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DIGITAL COMMERCE SECURITY AND CUSTOMERS' SATISFACTION IN SOUTH WEST NIGERIA.

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Abstract

The continuous survival of the firms in digital commerce depends to a large extent on the security of information provided by the subscribers on the platforms. Digital perceived security, is a critical factor for success of any digital commerce platforms. Hence, this study investigates the consumer perception of digital commerce security in South West Nigeria. This study is based on X-efficiency theory which identified two main roles for the entrepreneur as a gap filler and an input completer. A research question was raised and answered at $P < 0.05$ level of significance. The study employed quantitative research approach using descriptive survey method with an online structured questionnaire to obtain required data from 434 valid responses. A systematic sampling method was used for the sample selection. The primary data was collected through the q survey and analysed with the descriptive and inferential statistics. The analytical results demonstrated that customers perceived security positively and thus affects customer satisfaction. It was recommended that digital entrepreneurs should focus more on customer satisfaction through a robust and active security on their platforms, particularly in improving customer safety, convenience and interactivity.

Keywords: Digital commerce, Perceived security, Customer satisfaction, Perceived quality, Perceived value

JEL Classification Codes: L83, I31, J28, A13

1. INTRODUCTION

Recent advancements in Information Technology have revolutionised the ways in which communication and information is being accessed from virtually anywhere. The ability of the internet to bring together various races of people from different parts of the world has huge potential for developing countries like Nigeria (UNCTAD, 2019). This has also brought with it a lot of opportunities in all spheres of life, economically, socially, and culturally with great impact on nations, communities, institutions and the individuals. Internet technology is creating exciting opportunities, particularly in the aspect of digital commerce. Digital commerce has proven to be a vibrant source of economic growth in developed countries like America, Europe and some parts of Asia since the turn of the 21st century (Terzi, 2011). Digital commerce is witnessing rapid growth in Nigeria and some other African countries like Kenya, Egypt, and South Africa.

The internet provides consumers with new means of obtaining useful information from all marketing and sales of products and services. Digital commerce is currently attracting a great deal of interest and with deepening internet penetration, possibly because of the ease and security involved and as mobile phones are becoming the primary tool for everybody. Increasingly, more consumers are migrating to digital commerce to purchase products and services. Adeniji (2015) ascertained that digital commerce across the rest of the world is growing at 16.8 percent while Africa's digital commerce space is growing at a rate of 25.8 percent, making it the fastest-growing in the world. Bassey (2018) subsequently described Nigeria as having the fastest-growing digital commerce; reasons might be due to the cashless policy scheme in Nigeria, busy schedules preventing physical shopping, better quality, and returning policies of the digital shops as well as insecurity in the country.

Previous studies (such as Salisbury, Rodney, Allison, & David, 2001; Sanwal, Avasthi & Saxena, 2016; Hsu, & Luan, 2017; Ladokun, & Ajayi, 2017; Khapne, 2020) have explored the studies on perceived security and worldwide web purchase intentions, E-Commerce and its sway on the minds of young generations, the perceived risk of online shopping impacted on the consumers' attitude and purchase intentions, electronic commerce and cybercrime in Nigeria: way out. Frontiers of knowledge and potentials and commitments by internet merchants and problem faced by e-trade customers but existing gaps in knowledge reveals that there seems no study on the effect of digital commerce security on customers satisfaction. Thus, this study explores the nexus between digital commerce security and customer satisfaction in South-West Nigeria.

In order to achieve the objective of this study, a research question was raised; Does digital commerce security have any effect on customers satisfaction. In answering this question, there is a need to understand the relationships among digital commerce perceived security and customer's satisfaction. The context of this study is considered through the lens of X-efficiency theory at the micro-level of the economy that could drive entrepreneurship in developing countries. It is expected that this study will contribute significantly to the literature on digital entrepreneurship by identifying the effect of digital commerce platforms security on their customers. The remaining part of this paper will be presented thus: Sections 2 and 3, the review of relevant literature and the research methodology respectively. Section 4 presents the data analysis and results. Section 5 presents the conclusion and recommendations.

2. LITERATURE REVIEW

2.1. Conceptual Review

2.1.1. Digital commerce

Digital commerce is not just about setting up computers and businesses, but about doing business with an entirely different mindset, using a medium that challenges the very basic rules of traditional ways of doing business. Digital commerce is about a perfect interface between business management, strategy and technology with a view to serving the customers more satisfactorily (Ladokun, & Ajayi, 2017). The emergence of digital commerce has greatly changed the traditional method of shopping, that is buying and selling of goods and services can be done online at any time. While goods are delivered with either in-house or partner courier service

providers, electronic products like digital books, videos, and audios are delivered electronically (Byron, 2019).

In Nigeria, digital commerce is experiencing growth as more and more Nigerians are embracing digital commerce as their preferred platform for buying and selling of goods and services (Ihenyen, 2015). Though there are many attributes of digital commerce that determines the level at which customers will patronise the platforms such as adaptability, affordability, efficiency, and security but one major reason for a setback on the digital commerce platforms is the security (BR, et al. 2018), hence this study focused on security.

2.1.2. Perceived Security

Perceived security is the extent to which a potential customer believed that the digital commerce website is secure for transmitting sensitive information without being compromised. Perceived online security is about the online users' perception of how they are protected from risks related to security. Kim et al. (2008) used the term Perceived Security Protection (PSP) to describe consumers' perception that the Internet vendor will fulfil security requirements such as authentication, integrity, and encryption. Customers perceived security is concerned with the security of the transaction as a whole, which includes the including the means of payment, mechanisms for the storage and transmission of all personal information. A lack of perceived security is a major reason for many potential consumers not using the digital commerce platforms because of common perceptions of risks involved in transmitting sensitive information, such as credit card numbers across the Internet (Liu, et al., 2005; Ha, 2002; Hsu, & Luan, 2017) especially with numerous hackers and yahoo boys. Consumers who provide personal information during transactions assume the risk of having their information compromised.

Internet users have serious privacy and security concerns, and their trust has the primary role in the growth of digital commerce (Scott, 2004; DeKay, & Belva, 2009). Online users are increasingly finding themselves exposed to security risks during their digital activities. Security risks include the threats like manipulation of information and/or networks such as destruction, selling or modification of data or various types of fraud and misuse (Malhotra et al.,2004) that could be a menace to customers satisfaction which is penultimate to growth and profitability of a business.

2.1.3. Customers' Satisfaction

In today's fiercely competitive business world, not even the most successful digital commerce business can afford to have many unsatisfied customers. One of the primary goals of digital commerce is customers' satisfaction in comparison to conventional commerce which is often profit (Ogunnaike, & Kehinde, 2011). Customers' satisfaction can be experienced in a variety of situations connected to both goods and services. It is a highly personal assessment that is greatly affected by customers' expectations. Satisfaction is based on the customers' experience of both contact with the organization and personal outcomes. Khapne (2020) defined a satisfied customer as a measure of how products and services supplied by a company meets or surpasses the customers expectations.

The American Customer Satisfaction Index (ACSI) is one yardstick that many businesses rely on to help determine how well their company and industry is succeeding in achieving a high level of customers satisfaction. The research model was developed based on the ACSI considering the successful application of the ACSI model to measure customers' satisfaction with digital commerce (Shi, & Zhao, 2007; Hsu, 2008). Since satisfaction is the consequence of the customers' experiences during various online purchasing process involves (Lin, *et al.*, 2011). It is assumed that customers' satisfaction has positive relationship with customers' expectation, digital commerce service quality and perceived value of the digital commerce (Almsalam,2014).

Customers' expectation on one hand refers to expectations that combine customers' experiences with digital commerce system including the product, services and information provided by digital commerce system at any stage of online shopping process (Khalid, *et al.*, 2018). It is assumed that customers' expectations influence the evaluation of digital commerce service quality, perceived value and customer satisfaction by the digital commerce system (Shi, & Zhao, 2007). On the other hand, perceived quality explains the extent of service provided by digital commerce which encompassed all the phases of a customers' interaction with the digital commerce website. this include all cues and encounters that occur before, during and after the online transaction (Hsu, 2008; Lin, *et al.*, 2011). Whilst perceived values are the customers' overall assessment of the utility of a product or service, based on perceptions of what is received and what is give such as the benefits the customer received and the cost (Hsu, 2008). It is an evaluation of the desirability of a product (or service) on the basis of the perceived worthiness of the trade-off between the product's costs and benefits (Tzeng, 2011).

Customers' satisfaction is determined by customer's value as the comparison between the perceived attributes and the exchanging processes in comparison between the perceived benefits and the spent cost. Customers' satisfaction is as well influenced by service quality and expectations, which are comprehensive subjective evaluation on the service. Based on the company's level of perception, the service provided can fulfill the required desires and goals of the customers (Farn & Huang, 2008). Hence, this hypothesis was posited:

H₁: Digital Commerce Security has no significant positive influence on Customers Satisfaction.

2.2. X-Efficiency Theory of Entrepreneurship

Harvey Leibenstein, an American economist, developed X-efficiency theory in the 1960s. He identified two main roles for the entrepreneur, as a gap filler and an input completer (Aubry *et al.*, 2015). He stated that if all factors of production are not marketed or if there are imperfections in markets, the entrepreneur has to fill the gaps in the market. Gaps emerge when there are ineptitudes in markets, such as when the existing firms do not utilize their resources (Leibenstein, 1966;1978). In digital commerce, the digital entrepreneurs fill the gaps between digital users and commerce. The digital equipment can complement the local commerce for easy purchases.

3. METHODOLOGY

The study employed the quantitative approach using descriptive survey method to acquire data from digital commerce users in the South Western States of Nigeria. South West, Nigeria has six states; Ekiti, Lagos, Ogun, Ondo, Osun and Oyo. Lagos State is Africa's largest city, the commercial capital (Odeghe, *et al.* 2016; Odukoya, *et al.* 2017; Ikuteyijo, 2020) and Technological hub of Nigeria (ITEdgeNews, 2019; Nicholas *et al.* 2020), other South West States take a cue from Lagos, through which the regions had an estimated GDP of about N67 trillion naira (about \$305 billion US dollars), more than half of the GDP of the nation and by estimates and the region has the third largest economy in the continent of Africa (Abitunde 2015). This makes the region to be more of a commercial and technological hub that is suitable for this study. The population of the study is 625 digital commerce users from the South Western State of Nigeria. The sample included 434 digital commerce users which were selected using systematic survey method. The instrument for data collection was a structured online questionnaire which the link was distributed through different online platforms such as Facebook, WhatsApp, emails and twitter. The questionnaire was divided into three sections: The demographic profile of the respondents, the digital commerce security section and customers' satisfaction. The indicators for measuring customer perceived security and customers' satisfaction were adapted from Salisbury *et al.* (2001) and Anderson and Srinivasan (2003) respectively. Each item was measured on a five-point Likert scale ranging from (1) Strongly Disagree to (5) Strongly Agree, thus a respondent can score highest '100' and lowest '20'. The data was analysed using descriptive statistics, path coefficient, confirmatory factor analysis and bootstrapping.

4. FINDINGS AND DISCUSSIONS

4.1 Descriptive Statistics

Demographically, 68.20% of the respondents were men which is in consonance with the work of Szymkowiak and Garczarek-Bąk (2018) that men are more familiar with online shopping, since they are more technology-oriented and are more interested when compared to women. 42.86% were aged between 41 and 60; and 37.10% were aged between 30 and 40 which is in agreement with Adam (2019) that online shoppers are far more likely to be between the age of 25 and 55. This is the active working class age bracket, therefore, they have resources to spend as much as no time for physical shopping which informs their higher rate of participation in digital commerce platforms. 91.94% of the respondents are gainfully employed, they are consumers with high purchasing power, therefore, they have the potential to buy more item or spend more money on online products as also argued by Samsudin and Ahmad (2014). Whilst about 50% of the respondents has a BSc/HND/PGD degree, which agreed with Folorunso, *et al.*, (2006) findings that majority of those who use digital commerce have a form of formal education.

4.2 Inferential Statistics

4.2.1 Analysis of the Measurement Model

The measurement model and Structural Equation Model (SEM) is estimated for hypothesis testing. In order to confirm the multidimensionality of the digital commerce

construct, the first-order model was compared in which all the items were weighted as a single factor, with a second-order model in which various dimensions measured the construct under consideration.

Figure 1 shows that the second-order factor model of interface quality demonstrated acceptable fit and performed as well as the first-order model in terms of all fitness measures (*Second order constructs are done in Smart PLS using repeated approach. Reassigning all the indicators given to the first order constructs to the second order construct. Therefore, there will be the same indicator twice in the diagram*). It was concluded that the second-order factor model was suitable for this study modelling.

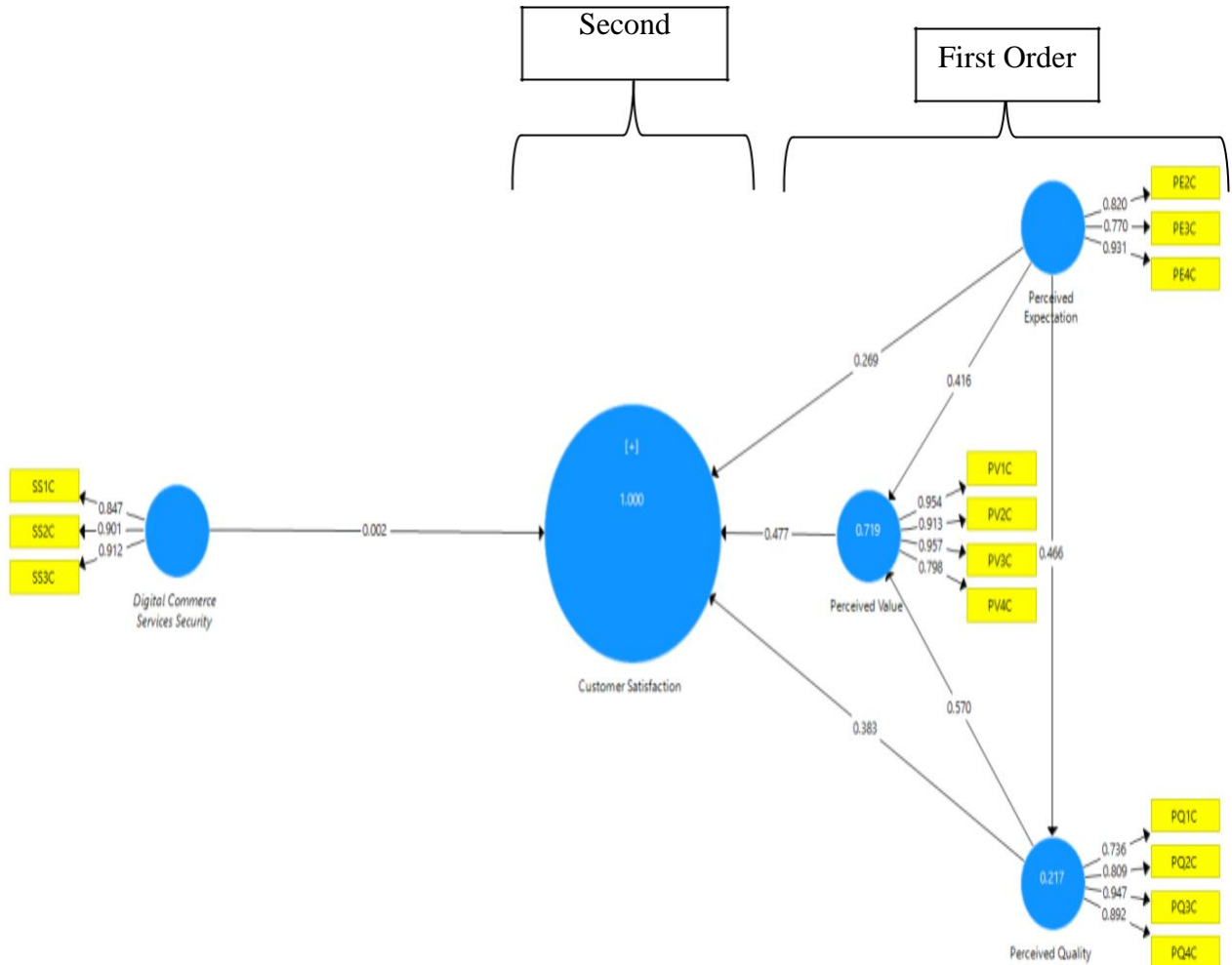


Figure 1: PLS Path Model after PLS Algorithm calculation of Digital Commerce Model
Source: Authors (2020)

4.2.2 Pre-Model Estimation

Each construct was evaluated separately by examining the indicator loading, construct reliability, convergent validity, and discriminant validity. All of the loadings of the items were statistically significant (t -values > 2). The reliability assessment was based on the composite reliability (CR) and average variance extracted (AVE).

Table 1: Measurement Summary of the Digital Commerce Model Calculation

	Items Loadings	t -value	Composite Reliability	Average Variance Extracted (AVE)
<i>Digital Commerce Services Security</i>			0.92	0.79
	SS1C	0.85	38.05	
	SS2C	0.90	54.25	
	SS3C	0.91	80.49	
<i>Customer Satisfaction</i>			0.94	0.59
	PE2C	0.65	20.60	
	PE3C	0.52	11.57	
	PE4C	0.76	33.06	
	PQ1C	0.71	26.00	
	PQ2C	0.66	26.86	
	PQ3C	0.80	54.74	
	PQ4C	0.78	45.78	
	PV1C	0.87	71.88	
	PV2C	0.87	40.47	
	PV3C	0.89	80.62	
	PV4C	0.82	48.95	
<i>Perceived Expectation</i>			0.88	0.71
	PE2C	0.82	36.34	
	PE3C	0.77	25.30	
	PE4C	0.93	125.97	
<i>Perceived Quality</i>			0.91	0.72
	PQ1C	0.74	27.76	
	PQ2C	0.81	39.95	
	PQ3C	0.95	225.70	
	PQ4C	0.89	68.23	
<i>Perceived Value</i>			0.95	0.82
	PV1C	0.95	172.42	
	PV2C	0.91	70.96	
	PV3C	0.96	209.06	
	PV4C	0.80	31.69	

Source: Authors, (2020)

Table 1 showed that the CRs ranged from 0.88 to 0.95, if the CRs is less than 0.7, it means that the items have more than half of the common variance attributed to the latent factor. The AVEs of both the first and second order constructs ranged from 0.59 to 0.82, both co-efficient are above their respective recommended cut-off levels of 0.70 and 0.50 thus implied that this study is considered to show good discriminant validity. Furthermore, the item loading ranged from 0.74 to 0.96 for the first orders, which was above the recommended cut-off level of 0.70 suggesting that the constructs under analysis were distinct and discriminately valid, and the second order constructs are between 0.52 and 0.89 which was also above the accepted cut-off level of 0.50 (Hair *et al.*, 2010), demonstrating adequate convergent validity.

4.3 Model Estimation

This Model Estimation examined the methods used to estimate parameters for statistical models and provide informative model summary statistics.

Table 2: The Results of the Structural Equation Model.

Hypotheses	Model		
	Path Coefficient	P -Values	Decision on Hypothesis
H1: Digital Commerce Security has no significant positive influence on Customer Satisfaction	0.346	0.013	Not Accepted
R² value: Customer Satisfaction - R ² = 0.12	F² value: Customer Satisfaction - F ² = 0.14	Q² value: Customer Satisfaction - Q ² = 0.12	Fit index: SRMR = 0.00

Note: a. t-value is significant at p < 0.05 when the t-value exceeds 1.96.

Source: Authors (2020)

Table 2 indicated that SRMR value of the model is less than the threshold of 0.08 showing a good fit of the model (Byrne 2013, Henseler et al., 2016). It also revealed that the endogenous variable, customer satisfaction R² value is 0.12. This showed that the variable perceived security model explained 12% of the variation in digital commerce while other variables that are not in this model will explain the remanning 88% (Frost, et al., 2017; Naz, 2019).

Table 2 further showed that the model F value is 0.14 at P<0.05, considering the classification of Cohen (1977) in which Effect size(r) is classified as; Small r = 0.10, Medium r = 0.30, Large r = 0.50. The model has a small effect size which means that the exogenous construct omitted from the model has no serious substantive impact on the endogenous constructs. Conducting the blindfolding procedure with omission Distance (D) value = 7, the Q² value is greater than zero, thus the path model's predictive relevance is high (Garson, 2016) for predicting the indicators of the endogenous constructs (Customer Satisfaction).

Table 2 also revealed that the path coefficient is 0.346 at p < 0.05 thus, Digital Commerce Security has significant influence on Customers’ Satisfaction in the South West, Nigeria. This implied that security of digital commerce platform will encourage online shoppers to be more loyal to the firm. Customers’ satisfaction is influenced by non-deviation of the product from their expectations, quality and value that was paid for. Customers’ satisfaction is totally focused on the services provided to and perceived by the digital commerce customers. Expectations are the consequences of previous experience with such products or services. This raises customers’ expectations for overall quality, in product and service quality, and for fulfillment of personal gratification (Anderson & Fornell, 2000). If there is a high similarity between perceived and provided services, the customers’ satisfaction level becomes very high and will lead to high customers’ loyalty (Agbor, 2011). If the product supplied is lesser in quality than expected, there will not be satisfaction consequently the digital firms will lose their patronage and the customers will search for a better platform.

Moreover, the perceived quality is the extent to which the product or service meets the standard expected of the product (Mabkhot, 2010) that worth the value of the price. These are pictorial choice without sighting, touching or feelings. An intention to adopt or reject a digital commerce service appears to be determined to a greater extent by perceived benefits than the

perceived barriers (Anckar & Walden, 2003). As the firms give higher value to customers in terms of security, then the satisfaction level gets higher leading to customer loyalty. Digital firms are able to increase customers' satisfaction by creating customers' value through their firm's digital platform security. Moreover, Zeithaml (1988) stated that customers who perceive that they receive value for money are more satisfied than customers who do not perceive they receive value for money.

The loyalty of the customers will lead to their commitment to repurchase from the digital commerce websites where they get satisfaction. This is in agreement with the study of Biswas et al. (2019) that there existed a significant and positive association between digital commerce security perception and customer satisfaction. When the customers perceived that there is security in their dealings, they tend to promote digital shopping. Digital commerce platforms security increases its reputation, it makes customer relax about the perceived risk of buying online (Nepomuceno et al. 2014). Perceived security, increases trust and, consequently the intention to purchase (Pavlou, 2003; Teo & Liu, 2007; Kim et al. 201; Ponte, 2015). Many customers will patronise a more trusted platform and recommend it to sceptical buyers that do not patronise digital commerce as well as sceptics in other platforms who might automatically switch over to where there is assured security. This in turn will increase the market share and profitability of the firm.

These results of this study indicated that digital commerce security is significant hence, if digital commerce platform is evaluated as possessing a high level of convenience, the frequency at which people patronise the platform will increase (Doolin, et al., 2005; Chang & Chang, 2017). On the other hand, when the users experience anxiety related to the security of personal information, the frequency of shopping on the platform will decrease, creating lack of trust in the digital commerce platform (Robinson, 2018), which will eventually affect the market share of the firm. Once this concern is addressed, consumer's confidence can grow and adoption of the platform could potentially increase. This study further sees digital commerce security as core to the success of any digital platforms which further supports Turban et al., (2010) assertion that Security is considered to be the backbone of doing business over the internet.

5. CONCLUSION AND RECOMMENDATIONS

The study examined the consumers perception of digital commerce security in South West of Nigeria. It showed that there existed a relationship between customers' satisfaction and digital commerce security. Therefore in answering the research question, digital commerce security positively affected customers' satisfaction, which also implied that a well-established digital commerce security will improve customers' satisfaction and increase the level of patronage, usage and trust. If consumers perceive that a digital commerce website is of high security, the consumers are likely to trust the website's competence, integrity, and benevolence. This study contributed to literature in entrepreneurship by identifying that security is of great importance to customers' satisfaction on any digital commerce platform. In view of this conclusion, the study recommends that:

- i. Security is not once and for all act. Effort should continually be made by digital entrepreneurs to ensure the platforms security by performing regular website data backup to both internal, that is, on the premise mediums (servers, hard drives, tape drives) and

- external mediums such as (cloud backup and/or storage), platform upgrade and feedbacks from customers for immediate recognition of potential threats.
- ii. Digital entrepreneurs should consider focusing more on customers' satisfaction through a robust and active security as a marketing strategy, particularly in improving customers safety, convenience and interactives. The use of reputable antivirus software tool to create a threat barrier to prevent hackers from entering the platform website servers, databases and folders is crucial.
 - iii. A good quality control department must be setup by digital entrepreneurs in other to ensure the product and services delivered matches customers expectation
 - iv. Digital commerce is evolving rapidly in Nigeria. Therefore the laws in Nigeria needs to rapidly evolve too. A stronger legal framework by the policy makers will provide a more secure and robust platform for digital commerce growth just as it does in advanced countries of the world.
 - v. Customers should take advantage of the feedback path on the platform to report every dissatisfaction.

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