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Cryptocurrency Integration and Competitive Advantage: A Study of Contextual Factors of Payment Strategy Innovations in Nigeria's E-Commerce Sector

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Abstract. This study examined how cryptocurrency integration shapes consumer trust, ease of use, and competitive advantage within Nigeria's e-commerce sector. Grounded in the Technology Acceptance Model (TAM), Diffusion of Innovation theory, and the Resource-Based View (RBV), the research was motivated by the rising adoption of digital payments and the uncertainty surrounding whether crypto can genuinely strengthen competitiveness. A structured online questionnaire yielded 324 valid responses. Data were analysed using structural equation modelling in Amos. Findings revealed that cryptocurrency integration had a significant negative effect on consumer trust (-.148, p = .022) but a marginal positive effect on ease of use (.128, p = .070). No direct link was found between crypto integration and competitive advantage (-.015, p = .822). Importantly, consumer trust significantly mediated the link between crypto and competitive advantage (-.191, p = .012), whereas ease of use did not (.072, p = .270). These results highlight that trust, not technology alone, drives competitiveness in emerging markets. Recommendations include phased crypto rollouts, stronger security safeguards, and linking crypto use to customer rewards. The study expands knowledge by showing that perceived risks can outweigh usefulness, suggesting future research should explore cultural and regulatory factors shaping digital adoption within Nigeria's e-commerce ecosystem.

Keywords: Competitive advantage, Consumer trust, Cryptocurrency integration, Diffusion of innovation, Perceived ease of use, Resource-based view (RBV), Technology acceptance model (TAM).

1. INTRODUCTION

Over the past decade, shopping habits in Nigeria appear to be shifting. As the study by Omamuzo, Oguntade, and Daniel (2025) puts it, while brick and mortar outlets such as open-air markets, corner shops, and supermarkets remain central to everyday life, more people in Nigeria seem to be trying out online shopping. According to Eze, Ugwu, Ojonta, Ozioka, and Okeke (2025), platforms like Jumia, Konga, Jiji, Slot, and PayPorte are becoming familiar names, even if they are not yet the first choice for every shopper. This gradual change may be due to wider internet access, the spread of smartphones, the youthful majority of Nigeria's population and evolving consumer preferences.

E-commerce began in 1982 with Boston Computer Exchange and has since grown into a US$6 trillion global industry. Africa joined the race with South Africa's Kalahari.com in 1998 and Bidorbuy.com (1999), before Nigeria's market truly took off in 2012 with Jumia and Konga, following earlier pioneers like ShopNigeria.com and DeNiger. Today, Nigeria's e-commerce sector is valued at US$8.53 billion (2024) and projected to reach nearly US$15 billion by 2029, ranking 38th globally. Today, online shoppers in Nigeria primarily use platforms, brand websites, and fast-growing social commerce, with nearly 90% of internet users in the country already engaging in e-commerce (Oloni, 2024).

However, as online shopping in Nigeria is slowly but steadily gaining ground, with that growth has come tougher competition among e-commerce platforms. Each company is trying to stand out by either attracting first-time buyers or finding ways to keep loyal customers coming back (Nkpurukwe, Wali, Ahuekwe, & Mzughulga, 2025). One area that's drawing fresh attention is payment systems (Eyo-Udo, Agho, Onukwulu, Sule, & Azubuike, 2024). For instance, some platforms are exploring the use of cryptocurrency as part of the shopping experience. The thinking is that giving customers more flexible, tech-driven payment options might create an edge over rivals. Still, whether this move actually translates into increased competitiveness remains an open question (Udo & Akpan, 2024).

Cryptocurrencies such as Bitcoin, Ethereum, Solana and various stablecoins were once seen mainly as speculative assets for investors, risk-takers and people who enjoy trying out new technology (Łęt, Sobański, Świder, & Włosik, 2023). In more recent years, however, they have started to find practical use (Mo, Chen, Shi, & Zeng, 2025). Around the world, some businesses are testing crypto payments as a way to reduce transaction costs, overcome restrictions on cross-border payments, and appeal to younger, digitally active customers (Suslenko, Zatonatska, Dluhopolskyi, & Kuznyetsova, 2022). In places where banking infrastructure can be unreliable or costly, cryptocurrencies are often presented as a possible alternative for making faster and cheaper transactions (Nguyen, Nguyen, Nguyen, Pham, & Nguyen, 2022).

Nigeria has emerged as one of the more visible markets for cryptocurrency (Emumena, Clinton, & Odiri, 2025). Industry reports suggest that Nigerians rank among the most active users of digital currencies, not only for trading but also for sending remittances and handling everyday transfers (Jenkinson, 2023). This level of familiarity may create an opening for e-commerce platforms to explore cryptocurrency as a payment option. For businesses that already operate in a competitive and sometimes unpredictable environment like Nigeria,

integrating crypto could seem attractive as a way to broaden payment choices, appeal to tech-aware customers, and possibly reduce costs tied to traditional banking channels (Bolaji-Daniel, 2025).

1.1. Problem Statement

However, the idea of crypto integration by e-commerce platforms in Nigeria may not be without some challenges. Particularly, simply adding a crypto option does not mean customers will embrace it (Udo & Akpan, 2024; Suslenko *et al.*, 2022). In this regard, for crypto integration to work in e-commerce settings, customers would likely need to feel both comfortable and confident using it. According to current knowledge, trust plays a particularly important role in Nigeria's online shopping environment, where worries about fraud, failed payments, and delivery problems still shape consumer behaviour (Omamuzo *et al.*, 2025). What this information suggests is that without strong trust, customers in Nigeria may hesitate to try crypto, no matter how innovative it looks.

In a related development, ease of use is another factor that could matter a great deal in crypto integration. For instance, even if people believe crypto is secure, they may not use it if the payment process feels complicated or time-consuming compared to more familiar methods (Kee *et al.*, 2025). On the whole, if crypto payments can be made safe, secure, quick, simple, and intuitive, adoption could increase, and the platforms that enable this may strengthen their market position (Ramoni, 2025). In this sense, competitive advantage could take different forms: attracting more customers, building loyalty, lowering payment processing costs, or simply being perceived as more innovative in a crowded marketplace.

1.2. Rationale

The state of current literature indicates that despite growing global interest in cryptocurrency and signs of strong usage in Nigeria, research on its role in the everyday operations of e-commerce businesses remains limited (Emumena *et al.*, 2025; Udo, & Akpan, 2024). Much of the existing work focuses on the technical foundations of cryptocurrency, such as blockchain mechanics, investment risks, or regulatory questions, rather than its use in consumer-interaction-based or e-commerce industries (Eyo-Udo *et al.*, 2024; Oliyide, & Ayodele, 2024). In the Nigerian context, where studies on e-commerce exist, they often highlight issues like poor logistics, weak customer service, or payment security, but say little about how crypto payments might reshape competition in the sector (Nkpurukwe *et al.*, 2025; Ramoni, 2025).

Consequently, the state of current literature points in the direction of some important gaps. For example, while it is often assumed that crypto payments could lower transaction costs or appeal to certain customer groups, there is little hard evidence from Nigerian e-commerce firms to confirm these expectations (Eyo-Udo *et al.*, 2024). Even less is known about how customers actually perceive crypto payments in this setting, whether they trust them, find them easy to use, or see them as adding value to their shopping experience (Oliyide, & Ayodele, 2024). Without elaborate evidence, firms may be uncertain about whether investing in crypto integration is worthwhile or what specific factors they should prioritise when rolling it out.

Our study, therefore, seeks to provide fresh insights by examining cryptocurrency integration within Nigeria's leading e-commerce platforms. Our study does not assume that crypto is automatically transformative. Instead, it explores under what conditions it might help e-commerce firms improve their standing, with particular attention to how customers view and interact with these systems. By focusing on issues of trust and ease of use, our research investigates the human side of payment innovations rather than just the technical or financial aspects of the online marketplace in Nigeria.

1.3. Significance

The relevance of our study is likely to spread across several stakeholders. For e-commerce firms, the findings could show whether cryptocurrency is a practical tool for building competitive advantage or merely a one-off trend. If trust and ease of use turn out to be critical in our study, e-commerce firms in Nigeria may need to think more carefully about designing education campaigns, investing in stronger security, or simplifying user interfaces.

For policymakers and regulators, our study could provide a more balanced picture of how cryptocurrency is being used in practice. So far, Nigerian authorities have often taken a cautious approach, focusing largely on risks of fraud, money laundering, and instability. While these risks exist, there may also be potential opportunities, such as encouraging innovation in digital payments, improving financial inclusion, and positioning Nigeria more strongly in the global digital economy. With stronger evidence, regulators may be able to design policies that support responsible innovation while still protecting consumers.

At a broader level, the study may also have significance for the Nigerian economy. Payment systems play an important role in trade, business confidence, and cross-border transactions. If our study shows that cryptocurrencies, and stablecoins in particular, can make these processes cheaper or smoother, Nigerian firms could find it easier (based on empirical evidence) to compete not only locally but also across Africa and other developing economies. This might, in turn, attract new investment, encourage local digital entrepreneurship, and gradually reduce reliance on cash and traditional banking. Of course, this would depend on how well crypto

systems are managed, and careful evidence is needed to ensure that adoption supports growth rather than creating new risks.

For customers, our findings could shed light on what crypto payments might mean for their shopping experiences. Done well, such systems could make transactions faster, cheaper, and more flexible. Done poorly, they could add complexity or increase risks. Finally, for researchers, the study could add to wider conversations about digital payments, consumer trust, and innovation in emerging markets. Nigeria, with its rapid uptake of crypto and growing e-commerce landscape, offers a particularly relevant case for exploring the themes of crypto integration, customer trust, ease of use and competitive advantage of the major players.

1.4. Aim and Objectives

In light of the issues raised above, the aim of this study is to investigate the role of cryptocurrency integration in strengthening the competitive advantage of e-commerce firms in Nigeria, with particular attention to how consumer trust and perceived ease of use may help explain this relationship.

Specifically, the study seeks to:

i. Assess how cryptocurrency integration system influences consumer trust in Nigerian e-commerce platforms.
ii. Examine whether customers perceive cryptocurrency integration system as easy to use when shopping online.
iii. Evaluate the relationship between cryptocurrency integration system and competitive advantage in the e-commerce sector.
iv. Test whether consumer trust mediates the link between cryptocurrency integration system and competitive advantage.
v. Investigate whether perceived ease of use mediates the link between perceived cryptocurrency integration system and competitive advantage.

2. LITERATURE REVIEW

This section reviews what is known, debated, and missing about cryptocurrency integration, trust, ease of use, and its impact on e-commerce competitiveness. It focuses on Nigeria's top e-shopping sites and identifies gaps that the study will address through conceptual, theoretical, and empirical reviews.

2.1. Conceptual Review

Cryptocurrency integration can be understood in different ways. At its most basic level, it is the ability for customers to pay for goods and services with digital money such as Bitcoin, Ethereum or Solana, etc. However, it goes beyond simply adding a "pay with crypto" button on a checkout page. Proper integration means that cryptocurrency transactions connect seamlessly to other areas of the business, including stock records, receipts, delivery tracking, and customer accounts, so everything operates smoothly. In regions like Nigeria, where banking networks can be slow or unreliable, cryptocurrency integration provides an alternative that feels faster, cheaper, and more flexible for both businesses and shoppers. Customers can typically sense the difference between a platform that has effectively built crypto into its system and one that has added it as an afterthought; when well-integrated, paying with cryptocurrency feels as natural as using a debit card.

Customers' perception of trust acts as the invisible handshake between buyers and sellers in the digital marketplace. Trust makes people confident enough to spend money online. In e-commerce, trust is established when customers believe that the platform will deliver their orders as promised, keep their personal details secure, and remain reliable after payment is made. With cryptocurrency, this feeling of trust becomes even more important because digital money feels "unseen" and intangible. Customers want assurance that their crypto payments will not disappear or end up in the wrong hands. When trust exists, people are more willing to return to the same platform, recommend it, and remain loyal even when competitors try to win them over.

Ease of use refers to how effortless it is for customers to navigate an e-commerce platform. If paying online involves filling out endless forms or navigating a complex series of steps, many customers will simply give up. With cryptocurrency, ease of use means that the payment process is so simple that customers do not need any special technical knowledge about blockchains or wallets; they can complete a transaction with just a few clicks. A user-friendly platform is like walking into a well-organised store where everything is clearly laid out. You know where to go and what to do without confusion. When e-commerce platforms simplify the process, customers not only use them more often but also start to see the platform as modern, smart, and reliable.

Competitive advantage is what enables a business to stand out, particularly in crowded markets where numerous players vie for the same customers. It can come in the form of lower prices, better service, or unique features that make the platform more appealing than others. In practical terms, it means providing something that rivals cannot easily replicate. In Nigeria's online shopping space, where platforms like Jumia and Konga compete fiercely, seamless cryptocurrency integration could provide such an advantage. It can reduce transaction costs, attract tech-savvy customers, and build a reputation for innovation. When combined with trust and ease of use, this advantage helps a platform not just survive but thrive.

2.1.1. Conceptual Framework

The proposed model (see Figure 1) conceptualises cryptocurrency integration as the independent variable influencing competitive advantage both directly and indirectly through two parallel mediators: consumer trust and ease of use. Using Andrew Hayes' PROCESS macro (Hayes, 2022), the framework suggests that the adoption of cryptocurrency by firms enhances their competitive advantage not only because of its intrinsic benefits but also because it builds consumer trust and improves ease of use in transactions. Consumer trust mediates the relationship by reinforcing customers' confidence in secure and transparent transactions, while ease of use mediates by reducing complexity and improving user experience. Together, these mediators explain *how* and *why* cryptocurrency integration strengthens competitive advantage, with the PROCESS macro allowing for the estimation of both the direct effect of cryptocurrency integration on competitive advantage and the indirect effects operating through trust and ease of use in parallel pathways.

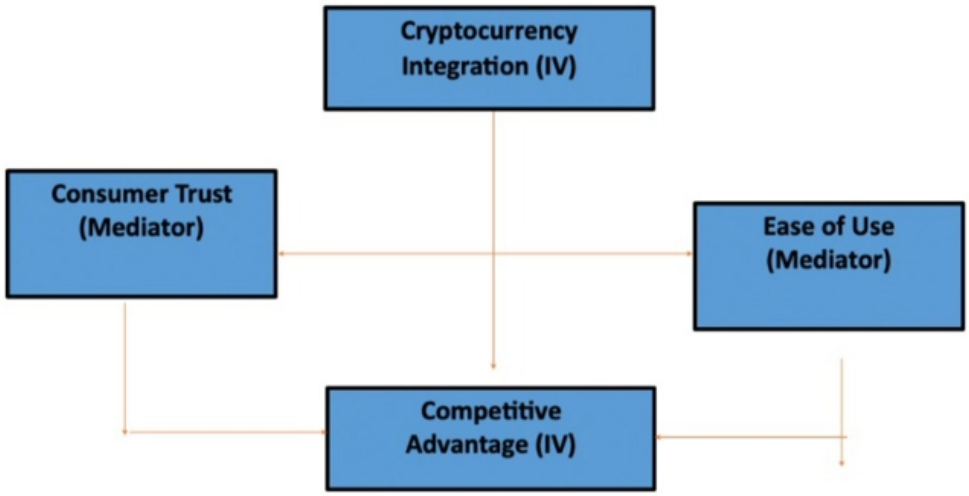

Figure 1. Conceptual model.

2.2. Theoretical Review

Our study utilises the Technology Acceptance Model (TAM), Diffusion of Innovation Theory and Resource-Based View (RBV) Theory to help explain the links among cryptocurrency integration, trust, ease of use, and competitive advantage in Nigeria's e-business marketplace.

2.2.1. Technology Acceptance Model (TAM)

The Technology Acceptance Model was developed by Davis in 1989 to explain why people accept or reject technology. Its main idea is that adoption depends on how useful and easy to use people perceive it to be. TAM has been used in areas like e-banking, mobile apps, and e-learning, consistently showing that simple and helpful systems attract more users. For example, studies in online retail have shown that when customers believe a platform saves them time and effort, they are more likely to use it. Critics argue that TAM is too narrow, focusing mainly on usefulness and simplicity while ignoring social and cultural influences. However, it remains relevant to this study because it illustrates how Nigerian e-commerce customers perceive cryptocurrency payments: if they find them easy and valuable, they are more likely to use them, which in turn boosts adoption and competitiveness.

2.2.2. Diffusion of Innovation Theory

Everett Rogers proposed the Diffusion of Innovation Theory in 2003 to explain how new ideas and technologies spread. It assumes that adoption follows a series of stages: awareness, interest, evaluation, trial, and adoption. The model is widely used in management research to study how firms adopt technologies such as mobile money, agricultural innovations, and health IT systems. Research shows that early adopters pave the way, while mass adoption depends on trust, simplicity, and proven value. Critics say the theory overlooks social inequalities that affect access to innovations and can be too linear for today's complex markets. Despite this, its relevance is clear: Nigerian customers may know about cryptocurrency, but widespread adoption on e-commerce platforms will only happen when people trust the process and find it easy to use.

2.2.3. Resource-Based View (RBV) Theory of Competitive Advantage

The Resource-Based View of the firm, proposed by Barney in 1991, is based on the idea that competitive advantage comes from resources that are valuable, rare, difficult to imitate, and well organised. It has been applied in management studies to explain why companies that manage unique technologies, strong brands, or superior processes outperform others. For instance, firms with advanced IT systems or specialised knowledge have been shown to lead over rivals. RBV often receives criticism for being static, as it focuses more on existing

resources than on how companies develop or adjust them in changing markets. Still, it remains powerful for explaining long-term advantage. In this study, RBV helps us view cryptocurrency integration when supported by trust and ease of use, not just as a payment tool but as a rare capability that can set Nigerian e-commerce platforms apart in a crowded market.

2.3. Empirical Review

This subsection reviews contemporary studies on cryptocurrency integration platforms, consumer trust, ease of use, and the competitive advantage of e-commerce businesses. It is organised into five themes that align with the research objectives. The goal is to understand the current state of the literature, find gaps, and show the need for our study.

2.3.1. Cryptocurrency Integration System and Perceived Consumer Trust

Quan, Moon, Kim, and Han (2022) explored how different payment methods, including cryptocurrency, influence trust and travel choices among Chinese and Korean consumers. They conducted a survey of hotel and tourism customers in both countries, collecting extensive data and analysing it with structural equation modelling. Their findings indicated that perceived usefulness, ease, and security vary across payment types and cultures. They concluded that payment preferences impact destination choices and suggested adjusting systems to meet cultural expectations.

In another study, Elrayah and Juhari (2023) surveyed 231 cryptocurrency wallet owners across various e-commerce settings, ensuring a diverse respondent pool. They used exploratory and confirmatory factor analyses with validity tests. Their results showed that crypto integration speeds up transactions, lowers costs, and builds trust when there is strong security in place. They recommended that platforms enhance transparency and customer support to encourage adoption.

Abdurrahaman, Abdurrahaman, Ayetigbo, Okunlola, and Adegbol (2024) explored cryptocurrency adoption in Nigeria, analysing survey data from 417 participants across six geopolitical zones using SEM-PLS. Findings revealed that emotionally perceived value strongly boosts adoption intention, while trust also has a significant positive effect. Interestingly, financially perceived value negatively influences adoption. The study concludes that socio-psychological drivers outweigh financial ones, urging policymakers and practitioners to build trust and highlight emotional value to foster wider adoption and strengthen digital financial inclusion in emerging markets.

Blancaflor and Pascua (2024) conducted a review of the Philippine e-commerce sector, relying on published studies instead of primary surveys. Their analysis highlighted rising interest but also identified barriers related to regulation and risk perception. They recommended further empirical research to inform adoption strategies. Similarly, Nikivorov (2024) employed case study methods, focusing on IBM Food Trust, to evaluate the role of blockchain in e-commerce. By comparing operational data, he confirmed that blockchain offers benefits in transparency and efficiency but cautioned about scalability and regulatory challenges. The study recommended innovation and policy changes to enhance consumer trust in blockchain as an enabler of e-commerce.

LingXiao and Ali (2025) used a mixed-methods approach in China. They combined surveys of online shoppers with case studies of Alibaba, JD.com, and Pinduoduo. Their results revealed that AI, blockchain, and user experience design help reduce fraud and improve consumer trust. They advised platforms to find a balance between technical upgrades and consumer-friendly design. Finally, Loh *et al.* (2023) surveyed online users in the sharing economy and analysed the responses using a hybrid SEM-fsQCA (fuzzy set qualitative comparative analysis) approach. The study found that scepticism, complexity, and habits lead to resistance to crypto payments. They recommended simpler systems and improved consumer education to enhance consumer trust. The reviewed studies show that cryptocurrency platforms can increase trust and efficiency, but adoption relies on security, user experience, and clear support from regulations.

2.3.2. Cryptocurrency Integration System and Ease to Use

Nadeem, Liu, Pitafi, Younis, and Xu (2021) studied bitcoin adoption in China by surveying 385 respondents. They used structural equation modelling to analyse the data. Their findings revealed that perceived ease of use and usefulness positively influence the intention to adopt, with transaction processing boosting usefulness. However, security and control had little impact. The study concludes that ease and efficiency drive adoption. It offers insights for users, investors, and businesses while suggesting that security concerns need further examination in future research.

Campino and Yang (2024) explored cryptocurrency adoption through a descriptive survey involving users and non-users. They also performed sentiment analysis on open-ended responses. Results showed that most users view crypto as an investment, with e-commerce and international payments being appealing applications. However, volatility and usability issues limit adoption. Regulation has become a growing concern, reflecting changing consumer expectations. The study concludes that addressing volatility and simplifying the user experience, while balancing regulation and anonymity, are key to wider adoption.

Doblas, Becaro, Sankar, Natarajan, and Yoganandham (2024) examined cryptocurrency adoption among 684

Philippine university students through quantitative surveys. Their analysis indicated that usefulness, attitude, self-efficacy, and social norms greatly shape the intention to adopt. Risk tolerance and knowledge also played significant roles, while ease of use remained influential. The study concludes that both practical and emotional factors, such as ease of use of cryptocurrency platforms, drive its adoption, providing new insights into Bitcoin use in emerging Asian economies. Doblas *et al.* (2024) recommend expanding behavioural models to better capture local decision-making processes in cryptocurrency adoption.

Mofokeng, Mbeya, and Maduku (2024) looked into Bitcoin adoption for online payments in South Africa by surveying 521 online shoppers. They used an integrated model of TAM, valency, and social contagion theory. They found that usefulness, ease of use, social influence, and trust drive both adoption and word-of-mouth. Perceived risk reduces intention, but self-efficacy enhances positive behaviours. The study concludes that boosting consumer confidence and lowering risk perceptions can encourage adoption and promote positive word-of-mouth.

2.3.3. Cryptocurrency Integration System and Competitive Advantage

Kant (2021) examined the potential of blockchain as an intangible resource for maintaining competitive advantage. Using a scholarship of integrated approach instead of a traditional systematic review, the paper argues that blockchain's transparency, trust, and adaptability make it a useful but underexplored resource in the Fourth Industrial Revolution. The findings suggest that blockchain can improve organisational efficiency and stakeholder value, but the technology is still in its early stages. The study notes the strategic potential while warning that adoption requires ongoing refinement. This makes it a valuable resource for managers and policymakers.

In a 2021 study conducted by an independent researcher and published in Strategic Direction, key insights on blockchain as a source of competitive advantage were summarised. It highlighted blockchain's ability to enhance secure peer-to-peer transactions using smart contracts, which boosts efficiency and performance. While acknowledging blockchain's early real-world application, it advised organisations to prepare strategically by investing in staff training and identifying issues that can be solved. The piece serves as a summary rather than empirical research, offering executives and strategists an easy and quick overview of blockchain's strategic opportunities.

Hu and Xu (2021) examined innovation in cross-border e-commerce (CBE) in China using big data and blockchain. Their study showcased how blockchain can solve issues related to trust, customs, payments, logistics, and data flow. The proposed blockchain-based CBE framework showed strong empirical support, as China's cross-border exports grew significantly, indicating blockchain's effect on trade growth. The study illustrated how blockchain can enhance transparency and efficiency in global commerce, particularly in large markets, while providing practical insights for policymakers and businesses involved in international trade.

Zheng (2021) studied blockchain adoption in cross-border e-commerce in Pakistan using the diffusion of innovation (DOI) theory. By surveying cryptocurrency users and potential investors in Karachi, the study found that relative advantage, compatibility, and reduced complexity significantly influenced adoption, while trialability and observability had less effect. Results showed that users valued privacy, global access, and integration with digital lifestyles. Though it provided rich empirical data, the study pointed out barriers to adoption, including limited exposure and stigma, offering useful guidance for stakeholders in developing economies.

Hajr, Katamoura, and Mirza (2023) analysed Bitcoin's role in Saudi Arabia's e-commerce ecosystem. Using an online survey and analysing the data with SPSS and SmartPLS, the study found that awareness and usage of Bitcoin positively affected payment efficiency, trust, and financial inclusion. The findings showed increasing consumer confidence in digital currencies and their connection to growing e-commerce. Despite being constrained by regulatory uncertainty, the study offers valuable insights for businesses and policymakers working with Bitcoin in a conservative financial environment, emphasising the potential for digital integration in the Gulf region.

Roopnarain and Mwapwele (2025) carried out a systematic literature review on blockchain adoption in e-commerce. By utilising four databases and conducting a thematic analysis of 19 articles, the study identified institutional, market, and technical factors that influence adoption, including high operating costs, cultural resistance, and verification issues. The authors created a conceptual model for adoption, offering both theoretical and practical insights. They stressed the importance of lowering costs while ensuring blockchain stays secure, scalable, and traceable. The study also connected blockchain adoption to the achievement of sustainable development goals, particularly financial inclusion (SDG 8).

2.3.4. Perceived Consumer Trust as Mediator

Namahoot and Rattanawiboonsom (2021) studied Thai consumers' intention to use cryptocurrency platforms. They extended the Technology Acceptance Model with innovativeness and perceived risk. Surveying 456 respondents and using structural equation modelling for analysis, they found that usefulness, ease of use, and innovativeness positively influenced adoption. Attitude played a key role in this process, and perceived risk was also significant. Their model accounted for nearly two-thirds of usage intention. The study showed that user

trust, based on perceived benefits, is essential for adopting cryptocurrency platforms.

Akoi (2025) looked at the factors that influence people's intentions to invest in cryptocurrencies, with trust as the primary mediator. An online survey of 385 respondents from various countries revealed that transparency, security, and clear regulations have a significant impact on trust, which in turn affects investment intentions. The study emphasised that without trust, even favourable conditions may fail to attract investors. Akoi recommends that regulators and industry leaders focus on strong security, clear communication, and regulatory clarity to build a safer and more trustworthy investment environment for cryptocurrency.

Mu'min and Vedpathak (2025) examined how blockchain can reshape e-commerce strategies for small and medium-sized enterprises (MSMEs) in Bengkulu City. Their survey data showed that blockchain strengthens consumer trust by improving transaction security and transparency, which enhances loyalty and brand image. By reducing the need for intermediaries, blockchain creates a fairer marketplace and provides small businesses with new competition opportunities. The study highlighted the importance of transparency in lowering risk perceptions and illustrated how trust supports the connection between technology use and marketing success.

Irfan (2024) investigated how trust affects the relationship between electronic word of mouth (eWOM) and security in cryptocurrency purchase decisions in Indonesia. Analysing responses from 320 valid surveys, structural equation modelling revealed that trust significantly linked eWOM and security to buying choices. Perceived behavioural control was also relevant, particularly in connecting security with decisions. The study indicates that users are more confident in their purchases when they trust platforms, feel secure, and read positive reviews. This underscores the need for effective trust-building strategies in cryptocurrency markets.

Rahardja *et al.* (2023) explored how trust and risk mediate the intention to use cryptocurrency. They surveyed 337 experienced investors and utilised PLS-SEM to assess relationships involving technology readiness, mindfulness, and financial literacy. The results indicated that readiness and mindfulness shaped perceptions of trust and risk, which then influenced the intention to adopt cryptocurrency. The study suggests that platforms should work to lower perceived risk while increasing trust through education and support. It provides practical advice for service providers and theoretical insights into cryptocurrency adoption.

Yadulla, Nadella, Maturi, and Gonaygunta (2024) studied Indonesian users of a cryptocurrency exchange app to understand how system quality, perceived trust, and digital currency features impact financial stability and user behaviour. Using SEM on data from 345 users, they found that high system quality directly increases trust and intention to adopt. Trust also contributes to financial stability. All tested relationships were significant. Though focused on a specific app, the study highlights that reliable systems and trust are crucial for sustaining cryptocurrency platforms and maintaining a competitive edge.

2.3.5. Perceived Ease of Use as Mediator

Sagheer, Khan, Fahd, Mahmood, Rashid, and Jamil (2022) examined cryptocurrency adoption in Pakistan through the Technology Acceptance Model. They used survey data from 333 Gen Z respondents. They found that perceived usefulness, ease of use, and risk played a role in the connection between technology awareness and users' intention to adopt cryptocurrency. Government support notably strengthened these effects, showing how regulatory backing can improve adoption outcomes. The study emphasises that ease of use and supportive governance are key to cryptocurrency acceptance and effectiveness in emerging markets.

Chong, Lui, and Go (2024) explored what drives Malaysians to actually adopt mobile wallets, focusing on Alipay and GrabPay. Using the Technology Acceptance Model with survey data from 632 users, they found that compatibility strongly shaped adoption, and this effect was mediated by perceived ease of use and usefulness. GrabPay outperformed Alipay in convenience and compatibility, while self-efficacy mattered across both. Other factors, like innovativeness and payment knowledge, had weaker effects. The study suggests tailoring e-payment services to different consumer lifestyles boosts adoption.

Atellu (2024) researched the factors influencing cryptocurrency adoption in Kenya by extending the TRA, TPB, and TAM models. From 400 survey responses, structural equation modelling verified that perceived ease of use, utility, risk, and social norms had a significant impact on behavioural intention. Attitude also played a mediating role in adoption behaviour, indicating that positive perceptions help turn ease of use into action. The study suggests that supportive policies, regulatory frameworks, and awareness campaigns are necessary to build confidence in cryptocurrency and encourage broader adoption in Sub-Saharan Africa.

Sharma, Panse, Gupta, Dawar, Kudal, and Sharma (2024) studied cryptocurrency adoption in India using an extended TAM framework with added variables like trust, privacy, and social influence. Based on responses from 140 participants, the results indicated that perceived ease of use enhanced perceived usefulness, which in turn influenced attitudes toward adoption. Trust was affected by both risk and social pressures, and these factors collectively influenced behavioural intention. The study emphasises the importance of ease of use and attitudes in driving cryptocurrency adoption, while also highlighting the need for regulation and trust-building in India.

Lui, Zainuldin, Yii, Lau, and Go (2021) studied why Malaysian consumers adopt Alipay, focusing on how perceived ease of use and usefulness shape adoption. Drawing on the Technology Acceptance Model, they surveyed Alipay users and analysed responses with structural equation modelling. Findings show that both ease of use and usefulness act as key mediators between user perceptions and adoption behaviour. In other words, the

simpler and more beneficial Alipay feels, the stronger the likelihood of adoption. The study offers insights for mobile payment providers in Malaysia.

2.4. Summary of Literature Review

Our review of the existing literature reveals that, although research on e-commerce in developing economies, such as Nigeria, has expanded, most studies have primarily focused on general adoption challenges, including logistics, payment security, and customer service. Very little attention has been given to how cryptocurrency integration specifically shapes consumer trust and perceptions of ease of use, and even less to how these factors may influence a firm's competitive advantage. Existing works tend to examine cryptocurrency as a broad financial innovation, not as a strategic tool within the online retail sector. Our study addresses this gap by exploring not only whether cryptocurrency integration matters for Nigerian e-commerce firms but also whether consumer trust and ease of use help explain its link to their sustained competitive positioning.

2.5. Hypotheses Development

Following the literature review, we hypothesise that:

1. Ho_1: Cryptocurrency integration will not influence consumer trust in Nigerian e-commerce platforms.
2. Ho_2: Customers will not perceive cryptocurrency integration as making online shopping easier to use.
3. Ho_3: Cryptocurrency integration will not influence the competitive advantage of e-commerce firms.
4. Ho_4: Consumer trust will not mediate the relationship between cryptocurrency integration and competitive advantage.
5. Ho_5: Perceived ease of use will not mediate the relationship between cryptocurrency integration and competitive advantage.

3. METHODOLOGY

This study sets out to understand how integrating cryptocurrency into online shopping platforms can give Nigerian e-commerce firms a competitive edge, and how consumer trust and perceived ease of use play a role in that process. In this study, methodology is important because it helps us explain how our research was planned, who we studied, and how data was collected and analysed. Following standard research practice, this section discusses the study's setting, design, sample, data collection process, steps taken to ensure validity and reliability, method of data analysis, and ethical responsibility.

3.1. Research Setting

The study was carried out in Nigeria. In accordance with our observations, online shopping is still developing but showing steady growth in the country. Leading platforms such as Jumia, Konga, and Jiji are competing for consumer attention in an increasingly crowded market (Nkpurukwe *et al.*, 2025). Further to our observations, cryptocurrency use is also rising in Nigeria, with the country ranked among the top global adopters of digital currencies (Emumena *et al.*, 2025). This, in our opinion, makes Nigeria a suitable setting to investigate how cryptocurrency integration might influence competitiveness among e-commerce firms.

3.2. Population

The population of this study consists of customers of the ten leading e-commerce platforms in Nigeria. These platforms were selected because of their market size, visibility, and ability to influence industry practices. The focus on customers is important because they are the ultimate users of cryptocurrency payment systems and their trust and perceptions might directly shape firm competitiveness (Mofokeng *et al.*, 2024).

3.3. Research Philosophy

This study is grounded in the positivist philosophy, which assumes that reality can be objectively studied through observable facts and measurable data (Kumatongo, & Muzata, 2021). Since the study aims to test cause-and-effect relationships, for example, whether cryptocurrency integration influences competitive advantage through consumer trust and ease of use, we considered that positivist philosophy is appropriate.

3.4. Research Design

We opted for a quantitative survey based on cross-sectional design. This choice of research design allowed data to be collected from a relatively large number of respondents and analysed statistically to test hypotheses (Hunziker, & Blankenagel, 2024). For instance, asking customers to rate their trust in e-commerce platforms after using cryptocurrency integration provided us with measurable insights that can be compared across the 10 participating firms.

3.5. Sampling Frame

The sampling frame included active online shoppers in Nigeria who have engaged with at least one of the ten leading e-commerce platforms in the past year. This ensured that the respondents were familiar with online

shopping and could reasonably comment on cryptocurrency-related services.

3.6. Recast based use of CB-SEM in Amos as Method of Data Analysis

3.6.1. Sample Size Determination

Because our study employed Covariance-Based Structural Equation Modelling (CB-SEM) in AMOS, we paid careful attention to sample size adequacy. CB-SEM typically requires larger samples than simpler regression-based methods, since it estimates multiple parameters simultaneously and relies on stable covariance matrices. Methodological guidelines (e.g. Sim, Kim, & Suh, 2022) suggest that while smaller models can sometimes be tested with around 150 cases, more complex models with mediation effects often demand 200-250 for medium-sized paths, and 400 or more when effects are small. Balancing these recommendations with practical feasibility, we set a target of 300 - 350 respondents.

3.7. Sampling Techniques

We adopted a multi-stage sampling approach. The top ten e-commerce firms were purposively selected, with each firm serving as a cluster for reaching customers. Within these clusters, participants were recruited through online forums and targeted survey links, while snowball sampling encouraged referrals from initial respondents to broaden reach. By combining purposive, cluster, and snowball techniques, the study captured a balanced mix of active shoppers across firms, making the sampling both practical and well-suited to the research aims.

3.8. Method of Data Collection

Data was gathered using a structured online questionnaire distributed within the clusters of the ten selected e-commerce firms. To reach participants effectively, survey links were shared through consumer shopping forums, WhatsApp groups, and social media communities where these shoppers are most active. This approach was chosen because the target population is already highly engaged online, making digital surveys both practical and reliable for capturing their experiences and perceptions.

3.9. Data Collection Instrument

The questionnaire was organised into four sections. The first captured demographic details such as age, gender, education, and shopping frequency to provide context. The second section measured cryptocurrency integration using items adapted from Rai, Patnayakuni, and Seth (2006). For example, respondents were asked to rate statements like *"Our use of cryptocurrency is closely integrated into payment and transaction systems"* and *"Cryptocurrency tools enable smoother information exchange with customers."*

Next, competitive advantage was assessed by drawing on Salim and Azo (2025). Sample items included *"Our firm delivers products or services more cost-effectively than competitors"* and *"We retain customers through unique value that rivals cannot easily imitate."* Adapted from Kulal, Parvin, Dinesh, Panakaje, and Ramzan (2025), consumer perceptions of trust was measured with items such as *"I feel confident that cryptocurrency transactions are protected from fraud"* and *"I trust the reliability of cryptocurrency platforms for financial exchanges."* Based on the same Kulal *et al.* (2025), user experience was captured through items like *"Cryptocurrency platforms are easy to navigate"* and *"Transactions are processed smoothly without technical glitches."* All items were measured on a 5-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (5), making the responses both consistent and easy to interpret.

3.10. Validity and Reliability of Instrument

The supply chain integration items by Rai *et al.* (2006) demonstrated strong reliability, with Cronbach's alpha values above .80. Competitive advantage scale that was drawn from Salim and Azo (2025) possessed CFA results with excellent fit (CFI .98, RMSEA .018). Measures of trust, and user experience followed Kulal *et al.* (2025), with factor loadings above .70 and high internal consistency. These psychometric properties attested to the reliability and validity of our instrument.

3.11. Method of Data Analysis

The data were analysed using Covariance-Based Structural Equation Modeling (CB-SEM) with AMOS. This approach was chosen because it not only tested direct relationships between variables but also allowed for the assessment of mediation effects. We also considered CB-SEM particularly suited for our study because it allowed us to simultaneously evaluate the measurement models and structural paths, while also generating fit indices that show how well the model aligns with the data.

3.12. Ethical Measures

Ethical standards were observed at all stages. Respondents were clearly informed about the purpose of the study and assured that participation was voluntary. Anonymity was guaranteed by not collecting identifiable information, and data was stored securely on password-protected devices. These steps are consistent with ethical guidelines for social science research (Hasan, Rana, Chowdhury, Dola, & Rony, 2021).

4. DATA ANALYSIS AND PRESENTATION

The study focused on customers of Nigeria's ten leading e-commerce platforms. The firms were chosen for their size, visibility, and market influence. A total of 324 valid responses were collected over 46 days, between July and August 2025. Data were cleaned and processed before applying descriptive statistics, and CB-SEM analysis in Amos to test our proposed model concerning the causal relationship between cryptocurrency integration and competitive advantage of e-commerce firms through customer perceived trust and ease of use.

4.1. Demographic Characteristics of the Sample

Table 1. Demographic Characteristics of Respondents (N = 324).

Variable	Categories	Frequency (Percentage)	Mean (Standard Deviation)
Gender	Male	108 (33.3%)	1.67 (0.47)
	Female	216 (66.7%)	
Age	18–27 years	180 (55.6%)	1.89 (1.24)
	28–37 years	72 (22.2%)	
	38–47 years	18 (5.6%)	
	48–57 years	36 (11.1%)	
	58 years & above	18 (5.6%)	
Education	Secondary/High School	126 (38.9%)	2.06 (1.13)
	Diploma/Certificate	108 (33.3%)	
	Bachelor's Degree	54 (16.7%)	
	Master's Degree	18 (5.6%)	
	Doctorate	18 (5.6%)	
Occupation	Student	198 (61.1%)	1.83 (1.17)
	Employed (Private Sector)	36 (11.1%)	
	Employed (Public Sector)	36 (11.1%)	
	Self-employed	54 (16.7%)	
Experience with Cryptocurrency	< 1 year	54 (16.7%)	2.33 (0.75)
	1–3 years	108 (33.3%)	
	> 3 years	162 (50.0%)	

The demographic profile of respondents (see Table 1) shows that out of the 324 valid responses, females represented the majority at 66.7%, while males accounted for 33.3%. This distribution is also reflected in the mean gender score (M = 1.67, SD = 0.47), leaning towards the female category. In terms of age, most participants were young adults between 18–27 years (55.6%), followed by those aged 28–37 years (22.2%). Smaller proportions fell into the 38–47 years (5.6%), 48–57 years (11.1%), and 58 years & above categories (5.6%). The mean age score (M = 1.89, SD = 1.24) confirms that the sample was largely youthful. This is not surprising, as our observations show that younger Nigerians are typically the most active online shoppers and the earliest adopters of digital innovations like cryptocurrency.

For education, secondary/high school leavers formed the largest group (38.9%), while diploma holders followed closely (33.3%). A smaller portion had a bachelor's degree (16.7%), with postgraduate qualifications (master's and doctorate) each representing 5.6%. The mean education score (M = 2.06, SD = 1.13) suggests that most participants had at least post-secondary training, which aligns with expectations for Nigeria's internet-savvy population. When asked about occupation, 61.1% identified as students, while others reported being self-employed (16.7%), employed in the private sector (11.1%), or in the public sector (11.1%). The mean occupational score (M = 1.83, SD = 1.17) indicates a student-dominant sample, reflecting the tendency for younger and less formally employed groups to be overrepresented in online shopping communities.

Experience with cryptocurrency showed a more balanced distribution. Specifically, half of the respondents (50%) had more than three years of experience, 33.3% reported 1-3 years, and 16.7% had less than one year. The mean score (M = 2.33, SD = 0.75) highlights that many participants were not only familiar with cryptocurrency but also had sustained exposure. This suggests that respondents could meaningfully comment on the role of cryptocurrency integration in shaping their trust and perceptions of e-commerce platforms.

4.2. Validity and Reliability Analysis

Table 2. Inter-Item Correlations among Study Variables (N = 324).

Variable	CRYPT	COMAD	TRUST
Cryptocurrency Integration (CRYPT)			
Competitive Advantage (COMAD)	-0.02		
Trust Perceptions (TRUST)	-0.02	-0.10	
Ease of Use Perceptions (EASE)	0.03	-0.01	-0.14*

Note: Values are correlation coefficients. $p < .05$.

To assess the discriminant validity of the scales, we examined the inter-item correlations across the four constructs: cryptocurrency integration, competitive advantage, trust perceptions, and ease of use. The results showed that correlations between the scales were weak and mostly negative, with only one reaching statistical significance. For example, trust and ease of use were negatively correlated ($r = -.14$, $p < .05$), suggesting that while related, they capture distinct dimensions of user experience. Overall, the low correlations provide evidence that the four scales measure separate, non-overlapping constructs (see Table 2).

Table 3. Reliability Statistics for Study Scales.

Scale	Cronbach's Alpha	N of Items
Cryptocurrency Integration	0.768	5
Competitive Advantage	0.783	5
Trust Perceptions	0.772	5
Ease of Use	0.735	4

Note: All scales exceeded the .70 reliability benchmark.

Concerning reliability, the four measurement scales was tested using Cronbach's Alpha. All scales demonstrated acceptable internal consistency, comfortably surpassing the commonly cited threshold of .70. The cryptocurrency integration scale ($\alpha = .768$), competitive advantage scale ($\alpha = .783$), trust perceptions scale ($\alpha = .772$), and ease of use scale ($\alpha = .735$) all fell within the range of "good" reliability. This suggests that the items on each scale were consistently measuring the same underlying construct.

4.3. Factor Analysis

Table 4. Summary of Factor Analysis Results.

Scale	KMO	Bartlett's χ^2 (df)	P	Variance Explained (%)	Factor Loadings Range
Cryptocurrency Integration	.729	425.96 (10)	.000	52.6	.648 - .785
Competitive Advantage	.745	455.57 (10)	.000	54.2	.674 - .789
Trust Perceptions	.733	433.99 (10)	.000	53.1	.658 - .790
Ease of Use	.644	327.75 (6)	.000	56.8	.636 - .813

Note: Extraction method = Principal Component Analysis. One component was extracted for each scale.

For the Cryptocurrency Integration Scale, the KMO value (.729) and Bartlett's test ($\chi^2 = 425.96$, $p < .001$) confirmed that the dataset was suitable for factor analysis. A single factor emerged, explaining 52.6% of the total variance, with item loadings ranging from .648 to .785. Similarly, the Competitive Advantage Scale yielded a strong KMO (.745) and a significant Bartlett's test ($\chi^2 = 455.57$, $p < .001$). One factor was extracted, accounting for 54.2% of the variance, with loadings between .674 and .789.

The Trust Scale also demonstrated validity, with a KMO of .733 and a significant Bartlett's test ($\chi^2 = 433.99$, $p < .001$). A single factor explained 53.1% of the variance, with loadings ranging from .658 to .790. Likewise, the Ease of Use Scale returned a somewhat lower but acceptable KMO (.644), and Bartlett's test remained significant ($\chi^2 = 327.75$, $p < .001$). One factor emerged, accounting for 56.8% of the variance, with item loadings between .636 and .813. In summary, these results confirm that the items in each scale loaded onto a single factor. The high factor loadings further attest to the validity of all four scales.

4.4. Model Analysis (Confirmatory Factor Analysis)

Table 5. Model Fit Indices for the Structural Model.

Fit Index	Value	Threshold (Guideline)	Interpretation
χ^2 (CMIN)	1016.49, df = 147, p < .001	Non-significant ideal, but large samples often yield significance	Model is statistically meaningful
CFI	.628	≥ .90 desirable	Below threshold, but acceptable for exploratory research
IFI	.632	≥ .90 desirable	Similar to CFI, room for refinement
TLI	.567	≥ .90 desirable	Indicates need for model adjustment
RMSEA	.135 (90% CI: .128 – .143)	≤ .08 acceptable	Suggests moderate misfit, but still informative
GFI	.764	≥ .90 desirable	Shows partial model support
AGFI	.695	≥ .90 desirable	Acceptable for complex behavioural models

The structural model (see Table 5) provides valuable insights into how cryptocurrency integration, trust, ease of use, and competitive advantage interact in Nigeria's e-commerce sector. The chi-square statistic was

significant (χ^2 = 1016.49, df = 147, p < .001), indicating that the model is statistically meaningful. Fit indices such as the CFI (.628), IFI (.632), and TLI (.567) suggest there is room for refinement, but this is not unusual in complex social science models where human behaviour is being captured. Importantly, the model shows coherent factor loadings, with an RMSEA of .135 highlighting that the structure provides a solid baseline for testing the study's hypotheses and building theory in this emerging field.

4.5. Test of Hypotheses

Table 6. Regression Weights and Hypothesis Testing Results.

Path	Estimate (β)	S.E.	C.R.	*p*	Outcome
Ease of Use ← Crypto	.128	.070	1.812	.070	Not supported
Trust ← Crypto	−.148	.065	−2.293	.022	Supported (negative)
Competitive Advantage ← Crypto	−.015	.066	−.225	.822	Not supported
Competitive Advantage ← Ease	.072	.065	1.103	.270	Not supported
Competitive Advantage ← Trust	−.191	.077	−2.499	.012	Supported (negative)

Note: Crypto = Cryptocurrency Integration.

The analysis in Table 6 set out to test how cryptocurrency integration connects with consumer trust, ease of use, and competitive advantage among Nigerian e-commerce firms. Concerning Hypothesis 1, the results showed that cryptocurrency integration had a significant, though negative, effect on consumer trust ($\beta = -.148$, $p = .022$). This suggests that while integration is noticeable to customers, it may raise concerns about safety or reliability, leading to reduced trust for now.

For Hypothesis 2, the link between cryptocurrency integration and perceived ease of use was positive but not statistically significant ($\beta = .128$, $p = .070$). In other words, customers seem to see some potential for convenience, but the evidence was not strong enough to claim that integration makes shopping easier in practice. Concerning Hypothesis 3, the direct path from cryptocurrency integration to competitive advantage was both weak and insignificant ($\beta = -.015$, $p = .822$). This means that on its own, integration does not automatically translate into a competitive edge for e-commerce firms.

Concerning mediation, Hypothesis 4 revealed that consumer trust significantly influenced competitive advantage ($\beta = -.191$, $p = .012$). This result means that trust plays a mediating role, but interestingly, in a negative way, lower levels of trust linked to cryptocurrency payments may actually dampen firms' ability to claim an advantage. Finally, for Hypothesis 5, ease of use did not show a meaningful mediating effect ($\beta = .072$, $p = .270$). Customers may recognise that cryptocurrency could streamline transactions, but this perception is not yet translating into a competitive benefit for firms. Overall, the results suggest that while customers are aware of cryptocurrency integration, lingering doubts about trust overshadow any convenience or competitive value it might bring at this stage.

4.6. Discussion of Findings

First, the finding that cryptocurrency integration negatively influenced consumer trust runs counter to available literature, which emphasises trust as a positive driver of adoption (Elrayah & Juhari, 2023; Abdurrahman *et al.*, 2024). Studies in Asia and Nigeria consistently show that speed, transparency, and security often *build* trust when crypto is well-designed and supported. Our result suggests that, at least in the Nigerian context, integration may have exposed consumers to concerns about fraud, volatility, or lack of regulation, echoing Loh *et al.* (2023) and Blancaflor & Pascua (2024), who found skepticism and regulatory gaps can hinder trust. From a theoretical lens, this result still aligns with Technology Acceptance Model (TAM) and Diffusion of Innovation (DOI) Theory; it illustrates that negative perceptions of security or complexity can undermine adoption. From Resource-Based View (RBV)'s perspective, crypto integration has not yet become a trust-enhancing resource; instead, it may currently be viewed as a liability.

The second hypothesis, that integration improves perceived ease of use, was not strongly supported. This partly contradicts studies like Nadeem *et al.* (2021) and Doblas *et al.* (2024), which found ease of use to be a key driver of cryptocurrency adoption, but resonates with Campino and Yang (2024), who highlighted usability issues as barriers. In Nigeria, where many consumers are still learning how cryptocurrency functions in everyday shopping, the perception of convenience is present but not robust enough to be significant. This finding fits neatly with TAM, which has long argued that ease of use must be both noticeable and trustworthy before it predicts adoption. From DOI, the "complexity" of crypto systems appears to be a sticking point, slowing diffusion. Within RBV, ease of use has not yet matured into a competitive capability, but it remains a potential resource if platforms can simplify integration.

The direct link between cryptocurrency integration and competitive advantage was not supported. This contrasts with studies like Hu and Xu (2021) and Hajr *et al.* (2023), which show that blockchain adoption can improve efficiency and trade outcomes. However, it is consistent with Kant (2021) and Roopnarain & Mwapwele (2025), who caution that the benefits of blockchain are still emerging and heavily dependent on supportive

structures. In our case, integration without strong trust and usability has not yet given firms an edge. From an RBV perspective, crypto is not yet a rare, valuable, and inimitable resource capable of driving sustained advantage. TAM and DOI help explain this finding. As such, without perceived usefulness and compatibility, new technology struggles to deliver firm-level payoffs.

Interestingly, consumer trust significantly mediated the link between cryptocurrency integration and competitive advantage, though in a negative way. This stands in contrast to prior work such as Namahoot & Rattanawiboonsom (2021) and Mu'min & Vedpathak (2025), which found trust to be a positive bridge between adoption and performance. Yet, it also resonates with Rahardja *et al.* (2023), who emphasized that perceived risk can undermine trust, weakening adoption intentions. In the Nigerian case, trust issues may have flipped the mediating effect, showing that integration without confidence in security may actually reduce competitiveness. From a TAM perspective, this reflects how perceived risk can override perceived usefulness. DOI's principle of "compatibility" comes into play here: integration is not aligning with user expectations of safety. From RBV, trust becomes a missing piece of the resource puzzle, without it, crypto fails to yield strategic value.

The final finding that ease of use did not mediate between integration and competitive advantage reflects a gap between technical possibility and consumer perception. This contradicts studies like Atellu (2024) and Lui *et al.* (2021), which confirm that ease of use often strengthens adoption effects. Instead, our result is closer to Campino & Yang (2024), who noted that volatility and complexity overshadow usability in limiting adoption. In Nigeria, ease of use may be necessary but insufficient without broader trust and regulatory assurances. TAM directly anticipates this outcome, ease alone does not guarantee adoption if usefulness and security are in doubt. DOI also suggests that when innovations are seen as complex or risky, diffusion slows, regardless of potential convenience. For RBV, the finding signals that usability by itself has not yet evolved into a strategic asset for firms.

5. CONCLUSION, RECOMMENDATIONS, LIMITATIONS AND FUTURE RESEARCH DIRECTION

5.1. Conclusion and Implications

The evidence showed that cryptocurrency integration had a negative and significant effect on consumer trust. This finding is striking because it suggests that, instead of offering reassurance, crypto payment options raised fresh concerns about security and reliability. In the Nigerian context, where worries about fraud and failed transactions are already common, cryptocurrency appears not to function as a trust-builder. Theoretically, this complicates the optimism of TAM and Diffusion of Innovation, since risk perceptions can outweigh usefulness. Practically, firms cannot assume that adding crypto builds credibility. And from a policy angle, regulators could play a stabilising role by setting clear safety standards.

The second finding showed a positive but only marginally significant link between crypto integration and ease of use. This suggests that some customers are beginning to view crypto as less intimidating, though for many, the systems remain complex. TAM's emphasis on ease shaping adoption is partially supported here, but the results also show that crypto's ease has not yet reached a tipping point in Nigeria. For practice, user interfaces need to be simpler, with smoother integration into common payment platforms. Policy-wise, we conclude that national digital literacy campaigns could help reduce the intimidation factor for average consumers.

The analysis also revealed no significant direct relationship between crypto integration and competitive advantage. In other words, simply offering crypto payment does not set firms apart in a meaningful way. From the RBV lens, this suggests that crypto is not yet a rare or inimitable resource; it may function more as a "basic feature" rather than a differentiator. Practically, firms should not expect crypto alone to drive competitiveness. Instead, advantage may arise when crypto is combined with other strengths, like loyalty rewards, faster delivery, or seamless refund systems. Policymakers could encourage firms to position crypto as part of broader innovation strategies, not as a silver bullet.

The results also showed that consumer trust significantly mediated the relationship between crypto integration and competitive advantage. This is pivotal: while crypto does not directly create competitive advantage, the trust it generates, or erodes, makes all the difference. Theoretically, this reinforces TAM and RBV, since it confirms trust as the "bridge" between technology use and strategic outcomes. Practically, it means that competitive battles in e-commerce will not be won by technology features alone, but by whether customers feel safe enough to use them. From a policy standpoint, consumer protection laws and strong regulation can help tilt the balance toward trust.

The final finding showed that ease of use did not significantly mediate the relationship between crypto integration and competitive advantage. This means that while usability improvements may make customers more willing to try crypto, ease on its own does not deliver lasting competitive benefits. Theoretically, this challenges TAM's assumption that ease is a core driver of adoption by showing it needs to be tied to other value-adding factors like security and loyalty. Practically, firms must move beyond usability toward building trust and delivering added value. Policy-wise, digital literacy must be paired with financial consumer protections to create a balanced environment.

5.2. Recommendation

1. E-commerce firms should introduce crypto gradually, with phased rollouts supported by consumer education campaigns. Visible safeguards such as two-factor authentication, transparent refund policies, and active customer support are key to turning skepticism into confidence.
2. Second, e-commerce firms should redesign crypto payment flows to mimic familiar card or wallet processes. Adding "one-click" checkout, contextual help tips, and real-time support chat would help reduce the steepness of the learning curve.
3. Third, e-commerce firms should embed crypto into larger value propositions, for example, linking crypto use to loyalty points, discounts, or exclusive offers. This shifts crypto from a neutral feature to a meaningful competitive tool.
4. E-commerce platforms should actively monitor customer trust through surveys, reviews, and feedback loops. If trust dips, firms should respond quickly with refunds, visible customer support, or public reassurances to protect their competitiveness.
   Firms should connect ease of use with tangible benefits. For example, offering discounts, faster processing, or exclusive access for crypto payments would ensure that ease translates into customer loyalty and competitive advantage.

5.3. Study Limitations and Unique Contribution to Knowledge

Our study relied on structural equation modeling within a cross-sectional survey, which limits causal interpretations. We also focused on Nigerian e-commerce, meaning our results may not generalise to more regulated or digitally mature markets. Meanwhile, our study expands knowledge by showing that in emerging markets, crypto's impact on competitive advantage is *indirect* and hinges heavily on consumer trust. Our study also shows that ease of use, while important for adoption, does not automatically translate into firm-level advantage.

5.4. Directions for Future Research

We posit that future studies could use longitudinal designs to track how trust evolves as regulations tighten and crypto becomes more mainstream. Comparative studies between Nigeria and other African or Asian markets could reveal whether these dynamics hold across different institutional settings. Finally, we also posit that experimental designs testing interventions like customer education or trust signals could provide practical strategies for boosting both adoption and competitiveness.

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