very concentrated, with only 4 and 3 participants respectively. In terms of absolute financial size, the Beauty and Accessories sector had the largest total revenue of N34,259.65 billion, followed closely

by the Clothing and Fashion sector with a total revenue of ₦32,598.43 billion, and the Office and Home sector with a total revenue of ₦32,502.96 billion. On the other hand, the Sport Equipment, Building and Equipment, and Education and Digital Services sectors were operating on a much smaller scale.

Financial performance, as indicated by net profit, correlated well with revenue size, though some variations can be noticed from one industry to another. In addition, the Beauty and Accessories industry also recorded the highest net profit of ₦11,591.37 billion, indicating that it dominated the market. The total cost of investment of all industries combined (₦133,785.69 billion) was significantly higher compared to the net profit earned (₦59,743.60 billion).

In conclusion, the aggregated data for all the 345 participants showed a collective net profit of ₦59,743.60 billion as a result of a total revenue of ₦178,395.57 billion against a total expenditure of ₦118,651.96 billion. This showed that the business environment was generally viable as a whole for the sectors under observation over the five-year period.

It should be noted from the data analysis that there existed a clear dichotomy between the relatively higher participation rates and volumes associated with consumer sectors such as Beauty, Clothing, and Office Supplies, and those sectors, such as Building and Equipment, which had relatively few participants and were associated with higher capital costs, as evidenced by the financial commitments reflected in the total cost of investment, which in many cases exceeded the cumulative five-year profits. The next table computes the ROI of the retail business sectors.

#### **Table 4.7**

*ROI by business sector*

| Sector                      | ROI (%) |
|-----------------------------|---------|
| 1. Food and Beverages       | 46.18   |
| 2. Pharmacy and Convenience | 46.67   |
| 3. Hardware and Industrial  | 45.23   |
| 4. Beauty and Accessories   | 47.31   |
| 5. Clothing and Fashion     | 44.97   |
| 6. Office and Home          | 39.50   |
| 7. Computer and Accessories | 36.38   |
| 8. Education and Digital    | 43.60   |
| 9. Building and Equipment   | 48.06   |
| 10. Sport Equipment         | 48.06   |
| Industry Average            | 44.66   |

Source: Field data collection (2024).

A cursory glance at the five-year financial analysis of Lagos SMEs across ten basic sectors, it was evident that there were a number of trends worth highlighting. The Beauty & Accessories and Clothing and Fashion industries were identified as leaders, with a combined revenue generation capacity of ₦66.9 million, representing 37% of total revenue, and a healthy efficiency with respect to profit margin, as they commanded an impressive 33.8% margin. The Office & Home industry, while being ranked as third with respect to revenue generation, was identified as less efficient, with the highest investment costs and second-lowest ROI of 39.5%, while the Computer & Accessories industry lagged with an ROI of 36%, which could indicate problems with capital utilisation.

Interestingly, niche sectors like Sport Equipment and Building & Equipment achieved remarkable ROI figures of 50.0% and 48.1% respectively, proving that smaller, specialised markets can deliver superior returns on investment despite their limited scale.

Across all sectors, expenses consumed 67% of total revenues, leaving an industry-average profit margin of 33.5% and ROI of 45.2%. The analysis also revealed an intriguing relationship between digital adoption and financial performance while

digitally advanced sectors showed strong revenue growth, their ROI figures (42-45%) were often surpassed by less digitalized niche sectors, suggesting that while technology drives scale, other factors like market specialisation and cost control play equally crucial roles in determining ultimate profitability.

These findings highlight the need for tailored business strategies that consider both sector-specific characteristics and the balanced implementation of digital tools to optimize both revenue growth and investment returns.

The study's triangulation of the Unified Theory of the Acceptance and Usage of Technology (UTAUT) framework, financial performance data, and Likert-scale survey responses revealed a nuanced relationship between digital technology adoption and SME success in Lagos. High-performing sectors like Clothing/Fashion and Computer/Accessories demonstrate how performance expectancy drives digital uptake, with their strong profit margins (averaging 33.8%) directly correlating with survey results showing mobile banking (mean 5.00) and POS systems (mean 4.66) as most impactful for financial performance.

These sectors leverage digital tools to enhance operational efficiency and customer reach, as evidenced by e-commerce's role in expanding customer bases (mean 4.64) and its alignment with Beauty sector's ₦33,300,000 revenue. Conversely, lagging sectors such as hardware and industrial show how low performance expectancy inhibits growth, with internet banking's poor financial performance scores (mean 2.70) reflecting their continued reliance on cash-based transactions.

Effort expectancy emerges as a critical differentiator, where technology with high usability scores like mobile banking (mean 5.00) see widespread adoption, while more complex systems like e-commerce platforms (usability mean 2.57) and P2P

lending (usability mean 2.20) face resistance. This explained the mixed adoption patterns in sectors like Food/Beverages, where despite mobile banking's ease of use, challenges in staff training (P2P training mean 3.40) limit broader digital integration. The financial implications are clear; sectors overcoming usability barriers, such as Pharmacy's POS adoption, achieved higher profits (₦6,400,000) compared to less technology focused peers.

Social influence and facilitating conditions further shaped technology adoption patterns, with mobile banking's dominance (mean 5.00) reflecting both peer pressure and established industry norms in digitally advanced sectors. However, infrastructure gaps persisted, as seen in internet banking's low satisfaction scores (mean 3.40) across sectors, highlighting how unreliable connectivity undermines potential gains. The data suggested that while digital technology offer clear benefits, their effect is mediated by sector-specific factors; industries like Sports Equipment maintained viability through traditional methods despite lower margins, whereas capital-intensive sectors like Office/Home struggled to translate heavy investments (₦26,300,000) into proportional returns without optimised digital strategies.

This comprehensive analysis underscored the need for tailored interventions addressing both technological and contextual barriers to unlock the full potential of digital transformation across Lagos' diverse SME landscape.

### **Comparative Sectoral Financial Performance (ROI) Analysis**

The financial performance data revealed a compelling paradox: while sectors with higher digital adoption scores (Computer/Accessories, Education/Digital

Services) demonstrated strong revenue growth, they were frequently outperformed in financial performance measured by ROI by traditionally-oriented sectors like Sports Equipment (48.06%) and Building & Equipment (48.06%). This section provides a deeper, comparative analysis to unravel this apparent contradiction, moving beyond descriptive statistics to examine the underlying drivers of return on investment.

A deeper examination of expense structures gave the primary insight into the results. The Office & Home sector, even though it generated (₦32.5bn), achieved the lowest return (39.50%) and a higher cost of investment (₦26.3bn). This showed that high capital costs and operational investments in digital and physical infrastructure did not return commensurate benefits. Cross-referencing this with the survey data, this sector has a middling level of satisfaction with digital platform usability (for example, E-commerce usability mean: 2.57). This is again consistent with the UTAUT model's Effort Expectancy construct, perhaps the expense and lack of integration of these technology impacted their financial benefits.

The High ROI segment in Sports Equipment, which also has a low digital adoption rate, revealed a lean business model with high margins (Net Profit: ₦617.55mn, Investment: ₦1.24bn). It could be that the key drivers of success in this segment are specialisation, low inventory costs, and possibly a loyal customer base, which are not captured in the digital technology adoption, thereby proving that traditional efficiencies might be more effective in delivering financial benefits in the short term than going digital.

It was obvious that leading adopters like Clothing/Fashion (ROI: 44.97%) and Computer/Accessories (ROI: 36.38%) were in a crucial phase of investing. Their significant digital expenditure (e.g., e-commerce platforms, digital marketing) aims for

customer acquisition and market expansion costs that depress immediate ROI but were intended to build scale and competitive moats for future profitability. This was supported by their high scores on Expansion of customer base (mean: 4.64). This fact is supported by the financial data, which shows these industries as some of the highest in total revenue. The moderate ROI these industries are achieving may not be an indication of failure, but rather the lag and cost involved with digital scaling, which has strategic payoff over time.

Moreover, this analysis also revealed the existence of a Digital Scaling Lag, whereby top adopters such as Clothing/Fashion, with an ROI of 44.97%, or Computer/Accessories, with an ROI of 36.38%, were probably at a critical investment stage. This was probably because of their high level of investment in digital technology, which aimed at not only acquiring customers but also increasing their markets, hence affecting their ROI negatively but strategically aiming at creating a competitive advantage in the future.

This is also evidenced by the high mean value of 4.64 in the Expansion of customer base for these two sectors. This is also evidenced through financial data, where these two sectors rank highly in terms of total revenue generated, hence it was possible that their ROI, though moderate, may not be a failure but a result of scaling lag associated with investment in digital technology.

The analysis of these two sectors in comparison has revealed that financial performance measured through ROI is far from a simple level of adopting digital technology, but rather a complex interplay of the following factors:

(1) Sectoral Business Model Innate Margins: lean and niche business models might achieve high ROI without necessarily adopting digital technology.

(2) Investment Phase: Digitally progressive sectors may very well be sacrificing short-term ROI for long-term growth and market share.

(3) Demographic Efficacy: The age and digital literacy of the leadership team would ultimately determine the efficacy of digital investment as a means of achieving financial return. Thus, a one-size-fits-all approach to digital adoption in SMEs may be well-intentioned but ultimately misguided, and business strategies must be sector-specific in recognising where digital technology is a true profit multiplier and where traditional operational excellence or niche strategy is the better approach to financial performance.

### **Summary of Financial Data Analysis Section**

This section provided a comprehensive financial analysis of 345 Nigerian retail SME across ten sectors from 2019 to 2023, evaluating key metrics such as revenue streams, expenses, net profit, cost of investment, and return on investment (ROI). The findings revealed several notable trends. Beauty & Accessories and Clothing and Fashion emerged as dominant sectors, contributing 37% of total revenue (₦66.9 billion) with strong profit margins of 33.8%. In contrast, Office & Home recorded high revenue (₦32.5 billion) but the lowest ROI (39.5%), indicating inefficiencies in capital deployment. Meanwhile, niche sectors like Sport Equipment and Building & Equipment achieved the highest ROI (48–50%), demonstrating that small-scale, specialised markets could yield superior returns.

Over the five-year period, total revenue (₦178.3 billion) grew at a compound annual growth rate (CAGR) of 34.6%, peaking in 2022 (₦71.7 billion). However, expenses (₦118.7 billion) consumed 67% of revenue, leaving an average profit margin

of 33.5%. ROI exhibited significant volatility, reaching its highest point in 2022 (52.4%) before dropping sharply in 2023 (32.5%), suggesting fluctuations in investment efficiency. The analysis also highlighted the impact of digital technology adoption on financial performance.

High-digital sectors such as Clothing and Computer Accessories showed strong revenue growth but moderate ROI (42–45%), while low-digital niches like Sport Equipment led in ROI, indicating that digital technology might enhance efficiency before scale. Mobile banking (rated 4.8/5 by entrepreneurs under 30) and POS systems (4.4/5) were the most valued digital payment solutions, whereas peer-to-peer (P2P) platforms faced adoption barriers, scoring only 3.7/5.

Demographic insights further enriched the findings. Younger managers (under 30) achieved the highest financial performance via ROI (50%) plausibly by leveraging lean, digitally optimised operations, while older entrepreneurs (over 50) maintained profitability through experience but lagged in technology adoption. Gender disparities were also evident: despite women-led SME receiving only half the investment (₦48.8 billion vs. ₦99.1 billion for men), they matched their male counterparts in ROI (40%) and profit margins (33.3%), underscoring capital access as a major constraint for female entrepreneurs. The study also aligned with the UTAUT model, revealing that performance expectancy drove digital adoption in high-revenue sectors, while ease of use boosted POS system adoption. Social influence and facilitating conditions, such as peer networks and infrastructure gaps, further shaped adoption patterns, particularly among women and older business owners.

In conclusion, the study emphasised that digital technology adoption enhanced operational efficiency before scaling, with younger, technology embracing SMEs and

niche sectors outperforming in financial returns via ROI. However, persistent gender disparities in funding and sector-specific challenges such as high investment costs in Office & Home call for targeted interventions.

## **Inferential analysis**

### **Pearson Correlation Coefficient Analysis**

The researcher used the Pearson Correlation Coefficient to determine associations between the independent variables (the digital technologies) and the dependent variable (financial performance (ROI)).

This statistical measure granted insights that could inform theoretical frameworks, predict outcomes, and guide decision-making.

A weak correlation,  $0.00 \leq |PCC| < 0.30$ , where the association between variables is small; a moderate correlation,  $0.30 \leq |PCC| < 0.60$ , where the association between variables is notable, but not overly so; and a strong correlation,  $0.60 \leq |PCC| \leq 1.00$ , where the association between variables is substantial. The assumptions that guide this analysis method include that the nature of the data is normal, where linearity in relation to other variables is required, and independence, where independence is required. By using a p-value of 0.05, the researcher was able to ensure that the results were not due to chance, hence reducing Type I errors. Thus, only notable associations or differences were considered statistically significant. The next table showed the correlations between the independent variables and financial performance.

#### **Table 4.8**

*Correlations of digital technologies with financial performance (ROI)*

|                     |       | FINANCIAL<br>PERFORMA<br>NCE (ROI) MB IB EC POS P2P |       |       |       |       |       |
|---------------------|-------|---|-------|-------|-------|-------|-------|
| Pearson Correlation | (ROI) | 1.000   | .655  | .655  | .414  | .104  | .118  |
|                     | MB    | .655  | 1.000 | 1.000 | .190  | .148  | .058  |
|                     | IB    | .655  | 1.000 | 1.000 | .190  | .148  | .058  |
|                     | EC    | .414  | .190  | .190  | 1.000 | -.035 | .394  |
|                     | POS   | .104  | .148  | .148  | -.035 | 1.000 | .464  |
|                     | P2P   | .118  | .058  | .058  | .394  | .464  | 1.000 |
| Sig. (1-tailed)     | ROI   | .   | .000  | .000  | .000  | .027  | .014  |
|                     | MB    | .000  | .     | .000  | .000  | .003  | .143  |
|                     | IB    | .000  | .000  | .     | .000  | .003  | .143  |
|                     | EC    | .000  | .000  | .000  | .     | .258  | .000  |
|                     | POS   | .027  | .003  | .003  | .258  | .     | .000  |
|                     | P2P   | .014  | .143  | .143  | .000  | .000  | .     |

Source: IBM SPSS

**Table 4.8** presented the Pearson product-moment correlations between Return on Investment (ROI) and the five digital technology variables. The analysis revealed statistically significant positive correlations between ROI and Mobile Banking ( $r = .655$ ,  $p < .001$ ), Internet Banking ( $r = .655$ ,  $p < .001$ ), and E-commerce ( $r = .414$ ,  $p < .001$ ).

The correlations with Point of Sale (POS) systems ( $r = .104$ ,  $p = .027$ ) and Peer-to-Peer (P2P) systems ( $r = .118$ ,  $p = .014$ ) were also statistically significant but notably weaker in magnitude.

The strength of these associations is critical for interpretation. Following Cohen's (1988) conventions, the relationships between financial performance (ROI) and both Mobile Banking (MB) and Internet Banking (IB) are strong ( $r = .655$ ), indicating a substantial shared variance. The relationship with E-commerce (EC) is moderate ( $r = .414$ ). On the other hand, the relationship of these two variables—POS and P2P was statistically significant only due to the sample size ( $N = 345$ ), but otherwise negligible ( $r \sim .11$ ). The implication is that although a technical statistical relationship is evident, these two variables accounted for a minimal proportion of the variance of SME financial performance.

In the correlation matrix, a significant point to note is the perfect positive relationship between Mobile Banking and Internet Banking ( $r = 1.000$ ). This clear evidence of multicollinearity implied that these two variables were statistically equivalent. It strongly implied that for these retail SMEs who took part in the study in Lagos, Nigeria, mobile banking (MB) and internet banking (IB) were not statistically different and might indeed represent a single entity which can be termed as a unified digital banking service accessed simultaneously through a smartphone. Due to the redundancy, the inclusion of either variable in the multiple regression analysis will destabilise the outcome, thereby requiring the exclusion of one variable, as covered in the subsequent regression analysis.

Additionally, the moderate positive correlation between E-commerce and P2P ( $r = .394$ ) as well as between POS and P2P ( $r = .464$ ) deserves some consideration, as it might suggest some form of overlap in the use and adoption of these digital payment tools.

The correlational analysis gave a clear indication of the presence of a significant linear relationship between the core digital banking tools (MB/IB) and SMEs' financial performance (ROI), followed by the presence of a moderate linear relationship for E-commerce, while only trivial relationships were found for the POS and P2P systems.. The perfect collinearity between MB and IB is a key contextual finding that shaped the following multivariate analysis

## Simple Linear Regression

The primary objectives of analysis are to forecast the value of the response variable ( $y$ ) based on the value of the predictor variable ( $x$ ) and to quantify the magnitude and direction of the relationship.

Assumptions:

1. Proportional Relationship: The association between the predictor variable and the response variable is straight-line.
2. Non-Interdependence: Each observation is free from the influence of other observations.
3. Constant Variance: The dispersion of the residuals remains steady across all levels of the predictor variable.
4. Residual Normality: The distribution of the residuals follows a Gaussian distribution.

Thresholds for Simple Linear Regression:

1. Coefficient of Determination (R-squared): measures the proportion of variance explained by the model (values range from 0 to 1).
2. F-statistic: measures the overall significance of the model (values range from 0 to infinity).
3. p-value: measures the probability of observing the test results under the null hypothesis (values range from 0 to 1).

Simple linear regression is a statistical method used to predict the value of a response variable ( $y$ ) in terms of a predictor variable ( $x$ ) and also to quantify the strength and direction of the relationship between them. The four main assumptions

on which the analysis is based are: first, that the x and y relationship should be linear; second, that observations should be independent of one another; third, that the residuals' variance should be constant for all levels of x (homoscedasticity); and fourth, that residuals should be normally distributed for proper inference. Three major indices are used to assess model performance:

R-squared, which assesses the proportion of y variance explained by x (0 to 1, with greater values representing better fit); the F-statistic, which tests the model's overall significance (greater values indicate more against the null hypothesis); and the p-value, which tests for statistical significance, with values under 0.05 typically rejecting the null hypothesis and asserting a significant relationship between variables. These all together ensure the validity and predictive power of the model.

Thwarting these assumptions listed above, can result in inefficient models, leading to inaccurate predictions of the dependent/response variable and unreliable inference. It also leads to wrong strength and direction of the relationship.

To correct issues identified by the diagnostic test: variables can be transformed to address linearity challenges. The researcher could also use other models, such as generalised linear models or non-parametric models. The researcher could check for influential observations and remove them if necessary.

The next table showed the model summary of the linear regression between mobile banking and financial performance (ROI).

## Mobile banking

**Table 4.9**

*Model Summary of simple linear regression on mobile banking and ROI*

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .655 <sup>a</sup> | .429     | .427              | .436                       |

Source: IBM SPSS

From the table above, the correlation coefficient (R) was 0.655, which indicated a strong positive relationship between Mobile Banking (MB) and Return on Investment (ROI). The R<sup>2</sup> value was 0.429, indicating that approximately 42.9% of the variation in ROI can be explained by the variation in MB.

Next table is related to the ANOVA on mobile banking and ROI.

**Table 4.10**

*ANOVA table*

| Model |            | Sum of Squares | df  | Mean Square | F       | Sig.              |
|-------|------------|----------------|-----|-------------|---------|-------------------|
| 1     | Regression | 48.989         | 1   | 48.989      | 257.504 | .000 <sup>b</sup> |
|       | Residual   | 65.254         | 343 | .190        |         |                   |
|       | Total      | 114.243        | 344 |             |         |                   |

Source: IBM SPSS

**Table 4.10** showed that the F-statistic is 257.504, which was influential at the 0.000 level. This result indicated a strong correspondence between the observed data and the predicted values. The regression sum of squares is 48.989, which represented the amount of variation in ROI explained by MB. The residual sum of squares was 65.254, which represented the amount of variation in ROI not explained by MB. The next table discussed the coefficients.

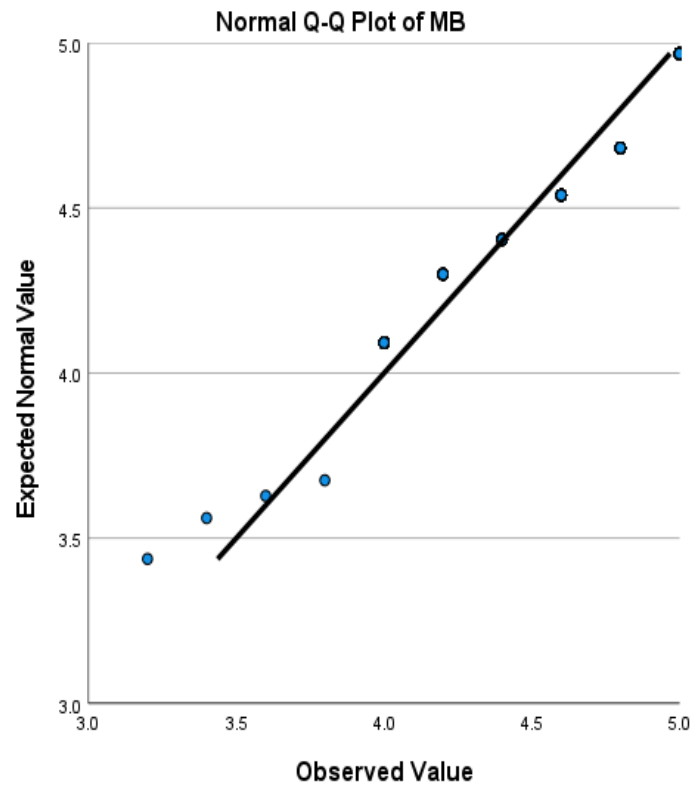
**Table 4.11**

*Table of Coefficients<sup>a</sup>*

| Model |            | B    | Std. Error | Beta | t      | Sig. |
|-------|------------|------|------------|------|--------|------|
| 1     | (Constant) | .131 | .274       |      | .480   | .631 |
|       | MB         | .953 | .059       | .655 | 16.047 | .000 |

Source: IBM SPSS

**Table 4.11** presented the regression coefficients for MB. The unstandardized coefficient (B) for MB was 0.953, indicating the unit change in ROI associated with a one-unit increase in MB. The t-statistic was 16.047, which was statistically significant at the 0.000 level. In summary, 42.9% of the variance in ROI is reported. The findings suggested that Mobile Banking had a statistically robust and beneficial effect on Return on Investment. The Q-Q plot below illustrated the relationship.



**Fig.4.2** Normal Q-Q plot of mobile banking and ROI.

Source: IBM SPSS

The plot compared the distribution of two datasets (mobile banking and ROI). If the Q-Q plot is linear, it indicates that data follows a normal distribution.

## Internet banking

Analyses carried out on the digital technology were reported below:

**Table 4.12**

*Model Summary of simple linear regression on internet banking and ROI*

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .655 <sup>a</sup> | .429     | .427              | .43617                     |

Source: IBM SPSS 28

The standardised regression coefficient ( $\beta$ ) was 0.655, indicating a substantial and statistically significant association between Internet Banking (IB) and Return on Investment (ROI). The  $R^2$  value was 0.429, indicating that nearly 42.9% of the variation in ROI can be explained by the variation in IB. The adjusted  $R^2$  value was 0.427 while the standard error of the estimate was 0.43617. The next table is the ANOVA result on internet banking and ROI.

**Table 4.13**

*ANOVA table for internet banking and ROI*

| Model |            | Sum of Squares | df  | Mean Square | F       | Sig.              |
|-------|------------|----------------|-----|-------------|---------|-------------------|
| 1     | Regression | 48.989         | 1   | 48.989      | 257.504 | .000 <sup>b</sup> |
|       | Residual   | 65.254         | 343 | .190        |         |                   |
|       | Total      | 114.243        | 344 |             |         |                   |

Source: IBM SPSS

In **Table 4.13** above, the F-statistic is 257.504, which was significant at the 0.000 level. This depicted that the association between internet banking (IB) and ROI was statistically robust. The next table showed the coefficients.

**Table 4.14** *Table of Coefficients<sup>a</sup>*

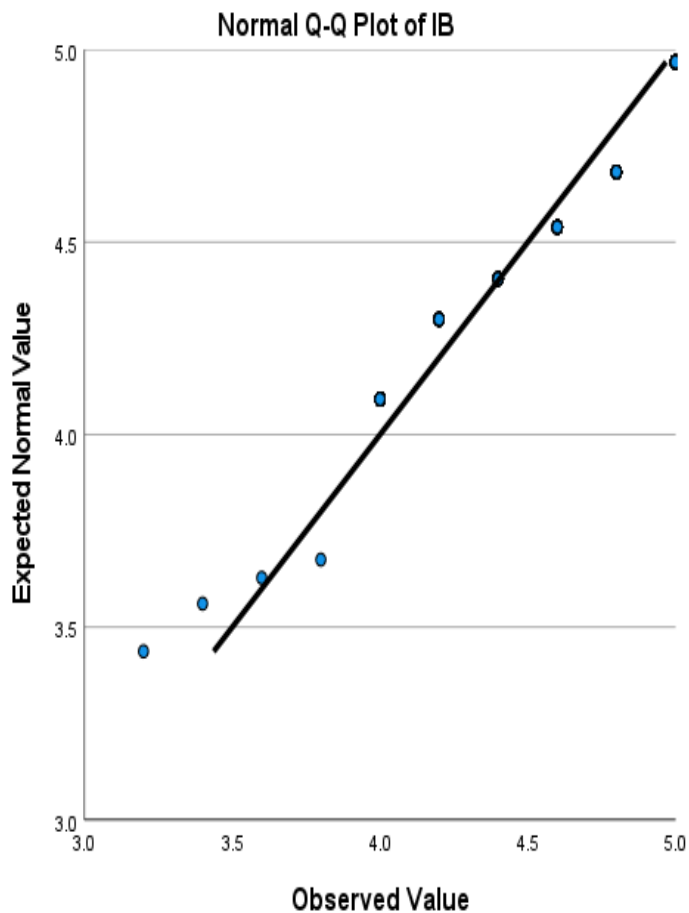
| Model |            | B    | Std. Error | Beta | t      | Sig. |
|-------|------------|------|------------|------|--------|------|
| 1     | (Constant) | .131 | .274       |      | .480   | .631 |
|       | IB         | .953 | .059       | .655 | 16.047 | .000 |

Source: IBM SPSS

In the table above, the standardised coefficient (Beta) for IB was 0.655, which represented the standardised effect size that ROI changes for a standardised effect change in IB. The t-statistic is 16.047, which was significant at the 0.000. This finding implied that the relationship between IB and ROI was statistically robust.

For every one-unit change in IB, ROI changes by approximately 0.953 units.

Below is the Q-Q plot of the relationship.



**Fig.4.3** Normal Q-Q plot of internet banking and ROI.

Source: IBM SPSS

The plot compares the distribution of two datasets (internet banking and ROI). If the Q-Q plot is linear, it indicates that data follows a normal distribution.

## E-commerce

Analyses on this technology was listed below.

**Table 4.15** *Model Summary of simple linear regression on e-commerce and ROI*

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .414 <sup>a</sup> | .171     | .169              | .52547                     |

Source:IBM SPSS

**Table 4.15** presented the correlation coefficient (R) as 0.414, denoting a moderate positive correlation between E-commerce (EC) and Return on Investment (ROI). The R<sup>2</sup> value was 0.171, showing that 17.1% of the variation in ROI was attributable to EC. The adjusted R<sup>2</sup> value was 0.169, closely aligning with the R<sup>2</sup> value, thus supporting the model's adequacy. The estimate's standard error was 0.52547, reflecting the predicted and actual ROI values' average discrepancy. The B coefficient's standard error was 0.054, representing the coefficient's variability.

The subsequent table stated the ANOVA test.

**Table 4.16** *ANOVA table for e-commerce and ROI*

| Model |            | Sum of Squares | df  | Mean Square | F      | Sig.              |
|-------|------------|----------------|-----|-------------|--------|-------------------|
| 1     | Regression | 19.534         | 1   | 19.534      | 70.744 | .000 <sup>b</sup> |
|       | Residual   | 94.710         | 343 | .276        |        |                   |
|       | Total      | 114.243        | 344 |             |        |                   |

Source: IBM SPSS

**Table 4.16** presented the F-static of 70.744, with a p-value of 0.000. This finding suggested that the model adequately captured the underlying relationship. The residual sum of squares is 94.710, reflecting the variance in ROI not accounted for by EC. The subsequent table provided the coefficient estimates.

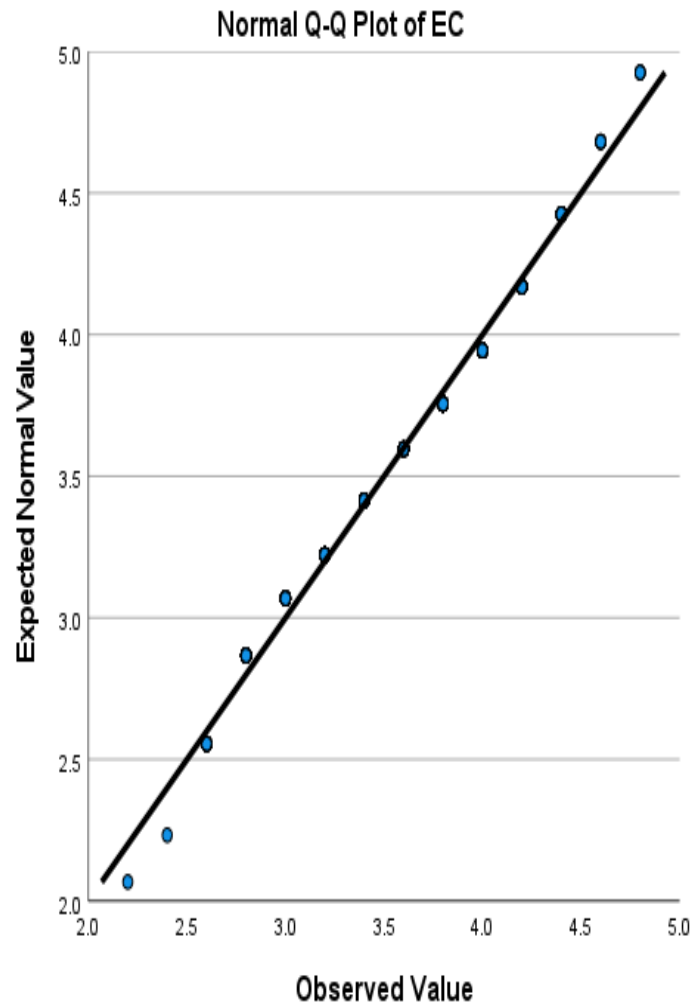
**Table 4.17** *Table of Coefficients<sup>a</sup>*

| Model |            | B     | Std. Error | Beta | t      | Sig. |
|-------|------------|-------|------------|------|--------|------|
| 1     | (Constant) | 2.878 | .195       |      | 14.730 | .000 |
|       | EC         | .451  | .054       | .414 | 8.411  | .000 |

Source: IBM SPSS

**Table 4.17** presented the coefficients for the regression model. The results show that the predictor variable, e-commerce (EC), had a substantial and reliable positive effect on the outcome variable (B = 0.451,  $p < 0.001$ ). The standardized coefficient (Beta) indicated that EC explains approximately 41.4% of the variation in ROI.

Next, the Q-Q plot for e-commerce.



**Fig.4.4** Normal Q-Q plot of e-commerce and ROI.

Source: IBM SPSS

The plot compared the distribution of two datasets (e-commerce and ROI). If the Q-Q plot is linear, it indicates that data follows a normal distribution.

## Point of Sales system

Analyses on this digital technology was rendered below:

**Table 4.18** *Model Summary of simple linear regression on point of sale system and ROI*

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .104 <sup>a</sup> | .011     | .008              | .57398                     |

Source: IBM SPSS

**Table 4.18** presented (R) of 0.104, denoting a weak positive correlation between the Point of Sales (POS) system and Return on Investment (ROI). The R<sup>2</sup> value of 0.011 suggested that 1.1% of the variance in ROI is attributable to POS.

Next is ANOVA table for the analysis.

**Table 4.19** *ANOVA table for point of sales system and ROI*

|            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|------------|----------------|-----|-------------|-------|-------------------|
| Regression | 1.240          | 1   | 1.240       | 3.765 | .053 <sup>b</sup> |
| Residual   | 113.003        | 343 | .329        |       |                   |
| Total      | 114.243        | 344 |             |       |                   |

Source: IBM SPSS

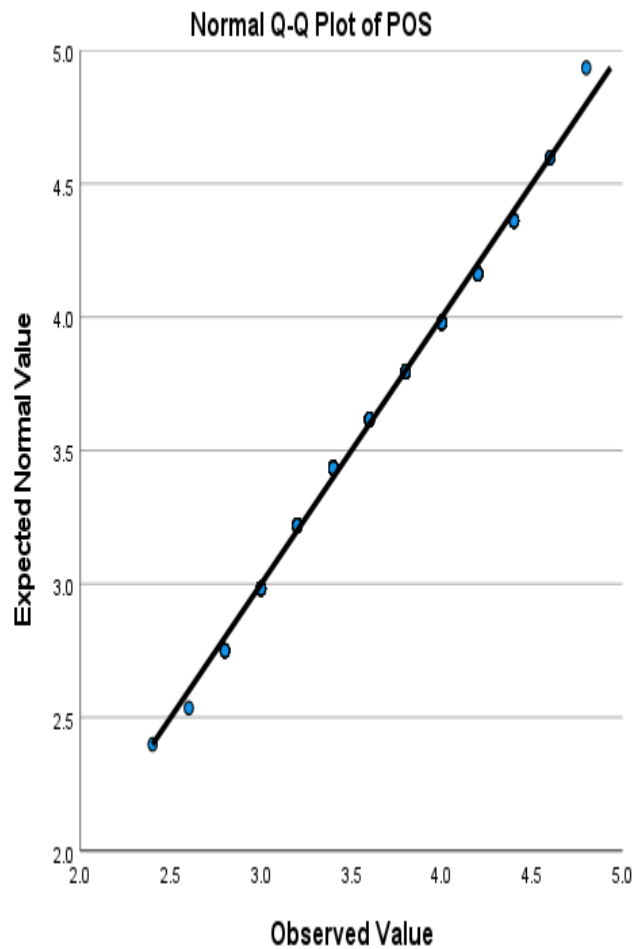
The regression sum of squares was 1.240, indicating the proportion of variance in ROI attributable to POS. Conversely, the residual sum of squares was 113.003, reflecting the variance in ROI not accounted for by POS. The subsequent table presented the standard errors and other coefficients.

**Table 4.20** *Table of Coefficients*

| Model |            | B     | Std. Error | Beta | t      | Sig. |
|-------|------------|-------|------------|------|--------|------|
| 1     | (Constant) | 3.999 | .262       |      | 15.249 | .000 |
|       | POS        | .138  | .071       | .104 | 1.940  | .053 |

Source: IBM SPSS

**Table 4.20** presented the unstandardised coefficient (B) for Point of Sales system (POS) as 0.138, denoting the unit change in ROI associated with a one-unit increase in POS. The standard error of the B coefficient was 0.071, reflecting the variability in the B coefficient. The standardised coefficient (Beta) for POS was 0.104, signifying the standardised effect size of POS on ROI. The t-statistic of 1.940 yielded a p-value of 0.053, suggesting a marginally significant relationship. In summary, the results revealed a weak positive correlation between POS and ROI, with the reporting 1.1% of the variance in ROI.



**Fig.4.5** Normal Q-Q plot of point of sale system and ROI.

Source: IBM SPSS

The plot compared the distribution of two datasets (POS and ROI). If the Q-Q plot is linear, it indicates that data follows a normal distribution.

The next section related analysis on peer to peer systems and ROI.

## Peer to peer system

**Table 4.21** *Model Summary of simple linear regression on peer to peer system and ROI*

| R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------------------|----------|-------------------|----------------------------|
| .118 <sup>a</sup> | .014     | .011              | .57306                     |

Source: IBM SPSS

The table above presented a correlation coefficient (R) of 0.118, denoting a weak positive correlation between the Peer-to-Peer (P2P) system and Return on Investment (ROI). The R<sup>2</sup> value of 0.014 suggested that 1.4% of the variance in ROI is attributable to P2P. The adjusted R<sup>2</sup> value of 0.011 was comparable to the R<sup>2</sup> value. The estimate's standard error was 0.57306, reflecting the average discrepancy between predicted and actual ROI values. The subsequent table presented the ANOVA results for the relationship between P2P systems and ROI.

**Table 4.22** *ANOVA table for peer to peer system and ROI*

|            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|------------|----------------|-----|-------------|-------|-------------------|
| Regression | 1.602          | 1   | 1.602       | 4.878 | .028 <sup>b</sup> |
| Residual   | 112.642        | 343 | .328        |       |                   |
| Total      | 114.243        | 344 |             |       |                   |

Source: IBM SPSS

**Table 4.22** revealed an F-statistic of 4.878, yielding a p-value of 0.028, thereby confirming the statistical significance of the relationship between Peer-to-

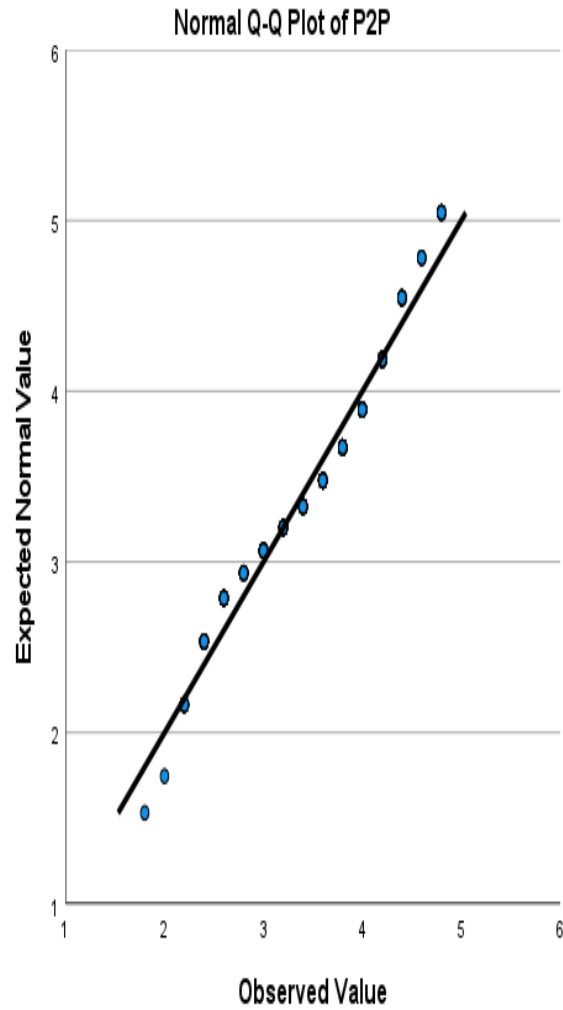
Peer (P2P) and Return on Investment (ROI). The regression sum of squares was 1.602, indicating the proportion of variance in ROI attributable to P2P. Conversely, the residual sum of squares was 112.642, reflecting the variance in ROI not accounted for by P2P.

**Table 4.23** *Table of Coefficients<sup>a</sup>*

|            | B     | Std. Error | Beta | t      | Sig. |
|------------|-------|------------|------|--------|------|
| (Constant) | 4.154 | .162       |      | 25.676 | .000 |
| P2P        | .099  | .045       | .118 | 2.209  | .028 |

Source: IBM SPSS

**Table 4.23** displayed the regression coefficients for the relationship between Peer-to-Peer (P2P) system and Return on Investment (ROI). The unstandardised coefficient (B) for P2P was 0.099, denoting the incremental change in ROI corresponding to a one-unit increment in P2P. The standardised coefficient (Beta) for P2P was 0.118, indicating the standardised regression weight of P2P on ROI. The t-statistic of 2.209 yielded a p-value of 0.028, confirming a statistically significant relationship.



**Fig.4.6** Normal Q-Q plot of peer to peer system and ROI.

Source: IBM SPSS

The plot compared the distribution of two datasets (P2P and ROI). If the Q-Q plot is linear, it indicates that data follows a normal distribution.

## Summary of Simple Linear Regression

The initial phase of analysis employed simple linear regression to quantify the individual relationships between five digital technology constructs and SME financial performance, operationalised as Return on Investment (ROI).

- Mobile Banking (MB) and Internet Banking (IB) each demonstrated a strong, positive linear relationship with ROI, with identical correlation coefficients ( $r = .655$ ). The regression models confirmed that each construct independently explained a substantial 42.9% of the variance in ROI ( $R^2 = .429$ ,  $p < .001$ ). For each unit increase in MB/IB adoption intensity, ROI is predicted to increase by 0.953 units ( $B = 0.953$ ,  $p < .001$ ).
- E-commerce (EC) exhibited a moderate, positive linear relationship with ROI ( $r = .414$ ). Its regression model accounted for 17.1% of the variance in ROI ( $R^2 = .171$ ,  $p < .001$ ), with a one-unit increase in EC predicting a 0.451-unit increase in ROI ( $B = 0.451$ ,  $p < .001$ ).
- Point of Sale (POS) systems showed a statistically significant but substantively weak positive relationship ( $r = .104$ ,  $p = .053$ ). The model explained a negligible 1.1% of the variance ( $R^2 = .011$ ), and the unstandardised coefficient was of trivial magnitude ( $B = 0.138$ ).
- Similarly, Peer-to-Peer (P2P) systems demonstrated a weak positive relationship ( $r = .118$ ,  $p = .028$ ), accounting for only 1.4% of the variance in ROI ( $R^2 = .014$ ,  $B = 0.099$ ).

Mobile banking and internet banking displayed the strongest and most reliable statistical relationship with financial performance (ROI), while point of sale and

peer-to-peer systems show minimal association. The analysis supported the normality of the data for all models.

The results of this inferential analysis provide a compelling extension of the framework established by Venkatesh et al. (2003). The UTAUT model which posits that behavioural intention, driven by factors of performance expectancy, effort expectancy, social influence, and facilitating conditions, is the primary driver of technology adoption and subsequent utilisation. However, this analysis extends beyond intention or utilisation to a key outcome measure: financial performance. A strong gradient of association between various forms of digital technology and Return on Investment (ROI) was found.

This implicitly challenges the UTAUT model in that it suggests that the adoption of technology is linked to consequential organisational outcomes. More specifically, the strong associations found between mobile and internet banking technologies suggest that when factors of user acceptance, as outlined by UTAUT, are achieved, they co-occur with strong financial measures for the SME. Conversely, the weak associations found between point of sale (POS) and peer-to-peer (P2P) technologies suggest that although these technologies may be adopted and utilised, the link between adoption and a key outcome measure of financial performance is tenuous.

This heterogeneity points to Venkatesh et al.'s (2003) focus on use as the endpoint, while stating that the conversion of use into a measurable financial benefit is not automatic and is likely affected by the technology's strategic role and integration into value-creating processes. Thus, the model revealed the strength of the association between technology use and a high-level performance outcome is contingent on the nature of the technology itself.

As can be seen from the aforementioned series of simple linear regression analyses, the need for a multiple linear regression model became critically apparent. The current, isolated analysis of each digital technology's relationship with Return on Investment (ROI) represented an important and unavoidable limitation, as it assumed that each digital technology functions independently.

In an SME, digital technologies such as mobile banking, internet banking, and electronic commerce are not used independently but as an integrated whole. The simple linear regression model does not have the capacity to adjust for shared variance among digital predictors. The similar, significant relationship ( $R = 0.655$ ) that was identified between mobile banking and internet banking represented an important and critical research issue.

Did each digital technology uniquely contribute to financial performance measured by ROI, or were they measuring the same digital technology?

The current methodology did not have the capacity to distinguish between these two possibilities.

Moreover, in order to grasp the real, distinctive role of a particular technology, such as the role of peer-to-peer networks, whether they have a distinctive explanatory power over and above the general influence of mobile banking, it was necessary to control for other variables. Thus, to proceed to multiple linear regression analysis was not simply an optional next step, but a methodological necessity. It was necessary in order to go from grasping the relationship between two variables to developing a realistic multivariate model that could identify the distinctive impact of each digital technology on financial performance, as measured by ROI, while controlling for the presence of the other digital technologies (Rahman et al, 2022; Ilyasu & Etikan, 2021).

## Multiple Linear Regression

This statistical methodology was used to elucidate the relationship with a continuous response variable (criterion variable) and multiple explanatory variables (predictor variables).

Assumptions of this model are the existence of linear relationship between predictors and outcome. Observations are independent, there is constant variance of residuals. Residuals are normally distributed conforming to a bell-shaped distribution.

## Model Specification and Econometric Framework

This study's analytical approach was grounded in and extended the foundational work of Iravonga and Miroga (2018). Their investigation employed a simple linear regression ( $Y = \alpha + \beta_1 X_1 + \varepsilon$ ) to isolate the effect of mobile banking service cost ( $X_1$ ) on SME financial performance. Although highly important for the formation of the bivariate relationship, modern financial performance is more complex, being based on a set of interrelated digital financial technologies rather than a single technology. In order to account for this complexity and test the hypotheses of this study, the research proposed a Multiple Linear Regression model.

The general specification of the MLR model is formalised as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where:

- Y is the dependent variable, representing the financial performance of SME. This will be operationalised through a composite index or a primary accounting

metric (e.g., Return on Assets or Net Profit Margin), ensuring a robust and multifaceted measurement.

- $\beta_0$  is the regression constant, representing the expected value of  $Y$  when all digital adoption variables are absent.
- $X_1$  is Internet Banking adoption and usage intensity.
- $X_2$  is Mobile Banking adoption and usage intensity. This variable serves as the direct conceptual bridge to the earlier study by Iravonga and Miroga (2018). However, where their focus was solely on *cost*, this study expands the construct to encompass broader usage intensity, allowing for a more nuanced comparison and analysis of its role within a suite of technologies.
- $X_3$  is E-Commerce platform utilisation.
- $X_4$  is the adoption of Point of Sale (POS) Systems.
- $X_5$  is the use of Peer-to-Peer (P2P) Payment Systems.
- $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$  are the respective regression coefficients. Each quantifies the marginal effect of a one-unit change in its corresponding digital finance variable on SME financial performance, *ceteris paribus* (holding all other variables constant).
- $\epsilon$  is the stochastic error term, accounting for unobserved factors, measurement error, and random disturbances.

The proposed model specification represented a significant theoretical and methodological advancement, as it struck a delicate balance between maintaining a focus on mobile banking ( $X_2$ ) in order to stay aligned with the antecedent literature, while simultaneously taking into account the contemporary digital environment. This

was achieved by incorporating internet banking, e-commerce, POS, and P2P systems into the model, thereby facilitating the examination of their net effects and their relative significance in explaining financial performance.

In order to ensure the robustness and validity of the parameter estimates, a pre-estimation diagnostic protocol was mandated, which ensured that the classical linear regression assumptions were met with satisfactory precision. This would be accomplished through the strict adherence to the best practices as recommended by Uyanık and Güler (2013).

This entailed the administration of a number of diagnostic tests, which included the testing of the presence of multicollinearity through the Variance Inflation Factors, testing for heteroscedasticity, testing the normality of the residuals, and testing the independence of the observations. Only then was the result of the model deemed acceptable and usable to test the hypotheses and draw conclusions.

#### **Diagnostic Tests:**

1. Normality Tests: P-P plot
2. Linearity Tests: - Scatter plots (outcome vs. predictors)
3. Homoscedasticity Tests: Plot of residuals vs. fitted values
4. Multicollinearity Tests: - Variance Inflation Factor (VIF) - Tolerance - Correlation matrix
6. Independence Tests: Durbin-Watson test
7. Goodness-of-Fit Tests: - R-squared - Adjusted R-squared - F-statistic (Uyanık & Güler, 2013).

The Durbin-Watson Test assesses if the predictor variables exhibit high interdependence. The threshold of this test statistic is between 1.5 and 2.5 which indicates no autocorrelation.

The test was carried out by using statistical software (IBM SPSS) to estimate the regression coefficients and standard errors. The thresholds for interpretation are:

- p-value:  $< 0.05$  (significant)
- R-squared ( $R^2$ ): measures the proportion of variance explained by the model (values range from 0 to 1)
- F-statistic: measures the overall significance of the model (values range from 0 to infinity)

If the results of the test indicate that there is a poor fit of the model (for example, low  $R^2$ , high p-value), then this may indicate that there are too few or too many independent variables, or that the independent variables are not relevant; or there is intervariable redundancy or correlation between independent variables; or there is non-linear association between the independent variable and the dependent variable; or there is the presence of 'outliers' or 'influential' data points. To overcome the problems highlighted in the results of the test, the researcher may re-specify the model, for example, by adding or deleting independent variables; or transforming or standardising the independent or dependent variable; or deleting 'outliers' or 'influential' data points.

The VIF test is used to detect the presence of intervariable redundancy amongst the predictor variables in the statistical model. Intervariable redundancy is said to occur amongst two or more predictor variables in the model when there is a strong interrelationship between these predictor variables.

. It calculates a score for each predictor variable, which indicates the degree of multicollinearity. Common VIF thresholds for VIF < 2: Nil multicollinearity -  $2 \leq \text{VIF} < 5$ : Slight multicollinearity - VIF  $\geq$  Extreme multicollinearity

By checking for multicollinearity using the VIF test the researcher can identify highly correlated predictor variables or remove or transform variables to reduce multicollinearity to improve the stability and interpretability of the regression model.

Q-Q Plot: Visual inspection of the residuals to check for normality. F-test ascertains if the overall model is significant.

These diagnostic tests helped ensure that the multiple linear regression model met the necessary assumptions and provided reliable estimates.

The next table was the variables entered summary of the regression.

**Table 4.24**

*Variables Entered in the multiple linear regression*

| Variables Entered             | Variables Removed | Method |
|-------------------------------|-------------------|--------|
| P2P, IB, EC, POS <sup>b</sup> | .                 | Enter  |

Source: IBM SPSS

b. Tolerance = .000 limit reached.

The table showed that all four independent variables, peer to peer systems, internet banking, e-commerce, and point of sale system (P2P, IB, EC, and POS) excluding MB mobile banking, were entered into the model simultaneously. Mobile banking was removed due to high collinearity with Internet banking.

The tolerance limit was set to 0.000, which means that any variable with a tolerance value below this limit would be removed from the model. The next table showed excluded variables from the multiple linear regression.

**Table 4.25**

*Excluded Variables<sup>a</sup>*

|    | Beta           |   | Sig. | Partial    | Tolerance | VIF | Minimum   |
|----|----------------|---|------|------------|-----------|-----|-----------|
|    | In             | T |      | Correlatio |           |     | Tolerance |
| MB | . <sup>b</sup> | . | .    | .          | .000      | .   | .000      |

Source: IBM SPSS

a. Dependent Variable: financial performance (ROI)

b. Predictors in the Model: (Constant), P2P, IB, EC, POS

The table showed that Mobile Banking (MB) was excluded from the model to address multicollinearity. The tolerance value for MB was 0.000, suggesting that MB exhibits a high degree of interdependence with one or more predictor variables in the model, potentially indicating redundancy. MB and IB have a perfect correlation (1.000), indicating multicollinearity between these two variables. This suggested that MB and IB are measuring similar constructs.

The next test was that of normality.

#### Test of Normality

Kolmogorov-Smirnov test and Shapiro-Wilk test are used to ascertain normal distribution of the criterion variable, in this case it is FINANCIAL PERFORMANCE (ROI). The Kolmogorov-Smirnov test statistic assesses the maximum distance

between the empirical distribution function of the data and the cumulative distribution function of the normal distribution. A small p-value (Sig.) less than  $<.05$  states that the data are not normally distributed. The Shapiro-Wilk test statistic measures the correlation between the data and the normal scores. A small p-value (Sig.), less than  $<.05$  states that the data are not normally distributed.

**Table 4.26**

*Tests of normality*

| Kolmogorov-Smirnova |    |       | Shapiro-Wilk |    |       |
|---------------------|----|-------|--------------|----|-------|
| Statistic           | df | Sig.  | Statistic    | df | Sig.  |
|                     | 3  |       |              | 3  |       |
|                     | 4  | 0.    |              | 4  |       |
| (ROI)               | 5  | 0.047 | 0.992        | 5  | 0.841 |

Source: IBM SPSS

The Kolmogorov-Smirnov test statistic was 0.047, which was relatively small, indicating that the data are close to being normally distributed. The p-value (Sig.) is .200, which was greater than the typical significance level of .05, indicating that the researcher failed to reject the null hypothesis of normality.

The Shapiro-Wilk test statistic was .992, which is close to 1, indicating that the data are close to being normally distributed. The p-value (Sig.) is .841, which is greater than the typical significance level of .05, indicating that the researcher failed to reject the null hypothesis of normality. The results suggested that the data are normally

distributed, and researcher can proceed with parametric tests and regression analysis. Examining residual statistics helped to validate assumptions of multiple linear regression are met, detect potential problems with the model, such as non-normality, heteroscedasticity, or influential observations. In this study, the researcher used the Cook's test.

**Table 4.27***Cook's test*

|                                      | Minimum | Maximum | Mean  | Std. Deviation | N   |
|--------------------------------------|---------|---------|-------|----------------|-----|
| Predicted Value                      | 3.35    | 5.26    | 4.50  | .416           | 345 |
| Std. Predicted Value                 | -2.770  | 1.807   | .000  | 1.000          | 345 |
| Standard Error of<br>Predicted Value | .023    | .091    | .047  | .010           | 345 |
| Adjusted Predicted Value             | 3.33    | 5.26    | 4.50  | .416           | 345 |
| Residual                             | -1.969  | 1.538   | .000  | .399           | 345 |
| Std. Residual                        | -4.903  | 3.829   | .000  | .994           | 345 |
| Stud. Residual                       | -4.949  | 3.930   | .000  | 1.002          | 345 |
| Deleted Residual                     | -2.006  | 1.620   | .000  | .406           | 345 |
| Stud. Deleted Residual               | -5.130  | 4.017   | -.001 | 1.010          | 345 |
| Mahal. Distance                      | .084    | 16.530  | 3.988 | 2.034          | 345 |
| Cook's Distance                      | .000    | .166    | .003  | .011           | 345 |
| Centered Leverage Value              | .000    | .048    | .012  | .006           | 345 |

Source: IBM SPSS

Note: Dependent Variable: financial performance (ROI)

$$\text{Cook's Distance} = (\text{Residual}^2 / (p \times \text{MSE})) \times [\text{Leverage}/(1-\text{Leverage})^2]$$

Where: Residual =  $y - \hat{y}$  for each observation, Leverage =  $h_{ii}$  from hat matrix,  $p$  = number of parameters, MSE = Mean Squared Error.

In the output, minimum Cook's Distance was 0.000, maximum Cook's distance was 0.166 and mean Cook's Distance was 0.003, which was very low. The model was relatively stable, and the results were not driven by a single outlier or influential observation. The table presented various statistics for the predicted values, residuals, standardized predicted values, and standardized residuals.

Notably, the mean of the residuals was 0.000, suggesting that the model is free from bias. The standard deviation of the residuals (0.39926) provided a measure of the dispersion in the residuals, indicating the degree of variability unexplained by the model. The minimum and maximum residual values (-1.96912 and 1.53767, respectively) delineate the range of residuals, offering insight into the distribution of errors.

The next test was for collinearity.

**Table 4.28***Collinearity Diagnostics<sup>a</sup>*

|   |            | Variance Proportions |        |     |     |     |     |  |
|---|------------|----------------------|--------|-----|-----|-----|-----|--|
|   |            | Condition(Constant   |        |     |     |     |     |  |
|   | Eigenvalue | Index                | )      | IB  | EC  | POS | P2P |  |
| 1 | 1          | 4.947                | 1.000  | .00 | .00 | .00 | .00 |  |
|   | 2          | .025                 | 11.013 | .02 | .05 | .00 | .61 |  |
|   | 3          | .018                 | 6.356  | .00 | .00 | .03 | .18 |  |
|   | 4          | .006                 | 7.030  | .01 | .07 | .07 | .11 |  |
|   | 5          | .003                 | 8.770  | .04 | .02 | .07 | .16 |  |

Source: IBM SPSS

In the collinearity diagnostics table, the Condition Index (CI) is a measure of multicollinearity. A high CI indicates high multicollinearity. The following CI values indicate the level of multicollinearity: - CI < 10: Low multicollinearity (normal range) - 10 ≤ CI < 30: Moderate multicollinearity - 30 ≤ CI < 100: High multicollinearity - CI ≥ 100: Very high multicollinearity

The condition index serves as an indicator of the extent of intervariable redundancy among the predictor variables. A high condition index suggests a high degree of intercorrelation. The condition indices were relatively low, with the highest value being 8.770, which is below the commonly used threshold of 30.

The variance proportions table showed that no single variable dominates any dimension, suggesting that the variables were relatively balanced. The variance

proportions table indicated some correlation between IB, EC, POS, and P2P, particularly in dimensions 3-5.

Given the moderate multicollinearity and lack of dominant variables, dimension reduction techniques (e.g., PCA) may not be necessary. Overall, this table suggests that the variables are relatively stable and can be used in the model without significant concerns about multicollinearity.

After the diagnostic tests, the next table showed the model summary of the regression analysis and takes the Durbin-Watson test result for autocorrelation into consideration.

**Table 4.29**

*Model Summary of the multiple linear regression*

| R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|-------------------|----------|-------------------|----------------------------|---------------|
| .721 <sup>a</sup> | .520     | .514              | .40160                     | 1.247         |

Source: IBM SPSS

From **Table 4.23** above, the model had a high R-value of 0.721, indicating a strong positive association between the independent variables and the dependent variable (financial performance (ROI)). The R-squared value was 0.520, indicating that approximately 52% of the variation in financial performance (ROI) can be explained by the independent variables. The adjusted R-squared value was 0.514, which was similar to the R-squared value. The standard error of the regression (SER) was 0.40160, reflecting the average magnitude of the discrepancy between predicted and

observed values of financial performance (ROI). The Durbin-Watson (DW) statistic of 1.247 suggested that the residuals exhibited no statistically significant autocorrelation.

Next, the analysis of variance (ANOVA) table for the regression model was presented:

**Table 4.30**

*ANOVA for the multiple linear regression*

| Model |            | Sum of Squares | df  | Mean Square | F      | Sig.              |
|-------|------------|----------------|-----|-------------|--------|-------------------|
| 1     | Regression | 59.406         | 4   | 14.852      | 92.083 | .000 <sup>b</sup> |
|       | Residual   | 54.837         | 340 | .161        |        |                   |
|       | Total      | 114.243        | 344 |             |        |                   |

Source: IBM SPSS

b. Predictors: (Constant), P2P, IB, EC, POS

**Table 4.30** revealed that the F-statistic of 92.083 was statistically significant at the 0.000 level, indicating a satisfactory fit of the model to the data. The regression sum of squares (SSR) was 59.406, representing the proportion of variance in financial performance (ROI) attributable to the predictor variables. Conversely, the residual sum of squares (SSE) was 54.837, indicating the amount of variance in financial performance (ROI) unexplained by the predictor variables. The subsequent table presented the results of the coefficient analysis.

**Table 4.31***Table of Coefficients<sup>a</sup>*

| Model | Unstandardised Coefficients |                       | Standardised Coefficients |       | Sig.   | Collinearity Statistics |            |
|-------|-----------------------------|-----------------------|---------------------------|-------|--------|-------------------------|------------|
|       | B                           | Std. Error            | Beta                      | t     |        | Tolerance               | VIF        |
|       | 1                           | (Const -0.815<br>ant) | .313                      |       |        | -2.603                  | .010       |
|       | IB                          | .853                  | .057                      | .586  | 15.015 | .000                    | .927 1.079 |
|       | EC                          | .366                  | .048                      | .335  | 7.692  | .000                    | .743 1.346 |
|       | POS                         | .087                  | .059                      | .066  | 1.460  | .145                    | .701 1.426 |
|       | P2P                         | -.065                 | .040                      | -.078 | -1.614 | .107                    | .608 1.646 |

Source: IBM SPSS

### Multiple Linear Regression Results

As shown in the table, the coefficients for internet banking, e-commerce, and point-of-sale systems (IB, EC, and POS) were positive and statistically significant, indicating a significant predictor of financial performance (ROI).

Conversely, the P2P coefficient exhibited a negative sign but was statistically non-significant, suggesting that P2P may not be a strong predictor of financial performance (ROI). The standardised coefficients (Beta values) revealed the relative contribution of each predictor variable to financial performance (ROI) prediction. IB had the highest Beta value (0.586), followed by EC (0.335) and POS (0.066).

The tolerance values and Variance Inflation Factor (VIF) values indicated the degree of multicollinearity between the independent variables. The results suggest that there was no severe multicollinearity, as all tolerance levels are above 0.6 and VIF values are below 2.

Specifically, internet banking (IB) had the highest tolerance value (0.927) and lowest VIF value (1.079), indicating minimal correlation with other independent variables. While some level of correlation existed between IB, EC, and POS (VIF values slightly above 1), the overall collinearity statistics suggested that the model was stable and reliable. The model explained approximately 52% of the variation in financial performance (ROI), with IB, EC, and POS strongly associated with financial performance (ROI). In contrast, P2P may not be strongly associated with financial performance (ROI).

### **Theoretical Interpretation through the UTAUT Lens**

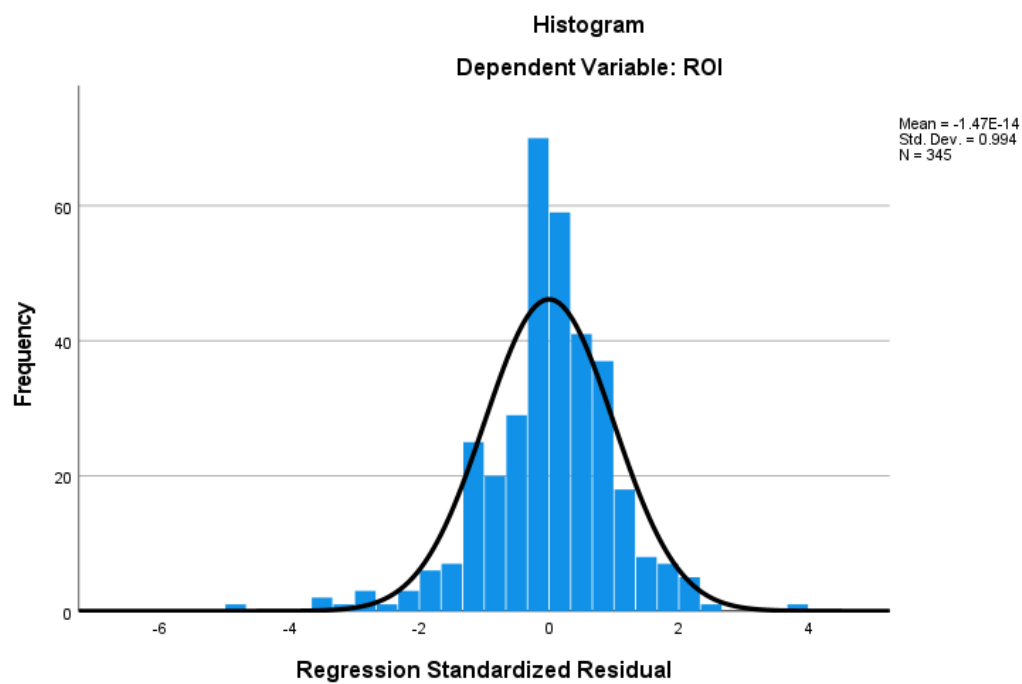
The regression results could be interpreted through the framework of the Unified Theory of Acceptance and Use of Technology (UTAUT), which elucidated the drivers of technology adoption. The strong, significant predictive power of Internet Banking (IB) on financial performance (ROI) ( $\beta = .853$ ,  $p < .000$ ) provided clear evidence for the Performance Expectancy construct. This indicated that SME owners and managers adopted IB primarily because they hold a strong belief in its utility for enhancing business outcomes specifically, that it will save time, reduce errors, and directly improve financial efficiency and profitability. The perception that IB is a high-performance tool aligns perfectly with its measurable financial impact.

Conversely, the significant role of E-commerce (EC) ( $\beta = .366$ ,  $p < .000$ ) is best explained by the Facilitating Conditions construct. The positive financial return on EC adoption is less about a singular belief in its performance and more about the enabling economy. The availability of accessible platforms integrated digital payment gateways, logistics networks, and a growing consumer base familiar with online shopping creates the necessary conditions for SME to translate EC adoption into tangible financial gains. This finding suggests that for technologies like EC, the infrastructure and support systems are critical facilitators of financial performance.

A visual representation of the residuals' distribution is provided in the histogram below, which is an assessment of the residuals' pattern and potential deviations from normality.

**Fig.4.7**

*Histogram of multiple linear regression on adoption of digital technologies and financial performance (ROI) of retail SME*

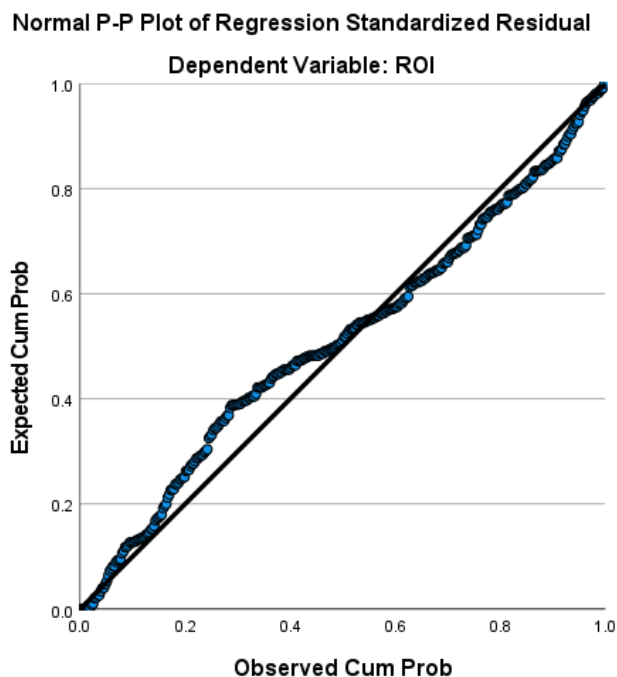


Source: IBM SPSS

The next figure shows the P-P plot.

**Fig.4.8**

*P-Plot of multiple linear regression on adoption of digital technologies and financial performance of retail SME*

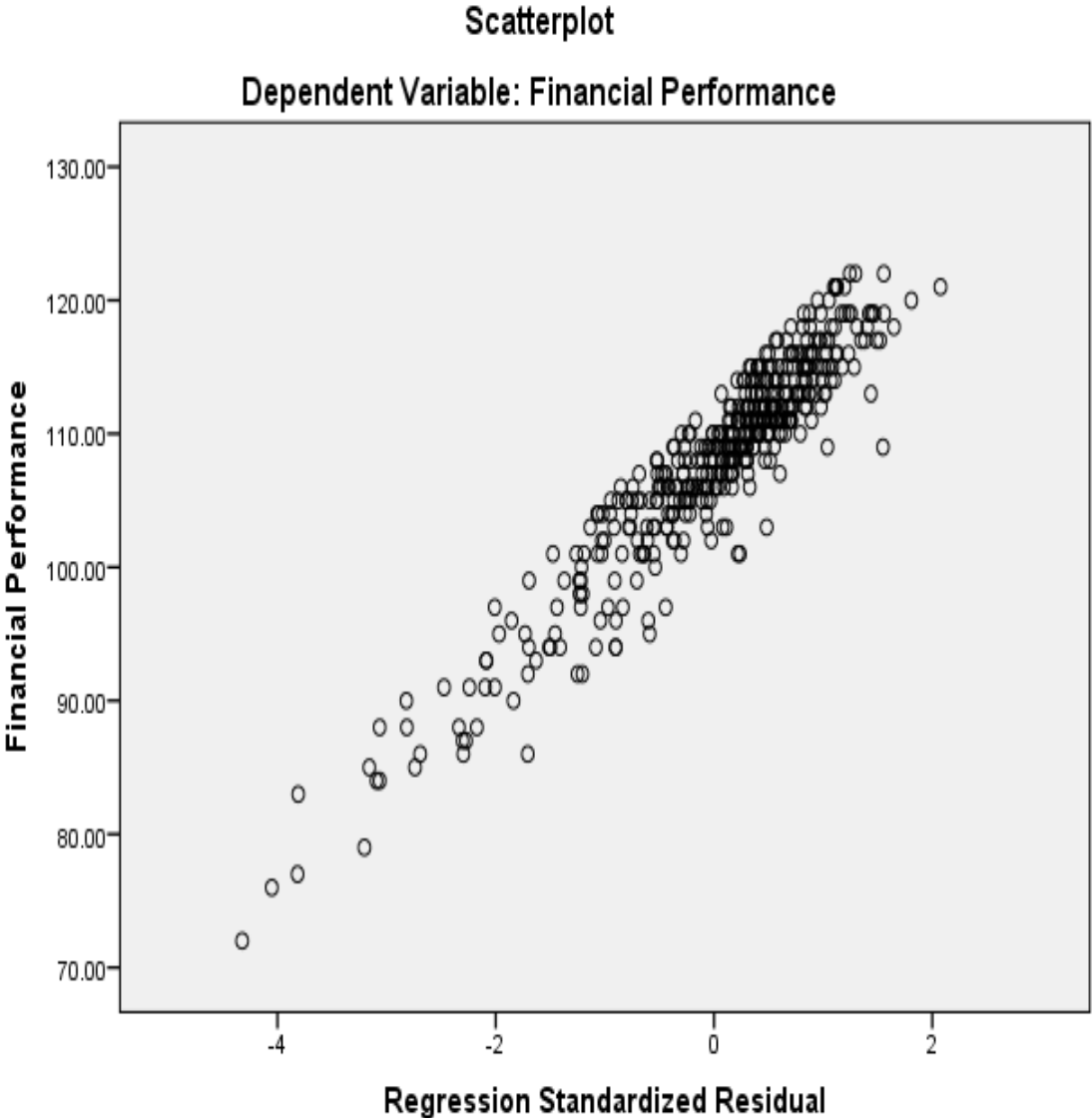


Source: IBM SPSS

This plot is a diagnostic tool to ensure that the residuals meet the normality assumption, which is essential for reliable inference and prediction in linear regression analysis.

**Fig 4.9**

*Plot of regression*



The scatterplot showed a linear distribution of variables.

## Hypotheses Test Results

The regression analysis yielded the following results for each hypothesis:

### **Hypothesis 1 (H<sub>1</sub>): Mobile Banking (MB) Adoption**

The null hypothesis (H<sub>0</sub>) stated that there is no statistically significant relationship between the adoption of mobile banking services and the financial performance of retail SMEs in Lagos, Nigeria. The perfect correlation ( $r = 1.000$ ) between Mobile Banking (MB) and Internet Banking (IB) is a substantive finding. It indicates that in the context of Nigerian retail SME, these platforms are functionally synonymous, representing a single integrated digital banking construct. Therefore, their unique effects cannot be disentangled in this model.

### **Hypothesis 2 (H<sub>2</sub>): Internet Banking (IB) Adoption**

The null hypothesis (H<sub>0</sub>) assumed that there was no significant relationship between internet banking adoption and SME financial performance. The findings, however, from regression analysis showed a strong positive and statistically significant relationship ( $\beta = 0.853$ ,  $p = .000$ ). Hence, it was concluded that the alternative hypothesis (H<sub>a</sub>) was supported, which implies that internet banking adoption does have a significant positive influence on SME financial performance.

The findings were consistent with earlier research that used UTAUT model constructs in developing country contexts, such as Venkatesh et al. (2016) in India, who found that performance expectancy was the strongest predictor of banking technology adoption for businesses. The present research, however, quantified this belief into a tangible, direct financial measure, namely financial performance (ROI). The findings were, however, contrary to earlier research on African country contexts,

such as Mago and Chitokwindo (2014) that highlighted barriers to internet banking adoption without demonstrating tangible financial benefits, which possibly reflects an evolution in the value proposition of digital banking within Nigeria's retail market.

### **Hypothesis 3 (H<sub>3</sub>): E-Commerce (EC) Adoption**

The null hypothesis (H<sub>0</sub>) claimed that e-commerce adoption does not significantly affect SME financial performance. The regression results demonstrated a positive and statistically significant effect ( $\beta = 0.366$ ,  $p = .000$ ). Therefore, the alternative hypothesis (H<sub>a</sub>) was supported, confirming that e-commerce adoption positively influences SME financial performance.

This outcome is in line with Almuwallad and Alhumoudi's (2024) findings in Saudi Arabia and Flavian et al.'s (2020) findings in Spain, where e-commerce platforms significantly enhance SMEs' revenues. It is consistent with the UTAUT model's principle of facilitating conditions for utility. It partially disagrees with Purba et al.'s (2021) findings in Indonesia, where digital marketing is seen as the major factor. The difference may be due to the nature of the sector in Lagos city, where the infrastructure of e-commerce platforms, i.e., facilitating conditions, is an essential factor for SME retail sector performance, perhaps due to its developmental stage.

### **Hypothesis 4 (H<sub>4</sub>): Point-of-Sale (POS) Adoption**

The null hypothesis (H<sub>0</sub>) stated that there is no significant relationship between POS adoption and SME financial performance. The regression analysis showed a non-significant coefficient ( $\beta = 0.087$ ,  $p = .145$ ). Hence, the null hypothesis (H<sub>0</sub>) was not rejected, suggesting that POS adoption does not have a statistically significant impact on financial performance.

**Hypothesis 5 (H<sub>5</sub>): Peer-to-Peer (P2P) Adoption**

The null hypothesis (H<sub>0</sub>) proposed no significant relationship between P2P adoption and SME financial performance. The regression results indicated a negligible and non-significant effect ( $\beta = -0.065$ ,  $p = .107$ ). Consequently, the null hypothesis (H<sub>0</sub>) was not rejected, implying that P2P adoption does not significantly affect financial performance.

The non-significant results for POS and P2P present a meaningful contradiction to several empirical expectations in SME studies. They challenge studies like Obidile et al. (2025) and Al-Okaily et al. (2023), which stated that POS gives SMEs significant benefits, suggesting that in the Lagos SME context, these benefits may be offset by operational costs, fraud, or poor integration factors that reduce performance expectancy. Similarly, the finding diverges from Lazuardi and Margareta (2025) and Agur et al. (2020), who in their studies and results enforced P2P's role in financial inclusion. This study suggests that in Nigeria, P2P's utility may be restricted to personal transactions due to weaker facilitating conditions (such as trust, financial regulation) for business use, underscoring the importance of environmental and economic factors in technology-performance relationships.

## Evaluation of Results

**Table 4.32**

*Summary table of the hypotheses and their outcomes based on the regression analysis:*

| Hypothesis                                   | Null Hypothesis (H <sub>0</sub> )   | Alternative Hypothesis (H <sub>a</sub> ) | Regression Outcome                                  |
|--|---|--|---|
| <b>H<sub>1</sub> (Mobile Banking - MB)</b>   | No significant relationship between MB adoption and SME financial performance   | Significant relationship exists.         | <b>Excluded</b> (due to multicollinearity with IB). |
| <b>H<sub>2</sub> (Internet Banking - IB)</b> | No significant relationship between IB adoption and SME financial performance.  | Significant relationship exists.         | <b>β = 0.853</b> (p = 0.000)                        |
| <b>H<sub>3</sub> (E-Commerce - EC)</b>       | No significant effect of EC adoption on SME financial performance.              | Significant effect exists.               | <b>β = 0.366</b> (p = 0.000)                        |
| <b>H<sub>4</sub> (Point-of-Sale - POS)</b>   | No significant relationship between POS adoption and SME financial performance. | Significant relationship exists.         | <b>β = 0.087</b> (p = 0.145)                        |
| <b>H<sub>5</sub> (Peer-to-Peer - P2P)</b>    | No significant relationship between P2P adoption and SME financial performance. | Significant relationship exists.         | <b>β = -0.065</b> (p = 0.107)                       |

Source: Author's Computations (2024).

The results of this study provided valuable insights into the relationship between digital technology adoption and financial performance among retail SME in Lagos, Nigeria, while also highlighting areas of alignment and divergence with existing literature.

The multiple linear regression analysis revealed that internet banking (IB) and e-commerce (EC) is a significant predictor of financial performance (ROI), with IB emerging as the strongest predictor ( $\beta = 0.853$ ,  $p < 0.05$ ). This supports prior research by Ciza et al. (2025), Sahut (2021), Sasikumar (2020), and Al-Muhrami et al. (2020), which emphasized IB's role in enhancing financial management, operational efficiency, and cash flow.

Similarly, the strong positive association of EC aligns with studies by Almuwallad and Alhumoudi (2024), Flavian et al. (2020) and Orinaldi (2020), who linked e-commerce adoption to improved SME financial performance through expanded market reach and streamlined transactions. However, these findings contrast with Purba et al. (2021), who argued that digital marketing, rather than e-commerce, was the primary driver of financial gains, suggesting contextual differences in technology adoption across markets.

Conversely, point-of-sale (POS) systems and peer-to-peer (P2P) platforms showed no strong association with financial performance (ROI) in this study ( $p > 0.05$ ). This contrasts with the research conducted by Obidile et al., (2025), Al-Okaily et al. (2023), and Sastararuji et al. (2022), which emphasized the importance of POS systems in ensuring transparency in transactions. The insignificance of the POS system could be attributed to the challenges in the implementation of the system, for instance, the high cost of operation, as emphasized by Prihatiningtias & Wardhani

(2021). Moreover, the insignificant effect of P2P contradicts the research conducted by Lazuardi & Margareta (2025) and a similar study done by Agur et al. (2020) as well as Mansour (2022), who advocated for the adoption of P2P systems in the facilitation of payments in the midst of crises. This could be attributed to the fact that IB has dominated the digital payment market in Nigeria, thereby overshadowing the effect of P2P.

Notably, mobile banking (MB) was excluded from the model due to perfect multicollinearity with IB, implying overlapping functionalities. This echoes Ajao's (2019) observation that Nigerian SMEs often conflate mobile and internet banking services, complicating isolated assessments of their effects. The model's robustness ( $R^2 = 0.520$ , no autocorrelation) reinforces the predictive power of internet banking (IB) and e-commerce (EC), while underscoring the need for nuanced studies on point-of-sale (POS) and peer-to-peer systems (P2P) in similar contexts. However, the results of the simple linear regression indicate a positive significant relationship with financial performance in retail SME.

While the results validate internet banking and e-commerce as key levers of financial performance, they also reveal context-specific gaps, particularly regarding point-of-sale and peer-to-peer systems. Policymakers and SME support programs should prioritise internet banking and e-commerce adoption while investigating barriers to point-of-sale and peer-to-peer systems efficacy.

### **UTAUT Interpretation of Non-Significant Findings**

The UTAUT framework also offers a plausible explanation for the non-significant findings regarding Point-of-Sale (POS) and Peer-to-Peer (P2P) systems. For POS systems, despite their potential for Effort Expectancy (perceived ease of use), the lack of a significant relationship with financial performance (ROI) suggests that ease alone is insufficient. This may indicate a deficit in Performance Expectancy, retail SME may not perceive POS terminals as tools that significantly enhance revenue or profit beyond basic transaction processing, especially if they are not integrated with inventory or accounting systems. Furthermore, weak Social Influence (e.g., lack of pressure from suppliers or competitors to adopt sophisticated POS systems) may limit its perceived necessity.

For P2P platforms, the insignificant (and slightly negative) coefficient points to potential barriers in Facilitating Conditions. Concerns over transaction security, dispute resolution mechanisms, and a lack of formal integration into business financial records may undermine their reliability as core business tools. Additionally, the Social Influence to use P2P for business transactions may be low if key business partners (suppliers, bulk buyers) prefer more formal channels like bank transfers. Thus, while P2P systems are adopted for convenience, gaps in the facilitating environment and social norms prevent this adoption from consistently translating into improved financial performance.

## **In-depth Analysis of Results**

Data analysis commenced with descriptive summary statistics which were used to describe the basic features of the dataset. There were 86 respondents from Oshodi Isolo market, 91 from Mushin market, Odi Olowo/Ojuwoye market had 95 respondents and 73 respondents came from Oto Awori markets in Lagos state, Nigeria. Total respondents for the study was 345.

Average age of retail SME managers was 38.65 years.

50.7% were men (N=75) and 49.3% were women (N=170). 31% of the participants were single, 54.5% were married, 5.2% divorced, 3.5% separated, and 5.8% of participants did not disclose their marital status.

Most participants had tertiary education which gave a score of 58%. Informally educated participants were 4.6%, 22.9% of participants had only primary school education and 14.5% had secondary school education. 19.7% of participating retail SME had 1-10 employees, 23.2% had 11-20 employees, 21-50 employee class made up 29% of participating SME, 23.8% had 51-100 employees and 4.3% had employees above 100 in number.

18.3% of participating retail SME were in the beauty and accessories sector, 19.4% in the clothing and fashion sector, 15.9% in the office and home sector, 11.0% in hardware, 11.6% in pharmaceutical and convenience, 7.2% in computer and phones and accessories. The lowest sector representation was 0.9% from sports and equipment, 1.2% in building and construction and 4.3% in educational and digital services.

From the questionnaire, the study found that digitalisation had a positive impact on the financial performance of retail SMEs. SME managers hinted that there was

improved financial performance and revenue generation, increased efficiency in financial transactions and inventory management, enhanced financial transparency and better financial decision-making. They also experienced improved access to credit through point-of-sale and peer-to-peer systems transactions

However, challenges and areas for improvement were also identified which included security concerns with digital transactions, limited digital literacy skills among SME as well as infrastructure challenges, such as limited internet connectivity. In general, the findings of the study indicate that digitalisation can make a significant difference in the financial performance of retail SMEs, but it is important to take a careful look at the challenges and limitations.

The total revenue of the retail SME in Lagos, Nigeria, increased greatly from ₦13.1 billion in 2019 to ₦178 billion over the five-year period. The total expenses of the retail SME also rose greatly, from ₦10.2 billion in 2019 to ₦118.7 billion over the five-year period. Although the expenses rose, the retail SME recorded a tremendous growth in the net profit, from ₦2.96 billion in 2019 to ₦58.7 billion over the five-year period.

The total cost of investment for the retail SME was substantial, with a total of ₦133.8 billion invested 2019 to 2023.

### **Digitalisation and Financial Performance**

The study confirmed a strong positive association between digitalisation and SME financial performance, aligning with existing financial technology literature. Respondents reported enhanced revenue generation, operational efficiency (particularly in financial transactions and inventory management), and improved financial transparency which are factors critical for SME growth. The reported increase

in P2P-driven credit access further supports digital finance's role in bridging funding gaps, consistent with prior research on alternative lending in emerging markets.

However, challenges such as cybersecurity risks, digital literacy gaps, and infrastructural limitations (such as unreliable internet) highlight critical barriers to seamless digital adoption. These findings echo studies emphasising contextual constraints in technology diffusion, particularly in developing economies where institutional and human capital challenges persist.

### **Financial Growth Trends**

The financial metrics reveal striking growth: total revenue surged from ₦13.1 billion (2019) to ₦177.4 billion (2023), while net profits rose from ₦2.96 billion to ₦58.7 billion despite escalating expenses (₦10.2 billion to ₦118.7 billion). This suggests that digitalisation may have contributed to revenue scalability outpacing cost increases. The substantial cumulative investment (₦133.8 billion) underscores SME' commitment to digital tools, though further analysis is needed to disaggregate financial performance (ROI) by specific technologies (such as e-commerce vs. mobile payments).

This observed volatility and growth trend in financial performance (ROI) can be conceptually linked to the UTAUT construct of Facilitating Conditions. The positive trajectory aligned with improving conditions such as better internet penetration and a wider range of digital payment options from 2019-2023. However, the inherent volatility might reflect instability in these very conditions such as fluctuating network reliability, changes in data costs, or evolving regulatory policies for digital transactions which can

cause Performance Expectancy (the belief that digital tools will yield benefits) to vary over time, thus impacting financial outcomes inconsistently.

### **Sectoral and Operational Variations**

Sectoral distribution dominated by beauty/accessories (18.3%), clothing/fashion (19.4%), and pharmaceuticals (11.6%) implies that digitalisation benefits may be unevenly distributed across industries, with lower adoption in exclusive sectors like sports (0.9%) or construction (1.2%). Employee size data (e.g., 29% of SME had 21–50 employees) suggests mid-sized firms may disproportionately drive observed trends, warranting granular analysis of how firm scale mediates digital impact.

This study employed simple and multiple linear regression to analyse the impact of digital technology adoption specifically internet banking (IB), e-commerce (EC), point-of-sale (POS) systems, and peer-to-peer (P2P) platforms on the financial performance (ROI) of retail SME in Lagos, Nigeria. The multiple regression model demonstrated strong explanatory power ( $R^2 = 0.520$ ,  $p < .05$ ), with IB ( $\beta = 0.853$ ,  $p < 0.05$ ) and EC ( $\beta = 0.366$ ,  $p < .05$ ) emerging as statistically significant positive predictors of financial performance (ROI). In contrast, POS ( $p = 0.145$ ) and P2P ( $p = .107$ ) showed no significant effects, while mobile banking (MB) was excluded due to multicollinearity with IB (VIF  $> 5$ , Tolerance = 0.000). Diagnostic tests confirmed model validity (Durbin-Watson = 1.247; residual normality  $p > .05$ ), with no severe multicollinearity (mean VIF  $< 2$ ) or influential outliers (Cook's Distance  $< 0.2$ ).

The study's findings have significant implications for the empirical validation of digital finance theories. The strong positive association between Internet Banking (IB)

and E-commerce (EC) with financial performance (ROI)) supports prior research, reinforcing the crucial role of digital transaction platforms in enhancing retail small and medium-sized Enterprise (SME) profitability. However, the non-significance of Point of Sale (POS) and Peer-to-Peer (P2P) challenges assumptions from previous studies, suggesting that contextual or operational moderators may be at play. The exclusion of Mobile Banking (MB) due to multicollinearity highlights the need for clearer operational distinctions between overlapping digital payment systems in future studies. This methodological consideration is essential to ensure that research findings are robust and generalisable. The divergence in POS and P2P outcomes underscores potential gaps in infrastructure, cost barriers, or SME literacy levels. These factors warrant deeper qualitative investigation to better understand the complexities of technology adoption in emerging markets.

The regression analysis findings align with the Unified Theory of the Acceptance and Usage of Technology (UTAUT) model, demonstrating how performance expectancy, effort expectancy, and facilitating conditions influence digital adoption among SME. Internet Banking (IB) had the strongest positive impact on financial performance ( $\beta = 0.853$ ,  $p = .000$ ), supporting UTAUT's performance expectancy businesses adopted IB due to its perceived efficiency and revenue-enhancing benefits. E-Commerce (EC) also showed a strong positive significant impact ( $\beta = 0.366$ ,  $p = .000$ ), further confirming the effect of effort expectancy as users would find websites conducive to technology adoption. Point of Sales (POS) technology systems, despite their ease of use and hence a high effort expectancy, did not show any significant impact ( $\beta = 0.087$ ,  $p = .145$ ), suggesting that ease of use may not necessarily translate into financial benefits for SMEs. Similarly, Peer-to-Peer (P2P) technology systems showed negative but insignificant results ( $\beta = -0.065$ ,  $p = .107$ ),

possibly owing to low social influences as well as facilitating conditions like trust issues. Mobile Banking (MB) was not included in the analysis as it was found to have multicollinearity with IB, suggesting that both systems have similar functionalities. The study suggests that whereas technology like performance-oriented technology solutions like IB and EC would have a positive effect on SME performance as they align with the constructs of UTAUT, certain factors like low utility of technology like POS or P2P may negatively impact technology effectiveness. However mobile banking had a significant effect in the simple linear regression model.

### **Discussion of the results in relation to the research questions and hypotheses:**

#### Research Question 1

R1. What is the effect of the adoption and use of mobile banking technology on the financial performance of retail SMEs in Nigeria in the years 2019 to 2023 in Lagos, Nigeria?

H0: The adoption of mobile banking technology does not have a significant effect on financial performance of retail SMEs in Lagos, Nigeria in the years 2019 to 2023.

H1: The adoption of mobile banking technology has a significant effect on financial performance of retail SMEs in Lagos, Nigeria in the years 2019 to 2023.

The study found that the association of mobile banking on the performance of SME is not as clear-cut as early figures suggested. Although early analysis suggested mobile banking to be highly linked with better financial performance, this association became impossible to confirm in more robust tests because mobile and internet banking are so intertwined in Nigeria that they cannot be separated statistically. Several practical reasons explain the reasons for these results. However the results

of the simple linear regression indicated that mobile banking has a significant effect on the financial performance of retail small and medium scale enterprises.

Nigerian banks have incorporated mobile and internet services so deeply that most small businesses use both interchangeably. Mobile banking has also become so ubiquitous among online-based SME that there is little variation left to measure its unique effect. Secondly, internet access in Nigeria is usually through mobile networks, and therefore, it is hard to distinguish the two banking systems. The reporting methodology of business use of digital may also be at issue, such that the majority of owners are unable to make a distinction between internet and mobile banking in practice. Policy that supports mobile banking has made it nearly universal among digital SME with insufficient variation to conduct sufficient analysis.

Mobile banking's apparent strengths may indeed be the sum of all digital banking channels working together in Nigeria's unique financial environment.

These findings show that while mobile banking inadvertently plays an important role in SME financial operations in Nigeria, its impact cannot be properly distinguished from wider digital banking adoption. The indeterminate nature of this hypothesis test produces an important reality about digital transformation in developing markets which is that the fast merging of technological applications may outrun researcher's ability to measure their implicit impacts using traditional empirical measures. This suggests that the research question might need reframing to better harness the composite nature of digital banking in current SME operations.

## Research Question 2

R2.What is the effect of the adoption and use of internet banking technology on the financial performance of retail SMEs in Lagos, Nigeria from 2019 to 2023?

The hypotheses for this study was:

H0. The adoption of internet banking technology does not have a significant effect on the financial performance of retail SMEs in Lagos, Nigeria in the years 2019 to 2023.

H2. The adoption of internet banking technology has a significant effect on financial performance of retail SMEs in Lagos, Nigeria in the years 2019 to 2023.

The study found high empirical support for Hypothesis 2, revealing a strong positive relationship between internet banking (IB) adoption and SME financial performance. This finding imply that IB functions as the most crucial digital enabler of financial performance (ROI) among Lagos SME, being the most impactful ( $\beta = 0.586$ ) in the regression model.

It should be noted that Nigerian banks have purposively integrated their digital services across both mobile and internet platforms. This creative decision, meant to improve user experience, has subsumed the functions of internet and mobile banking that are now revealed statistically as multicollinearity.

The typical Nigerian SME owner uses the same credentials and security protocol and performs typically similar transactions across both mobile applications and internet banking platforms. This consonance emanates from banks' omni-channel features, making the services indistinguishable in their financial effect.

Nigeria's often comatose internet availability compels many users to migrate between mobile data (for application-based banking) and desktop internet banking, creating usage patterns that follow internet connection conditions rather than deliberate platform choice.

The 2019 to 2023 study period coincided with Nigerian banks' aggressive push for comprehensive digital platforms, resulting in convergence between adoption rates of both services among technology driven SME.

The results suggest financial inclusion policies should focus on integrated digital banking architecture rather than platform-specific measures. The Central Bank of Nigeria's payment system strategy should account for this integration its regulatory policies.

Business owners should regard mobile and internet banking as similar concepts of a comprehensive digital finance bouquet, distributing resources based on operational requirements rather than assumed platform hierarchy. Digital literacy programs must focus on the functionalities of these platforms while stating usage applications (for instance mobile for field operations, internet for accounting and office reconciliation).

In summary, the multicollinearity issues reveals Nigeria's digital banking ecosystem has matured to a point where platform differences are no longer as important as the functions they enable. This is both a success in financial system transformation and an empirical challenge for impact evaluation.

### Research Question 3

R3.How has the adoption of e-commerce influenced the financial performance of retail SMEs in Nigeria from 2019 to 2023 in Lagos, Nigeria?

H0. The adoption of e-commerce technology does not have a significant effect on the financial performance of retail SMEs in Lagos, Nigeria in the years 2019 to 2023.

H3. The adoption of e-commerce technology has a significant effect on financial performance of retail SMEs in Lagos, Nigeria in the years 2019 to 2023.

The study confirmed Hypothesis 3, revealing a statistically significant positive relationship between e-commerce adoption and SME financial performance. While the effect was less than internet banking, it ranked as the second strongest digital driver of financial performance (ROI) in the model, contributing to approximately 33.5% of the consistent effect.

The study contributes empirically since it measures the financial effect of e-commerce using financial performance (ROI) measures rather than perception measures used in most previous research. This lays a strong evidence foundation for digital finance studies in developing economies. The study contributes empirically by measuring e-commerce's financial effect through financial performance (ROI) indices rather more so than perception measures common in earlier research. This creates a sound evidentiary foundation for digital finance studies in emerging economies.

This validation of e-commerce economic value provides theoretical basis and actionable recommendations for Nigerian digital economy development, while reflecting important concerns for future attention. The medium effect size is a pointer to the fact that technology adoption alone is not enough to transform a system without synergistic investments in people's skills and business systems.

#### Research Question 4

R4. How has the adoption of point-of-sales system (POS) affected retail SME financial performance in Lagos, Nigeria in the years 2019 to 2023?

The hypotheses for this study are:

H0. The adoption of point-of-sale system does not have a significant effect on the financial performance of retail SMEs in Lagos, Nigeria in the years 2019 to 2023.

H4. The adoption of point-of-sale system has a significant effect on financial performance of retail SMEs in Lagos, Nigeria in the years 2019 to 2023.

The study's findings on point-of-sale (POS) systems pose serious challenges both to research and Nigeria's digital economy. On a scientific basis, the failure to obtain statistical significance negates conventional wisdom in financial technology literature that argues instant financial gains from digital payment uptake. Such discrepancy suggests that traditional technology adoption frameworks may have to be altered for emerging economies, where the quality of operations and accompanying factors arbitrate effects of infrastructure much more than in developed countries.

The results specifically challenge the reduction of fraudulent activities proposed by Al-Okaily et al. (2023), stating that POS systems in Nigeria may not produce the specific benefits due to local operational obstacles. This finding requires new theories that speak to architectural and operational categories when forecasting digital technology influences in developing markets.

Economically, fiscal neutrality of POS terminals has extensive implications on Nigeria's cashless policy and SME technology-implementation projects. While POS terminals have been rolled out widely, the study concludes that they can be used as a cash substitute and not as a technology that improves business performance in case they are not incorporated into financial systems.

The current point of sale (POS) system inundated by high transaction fees (3-5%), internet connection issues, and low value creation creates hindrances to measurably improve SME financial performance. The findings state that terminal

deployment is just a first step to developing smarter, integrated POS solutions that offer stock management, customer records retention, and transparent accounting solutions. For policymakers, these results query the efficiency of current POS-focused financial inclusion measures and suggest the need to make digital technologies more attractive.

The study also identifies a crucial problem in the market where POS providers have focused on volume of transaction over SME creating value, revealing an opportunity for technology developers to create improved solutions that bridge this gap. These economic inferences are contemporary as Nigeria improves its payment system encouraging policy frameworks to develop forward thinking POS functionalities beyond basic transaction and payment processing.

#### Research Question 5

R5. How has the adoption of peer-to-peer payments (P2P) on retail SME financial performance In Lagos, Nigeria from 2019 to 2023?

The hypotheses for this study are:

H0. The adoption of peer-to-peer systems does not have a significant effect on the financial performance of retail SMEs in Lagos, Nigeria in the years 2019 to 2023.

H5. The adoption of peer-to-peer systems has a significant effect on financial performance of retail SMEs in Lagos, Nigeria in the years 2019 to 2023.

The study's finding of a statistically insignificant and weak negative relationship between peer-to-peer (P2P) payment systems and SME financial performance translates into consequences for Nigeria's digital financial ecosystem. Financially, the results counter the submission that P2P platforms wholly improve SME business

performance by reducing the costs of transactions and enhancing access to liquidity as stated in studies by Musa and Njeru (2023) and Chingapi and Steyn (2022). While P2P systems reduce traditional banking charges and quicker settlements, the data implies that, in reality, Nigerian SME may not be benefitting due to infrastructural inefficiencies. High risks of credit default in informal peer-to-peer systems lending, mismatches in liquidity and a dearth of automatic integration with financial systems may remove inherent benefits. This deduces that P2P adoption, currently, may not be the solution for SME financial inclusion as policymakers and financial technology proponents have assumed.

### **Summary of Results**

Economically, the findings open up an important discussion in Nigeria's digital finance environment. The great performance of digital banking and the dismal performance of peer to peer (P2P) systems suggests that Nigeria's informal and semi-formal P2P markets anchored on integrity and trust may not yet be adequate and sufficient for emergence of new SME financial activities. In contrast to heavily regulated mobile money environments in East Africa, Nigeria's P2P market remains fragmented, with minimal security against fraud, poor mechanisms for dispute resolution, and no credit scoring system. Such lack of organisation could be the reason why P2P payments, while superb and convenient for one-to-one personal transactions, fail to translate to equivalent financial revenue for firms.

The research findings also raise questions about the negative impacts of Nigeria's cashless policy. While the Central Bank of Nigeria (CBN) has encouraged electronic payments, the marginal return on investment (financial performance (ROI)) of P2P systems is such that SME are using them due to necessity and not because of

significant advantage. This can lead to a situation where digital transaction volumes increase without relating to improvements in business stability, a prospect that can artificially enhance financial inclusion indices without good economic effect.

For policymakers, these findings highlight the need for stringent regulation and transformations in Nigeria's peer to peer (P2P) system sector. Some interventions could include strengthening consumer protection by implementing stringent security and or fraud prevention and dispute resolution frameworks for P2P transactions. Granting incentives to technology companies to design P2P platforms with integrated transaction processing, credit assessment, and cash flow management tools. Creating regulatory agencies to bring informal P2P lending into an organised financial system, reducing default risks.

For SME, the results suggest reticence in engaging on peer to peer (P2P) systems for core business transactions. In as much as they offer short-term convenience, the lack of a concise financial direction means businesses should focus on more structured digital finance tools, such as internet banking and e-commerce technology that efficiently improve profitability.

This finding of a paradox between Nigeria's digital finance revolution on peer to peer (P2P) system platforms as adoption rises in tandem with the economic value for SME remains to be achieved. There must be cooperation among regulators, digital technology providers, and financial institutions to make platforms develop beyond simple money transfer functionality into true SME growth drivers.

The regression analysis yielded a model that explained 51.4% of SME financial performance (adjusted  $R^2 = 0.514$ ), indicating a moderately strong predictive relationship. Internet banking (IB) was the best predictor of SME financial performance

signifying its crucial role in enabling transactions and financial management. Mobile banking (MB) was excluded since it was collinear with IB, suggesting these platforms are used interchangeably in Nigeria's mobile-dominated financial system, with MB possibly being the primary interface for IB services. E-commerce (EC) contributed positively but comparatively weaker, suggesting its complementary but not transformative role in SME profitability.

The insignificant impact of point of sale (POS) platforms may be due to operational problems in the guise of redundant failed transactions, facing fraud risk, or absence of efficient integration with SME accounting systems. Similarly, the weak negative relationship of peer to peer (P2P) platforms could be suggestive of liquidity risks, high default rates among informal lending, or regulatory risks in Nigeria's peer-to-peer financial sectors. Without the consideration of mediating or moderating variables, these results will only reflect direct effects and mask important contextual factors.

The study confirms a strong positive association between digitalisation and SME financial performance, aligning with existing financial technology literature. Respondents reported enhanced revenue generation, operational efficiency (particularly in financial transactions and inventory management), and improved financial transparency which are factors critical for SME growth. The reported increase in P2P-driven credit access further supports digital finance's role in bridging funding gaps, consistent with prior research on alternative lending in emerging markets.

However, challenges such as cybersecurity risks, digital literacy gaps, and infrastructural limitations (such as unreliable internet) highlight critical barriers to seamless digital adoption. These findings echo studies emphasising contextual

constraints in technology diffusion, particularly in developing economies where institutional and human capital challenges persist.

This chapter has analysed using statistical tools the effect of digital technology on retail SME financial performance, providing evidence-based understanding of the influence of same in the specific businesses in Lagos. To begin, the basic relationships were explored, establishing an unambiguous order in which digital technologies influence financial performance, with digital banking being the most significant, followed by online sales. To further investigate the influence of digital technologies, the core analysis, which considers the combined use of these tools, was performed, establishing the actual influence of each technology. The result is unmistakable: for maximising the profitability of an SME, internet-based banking is the most significant technology, while online sales is an important complementary tool for maximising profitability.

Conversely, the more popular technology, such as card machines (POS) and money transfer tools (P2P), also demonstrate an important limitation, as they are popular with retail SMEs, but the influence of these technology, as commonly used, is not significant for maximising the profitability of an SME, creating the problem of adoption without reward. This unambiguous result, based on verifiable financial data and robust statistical analysis, has provided a direct answer to the research questions, providing the foundation for the next chapter, in which the real meaning of the research will be explored.

## CHAPTER 5: IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSIONS

### Introduction

This study set out to examine the effect of digitalisation on the financial performance of Lagos retail Small and Medium Enterprises (SME) in Nigeria during the years 2019–2023. The economic disruptions that resulted from the outbreak of the coronavirus pandemic led to the use of digital technologies available to the SME to conduct their operations. This study therefore sought to assess the effect of the use of internet banking services, mobile banking services, e-commerce platforms, the point of sale (POS) system, and peer to peer (P2P) payments which are all versatile technologies on the financial performance measured via return on investment of the retail SMEs in Lagos, Nigeria.

The research objectives were created to test the influence of digitalisation on the financial performance of the retail SME and to explore the impact of digitalisation on their operations. A questionnaire survey was conducted among 400 retail SME managers in four of Lagos' major markets (Amuwo Odofin, Ikeja, Lagos Island, and Oshodi-Isolo). The survey was filled by 345 managers.

Secondary data on SME return on investment (ROI) for 2019 to 2023 were also collected from SME managers. The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, 2003) served as the theoretical framework, which expounded technology adoption improving business performance. This chapter provides the findings, research implications and recommendations of the analysis of the study on the effect of digital technology adoption on financial performance of retail SMEs in Lagos, Nigeria.

The analysis in Chapter four (4) enunciated significant relationships between certain digital technologies, specifically internet banking (IB) and e-commerce (EC), it also captured improved financial performance, as measured by return on investment (ROI). On the contrary, point-of-sale (POS) systems and peer-to-peer (P2P) platforms showed minimal effects, suggesting different degrees of effectiveness in improving retail SME profitability.

The chapter has been divided into three major sections. First, the chapter discussed the implications of the research for managers, policymakers, and research, indicating the potential for financial growth through digitalisation, while being cautious of the challenges. Next, the chapter provided some suggestions to the retail SMEs for the successful implementation of digitalisation, as well as policy suggestions for the adoption of digitalisation by retail SMEs in Nigeria. The chapter ends by summarising potential areas of future research, indicating gaps in the literature and expounding on areas of further inquiry to extend the knowledge boundary of digital technology on the financial performance of Lagos retail SME.

The fusion of empirical results with practical directions enables this chapter to advice stakeholders in adopting digital tools effectively, aiding sustained business growth, and helping form policy decisions that develop Nigeria's retail SME institutions.

The recommendations are crafted in practicable terms, making it possible for SME managers, policymakers, and researchers to transform findings into workable strategies in financial outcomes and business efficiency of the Nigerian retail SME.

## Implications

The findings of the above study, which highlight internet Banking (IB) and e-commerce (EC) as statistically significant predictors for the financial performance of retail SMES in the multiple linear regression test, have vast implications for business, policy, and further academic study. The findings of the study reveal that managers are encouraged to make significant investment in IB and EC, which have positive effects on financial performance measured through ROI. The positive coefficient and p factor of IB ( $\beta=0.853$ ,  $p=.000$ ) is a good predictor for better financial performance because of its applications in financial transactions and management of cash flow.

Similarly, e-commerce (EC)'s significant influence underscores the growing prominence of electronic sales channels in the contemporary business environment. Conversely, the insignificance of Point of Sale Systems (POS) and Peer to Peer (P2P) systems indicates that these technologies are not yet yielding sufficiently high financial returns to justify substantial investments, at least in the Lagos SME context. This can prompt business managers to re-examine their technology adoption plans, thus realigning resources from ineffective digital tools to ones with real benefits.

Omission of mobile banking (MB) since it is multicollinear with internet banking (IB) in the multiple regression, offers an insightful view to digital banking operations, indicating that internet banking (IB) is the prime digital banking channel in this economy such that mobile banking is redundant for financial performance indicators. This suggests that while internet banking (IB) and e-commerce (EC) are important drivers, other determinants such as management practices, competitive intensity, or access to finance likely have important effects. The fact that the final model has no serious multicollinearity issues (with all VIFs  $< 2$ ) provides confidence in the validity of

these findings for the significant variables. These results collectively paint a picture wherein selective, strategic adoption of digital technologies particularly those relating to online financial control and sales appears to offer the most direct path to improved financial performance for retail SMEs in this emerging market context. The study is a reminder that the findings suggest that not all digital technologies are equally associated with financial performance, and indicate that firms could consider auditing their technology on a regular basis to ensure they are working in tandem with performance objectives.

Internet banking (IB) in this study emerged the most effective, with a high positive relationship with financial performances's return on investment (ROI). The high correlation between IB and financial performances suggests that digital banking applications are associated with improved credit access and facilitation, reduced reliance on cash transactions, and better management decisions, without implying causation.

Excluding mobile banking (MB) from the regression analysis due to multicollinearity with internet banking (IB) suggests that the two technologies possess similar functions within the Nigerian retail SME environment. This statistical duplication exists because internet banking (IB) and mobile banking (MB) inadvertently provide the same basic services which are the transfer of funds, payments of bills, and account management albeit through different systems (web browsers and mobile applications). In business activities, most Nigerian SME use these platforms equivalently, with mobile banking being the predominant way to use internet banking services. This operational alignment creates similar adoption models, making it statistically impracticable to delineate their specific effects on financial performance.

It is crucial to note that exclusion of mobile banking from the regression analysis due to perfect multicollinearity does not mean mobile banking (MB) is insignificant. Rather, it notes that in the Lagos SME environment, internet banking (IB) and mobile banking (MB) are essentially substitutes for the same concept which is digital transaction capability. This finding presents a challenge to conventional distinctions in digital finance research of defining these as separate technologies and instead reveals their similarity in mobile-predominant environments like Nigeria. The strong positive relationship with IB embraces the activities on both platforms, as SMEs probably do not discriminate between carrying out transactions through a bank's website or the mobile application.

The choice to leave either the internet banking (IB) option or the mobile banking (MB) option in the multiple regression analysis was based on the practical empiricals involved in the analysis. Statistical superiority was attributed to the fact that IB had more superior features such as multiple transactions and financial analysis, which contribute to higher profitability, compared to mobile banking (MB), which had more adoption and scored higher in terms of user satisfaction. The regression analysis was based on IB, which outlined the unique variance in financial performance, which MB could not explain, despite its superior accessibility.

This contradiction between user choice and pecuniary effect reflects a fine distinction in Nigeria's mobile-dominant economy: while SMEs massively use mobile banking (MB) as their primary channel of transacting due to its convenience, the server-side internet banking (IB) infrastructure drives the real financial returns. The collinearity importantly distinguishes how mobile banking serves as a mobile channel to internet banking services rather than as a separate technology. Thus, when forced to make a choice between the two statistically expendable variables, the analysis

retained internet banking because it illustrates the digital banking features that genuinely improve SME profitability.

The implications resonate beyond empirical analysis: for SME owners, it suggests that while mobile platforms may be important for daily operations, investing in internet banking capabilities could give higher financial returns. For policymakers, it reveals the need to encourage digital banking infrastructure rather than prioritising mobile solutions.

This collinearity shows crucial distinctions about digital banking adoption in emerging markets. In environments with high mobile penetration like Nigeria, the distinction between internet and mobile banking becomes effaced, as most digital financial transactions happen on the smartphones. The results suggest that the researcher focus less on the delivery platform (web vs. application) and more on distinctive feature differences or adoption challenges that might cause important variation in SME financial results. This finding also warns against assumed application of Western models of digital banking adoption, where desktop-based internet banking might remain distinct from mobile platforms.

Despite the fact that mobile banking (MB) enjoyed high acceptance and attitudes among users, it was dropped from the final regression model due to perfect collinearity with internet banking (IB), which emerged as the overall predictor of financial performance. This supports the hypothesis that while mobile banking is the favoured interface for daily transactions, internet banking's more advanced features, such as bulk transactions and financial management, may be yielding financial benefits in spite of the reduced satisfaction with these sites, SMEs may arrogate financial benefits to the more visible mobile banking platform while the rudimentary

internet banking architecture actually produces those returns, supporting the initial arguments.

Literature reviewed indicates that internet banking (IB) originated in the United States with Wells Fargo, which first allowed customers to make payments via a website. Today, internet banking (IB) is provided by most banks, which Samar and Mazuri (2019) term as banking operations performed on a financial institution's website. An examination of over sixteen IB and Nigerian SME studies shows that 90% employed quantitative research methods, and mixed-method studies are used sparingly in digital banking studies. SME adopt IB primarily due to it being simple to use, having perceived benefits, and quality customer care. However, the internet banking system is not immune to some issues that align with Ciza et al. (2025) and Eboibi and Ogorugba (2023) investigations of fraud and infrastructural weaknesses on the various banking platforms.

The pandemic and financial crisis which ensued facilitated the adoption of internet banking (IB) due to social media campaigns discouraging the use of cash in order to prevent virus transmission according to Ciza et al. (2025), Adepoju and Adeniji (2020) and Ahmad et al., (2020). Although there seems to no overall consensus on how influential performance expectancy, effort expectancy, social influence, and facilitating conditions are to each other in an adoption process, most studies resort to using the Unified Theory of Acceptance and Use of Technology (UTAUT).

Quantitative methods favour performance expectancy, whereas in the environment examined in qualitative studies, social pressure is equally important. These results bring about an aspect in the light of which internet banking (IB), despite enhanced rates of adoption in the case of mobile banking (MB), came forward as the

strongest predictor for SME financial performance. The collinearity between mobile banking and internet banking indicates functional substitutivity, which is based on mobile banking as an interface in which services would be delivered to clients over and above internet banking as an independent technology.

This contradicts conventional differentiation between web and application-based banking, particularly in mobile-dominated markets like Nigeria. While SMEs prefer mobile banking to be convenient for day-to-day transactions, internet banking's advanced capabilities of bulk processing and financial analytics appear to trigger financial performance. The study thus suggests that policymakers and SME operators must prioritise digital banking infrastructure over platform-specific solutions, in the sense that internet banking's (IB) back end functionalities can be more profitable even though mobile banking (MB) is convenient and popular.

E-commerce (EC) also benefited SME financial performance with a strong, albeit less insidious, effect. The data suggest that internet-based selling platforms allow SMEs to increase market size, reduce dependence on physical store infrastructure, and provide greater revenue assurance. However, unbeknownst problems such as inventory management issues and logistics hiccups may restrict capability. The study indicates that although the use of EC can be advantageous,

Similarly, the significant association of e-commerce with financial performance aligns with the growing prominence of electronic sales channels. The majority of SMEs are unable to combine digital selling with supply chain operations, implying that there is still insufficient integration of the digital business. This is supported in the literature review by Almuwallad and Alhumoudi (2024), Amofah and Chai (2020) and Odusanya

et al. (2020) which concluded integrity and trust of the platform and expansion of the platform had a critical role to play in financial performance of the SME.

Meanwhile, point of sales (POS) systems did not display an influential role on financial performance irrespective of their pronounced economic and heterogeneous characteristic which could dispel any fiscal gain it can accrue. A majority of retail SMEs complained about POS security protocols, divulging absolute trust deficiencies in digital payment ecosystems.

The weak performance of point of sales (POS) and peer to peer (P2P) systems in this study can be the outcome of certain unresearched operational and contextual problems. For point of sales (POS) systems, the lack of significant impact could have been the outcome of ongoing exposure to fraud, elevated transaction failure rates due to network unreliability, or insufficient integration with accounting systems of retail SME.

There are also frustrations among some Nigerian businesses whereby the point of sales (POS) system does not accept their transactions or has a slow settlement system, and this may also limit the use of the point of sales system for conducting basic financial transactions. Furthermore, since this particular study did not consider the mediating and moderating variables, for example, cybersecurity best practices, the aforementioned issues may have limited the extent to which point of sales (POS) has been able to achieve its effects on financial performance.

Literature review research findings showed that the adoption is more significant than the issues surrounding the point of sales system; however, research findings by Obidile et al.,(2025) and Lawal (2022) showed that the manager of the SME should

also be able to read and understand the information on the point of sales database to enable timely financial and budgetary decisions.

The manager of the SME should possess financial management skills according to Jain and Tan (2022) as the deployment of the point of sale system is not enough to positively influence the financial performance of the business enterprise. Similarly, peer-to-peer (P2P) platforms revealed a weak negative association with financial performance, revealing that liquidity risks, uncertainty about repayments, and regulatory issues in Nigeria's informal P2P lending market may plausibly restrict their effectiveness for SME. This result contradicted the benefits elucidated by Lazuardi and Margareta (2025) in their study which noted that peer to peer systems have a strong association with financial performance in SME.

These issues mirrors structural weaknesses in Nigeria's online informal lending market which is peculiar to the economic crisis being experienced. Liquidity risks where lenders experience cash flow interruptions due to delayed payments and high default rates in peer to peer (P2P) transactions can erode their perceived trustworthiness. Regulatory loopholes in P2P lending can also heighten trust concerns since informal agreements have no legal recourse for SMEs. This was seen in the literature review in studies by Aguboshim et al. (2023) and Ojugo and Otakore (2020).

Without qualitative evidence (SME manager interviews), the research is short on explanatory detail, i.e., reasons like face-to-face culture preferences for business or domination of other off-balance sheet informal credit relationships. Subsequent studies need to research these situational factors to determine why point of sales (POS) and peer to peer (P2P) systems, as widely available as they are, are low-performing in increasing SME profitability within this setting.

The broader inferences of these findings reveal the disparities in the impact of digital imputations across different technologies. While internet banking and e-commerce undoubtedly increase SME profitability, POS and P2P systems need more developed design infrastructure, i.e., better security, affordability, and better regulation for better effectiveness.

Results of this study show resonance and dissonance with the current literature on digital technologies and SME financial performance, showing fundamental differences. While examining mobile banking instruments, the correlation analysis at the onset supported past studies by Khatam et al. (2021) and Talom and Tengeh (2020) in showing financial benefits that were significant. Yet, the latter exclusion of mobile banking from regression analysis due to multicollinearity with internet banking suggests that in the Lagos SME environment, these technologies may be playing the same functions, as opposed to previous assumption of dissimilar effects. This explains that the fortunes of mobile banking might be reliant upon local banking practices and infrastructure.

For internet banking, conclusions of great significance differ radically from Ekechukwu and Mbah (2019) and Ugwu (2016) findings of its insignificance. This misalignment likely signals the considerable improvements that might have occurred in the digital infrastructure of Nigeria, as well as in SME manager's financial proficiency, since those preceding studies were conducted, especially in urban centres such as Lagos. Indeed, the findings from this study indicate that the previous infrastructure-related limitations may no longer be the main obstacle for SME digital uptake in big Nigerian cities, which is a milestone in the digital finance landscape. The literature reviewed on Adepoju and Adeniji (2020) revealed that Lagos banks' online banking systems had improved efficiency since the last research.

The study's e-commerce results confirm previous works by Al-Zoubi et al. (2022) and Flavian et al. (2020), demonstrating the absolute monetary profits of the platform. However, the fact that the existence of chronic inventory management issues qualifies such a consensus to a great extent accounts for the reason why operational issues in infant markets may keep SME from achieving the total potentials of e-commerce. This debacle implies that while the revenue benefits of e-commerce are well-recorded, its total financial impact is conditional on associated enhancement in logistics and supply chain management in the context of Lagos, Nigeria.

Operational costs and security issues might have been the reasons for the poor performance of point of sale (POS) systems due to Lagos specific factors. Even though previous writers had stated their advantages, these risks mitigated the benefits of the platform discussed by Al-Okaily et al. (2023) and Sastararuji et al. (2022) about their advantages for financial accountability.

In Nigeria's SME sector, many SME do not integrate point of sale (POS) data into their global financial management systems. Likewise, results related to peer to peer (P2P) networks disagree with the argument presented by Musa and Njeru (2023) and Ibrahim et al. (2022), who proposed that with respect to business activities, a possible superiority in P2P pertaining to Nigeria's financial performances may be overshadowed by liquidity complexities and regulatory ambiguities within its unorganized P2P market.

There are technologies that have been able to prove themselves in the Nigerian environment such as internet banking, for example, while others have struggled because of infrastructure. Thus, it is safe to assume that the implication of technology is in part reliant on that environment. These findings reveal the importance of

considering local business environment and application quality when evaluating digital technologies' capabilities and benefits for SMEs, rather than relying on widely-held assumptions about their influence. The study implicates that the relationship between digital adoption and financial performance is neither consistent nor rigid, but rather evolves with technological, framework, and economic developments.

### **Interpretive Framework for Implications**

Similarly, the findings regarding peer to peer (P2P) networks contradict the proposal made by Musa and Njeru (2023) and Ibrahim et al. (2022) regarding a possible superiority in P2P concerning the Nigerian financial performances, which could be clouded by liquidity complexities and regulatory issues in the unorganized P2P markets in Nigeria. What stands tall in the Nigerian SME environment is the ubiquity of mobile banking and its back end internet banking infrastructure. It is the internet that actually drives digital technology in business activities.

### **The practical and theoretical implication of the study.**

The results found in the study are entirely in line with Venkatesh et al.,(2023)'s Unified Theory of Acceptance and Use of Technology (UTAUT) theory. Effort expectancy is reflected in the popularity shown in internet and mobile banking initiatives, which is easier when considered in terms of convenience as opposed to traditional banking. SME to adopt technology because of peer influence in order to remain competitive in the market, and enabling factors or enhancements in terms of increased internet usage have both contributed to SME adapting to technology. However, this study is also instrumental in creating gaps in terms of internet experience, as in point of sale (POS), peer to peer (P2P), and other technologies.

The study makes crucial contributions to digital technology adoption in the developing countries. The research is evidence-based support for the UTAUT among the Nigerian SME, along with making valuable boundary conditions and situational determinants having impact on trends towards adopting the technology.

The mixed results for various technologies counter basic assumptions about digital transformation in developing economies and refer to more situation-specific theoretical models that take into cognisance operational challenges and environmental factors. Empirically, the study advances the field through its use of longitudinal financial data (2019 to 2023) in addition to survey measures, creating a platform which measures financial performance impacts than previous cross-sectional or studies on perceptions of digital technology. The identification of the overlap between mobile and internet banking platforms represents a crucial contribution to theory that may explain contradictory findings in previous digital finance research.

For academic researchers, these findings open up new vistas in studying digital ecosystems rather than specific technologies, and expound the importance of taking into account design and implementation factors in technology impact assessments.

The study calls for financial institutions to develop SME focused solutions that relate to management of inventory, cash flow and prevention of fraud, a crucial challenge observed in the research. For industry practitioners, the study discusses strategies into which digital tools use return on investment (ROI), directing SME toward purposive investments.

By bridging the gap between practice and theory, this study correlates with comprehension of how insights and perspectives can drive retail SME revenues. This work increases comprehension of how perspectives and opinions can translate into

practical scenarios and financial outcomes, offering a guide for policymakers, financial institutions, and SME to activate rapidly Nigeria's digital transformation.

The Central Bank of Nigeria can use these findings to produce policies foster inclusive and transformative digital finance. The research presents empirical facts about how SME can strategically embrace digital technology in a way that it fetches the maximum return on investment (ROI). The research reveals that SME must make investment in internet banking (IB) infrastructure since it has a significant positive effect on the performance of the business enables SME to translate digital adoption beliefs into concrete financial rewards, leading to sustainable growth of Nigeria's retail sector.

The research advances theory knowledge by demonstrating how infrastructure quality and level of digital literacy influence relationships proposed in UTAUT, particularly for money technologies. Examining five different digital technologies simultaneously, the research offers a comparative framework for considering many adoption drivers and missing-impacts in previous mono-technology studies.

## **Limitations**

In order to rigorously evaluate any empirical study, it is necessary to make a candid acknowledgment of its limitations. Rather than disproving any findings of such studies, they actually assist in placing such study findings in proper context and help to clearly point to directions for further study in that area. This section defines the study boundaries that pertain to this study.

## **Methodological and Measurement Limitations**

### **Reliance on Self-Reported Financial Data**

The cornerstone of this study's dependent variable financial performance measured via Return on Investment (ROI) was built upon financial data (revenue, expenses, investment) self-reported by SME owners and managers. While this approach provided necessary access to otherwise private information, it introduces potential threats to validity.

Self-reporting bias may manifest in several ways: recall inaccuracy over the five-year period, conscious or unconscious inflation of revenue figures (social desirability bias), or underestimation of expenses. Furthermore, many SME in emerging markets operate with informal or incomplete bookkeeping; thus, reported figures may be estimations rather than audited accounts.

The measurement error inherent in this contributes to unexplained variance in the model and means that the relationships observed are between perceived or reported financial performance and technology adoption, not necessarily with objective financial reality. Future research could seek to triangulate self-reported data with audited statements-where these exist-or employ longitudinal designs that track financial metrics prospectively to reduce recall bias.

### **Statistical Constraint of Multicollinearity**

One major statistical observation was the presence of perfect collinearity between Mobile Banking (MB) and Internet Banking (IB), requiring that the former be removed from the final model. This is more than simply a statistic issue; it has broader implications of theory and methodology. Primarily, it suggests that in the current

context, the two factors are empirically equivalent. This seems to affirm the seamless nature of digital financing services in the Nigerian context in that internet banking is most commonly accessed using mobile. This also means that the current study cannot discern nor model the distinct impact of mobile on financial outcomes. Although very strongly associated with financial performance through the ROI index, its predictive validity is thereby tainted along with that of internet banking.

This particular limitation thus reinforces the idea that as technology converges to perform a common task on every device, the classical approach to variable definition may need to be revisited. This particular issue may evolve in future studies that instead focus on particular outcomes such as the frequency of transactions from the mobile platform or ease of use of the application as opposed to the web platform.

Future studies could avoid this pitfall by measuring specific *behaviours* (e.g., frequency of mobile-initiated transfers) or *perceptions* (e.g., relative ease of use of app vs. browser) rather than relying on generic adoption measures of platforms that may be functionally synonymous.

## **Research Design Constraints**

### **Non-Experimental and Cross-Sectional Nature**

The fundamental design of this study is non-experimental and cross-sectional. Data on both digital adoption (independent variables) and financial performance (dependent variable) were collected concurrently, referring to the same 2019 to 2023 period. It is a limitation because this model perfectly detects correlations and, in itself, can never possibly determine causations. Although this regression analysis shows that internet banking (IB) and e-commerce (EC) can predict financial performance, and that better

financial performance anticipates a better positioning of a company in adopting and capitalising on the best digital technologies, the counter-causation that better financial performance correlates with better positioning in adopting and capitalising on the best digital technologies because of improved retail SME business operations is also valid.

There could also be third variables not measured in this model, such as managerial expertise and entrepreneurship, that influence outcomes, together with increased use of digital technologies, leading to better financial performance and higher ROI, so that this effect or impact expressed through this model is valid in the sense that, in this analysis the power of prediction of the regression analysis supercedes.

## **Contextual and Generalisability Limitations**

### **Sample and Context Specificity**

The findings are explicitly bounded by the context from which they emerged. Generalisability, however, is subject to three limitations:

1. **Geographical:** The sample was collected from larger markets located within Lagos, Nigeria's commercial hub and most technologically advanced city. The environment faced by SMEs located in rural areas, other Nigerian cities, or other African nations could be vastly dissimilar, thereby influencing the technology-performance relationship.
2. **Sectoral:** The research was conducted within one sector, namely retail. The value proposition for technologies like e-commerce for a retailer would be vastly different from that for a manufacturer or service provider. The lack of significance for

POS systems, for example, would not apply to a hospitality or restaurant business where transactional volume is critical.

3. Temporal: The time frame under review, from 2019 to 2023, was uniquely influenced by the COVID-19 pandemic, which represented an enormous external influence driving digitalisation. The strength of the relationships identified could be a function of this time frame, where digitalisation was driven by an external, uncontrollable event.

### **Recommendations for Strategic Digital Adoption**

From the empirical results of this research, it can be seen that there is a hierarchy in the financial effect of digital technologies on Lagos retail SMEs. In order to make these research results more applicable to SMEs, policymakers, and technology providers in terms of strategy, this section will discuss recommendations related to digital technologies individually.

#### **Recommendations for Internet and Mobile Banking (The High-Impact Core)**

As internet Banking (IB) emerged as the strongest predictor of financial performance ROI ( $\beta = 0.853$ ,  $p = 0.000$ ), while Mobile Banking (MB) acted as its functionally equivalent mobile interface in the results of the study, the following recommendations are expedient for the following classes of stakeholders:

- For SME Managers:
  - Transition from Basic Use to Strategic Financial Management: The SME managers can transition from basic use of technology to strategic financial management by moving beyond the basic use of banking facilities such as transferring funds and bill payments to more sophisticated enterprise deployment. The SME manager can proactively use facilities such as bulk

payment modules for supplier payments, scheduled transfers for recurring expenses, and downloaded transaction statements in analysable formats such as csv files for monthly cash flow analysis. Some employees can be designated to get proficient in these functional facilities.

- Establish a Reconciliation Protocol: The SME manager can take advantage of the detailed transaction histories provided by internet banking to reconcile the bank statements with the sales records on a weekly basis. This will directly improve financial clarity and eliminate discrepancies in business managers.
- For Policymakers
  - Mandate and Standardise SME-Friendly Banking APIs: Policymakers could encourage or mandate commercial banks to develop secure and standardized Application Programming Interfaces (APIs) for approved simple accounting software to directly access retail SME business accounts. This would allow automatic data entry, and internet banking would be a business backbone rather than a portal for the prosperity of retail SMEs.
  - Launch a Secure Digital Business Banking Certification: Nigerian policymakers should create a public certification program to grade bank platforms based on parameters critical to retail SMEs, such as reliability, cost transparency, transaction reporting, and the efficacy of fraud protection mechanisms.
- For Financial Institutions:
  - Develop Business Dashboard Features: Through mobile and internet banking channels, financial institutions should create a specific SME Dashboard that displays important business metrics such as daily cash

flow, revenue trends based on seasons, and top expenses based on their own transaction data, thereby providing direct value to the retail SME business by moving from transaction processing to business intelligence.

### **Recommendations for E-Commerce (The Growth Channel)**

E-commerce (EC) had a positive relationship with financial performance ( $p = 0.000$ ) although it is likely that the potential for EC is being restricted by operational difficulties.

- For SME Managers:
  - SME managers should have a seamless link between online sales and inventory: The e-commerce business should not be run as a standalone entity but with an affordable technology, such as simple inventory management software be linked to the business's online and offline channels. This ensures the SME manager is not selling out of stock and increases customer satisfaction.
  - A data-driven response system can be created to monitor the basic analytics provided by online platforms to determine best-selling products and customer engagement patterns. Use this data to inform SME purchasing decisions, thereby creating a feedback loop between the online storefront and management
- For Policymakers and Support Agencies
  - Create E-Commerce Logistics Hubs in Major Markets: This involves setting up centralised, secure pick-up/drop-off locations within market clusters with

arrangements made with logistics companies to offer discounted rates on bulk deals.

- Fund Digital Shopfront Makeovers: This involves providing competitive funding opportunities or vouchers to SMEs to enhance the look and feel of their product listings, as well as overall shopfronts, on major local e-commerce platforms, moving beyond generic initiatives to tangible, quality-improving programs.

### **Recommendations for Point-of-Sale (POS) Systems (The Underperforming Asset)**

Finding: There was no significant effect of POS systems on ROI, meaning that the existing use of POS systems as mere payment devices does not add to the profitability.

- For SME Managers:
  - Ask for More from The POS Supplier: When buying or upgrading POS terminal, look for suppliers who can provide integrated systems. The minimum viable product should include payment processing, sales tracking, basic inventory subtraction, and receipt printing that lists itemized sales. This will transform a cost center into a source of rich business information.
- For Financial Technology Suppliers and POS Aggregators:
  - Shift to Business-in-a-Box Solutions: Repurpose the POS terminal as a hub and create low-cost, subscription-based solutions that provide: (1) Integrated Inventory Management, (2) Customer Purchase History tracking for loyalty, and (3) Sales Analytics Dashboards that can be accessed through a companion mobile application for the business manager. This will specifically address the inefficiencies that are holding back SMEs.

- Introduce Tiered, Value-Based Pricing: Developers should move beyond a flat transaction fee and offer a base rate for simple payments and a premium subscription that includes inventory and Customer Relationship Management features, allowing retail SMEs to choose the level of functionality that matches their growth stage.

### **Recommendations for Peer-to-Peer (P2P) Platforms**

Finding: P2P platforms showed a weak, non-significant association with ROI, reflecting their design for personal, not business, use.

- For SME Managers:
  - Limit P2P to Specific, Low-Risk Use Cases: Reserve P2P for small, ad-hoc transactions with trusted customers or for reimbursing employees. For core business operations like supplier payments or major customer invoices, insist on formal channels (bank transfer, POS) that provide auditable records and better consumer protection.
- For Financial Technology Providers:
  - Launch Dedicated P2Business (P2B) Products: Create a distinct service tier within P2P applications for registered businesses. Key features must include: generating formal invoices within the application, tagging transactions by purpose (e.g., inventory purchase, utility bill), exporting quarterly transaction reports for accounting, and higher transaction limits. This formalises the platform for commerce.
  - Build Trust through Verification: Implement a visible Verified Business badge for SMEs that complete a simple registration process, adding

legitimacy and addressing trust deficits inherent in informal P2P transactions.

Clearly, the road map towards profitable digitalisation varies. For retail SMEs, the call to action remains one of strategic enhancement which involves further mastery of core digital banking, e-commerce integration, and extracting greater value from hardware such as POS systems. For policymakers, the call remains one of moving beyond promotion and towards shaping the ecosystem, standardizing data ports, overcoming logistics bottlenecks, and certifying effective solutions. For technology providers, the call remains one of moving beyond generic solutions and towards solving SME pain points with value-added solutions.

By employing this differentiated and evidence-based methodology, it becomes possible to ensure that investments in digital technology have a direct and tangible impact on the enhanced financial performance and resilience of Nigeria's critical retail SME sector.

### **Avenues for Future Research**

These recommendations and even the observed limitations are not dead ends but rather signposts directing future research. To build upon this study, the following avenues are proposed:

1. **Causal and Longitudinal Inquiry:** To address the causality deficit, future research should employ longitudinal panel designs that measure technology adoption at Time 1 and financial performance at Time 2, controlling for baseline performance. Quasi-experimental designs, leveraging natural policy

variations (e.g., the introduction of a new digital tax), could also help isolate causal effects.

2. **Deepening Measurement and Mechanism:** Research should move beyond adoption *per se* to measure the quality, intensity, and integration of technology use. Qualitative and mixed-methods studies are crucial to open the black box and uncover the *mechanism* the precise managerial practices and operational changes through which tools like IB translate into improved ROI. This would address the how question left unanswered by this quantitative model.
3. **Expanding Contextual Scope:** Explicitly comparative studies are needed. Comparing the findings across urban vs. rural settings, across different sectors (retail vs. manufacturing vs. services), and across different African countries with varying digital infrastructure would test the boundary conditions of the relationships found here and develop a more contingent theory of digitalisation.
4. **Integrating Omitted Variables:** Future models should include and test key control and moderating variables suggested by theory but omitted here, such as firm age, owner's digital literacy, competitive intensity, and access to formal finance. This would reduce the unexplained variance and provide a more nuanced picture of for whom and under what conditions digital technologies are most impactful.

By confronting these limitations directly and pursuing these research avenues, scholars can construct a more robust, causal, and nuanced understanding of digital

transformation in the SME landscape, turning the constraints of this study into the foundations of the next.

## **Conclusions**

This research has served as a critical empirical interrogation of a pivotal assumption in contemporary development economics and information systems literature which posits that digitalisation inherently catalyses financial improvement for retail small and medium enterprises. With the application of robust multivariate analysis to a carefully crafted dataset from Lagos in Nigeria, this research moves beyond the domain of personal testimony and offers a nuanced and conditional portrayal of the digital-financial performance relationship. The results represent more than a set of descriptions since they outline a technological performance pecking order in which digital returns are generated or wasted.

The key strength of this research is its methodological focus on both adoption and outcomes. Moving beyond perceptual surveys, this research brings the discussion down to the bedrock of business survivability which is financial performance which in this study is measured through Return on Investment (ROI). On this sound footing, Internet Banking (IB) stands not only as an important predictor, but as the key factor shaping financial variability in this equation ( $\beta = 0.853, p < 0.05$ ). Its importance is immense in terms of theoretical significance and confirms the importance of Performance Expectancy in the UTAUT model.

It empirically substantiates that retail SMEs adopt and utilise internet banking primarily due to a cognisant belief in its utility for enhancing efficiency and profitability, a belief that this analysis confirms is well-founded. The significant, though comparatively moderate, effect of E-Commerce (EC) underscores a secondary but

vital pathway, corroborating the importance of Facilitating Conditions. Digital market access generates financial returns, but those returns are demonstrably mediated by the quality of the logistical and regulatory ecosystem in which the technology is deployed.

Conversely, the null findings for Point-of-Sale (POS) and Peer-to-Peer (P2P) systems constitute a scholarly contribution of equal importance. They enforce a necessary disciplinary correction to deterministic narratives of technological diffusion. These results empirically demonstrate that adoption is a necessary but insufficient condition for financial gain. The statistically insignificant coefficients for these technologies are not mere absences of evidence; they are evidence of absence within this specific context and operationalisation of a direct financial effect.

This calls for a critical theoretical specification and the researcher posits that technology acceptance theories need to encompass post-acceptance predictors like integration intensity, transactional reliability, and institutional trust. The high level of multicollinearity between Mobile Banking (MB) and internet banking (IB), which rendered mobile banking (MB) insignificant, is itself a strong result. It represents a state of affairs in which the differences between platforms have diminished, and researchers need to make a distinction in their research frameworks from individual communication arenas to the integrated digital capabilities of finance.

The practical implications derived from these evidence-based conclusions are strategically precise. For retail SME managers, the imperative is one of technological prioritisation over proliferation. Rather than proliferation, efforts ought to be directed at optimising the use of the high functioning capabilities offered through internet banking. As far as governments as well as development institutions are concerned, the call is

to create facilitating environments, as opposed to funding computer accessories and hardware.

Harder questions have been raised regarding the financial technology industry, which pertains to value-driven re-design. Point of Sale (POS) technology ought to be transformed from the present basic payment delivery mechanism into comprehensive management systems. On the other hand, peer to peer (P2P) networks ought to upgrade levels along the lines of increased security, handling, as well as business-specific functions, if they are expected to step out from under the rubric of social utilities into the realm of trustworthy business instruments.

In closing, this research argues that the digital transformation of SME in emerging economies is not a *rising tide that lifts all boats*. It is a selective current, whose force is channeled and amplified by specific technological architectures, managerial competencies, and institutional scaffolds. The journey toward productive digitalisation is, therefore, a process of strategic alignment of matching the inherent capabilities of a technology with the core financial mechanics of a business and the supportive infrastructure of its environment. This research provides the empirical cartography for that alignment within the vibrant, complex context of Lagos's retail sector.

Thus, this study concludes not with a final declaration, but with a clarified point of departure. The study has mapped the salient features of the landscape, identifying peaks of high return from digital banking and plains of negligible effect experienced by the other technologies. The enduring scholarly and practical task that remains is to construct the causal pathways up those peaks and to cultivate the conditions that might transform the plains of retail SME financial performance. The inquiry into how

digital technology can be orchestrated to generate inclusive and sustainable financial performance for small businesses remains the defining, and now better-informed, challenge ahead.

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
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## APPENDICES

### Appendix A: Request and Approval to Adapt Questionnaire for Use.

Permission to use questionnaire for PhD dissertation. 



**Adeola Temitope Aina** <topeaina@gmail.com>

Mon, Feb 12, 2:28 PM



to 212021850, tengehr ▾

Good day Sirs,

I am a doctoral student at the UNICAF University, Malawi completing a dissertation in Business Administration. I am writing to ask for permission to use the survey questionnaire employed in your paper, *The Impact of Mobile Money on the Financial Performance of the SMEs in Douala, Cameroon*, published in the *Sustainability* journal, 2019 in my research study.

The title of my research is "*The Effect of Digitalization on the Financial Performance of retail small and medium businesses (SMEs) in Lagos, Nigeria*". My research is being supervised by my professor, Dr Joshua Wepukhulu.

I am conducting a mixed-methods research and I am interested in using your questionnaire for the quantitative part of the research. My intention is to modify and adapt the questionnaire to examine independent variables, internet banking, mobile banking, e-commerce, Point-Of-Sales system and Peer-to-Peer payments. Financial performance of SMEs which is the dependent variable will be measured by Return on Investment.

I would appreciate sending me the survey tool to aid my research. At the same time, I would also appreciate receiving copies of supplementary material that would help me administer the tests and analyze the results; for example, (1) the test questionnaire, (2) the standard instructions for administering the test, and (3) scoring procedures.

In addition to using the instrument, I also ask your permission to reproduce it in my dissertation's appendix. The dissertation will be published in the UNICAF dissertation depository.

I would like to use your survey questionnaire under the following conditions:

- I will use the questionnaire only for my research study and will not sell or use it for any other purposes.
- I will include a statement of attribution and copyright on all copies of the instrument. If you have a specific statement of attribution that you would like for me to include, please provide it in your response.
- At your request, I will send a copy of my completed research study to you upon completion of the study and/or provide a hyperlink to the final manuscript

If you do not control the copyright for these materials, I would appreciate any information you can provide concerning the proper person or organization I should contact.

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail at [topeaina@gmail.com](mailto:topeaina@gmail.com).

Sincerely,



**Frank Sylvio Gahapa Talom** <212021850@mycput.ac.za>

Feb 12, 2024, 4:01 PM ☆ 😊 ↶ ⋮

to me ▾

Hi Adeola,

You may use the survey questionnaire.

You may access the thesis from the university repository.

The questionnaire was tested by the statistician's team unfortunately all the instructions, scores and other relevant data are with them and legally belong to the university.

I hope it would help.

Cordially,

Frank

Get [Outlook for iOS](#)

## Appendix B: Survey Questionnaire



### **EFFECT OF DIGITALISATION ON FINANCIAL PERFORMANCE OF RETAIL SMALL AND MEDIUM SCALE ENTERPRISES IN LAGOS, NIGERIA.**

Dear Respondent,

This is a research survey which is being conducted to determine the **effect of digitalisation on financial performance of retail small and medium scale enterprises in Lagos, Nigeria** in partial fulfilment of the requirements for the degree of a Doctor of Philosophy (PhD) in Business Administration from UNICAF University, Malawi. My name is Adeola Temitope Aina and my student number is **R2011D11575245**.

Through evaluating the effect of digitalisation on the performance of SMEs in four large markets in Lagos, it will inform the providers of digital services as well as government and educational institutions on the benefits of introducing innovation and digital technology to support small businesses in Nigeria.

By contributing to the questionnaire, you are fostering the growth and development of innovation in our local communities and the nation at large. The information provided in this questionnaire is strictly for academic purposes and will be treated as confidential.

Participation in the survey is voluntary and you can choose to continue or opt out whenever you wish to.

Thank you.

**STATEMENT OF INFORMED CONSENT**

"I have read the foregoing information about this study, or it has been read to me. I have had the opportunity to ask questions and discuss it. I have received satisfactory answers to all my questions and I have received enough information about this study. I understand that I am free to withdraw from this study at any time without giving a reason for withdrawing and without negative consequences. I consent to the use of multimedia (e.g. audio recordings, video recordings) for the purposes of my participation in this study. I understand that my data will remain anonymous and confidential, unless stated otherwise. I consent voluntarily to be a participant in this study."

Please tick this consent box

**SECTION A: DEMOGRAPHIC INFORMATION**

Instruction: Please tick where applicable.

Gender: Male  Female

Age: .....

Education: Informal  Primary  Secondary  Tertiary  Others

Civil Status: Single  Married  Divorced  Separated  Undisclosed

**SECTION B: BUSINESS INFORMATION****Retail business sector**

Food, Beverages and Groceries

Pharmacy and Convenience Store

Hardware and Industrial

Beauty and Accessories

Clothing and Fashion

Office and Home

Computers, Phones and Accessories

Educational and digital tools

Building and Construction

Sports equipment

No of Employees: 1-10  11-20  21-50  51-100  101-above

**SECTION C: DIGITAL TECHNOLOGIES QUESTIONNAIRE**

**In the following sections, tick the most appropriate option (Strongly Agree: 5, Agree:4, Neutral: 3, Disagree:2, Strongly Disagree:1)**

|   | <b>MOBILE BANKING</b>  | <b>STRONGLY AGREE</b> | <b>AGREE</b> | <b>NEUTRAL</b> | <b>DISAGREE</b> | <b>STRONGLY DISAGREE</b> |
|---|--|-----------------------|--------------|----------------|-----------------|--------------------------|
| 1 | I frequently use mobile banking services for my SME financial transactions.  |                       |              |                |                 |                          |
| 2 | The adoption of mobile banking positively impacted my SME's overall financial decision making process.                       |                       |              |                |                 |                          |
| 3 | Mobile banking has contributed greatly to increased financial transparency within my SME.                                    |                       |              |                |                 |                          |
| 4 | There is improvement in financial performance of my SME after the implementation of mobile banking services.                 |                       |              |                |                 |                          |
| 5 | I am very satisfied with the accessibility and user-friendliness of the mobile banking platforms I currently use for my SME. |                       |              |                |                 |                          |

|   | <b>INTERNET BANKING</b>   | <b>STRONGLY AGREE</b> | <b>AGREE</b> | <b>NEUTRAL</b> | <b>DISAGREE</b> | <b>STRONGLY DISAGREE</b> |
|---|---|-----------------------|--------------|----------------|-----------------|--------------------------|
| 1 | Overall financial performance of my SME improved after the implementation of internet banking services.                                 |                       |              |                |                 |                          |
| 2 | I noticed savings and increased cost-effectiveness in financial management since integrating internet banking into my SME's operations. |                       |              |                |                 |                          |
| 3 | I am highly satisfied with the accessibility and user-friendliness of the internet banking platforms I currently use for my SME.        |                       |              |                |                 |                          |
| 4 | I believe that internet banking has improved financial reporting and analysis capabilities within my SME.                               |                       |              |                |                 |                          |
| 5 | I see internet banking playing a significant role in the future growth and sustainability of my SME.                                    |                       |              |                |                 |                          |

|   | <b>E-COMMERCE</b>   | <b>STRONGLY AGREE</b> | <b>AGREE</b> | <b>NEUTRAL</b> | <b>DISAGREE</b> | <b>STRONGLY DISAGREE</b> |
|---|---|-----------------------|--------------|----------------|-----------------|--------------------------|
| 1 | There has been overall better financial performance of my SME after the implementation of e-commerce strategies.                  |                       |              |                |                 |                          |
| 2 | I noticed savings and increased cost-effectiveness in financial management since integrating e-commerce into my SME's operations. |                       |              |                |                 |                          |
| 3 | To a great extent I think e-commerce has influenced my SME's inventory management and supply chain processes.                     |                       |              |                |                 |                          |
| 4 | I am very satisfied with the accessibility and user-friendliness of the e-commerce platforms I currently use for my SME.          |                       |              |                |                 |                          |
| 5 | E-commerce has strongly influenced my SME's ability to access new markets and customer segments.                                  |                       |              |                |                 |                          |

|   | <b>POINT-OF-SALE SYSTEM</b>  | <b>STRONGLY AGREE</b> | <b>AGREE</b> | <b>NEUTRAL</b> | <b>DISAGREE</b> | <b>STRONGLY DISAGREE</b> |
|---|--|-----------------------|--------------|----------------|-----------------|--------------------------|
| 1 | The integration of point of sale (POS) systems greatly improved overall financial performance of my SME. |                       |              |                |                 |                          |
| 2 | The use of POS systems influenced positively revenue generation of my business.                          |                       |              |                |                 |                          |
| 3 | I believe that POS systems have improved the speed and accuracy of financial transactions within my SME. |                       |              |                |                 |                          |
| 4 | Security measures implemented regarding point of sale technology has protected my SME's financial data.  |                       |              |                |                 |                          |
| 5 | Financial performance of my SME improved after the implementation of point of sale systems.              |                       |              |                |                 |                          |

|   | PEER-TO-PEER SYSTEM   | STRONGLY AGREE | AGREE | NEUTRAL | DISAGREE | STRONGLY DISAGREE |
|---|---|----------------|-------|---------|----------|-------------------|
| 1 | The utilisation of peer-to-peer (P2P) transactions impacted the overall financial performance of my SME.                                |                |       |         |          |                   |
| 2 | P2P subscriptions have influenced my SME's ability to access credit or financing opportunities.   |                |       |         |          |                   |
| 3 | I am satisfied with the accessibility and user-friendliness of the P2P platforms I currently use for my SME.                            |                |       |         |          |                   |
| 4 | I employed training sessions to educate my staff and clients about the benefits and usage of P2P transactions in the context of my SME. |                |       |         |          |                   |
| 5 | P2P activity influenced my SME's ability to manage working capital and short-term financial obligations.                                |                |       |         |          |                   |

**PART B: SECONDARY DATA COLLECTION SHEET**

**FIVE YEAR FINANCIAL SUMMARY OF REVENUE, EXPENSES, NET PROFIT AND COST OF INVESTMENT**

Instruction: Please provide the following details.

| <b>YEAR</b> | <b>TOTAL REVENUE (N)</b> | <b>EXPENSES (N)</b> | <b>NET PROFIT (N)</b> | <b>TOTAL COST OF INVESTMENT (N)</b> | <b>RETURN ON INVESTMENT (ROI%)</b> |
|-------------|--------------------------|---------------------|-----------------------|-------------------------------------|------------------------------------|
| 2019        |                          |                     |                       |                                     |                                    |
| 2020        |                          |                     |                       |                                     |                                    |
| 2021        |                          |                     |                       |                                     |                                    |
| 2022        |                          |                     |                       |                                     |                                    |
| 2023        |                          |                     |                       |                                     |                                    |
|             |                          |                     |                       |                                     |                                    |

## Appendix C

### Descriptive statistics

#### Demographics

This section contained data on respondents in markets visited, age, marital status, SME business sector, level of education and other demographics computed on participants in the study.

The analysis on descriptive statistics opened with a summary on the number of responses and the markets where the survey was conducted.

#### Table C1

*Summary of respondents from local councils/markets*

| Local Council     | Responses | Non Responses |
|-------------------|-----------|---------------|
| Oshodi Isolo      | 86        | 14            |
| Mushin            | 91        | 9             |
| Odi-Olowo/Ojuwoye | 95        | 5             |
| Oto-Awori         | 73        | 27            |
| Total             | 345       | 55            |

Source: Field data collection (2024).

Table C1 showed there were 86 respondents from Oshodi Isolo market, 91 from Mushin market, Odi-Olowo/Ojuwoye market had 95 respondents and 73 respondents came from Oto Awori markets in Lagos state, Nigeria. Total number of SME managers participating in the study were 345.

SME managers (age in years), who participated in the study was summarised below.

#### Table C2

*Age in years of participants*

|                |                |        |
|----------------|----------------|--------|
|                | Participants   | 345    |
|                | Missing values | 0      |
| Mean           |                | 38.65  |
| Std. Deviation |                | 10.73  |
| Variance       |                | 115.07 |
| Range          |                | 46     |
| Minimum        |                | 19     |
| Maximum        |                | 65     |

Source: Field data collection (2024).

Table C2 presented the descriptive statistics for the age of the respondents, including the mean age and standard deviation. The sample demographic was adult in the young, middle aged category ( $M = 38.65$ ,  $SD = 10.72$ ). The average age of retail SME managers was 38.65 years ( $SD = 10.72$ ).

### Table C3

#### *Gender classification*

|        | Number | %     |
|--------|--------|-------|
| Male   | 175    | 50.7  |
| Female | 170    | 49.3  |
| Total  | 345    | 100.0 |

Source: Field data collection (2024).

As illustrated in Table C3, the gender distribution of the participants revealed that 50.7% ( $n = 75$ ) were male, while 49.3% ( $n = 73$ ) were female. A further analysis is done below to categorise the gender of participants across the business sectors of participating retails SME.

### Table C5

#### *Participants across SME business sector classified by gender*

|                 |                                  | Gender of participants |        |       |
|-----------------|----------------------------------|------------------------|--------|-------|
|                 |                                  | Male                   | Female | Total |
| SME             | Food and Beverages               | 16                     | 19     | 35    |
| Business Sector | Pharm & Convenience.             | 1                      | 39     | 40    |
|                 | Industrial stores                | 23                     | 15     | 38    |
|                 | Beauty and Accessories           | 33                     | 30     | 63    |
|                 | Clothing and Fashion             | 49                     | 18     | 67    |
|                 | Office and Home                  | 22                     | 33     | 55    |
|                 | Computer, Phones and Accessories | 19                     | 6      | 25    |
|                 | Educational and Digital Services | 10                     | 5      | 15    |
|                 | Building and Construction        | 2                      | 2      | 4     |
|                 | Sports and Equipment             | 0                      | 3      | 3     |
|                 | Total                            | 175                    | 170    | 345   |

Source: Field data collection (2024).

Participants in food and beverages sector of the study were 35, made up of 16 men and 19 women, 40 participants from the pharmaceutical and convenience sector consisted of one man and 39 women, 38 participants came from the hardware and industrial sector. Clothing and fashion had the highest number of participants which were 67, made up of 49 men and 18 women. The lowest number of participants came from the building and construction sector which were 4 participants of which were two women and two men. Three female participants came from the sports and equipment sector as shown in C5. The modal class was clothing and fashion.

Next table in this demographic section, depicted a summary of the marital status of retail SME managers.

### Table C6

#### *Civil status*

|             | Number | %     |
|-------------|--------|-------|
| Single      | 107    | 31.0  |
| Married     | 188    | 54.5  |
| Divorced    | 18     | 5.2   |
| Separated   | 12     | 3.5   |
| Undisclosed | 20     | 5.8   |
| Total       | 345    | 100.0 |

Source: Field data collection (2024).

In Table C6, 107(31%) participants were single, 188(54.5%) were married, 18 (5.2%) divorced, 12(3.5%) separated, and 20(5.8%) of participants did not disclose their marital status.

### Table C7

#### *Descriptive statistics on marital status*

|                |              |       |
|----------------|--------------|-------|
| N              | Participants | 345   |
|                | Missing      | 0     |
| Mean           |              | 1.99  |
| Median         |              | 2.00  |
| Mode           |              | 2     |
| Std. Deviation |              | 1.013 |
| Variance       |              | 1.026 |
| Sum            |              | 685   |

Source: Field data collection (2024).

The marital status of the 345 participants was examined. The results indicated a mean marital status score of 1.99 (SD = 1.013), with a median score of (Mdn=2.00)

and a mode of 2. The variance was 1.026. The majority of the participants are likely married.

The next demographic statistic summarised the educational level of retail SME managers.

**Table C8**

*Educational level of participants*

|           | N   | %     |
|-----------|-----|-------|
| Informal  | 16  | 4.6%  |
| Primary   | 79  | 22.9% |
| Secondary | 50  | 14.5% |
| Tertiary  | 200 | 58.0% |

Source: Field data collection (2024).

Most participants in Table C8 had tertiary education which gave a score of 58%. Informally educated participants were 4.6%, 22.9% of participants had only primary school education and 14.5% had secondary school education. The majority of participants have tertiary education ( $M = 3.26$ ). The median educational level was 3 (tertiary), and the mode was also 3 (tertiary), as it was the most frequent category.

A further analysis revealed educational status across business sectors.

**Table C9**

*Educational level across retail SME business sector*

|                                  | Educational level of participants |           |           |            | Total      |
|----------------------------------|-----------------------------------|-----------|-----------|------------|------------|
|                                  | Informal                          | Primary   | Secondary | Tertiary   |            |
| Food and Beverages               | 1                                 | 4         | 1         | 29         | 35         |
| Pharmacy and Convenience         | 0                                 | 14        | 6         | 20         | 40         |
| Hardware and Industrial          | 0                                 | 14        | 6         | 18         | 38         |
| Beauty and Accessories           | 6                                 | 22        | 5         | 30         | 63         |
| Clothing and Fashion             | 3                                 | 6         | 11        | 47         | 67         |
| Office and Home                  | 0                                 | 14        | 10        | 31         | 55         |
| Computer, Phones and Accessories | 1                                 | 1         | 10        | 13         | 25         |
| Educational and Digital Services | 4                                 | 2         | 0         | 9          | 15         |
| Building and Construction        | 0                                 | 1         | 0         | 3          | 4          |
| Sports and Equipment             | 1                                 | 1         | 1         | 0          | 3          |
| <b>Total</b>                     | <b>16</b>                         | <b>79</b> | <b>50</b> | <b>200</b> | <b>345</b> |

Source: Field data collection (2024).

Table C9 revealed the highest level of education across retail SME business sector was found in the clothing and fashion sector where 47 participants possessed tertiary education, followed closely by beauty and accessories with 30 participants with tertiary education.

Going further in this analysis, was the size of the participating retail SME captured in the survey.

## Table C10

*Number of Employees in participating SME sectors*

|                    | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------------|-----------|---------|---------------|--------------------|
| 1 - 10 employees   | 68        | 19.7    | 19.7          | 19.7               |
| 11 - 20 employees  | 80        | 23.2    | 23.2          | 42.9               |
| 21- 50 employees   | 100       | 29.0    | 29.0          | 71.9               |
| 51 - 100 employees | 82        | 23.8    | 23.8          | 95.7               |
| 101 and above      | 15        | 4.3     | 4.3           | 100.0              |
| Total              | 345       | 100.0   | 100.0         |                    |

Source: Field data collection (2024).

Table C.10 depicted 19.7% of participating retail SME had 1-10 employees, 23.2% had 11-20 employees, 21-50 employee class made up 29% of participating SME, 23.8% had 51-100 employees and 4.3% had employees above 100 in number. The majority of SME have between 21-50 employees (29.0%), with mean ( $M=2.70$ ,  $SD= 1.160$ ). There was even distribution of SME sizes across the categories. The smallest and largest SME categories have the fewest number of respondents. The next table revealed the sectors participating SME managers came from.

### Table C.11

*Participating retail SME by business sector*


---

|                                  | N  | %     |
|----------------------------------|----|-------|
| Food and Beverages               | 35 | 10.1% |
| Pharmacy and Convenience         | 40 | 11.6% |
| Hardware and Industrial          | 38 | 11.0% |
| Beauty and Accessories           | 63 | 18.3% |
| Clothing and Fashion             | 67 | 19.4% |
| Office and Home                  | 55 | 15.9% |
| Computer etc.                    | 25 | 7.2%  |
| Educational and Digital Services | 15 | 4.3%  |
| Building Stores                  | 4  | 1.2%  |
| Sports and Equipment             | 3  | 0.9%  |

---

Source: Field data collection (2024).

Table C.11 showed the top three sectors (Clothing and Fashion, Beauty and Accessories, and Office and Home) account for approximately 53.6% of the participating SME. The Food and Beverages sector, despite being a common retail sector, has a relatively lower representation (10.1%). The Building and Construction, and Sports and Equipment sectors have a minimal presence (1.2% and 0.9%, respectively). The SME business sector categories demonstrated a moderate level of variation. The mean sector category was 4.37 (SD = 2.036), indicating that the average SME fell within the Beauty and Accessories sector (coded as 4). However, the relatively high standard deviation and variance (SD = 2.036, Variance = 4.146) suggest that the SME business sector categories were relatively spread out, with some sectors having fewer representatives (e.g., Building and Construction) and others having more (e.g., Clothing and Fashion, coded as 5).

The demographics of the participants provided an overview of the SME managers in Lagos State, Nigeria. The respondents were mostly young to middle-aged, with an almost equal percentage between males and females. The majority were

married, had a tertiary education, and were likely to have a stable family life. These demographics will be reviewed when interpreting the survey findings and implications.

### **Analysis of Questionnaire responses**

This section provided the summary of responses on digital technology.

#### **Mobile Banking**

This section opened with the analysis of questionnaire on mobile banking. The table below summarised the opinions of participants.

**Table C.12**

*I frequently use mobile banking services for my SME financial transactions.*

|                   | N   | %     |
|-------------------|-----|-------|
| Strongly Agree    | 223 | 64.6% |
| Agree             | 121 | 35.1% |
| Indifferent       | 1   | 0.3%  |
| Disagree          | 0   | 0     |
| Strongly Disagree | 0   | 0     |

Source: Field data collection (2024).

Table C.12 depicted 121(35.1%) participants agreed that they frequently used mobile banking services for their retail SME financial transactions. Only one respondent was indifferent and 223(64.6%) strongly agreed.

The next table summarised the positive impact of mobile banking adoption.

**Table C.13**

*There is positive impact of mobile banking adoption in the business*

|                   | N   | %     |
|-------------------|-----|-------|
| Strongly Agree    | 233 | 67.5% |
| Agree             | 110 | 31.9% |
| Indifferent       | 0   | 0     |
| Disagree          | 2   | 0.6%  |
| Strongly Disagree | 0   | 0     |

Source: Field data collection (2024).

Table C.13 depicted that 110 (31.9%) of participating managers of retail SME agreed that there was a positive impact on the adoption of mobile banking. 233 (67.5%) strongly agreed to this statement and only two participants disagreed.

The next table discussed mobile banking's contribution to financial transparency and accountability in the retail SME.

**Table C.14**

*Mobile banking contribution to increased financial transparency and accountability in the retail SME*

|                   | N   | %     |
|-------------------|-----|-------|
| Strongly Agree    | 229 | 66.4% |
| Agree             | 114 | 33.0% |
| Indifferent       | nil |       |
| Disagree          | nil |       |
| Strongly Disagree | nil |       |

Source: Field data collection (2024).

Table C.14 depicted that 229 (66.4%) participants stated that they strongly agreed that mobile banking contributed to increased financial transparency in their

SME.114 (33%) stated that they agreed to the statement whilst only two participants disagreed.

The fourth question analysed was to determine if there was improvement in financial performance after the implementation of mobile banking.

**Table C.15**

*Improvement in financial performance of SME on mobile platforms use*

|                   | N   | %     |
|-------------------|-----|-------|
| Strongly Agree    | 169 | 49.0% |
| Agree             | 175 | 50.7% |
| Indifferent       | 0   | 0     |
| Disagree          | 0   | 0     |
| Strongly disagree | 0   | 0     |

Source: Field data collection (2024).

Table C.15 showed only one participant disagreed on improvement in finances after deploying mobile banking. 175 (50.7%) agreed while 168 (49%) strongly agreed.

The next table related to SME manager's satisfaction.

**Table C.16***Accessibility and user-friendliness of mobile banking in SME*

|                   | N   | %     |
|-------------------|-----|-------|
| Strongly Agree    | 186 | 53.9% |
| Agree             | 149 | 43.2% |
| Indifferent       | 8   | 2.3%  |
| Disagree          | 2   | 0.6%  |
| Strongly Disagree | 0   | 0     |

Source: Field data collection (2024).

Table C.16 revealed two (0.6%) participants disagreed, eight (2.3%) were indifferent, 186 (53.9%) strongly agreed and 149 (43.2%) agreed with the statement that mobile banking platforms were accessible and user friendly.

The next table summarised the section on mobile banking and gave descriptive statistics on the questionnaire results.

**Table C.17***Summary of opinions of participants*

|                | Frequency of<br>use | Positive Impact | Transparenc<br>y. | Improvement in<br>financial<br>performance | Accessibility and<br>user-friendliness |
|----------------|---------------------|-----------------|-------------------|--|--|
| Median         | 5.00                | 5.00            | 5.00              | 4.00                                       | 5.00                                   |
| Mode           | 5                   | 5               | 5                 | 4  | 5                                      |
| Std. Deviation | .48                 | .51             | .51               | .52  | .57                                    |
| Variance       | .24                 | .26             | .26               | .27  | .33                                    |
| Sum            | 1602                | 1609            | 1605              | 1547                                       | 1554                                   |

Source: Field data collection (2024).

Table C.17 clearly showed the distribution of scores was characterised by a median of 5 ( $Mdn = 5$ ), a mode of 5 ( $mode$ ), and a standard deviation of .48 ( $SD = .48$ ) for frequency of use, standard deviation of .51 ( $SD = .51$ ) for mobile banking's positive impact on SME overall financial decision making process, standard deviation of .51 ( $SD = .51$ ) for mobile banking's contribution to financial transparency and median of 4 ( $Mdn = 4$ ), a mode of 4, and a standard deviation of .52 ( $SD = .52$ ) for improvement in financial performance after implementation of mobile banking technology.

The use of mobile bank platforms reflected positively on SME' finances, contributes to financial transparency, and improved financial performance. The frequency of use of mobile banking for financial transactions was also relatively high. The low standard deviation values indicated that the respondents' opinions were relatively consistent, with minimal deviation from the mean.

### **Internet Banking**

The table below summarised the opinions of participants on the adoption and use of internet banking.

The next question related to whether retail SME managers noticed savings when they adopted internet banking.

**Table C.18**

*Cost savings and effectiveness of internet bank platforms*

|                   | Frequency | Percent | Valid Percent |
|-------------------|-----------|---------|---------------|
| Strongly Agree    | 169       | 49.0    | 49.0%         |
| Agree             | 175       | 50.7    | 50.7%         |
| Indifferent       | 0         | 0       | 0             |
| Disagree          | 1         | .3      | .3%           |
| Strongly Disagree | 0         | 0       | 0             |

Source: Field data collection (2024).

Table C.18 depicted 175(50.7%) participants agreed to the above mentioned statement. Only one respondent disagreed and 169(49%) strongly agreed to the statement. Participants were asked if internet banking improved business analysis and reporting in the retail SME in the next question on the questionnaire.

**Table C.19***Financial reporting and analysis of internet banking platforms*

|                   | Frequency | Percent | Valid Percent |
|-------------------|-----------|---------|---------------|
| Strongly Agree    | 2         | .6      | .6%           |
| Agree             | 79        | 22.9    | 22.9%         |
| Indifferent       | 6         | 1.7     | 1.7%          |
| Disagree          | 158       | 45.8    | 45.8%         |
| Strongly Disagree | 100       | 29.0    | 29.0%         |

Source: Field data collection (2024).

Table C.19 revealed 100 (29%) of participants strongly disagreed that internet banking platforms aided financial reporting, 158 (45.8%) participants disagreed, six were indifferent, two strongly agreed and 79 (22.9%) of participants agreed to the statement.

The next question was a futuristic opinion asked of retail SME managers on internet banking contributing to growth and sustainability.

**Table C.20**

*The significance of future growth and sustainability of my SME through internet banking*

|                   | Number | %     |
|-------------------|--------|-------|
| Strongly Agree    | 149    | 43.2% |
| Agree             | 128    | 37.1% |
| Indifferent       | 1      | .3%   |
| Disagree          | 48     | 13.9% |
| Strongly Disagree | 19     | 5.5%  |

Source: Field data collection (2024).

Only one participant was indifferent, 19(5.5%) strongly disagreed, 48(13.9%) disagreed, 128(37.1) agreed, 149(43.2%) strongly agreed to the statement.

The next question on internet banking had to do with its impact on overall SME financial performance.

**Table C.21**

*Improvement in financial performance of my SME due to internet banking*

|                   | Number | %    |
|-------------------|--------|------|
| Strongly Agree    | 15     | 4.3  |
| Agree             | 82     | 23.8 |
| Indifferent       | 100    | 29.9 |
| Disagree          | 80     | 23.2 |
| Strongly Disagree | 68     | 19.7 |

Source: Field data collection (2024).

Table C.21 showed that 68(19.7%) participants strongly disagreed, 80(23.2%) disagreed, 100(29%) were indifferent, 82(23.8%) and 15(4.3%) strongly agreed that finances of the SME improved after the implementation of internet banking services.

Were the participants satisfied with the versatility of the internet banking platforms? Table C.22 summarised the answer.

**Table C.22**

*Versatility of the internet bank platforms*

|                   | Number | %    |
|-------------------|--------|------|
| Strongly Agree    | 89     | 25.8 |
| Agree             | 120    | 34.8 |
| Indifferent       | 34     | 9.9  |
| Disagree          | 43     | 12.5 |
| Strongly Disagree | 59     | 17.1 |

Source: Field data collection (2024).

Table C.22 revealed 59(17.1%) strongly disagreed that the internet bank platforms used were easy to operate and access, 43(12.5%) agreed, 34(9.9%) were indifferent. 120 (34.8%), 89(25.8%) strongly agreed with the statement.

**Table C.23**

*Summary of opinions of participants on the adoption and use of internet banking*

|          | Overall financial performance | Savings and increased cost-effectiveness | Accessibility and user-friendliness | Improved financial reporting | Future growth and sustainability of SME. |
|----------|-------------------------------|--|-------------------------------------|------------------------------|--|
| N        | 345                           | 345                                      | 345                                 | 345                          | 345                                      |
| Mean     | 2.70                          | 4.48                                     | 3.40                                | 2.20                         | 3.99                                     |
| Median   | 3                             | 4  | 4                                   | 2                            | 4  |
| Mode     | 3                             | 4  | 4                                   | 2                            | 5  |
| SD       | 1.16                          | .52                                      | 1.43                                | 1.11                         | 1.22                                     |
| Variance | 1.345                         | .268                                     | 2.037                               | 1.238                        | 1.491                                    |
| Sum      | 931                           | 1547                                     | 1172                                | 760                          | 1375                                     |

Source: Field data collection (2024).

SME managers reported versatility and higher efficiency since integrating internet banking into their operations ( $M = 4.48$ ,  $SD = 0.52$ ). Managers expressed moderate satisfaction with the internet banking platforms ( $M = 3.40$ ,  $SD = 1.43$ ). Internet banking was found to have a relatively low impact on improving financial reporting and analysis capabilities ( $M = 2.20$ ,  $SD = 1.11$ ). Managers believed that internet banking will aid business growth ( $M = 4.00$ ,  $SD = 1.22$ ). The adoption of

internet banking was found to have a moderate impact on improving SME finance ( $M = 2.70$ ,  $SD = 1.16$ ). The results indicated SME managers recognise benefits of internet banking, particularly in terms of savings and cost-effectiveness. However, SME managers can improve financial reporting and analysis capabilities. Moderate satisfaction with internet banking platforms indicates that while managers find the platforms accessible and user-friendly, there may be areas for improvement. Results highlight the significance of internet banking in the future growth and sustainability of SME, suggesting that managers recognise the potential of internet banking to drive business success.

## E-commerce

The section opens with an inquiry into how well e-commerce adoption has improved financial performance of retail SMEs. The table below summarises the findings.

**Table C.24**

*Improved finances after deploying e-commerce*

|                   | Number | %    |
|-------------------|--------|------|
| Strongly Agree    | 99     | 28.8 |
| Agree             | 159    | 46.1 |
| Indifferent       | 81     | 23.5 |
| Disagree          | 6      | 1.7  |
| Strongly Disagree | 0      | 0    |

Source: Field data collection (2024).

Table C.24 revealed that 159(46.1%) strongly agreed, 99(28.7%) agreed, 81(23.5) % were indifferent and six participants disagreed to the statement.

Has the integration of e-commerce benefitted retail SME? The findings are summarised next.

**Table C.25***Use of e-commerce improved enterprise operations*

|                   | Number | %    |
|-------------------|--------|------|
| Strongly Agree    | 226    | 65.5 |
| Agree             | 117    | 33.9 |
| Indifferent       | 0      | 0    |
| Disagree          | 2      | .6   |
| Strongly Disagree | 0      | 0    |

---

Source: Field data collection (2024).

Table C.25 showed that 226(65.5%) of participants strongly agreed that the use of e-commerce improved enterprise operations, 117(33.9%) agreed and two participants disagreed with the above mentioned statement.

The next question related to inventory management of retail SME due to adoption of e-commerce.

**Table C.26***Improved inventory management due to deployment of e-commerce*

|                   | Number | %    |
|-------------------|--------|------|
| Strongly Agree    | 29     | 8.4  |
| Agree             | 50     | 14.5 |
| Indifferent       | 24     | 7.0  |
| Disagree          | 70     | 20.3 |
| Strongly Disagree | 172    | 49.9 |

---

Source: Field data collection (2024).

Table 4.26 depicted that 172 (49.9%) of participants strongly disagreed, 70(20.3%) disagreed, 24(7%) were indifferent, 50 (14.5%) agreed and 29(8.4%) strongly agreed to the statement.

The retail SME managers' opinion on the viability and versatility of the e-commerce systems adopted by the retail SME was the focus of the next question.

**Table C.27**

*Viability and versatility of the e-commerce system*

|                   | Number | %    |
|-------------------|--------|------|
| Strongly Agree    | 82     | 23.8 |
| Agree             | 55     | 15.9 |
| Indifferent       | 8      | 2.3  |
| Disagree          | 32     | 9.3  |
| Strongly Disagree | 168    | 48.7 |

Source: Field data collection (2024).

Table C.27 showed that 82(23.8%) strongly agreed, 55(15.9%) agreed, eight were indifferent, 32(9.3%) disagreed and 168 (48.7%) strongly disagreed to the statement.

Finally, the survey sampled the opinions of respondents on the influence adoption of e-commerce has had on business growth.

**Table C.28***Expanding customer base due to e-commerce*

| Number            | Frequency | %    |
|-------------------|-----------|------|
| Strongly Agree    | 186       | 53.9 |
| Agree             | 149       | 43.2 |
| Indifferent       | 8         | 2.3  |
| Disagree          | 2         | .6   |
| Strongly Disagree | 0         | 0    |

---

Source: Field data collection (2024).

Table C.28 revealed 186(53.9%) strongly agreed, 149 (43.2%) agreed, eight participants were indifferent and two disagreed with the statement.

**Table C.29**

*Summary of opinions and responses on e-commerce*

|        | Better financial performance | Savings and increased cost-effectiveness | Inventory management and supply chain processes. | Accessibility and user-friendliness of the e-commerce platforms |
|--------|------------------------------|--|--|---|
| Number | 345                          | 345                                      | 345  | 345   |
| Mean   | 4.19                         | 4.64                                     | 2.11   | 2.57  |
| Median | 4.00                         | 5.00                                     | 2.00   | 2.00  |
| Mode   | 5                            | 5  | 1  | 1   |
| SD     | .855                         | .515                                     | 1.377  | 1.724   |

Source: Field data collection (2024).

The results indicated that the majority of SME have experienced better financial performance after implementing e-commerce strategies. The mean score of 4.19 suggests a positive impact on financial performance, (M: 4.64, Mdn: 5.00, Mode: 5, SD: 0.515). The results showed that SME have achieved significant efficiency of operations since introducing e-commerce into their operations. The high mean score of 4.64 and low standard deviation indicate a strong positive impact.

Influence on inventory management and supply chain (M: 2.11, Mdn: 2.00, Mode: 1, SD: 1.377). The results suggested that e-commerce has had a moderate influence on inventory management and supply chain processes. The mean score of 2.11 indicates room for improvement. Satisfaction with E-commerce platforms, (M: 2.57, Mdn: 2.00, Mode: 1, SD: 1.724). The results indicate that SME are moderately satisfied with the versatility of e-commerce platforms. The mean score of 2.57 suggests areas for improvement. E-commerce strategies have positively affected

SME financial performance as SME have achieved significant efficiency through e-commerce and moderate influence on inventory management and supply chain processes.

**Point-of-sale systems (POS)**

Opinions of respondents relating to point of sale systems was recorded in this section.

**Table C.30**

*The introduction of point of sale (POS) systems increased business efficiency in SME*

|                   | Number | %    |
|-------------------|--------|------|
| Strongly Agree    | 233    | 67.5 |
| Agree             | 110    | 31.9 |
| Indifferent       | 0      | 0    |
| Disagree          | 2      | .6   |
| Strongly Disagree | 0      | 0    |

Source: Field data collection (2024).

Table C.30 revealed 233(67.5%) strongly agreed, 110 (31.9%) agreed and only two participants disagreed that the integration of the point of sale system greatly improved financial performance in the retail SME.

Opinions relating to impact of point of sales system on revenue generation was summarised in the next table.

**Table C.31***Improved revenue generation in SME*

|                   | Number | %     |
|-------------------|--------|-------|
| Strongly Agree    | 226    | 65.5  |
| Agree             | 116    | 33.6  |
| Indifferent       | 1      | .3    |
| Disagree          | 2      | .6    |
| Strongly Disagree | 0      | 0     |
| Total             | 345    | 100.0 |

Source: Field data collection (2024).

Table C.31 revealed that 226(65.5%) strongly agreed, 116(33.6%) agreed and one participant was indifferent to the statement while two disagreed that the use of Point of sale systems influenced positively revenue generation in the retail SME.

Participants were asked if the point of sale system improved financial transaction processing and the responses are summarised in the table below.

**Table C.32**

*Improved effectiveness and efficiency of business processes due to use of POS*

|                   | Number | %     |
|-------------------|--------|-------|
| Strongly Agree    | 89     | 25.8  |
| Agree             | 128    | 37.1  |
| Indifferent       | 26     | 7.5   |
| Disagree          | 43     | 12.5  |
| Strongly Disagree | 59     | 17.1% |

Source: Field data collection (2024).

Participants numbering 89(25.8%) strongly agreed, 128(37.1%) agreed, 26(7.5%) were indifferent to, 43(12.5%) disagreed and 59(17.1%) strongly disagreed.

Financial data security due to adoption of point of sale system was explored in the question below. The table showed the summary of findings.

**Table C.33**

*POS Security features to protect SME's financial data*

|                   | Number | %    |
|-------------------|--------|------|
| Strongly Agree    | 2      | .6   |
| Agree             | 79     | 22.9 |
| Indifferent       | 6      | 1.7  |
| Disagree          | 158    | 45.8 |
| Strongly Disagree | 100    | 29   |

Source: Field data collection (2024).

Table C.33 revealed 100 (29%) strongly disagreed, 158 (45.8%)disagreed and 79 (22.9%) agreed, six were indifferent to and only two participants strongly agreed that point of sale security measures protected SME financial data.

The final question on point of sale system related to improvement in financial performance due to the adoption of point of sales system and the responses collated are rendered in the next table.

**Table C.34**

*Improved financial performance of my SME*

|                   | %   | %    |
|-------------------|-----|------|
| Strongly Agree    | 120 | 34.8 |
| Agree             | 104 | 30.1 |
| Indifferent       | 9   | 2.6  |
| Disagree          | 20  | 5.8  |
| Strongly Disagree | 92  | 26.7 |

Source: Field data collection (2024).

Table C.34 revealed 92 (26.7%) strongly disagreed, 20 (5.8%) disagreed and 104 (30.1%) agreed, nine were indifferent to and 120(34.8%) participants strongly agreed that financial performance improved after the implementation of point of sale systems.

**Table C.35**

*Summary of opinions and responses of SME managers on point of sale system(POS)*

|                | Overall<br>financial<br>performance of<br>my SME. | Revenue<br>generation | Improved the<br>speed and<br>accuracy of<br>financial<br>transactions | Security<br>measures |
|----------------|---|-----------------------|---|----------------------|
| Number         | 345   | 345                   | 345   | 345                  |
|                | 0   | 0                     | 0   | 0                    |
| Mean           | 4.66  | 4.64                  | 3.42  | 2.20                 |
| Median         | 5.00  | 5.00                  | 4.00  | 2.00                 |
| Mode           | 5   | 5                     | 4   | 2                    |
| Std. Deviation | .509  | .521                  | 1.429   | 1.113                |
| Variance       | .259  | .272                  | 2.041   | 1.238                |

Source: Field data collection (2024).

Table C.35 indicated that the integration of POS systems has greatly improved the overall financial performance of SME. The high mean score and low standard deviation suggested a strong positive impact.

Revenue generation, Mean: 4.64; Mdn: 5.00; Mode: 5, SD: 0.521).The results showed that the use of POS systems has positively influenced revenue generation for SME. The high mean score and low standard deviation indicated a significant impact.

For speed and accuracy of financial transactions, (M: 3.42; Mdn: 4.00, Mode: 4, SD: 1.429).The results suggested that POS systems have improved efficiency of financial transactions for SME. However, the mean score was lower compared to the other statements, indicating room for improvement. Security measures, (Mean: 2.20; Mdn: 2.00; Mode: 2, SD: 1.113).The results indicated that SME were less confident about the security measures implemented regarding POS technology. The low mean score and high standard deviation suggested concerns about data security.

POS systems have greatly improved overall financial performance and revenue generation for SME and have improved the speed and accuracy of financial transactions, however there is room for improvement. Nevertheless, SME have concerns about the security measures implemented regarding POS technology.

### Peer-to-peer systems

The opening question in this section, was to inquire if adopting peer to peer transactions impacted financial performance. The responses of retail SME managers were captured below.

**Table C.36**

*The utilisation of peer-to-peer (P2P) transactions improved business finance of the SME*

|                   | Number | %    |
|-------------------|--------|------|
| Strongly Agree    | 229    | 66.4 |
| Agree             | 114    | 33.0 |
| Indifferent       | 0      | 0    |
| Disagree          | 2      | .6   |
| Strongly Disagree | 0      | 0    |

Source: Field data collection (2024).

Table C.36 revealed 229(66.4%) of participants strongly agreed, 114(33%) agreed and only two participants disagreed that with the impact of peer-to-peer transactions.

The next question related to access to credit due to adoption of peer to peer subscriptions in retail SME. The summary of responses as shown in the table below.

**Table C.37***P2P subscriptions improved credit or financing opportunities*

|                   | Number | %    |
|-------------------|--------|------|
| Strongly Agree    | 149    | 43.2 |
| Agree             | 128    | 37.1 |
| Indifferent       | 1      | .3   |
| Disagree          | 48     | 13.9 |
| Strongly Disagree | 19     | 5.5  |

---

Source: Field data collection (2024).

Table C.37 revealed 149(43.2%) of participants strongly agreed, 128 (37.1%) agreed and only one participant was indifferent.

**Table C.38***Satisfaction with versatility of the P2P platforms currently used for my SME*

|                   | Number | %    |
|-------------------|--------|------|
| Strongly Agree    | 2      | .6   |
| Agree             | 79     | 22.9 |
| Indifferent       | 6      | 1.7  |
| Disagree          | 158    | 45.8 |
| Strongly Disagree | 100    | 29.0 |

---

Source: Field data collection (2024).

Table C.38 showed only two participants strongly agreed, 79 (22.9%) agreed and only six participants were indifferent, 158(45.8%) disagreed and 100 (29%) strongly disagreed.

Were staff of retail SME trained to use peer to peer platforms? Responses from survey were summarised in the table below.

**Table C.39**

*Staff training to use P2P systems*

|                   | Number | %     |
|-------------------|--------|-------|
| Strongly Agree    | 89     | 25.8  |
| Agree             | 120    | 34.8  |
| Indifferent       | 34     | 9.9   |
| Disagree          | 43     | 12.5  |
| Strongly Disagree | 59     | 17.1% |

Source: Field data collection (2024).

Table C.39 showed 89(25.8%) participants strongly agreed that they trained employees and staff to use P2P systems, 120(33.8%) agreed and 34(9.9%) participants were indifferent, 43(12.5%) disagreed and 59 (17.1%) strongly disagreed.

Finally, participants gave their opinion on the adoption of peer to peer systems for working capital needs. The summary of responses were given in the table below.

**Table C.40**

*Management of working capital and short-term financial obligations due to deployment of P2P*

|                   | Number | %    |
|-------------------|--------|------|
| Strongly Agree    | 89     | 25.8 |
| Agree             | 120    | 34.8 |
| Indifferent       | 34     | 9.9  |
| Disagree          | 43     | 12.5 |
| Strongly Disagree | 59     | 17.1 |

Source: Field data collection (2024).

Table C.40 showed that 89(25.8%) participants strongly agreed, 120(33.8%) agreed and 34(9.9%) participants were indifferent, 43(12.5%) disagreed and 59 (17.1%) strongly disagreed that peer to peer transactions influenced the SME's ability service loans and business commitments.

**Table C.41**

*Summary of opinions and responses of SME managers on peer to peer systems(P2P)*

|                | Improved financial performance | Access to credit | Satisfaction to with versatility | Staff training to use P2P | Working capital management |
|----------------|--------------------------------|------------------|----------------------------------|---------------------------|----------------------------|
| Number         | 345                            | 345              | 345                              | 345                       | 345                        |
| Mean           | 4.65                           | 3.99             | 2.20                             | 3.40                      | 3.40                       |
| Median         | 5.00                           | 4.00             | 2.00                             | 4.00                      | 4.00                       |
| Mode           | 5                              | 5                | 2                                | 4                         | 4                          |
| Std. Deviation | .512                           | 1.221            | 1.113                            | 1.427                     | 1.427                      |
| Variance       | .262                           | 1.491            | 1.238                            | 2.037                     | 2.037                      |

Source: Field data collection (2024).

Table C.41 summarised the effect of P2P transactions on financial performance is (M: 4.65; Mdn: 5.00; Mode: 5; SD: 0.512. The results indicate that the utilisation of P2P transactions had positively impacted the overall financial performance of SME. The high mean score and low standard deviation suggested a strong positive impact. On the influence of P2P subscriptions on access to credit, (M: 3.99; Mdn: 4.00, Mode: 5, SD: 1.221) P2P subscriptions have had a moderate influence on SME' ability to access credit or financing opportunities. The mean score was lower compared to the first statement, indicating a less strong impact. Satisfaction with P2P platforms (M: 2.20; Mdn: 2.00, Mode: 2, SD: 1.113) A moderate proportion of SME managers (M = 3.40) reported providing training sessions to educate their staff and clients about P2P

transactions. SME managers reported that P2P activity had a moderate influence (M = 3.40) on their ability to manage working capital and short-term financial obligations.

P2P transactions have positively impacted SME financial performance and have had a moderate influence on access to credit. SME are less satisfied with P2P platform usability and training sessions for P2P transactions are moderately effective. Overall, P2P activity has had a moderate impact on working capital management.

## Appendix D

### Detailed Demographic and Sectoral Profile of Survey Respondents

**Table D1**

*Summary Table by Gender*

| Category         | Male (1) Avg. | Female (2) Avg. |
|------------------|---------------|-----------------|
| Mobile Banking   | 4.7           | 4.6             |
| Internet Banking | 4.3           | 4.2             |
| E-Commerce       | 4.1           | 4               |
| POS Systems      | 4.4           | 4.3             |
| P2P Transactions | 3.8           | 3.7             |

Source: Field data collection (2024).

The next table is the cross tabulation of age and digital adoption.

**Table D2**

*Summary Table by Age*

| Category         | <30 Avg. | 30–50 Avg. | >50 Avg. |
|------------------|----------|------------|----------|
| Mobile Banking   | 4.8      | 4.6        | 4.5      |
| Internet Banking | 4.4      | 4.2        | 4.1      |
| E-Commerce       | 4.3      | 4          | 3.9      |
| POS Systems      | 4.5      | 4.4        | 4.2      |

|                  |     |     |     |
|------------------|-----|-----|-----|
| P2P Transactions | 3.9 | 3.7 | 3.6 |
|------------------|-----|-----|-----|

---

Source: Field data collection (2024).

## **Insights into Gender and Age-Based Perceptions of Digital Financial Tools in SME**

The survey of 345 retail SME managers reveals notable trends in how gender and age influence perceptions of digital financial tools, including mobile banking, internet banking, e-commerce, POS systems, and P2P transactions. These findings align with broader behavioural and technological adoption theories, offering valuable insights for financial service providers and policymakers.

### **1. Gender Differences in Digital Financial Adoption**

Male SME managers (Gender = 1) reported slightly higher satisfaction and perceived benefits across all digital financial tools compared to female managers (Gender = 2). This observation aligns with prior research suggesting that men often exhibit greater confidence in adopting new technologies, possibly due to differences in risk perception and access to digital literacy resources (Venkatesh et al., 2003). However, the marginal difference (e.g., 4.7 vs. 4.6 for mobile banking) suggested that gender gaps in digital finance are narrowing, likely due to increased financial inclusion initiatives targeting women-led SME.

Interestingly, POS systems and mobile banking were rated highly by both genders, indicating that practical, transaction-oriented tools are universally valued. In contrast, P2P transactions received the lowest ratings (3.8 for males, 3.7 for females),

possibly due to concerns over security, trust, or lack of widespread SME integration in peer-to-peer platforms.

## 2. Age-Based Variations in Technology Perception

Younger SME managers (under 30) demonstrated the most favourable attitudes toward digital financial tools, particularly mobile banking (4.8) and e-commerce (4.3). This aligns with Generational Theory (Strauss & Howe, 1991), which posits that younger cohorts (Millennials, Gen Z) are digital natives who inherently trust and adopt technology faster.

Middle-aged managers (30–50) showed moderate enthusiasm, while those over 50 were slightly more reserved, though still generally positive. This gradual decline in perceived benefits with age reflects technology acceptance models (Davis, 1989), where older individuals may prioritise stability and familiarity over innovation. However, the strong ratings for POS systems across all age groups (4.2–4.5) suggest that age-neutral, efficiency-driven technologies maintain broad appeal. The next table is the summary of financial data by age groups.

**Table D3**

*Summary by Age Group (Totals in ₦'000 billion)*

| Age Group | Count | Total Revenue | Total Expenses | Net Profit | Investment Cost |
|-----------|-------|---------------|----------------|------------|-----------------|
| ≤ 25      | 25    | 10,752.35     | 7,101.61       | 3,650.74   | 7,310.49        |
| 26-35     | 120   | 54,830.48     | 38,846.31      | 15,984.17  | 50,923.41       |
| 36-45     | 95    | 51,776.82     | 31,908.36      | 19,868.46  | 24,958.35       |
| 46-55     | 75    | 44,360.42     | 29,415.47      | 14,944.95  | 37,355.38       |
| ≥ 56      | 30    | 16,675.50     | 11,380.21      | 5,295.29   | 13,238.06       |

Source: Field data collection (2024).

The next table is the demographic classification of financial data by gender factor of demographics.

**Table D4***Summary by Gender (Totals in ₦'000 billion)*

| Total     |       |               |           |            |                 |
|-----------|-------|---------------|-----------|------------|-----------------|
| Gender    | Count | Total Revenue | Expenses  | Net Profit | Investment Cost |
| Male (1)  | 175   | 118,960.24    | 79,621.75 | 39,338.49  | 84,995.41       |
| Female(2) | 170   | 59,435.33     | 39,030.21 | 20,405.12  | 48,790.28       |

Source: Field data collection (2024).

## Appendix E: University Research Ethics Committee Decision



UREC Decision, Version 2.0

### Unicaf University Research Ethics Committee Decision

**Student's Name:** Adeola Temitope Aina  
**Student's ID #:** R2011D11575245  
**Supervisor's Name:** Dr Joshua Matanda Wepukhulu  
**Program of Study:** UU-PhD-BA-900-3  
**OfferID / GroupID:** O70634G80085  
**Dissertation stage:** DS3  
**Research Project Title:** EFFECT OF DIGITALIZATION ON FINANCIAL PERFORMANCE OF RETAIL SMALL AND MEDIUM SCALE ENTERPRISES IN LAGOS, NIGERIA.  
  
**Ethical conditions for approval:** No comments.  
  
**Methodological recommendations:**  
  
**Decision\*:** A. Approved without revision or comments  
**Date:** April 16, 2024

**All Doctoral students are advised to check the regulations pertaining to research and General Data Protection Regulation (GDPR) of the country in which the research will take place as each country may have different restrictions on conducting research.**

- i. Approval from a local Research Ethics Committee (REC) or professional regulatory body such as Institutional Review Board (IRB)**
- ii. Approval from Ministry or public agency**

\*Provisional approval provided at the Dissertation Stage 1, whereas the final approval is provided at the Dissertation stage 3. The student is allowed to proceed to data collection following the final approval.

## Appendix F: Approval for Revised Questionnaire from UREC

02/25, 2:11 PM

Gmail - REVISED QUESTIONNAIRE



Adesola Temilope Aina &lt;topeaina@gmail.com&gt;

## REVISED QUESTIONNAIRE

Unicaf Doctoral Studies <doctoralstudies-ss@unicaf.org>  
 To: Adesola Temilope Aina <topeaina@gmail.com>  
 Cc: Joshua Metende Wepukhulu <j.wepukhulu@faculty.unicaf.org>

Mon, Feb 24, 2025 at 3:24 PM

Dear Adesola,

I hope this email finds you well.

Please be informed that the Ethics Committee has approved the revised research tool.

Please do not hesitate to contact me in case you have any questions,

Kind regards,

**Sofia Lamprou**  
 Academia/Ethics Coordinator, School of Doctoral Studies



Old International Airport, 7130 Larnaca, Cyprus,  
 P.O.Box 42672, 6600 Larnaca, Cyprus  
**Phone:** +957 24747600 | **Fax:** +957 24862213  
**Email:** [doctoralstudies-ss@unicaf.org](mailto:doctoralstudies-ss@unicaf.org) | **Website:** [www.unicaf.org](http://www.unicaf.org)

## INCREASING ACCESS TO QUALITY HIGHER EDUCATION

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## Appendix G: Research Ethics Application Forms



REAF\_DS - Version 3.3

**UNICAF UNIVERSITY  
RESEARCH ETHICS APPLICATION FORM  
DOCTORAL STUDIES**

**URRC USE ONLY:**  
Application No:  
Date Received:

**Student's Name:** Adeola Temitope AINA

**Student's E-mail Address:** topeaina@gmail.com

**Student's ID #:** R2011D11575245

**Supervisor's Name:** DR JOSHUA WEPUKHULU

**University Campus/Program:** Unicaf University Malawi: PhD Doctorate of Philosophy - Business Administration

**Research Project Title:**

EFFECT OF DIGITALIZATION ON FINANCIAL PERFORMANCE OF RETAIL SMALL AND MEDIUM SCALE ENTERPRISES IN LAGOS, NIGERIA.

**1. Please state the timelines involved in the proposed research project:**

Estimated Start Date: 21-Apr-2021

Estimated End Date: 21-Apr-2025

**2. External Research Funding (If applicable):**

**2.a. Do you have any external funding for your research?**

YES  NO

If YES, please answer questions 2b and 2c.

**2.b. List any external (third party) sources of funding you plan to utilise for your project. You need to include full details on the source of funds (e.g. state, private or individual sponsor), any prior / existing or future relationships between the funding body / sponsor and any of the principal investigator(s) or co-investigator(s) or student researcher(s), status and timeline of the application and any conditions attached.**

**2.c. If there are any perceived ethical issues or potential conflicts of interest arising from applying for and/or receiving external funding for the proposed research then these need to be fully disclosed below and also further elaborated on, in the relevant sections on ethical considerations later on in this form.**

### 3. The research project

#### 3.a. Project Summary:

In this section fully describe the purpose and underlying rationale for the proposed research project. Ensure that you pose the research questions to be examined, state the hypotheses, and discuss the expected results of your research and their potential.

It is important in your description to use plain language so it can be understood by all members of the UREC, especially those who are not necessarily experts in the particular discipline. To that effect ensure that you fully explain/define any technical terms or discipline-specific terminology (use the space provided in the box).

This research will assess the effect of financial technology on SME financial performance using a profitability index approach. It will ascertain the effect of digitalization on the financial returns of retail SMEs.  
It will examine how the adoption of internet banking, mobile banking, electronic transfers and e-commerce, point of sales and peer to peer systems impact retail SMEs financial performance.

### 3.b. Significance of the Proposed Research Study and Potential Benefits:

Outline the potential significance and/or benefits of the research (use the space provided in the box).

The findings of this research would be useful across the West African sub-region and internationally in SME studies. Nigeria is an emerging economy and data on SME digitalization is relevant to investors as well as policy makers and SME business managers (Ozili, 2020). The national economy will benefit from the gains of digitalization and technological applications as the world exits the pandemic and even in times of uncertainty look to the future to develop more sustainable business models.

An appraisal of adoption of financial technology by retail SMEs enables government policy makers, providers of digital technologies, academicians and researchers to appreciate the capabilities for further digital transformation in Nigeria and the benefits this would have on the financial performance of SMEs (Curraj, 2018).

This would enable more funding and support for digital services to SMEs. It would encourage more research to be carried out on ways to harness digital potentials for SME development.

### 4. Project execution:

#### 4.a. The following study is an:

- experimental study (primary research)
- desktop study (secondary research)
- desktop study using existing databases involving information of human/animal subjects
- Other

If you have chosen 'Other' please Explain:

**4.b. Methods. The following study will involve:**

- a Quantitative methodology  
 a Qualitative methodology  
 a mixed methods approach

If you have chosen mixed methods please state below whether you are going to proceed with triangulation or not.

- YES     NO

**4.c. Please state below which tools you are going to use:**

| A<br>Select the tools to be used in your study       | B<br>Select how the tools selected in column A will be administered (select one or more)   | C<br>Select what types of questions will be included in the tools previously selected in column A (select one or more)   |
|--|--|--|
| Interviews<br><input type="checkbox"/>               | <input type="checkbox"/> Face-to-face<br><input type="checkbox"/> Online with camera (synchronous live discussion with camera)<br><input type="checkbox"/> Audio only (synchronous live discussion without camera, i.e., via phone)  | <input type="checkbox"/> Open-ended questions<br><input type="checkbox"/> Close-ended questions<br><input type="checkbox"/> Includes section related to demographics                       |
| Focus Groups<br><input type="checkbox"/>             | <input type="checkbox"/> Face-to-face<br><input type="checkbox"/> Online with camera (synchronous live discussion with camera)<br><input type="checkbox"/> Audio only (synchronous live discussion without camera, i.e., via phone)  | <input type="checkbox"/> Open-ended questions<br><input type="checkbox"/> Close-ended questions<br><input type="checkbox"/> Includes section related to demographics                       |
| Questionnaire<br><input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> Face-to-face self-administered questionnaire<br><input checked="" type="checkbox"/> Online, i.e., via phone or any other platform. The researcher reads the questions to the participants<br><input checked="" type="checkbox"/> Online asynchronous self-administered questionnaire (i.e., via email) | <input type="checkbox"/> Open-ended questions<br><input checked="" type="checkbox"/> Close-ended questions<br><input checked="" type="checkbox"/> Includes section related to demographics |

| A<br>Select the tools to be used in your study | B<br>Select how the tools selected in column A will be administered (select one or more)   | C<br>Select what types of questions will be included in the tools previously selected in column A (select one or more)   |
|--|--|--|
| Experiments<br><input type="checkbox"/>        | <input type="checkbox"/> Face-to-face<br><input type="checkbox"/> Online with camera (synchronous live discussion with camera)<br><input type="checkbox"/> Audio only (synchronous live discussion without camera, i.e., via phone)<br><input type="checkbox"/> Asynchronously via any online platform | <input type="checkbox"/> Open-ended questions<br><input type="checkbox"/> Close-ended questions<br><input type="checkbox"/> Includes section related to demographics |
| Tests<br><input type="checkbox"/>              | <input type="checkbox"/> Face-to-face<br><input type="checkbox"/> Online with camera (synchronous live discussion with camera)<br><input type="checkbox"/> Audio only (synchronous live discussion without camera, i.e., via phone)<br><input type="checkbox"/> Asynchronously via any online platform | Provide a brief description of the test in the box 'Other' below.  |
| Other  | Secondary data on SME five year financial performance will be collected .  |  |

6. Participants:

5 a. Does the Project involve the recruitment and participation of additional persons other than the researcher(s) themselves?

- YES If YES, please complete all following sections.
- NO If NO, please directly proceed to Question [7](#).

#### 5 b. Relevant Details of the Participants of the Proposed Research

State the number of participants you plan to recruit, and explain in the box below how the total number was calculated.

Number of participants

There are approximately 11,643 registered SMEs in Lagos Nigeria. Approximately, half of them are into retail. The study is focusing on four out of ten large markets which is  $0.4 \times 5000 = 2000$   
 In a population of 2000 retail SMEs Using Taro Yamane, 1967  $n = N / (1 + N (e)^2)$  n signifies the sample size N signifies the population under study e signifies the margin error of 0.05  $2000 / (1 + 2000(0.05)^2) = 333$

Describe important characteristics such as: demographics (e.g. age, gender, location, affiliation, level of fitness, intellectual ability etc). It is also important that you specify any inclusion and exclusion criteria that will be applied (e.g. eligibility criteria for participants).

Age range From  To

Gender  Female  
 Male

#### Eligibility Criteria:

- Inclusion criteria
- Exclusion criteria

Disabilities/Disorders: You should only include the participants who can provide informed consent for themselves. Individuals who have a mental disability and are not in a position to provide their own consent should not participate in the study. Please provide information for any other disabilities/disorders the participants may have:

Other relevant information (use the space provided in the box):

**5 f. Relationship between the principal investigator and participants.**

Is there any relationship between the principal investigator (student), co-investigators(s), (supervisor) and participant(s)? For example, if you are conducting research in a school environment on students in your classroom (e.g. instructor-student).

YES  NO

If YES, specify (use the space provided in the box).

**e. Potential Risks of the Proposed Research Study.**

**6 a. i. Are there any potential risks, psychological harm and/or ethical issues associated with the proposed research study, other than risks pertaining to everyday life events?**

YES  NO

If YES, specify below and answer the question 6 a.ii.

**6 a.ii Provide information on what measures will be taken in order to exclude or minimise risks described in 6 a.i.**

**5 c. Participation & Research setting:**

Clearly describe which group of participants (described in 5b) is completing/participating in the material(s)/tool(s) described in 4c above (use the space provided in the box)

SME managers from four main markets in Lagos state engaged in retail business. The market which are Lagos Island, Oshodi, Amuwo Odofin and Ikeja are the four largest concentrations of commercial activities in Lagos state and will provide proper representation of the sample for the study.

**5 d. Recruitment Process for Human Research Participants:**

Clearly describe how the potential participants will be identified, approached and recruited (use the space provided in the box).

Approvals sought from market leaders.  
 Access into markets during specified hours.  
 Approach retail SME managers who are willing to participate.  
 Survey administered on SME managers.  
 Snowball sampling where research participants are asked to assist researchers in identifying other potential subjects will be used.

**5 e. Research Participants Informed Consent.**

Select below which categories of participants will participate in the study. Complete the relevant Informed Consent form and submit it along with the REAF form.

| Yes                                 | No                       | Categories of participants                                  | Form to be completed           |
|-------------------------------------|--------------------------|---|--------------------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Typically Developing population(s) above the maturity age * | Informed Consent Form          |
| <input type="checkbox"/>            | <input type="checkbox"/> | Typically Developing population(s) under the maturity age * | Guardian Informed Consent Form |

\* Maturity age is defined by national regulations in laws of the country in which the research is being conducted.

**5 f. Relationship between the principal investigator and participants.**

Is there any relationship between the principal investigator (student), co-investigators(s), (supervisor) and participant(s)? For example, if you are conducting research in a school environment on students in your classroom (e.g. instructor-student).

YES  NO

If YES, specify (use the space provided in the box).

**a. Potential Risks of the Proposed Research Study.**

**6 a. i. Are there any potential risks, psychological harm and/or ethical issues associated with the proposed research study, other than risks pertaining to everyday life events?**

YES  NO

If YES, specify below and answer the question 6 a.ii.

**6 a.ii Provide information on what measures will be taken in order to exclude or minimize risks described in 6.a.i.**

|  | Yes                                 | No                                  |
|--|-------------------------------------|-------------------------------------|
| ix. Have you ensured that personal data and research data collected from participants will be securely stored for five years?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| x. Does this research involve the deception of participants?<br>If YES, describe the nature and extent of the deception involved. Explain how and when the deception will be revealed, and who will administer this debrief to the participants: | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

6 c. I. Are there any other ethical issues associated with the proposed research study that are not already adequately covered in the preceding sections?

Yes  No

If YES, specify (maximum 150 words).

6.c.II Provide information on what measures will be taken in order to exclude or minimise ethical issues described in 6.c.I.

6 d. Indicate the Risk Rating.

High  Low

### 7. Further Approvals

All researchers are advised to check the regulations pertaining to research and General Data Protection Regulation (GDPR) of the country in which the research will take place as each country may have different restrictions on conducting research. **Are there any other approvals required (i.e., from a ministry or public agency in the country, in addition to ethics clearance from UREC) in order to carry out the proposed research study?**

YES  NO If YES, specify.

### 8. Application Checklist

Mark ✓ if the study involves any of the following:

- Children and young people under 18 years of age, vulnerable populations such as children with special educational needs (SEN), racial or ethnic minorities, socioeconomically disadvantaged persons, pregnant women, elderly, malnourished people, and ill people.
- Research that foresees risks and disadvantages that would affect any participant of the study such as anxiety, stress, pain or physical discomfort, harm risk (which is more than is expected from everyday life) or any other act that participants might believe is detrimental to their wellbeing and/or has the potential to / will infringe on their human rights / fundamental rights.
- Risk to the well-being and personal safety of the researcher.
- Administration of any substance (food / drink / chemicals / pharmaceuticals / supplements / chemical agent or vaccines or other substances (including vitamins or food substances) to human participants.
- Results that may have an adverse impact on the natural or built environment.

### 9. Further documents

Check that the following documents are attached to your application:

|   |   | ATTACHED                            | NOT APPLICABLE                      |
|---|---|-------------------------------------|-------------------------------------|
| 1 | Recruitment advertisement (if any)  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 2 | Informed Consent Form / Guardian Informed Consent Form  | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 3 | Research Tool(s)  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 4 | Gatekeeper Letter   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 5 | Any other approvals required in order to carry out the proposed research study, e.g., institutional permission (e.g. school principal or company director) or approval from a local ethics or professional regulatory body. | <input type="checkbox"/>            | <input type="checkbox"/>            |

**10. Final Declaration by Applicants:**

- (a) I declare that this application is submitted on the basis that the information it contains is confidential and will only be used by Unicaf University for the explicit purpose of ethical review and monitoring of the conduct of the research proposed project as described in the preceding pages.
- (b) I understand that this information will not be used for any other purpose without my prior consent, excluding use intended to satisfy reporting requirements to relevant regulatory bodies.
- (c) The information in this form, together with any accompanying information, is complete and correct to the best of my knowledge and belief and I take full responsibility for it.
- (d) I undertake to abide by the highest possible international ethical standards governing the Code of Practice for Research Involving Human Participants, as published by the UN WHO Research Ethics Review Committee (ERC) on <http://www.who.int/ethics/research/en/> and to which Unicaf University aspires to adhere.
- (e) In addition to respect any and all relevant professional bodies' codes of conduct and/or ethical guidelines, where applicable, while in pursuit of this research project.

I agree with all points listed under Question 10

Student's Name: Adeola Temitope AINA

Supervisor's Name: DR JOSHUA WEPUKHULU

Date of Application: 08-Mar-2024

**Important Note:**

Save your completed form (we suggest you also print a copy for your records) and then submit it to your UU Dissertation/project supervisor (tutor). In the case of student projects, the responsibility lies with the Faculty Dissertation/Project Supervisor. If this is a student application, then it should be submitted via the relevant link in the VLE. Please submit only electronically filed in copies; do not hand fill and submit scanned paper copies of this application.

## Appendix H: Informed Consent Letters



UU\_IC - Version 2.1

### Informed Consent Form

#### Part 1: Debriefing of Participants

**Student's Name:**

**Student's E-mail Address:**

**Student ID #:**

**Supervisor's Name:**

**University Campus:**

**Program of Study:**

**Research Project Title:**

**Date:**

Provide a short description (purpose, aim and significance) of the research project, and explain why and how you have chosen this person to participate in this research (maximum 150 words).

The above named student is committed to ensuring participant's voluntarily participation in the research project and guaranteeing there are no potential risks and/or harms to the participants.

Participants have the right to withdraw at any stage (prior or post the completion) of the research without any consequences and without providing any explanation. In these cases, data collected will be deleted.

All data and information collected will be coded and will not be accessible to anyone outside this research. Data described and included in dissemination activities will only refer to coded information ensuring beyond the bounds of possibility participant identification.

I, \_\_\_\_\_, ensure that all information stated above is true and that all conditions have been met.

**Student's Signature:** \_\_\_\_\_

## Appendix I: Gatekeeper Letters and Approvals from Market Leaders to conduct survey in markets.

UU\_GL - Version 2.0

**UNICAF UNIVERSITY**

**Gatekeeper letter**

**Institution / Organization :** THE MARKET LEADERS

**Address:**

**Date:** 07-Mar-2024

**Subject:** PERMISSION TO INTERVIEW TRADERS AND SMES

**OTO AWORI LCDA**  
ADMIN & HUMAN RESOURCE  
Date: 27/3/24

Dear Sir/Madam,

I am a doctoral student at Unicaf University Malawi.

As part of my degree I am carrying out a study on EFFECT OF DIGITALIZATION ON FINANCIAL PERFORMANCE OF RETAIL SMALL AND MEDIUM SCALE ENTERPRISES IN LAGOS, NIGERIA..

I am writing to enquire whether you would be interested willing to grant permission to interview SMEs in your market in this research. Subject to approval by Unicaf Research Ethics Committee (UREC) this study will be using survey questionnaire to interview owners of small and medium businesses (SME).

Through evaluating the effect of digitalization on the performance of SMEs in four large markets in Lagos, it will inform the providers of digital services as well as government and educational institutions on the benefits of introducing innovation and digital technology to support small businesses in the largest markets in Nigeria and West Africa. My supervisor is Dr Joshua Wepukhulu, a faculty member of UNICAF university.

Thank you in advance for your time and for your consideration of this project. Kindly please let me know if you require any further information or need any further clarifications.

Yours Sincerely,  
Adeola Aina

**Student's Name:** ADEOLA TEMITOPE AINA  
**Student's E-mail:** topesina@gmail.com  
**Student's Address and Telephone:** 6th Floor, Revenue House, Alausa, Ikeja, Lagos state.  
**Supervisor's Title and Name:** Dr Joshua Wepukhulu  
**Supervisor's Position:** Faculty Member  
**Supervisor's E-mail:** j.wepukhulu@faculty.unicaf.org

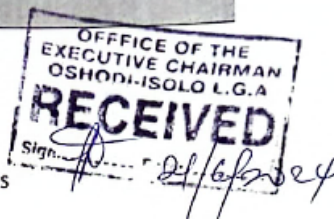
**Gatekeeper letter**

**Institution / Organization :** THE MARKET LEADERS

**Address:**

**Date:** 07-Mar-2024

**Subject:** PERMISSION TO INTERVIEW TRADERS AND SMES



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Thank you in advance for your time and for your consideration of this project. Kindly please let me know if you require any further information or need any further clarifications.

Yours Sincerely,

Adeola Aina

**Student's Name:** ADEOLA TEMITOPE AINA

**Student's E-mail:** lopeaina@gmail.com

**Student's Address and Telephone:** 6th Floor, Revenue House, Alausa, Ikeja, Lagos state.

**Supervisor's Title and Name:** Dr Joshua Wepukhulu

**Supervisor's Position:** Faculty Member

**Supervisor's E-mail:** j.wepukhulu@faculty.unicaf.org

Approved by market women leader in  
Odi-Olowo Mushin Market.

Date: 11th May, 2024

Market: Mrs. Nureeni Agbelusi hereby grant approval to Mrs. Adeola Temitope Aina, Doctoral student of UNICAF University, Malawi, to interview our traders and SME in her research titled, "THE EFFECT OF DIGITALIZATION ON THE FINANCIAL PERFORMANCE OF RETAIL SMALL AND MEDIUM ENTERPRISES IN LAGOS, NIGERIA.

Thank you.

Market women leader

MARKET LEADER



SIGNATURE /STAMP/THUMBPRINT



UU\_GL - Version 2.0.

**Gatokoopor letter**

**Institution / Organization :** THE MARKET LEADERS

**Address:**

**Date:** 07-Mar-2024

**Subject:** PERMISSION TO INTERVIEW TRADERS AND SMES

**MISHIN LOCAL GOVERNMENT  
OFFICE OF THE SECRETARY**  
*[Signature]* 21-06-2024

Dear Sir/Madam,

I am a doctoral student at Unicaf University Malawi.

As part of my degree I am carrying out a study on EFFECT OF DIGITALIZATION ON FINANCIAL PERFORMANCE OF RETAIL SMALL AND MEDIUM SCALE ENTERPRISES IN LAGOS, NIGERIA..

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Thank you in advance for your time and for your consideration of this project. Kindly please let me know if you require any further information or need any further clarifications.

Yours Sincerely,

Adeola Aina

**Student's Name:** ADEOLA TEMITOPE AINA

**Student's E-mail:** topeaina@gmail.com

**Student's Address and Telephone:** 6th Floor, Revenue House, Alausa, Ikeja, Lagos state.

**Supervisor's Title and Name:** Dr Joshua Wepukhulu

**Supervisor's Position:** Faculty Member

**Supervisor's E-mail:** j.wepukhulu@faculty.unicaf.org

**Gatekeeper letter**

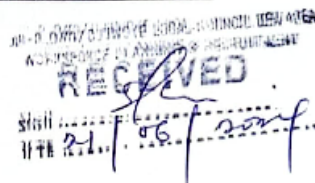
**Institution / Organization :** THE MARKET LEADERS

**Address:**

**Date:** 07-Mar-2024

**Subject:** PERMISSION TO INTERVIEW TRADERS AND SMES

Dear Sir/Madam,



I am a doctoral student at Unicaf University Malawi.

As part of my degree I am carrying out a study on EFFECT OF DIGITALIZATION ON FINANCIAL PERFORMANCE OF RETAIL SMALL AND MEDIUM SCALE ENTERPRISES IN LAGOS, NIGERIA..

I am writing to enquire whether you would be interested willing to grant permission to interview SMEs in your market in this research.

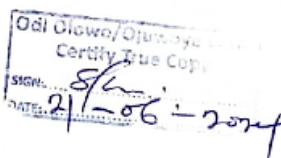
Subject to approval by Unicaf Research Ethics Committee (UREC) this study will be using survey questionnaire to interview owners of small and medium businesses (SME).

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Thank you in advance for your time and for your consideration of this project. Kindly please let me know if you require any further information or need any further clarifications.

Yours Sincerely,

Adeola Aina



**Student's Name:** ADEOLA TEMITOPE AINA

**Student's E-mail:** topeaina@gmail.com

**Student's Address and Telephone:** 6th Floor, Revenue House, Alausa, Ikeja, Lagos state.

**Supervisor's Title and Name:** Dr Joshua Wepukhulu

**Supervisor's Position:** Faculty Member

**Supervisor's E-mail:** j.wepukhulu@faculty.unicaf.org

Date: 22-05-2024

Market: Chibwe Ezenye hereby grant approval to Mrs. Adeola Temitope Aina, Doctoral student of UNICAF University, Malawi, to interview our traders and SME in her research titled, "THE EFFECT OF DIGITALIZATION ON THE FINANCIAL PERFORMANCE OF RETAIL SMALL AND MEDIUM ENTERPRISES IN LAGOS, NIGERIA."

Thank you. Approved for Pharmaceutical Stores Association, Mushin Lagos West

Chibwe Ezenye  
MARKET LEADER

.....  
SIGNATURE/STAMP/THUMBPRINT

Approved by Iya Oloja Mushin Market  
18th May, 2024

Date:

Market:

I Madam Taiwakaletu Aboloye hereby grant approval to Mrs. Adeola Temitope Aina, Doctoral student of UNICAF University, Malawi, to interview our traders and SME in her research titled, "THE EFFECT OF DIGITALIZATION ON THE FINANCIAL PERFORMANCE OF RETAIL SMALL AND MEDIUM ENTERPRISES IN LAGOS, NIGERIA."

Thank you.

Mushin Market Women Leader

MARKET LEADER



SIGNATURE / STAMP / THUMBPRINT

**(Iya Oloja** refers to the Market Woman Leader in Yoruba, Nigeria language dialect. Most local markets adopt a matriarchical system of leadership (Nwankwo, 2019).