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Technology Adoption and Competitive Advantage of Quoted Insurance Companies in Lagos State, Nigeria

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Abstract

The competitive advantage of quoted insurance companies across the globe has continued to generate concern despite the sector's pivotal role in economic development. Persistent challenges facing these firms have prompted scholarly interest in examining whether dimensions of technology adoption, specifically innovation capability, social media marketing, digital leadership, and electronic customer relationship management (e-CRM), significantly influence their capacity to achieve and sustain competitive advantage. The study adopted a survey research design and targeted a population of 2,569 management staff of quoted insurance companies in Nigeria. A sample size of 436 respondents was determined using the Raosoft online calculator, and participants were selected through a proportionate distribution and simple random sampling technique. Data were collected using an adapted and structured questionnaire, with Cronbach's alpha coefficients ranging from 0.856 to 0.962, indicating high internal consistency. The hypotheses were tested using multiple regression analysis, and the results revealed that the dimensions of technology adoption had a significant effect on the competitive advantage of quoted insurance companies in Lagos State, Nigeria ($Adj.\ R^2 = 0.644$, $F(4, 425) = 192.342$, $p < 0.05$). Based on these findings, the study recommended that insurance company management should leverage technology adoption practices to strengthen and sustain their competitive advantage in an increasingly digitalized business environment.

Keywords: *Competitive advantage, Technology adoption, Quoted insurance companies, Nigeria*

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Background to the Study

Globally, insurance accounts for 7% of global GDP (Internal Insurance Society, 2024). However, many insurance companies struggle with poor competitive advantage. A global insurance firm like Allianz faced a $6 billion settlement in 2022 over the Structured Alpha Funds scandal, where its U.S. subsidiary misled investors, leading to massive losses during the 2020 market crash (Financial Times, 2022). On global competition scale, insurers face fierce competition from Insurtech firms leveraging AI, big data, and digital platforms. Traditional insurers lag in innovation, leading to customer attrition. According to PwC (2023), 40% of customers now prefer digital-first insurers, leaving legacy players struggling to adapt. Moreover, consolidation in the industry has made it harder for smaller firms to compete (European insurance and occupational pension authority (EIOPA), 2023). Further, the European insurance market is highly fragmented, with over 5,000 insurers competing for market stake (Insurance Europe, 2025).

For Africa, insurance premiums as a share of GDP in many African countries remain far below global averages, constraining growth and commercial scale advantages (African Insurance Organisation, 2023; Malambo, 2023). Kenya's penetration remains well below global averages, constraining insurers' ability to spread risk and achieve scale economies (Cytonn Investments, 2024). Firms frequently rely on undifferentiated product offerings (e.g., motor and medical risk classes dominate), which leads to intense price competition and margin erosion. With low product uniqueness, competitive advantage via differentiation is weak and firms compete on cost, reducing profits (Cytonn Investments, 2023; Curacel, 2025). In Ghana, the industry's insurance-penetration rate remains stubbornly low at around 1.0% of GDP, limiting firms' ability to grow, achieve scale and differentiate themselves. With so few people insured, firms cannot build strong networks, invest in distinct capabilities or capture economies of scale, undermining competitive advantage (Kuuire, 2025).

In Nigeria, insurance penetration remains very low, meaning insurers reach only a tiny fraction of potential customers, a major competitive weakness limiting scale and risk pooling (Ibebi, 2025). Not to mention, the fact that many of these insurers have been thinly capitalised, weakening their competitive advantage and exposing their vulnerability to shocks and regulatory recapitalisation drives (National Insurance Commission, (NAICOM), 2023). Furthermore, the insurance market is fragmented, and many local insurers have been slow to embrace digital transformation. This makes it harder for them to distribute products quickly and affordably, limits innovation in micro- and embedded-insurance, and ultimately reduces their competitive advantage (KPMG, 2024; Oxford Business Group, 2024). More also, the Nigerian insurance market ranks 62nd in the world, with $1.64 billion in premiums collected in 2018, accounting for 0.2% of global premiums which is poor (Odunmbaku et al., 2024). Due to poor competitive advantage, it is worth noting that since 2012, the Insurance sub-sector in Nigeria has witnessed more delisting (including mergers and acquisitions) from the NGX than the banking sub-sector (Titilayo et al. 2022).

The insurance sector increasingly depends on the effective adoption and utilization of technology as a strategic resource for achieving and sustaining competitive advantage. Despite

the crucial role of technology adoption in enhancing innovation, operational efficiency, and customer engagement, maintaining a strong competitive position remains a global concern among insurance institutions. In Nigeria, particularly within the insurance industry, empirical evidence on the influence of technology adoption, encompassing innovation capability, digital leadership, social media marketing, and electronic customer relationship management, on competitive advantage remains limited and underexplored (Nnodim et al., 2020; Oyelakin et al., 2022; Permana et al., 2019; Puspita et al., 2020, Qosasi et al., 2019; & Sulaimon et al., 2020). This gap emphasizes the need for a deeper understanding of how technology adoption shapes the competitive landscape of quoted insurance companies in Lagos State, Nigeria. This study therefore investigated how technology adoption dimensions (innovation capability, social media marketing, digital leadership, and electronic customer relationship management) affect the competitive advantage of quoted insurance companies in Lagos State, Nigeria.

Statement of the Problem

Competition in Nigeria is gradually becoming unbearable for companies (Nafiu et al., 2020). This challenge of competitive disadvantage is similar to the telecommunication firms in Ghana who are facing the uncertainty and speed of transition daily, as well as the globalization of demanding consumers and hyper competition. They are confronted with greater complexity and competition for new product shares (Quagraine et al., 2021). Even for small firms that supply large companies too, are faced with stiff competition that their survival is dependent on marketing capabilities in order to sustain their competitive advantage (Mainardes et al., 2022). However, studies have been carried out on technology adoption and competitive advantage across several industries (Nafiu et al., 2020; Nnodim et al., 2020; Oyelakin et al., 2022; Permana et al., 2019; Sulaimon et al., 2020). These studies have explored the role of technology adoption in maintaining an organization's competitive edge in the face of market changes and competitive forces. While much of the existing literature focuses on sectors like manufacturing, there is limited research on how technology adoption influences the competitive advantage of insurance companies, particularly within Lagos State, Nigeria. Studies have shown that technology adoption dimensions facilitate competitive advantage, most of these studies have focused on developed economies with a few on the developing economies, some on other sectors of the economy, while others on marketing or claims management (Adebisi et al. 2021). However, research has not been carried out on the subject of technology adoption and competitive advantage to advance knowledge in such area as important as the insurance sector in Lagos State, Nigeria. These gaps emerged from the following scholars who identified those gaps in technology adoption with respect to competitive advantage: Nafiu et al. (2020); Nayak et al. (2021); Nnodim et al. (2020); Oyelakin et al. (2022); Permana et al. (2019); Puspita et al. (2020); Qosasi et al. (2019); and Sulaimon et al. (2020).

Literature Review

Competitive Advantage

According to Farida and Sutopo (2023), competitive advantage is a unique edge that makes it tough for rivals to copy. This includes creating items that are sustainable and genuinely have regionally distinctive values, which prevents rival products from grabbing consumers'

attention. According to Adebisi et al. (2021), competitive advantage is demonstrated by a positioning advantage over rivals in either marketing or technological know-how, which results in creative products that are difficult to copy. Competitive advantage is defined as an edge over rivals attained by providing customers with greater value than rivals' offerings (Samoedra, 2021). The definition of competitive advantage is superior positioning based on superior client lifetime value, achieving lower cost structures than rivals, gaining a larger market share in market segments, and achieving corporate success (Wongsansukcharoen & Thaweepaiboonwong, 2023).

A business can get a competitive edge by offering clients better and more useful services than its rivals (Awamleh & Bustami, 2022). The ability of a company to create and maintain a position ahead of its rivals is known as its competitive advantage (Lovely et al., 2021). Competitive advantage is an advantage gained over other companies (competitors) by providing a larger or higher degree of consumer value, either through price reductions or increased customer advantages (Permana et al., 2019). A competitive advantage is a company's ongoing effort to outperform competitors (Farida & Setiawan, 2022). A firm gains a competitive advantage by increasing its economic efficiency or profit relative to the average profit rate in the same market or industry (Adeoye et al., 2019). The company's assets, including its internal activities and resources, can be leveraged to gain a competitive edge (Abdurohim et al., 2022).

There are several characteristics of competitive advantage. Coordination and integration, differentiation and quality, cost reduction, and ongoing innovation and development are all components of competitive advantage (Samoedra, 2021). According to a different study, competitive advantage can be measured in terms of factors including uniqueness, brand, distinction, and the most recent technological knowledge (Permana et al., 2019). Similarly, Farida & Setiawan (2022) believe that outreach level, cost leadership, and differentiation are the hallmarks of competitive advantage. But according to Imbambi et al. (2019), there is a competitive edge in terms of profit, production costs, and sales/market share. There aren't many studies on a product's competitive advantage that consider elements like cost and price, quality, delivery dependability, product innovation, and time to market to have a beneficial impact on organisational success.

Other research, on the other hand, views competitive advantage in terms of three primary traits: decreasing costs, exploitation of market opportunities, and risk mitigation. Because they offer a precise and useful indicator of competitive advantage that can aid executives in comprehending the idea and its fundamental representations, these components seem appropriate (Awamleh & Bustami, 2022). Today's and tomorrow's competition should be seen as extremely dynamic rather than static, so we must approach it strategically. When a business creates value for its customers, it gains a competitive advantage. The higher value that results from setting prices lower than those of competitors will be paid for by customers. Products and services that are produced for survival and profit must consider the concept of competitive advantage, which has two dimensions: cost leadership and product and service differentiation (Samoedra, 2021). On the advantages, competitive advantage plays a pivotal role not only at the organizational level but also in broader economic development, as it can contribute to

national GDP by maximizing profitability and unlocking new opportunities for business growth and innovation (Farida & Sutopo, 2023). At the firm level, a well-established competitive advantage is expected to support long-term sustainability, enable market share expansion, enhance customer satisfaction, and drive consistent profit generation. By strengthening an organization's position within its industry, competitive advantage ultimately fosters resilience, strategic agility, and value creation in an increasingly competitive global marketplace (Samoedra, 2021).

Maintaining a competitive advantage is not without challenges. One major drawback is the constant threat of imitation, substitution, or technological disruption (Dagnino et al., 2021). As markets evolve due to technological advancements, shifting consumer preferences, and increased global competition, previously effective strategies may become obsolete or insufficient to sustain competitive performance (Posen et al., 2023). Moreover, organizations may become complacent or over-reliant on their current advantage, leading to strategic inertia. Internal misalignment between departments or failure to adapt to customer needs can also erode competitive positioning (Li, 2022). Therefore, to preserve and renew competitive advantage, firms must continuously innovate, monitor external environments, and align internal capabilities with emerging opportunities and threats (Ramadan et al., 2022). In light of the numerous discussions surrounding competitive advantage, this study defines competitive advantage as organisational superiority that make a firm perform better than another firm. In the insurance industry, competitive advantage refers to the unique strengths or strategies that allow an insurer to outperform rivals in terms of profitability, customer acquisition, retention, and market share.

Technology Adoption

Technology adoption or the adoption of information and communication technology refers to individuals or organisations deciding to acquire and utilise new innovative technologies in their operations. A common goal of ICT adoption is to improve productivity, effectiveness, and overall employee quality by using scientific ideas in real settings (Alabi et al., 2024). The availability of new technologies does not necessarily lead to development. Technologies must be embraced, and technology adoption occurs when it benefits the individuals and industries who accept it. Only when new technology is widely distributed and employed will its contribution to economic growth become apparent. The adoption of new technology is typified by uncertainty in future profit sectors and irreversibility, which results in some fall costs. Adoption speeds up as technology progresses and more people become acquainted with it (Lakhwani et al., 2020). Information and communication technology refer to the use of scientific methods, information, and tools to attain specified aims and objectives, solve practical problems, or meet identified human needs. This broad term includes a variety of techniques, methods, systems, and processes that use tools, materials, machines, and information to generate and modify processes, products, or services (Alabi et al., 2024). Adopting new information and communication technology is crucial for increasing efficiency, improving service quality, and keeping up with skill development, which can contribute to greater governance and economic progress. Initiatives that aim to provide employees with the required skills and knowledge to properly utilise and use technology in their professions are

critical. These programs aim to improve digital literacy, enhance the acceptance of new technologies, and nurture a workforce capable of adapting to the changing technology landscape (Alabi et al., 2024).

Hidayat et al. (2023) defines information technology as a set of tools that enable you to deal with information and conduct information processing tasks. Information technology refers to any technology that creates, manipulates, saves, communicates, or delivers data. Communication technology processes, stores, and transmits data via computer hardware and software. Information technology is defined as the tools used to deal with and process information. These definitions indicate that information technology encompasses both computer and telecommunications technology. Information technology refers to computer and telecommunications technologies (Kemala et al., 2023). According to Egieya et al. (2024), information technology is a combination of computer and communication technologies that are used to process data. This includes obtaining, processing, compiling, storing, and manipulating data in a variety of ways to produce high-quality, timely, and relevant information that can be used for governmental, business, and personal purposes as well as strategic information for decision-making.

The characteristics of technology adoption include innovation compatibility, user readiness, organizational capacity, and relative advantage (Campagna & Bhada, 2024; Lut & Wang, 2020; Purnomo et al., 2021; Zhang et al., 2020). Technology adoption is more probable when it aligns with prevailing values and practices, users possess the necessary competencies and support systems, and the anticipated benefits clearly surpass associated costs or risks (FakhrHosseini et al., 2024). Technology adoption involves stages such as awareness, interest, evaluation, trial, and full integration. It may occur incrementally or radically, with its success largely dependent on leadership support, infrastructure availability, employee training, and effective change management strategies (FakhrHosseini et al., 2024; Saghafian et al., 2021).

The adoption of technology offers significant advantages, including the enhancement of customer experiences, the optimisation of operational processes, and the stimulation of innovation, particularly within technology-dependent economies. The developments in digital marketing, social media, and e-payment systems demonstrate the many advantages of digital transformation. These advantages include improved operational effectiveness, increased customer engagement, quicker speed to market, and the ability to adapt to changing market conditions (Hanandeh et al., 2024). Agricultural development has been observed to be impacted by ICT adoption through mechanisms like improved information access, farmer knowledge, supply chain management for inputs and outputs, enhanced delivery services, lower transaction values, farm credit, and health insurance (Khan et al., 2022). Technology has also provided organisations with useful insights by collecting and analysing massive volumes of data. The advent of big data analytics and machine learning algorithms has enabled organisations to extract significant patterns, trends, and correlations from data, allowing them to make more informed decisions and optimise their strategy. Data-driven insights have emerged as a critical driver of organisational success, ranging from predictive analytics for demand forecasting to consumer behaviour analysis for personalised marketing

(Malik, 2021). Furthermore, technology has accelerated the rate of innovation and the creation of new products and services. Organisations can use emerging technologies like artificial intelligence, the Internet of Things (IoT), and blockchain to develop innovative solutions that match the changing needs of customers. Organisations that embrace technological innovations can stay ahead of the competition, enter new markets, and adapt to changing client demands, thereby increasing their market effectiveness (Hanandeh et al., 2024; Malik, 2021).

Despite its numerous advantages, it is critically important to recognise that the influence of technology on organisational success is accompanied by certain limitations and potential challenges (Malik, 2021). Organisations must consider data privacy, cybersecurity, and ethical considerations while adopting and using technology. Furthermore, due to the quick rate of technological change, organisations must engage in continual learning and upskilling to guarantee that staff can successfully use the technology tools at their disposal. Finally, technology has revolutionised how organisations work, communicate, develop, and make choices. Its impact on organisational performance is broad, allowing organisations to streamline procedures, increase productivity, stimulate innovation, and achieve a competitive advantage. To fully realise the potential of technology, organisations must adopt it strategically, handle associated issues, and equip their workforce with the essential skills and expertise. This allows organisations to successfully navigate the digital age while achieving long-term growth and success (Malik, 2021; Sari et al., 2024). In accordance with the aforementioned thoughts and opinions of scholars, this study defined technology adoption in the insurance context as the process by which insurers, intermediaries (agents/brokers), and customers integrate and utilize new technological innovations to enhance efficiency, risk assessment, customer experience, and business growth. It refers also as the application of technologies to restructure organisational settings and processes towards achieving corporate visions and goals.

Hypothesis Development

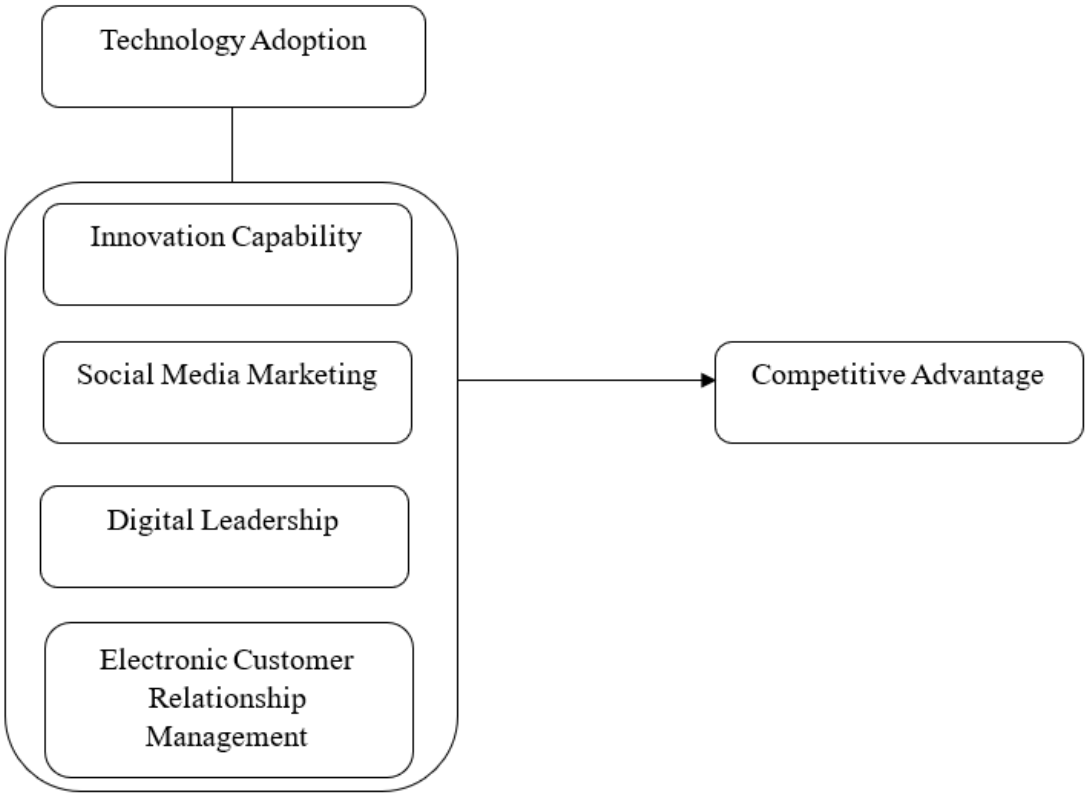
Studies have been carried out on technology adoption dimensions and competitive advantage, with mixed findings. ElTahir (2020) concluded that there a clear impact of information technology in achieving a competitive advantage. Nnodim et al. (2020) indicated that banks who possesses high marketing innovation capability will scale higher than banks who don't in terms of sales growth. In addition, the studies by Awamleh and Bustami (2022), Qosasi et al. (2019), and Lovely et al. (2021) identified that technological capabilities influence competitive advantage. Awamleh and Bustami (2022) suggested a strong need for firms to engage in information technology developments to survive in the dynamic business environment. Qosasi et al. (2019) revealed that ICT capability affects competitive advantage. The study's emphasis is on engaging and incorporating technological competencies and agility into the traditional way of doing production and business. Lovely et al. (2021) found that combining organisational agility with IT capabilities influences competitive advantage for selected small firms in Indonesia's fashion industry that have used e-commerce platforms to conduct their business activities.

According to Oyelakin et al. (2022), innovation capability, a dimension of technology adoption, has an impact on competitive advantage. Findings from Quagraine et al. (2021), revealed that dynamic capabilities through innovation capability positively impacted competitive advantage and were statistically significant. Permana et al. (2019), reported that digital capability has an impact on competitive advantage, which in turn impacts company performance. Adebisi et al. (2021) in their findings showed, that innovation capability, a dimension of technology adoption, had a significant influence on competitive advantage. Farida and Sutopo (2023) discovered that digital innovation technology has a positive and significant impact on the competitive advantage. Sulaimon et al. (2020) revealed that innovation capability had significant influence on competitive advantage. Nafiu et al. (2020) showed that innovative activities have strong significant effect on the competitive advantage. Nafiu et al. (2020) demonstrated that innovative activities have a strong significant effect on competitive advantage. Furthermore, Adeoye et al. (2019) found that technological capability and innovative culture have a positive effect on competitive advantage. Puspita et al. (2020) found out that supply chain capability and innovation capability effect competitive advantage.

Shyshpanova and Bodnar (2021) established that in modern conditions of digital transformations, insurance companies widely use innovative technologies that ensure the achievement of both short-term effects and long-term competitive advantages. Samoedra (2021) found that social media marketing had the most significant influence on competitive advantage. Abdurohim et al. (2022) concluded that social media marketing has a positive and significant effect on sustainable competitive advantage. Awad and Mahmoud (2024) in their findings reveal a significant positive correlation between E-CRM and competitive advantage. In view of these findings, the following hypothesis is proposed:

$H_0$1: Technology adoption has no significant effect on competitive advantage.

Figure 1: Researchers Model



Theoretical Review

Diffusion of Innovation Theory

Diffusion of Innovation Theory (DOI) is a social science theory proposed by Rogers in 1962 (Mueni & Angima, 2022). Everett Roger developed this theory in 1995, arguing that diffusion is the process by which an innovation is communicated through specific channels over time among the participants in a social system, and that not all innovations are adopted; even if an innovation is good, it may take a long time for it to be adopted (Joseph & Ankoh, 2022; Piabari et al., 2022). This theory emerged from communication and describes how and at what pace a new idea, product, or technology develops traction and spreads over time via organisations, populations, or social systems. This theory proposes that four factors influence the dissemination of ideas: communication routes, innovation, time, and social systems. Organisations whose personnel have a positive attitude towards a specific technology reap benefits such as lower expenses, growth, and enhanced efficiency. (Mueni & Angima, 2022).

Rogers suggests that four major factors impact the dissemination of a new idea: innovation itself, communication channels, time, and a social system. Innovation is defined as an idea, practice, or undertaking that is seen as novel by an individual or other unit of adoption. The innovation-decision process is an information gathering and processing activity in which an

individual is driven to eliminate uncertainty regarding the benefits and drawbacks of an innovation. He describes the innovation-decision process as five steps: knowledge, persuasion, decision, implementation, and confirmation (Joseph & Ankoh, 2022).

Innovation diffusion is a process for reducing uncertainty. He has also identified traits that can help reduce uncertainty in the innovation process, such as relative advantage, compatibility, complexity, trialability, and observability. Relative advantage refers to a concept that gives an organisation an advantage, whereas compatibility refers to the extent to which the innovation is perceived to be consistent with the organization's values and the needs of potential adopters (Joseph & Ankoh, 2022). Another important variable in the diffusion of innovation theory is perceived compatibility, which is defined as the degree to which society trusts AI technologies and applications even when the technology contradicts the users' existing values, experience, or potential needs. Users are more likely to adopt technologies that they consider to be compatible with their needs and experiences. (Almaiah et al., 2022). Complexity is the perceived level of work required by the end user to understand inventions, as well as their ease of use. Complexity refers to the level of difficulty that learners perceive when utilising an AI system, which may have a detrimental impact on their performance (Almaiah et al., 2022). Trialability is the extent to which an idea can be tested on a limited scale (Joseph & Ankoh, 2022). Trialability refers to how much society trusts innovations. Trialability is the extent to which learners are encouraged to adopt AI technology and applications in the future (Almaiah et al., 2022). Observability refers to how easily others can see the innovation (Joseph & Ankoh, 2022). Observability refers to the degree to which the AI is perceived as observable to users and others. Visibility suggests that AI can help with peer discussion of a novel idea when learners attempt to discuss and negotiate the innovation (Almaiah et al., 2022).

The Diffusion of Innovation Theory is relevant to this study as it provides a valuable framework for explaining how new technologies are adopted and spread within organizations, and how such adoption can influence their competitive advantage (Rogers, 2003). The theory describes the process through which innovations are communicated over time among members of a social system, and identifies key attributes, relative advantage, compatibility, complexity, trialability, and observability, that determine the rate of adoption. In the context of this study, DOI helps to explain how insurance companies in Lagos State embrace technological innovations to improve operational efficiency and strengthen their competitive positioning. Unlike traditional views that focus only on the availability of technology, the DOI theory emphasizes the social and organizational factors that influence the adoption process. It suggests that the decision to adopt a new technology follows a series of stages, knowledge, persuasion, decision, implementation, and confirmation, each of which affects how successfully an innovation is integrated into organizational practice (Rogers, 2003). Organizations that clearly perceive the benefits and compatibility of new technologies are more likely to adopt them early and use them strategically to gain a competitive edge. In this regard, DOI theory highlights that competitive advantage among insurance firms in Lagos State depends not only on access to technological tools, but also on how effectively these tools are understood, accepted, and embedded within their operational systems.

Methodology

This study adopted a quantitative research approach, employing the deductive reasoning aspect of the method. A cross-sectional survey research design was used, involving the collection of primary data through adapted questionnaires. The study was anchored on a positivist research philosophy, which emphasizes objectivity, measurement, and empirical validation. Lagos State was selected as the study area. The target population comprised management staff of quoted insurance companies operating within Lagos State, Nigeria. The sample size of 436 respondents was determined using the Taro Yamane (1967) sample size calculator. The initial computation yielded 335 respondents; however, to accommodate potential non-responses, an additional 30% was added, resulting in a final sample size of 436.

A pilot study was conducted to evaluate the clarity, relevance, and comprehensibility of the research instrument prior to its administration in the main study area. The pilot exercise was carried out in an insurance company located in Lagos State, which was excluded from the main study to prevent contamination of results. A total of forty-four (44) copies of the questionnaire were distributed to employees of the company. The validity and reliability of the instrument were assessed using the returned questionnaires, and the data were analyzed with the Statistical Package for the Social Sciences (SPSS), version 25.

Table 1: Construct Validity Analysis of the Research Instrument

Construct	**Number of Items**	**Number of Items Retained**	**KMO**	**Bartlett's Test of Sphericity**	**Sig.**	**AVE**
Technology Adoption						
Innovation Capabilities	5	5	0.682	546.611	0.000	0.770
Social Media Marketing	5	5	0.729	137.372	0.000	0.654
Digital Leadership	5	5	0.841	326.004	0.000	0.844
e-Customer relationship management system	5	5	0.817	439.877	0.000	0.756
Competitive Advantage	5	5	0.682	336.919	0.000	0.457

Source: Author's Computation (2025)

Table 1 presents the results of the construct validity tests. The Kaiser-Meyer-Olkin (KMO) values for all variables were above the acceptable threshold of 0.5, while the Bartlett's Test of Sphericity was significant at $p < 0.05$. These results indicate that the items comprising the research instrument adequately measured the intended constructs and were appropriate for factor analysis. Furthermore, the table shows that the Average Variance Extracted (AVE) values for all constructs were approximately greater than 0.50 (Fornell & Larcker, 1981), ranging from 0.457 to 0.844. These values exceed the recommended benchmark, thereby demonstrating satisfactory convergent validity.

Table 2: Discriminant Validity of Technology Adoption

Construct	Innovation Capabilities	Social Media Marketing	Digital Leadership	e-Customer relationship management system
Innovation Capabilities	**0.877**			
Social Media Marketing	0.957	**0.808**		
Digital Leadership	0.890	0.710	**0.919**	
e-Customer relationship management system	0.570	0.627	0.913	**0.869**

Source: Author's Computation (2025)

Table 2 presents the results of the discriminant validity analysis for the constructs employed in this study. The diagonal elements represent the square roots of the Average Variance Extracted (AVE) for each construct, all of which are higher than the corresponding off-diagonal correlation coefficients. This indicates that each construct shares greater variance with its own measures than with other constructs, thereby confirming the presence of discriminant validity.

Table 3: Reliability of Research Instrument

Construct	Number of Items	Number of Items Retained	Cronbach 's Alpha	Composite Reliability	Comment
Technology Adoption					
Innovation Capabilities	5	5	0.954	0.995	Reliable
Social Media Marketing	5	5	0.856	0.991	Reliable
Digital Leadership	5	5	0.962	0.996	Reliable
e-Customer relationship management system	5	5	0.957	0.993	Reliable
Competitive Advantage	5	5	0.866	0.984	Reliable

Source: Author's Computation (2025)

A reliability analysis was conducted to assess the internal consistency of the questionnaire used in the study. The reliability coefficients for each construct were determined using Cronbach's alpha and composite reliability. The results indicated that all values exceeded the recommended benchmark of 0.70, thereby confirming the internal consistency and reliability of the measurement instrument.

Data Analysis

The study employed regression analysis to examine the relationships among the study variables. Prior to conducting the analysis, key assumptions of regression, namely, normality, multicollinearity, linearity, and homogeneity of variance were tested and found to be satisfactorily met. The results of the multiple regression analysis are presented in Table 4 below.

Table 4: Multiple Regression analysis for the effect of technology adoption on competitive advantage.

N	Model	β	T	Sig	R	*Adj.* R^2	F (4,420)	ANOVA (Sig.)
425	(Constant)	3.496	4.713	.000	.804	.644	192.342	0.000b
	Innovation Capabilities	.217	4.088	.000				
	Social Media Marketing	.164	3.003	.003				
	Digital Leadership	.159	2.792	.005				
	E-Customer Relationship Management System	.317	5.840	.000				
	Predictors: (Constant), Innovation Capabilities, Social Media Marketing, Digital Leadership, E-Customer Relationship Management System							
	Dependent Variable: Competitive Advantage							

Source: Researcher's Findings, 2025

Interpretation

Table 4 shows the multiple regression analysis results for the effect of technology adoption on competitive advantage. The results showed that innovation capabilities ($\beta = 0.217$, $t = 4.088$, $p<0.05$), social media marketing ($\beta = 0.164$, $t = 3.003$, $p<0.05$), digital leadership ($\beta = 0.159$, $t = 2.792$, $p<0.05$), and electronic customer relationship management system ($\beta = 0.317$, $t = 5.840$, $p<0.05$) have positive and significant effect on competitive advantage. This implies that all the technology adoption dimensions (innovation capabilities, social media marketing, digital leadership, and electronic customer relationship management system) are important factors which in turn yields an increase in competitive advantage in the quoted insurance companies in Lagos State, Nigeria.

The R-value of 0.804 supports this result and it indicates that technology adoption has a strong positive relationship with competitive advantage in the quoted insurance companies in Lagos State. The coefficient of multiple determination Adj. $R^2 = 0.644$ indicates that about 64.4% of the variation that occurs in competitive advantage can be accounted for by the technology adoption while the remaining 35.6% changes that occur in competitive advantage is accounted for by other variables not captured in the model. The predictive and prescriptive multiple regression models are thus expressed:

CA = 3.496 + 0.217IC + 0.164SMM + 0.159DL + 0.317ERMS + Ui --- Eqn(i) (Predictive Model)

CA = 0.217IC + 0.164SMM + 0.159DL + 0.317ERMS + Ui --- Eqn(i) (Prescriptive Model)

Where:
CA = Competitive Advantage
IC = Innovation Capabilities
SMM = Social Media Marketing
DL = Digital Leadership
ERMS = Electronic Customer Relationship Management System

The intercept (3.496) in the regression predictive model represents the mean value of competitive advantage when all of the predictor variables (technology adoption dimensions) in the model are equal to zero. Therefore, holding technology adoption dimensions to a constant zero, competitive advantage would be 3.496 which is positive. In the predictive model, it is seen that all the variables had positive and significant effects and are therefore retained in the prescriptive model. The results of the multiple regression analysis as seen in the prescriptive model indicate that when all dimensions of technology adoption (innovation capabilities, social media marketing, digital leadership, and electronic customer relationship management system) are improved by one-unit, competitive advantage would also increase by 0.217, 0.164, 0.159, and 0.317 units respectively and vice-versa.

The results further revealed that electronic customer relationship management system (β = 0.317) has a stronger significant effect on competitive advantage in the insurance companies. Hence, more attention should be paid to this dimension of technology adoption. In addition, the F-statistics (df = 4, 420) = 192.342 at p = 0.000 ($p < 0.05$) indicated that the overall model was significant in predicting the effect of technology adoption on competitive advantage. Therefore, the null hypothesis (H_{03}) which states that technology adoption has no significant effect on competitive advantage in the quoted insurance companies in Lagos State, Nigeria was rejected.

Discussion of Findings

The finding revealed that technology adoption dimension of innovation capability, social media marketing, digital leadership, and e-customer relationship management system have significant effect on the competitive advantage of quoted insurance companies in Lagos State, Nigeria. These findings support empirical studies of ElTahir (2020) that there is significant effect of information technology in achieving a competitive advantage. In addition, the studies by Awamleh and Bustami (2022), Qosasi et al. (2019), and Lovely et al. (2021) identified that technological capabilities influence competitive advantage. This is substantiated by Qosasi et al. (2019) revealed that ICT capability affect competitive advantage. Lovely et al. (2021) found that combining organisational agility with IT capabilities influences competitive advantage.

This is further corroborated by Oyelakin et al. (2022) that innovation capability, a dimension of technology adoption, has a significant impact on competitive advantage. Findings from Quagraine et al. (2021), revealed that dynamic capabilities through innovation capability positively impacted competitive advantage and were statistically significant. Supporting this is Permana et al. (2019), reported that digital capability has an impact on competitive advantage. Agreeing is Adebisi et al. (2021) in their findings that innovation capability, a dimension of technology adoption, had a significant influence on competitive advantage. In the same vein, Farida and Sutopo (2023) discovered that digital innovation technology has a positive and significant impact on the competitive advantage. This further aligns with empirical work by Sulaimon et al. (2020) that innovation capability had significant influence on competitive advantage. Nafiu et al. (2020) showed that innovative activities have strong significant effect on the competitive advantage. Also, Nafiu et al. (2020) demonstrated that innovative activities have a strong significant effect on competitive advantage. Furthermore, Adeoye et al. (2019) found that technological capability and innovative culture have a positive effect on competitive advantage. Supporting is Puspita et al. (2020) found that supply chain capability and innovation capability affect competitive advantage.

This claim is further reinforced by Shyshpanova and Bodnar (2021) that in modern conditions of digital transformations, insurance companies widely use innovative technologies that ensure the achievement of both short-term effects and long-term competitive advantages. Similarly, Samoedra (2021) found that social media marketing had the most significant influence on competitive advantage. Supporting is Abdurohim et al. (2022) that social media marketing has a positive and significant effect on sustainable competitive advantage. Awad and Mahmoud (2024) reveal a significant positive correlation between E-CRM and competitive advantage.

The findings of this study support the theoretical assumptions of the diffusion of innovation theory. The Diffusion of Innovation (DOI) theory presents a theoretical foundation for understanding how the adoption of technological innovations contributes to the development and sustenance of competitive advantage. The theory identifies five fundamental attributes, relative advantage, compatibility, complexity, trialability, and observability as critical factors influencing the adoption and diffusion of innovations within organizational settings (Dhaked, 2024; Yu, 2022). When innovations are perceived to offer meaningful improvements, align with existing operational structures, are relatively easy to implement, and produce observable outcomes, the likelihood of successful adoption increases, thereby enhancing organizational performance and efficiency (Obiki-Osafiele et al., 2024). Moreover, DOI underscores the significance of adopter categories particularly innovators and early adopters in shaping the pace and pattern of diffusion across social systems (Mbatha, 2024). This theoretical insight enables organizations to design more effective implementation strategies that promote early adoption, generate momentum, and foster broader technological acceptance. Consequently, the DOI framework contributes to enhanced organizational adaptability, continuous innovation, and the reinforcement of long-term competitiveness in dynamic and evolving environments (Veselica Celić, 2025). In conclusion, the study's findings demonstrate that the dimension of technology adoption examined exerts a significant and positive influence on the

competitive advantage of quoted insurance companies in Lagos State, Nigeria. These findings are in line with existing empirical literature and further affirm the relevance of the Diffusion of Innovation Theory and the Technology Acceptance Model in strengthening competitive positioning within the insurance industry.

Implication of the Study

The findings of this study have notable implications. By clarifying the constructs of technology adoption and competitive advantage, the study provides a practical framework for managers and policymakers to design strategic interventions that strengthen market performance. Theoretically, the study validates the Dynamic Capabilities Theory within the Nigerian insurance sector, emphasizing how internal technological resources can be leveraged to achieve sustainable competitive advantage in emerging markets. The conceptual model demonstrates that technology adoption exerts a causal influence on competitive advantage among quoted insurance companies in Lagos State, Nigeria. This indicates that innovation capability, digital leadership, social media marketing, and electronic customer relationship management collectively enhance organizational competitiveness. The results finally confirmed that effective technology adoption significantly and positively impacts competitive advantage, underscoring the need for continuous digital innovation and capability development to sustain long-term competitiveness.

Conclusion and Recommendation

The findings revealed that technology adoption dimensions have significant effect on competitive advantage of quoted insurance companies in Lagos State, Nigeria. Based on the finding, the study recommended that the management of quoted insurance in Lagos State, Nigeria should adopt technological innovations to reduce operational costs and gain a competitive edge. The integration of digital tools streamlines internal processes, enhances customer service, and supports faster, more accurate decision-making. These efficiencies enable firms to respond swiftly to market dynamics, introduce innovative products, and effectively differentiate themselves within a highly competitive insurance industry.

Limitation and Suggestion for Further Studies

This investigation focused on selected dimensions of technology adoption, such as innovation capability, social media marketing, digital leadership, and electronic customer relationship management, in relation to competitive advantage among quoted insurance companies in Lagos State, Nigeria. Future studies may consider examining additional dimensions of technology adoption such as artificial intelligence applications, data analytics, cybersecurity measures, and customer relationship technologies, which were beyond the scope of this study. Moreover, the present study utilized a cross-sectional research design restricted to the insurance sector. Subsequent research may adopt a longitudinal approach across diverse financial and non-financial sectors to provide deeper insights into the long-term effects, acceptance levels, and utilization patterns of technology adoption on competitive advantage within different organizational contexts. Comparative analysis may be carried out to determine the outcome of this study in comparison with other States in Nigeria or perhaps emerging economies.

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