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CORRELATION BETWEEN CONSUMER SOPHISTICATION AND INNOVATIONS IN THE NIGERIAN TELECOMMUNICATION SECTOR

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ABSTRACT
Consumer sophistication has emerged as a crucial determinant of innovation in the telecommunication sector, influencing investment decisions and service delivery. This study examined the relationship between consumer sophistication and innovation in the Nigerian telecommunication industry, focusing on key areas such as 5G network investment, financial services integration, and mobile number portability (MNP). The researchers collected data from 48 managers in 8 telecommunication companies operational in Nigeria, using a questionnaire, designed in Likert 5 – point scale. Three null hypotheses were tested using Pearson Product Moment Correlation Analysis, to assess the link between consumer sophistication and innovations. The analysis examined on how consumer sophistication correlates with investment in 5G technology, financial services integration, and mobile number portability in the Nigerian telecommunication sector. The findings indicate that sophisticated consumers push companies to invest in cutting-edge technologies such as 5G to meet evolving demands. Additionally, mobile financial services, such as digital banking and mobile payments, have become integral to telecom operations due to heightened consumer expectations for seamless financial transactions. Furthermore, the implementation of mobile number portability reflects consumer demand for flexibility and service quality, compelling telecom providers to innovate in pricing, service bundling, and customer engagement. The study concludes that there is a significant, positive relationship between consumer sophistication and innovations in the Nigerian telecommunication sector, as consumer sophistication plays a crucial role in shaping innovation strategies in the telecommunication sector. It recommends accelerated 5G deployment, continuous innovation in financial services, and improved regulatory support for MNP to foster a more dynamic and competitive market. By aligning strategies with evolving consumer preferences, telecom firms can sustain growth, enhance customer satisfaction, and drive industry-wide innovation.

Keywords: ***Consumer sophistication, telecommunication innovation, 5G investment, financial services integration, mobile number portability, telecom industry.***

BACKGROUND TO THE STUDY
The telecommunication industry is one of the most dynamic sectors in Nigeria, playing a crucial role in economic development and technological advancement (Adebayo, 2021). Over the years, there has been a significant shift in consumer expectations and behavior, driven by increased access to information, higher digital literacy, and exposure to global trends (Ogunleye & Adegbite, 2020). This evolution in consumer sophistication has had profound implications for the innovativeness of telecommunication companies, influencing service delivery, product development, and competitive strategies (Eze & Nwankwo, 2022).

In the telecommunication sector, sophisticated consumers demand high-quality services, seamless connectivity, and innovative solutions that align with global standards (Adesanya & Bello, 2021). This increasing consumer awareness forces telecommunication companies to invest in cutting-edge technologies, enhance customer experiences, and adopt innovative business models to retain

market relevance (Umar & Usman, 2023). As the Nigerian telecommunications industry continues to grow, understanding the impact of consumer sophistication on innovation becomes imperative. Companies that fail to align their offerings with the evolving expectations of their consumers risk losing market share to more adaptable competitors (Chukwuma, 2020).

Despite the rapid growth of the Nigerian telecommunication sector, there remains a gap between consumer expectations and the innovative capabilities of telecom companies (Ogunleye & Adegbite, 2020). Many firms struggle to keep pace with the increasing sophistication of consumers, leading to service inefficiencies, product dissatisfaction, and heightened competition from global market players (Eze & Nwankwo, 2022). Furthermore, while previous studies have explored consumer behavior and service quality (Adesanya & Bello, 2021), limited research has examined the direct relationship between consumer sophistication and the innovation strategies of Nigerian telecommunication companies.

Existing literature focuses primarily on general market adaptation, digital transformation, and competition in the telecommunication industry (Chukwuma, 2020; Umar & Usman, 2023). However, there is a lack of empirical studies that analyze how increasing consumer sophistication influences the innovation process within Nigerian telecom companies. Most studies either examine innovation in developed markets (Kotler & Keller, 2019) or analyze consumer behavior without linking it to corporate innovation strategies (Adebayo, 2021). This creates a knowledge gap regarding how Nigerian telecommunication firms can align their innovation efforts with the evolving needs of their consumers.

This study aims to fill this gap by investigating the extent to which consumer sophistication drives innovation in the Nigerian telecommunications industry. Using a quantitative approach, the study will examine consumer sophistication, evaluate corporate innovation strategies, and assess technological advancements in meeting consumer demands. By carrying out an empirical research on the link between consumer sophistication and innovation in the Nigerian telecommunication sector, this research will offer practical recommendations for telecommunication companies to enhance their competitive advantage and align with global best practices.

CONCEPTUAL FRAMEWORK

As shown in the conceptual framework, consumer sophistication is the predictor variable and innovation is the criterion variable. Consumer sophistication is used as a one-dimensional variable whilst innovation in the telecom sector is measured in terms of investment in 5G technology, financial services integration, and mobile number portability.

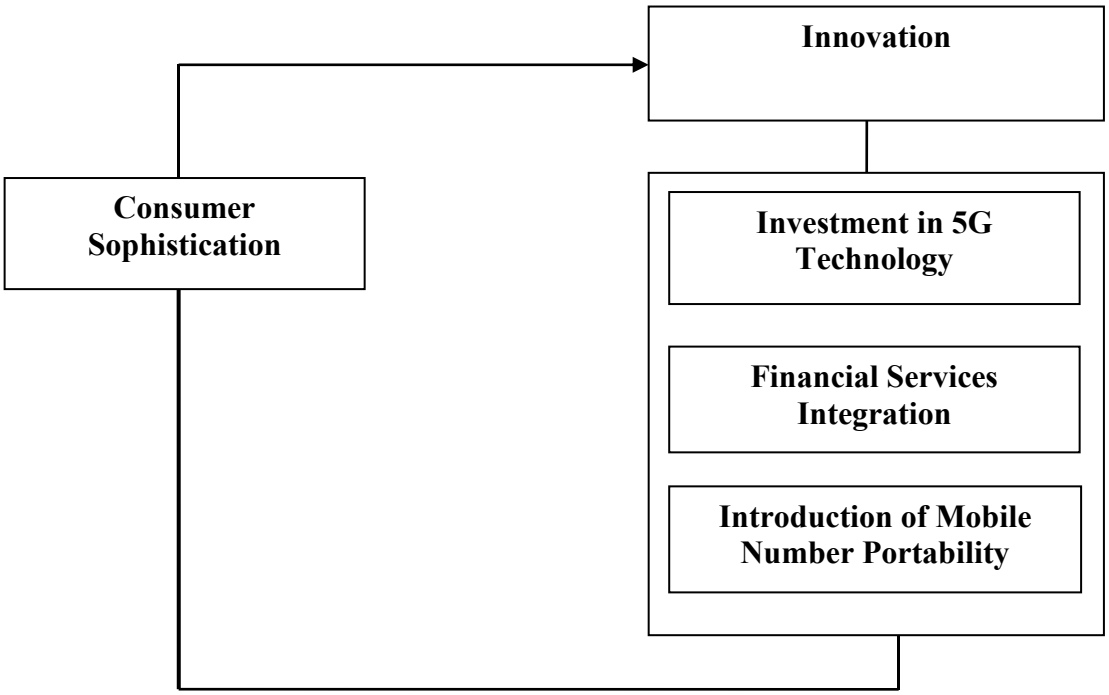

Figure 1: *Conceptual framework of the correlation between consumer sophistication and innovations in the Nigerian telecommunication sector*
Source: Chukwuma (2020); Ogunleye and Adegbite (2020).

PURPOSE OF THE STUDY

The purpose of this study was to investigate the relationship between consumer sophistication and innovations in the Nigerian telecommunication sector. Specifically, the objectives were to:

i. Explore the relationship between consumer sophistication and investment in 5G technology in the Nigerian telecommunication sector.
ii. Identify the relationship between consumer sophistication and financial services integration in the Nigerian telecommunication sector.
iii. Examine the relationship between consumer sophistication and introduction of mobile number portability in the Nigerian telecommunication sector.

THEORETICAL FOUNDATION: Diffusion of Innovation (DOI) Theory

The Diffusion of Innovation (DOI) Theory, proposed by Everett Rogers (2003), explains how new ideas, technologies, or products spread within a population over time. This theory is instrumental in understanding the adoption of innovations in various industries, including telecommunications. The DOI theory identifies five key attributes that influence the adoption rate of an innovation: relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2003). These attributes determine whether consumers will embrace a new product or service and how quickly it will penetrate the market.

DOI theory also categorizes adopters into five distinct groups: innovators, early adopters, early majority, late majority, and laggards (Rogers, 2003). Innovators and early adopters are more willing to try new technologies, while the late majority and laggards tend to be more resistant to change. This segmentation is particularly relevant to the Nigerian telecommunications industry, where varying levels of digital literacy and economic capability affect the adoption of new technologies (Adebayo, 2021). Understanding these consumer categories enables

telecommunication companies to develop targeted innovation strategies that align with different market segments.

The DOI theory is an appropriate baseline for this study because it provides a structured framework for analyzing how consumer sophistication influences the innovation strategies of telecommunication companies. As Nigerian consumers become more technologically aware and discerning, their expectations for advanced and efficient telecom services increase (Ogunleye & Adegbite, 2020). Telecom firms must ensure that their innovations align with consumer sophistication levels by addressing key adoption factors such as ease of use, perceived benefits, and compatibility with existing technologies (Eze & Nwankwo, 2022). By leveraging DOI insights, telecom companies can anticipate consumer responses to innovations and adjust their strategies accordingly to improve market penetration.

The DOI theory serves as a robust foundation for examining the relationship between consumer sophistication and corporate innovation in Nigeria's telecommunication sector. It provides a systematic approach to understanding how innovation diffuses within the market and offers actionable insights into how telecom firms can enhance their competitive edge by aligning innovations with consumer needs.

CONSUMER SOPHISTICATION AND ITS INFLUENCE ON BUSINESS INNOVATIONS

Consumer sophistication refers to the increasing knowledge, awareness, and expectations of consumers regarding products and services in a given market. As consumers become more informed, they demand higher quality, better service, and more innovative solutions from businesses (Kotler & Keller, 2019). This growing sophistication has forced companies across industries to rethink their strategies, invest in advanced technologies, and provide tailored solutions to meet evolving consumer needs (Brown & Jones, 2021).

One major way consumer sophistication influences business innovation is through the demand for enhanced product quality and functionality. With the widespread availability of information, consumers compare products, read reviews, and seek premium features that align with their specific preferences (Smith, 2020). In response, businesses have adopted research and development (R&D) strategies to improve product offerings, ensuring that they meet the increasing expectations of knowledgeable consumers (Adesanya & Bello, 2021).

Additionally, consumer sophistication has driven digital transformation across industries. Businesses have integrated artificial intelligence (AI), big data, and automation to enhance customer experiences and optimize service delivery (Ogunleye & Adegbite, 2020). For instance, in the retail sector, companies use AI-driven chatbots to provide personalized shopping assistance, while in the financial sector, banks employ machine learning to improve fraud detection and enhance security (Eze & Nwankwo, 2022). These technological advancements cater to consumers who expect seamless, efficient, and secure interactions with brands.

Another key influence of consumer sophistication is the demand for transparency and ethical business practices. Modern consumers prioritize sustainability, corporate social responsibility (CSR), and fair trade practices when choosing brands (Chukwuma, 2020). As a result, businesses have adopted sustainable production processes, implemented eco-friendly initiatives, and embraced ethical sourcing to align with consumer values (Umar & Usman, 2023). Companies that fail to address these concerns risk losing market share to competitors who prioritize transparency and ethical operations.

Moreover, consumer sophistication has intensified competition, pushing businesses to differentiate themselves through innovative pricing models, loyalty programs, and omnichannel strategies

(Adebayo, 2021). Companies now leverage customer data analytics to create tailored marketing campaigns, dynamic pricing structures, and personalized promotions, thereby enhancing customer retention and brand loyalty.

Thus, consumer sophistication has become a powerful driver of business innovation across various industries. As consumers continue to demand superior quality, advanced technology, ethical practices, and personalized experiences, businesses must remain agile and proactive in meeting these expectations. Embracing continuous innovation and consumer-driven strategies will be essential for sustaining competitiveness and long-term growth.

INNOVATIONS IN THE TELECOMMUNICATION SECTOR

The telecommunication sector has undergone remarkable transformations over the years, driven by rapid technological advancements, changing consumer demands, and competitive market forces. Innovation in this industry is crucial for improving service quality, expanding network coverage, and enhancing user experiences. Various groundbreaking innovations have reshaped the telecommunication landscape, making communication more efficient and accessible (Kotler & Keller, 2019).

One of the most significant innovations in the sector is the development of 4G and 5G networks. The transition from 3G to 4G significantly improved internet speed, enabling better video streaming, mobile applications, and cloud services (Eze & Nwankwo, 2022). With the introduction of 5G, telecommunications have reached a new level of connectivity, supporting ultra-fast data transfer, reduced latency, and the expansion of the Internet of Things (IoT) (Chukwuma, 2020). This innovation is expected to revolutionize industries such as healthcare, finance, and smart cities.

Another key innovation is artificial intelligence (AI) and automation in telecommunication services. AI-powered chatbots, virtual assistants, and automated customer service systems have enhanced user interactions and improved service efficiency (Smith, 2020). Additionally, AI-driven predictive analytics helps telecommunication providers optimize network performance and anticipate system failures before they occur, ensuring a seamless user experience (Ogunleye & Adegbite, 2020).

Mobile financial services and digital payment solutions have also transformed the industry. Telecommunication companies now offer mobile wallets, mobile banking, and digital transactions that facilitate financial inclusion, particularly in developing economies (Adesanya & Bello, 2021). Services such as MTN's MoMo and Airtel Money have enabled millions of users to access financial services without traditional banking infrastructure, reducing financial exclusion (Umar & Usman, 2023).

Another groundbreaking innovation is fiber-optic broadband expansion, which has enhanced connectivity and reduced network congestion. Fiber-optic technology provides faster, more reliable internet services, catering to the growing demand for high-speed data in homes and businesses (Brown & Jones, 2021). This development has facilitated remote work, e-learning, and the growth of digital businesses, contributing to economic progress.

Furthermore, cloud computing and edge computing have revolutionized how telecommunication companies manage data. Cloud-based infrastructure enables efficient data storage, faster service deployment, and seamless remote access to digital resources (Eze & Nwankwo, 2022). Edge computing, in particular, helps reduce latency by processing data closer to the source, enhancing real-time applications such as autonomous vehicles and industrial automation (Chukwuma, 2020).

Continuous innovation in the telecommunication sector is crucial for enhancing connectivity, improving customer experience, and driving economic growth. The adoption of 5G, AI, mobile financial services, fiber-optic broadband, and cloud computing has reshaped the industry, making communication faster, smarter, and more inclusive. As technology evolves, telecommunication companies must embrace future innovations to maintain their competitive edge and meet the dynamic needs of consumers.

MEASURES OF INNOVATION IN THE TELECOM SECTOR

Innovation in the telecom sector is measured in terms of 5G networks, expansion of mobile financial services, mobile number portability, artificial intelligence, and fiber-optic broadband expansion. In this study however, 5G networks, mobile financial services, and mobile number portability are examined.

Investment in 5G Networks in the Telecom Sector

The global telecommunication sector has witnessed a significant shift with the advent of fifth-generation (5G) networks. Investments in 5G technology have become a critical focus for telecom companies seeking to enhance network capacity, improve service delivery, and drive digital transformation. The deployment of 5G networks presents opportunities for economic growth, improved consumer experiences, and the expansion of emerging technologies such as the Internet of Things (IoT), artificial intelligence (AI), and smart cities (Chukwuma, 2020).

A key motivation behind 5G investments is its superior speed and low latency. Compared to 4G networks, 5G offers faster data transmission rates, enabling real-time communications and seamless connectivity for high-bandwidth applications such as virtual reality (VR), autonomous vehicles, and cloud gaming (Eze & Nwankwo, 2022). The lower latency of 5G, which reduces delays in data transmission, is essential for industries such as healthcare, where remote surgeries and telemedicine rely on real-time connectivity (Smith, 2020).

Another driver of 5G investment is its capacity to support massive IoT deployments. As industries increasingly integrate IoT devices, the demand for a robust and scalable network infrastructure has risen. 5G networks can connect a vast number of smart devices, including wearables, industrial sensors, and home automation systems, thus enabling the seamless exchange of data across industries (Ogunleye & Adegbite, 2020). This transformation is expected to revolutionize sectors such as agriculture, manufacturing, and logistics by optimizing supply chains and enabling predictive maintenance (Adesanya & Bello, 2021).

Despite its advantages, 5G deployment requires significant capital investment. Telecom companies must invest in network infrastructure, including fiber-optic backbones, small cell towers, and spectrum acquisitions, to ensure nationwide coverage (Umar & Usman, 2023). Additionally, regulatory challenges, cybersecurity risks, and concerns about data privacy pose hurdles to widespread 5G adoption (Brown & Jones, 2021). Governments and private stakeholders must collaborate to create policies that foster investment in 5G while addressing security concerns and ensuring affordability for consumers.

Investment in 5G networks is a strategic move for telecom companies looking to maintain a competitive edge in the digital economy. While the financial and regulatory challenges remain, the long-term benefits of 5G—enhanced connectivity, IoT integration, and economic growth—outweigh the risks. Continued investment in 5G infrastructure will play a pivotal role in shaping the future of telecommunications and digital transformation.

Financial Services Integration in the Telecom Sector

The integration of financial services into the telecommunications sector has revolutionized the way consumers access and utilize financial products. Telecom companies have expanded their offerings beyond traditional voice and data services to include mobile banking, digital wallets, and payment solutions. This integration has enhanced financial inclusion, particularly in developing economies, by providing banking services to previously unbanked populations (Adesanya & Bello, 2021).

A key driver of financial services integration in the telecom sector is mobile money platforms. Telecom operators such as MTN, Airtel, and Safaricom have introduced mobile payment services that allow users to transfer money, pay bills, and conduct financial transactions through their mobile phones. These services have significantly reduced reliance on physical banking infrastructure, enabling greater financial accessibility in rural and underserved areas (Umar & Usman, 2023). Mobile money has also facilitated cross-border remittances, improving economic participation for migrant workers and their families (Smith, 2020).

Another significant innovation is telecom-driven microfinance and credit services. By leveraging customer data and transaction histories, telecom companies can assess creditworthiness and offer microloans to users without requiring traditional banking records. This has empowered small businesses and entrepreneurs who lack access to conventional financial institutions (Eze & Nwankwo, 2022). Additionally, telecom companies collaborate with financial institutions to provide savings and investment opportunities through mobile platforms, further expanding financial services accessibility (Chukwuma, 2020).

Blockchain and digital currency innovations have also influenced telecom financial services. Some telecom operators have explored blockchain-based payment systems to enhance transaction security and reduce fraud risks. The adoption of cryptocurrency-enabled payments in certain regions has provided an alternative means of financial exchange, particularly in areas with unstable traditional banking systems (Ogunleye & Adegbite, 2020).

Despite the benefits, financial services integration in the telecom sector faces regulatory and security challenges. Governments and financial regulators impose compliance requirements to prevent money laundering, fraud, and financial crimes. Additionally, concerns over data privacy and cybersecurity threats necessitate the implementation of robust security frameworks to protect consumer information (Brown & Jones, 2021).

Financial services integration in the telecom sector has transformed financial accessibility and economic participation. Through mobile money, microfinance, and blockchain technology, telecom companies have expanded financial inclusion and empowered businesses. However, addressing regulatory challenges and security risks will be crucial in ensuring the sustainable growth of telecom-driven financial services.

Mobile Number Portability in the Telecom Sector

Mobile Number Portability (MNP) is a regulatory policy that allows consumers to retain their mobile phone numbers while switching from one service provider to another. This policy enhances competition in the telecom sector by reducing switching costs and empowering consumers with the freedom to choose the best service provider based on quality, pricing, and network coverage (Eze & Nwankwo, 2022). MNP has been widely adopted across the globe, including in Nigeria, where it has played a pivotal role in shaping the competitive dynamics of the telecommunications industry (Umar & Usman, 2023).

One of the primary benefits of MNP is increased consumer choice and satisfaction. Prior to its implementation, consumers were reluctant to switch service providers due to the inconvenience of changing their mobile numbers. With MNP, users can retain their numbers while opting for better services, thereby encouraging telecom companies to improve network quality and offer competitive pricing (Chukwuma, 2020). This policy also helps eliminate monopolistic practices and ensures that service providers remain accountable for service quality.

MNP also serves as a catalyst for market competition and innovation. Telecom companies invest in network expansion, customer service, and promotional incentives to attract and retain customers. This has led to the introduction of innovative pricing models, improved data plans, and enhanced customer engagement strategies (Ogunleye & Adegbite, 2020). The competitive pressure generated by MNP has driven improvements in service delivery and increased investments in infrastructure to minimize call drops and network congestion (Adesanya & Bello, 2021).
Despite its advantages, the implementation of MNP comes with operational and technical challenges. Porting processes can sometimes be delayed due to administrative bottlenecks, and some telecom operators may impose hidden charges or create barriers to discourage customers from switching (Brown & Jones, 2021). Additionally, concerns over fraudulent porting and identity theft necessitate the implementation of robust verification mechanisms to protect consumers (Smith, 2020).

Mobile Number Portability has significantly transformed the telecom sector by promoting competition, enhancing service quality, and improving consumer satisfaction. However, addressing regulatory challenges and ensuring seamless porting processes are essential for maximizing the benefits of MNP and fostering a dynamic telecommunications landscape.

CONSUMER SOPHISTICATION AND INNOVATIONS IN THE NIGERIAN TELECOMMUNICATION SECTOR

As consumers become more informed, they demand higher quality, better service, and more innovative solutions from businesses (Kotler & Keller, 2019). In Nigeria's telecommunication sector, consumer sophistication has significantly influenced the rate and nature of innovation, driving companies to adopt advanced technologies, improve service delivery, and introduce new business models to remain competitive (Adebayo, 2021).

One of the primary ways consumer sophistication influences innovation in the Nigerian telecom industry is through the demand for high-speed internet, seamless connectivity, and enhanced user experiences. With increasing smartphone penetration and digital literacy, consumers are more aware of global telecom trends and expect local providers to deliver comparable services (Ogunleye & Adegbite, 2020). This has led to increased investment in 4G and 5G network expansion, fiber-optic broadband, and cloud-based solutions to enhance network reliability and performance (Eze & Nwankwo, 2022).

Additionally, consumer sophistication has compelled telecom companies to improve customer service and introduce more personalized offerings. Modern Nigerian telecom users seek flexible data plans, transparent billing, and value-added services such as mobile banking, streaming platforms, and IoT connectivity (Chukwuma, 2020). In response, telecom firms have leveraged artificial intelligence (AI) for chatbots and virtual assistants, providing round-the-clock support and data-driven customer insights to enhance user satisfaction (Umar & Usman, 2023).

The competitive landscape in Nigeria's telecom sector has also been reshaped by consumer sophistication. Informed consumers now compare service providers based on speed, reliability, and cost, prompting telecom companies to differentiate themselves through innovative pricing

models, loyalty programs, and digital payment solutions (Adesanya & Bello, 2021). Moreover, telecom firms have embraced fintech collaborations, allowing mobile wallets and digital banking services to thrive within the industry.

Thus, the growing sophistication of Nigerian telecom consumers has been a major catalyst for innovation within the industry. As consumer expectations continue to rise, telecom firms must prioritize continuous improvement, technological advancements, and customer-centric strategies to sustain their competitive advantage. By aligning their innovations with consumer demands, Nigerian telecom companies can foster industry growth, enhance customer satisfaction, and contribute to the nation's digital transformation.

EMPIRICAL RESEARCH ON THE RELATIONSHIP BETWEEN CONSUMER SOPHISTICATION AND INNOVATIONS IN THE TELECOMMUNICATION SECTOR

There is a plethora of studies similar to the study of the relationship between consumer sophistication and innovations in the Nigerian telecommunication sector. Some of these studies are examined, highlighting the purpose, country of study, tools for analysis, findings and conclusion. Eze and Nwankwo (2022) investigated the role of digital literacy in consumer expectations and telecom innovation in Nigeria. The study examines how increasing consumer knowledge and expectations drive technological innovation in Nigeria's telecom sector. Structural Equation Modeling (SEM) was used to analyze the data, which revealed that consumer knowledge and expectations significantly influence investment in 5G infrastructure and digital transformation. Therefore, the study concluded that, as consumers become more knowledgeable, telecom firms must innovate to remain competitive.

Adesanya and Bello (2021) investigated the relationship between consumer behavior and innovation in the South African telecom sector. The purpose of the study is to analyze the role of consumer demand in shaping network quality and service diversification. Regression Analysis was used to analyze the data which indicated that higher consumer expectations correlate with increased investment in network optimization and artificial intelligence-driven customer service. It was concluded that, Telecom companies must adopt adaptive business models to meet evolving consumer needs.

Brown and Jones (2021) examined the evolution of telecommunication services in the United Kingdom. The purpose of the study is to investigate the impact of consumer digital literacy on telecom service adoption and innovation. Surveys and descriptive statistics were deployed in the study for data collection and analysis. Findings indicated that, digital literacy fosters consumer-driven innovation, compelling telecom firms to provide advanced self-service portals and customized plans. The study concluded that, consumer sophistication encourages telecom firms to improve user experience through digital innovations.

Ogunleye and Adegbite (2020) investigated the relationship between technological advancements and consumer sophistication in Ghana's telecommunications industry. The purpose of the study is to assess the influence of consumer behavior on telecom pricing strategies and service models. Time-Series analysis was conducted which revealed that, increased consumer awareness leads to more competitive pricing strategies and innovative service bundling. It concluded that Telecom providers must continuously evolve to retain consumer interest and market share.

Umar and Usman (2023) explored the relationship between mobile financial services and financial inclusion in Kenya's telecom sector. The purpose of the study is to explore how mobile financial services innovation is driven by consumer expectations. Mixed-Methods Approach was deployed in the collection and analysis of data. Findings indicated that, consumer demand for financial

inclusion has led to telecom-fintech partnerships and mobile banking advancements. Therefore it is concluded that the telecom sector must integrate financial services to align with consumer sophistication trends.

These studies highlight the influence of consumer sophistication in the innovation of companies in the telecom sector. However, the following null hypotheses herein formulated were tested in order to achieve the objectives, and purpose of the study.

***H_{01}*:** There is no significant relationship between consumer sophistication and investment in 5G technology in the Nigerian telecommunication sector.

***H_{02}*:** There is no significant relationship between consumer sophistication and financial services integration in the Nigerian telecommunication sector.

***H_{03}*:** There is no significant relationship between consumer sophistication and introduction of mobile number portability in the Nigerian telecommunication sector.

METHODOLOGY

The methodology of this study is founded on the positivist research paradigm which relies on deductive logic, formulation and testing of hypotheses, offering operational definitions and mathematical equations, calculations, extrapolations and expressions to derive conclusions. Thus, a cross-sectional survey of causal research deign particularly an explanatory design was employed by the researchers to establish the relationship between consumer sophistication and innovations in the Nigerian telecommunication sector. The population of the study comprised 8 telecommunication companies that provide GSM, Fixed Wireless, and Voice over Internet Protocol services in Nigeria. See Table 1.

This is a census study therefore no sampling technique was employed. In other words, all the 8 telecommunication companies were studied. From the companies, 48 top level managers provided data for the study. These employees were (i) Innovation Officers (ii) Directors of Consumer Insights (iii) Heads of Product Development (iv) Network Optimization Managers (v) Customer Experience Directors and (vi) Digital Transformation Leads. A semi-structured questionnaire consisting of 20 items was used to collect primary data from the respondents. The instrument was designed in Likert 5–point scale of very high extent to very low extent. That is, (very high extent = 5; high extent = 4; moderate extent = 3; low extent = 2; very low extent = 1). Table 1 shows the 8 telecommunication companies from which data were collected.

Table 1: Telecommunication Companies

S/N	Companies	Number of Respondents
1	MTN Nigeria	**6**
2	Globacom	**6**
3	Airtel Nigeria	**6**
4	9mobile	**6**
5	21st Century Technologies	**6**
6	IPNX Nigeria Ltd	**6**
7	Smile Nigeria Ltd	**6**
8	Ntel	**6**
	Total	**48**

Source: Nigerian Communication Commission (2022)

Furthermore, Table 2 shows results of Cronbach's alpha reliability analysis, and Exploratory Factor Analysis (EFA). The Cronbach's (1951) alpha reliability test was conducted to determine the reliability of the study instrument. The test was to find out whether a comparable result could be realized if this study was carried out again in a similar condition. A threshold of 0.70 established by Nunally (1978) was adopted in determining the reliability of the research instrument. More also, Exploratory Factor Analysis (EFA) was conducted to ascertain the discriminant validity of the study instrument. The results are shown in the factor loadings which were not less than 0.4 to indicate that the constructs had discriminant validity. In establishing the relationship between the variables, a correlation analysis was conducted by testing three null hypotheses whose results are subject to a critical value of 0.01. The analyses were done with the aid of Statistical Package for Social Sciences (SPSS) version 25.

Table 2: Results of Reliability and Validity Tests

S/N	Variables	Number of Items	Cronbach's Alpha Coefficients	Factor Loadings
1	Consumer Sophistication	5	0.759	0.721
2	Investment in 5G Technology	5	0.806	0.681
3	Financial Services Integration	5	0.851	0.814
4	Introduction of Mobile Number Portability	5	0.796	0.796

Source: SPSS output form field data

Table 2 shows that, Cronbach's (1951) alpha reliability test and Exploratory Factor Analysis (EFA) were conducted. Results of the Cronbach's (1951) alpha reliability test showed that all the variables in the study produced high and very high Cronbach's alpha coefficients. This means that, if this study is carried out again under a similar condition the results will be comparable to the results of this study. More also, results of the Exploratory Factor Analysis (EFA) revealed that all questionnaire items related to consumer sophistication loaded heavily on the variable, and investment in 5G technology, financial services integration, and mobile number portability, loaded heavily on innovation. These loadings (no factor loading is less than 0.4) indicate that the constructs have discriminant validity (Straub et al., 2004).

TEST OF RESEARCH HYPOTHESES AND DISCUSSION OF FINDINGS

Three null hypotheses were tested using Pearson Product Moment Correlation Analysis. The analysis assessed the link between consumer sophistication and innovations in the Nigerian telecommunication sector, by examining how consumer sophistication correlates with investment in 5G technology, financial services integration, and mobile number portability in the Nigerian telecommunication sector. Results of the analysis are shown in Table 3.

Table 3: Correlation Analysis of the Relationship between Consumer Sophistication and Innovations (investment in 5G networks, financial services integration, and mobile number portability) in the Nigerian Telecommunication Sector

		Consumer Sophistication	Investment in 5G Technology	Financial Services Integration	Introduction of Mobile Number Portability
Consumer Sophistication	Pearson Correlation	1	.846**	.780**	.731**
	Sig. (2-tailed)		.000	.000	.000
	N	48	48	48	48

Investment in 5G Technology	Pearson Correlation	.846**	1	.723**	.863**
	Sig. (2-tailed)	.000		.000	.000
	N	48	48	48	48
Financial Services Integration	Pearson Correlation	.780**	.723**	1	.714**
	Sig. (2-tailed)	.000	.000		.000
	N	48	48	48	48
Introduction of Mobile Number Portability	Pearson Correlation	.731**	.863**	.714**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	48	48	48	48

**. Correlation is significant at the 0.01 level (2-tailed).

A Pearson Product Moment Correlation was run to assess the link between consumer sophistication and innovations in the Nigerian telecommunication sector, by examining how consumer sophistication is associated with investment in 5G technology, financial services integration, and mobile number portability) in the Nigerian telecommunication sector. Using a sample of 48 respondents, drawn from the telecommunication companies in Nigeria, results of the analysis in Table 3 indicated that, consumer sophistication has a very strong, positive relationship with investment in 5G networks, evident in the correlation coefficients of 0.846. The analysis further revealed that, consumer sophistication has strong, positive relationships with financial services integration, and mobile number portability, evident in the correlation coefficients of 0.780, and 0.731 respectively.

Furthermore, consumer sophistication is significantly linked with investment in 5G technology, financial services integration, and mobile number portability, evident in the probability values which are less than the 0.01 decision threshold. In view of these results, the researchers reject the hypothesized relationship between consumer sophistication and innovation, wherein it is state that *'consumer sophistication does not significantly relate with investment in 5G technology, financial services integration, and introduction of mobile number portability in the Nigerian telecommunication sector'.* In other words, consumer sophistication is significantly linked with innovations, evident in investment in 5G technology, financial services integration, and mobile number portability in the Nigerian telecommunication sector, as show in the results.

These findings are consistent with the findings of previous studies examined. For instance, the findings affirm the findings of Eze and Nwankwo (2022) who investigated the role of digital literacy in consumer expectations and telecom innovation in Nigeria. The study examined how increasing consumer knowledge and expectations drive technological innovation in Nigeria's telecom sector, which revealed that consumer knowledge and expectations significantly influence investment in 5G infrastructure and digital transformation.

Similarly, the findings are consistent with the findings of Adesanya and Bello (2021) who investigated the relationship between consumer behavior and innovation in the South African telecom sector. The study analyzed the role of consumer demand in shaping network quality and service diversification, and it was indicated that higher consumer expectations correlate with increased investment in network optimization and artificial intelligence-driven customer service.

More also, our findings align with the findings of Brown and Jones (2021) who examined the evolution of telecommunication services. The study investigated the impact of consumer digital literacy on telecom service adoption and innovation in the United Kingdom, indicated that, digital

literacy fosters consumer-driven innovation, compelling telecom firms to provide advanced self-service portals and customized plans.

Findings of this study also affirm the findings of Ogunleye and Adegbite (2020) who investigated the relationship between technological advancements and consumer sophistication in Ghana's telecommunications industry. The study assessed the influence of consumer behavior on telecom pricing strategies and service models, and revealed that, increased consumer awareness leads to more competitive pricing strategies and innovative service bundling.

Our findings also agree with the findings of Umar and Usman (2023) who explored the relationship between mobile financial services and financial inclusion in Kenya's telecom sector. The study explored how mobile financial services innovation is driven by consumer expectations. Findings of the study indicated that, consumer demand for financial inclusion has led to telecom-fintech partnerships and mobile banking advancements.

Findings of this study together with results of previous studies examined highlight the significant role of consumer sophistication in the innovation drive of companies in the telecom sector. These findings indicate that consumer sophistication plays a crucial role in shaping innovation strategies in the Nigerian telecommunication sector. As consumers become more knowledgeable, their expectations for superior connectivity, seamless financial transactions, and flexible service options increase. This shift in demand has led to significant investments in 5G networks, financial services integration, and mobile number portability.

CONCLUSION

Based on the findings of this study, and the consistency of these findings with results of previous studies examined, it is concluded that there is a significant, positive relationship between consumer sophistication and innovations in the Nigerian telecommunication sector. Consumer sophistication plays a crucial role in shaping innovation strategies in the telecommunication sector.

Firstly, consumer expectations for high-speed, low-latency connectivity have driven telecom companies to invest heavily in 5G infrastructure. With data-hungry applications, smart devices, and the Internet of Things (IoT) becoming more prevalent, telecommunication providers are prioritizing 5G deployment to meet these growing demands.

Secondly, the increasing sophistication of consumers has fueled the integration of financial services into telecom operations. Mobile money services, digital banking, and fintech collaborations have expanded rapidly, enabling consumers to conduct seamless financial transactions through their mobile networks. This has not only enhanced convenience but also fostered financial inclusion in regions with limited access to traditional banking systems.

Lastly, mobile number portability (MNP) has been introduced in response to consumer demand for flexibility and competitive pricing. Sophisticated consumers are more inclined to switch providers if they perceive better service quality elsewhere, pushing telecom companies to improve service offerings, pricing structures, and customer engagement strategies.

Therefore, consumer sophistication is a key driver of telecom innovation. It compels companies to invest in cutting-edge technologies, integrate financial services, and offer more flexible service models to meet the evolving needs of their users. As the industry continues to evolve, telecom providers must remain responsive to consumer expectations to maintain competitiveness and enhance customer satisfaction.

RECOMMENDATIONS

In view of the findings and conclusion of this study, the following recommendations are made;

i. Accelerating 5G Deployment: Companies should prioritize expanding 5G infrastructure to meet growing consumer demands for faster and more reliable connectivity.

ii. Enhancing Financial Service Offerings: Telecom operators should continue integrating financial services, such as mobile payments and digital banking, to cater to consumer expectations and drive financial inclusion.

iii. Improving Customer Experience: Companies should invest in AI-driven customer support, self-service platforms, and personalized service plans to enhance user satisfaction.

iv. Encouraging Regulatory Support for Mobile Number Portability (MNP): Policymakers should ensure that MNP processes remain seamless and efficient, promoting healthy competition and service improvement.

v. Continuous Market Research: Telecom companies should conduct regular market research to stay ahead of consumer trends and expectations, ensuring their services remain relevant and competitive.

vi. Promoting Sustainable Innovations: Investment in eco-friendly infrastructure and energy-efficient technologies should be encouraged to align with global sustainability goals while meeting consumer demands.

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