



Global Economic Integration and Entrepreneurial Success of Selected ICT Businesses in Ilorin Metropolis

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ABSTRACT

Research on global economic integration has garnered attention among scholars, particularly regarding its implications for competitiveness and survival of firms in emerging economies, such as Nigeria. This study investigated the relationship between global economic integration operationalized through digitalization and trade openness, and entrepreneurial success (specifically customer satisfaction and market share) of selected ICT businesses in Ilorin, Kwara State. The specific objectives were to examine the link between digitalization and customer satisfaction of ICT businesses in Ilorin, Kwara State; and to assess the association between trade openness and market share. The population used for this study is made up of 165 ICT firms registered with the Information Technology Professionals Association (ITPA) in Ilorin, Kwara State. A total sample of 117 was estimated to be appropriate for this study using Raosoft Sample Size Calculator, and out of the 117 copies administered, 114 were properly completed and returned. Data were gathered using a structured questionnaire and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). Findings established a strongly positive association between digitalization and customer satisfaction. It was also revealed that trade openness has a significant positive relationship with market share. It was therefore concluded that digitalization and trade openness are significant predictors of customer satisfaction and market share in the study area. This study therefore recommends prioritization of investment in digital infrastructure, policy implementation for tariff reduction and streamlined import/export procedures, and adoption of customer-centric practices among ICT firms to improve their success and survival.

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1. INTRODUCTION

1.1 Background to the Study

The world we know today has become interconnected through trade, information flows, national and international standards, and various platforms. This, therefore, presents the degree to which markets are open and the extent to which business is digital as major success factors for entrepreneurs intending to participate in global markets. These factors became even more relevant to small ICT firms to find customers, scale up their operations, and compete. According to the WTO (2024), addressing the questions regarding how cross-border digital trade and interoperable rules are now essential for

competing in global markets, as this results in reducing transaction costs and increasing market reach, especially for small firms. OECD (2025) noted that early adoption of digital tools and participation in importation and exportation are often more resilient than their competitors.

In African emerging economies, integration through trade promotion and digital uptakes has been identified as critical to micro, small, and medium enterprises (SMEs) performance. According to Madueke and Eyupoglu (2024), real market openness is not just the reduction of tariffs, but also includes the frictions that determine both the time and cost to market. Substantiating this, the authors explained further that cross-

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border trade participation and digitalization provide cost advantages that translate to improved performance.

SMEs in Nigeria, especially those in the ICT sector, are now identified as major facilitators and enablers of cross-border transactions, as evidenced by the increase in ICT adoption rate, revenue from ICT-related products and services, and various policy recommendations targeted at expanding and easing access to digital markets for firms with relevant capabilities. Research by Madueke and Eyupoglu (2024) identified e-service quality, reliability, responsiveness, and privacy as drivers of perceived value and satisfaction of digital capabilities, which ultimately translate to positive customer-based performance. By implication, well digitalized ICT firms are more likely to achieve higher customer patronage, reach more customers, and perform better.

However, Ilorin, which is the capital of Kwara State, Nigeria, has a diverse range of ICT-based micro and small firms operating within the city, providing services to educational institutions, retail businesses, professional service providers, and public offices. The study by Ajirowo (2025) emphasizes the importance of the entrepreneurial ecosystem in Kwara State, including access to finance, infrastructural support, and knowledge exchange, which contribute to improved performance. The growing attraction for digital skills within the state further fuels the participation of businesses in the study area in the global market.

1.2 Statement of the Problem

The need to translate digital tools into tangible customer outcomes has become one of the major concerns of most small ICT businesses. Although digitalization, which is one of the benefits associated with globalization, leads to enhanced service delivery, most small ICT businesses lack the capabilities and strategic orientation required for translating digital investment into customer satisfaction and competitive positioning (Escos & Becker, 2024). Furthermore, research has shown that, despite the potential for digital platforms to improve customer experience and satisfaction, they still depend greatly on the digital orientation and the firm's ability to effectively use data for service improvement (Mariani & Nambisan, 2021). Most ICT vendors in Ilorin adopt a piecemeal digital marketing tools like social media and multimedia messaging apps, which makes it difficult to analyze customer experience. This leaves a gap in understanding how digitalization improves customer satisfaction, which determines the market share of the firms.

In addition to digitalization, trade openness is another major factor that promotes globalization and cross-border transactions among firms. This results from a reduction in barriers that create opportunities for SMEs to access inputs and markets in foreign countries. However, there are mixed results on firm-level benefits, and research has also established that this is mediated by infrastructure, finance, and firm capabilities (Osuma & Nzimande, 2024). In Nigeria specifically, the nature of effect of trade openness on SMEs performance remains unclear. While some researchers affirmed positive effects such as increased market share, cheaper inputs, and new buyers, others established negative effects like increased competition and a lack of understanding of foreign markets (Olagunju, 2023). For ICT businesses in Ilorin and Kwara State at large that rely largely on the importation of foreign components and exportation of ICT accessories and services across borders, it is

uncertain whether trade openness can translate to an increase in market share and customer satisfaction.

Based on this, this study examined how digitalization and trade openness, as components of global economic integration, influence customer satisfaction and market share respectively, which are major factors for entrepreneurial success.

1.3 Research Questions

The under-listed research questions were drafted to provide answers to this study:

- i. Is there any significant relationship between digitalization and customer satisfaction of ICT businesses in Ilorin, Kwara State?
- ii. What is the relationship between trade openness and market share in ICT businesses in Ilorin, Kwara State?

1.4 Research Objectives

The main objective of this study is to investigate global economic integration and entrepreneurial success of selected ICT businesses in Ilorin, Kwara State. The specific objectives were to:

- i. examine the relationship between digitalization and customer satisfaction of ICT businesses in Ilorin, Kwara State.
- ii. evaluate the extent of the relationship between trade openness and market share of ICT businesses in Ilorin, Kwara State.

1.5 Research Hypotheses

The following hypotheses were appropriately tested in this study:

H₀₁: There is no significant relationship between digitalization and customer satisfaction of ICT businesses in Ilorin, Kwara State.

H₀₂: There is no significant relationship between trade openness and market share of ICT businesses in Ilorin, Kwara State.

2. LITERATURE REVIEW

2.1 Conceptual Review

2.1.1 Global Economic Integration

The conceptualization of global economic integration has transitioned from simple trade-flow metrics to a focus on deep interdependence within global value chains and digital networks. According to Kose and Sugawara (2021), modern integration is defined by rising cross-border flows of technology and services, while Srdelić and Dávila-Fernández (2024) argue that contemporary integration is increasingly driven by "positive integration" which are the creation of common digital standards and enforcement mechanisms that facilitate sustained international engagement. According to Kose and Sugawara (2021), global economic integration is defined at the structural level as the process of deepening interdependence of national economies through rising cross-border flows of goods, services, and technology and through the growing role of global value chains.

In the definition of Srdelić and Dávila-Fernández (2024), governance and institutions were considered to be central. This view is different from that of Kose and Sugawara (2021) by considering integration to consist not only of flows but also the

removal of barriers and harmonization of various rules guiding cross-border activities. This view further identified 2 major types of integration: negative integration, which involves removing all impediments to cross-border transactions, and positive integration, which concerns creating common institutions, standards, and enforcement that collectively determine how market openness translates to sustained international engagement for businesses.

Furthermore, another perspective on defining integration considers digital connectivity in clarifying what global economic integration connotes. This results from the continuous emergence of cross-border data flows, cloud services, platform markets, and digital payment systems through which businesses integrate themselves into the global market. UNCTAD (2021) describes global economic integration as the creation of new forms of trade through data-enabled services facilitated by digitalization, which remove impediments to access to global trade. By this definition, UNCTAD considers digitalization to be the key driver of economic integration by affirming its associated benefits, such as cost reduction, wider market reach, and foreign market participation.

The above-presented definitions of global economic integration are complementary, rather than contradictory. The three perspectives offered by the definitions (the trade flow perspective, institutional perspective, and digital perspectives) provide a wider view for determining a more appropriate definition for global economic integration. Hence, global economic integration can be described as the obliteration of impediments to the free movement of goods, services, and information facilitated by enabling institutional policies and global adoption of digitalization as a necessity for cross-border economic relationships. Considering the above given definition, this study considers digitalization and trade openness as some of the major factors for global economic integration.

2.1.2 Digitalization

Current literature on digitalization has moved beyond the mere adoption of tools to focus on the transformation of organizational structures. According to Za and Faraoni (2022), digitalization involves not only technology deployment, but also reconfiguration of firms' culture, structure, and overall activities through consecutive interplay of both human efforts and digital tools.

Furthermore, some authors see digitalization as the intentional adoption of data, algorithms, and digital systems to transform how businesses operate in the global market. Advocates of this view describe digitalization as the use of digital technology to control, communicate, and execute tasks within business organizations. This view is in line with the perspective of Za and Faraoni (2022), who also identify digital technology integration as core to defining digitalization as a concept.

In addition, the view of Higón and Bonvin (2024) considers digitalization as a key driver of innovation and global expansion of business operations. The authors emphasized that digitalization increases the possibility of SMEs' participation in the international market through importation and exportation, hence reducing coordination costs, enhancing global market access, and global market participation.

2.1.3 Trade Openness

Like other terms used in globalization-related studies, trade openness also has no generally agreed-upon definition. According to Fujii (2019), trade openness is defined as the ratio of total trade to GDP. The term total trade in this definition implies the total sum of exports and imports of a nation. While this definition presents a simple connotation of the term, it may lead to conflict with the structural characteristics of an economy, hence making this definition unclear.

Another better definition of trade openness was offered by the IMF (2003) as the degree to which demand actors can transact with foreign parties with no fear of foreign government restrictions and impositions. By this definition, trade openness implies that both local and foreign businesses can transact without fear of high tariffs, other non-tariff barriers, and high domestic content rules and standards; hence, trade openness has nothing to do with the total trade to GDP ratio, but rather the complete removal of trade barriers.

In addition to the above definition, the study of Tomohara et al. (2021) presents another view for explaining what trade openness implies. According to these authors, trade openness has 2 major dimensions through which it could be viewed. These include *de jure* openness (formulation of formal policies and regulatory procedures) versus *de facto* openness (actual trade flows); and real openness (goods and services transactions) versus financial openness (flow of capital). This view offers a clearer and multidimensional perspective for looking at the concept.

Trade openness is an essential element of globalization, facilitating the easy exchange of goods, services, and human capital across countries. ICT firms like those used in this study can also leverage trade openness to expand their market to foreign countries, source inputs like components and parts from foreign countries, and satisfy local customers better due to their accessibility to foreign inputs.

2.1.4 Entrepreneurial Success

Scholars have offered varying perspectives to explain what entrepreneurial success implies. According to Chaves-Maza and Fedriani (2022), entrepreneurial success simply implies the objective performance outcomes of an entrepreneurial venture, measured through market share, growth, profitability, and sales volume.

Another perspective on defining this concept emphasizes subjective success by focusing more on satisfaction, achievement, and well-being of the entrepreneur (Fisher, Laferriere & Rixon, 2024). This definition personalizes the concept by associating the success of an entrepreneurial venture with the personal characteristics of the entrepreneur who established the venture.

A better perspective integrates both objective outcomes and subjective perceptions in defining entrepreneurial success. A structural model offered by Chaves-Maza and Fedriani (2022) affirmed that entrepreneurial success is made up of three major dimensions: positioning (market presence and performance), expectations (founder goals alignment), and evolution (growth and trajectory of change). Based on this definition, market share is an essential factor for entrepreneurial success, but this can be shared by the personal characteristics of the entrepreneur, which enable them to shape the success of the establishment.

According to Baumann and Kritikos (2020), entrepreneurial success is defined as the achievement of sustainable performance through continuous adaptation to market dynamics, like innovation, competitiveness, and survival in a turbulent business environment. This definition also emphasizes the importance of resilience and sustainability in determining the success of a firm.

From the above given perspectives on defining entrepreneurial success, it is clear that it will be wrong to be myopic by looking at the connotation of the term from a single perspective. Hence, a good definition of the concept should consider both subjective measures and personal characteristics of the entrepreneur, like resilience, that lead to success. We can therefore define entrepreneurial success as an entrepreneur's ability to achieve the ultimate goals of the firm's objectives and grow despite changing organizational and market conditions, and survive difficult times through resilience, perseverance, and appropriate strategic implementation.

2.1.5 Market Share

Primarily, market share is defined as an organization's sales expressed as a percentage of total industry sales for a particular period of time (Kazemian, 2022). This definition, though it is short, is preferred by some authors because of its ability to capture both the relative size and competitive standing of a firm. The author explained further that the concept can further be expressed in terms of revenue as the value of a share, and in terms of physical terms like volume or unit of share. The choice of terms for explaining the connotation of this concept often determines its interpretation.

Also, scholars like Ehrenberg (2021) offered two dimensions to explain market share. The first dimension is stability versus volatility, while a stable market share implies reduced competitive pressure and an increase in competitive advantage and increased returns, volatility in market share signifies short-term tactical swings and contestability. The second dimension offered includes scope and boundary. Explicit market definition is required for a better understanding of what constitutes a market, and this can be done in terms of geography and product categorization.

Market share is crucial to entrepreneurial success as it determines the competitive position of a firm and is one of the key indicators of entrepreneurial performance. Improved market share signals greater product acceptance. As an important determinant of entrepreneurial success, market share also leads to economies of scale and scope and increases strategic bargaining power. However, as important as it is, market share alone is not a sufficient measure of entrepreneurial success. Hence, Kazemian (2022) suggests that it must be combined with other complementary indicators like customer satisfaction, profitability, and innovation output.

2.1.6 Customer Satisfaction

Different perspectives have been offered by varying scholars for conceptualizing customer satisfaction. According to Oliver (1997), the most popular definition of the concept is post-consumption evaluative judgement of customers. By this definition, customers make a comparison between their perceived and expected performance of a firm's products and services and their level of satisfaction. By implication, customer satisfaction is simply the customers' psychological state after product consumption.

In addition, the definition of Yingfei, Zhang, and Bae (2022) offers an experiential and relational perspective to defining customer satisfaction, seeing it as the outcome of a broader customer experience and service-quality ecosystem resulting from service quality, experiential interactions, perceived value, and relationship cues that accumulate over time. This definition explains why accumulated customer experience, corporate image, and service recovery matter in determining customer satisfaction level.

Customer satisfaction is critical to achieving entrepreneurial success, since repeat purchases can be attracted through satisfied customers, and prospective customers can be gained through recommendations by satisfied customers. Hence, customer satisfaction can be a reality with increased customer loyalty and retention (Mittal et al., 2023). Also, firms with a positive record of customer satisfaction are more likely to achieve revenue durability, which results from demand stability and reduced customer acquisition costs, which help increase cash flow and firm growth. Also, Hanaysha and Al-Shaikh (2022) noted that since customer satisfaction encapsulates both relational quality and immediate experience, it serves as a linkage between objective performance metrics and the subjective behavioural process that sustains them.

2.2 Theoretical Review

2.2.1 Resource-Based View (RBV) Theory

The RBV Theory is a highly popular theory proposed and popularized by Jay Barney in the year 1991. This theory is based on the assumption that an organization or firm is made up of a heterogeneous combination of intangible and tangible resources that can be possessed and strategically deployed, and which account for performance differences between organizations. Barney (1991) proposed further that firms differ in terms of resources they possess, and for the possessed resources to assist the organization to attain the required competitive advantage that can translate to entrepreneurial success, such resources must have four major characteristics: they must be valuable, rare, not easily imitable, and not be easily substitutable (VRIN). Resources, as explained by theory, are heterogeneously distributed and immobile across firms. Hence, when first deploying resources that meet the VRIN qualities, they can help the firm generate a sustainable competitive advantage capable of translating to entrepreneurial success.

Despite its wide adoption, the RBV theory has been criticized for being static and for a lack of consideration of the effect of factors that are external to the organization, like industry rivalry, institutional factors, and other factors in determining the competitive advantage of a firm (Karim, Nahar, & Demirbag, 2022). Notwithstanding the criticism, RBV remains relevant to this study because of the due attention it gives to firm resources and capabilities, such as digital assets, technical know-how, and networks, which determine the influence of digitalization and trade openness and can translate to entrepreneurial success through increased market share and customer satisfaction.

Therefore, RBV is the theory on which this study is anchored because it explains how a firm's resources translate into competitive advantage. For this study, we consider digitalization and its enablers (increased technology adoption, internet usage, improved digital technology skills) and trade openness, which allows for cross-border transactions like

importation and exportation, as resources that firms can leverage to achieve success.

2.3 Empirical Review

Research by scholars in management and social sciences has been conducted on globalization-related variables. One such study is that of Higón and Bonvin (2024), which focused on digitalization and trade participation of SMEs. The study used panel data collected for Spanish manufacturing SMEs covering the period from 2001 to 2014. An effort was made by the researchers to construct a multidimensional digitalization index and to use dynamic panel econometric models to estimate the direct and productivity-mediated effect of digitalization on trade participation. The data used were primarily secondary data, which were analysed with the adoption of dynamic panel GMM and mediation tests. The result of the study affirmed that increased exports and imports result from high digitalization. The study, therefore, concluded that digital adoption is critical for facilitating international market entry of SMEs. The study also affirmed the need for complementary investments, like skills productivity improvement, to transform digital tools into trade outcomes.

In research conducted in Africa, Mazwane, Maya, and Makhura (2024) investigated digitalization and small businesses' supply chain financing using cross-sectional data collected across 4,409 small businesses. The researcher measured digitalization, which is the independent variable of the topic, using web presence, social media, online advertising, and mobile ownership. Required data were gathered using secondary data and analysed using logit regression to estimate the likelihood of access to supply-chain financing. The study findings show that improvement in digitalization has a significant positive effect on the probability of obtaining supply-chain finance. However, it was found that the effect varies by sector and the country's ICT infrastructure. It was concluded based on the study findings that small-scale businesses can improve financing prospects through the use of digital tools.

Furthermore, Nigerian scholars are not left out in knowledge advancement through research on globalization-related variables. Madueke and Eyupoglu (2024) conducted research on sustaining economic growth, with a focus on the role of e-service quality in fostering customer loyalty in Nigerian SMEs using a cross-sectional quantitative design. An online questionnaire was used to collect relevant data from SME customers across four geopolitical zones in Nigeria. The administration of the instrument yielded 492 responses used for the study. Data gathered were analysed using descriptive statistics with the aid of SPSS, and structural equation modelling with the aid of SmartPLS. Results established that the dimensions of e-service quality, such as convenience, trust, web design, reliability, empathy, and cultural inclusion, have a statistically significant impact on firms' customer satisfaction, which ultimately strongly predicts customer loyalty. The study, therefore, concluded that improvement in the quality of e-service offered can translate to improved customer satisfaction level and boost employee loyalty.

In addition, another study conducted by a Nigerian indigenous researcher is that of Olagunju et al. (2023), which assessed trade liberalization and how it affects the performance of Nigerian SMEs. An econometric design was adopted, using secondary data gathered from the Central Bank of Nigeria

bulletins and World Development Indicators covering the period from 1981 to 2019. The data gathered on the national time series and macro/micro indicators were analysed with the adoption of Autoregression Distributed Lag (ARDL) suitable for capturing both short-run and long-run relationships between study variables. Findings from the study affirmed a positive effect of trade openness on short-run performance of SMEs, and that trade liberalization benefits can be transitory until it is complemented by domestic support. It was therefore concluded that there is a need for a policy to promote consideration of openness with firm-level capacity building, infrastructure, and targeted SME supports for actualization of sustainable success.

These recent studies collectively evidenced that digitalization and openness are no longer optional, but fundamental requirements for the competitive positioning and survival of ICT firms in emerging markets.

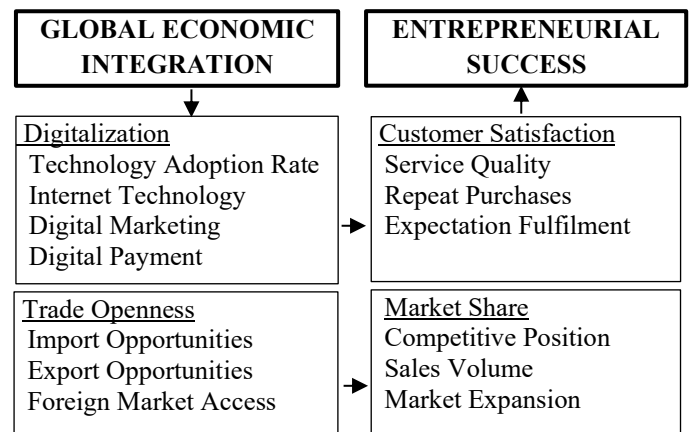


Fig. 1. Conceptual Framework

3. METHODOLOGY

3.1 Research Design

The adopted research design for this study was a survey research design, using closed-ended questionnaire to elicit quantitative data from the study responses. A research approach was also adopted. This is done by gathering quantitative data from the study respondents on the study constructs, variables, and indicators, and to ensure drawing of evidence-based conclusions from the study findings.

3.2 Population of the Study

The population used in this study is made up of all 165 members of the Information Technology Professionals Association (ITPA), Ilorin, Kwara State. This sampling frame is considered because of their active engagement in the global digital economy by sourcing software and components internationally while also serving a diverse client base that includes educational institutions, retail businesses, and public offices both inside and outside Nigeria. However, while this localized focus allows this study to carry out an in-depth examination of the ICT entrepreneurial ecosystem in a burgeoning Nigerian state capital, it is important to acknowledge that the boundary conditions of this study are defined by the specific socio-economic and infrastructural characteristics of the Ilorin metropolis.

3.3 Sample Size Determination

For the determination of the appropriate number of samples required from the total population of 165, this study adopted the use of Raosoft Online Sample Size Calculator. This method is found appropriate as it employs the Cochran formula with a finite population correction (FPC) using a 95% confidence level, 5% error term, and a conservative 50% response distribution, which yielded a sample of 117. The estimated sample size is considered appropriate for this study as Partial Least Squares Structural Equation Modelling (PLS-SEM) has been used for the analysis of the data gathered, which is popular for its ability to achieve high statistical power with smaller samples used, having been estimated to be most appropriate to represent the entire study population. To further justify the appropriateness of the sample size, according to the “10-times rule” which is commonly used in PLS-SEM literature, there is a need for the sample size to be at least ten times the maximum number of structural paths pointing at any latent construct. Since the model for this study involves a maximum of one path pointing to each endogenous construct as contained in Figure 2, the final sample of 114 responses found usable significantly exceeds the minimum requirement for achieving reliable estimates and predictive relevance.

3.4 Sampling Technique

The estimated sample members were selected from the population using a purposive sampling technique such that copies of the research instrument were administered to members of the population who were ready and willing to participate in the survey, and most importantly, those who participate in cross-border transactions. This sampling technique is adopted because it ensures consideration of members of the study population with characteristics relevant to the achievement of the study objectives.

3.5 Research Instrument and Operationalization

The data used in this study were elicited from the study respondents using a structured, closed-ended questionnaire. All study constructs were measured on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Considering the unique focus of this study on the interconnectedness of the study variables within the Ilorin ICT sector, the instrument was personally developed by the researcher by adapting and grounding its items and dimensions on established theoretical frameworks and empirical literature.

On the operationalization of the variables used for measuring the study constructs, Digitalization (DGT) was measured using four (4) items that focus on technical and operational integration. These items include technology adoption rate, internet technology usage, digital marketing engagement, and digital payment systems adapted from Za and Faraoni (2022)'s conceptualization of technology deployment and Higón and Bonvin (2024)'s conceptualization of digital adoption for market participation. Trade Openness (TO) was measured using three (3) items reflecting de facto and real openness. The items include import opportunities, export opportunities, and access to foreign markets, which were adapted from the IMF (2003)'s definition of barrier removal and the multidimensional perspective on trade flows offered by Tomohara et al. (2021).

Customer satisfaction was operationalized with three items to assess post-consumption judgement of customers using items service quality, repeat purchase intentions, and expectation

fulfilment, adapted from Oliver (1997)'s expectancy-disconfirmation paradigm and the experiential view of Yingfei et al. (2022). While market share (MS) was measured using 3 items, including competitive position, sales volume, and market expansion to capture competitive standing and growth, with the items adapted from Kazemian (2022) and Ehrenberg (2021).

This made the total of thirteen (13) items used across the four latent constructs, to ensure that the measurement model is both theoretically grounded and contextually relevant to the ICT industry used for this study.

3.6 Reliability and Validity of the Instrument

To ensure the psychometric adequacy of the measurement model, this study evaluated internal consistency reliability, convergent validity, and discriminant validity. Internal consistency was assessed using Cronbach's Alpha with a threshold of 0.65 and Composite Reliability with a threshold of 0.50. Convergent validity was determined through the Average Variance Extracted (AVE) where a value greater than 0.50 indicates that a construct explains more than half of its indicators' variance. In addition, this study also used the Fornell-Larcker criterion, which requires that the square root of the AVE for each construct must exceed its correlations with other constructs, and the Heterotrait-Monotrait Ratio (HTMT), which requires that its estimated value must be below the threshold of 0.90 to confirm that constructs are conceptually distinct.

The results from the assessment of the measurement model confirm that all constructs used in this study meet the standard criteria for reliability and validity. Results presented in Table 1 show that the Composite Reliability (CR) values range from 0.807 to 0.889, and the estimated Cronbach's Alpha coefficients range from 0.653 to 0.813, all exceeding the acceptable thresholds for internal consistency. Since the estimated AVE values for all constructs range from 0.583 to 0.727, which are greater than the minimum threshold of 0.50, convergent validity is established. On discriminant validity, the HTMT ratios presented in Table 2 are all significantly below the maximum limit of 0.90, with Trade Openness and Market share recording the highest ratio of 0.747, discriminant validity is established. Furthermore, results also established that the Fornell-Larcker criterion is also satisfied since the square root of the AVE for each of the latent variables was greater than its highest correlation with any other latent variable. Collectively, these metrics demonstrate that the results have a high psychometric quality, the measurement model is reliable and valid for structural testing.

3.7 Method of Data Analysis

On the method for analysis of the data elicited, Partial Least Squares Structural Equation Modelling (PLS-SEM) was used. This test was executed with the aid of SmartPLS 3.2.9. Using this method, this study evaluated both the outer measurement model and the inner structural model of the data used. According to Hair, Hult, Ringle, and Sarstedt (2022), the strength of this method of data analysis lies in its ability to consecutively evaluate all paths in a study's data, and this makes it suitable for this research. The structural modelling was assessed by evaluating the Path Coefficients, R-squared (R²), Q-squared (Q²), and Model Fit. The path coefficients were generated to get the p-value through bootstrapping of the path coefficients between the latent variables of the study. The estimated R² represents the explanatory power of the model for

endogenous latent variables. However, the Q2 estimate is used to evaluate the predictive relevance of the model using a procedure called blindfolding. The rule is that an estimated Q2 value must be above zero ($Q2 > 0$) to prove the predictive relevance of the predictors and variables used in this study. For ascertaining the fitness of the model, this study used the Standardized Root Mean Square Residual (SRMR).

3.8 Limitations of the Study

A primary limitation of this study is that it has limited external validity as findings were arrived at exclusively from ICT firms registered with the ITPA in Ilorin, Kwara State, which may not be fully generalizable to the broader Nigerian or African ICT sectors where market dynamics, regulatory environments, and digital infrastructure can vary significantly. Another limitation is the use of a self-designed closed-ended questionnaire, which may introduce the potential for self-report bias. Also, since respondents are required to offer information on their own firm's performance and capabilities, there is a risk of subjective overestimation of customer satisfaction or market share levels.

3.9 Ethical Consideration

In compliance with international standards for research involving human subjects, the research sought the permission of the ITPA members before considering them for this study. Respondents were briefed on the study objectives, and participation was made entirely voluntary, and respondents were made aware of their right to withdraw from the survey at any time without penalty. To ensure confidentiality and anonymity of the study respondents, no personal identifiable information was collected from the respondents, and all data gathered were treated with strict privacy and used exclusively for academic purposes.

3.10 Data Availability Statement

The data used for this study are available upon request. The dataset is not deposited in a public depository in order to protect the privacy and confidentiality of the participating ICT firms and members of ITPA.

4. RESULTS AND DISCUSSION OF FINDINGS

4.1 Measurement Model Evaluation

The study measurement model explains the relationships between the study constructs, the variables used for measuring them, and the indicators used for measuring each of the study variables. The threshold of factor loadings is 0.60; this is why Ringle, Wende, and Becker (2024) affirmed that indicators with factor loadings less than this threshold must be removed. Hence, we only considered indicators with factor loadings above 0.6 ($FL > 0.6$). Reliability analysis is the first element of the research measurement model, and this is ascertained in this study using composite reliability with a threshold of 0.65, which Hair et al. (2022) identified to be the acceptable threshold. Consequently, data presented in Table 1 below shows that all the latent constructs of the study model pass the composite reliability test as evidenced by CR values of 0.872, 0.872, 0.889, and 0.807, which are above the threshold of 0.7 ($CR > 0.7$).

Table 1. Factor Loadings, Reliability, and Validity

Variables/Indicators	A	Alpha	CR	AVE
Customer Satisfaction (CS)		0.786	0.872	0.695
CS1 (Service Quality)	0.870			
CS2 (Repeat Purchases)	0.806			
CS3 (Expectation Fulfilment)	0.825			
Digitalization (DGT)		0.786	0.872	0.695
DT1 (Technology Adoption Rate)	0.765			
DT2 (Internet Technology)	0.811			
DT3 (Digital Marketing)	0.804			
DT4 (Digital Payment)	0.750			
Market Share (MS)		0.813	0.889	0.727
MS1 (Competitive Position)	0.863			
MS2 (Sales Volume)	0.856			
MS3 (Market Expansion)	0.840			
Trade Openness (TO)		0.653	0.807	0.583
TO1 (Import Opportunities)	0.739			
TO2 (Export Opportunities)	0.741			
TO3 (Foreign Market Access)	0.809			

Source: SmartPLS Output, 2025

Data presented in Table 1 above show the factor loadings values, estimated reliability, and validity results of this study. These factor loadings and their respective p-values have been presented in Figure 2 below. In addition to the reliability analysis, the second element of the measurement model is convergent validity, which is evaluated in this study using Average Variance Extracted (AVE). According to Ringle et al. (2018), the cut-off criterion for the AVE value is 0.50. However, since the AVE values (0.695, 0.696, 0.727, and 0.583) estimated for all variables used in this study were above 0.50 ($AVE > 0.5$) as contained in Table 2 below, the study constructs have convergent validity. The discriminant validity of the constructs, on the other hand, was assessed using the Heterotrait-Monotrait Ratio (HTMT). Sarstedt et al. (2020) noted that the threshold for establishing discriminant validity is an HTMT ratio of less than 0.90. Data presented in Table 2 below presents HTMT, which was significantly less than the established threshold of 0.90, indicating the achievement of discriminant validity of the data.

Table 2. Discriminant Validity Using (HTMT)

	CS	DGT	MS	TO
Customer Satisfaction				
Digitalization	0.687			
Market Share	0.687	0.507		
Trade Openness	0.717	0.746	0.747	

Source: SmartPLS Output, 2025

4.2 Structural Model Evaluation

For the evaluation of the structural model of the study, we used a structural path model to estimate the coefficient of determination (R^2), Beta coefficients (β), and predictive relevance (Q^2). To generate these values, this study used a 500-sample setting to perform a bootstrap conducted with the aid of SmartPLS 3.2.9 to ensure accurate measurement of the path coefficients, t-value, and standard errors, which are required for evaluating the direct relationships between the variables contained in the proposed hypotheses as suggested by Hair et al. (2020). Upon evaluation of the interactions between the variables as determined by their respective indicators through

computation of the coefficient path, we first evaluated the Model Fit considering the SRMR value. Hu and Bentler (1999) established that SRMR values less than 0.10 or 0.08 are considered a good fit; hence, the SRMR of 0.093, less than 0.1 as presented in Table 3, indicates that the model is fit.

Table 3. Model Fit

	Saturated Model	Estimated Model
SRMR	0.093	0.103
d_ULS	0.789	0.974
d_G	0.315	0.324
Chi-Square	210.491	208.026
NFI	0.675	0.679

Source: SmartPLS Output, 2025

Since the model is fit, the variables used in this study are good predictors of their respective constructs. Therefore, the results obtained in respect of the 2 hypotheses tested are presented as follows:

H0₁: Digitalization has no significant effect on the customer satisfaction of ICT businesses in Ilorin, Kwara State.

The path coefficient with respect to the first proposed hypothesis, as presented in Table 4, established that technology adoption rate, internet technology, digital marketing, and digital payment used in this study as indicators for measuring digitalization collectively predict 32.6% variance in customer satisfaction.

The estimated path coefficient for the first study hypothesis is contained in Table 4 below. As contained in the table, digitalization can predict up to 21.1% variance in customer satisfaction, while the remaining percentages could be predicted by other variables not included in the model.

Table 4. Path Coefficients

	Path Coefficient (β)	SD	T-Stats	P Value	R2	Q2
DGT -> CS	0.571*	0.068	8.399	0.00	0.326	0.211

Source: SmartPLS Output, 2025

Results in respect of the first hypothesis tested presented in Table 4 further affirmed that, all factor loadings from the 4 indicators of digitalization (i.e., DT1, DT2, DT3 and DT4) which is one of the variable used in this study for measuring global economic integration presented in Table 1 collectively contribute to customer satisfaction ($\beta = 0.571$, $t = 8.399$, $p = 0.000 < 0.05$). This is evidenced by the estimated P-value of $0.000 < 0.05$, which indicates that the path coefficient is statistically significant. In addition, the estimated Q² value of 0.211, which is greater than 0 ($Q^2 > 0$), further guaranteed the predictive relevance of the model. Based on these, the first proposed hypothesis, which states that “Digitalization has no significant effect on the customer satisfaction of ICT businesses in Ilorin, Kwara State,” is rejected, while its alternative is accepted. Therefore, digitalization has a statistically significant effect on the customer satisfaction of the firms used in this study.

H0₂: Trade openness has no significant effect on the market share of ICT businesses in Ilorin, Kwara State.

Contained in Table 5 below are the results with respect to the test of the second proposed study hypothesis. The result affirmed that import opportunities, export opportunities, and foreign market access, which are indicators used for measuring trade openness as one of the variables used for measuring global economic integration in this study, also collectively predict 41.6% of the variance in market share.

Table 5. Path Coefficients

	Path Coefficient (β)	SD	T-Stats	P Value	R2	Q2
TO-> MS	0.372*	0.077	4.811	0.00	0.416	0.283

It was also affirmed by all factor loadings from the indicators of trade openness (TO1, TO2 and TO3) as one of the variables used for measuring global economic integration in this study collectively contribute 37.2% to the observed increase in market share of the ICT firms, and this is statistically significant as evidenced by the estimated p-value of $0.000 < 0.05$ ($\beta = 0.372$, $t = 4.811$, $p = 0.000 < 0.05$). The estimated p-value of $0.000 < 0.05$ affirmed that the path coefficient is statistically significant. Furthermore, the overall predictive relevance of the model is evidenced by the estimated Q² value of 0.283, which is greater than 0 ($Q^2 > 0$). Relying on these, this study also rejected the second proposed hypothesis, which states that “Trade openness has no significant effect on market share of ICT businesses in Ilorin, Kwara State”, while its alternative is accepted. Hence, trade openness has a statistically significant effect on the market share of the ICT firms in Ilorin, Kwara State.

The bootstrapping result containing the study variables, their respective indicators, the estimated part coefficient, and factor loadings is contained in Figure 2 below.

Furthermore, study findings further established a statistically significant positive relationship between trade openness and market share ($\beta = 0.372$, $t = 4.811$, $p < 0.05$). The model in respect of the second hypothesis further established that trade openness explains a sizeable proportion (41.6%) of the variance in market share ($R^2 = 0.416$), while a good predictive relevance of the model is further confirmed by the estimated Q² value of 0.283 ($Q^2 = 0.283 > 0$). This suggests that this result implies that import and export opportunities and access to foreign market channels are associated with market expansion necessary for increasing sales volume and enhanced competitiveness. Olagunju et al. (2023) observed that while trade liberalization offers benefits for Nigerian SMEs, these effects are inconsistent across different sectors. However, in support of the findings of this study is Higón and Bonvin (2024), who observed that digital adoption consistently facilitates successful international market participation. Comparing these results to the broader Nigerian SME landscape, it is clear that ICT firms in the study area are leveraging foreign market access and import opportunities more effectively than firms in traditional sectors.

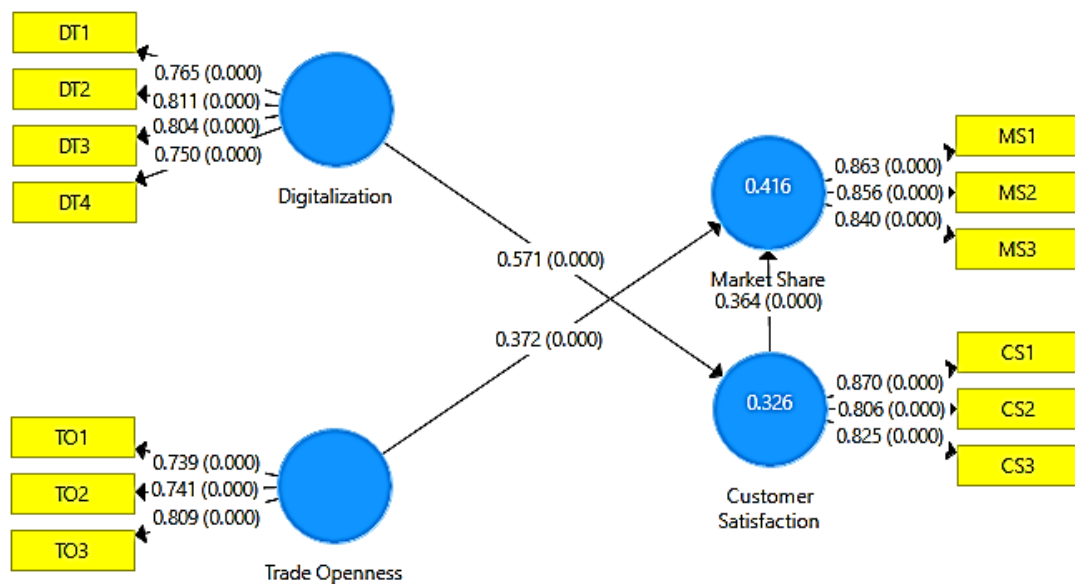


Fig. 2. PLS-SEM Bootstrapping (Complete Model)

Source: SmartPLS Output, 2025

5. CONCLUSION AND RECOMMENDATIONS

Relying on the findings of this study, it was concluded that digitalization and trade openness are significant predictors of entrepreneurial success among ICT firms in Ilorin. Specifically, it was demonstrated that digitalization is strongly associated with enhanced customer satisfaction, while openness is also positively linked to increased market share. These, therefore, imply that global economic integration provides the ICT sector in Ilorin the necessary resources and market reach to enhance both relational success with customers and competitive standing in the industry.

Based on the study findings and conclusion, the following recommendations were suggested:

1. There is a need for ICT firms to prioritize continuous investments in specific digital capabilities to achieve desirable improvements in customer experience and overall satisfaction.
2. Since trade openness is associated with market share expansion, ITPA should facilitate programs that enhance members' access to foreign market channels and streamline the sourcing of international ICT components, as these are crucial for the entrepreneurial success of ICT firms in Ilorin metropolis.
3. For local policymakers, to support the growth of the ICT sector, there is a need for the Government of Kwara State, in which Ilorin is the state capital, to implement initiatives capable of reducing the friction in import and export procedures for ICT accessories, as these are empirically linked to increased sales volume and market expansion of the local entrepreneurial ventures studied.

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