

Service Quality Dimensions and Customer Satisfaction: An Empirical Study of the Nigerian Online Business-to-Consumer (B2C) Firms

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Abstract: This study investigates the relationship between B2C online service quality and customer satisfaction among customers of B2C online business firms in Nigeria. A quantitative approach was applied utilizing a close-ended self-completion e-questionnaire based on a revised e-SERVQUAL model with seven dimensions of e-service quality, which include service user interface quality, perceived security, service information quality, perceived privacy, e-commerce personalization, e-commerce customer trust, and e-commerce pricing awareness. The study administered e-questionnaire with 7 major items and 32 sub-items using a five-point Likert scale to 385 respondents. Multiple Regression Analysis, ANOVA, and the Kruskal Wallis Test were employed for data analysis and hypotheses testing. The finding revealed that a) perceived e-service quality dimensions are significantly related to customer satisfaction in the Nigerian online B2C industry. b) no significant difference among components of e-service quality affecting Nigerian online B2C firms. c) no statistically significant difference in the perception of e-service quality dimensions among the customers of Nigerian online B2C firms. The Service information quality appeared as the most satisfying element of customer value in Nigeria's online purchases as it compensates customers lack physical interaction with the product. Their purchasing decisions are largely influenced by the quality and clarity of the information presented to them. Overall, this research has established a high and positive correlation between the dimensions of service quality and customers' satisfaction of online B2C firms in Nigeria. It also recommended, among other recommendations, that online B2C firms in Nigeria should focus on quality-of-service information quality.

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I. INTRODUCTION

The core management processes have been revolutionized through the adoption of Information Systems with Information Technology. Adebayo (2017), referred to the impact of Information Technology on business in the quest to expand customer base, grow revenues and maximize profit. Additionally, Adeyeye (2008) described electronic business (e-business) as an umbrella term for all business transactions performed over the internet of which e-commerce (electronic commerce) is a part. Okoye and Obi (2014) described e-commerce as a business over the internet that could be either buying or selling of product and services, or a mix of the two that is, all the tools, techniques, processes, technologies, operations and activities that create functional interaction with customers and prospects in terms of ordering, cataloguing and exchange of products and services via transaction processing systems, pre-sales and post-sales service support and customer's relationship management (Okoye and Obi, 2014; Akanbi and Akintunde, 2018).

Qin, Chang, Li and Li (2014) revealed that between 1998-2000, a substantial number of businesses around the world embraced e-commerce which has led to an unprecedented conversion of the internet into a shopping hub which is a shift from the traditional distribution chain. In recent times business over the internet has been in the fore front of strategic decisions of contemporary organizations who desire all the benefits that come with its implementation and the edge it presents to the organization in a competitive environment. Nigeria's business environment is no exception in the influence of information and communication technology and most especially the e-commerce.

However, the attention for this research is directed towards the Business to Customer (B2C) of e-commerce sector in Nigeria. Online commerce (e-commerce) effectively started in Nigeria started in Nigeria in 2012 (Chigbu, 2016). Today, it has formed a major presence in businesses especially in Transaction Processing Systems (TPS), finding niche, closing transactions efficiently and effectively, nurturing prospects, forecasting sales revenue, determining customers' behavioural pattern, satisfaction level and customer data extrapolation on in real time. In fact, it's a

major source for competition edge and vital ingredient in strategic marketing in businesses in Nigeria. Jenyo and Soyoye (2015) outline the benefits of E-commerce among others which include faster selling / buying procedure as well as easy to find products, low operational cost, more reach to customers as there no typical physical limitations, selling and buying 24/7 and customers can easily select products from different providers without bodily movement. Today, the prevailing circumstances has shown tremendous improvement as e-commerce has become a part of everyday life of an average buyer (Lawal & Ogbu, 2015). The nature of business-customer interaction has gone through a landmark revolution; as more customers adopt e-commerce with the understanding that they do not relate to physical personnel, but a digital system and the businesses see every customer as virtual buyer interacting in a cybernetic environment.

While Abbakin (2018), posited that 89% of these users are customers of online B2C business firms in Nigeria. Chigbu (2016) predicted that the e-commerce industry in Nigeria is worth N2.5 trillion and N4.01 trillion in 2016 and 2018 respectively. While Olukoya (2017) predicted that the market value could rise to N15.45 trillion by 2022. However, these statistics and promising projections may encounter some probable threats as Ogunfuwa (2018) pointed at the situation where Zenox Technologies acquiring Konga operations while OLX and effritin.com recently shut down operations in Nigeria as major apprehensions which may cause some setbacks to the extent to which the projections are attainable. Anuforo (2018) summarizes the current status of Nigeria's e-commerce sector as "struggles" despite growth potential. This was corroborated by Ubabukoh (2017) who stated that 70% of e-commerce start-ups in Nigeria are unprofitable. This means that probably only 30% of e-commerce firms in Nigeria are responsible for the projections. Hence, it is safe to state that e-commerce industry is under-optimized. Kareem, Owomoyela and Oyebamiji (2014) outline some of the factors which may have been cogs in the wheel of e-commerce optimization in Nigeria which include quality service delivery, location biasness, security and product quality, customers' adoption and acceptance of the internet as a feasible and complementary option to the traditional channels of distribution. This is similar to the posits of Hendricks and Mwapwele (2024) which identified technology, environment, and customer trust to be the critical challenges impacting the adoption of e-commerce in developing nation adoption. In essence, these have made e-commerce development and optimization suffered a very slothful momentum in Nigeria.

It should be noted at this juncture that service quality delivery is a prime factor in e-commerce optimization in Nigeria because customer satisfaction is hinged on it. Service quality is described as the degree to which the delivery aligns with the customers' expectations or needs. Uwabor *et. al.* (2023) emphasised the critical nature of service quality is a predicator for productivity and a means to achieve the overall objective of the business. Despite the inadequacy of all-inclusive quality measurements, service quality is still measured from the customers' perspective (Sein and

Chey,2013). Most research on quality dimensions banked on the service quality (SERVQUAL) model formed by Parasuraman, Zeithaml and Berry in 1988 for measuring quality. SERVQUAL is a five-dimension parameter scale which includes assurance, reliability, empathy, tangible and responsiveness. Yarimoglu (2014) explains further that reliability denotes to the ability of a business organization to brand promise dependably and correctly. Responsiveness is explained as the willingness to offer swift service. Assurance relays to the level of employee knowledge and courtesy that inspires customer confidence in their expectations that will be met. Tangible is the representation of the service and physical appearance, equipment and other customers in service facility. Empathy denotes employee intent to understand customer requirements. Indisputably, users' satisfaction with e-commerce service quality is intricately connected with the way its service quality is being evaluated.

According to Kotler and Keller (2014) and Ilieva (2022), it can be inferred that customer satisfaction results from a process of internal assessment that dynamically compares expectation before buying with perceived performance during and after the conclusion of the buying experience. This signifies customers' inclinations towards the company and its product/service. A primary motive for tracking customer satisfaction emanates from the universal belief that keeping loyal customers has more strategic benefit to business entities than winning new ones. However, this might prove challenging when quality service issues are brought into space. Ayo, Adewoye and Oni (2011) connected the possible challenges of e-commerce in Nigeria to service quality, internet penetration, reluctance of customers on online payment, logistics challenge of commodities delivery, faulty business models and market environment. However, Kabango and Asa (2015) listed quality issues in e-commerce as trust; security, fraud & hacking, awareness & perceived usefulness; accessibility; and perceived product quality as the factors impacting the e-commerce quality service and consequently customers satisfaction.

Therefore, this research shifts the frontier of knowledge by using e-service quality as a pivot to measure customer satisfaction in B2C online business firms from the Nigerian perspective. This new sector has only 9 years' history and it's crucial to enquire about its quality depth especially in the aspect of quality service delivery.

A. Statement of the problem

Customer satisfaction plays a crucial role in customer retention and profitability of every business organization, especially on the internet-based (e-commerce) service companies. Given the enormity of competition among online firms, consumer dynamism and proclivity towards online post-covid, availability of service substitutes, there is high propensity of customer loss and attrition rates. Thus, it is vital for online businesses to ascertain the mechanisms that lead to superior service quality and prioritize them. To achieve this, it's crucial to understand the dimensions of quality service vis-à-vis the level of customers' satisfaction.

There is dearth of studies in Nigeria has explored e-service quality (e-SERVQUAL) and customer satisfaction for B2C e-commerce firms. Hence, exploring e-SERVQUAL dimension for the e-commerce sector is still a gap that needs to be filled. Therefore, what remains unclear is if truly the customers' behavioural disposition in terms of the perception of the quality of service received from Nigerian online B2C companies are the same or mutually and exclusively different on in relation to service satisfaction.

B. Objectives of the study

The study aims to investigate, identify, and measure the quality service level of online B2C business firms vis-à-vis customer satisfaction. The other is to identify which aspect of e-SERVQUAL the online B2C business firms' customers find most significant.

C. Hypothesis

- H₀₁: Perceived e-service quality dimensions are not significantly related to customer satisfaction in the Nigerian online B2C industry.
- H₀₂: There is no significant difference among components of e-service quality affecting Nigerian online B2C firms.

II. LITERATURE REVIEW

A. Concept of Service and E-service

Concepts of service are of great importance; this is because of the strong impact it has in businesses globally. Kotler and Armstrong (2006) described services as a type of commodity that comprises of benefits, activities and or satisfactions offered for sale. It is also the interaction between the seller and the buyer who renders the service to customers (Gronroos, 2007). Kumasey (2014) described service is largely intangible and usually experienced simultaneously with the occurrence of production and consumption. Conclusively, service be viewed as any act or performance that one party can offer to another that is essentially intangible and does not result in the ownership of anything.

Kvasnicova, Kremenova, and Fabus (2016) described e-service as an umbrella word for services on the Internet while AlBalushi (2021) consider electronic service as services offered via different information and communication technologies platforms and applications in various domains and sectors (business, government, education and health). It includes e-commerce interfaces for handling online orders and transaction services, application hosting by application service providers (ASPs) and any processing capability that is accessible on the internet. Ojasalo (2010) claimed that e-services are services on the internet where it is possible to make a purchase and sales transaction, unlike traditional websites, where there is only descriptive information available. Rust and Lemon (2001) posited that the feature of e-service includes personalized communication, Situation-specific, collaborative product development, real-time adjustment of the firm's offering and opportunity to develop

customers while Ojasalo (2010) added that core services, supporting services, complementary services, facilitating services, user interface, increased options for service delivery services are offered more economically with product variety and greater geographic range.

B. Concept of Service Quality and e-service quality

Nuridin (2018) viewed service quality as an effort to meet the needs and desires of customers and the accuracy of delivery in counterbalance customer expectations. Service quality (SQ) in its present-day conceptualization according to Oliver, Balakrishnan and Barry (1994) is an assessment of perceived performance (P) with perceived expectations (E) of a service, leading to the equation $P-E = SQ$. This conceptualization of service quality has its backgrounds in the expectancy-disconfirmation paradigm. Lovelock and Wright (2002) opined that after making a purchase, customers compare the service expected to what was received. Customers resolve how satisfied they are with service delivery and outcomes, and they also make verdicts about quality. Although service quality and customer satisfaction are connected concepts, they are not the same. Researchers (Ojasalo, 2010; Pather and Usabuwera, 2010; Lee and Lin 2005) believed that customers' perceptions about quality are based on long-standing cognitive evaluations of an organization's service delivery. On the contrary, customer satisfaction is a short-term emotional reaction to a specific service experience. Following service meetings, customers may evaluate the levels of satisfaction or dissatisfaction and may use this information to update their perceptions of service quality. Experiencing a service by a customer is the prerequisite for a dissatisfied or satisfied outcome. E-service quality can be seen as total customer assessments and verdicts concerning the excellence and quality of e-service delivery in the virtual marketplace (Lee & Lin, 2005).

C. B2C Online / E-commerce

B2C or Business-to-Consumer, is a term used to describe a commercial transaction between a business and an end consumer. Bruno (2018) defined B2C electronic commerce as the online platform used by businesses and consumers of the global internet for the sale and purchase of services and goods. It includes commercial services and after-sale -support to consumers.

Currently, new electronic intermediary software applications such as e-mail, mobile app and product selection artificial intelligence are emerging. This process of translating business layers in charge for intermediary functions from traditional to electronic mediums is called **re-intermediation**.

D. E-commerce Service quality

Santos (2003) described e-commerce service quality as the evaluations from the definite experience of the service in terms of quality and superiority of the e-commerce service delivery in the online market. E-service quality dimensions for e-commerce are explained in Table 1 below.

Table 1 E-service quality dimensions

Barnes and Vidgen, 2002	Usability, Design, Information, Trust, Empathy
Santos, 2003	Appearance, Ease of use, Linkage Structure and layout, Content, Reliability, Efficiency, Support, Security, Communication, Incentive
Wolfenbarger and Gilly, 2002	Fulfillment /reliability, Website design Customer service, Security /privacy
Ribbink, van Riel, Liljander and Straukens, 2004	Ease of use, E-scape, Responsiveness, Customization, Assurance
Lee and Lin, 2005	Website design, Responsiveness, Reliability, Trust, Personalization
Parasuraman, Zeithaml and Malhotra, 2005	Efficiency, Fulfillment, System availability, Privacy, Responsiveness, Compensation, Contact
Raman, Stephenaus, Alam and Kuppusamy, 2008	Ease of use, Appearance, Reliability, Customization, Communication, Incentive
Swaid and Wigand, 2009	Website usability, Information quality, Reliability Responsiveness, Assurance, Personalization
Zavareh and Ashourian ,2012	Ease of use, Efficiency & Reliability, Fulfilment, Security/trust, Site aesthetics, Responsiveness
Kaur 2018	Responsiveness, Reliability, Security, Website design, Ease of use, Personalization

Sources: Ojasalo, (2010), Zavareh and Ashourian (2012), Kaur (2018)

In conclusion, E-commerce service quality largely depends on the information quality, ease of interface, security and wide range of quality products and services. responsiveness, reliability, security, website design, personalization as the driving factors that form the expectation of the customers.

E. Customer Satisfaction

Farris, Bendle, Pfeifer and Reibstein (2010) described customer satisfaction as a term frequently used in marketing designed to assess how services and products delivered by a company meet or surpass customer expectation. Mamo (2018) put it as the fraction of total customers whose testified experience with a firm, its products, or its services (ratings) surpasses a definite fulfilment goal. The earliest research on customer satisfaction can be traced way back to the time of Cardozo (1965); Howard and Sheth (1969). These scholars investigated the influence and stimulus of expectations on satisfaction. These studies are recognized to be the beginning of logical interest in the satisfaction phenomenon (Campo and Yague, 2009). The status of satisfaction relies on many variables of physical and psychological aspects which are associated with satisfaction behaviour such as return and referral rate (Enemu, Ejikeme & Edward, 2016). Customer satisfaction is exactly how the users’ perceived approval of the outcome offered by the service or product (Omilani & Akintolu 2017).

➤ **Service quality dimensions**

The service quality dimensions are critical indicators utilised to define and assess the extent to which a service aligns with customer expectations (Vu, 2021). Among several approaches the generally accepted model was propounded by parasuramal *et al* (1988) which is referred to as SERVQUAL model that identified five core dimensions includes tangibles, reliability, responsiveness, assurance, and empathy. The tangibles described the facilities which impacts first impressions and presumed professionalism. The second item is reliability which refers to the extent to which a business meets brand promise dependably reflecting consistency and trustworthiness. The third is responsiveness which refers to

the ability to assist customers and deliver adequate service, emphasizing the value of time and attention in service delivery.

Assurance is employees' ability and skill to impart trust and confidence, typically associated with their knowledge and courtesy. Empathy, finally, includes the provision of caring, personalized service to customers, which can have a powerful effect in building satisfaction and loyalty. All three dimensions are involved in the creation of the general customer perception of service quality and influencing future customer behaviour, such as repeat business and word-of-mouth communication. Both theoretically and practically, both the understanding and development of these dimensions are essential to organizations that aim to maintain competitive advantage and customer satisfaction in service industries.

F. Service Quality and Customer Satisfaction

Scholars have endeavored to make distinctions between customer satisfaction and service quality even as the terms are used interchangeably in use. Palese and Usai (2018) hinted that the most common explanation for the distinction between the two is that perceived service quality is a form of attitude. Whereas, satisfaction is an emotional reaction, a transaction-specific measure (David, Szymanski & Henard, 2002).

Gupta *et. al.* (2023) explored the relationships between service quality dimensions and customers satisfaction among Indian logistics service providers and how it translates to customer loyalty. Customers of these service providers were surveyed, and Structural Equation Modelling (SEM) was adopted to test the research hypotheses. The findings revealed that the operational quality, information quality, resource quality, personnel contact quality as well as customization and innovation quality have a direct relationship with customer satisfaction. These dimensions were also found to have indirect relationship with customer loyalty.

Furthermore, Sheu & Chang (2022) examined the relationship of service quality dimensions, customer satisfaction and loyalty in e-commerce utilizing the case study of Shopee App in Singapore. The study aimed at assessing four dimensions of service quality (efficiency, fulfilment, system availability, privacy services) and its relationship with customers satisfaction and loyalty. Data was collected via an online survey 373 samples were analyzed using ANOVA while regression analysis examined the relationship among service quality, satisfaction, and loyalty. The study found that all element influence customer satisfaction but there are significant differences in service quality dimensions with the most significant element to customer efficiency, followed by fulfilment, system availability, and privacy. All service quality dimensions positively influenced the customer's satisfaction. While satisfaction positively relates and impacts loyalty.

In Indonesia, Sugiarto and Octaviana (2021) investigated the impact of service quality dimensions on customer satisfaction from the Banking industry. The model utilized observation and questionnaires designed using a Likert scale among 96 respondents (customers). The data analyzed using multi-linear regression method found that all variables (Tangible, Reliability, Responsiveness, Assurance and Empathy) are simultaneously serviced quality dimensions. However, tangible, reliability, and empathy were found to have a significant and positive impact on customer satisfaction while responsiveness and assurance are not supported.

G. SERVQUAL Model

Parasuraman et al (1988) described service quality as the consequences from the comparison of perceived performance with customer's expectation of services. Service quality can also be described as a validation of differences between expectations and competence along the important quality dimension. It is commonly renowned as a critical pre-requisite and determinant of competitiveness for establishing and sustaining satisfying relationships with customers. Canh & Phong (2018) however, emphasis that service quality is harder to define than product quality; for example, it is harder to agree on the quality of hair cut than on the quality of hair dryer. Service quality is dissimilar to quality of goods. Since services are immaterial, perishable produced and consumed heterogeneously and concurrently (Zeithaml and Bitner, 2000).

Conversely, Johnson and Sirikit (2002) opined that service delivery systems have the capacity to allow managers of company to recognize the satisfaction and real customer feedback since quality reflects the customer's expectations about a services or products.

Customers' expectations of a specific service is determined by factors such as personal needs, recommendations and previous experiences. The expected service and the perceived service might not meet, thus leaving a gap; the imbalance or disparity which exists between the customer's perception of a firm's performance and their previous expectation. Management of service quality principally focuses on dealing with the gaps between expectations and perceptions of customers (Zeithaml and Bitner 2003). The goal of the firm is to minimize the gap between expectation and perception.

According to Parasuraman et al. (1985), the advents of a gap can be influenced by 10 factors; they include competence, courtesy, credibility, accessibility, communication, security, knowing the customers, tangibles, responsiveness and reliability. These ten factors were later reduced to 5. Thus reliability, tangibles responsiveness, assurance, and empathy are retained. Based on these five factors, the 22- item SERVQUAL was developed. Ushantha, Wijeratne and Kumara (2014) stressed that internal evaluation is to gauge the internal process while external evaluation is to measure the quality of products or services based on customer satisfaction. The main measurement of performance in quality for service business firms is external customer satisfaction.

Gupta and Zeithaml (2006) projected a theoretical framework for customer satisfaction in his article. According to the author there are five important variables that have a critical impact on the level of customer satisfaction. The research proved that all the five variables have a positive and significant impact on customer satisfaction. The five factors (customer relationship management, value-added services, availability of products, variety offered and ambiance that affect customer satisfaction are like the drivers in the SERVQUAL model.

Established on theoretical knowledge, positive relationship between service quality, customer satisfaction and customer loyalty are well documented in literature. Service quality results in repeated sales and increased market share, which leads to customer loyalty. Farooq, & Salam, Alain, Jaafar & Ayupp (2018) mentioned that if providers get these dimensions correct, customers show absolute loyalty because they'll have received excellent service.

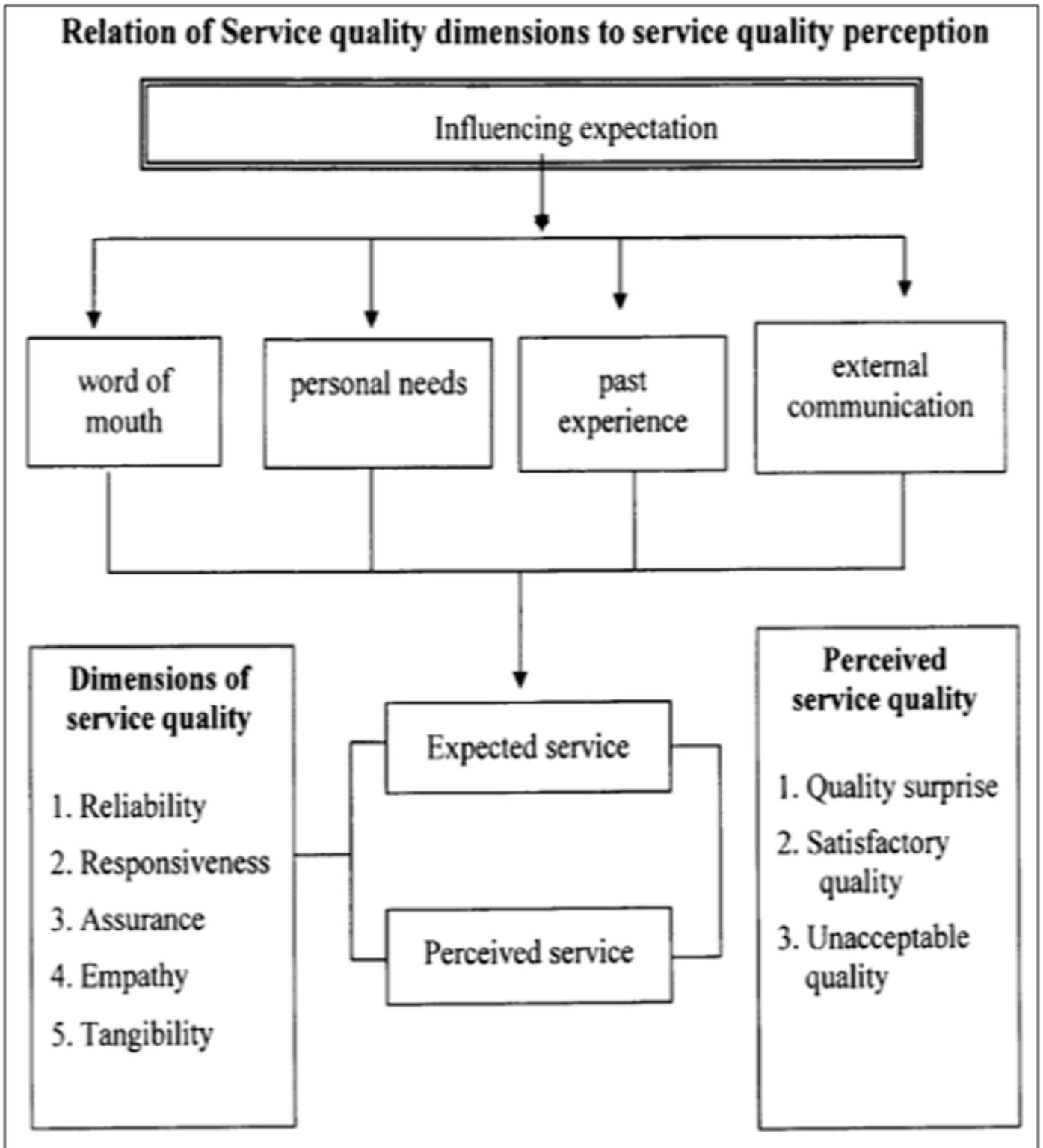


Fig 1 Relation of Service Quality Dimensions to Service Quality Perception

In conclusion, we can rightfully connect dimensions of e-service quality as stimulus that a customer can based its metrics on to actively and functionally compare or evaluates its expected service and perceived service to has to determine the satisfaction level which was buttressed by expectation disconfirmation theory and at what level is the impact of the individual factors that forms the dimension of quality service which is emphasized majorly by the SERVQUAL model.

H. Expectancy-Disconfirmation Theory

This was premised on the axioms that customer’s satisfaction can quantify from variance between customer’s expectation and experience in perceived products or services (Oliver 1977).

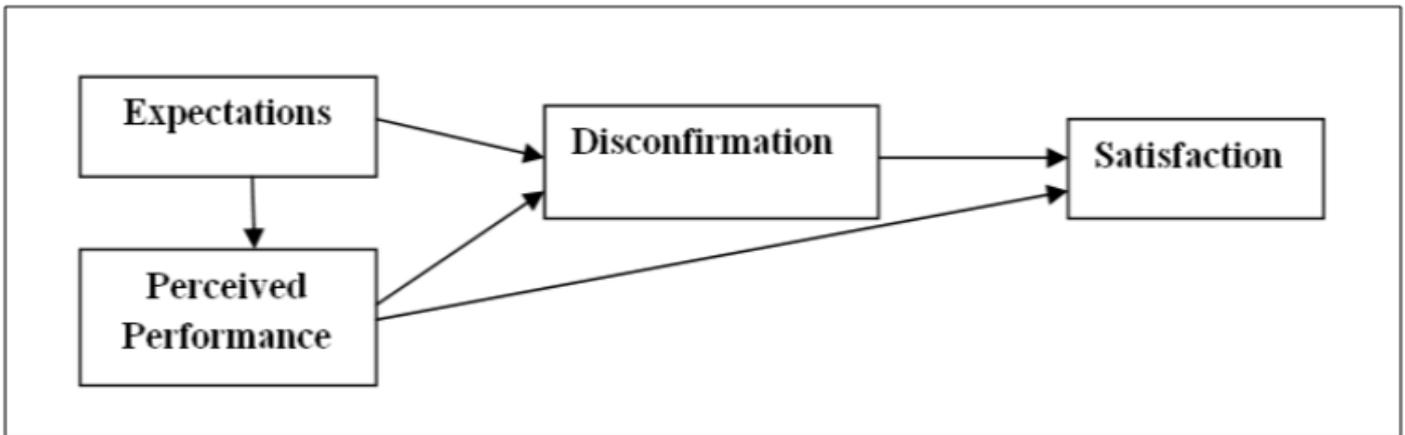


Fig 2 The first model of EDT
Source: Elkhani and Bakri (2012)

According to this theory, satisfying customers is not limited to expectation of services or products. Rather, satisfying customer from perceived information is the first step that can attract customer’s trust to offered services and products by business (Santos,2003). should customer realize that perceived information of services or products satisfy their preliminary expectations, then positive disconfirmation will occur and leads to customer satisfaction. On the contrary, when the perceived information of services or products does

not match with their preliminary satisfaction, dissatisfaction occurs due to negative disconfirmation. Customers positions are divided to two concepts consist of expectations and desires. Expectation is defined as a set of standards that predict expectations and anticipates of customer about specific services or products. On the other hand, desire can be described as a set of attributes that present more value to the customers.

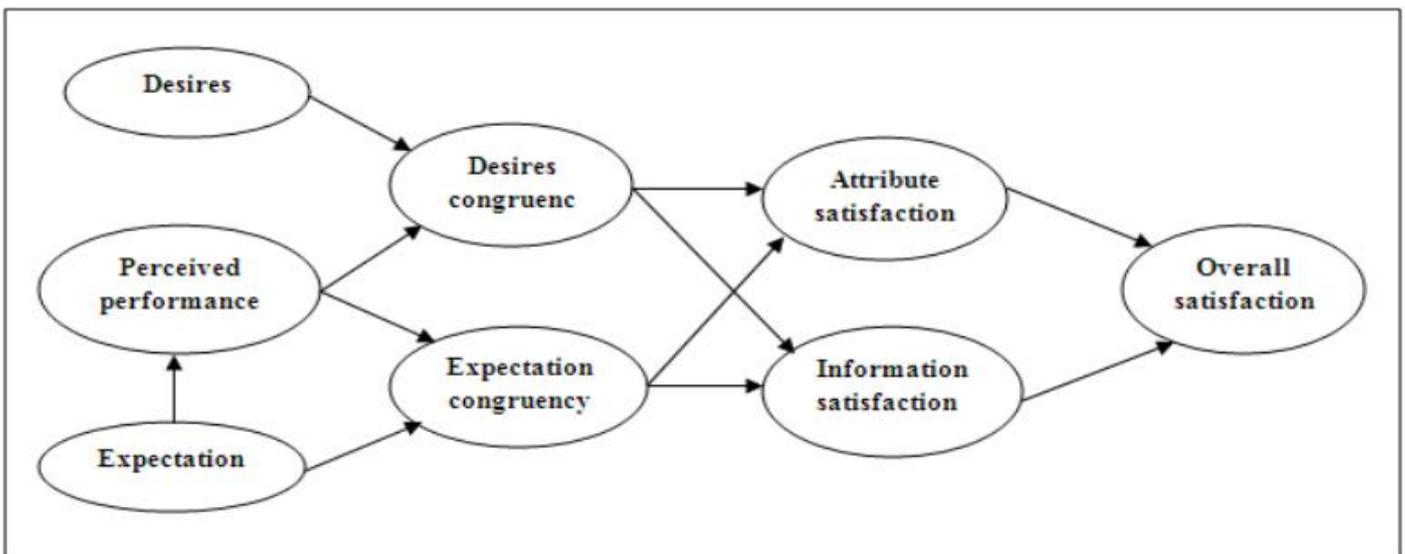


Fig 3 The second model of EDT
Source: Elkhani and Bakri (2012)

According to the second model of EDT Figure above, expectations have a positive impact on perceived performance and desires result in a positive correlation with perceived performance. Also, disconfirmation generates both negative and positive impact on overall satisfaction. Current research has confirmed performance has direct impact on overall satisfaction which was not the case hitherto. In the case of online business services, overall e-satisfaction can define as customer’s satisfaction of previous purchase experience from websites or mobile app in various facets such as customer’s information satisfaction, purchase satisfaction and online facilities satisfaction.

To summarize, EDT has two variables: expectation and perceived performance. These variables are expressed in two different time periods. Expectation / desire is related to the pre-purchase situation that a customer has initial expectation of a specific performance of services or products. Perceived performance or experience are connected to the post-purchase period that the customer gets experience after perceiving a real performance such as quality of specific services or products. The gap between preliminary expectation or desire and perceived experience or performance is described as disconfirmation (Elkhani & Bakri 2012). The outcome of this difference implies that disconfirmation of expectation or desire can be positive or negative.

Lanklon and Mcknight (2012) compared Oliver's simplified and complete models to determine whether there are differences in satisfaction and continuance intention prediction. This comparison reveals the value of using the complete model that include performance because it reveals assimilation and asymmetric effects. Assimilation effects revealed by the complete model are strongest for ease of use and for lower experienced users. Because performance is easy to measure, these gains in predictive power and overall understanding of satisfaction justify measuring it separately and including its relationships with the other EDT variables, as depicted in the complete model.

In summary, the line of symmetry in all the literature reviewed revealed that customer satisfaction is an internal evaluation process that dynamically compares expectations before purchase (borne out of an integrated environmental factors / stimulus) with perceived performance during to post-delivery experience. When the evaluation could be positive or negative which indicates satisfaction or dissatisfaction respectively this was emphasized majorly by expectancy disconfirmation theory.

I. Research Methodology

Service quality is a vital component of customer perception about a service. Therefore, customer satisfaction can be measured vis-a-vis the quality service dimensions, especially among customers of organizations who conduct most of their business online (i.e. e-commerce firms). The beacon is on B2C firms in Nigeria which was commercially launched in 2012.

J. Research Design

This study adopts quantitative approach through a survey of a sample from the total population of online customers in the e-commerce industry in Nigeria with the major focus on customers of B2C firms. The aim is to classify features, compute them and construct statistical models to explain what is observed. Given that quantitative data is more efficient and able to test hypotheses, the survey involves the administration of an e-questionnaire / online questionnaire to obtain data on current perception of service quality as a major factor in determining customer satisfaction in the various services of online / ecommerce firms and industry especially B2C firms. Of particular interest in this research is positivism which emphasizes objectivity and independence on the part of the research.

K. Target Population

Nigeria Communications Commission (NCC) (2018) puts the number of active internet users in Nigeria to be 103,514,997 (GSM 103,152,726; CDMA 30,309; Fixed {wired} 10,328; VoIP 2 -321,634). While Abbakin (2018), posited that 89% of these users are customers of online B2C business firms in Nigeria. Hence our population of study is 92,128,347 e-customers.

L. Sample Size and Sampling Techniques

The Krejcie and Morgan Test is used to select the sample size via Qualtrics (2018) an online software. Thus, at

95% confidence level, the sample size is 385. Simple Random Sampling was used to determine the responders while Data is collected from customers of online B2C firms in Nigeria from the survey questions. Measures for all variables are constructed in accordance with the existing scales in the literature upon which a survey instrument is created.

M. Instrumentation

Convenient and online sampling is used to distribute the e-questionnaire. The multi-stage approach was adopted to enhance the representativeness of the sample.

N. Methods of Data Collection

Data for this study came from two main sources: secondary data which is sourced from already existing materials like journals, discussion papers, annual reports, government publication/bulletins, and textbooks. Primary data are gathered through surveys and observations primarily to resolve the problem under investigation.

To this research, primary data is sourced with the use of online close-ended questionnaires filled and submitted by customers of these online firms. These customers are drawn majorly from the 4 top e-commerce firms in Nigeria which according to Anuforo (2018) are Jumia, Konga, Dealdey and Payporte. Questionnaire is used because it ensures a higher level of anonymity and uniformity of response (Cooper and Schindler, 2011). This research adapted and expanded Mustafa (2011) B2C online SERVQUAL questionnaire format because the construct and the contents speaks closely to the intentions of this research. To form the basis of the analysis, all the variables are measured using 5-point Likert scales: strongly disagree to Strongly agree to undecided to disagree and strongly disagree. Four demographic variables gender, age, education and income level are some of the items that are captured in the questionnaire. Attitude measures like the one used in this research are both useful and accurate as is common with all measures used in marketing.

O. Method/ Procedure for Data Analysis

The questionnaire is structured on 7 major items with 32 sub-items using a five-point Likert scale. The data was collected and then responses were fed into the Statistical Package for Social Sciences (SPSS) version 23.0 for analysis and evaluation. Moreover, Multiple Regression Analysis, ANOVA and the Kruskal Wallis Test were employed for the purpose of data analysis while hypotheses were tested using multiple regression techniques. R-squared provides an estimate of the strength of the relationship between the model and the response variable. The overall F-test determines whether this relationship is statistically significant. If the P value for the overall F-test is less than significance level, it is concluded that the R-squared value is significantly different from zero.

The model specification is designed for regression analysis aimed at identifying the relationship between the quality service and its possible components and to measure significance of the coefficients.

Model:

$$ECS = \alpha + \beta_0 \text{SUIQ} + \beta_1 \text{SIQ} + \beta_2 \text{PS} + \beta_3 \text{PP} + \beta_4 \text{ECP} + \beta_5 \text{ET} + \beta_6 \text{ECPA} + \mu \dots \text{eqn (1)}$$

Definition of variables:

(ECS) - E-Commerce Customer Satisfaction

(SUIQ) - E-commerce Service User Interface Quality

(SIQ) - E-commerce Service Information Quality

(PS) - Perceived Security

(PP) - Perceived Privacy

(ET) - E-Commerce Customer Trust

(ECP) - E-Commerce Personalization

(ECPA) - E-Commerce Pricing Awareness

α - Constant Variable; μ - Error term; $\beta_0 \dots \beta_6$ - Coefficients of independent Variables

P. Presentation of Findings

➤ *Hypothesis Testing*

H₀1: Perceived e-service quality dimensions are not significantly related to the customer satisfaction in Nigerian online B2C industry.

Table 2 Summary of Multiple Regression Analysis Showing the Influence of SUIQ, SIQ, PS, PP, ET, CP and ECPA on ECS

Predictors	B	T	P	R ²	Adj.R ²	Df	F	P
E-commerce Service User Interface Quality	0.173	5.949	0	0.894	0.892	7	451.984	0
E-Commerce Service Information Quality	0.311	9.239	0					
Perceived Security	0.143	4.598	0					
Perceived Privacy	0.198	5.76	0					
E-Commerce Customer Trust	0.085	3.137	0.002					
E-Commerce Personalization	0.104	3.471	0.001					
E-Commerce Pricing Awareness	0.07	2.696	0.007					

The results indicate that the overall model is statistically significant (F=451.984, P= 0.000). The p-value for each term tests the null hypothesis that the coefficient is equal to zero (no effect). Hence, a low p-value (<0.05) indicates that the null hypothesis can be rejected and vice-versa. Therefore, from the analysis above, all of the predictor variables are statistically significant as each p-value are less than 0.05 (p<0.05). In addition, the regression table showed that the Adjusted R-squared value is 0.892. This implies that 89.2% of the variation in E-Commerce Customer Satisfaction is explained by the independent variables (that is; all the e-service quality dimensions). With the sig-value being 0.000, we can therefore reject H₀ and make inference that perceived e-service quality dimensions are significantly related to the customer satisfaction in Nigerian online B2C industry.

Model fitting

$$ECS = \alpha + \beta_0 \text{SUIQ} + \beta_1 \text{SIQ} + \beta_2 \text{PS} + \beta_3 \text{PP} + \beta_4 \text{ECP} + \beta_5 \text{ET} + \beta_6 \text{ECPA} + \mu \dots \text{eqn (1)}$$

(ECS) - E-Commerce Customer Satisfaction

(SUIQ) - E-commerce Service User Interface Quality

(SIQ) - E-commerce Service Information Quality

(PS) - Perceived Security

(PP) - Perceived Privacy

(ET) - E-Commerce Customer Trust

(ECP) - E-Commerce Personalization

(ECPA) - E-Commerce Pricing Awareness

α - Constant Variable

μ - Error term

$\beta_0 \dots \beta_6$ - Coefficients of independent Variables

The model is fitted thus:

$$ECS = 0.119 + 0.172\text{SUIQ} + 0.311\text{SIQ} + 0.143\text{PS} + 0.198\text{PP} + 0.104\text{ECT} + 0.085\text{ECP} + 0.070 \text{ECPA} + 2.36$$

H₀2: There is no significant difference among components of e-service quality affecting Nigerian online B2C firms. The one-way ANOVA analysis was used to test this hypothesis. Independent variables were quality dimensions while the ‘Most Used E-Commerce firm’ question from the questionnaire was the dependent variable. The results are shown below:

Table 3 Distribution of Means of Quality Dimensions Affecting Online B2C Firms

Groups	E-Commerce Firms	Mean
E-commerce Service User Interface Quality Total = 9.31	Jumia	9.55
	Konga	9.02
	Dealdey	11.67
	Payporte	6.75
	Others	8.94
E-commerce Service Information Quality Total = 12.82	Jumia	12.98
	Konga	12.83
	Dealdey	13.33
	Payporte	9.75
	Others	12.63
Perceived Security Total = 8.50	Jumia	8.68
	Konga	8.65
	Dealdey	10.00
	Payporte	7.13
	Others	7.95
Perceived Privacy Total = 11.93	Jumia	12.29
	Konga	12.17
	Dealdey	12.33
	Payporte	10.25
	Others	10.88
E-Commerce Customer Trust Total = 11.01	Jumia	11.11
	Konga	11.46
	Dealdey	11.00
	Payporte	11.38
	Others	10.43
E-Commerce Personalization Total = 11.34	Jumia	11.56
	Konga	11.63
	Dealdey	11.00
	Payporte	10.38
	Others	10.54
E-Commerce Pricing Awareness Total = 9.57	Jumia	9.59
	Konga	9.98
	Dealdey	8.00
	Payporte	8.50
	Others	9.35

Table 4 Summary of Analysis of Variance Showing the Difference among Components of e-Service Quality Affecting Nigerian online B2C firms.

Groups	SS	DF	MS	F	P
E-commerce Service User Interface Quality	98.043	4	24.511	1.905	0.109
E-Commerce Service Information Quality	85.858	4	21.464	0.891	0.469
Perceived Security	55.601	4	13.900	1.350	0.251
Perceived Privacy	149.833	4	37.458	1.819	0.124
E-Commerce Customer Trust	40.062	4	10.016	0.673	0.611
E-Commerce Personalization	76.598	4	19.150	1.132	0.341
E-Commerce Pricing Awareness	28.152	4	7.038	0.589	0.671

The p-value for all the groups shown above are greater than 0.05. The p-value is the area of the f-statistic obtained from the ANOVA table. It's the probability of observing the result (f-critical) as big as the one which is obtained in the experiment (f0), assuming the null hypothesis is true. P-values are indications of strong evidence against the null hypothesis. In the case of each of the factors, we accept the null hypothesis and conclude that there is no significant difference among components of e-service quality affecting Nigerian online B2C firms.

III. DISCUSSION OF FINDINGS

The findings indicated that customer satisfaction is more at an indifference level as the finding revealed more customers in this category which by implication, the average perception and expectation of customers with respect to how satisfied they are with B2C online business firms service is unconvincing. However, to get a more definitive outlook, the performance of B2C online business firms vis-à-vis the quality dimensions revealed that customers are more satisfied

with service user interface and quality of information but less satisfied with security, trust, privacy, personalization and pricing.

From the statistical analysis it's discovered that there is a positive and significant relationship between online service / e-service quality dimensions (e-SERVQUAL) and customer satisfaction of Nigerian online B2C firms. By implications is increase in the customer satisfaction is determined by the increase in the perception of service quality received from the online B2C firms in Nigeria. This resort agrees with the findings of online B2C firms in Saudi Arabia by Eid (2011); Amin, Yahya, Ismayatim, Nasharuddin and Kassim (2013).

Although there is no significant difference in the components of online service quality affecting Nigerian online B2C firms, service information quality stands out as the most significant component of the e-service considered (other components include service user interface quality perceived security, perceived privacy, customer trust, personalization, pricing awareness). This finding aligns with the submission of expectancy disconfirmation theory (EDT) which indicated that satisfying customers is not limited to expectation of products or services; rather, satisfying customers from perceived information is the first step that can attract customer's trust to offered products and services by business as expressed by Santos (2003); Azam, Qiang and Abdullah (2012).

Furthermore, the perception of online customers with respect to e-service quality components among online B2C has no significant difference. This means the drivers or motivation for deriving satisfaction from the lens of service quality in the online business is perceived horizontally. This submission agrees with the position of Hendrayati and Atrisia (2015). This study is able to investigate, identify and measure the quality service level of online B2C business firms vis-à-vis the customer satisfaction and also provide a clear direction as to the e-service quality dimensions in Nigerian online B2C firms. The e-service quality dimensions adopted include Service User Interface Quality (SUIQ), Service Information Quality (SIQ), Perceived Security (PS), Perceived Privacy (PP), E-Commerce Customer Trust (ECT), E-Commerce Personalization, E-Commerce Pricing Awareness (ECPA). It was discovered that these factors are positively and significantly related to customer satisfaction as they covered 89% of all factors affecting the behavioral disposition of customers in terms of satisfaction with of B2C online business firms' operations in Nigeria. These findings corroborate with the finding of Eid (2011); Nwokah and Gladson-Nwokah (2016). However, the ratio of the significance varies among the components. The relationship between the components of e-service quality is positively related to customers satisfaction.

However, the coefficients of the relationships come with different degrees of effect on customer satisfaction which the dependent variable. It can be inferred from the analysis therefore that for every unit index increase in satisfaction is caused by 0.172 increase in Service User Interface Quality (SUIQ) index; 0.311 of Service Information

Quality (SIQ) index; 0.143 of Perceived Security (PS) index; 0.198 of Perceived Privacy (PP) index; 0.104 of E-Commerce Customer Trust (ECT) index; 0.085 of E-Commerce Personalization index and 0.070 of E-Commerce Pricing Awareness (ECPA) index. For instance, if the index of perception of quality of the service user interface (ease of use or ease of navigation) increased by 0.172 %, customer satisfaction of the services of B2C online business firms increases by 1%.

Moreover, the component(s) of the e-service quality dimensions that can be described as most significant in Nigerian online companies in relation to the e-customer satisfaction is service information quality returning a coefficient of 0.311 followed by perceived privacy which has 0.198 as the coefficient then by the quality of the service user interface with a coefficient of 0.172. Others include perceived security, trust, personalization and pricing returned 0.143, 0.104, 0.085 and 0.070 respectively. It's noteworthy that the e-commerce service information quality being the most significant component from the analysis above is contrary to the apriori expectation. However, there is a strong positive relationship between both variables. It can further reveal that 62.7% of the outcome of E-Commerce Trust is predicted or determined by E-Commerce Service Information Quality. It can be said that the Nigerian B2C online customer prioritizes the quality of information available at any given time about the products or services over the internet more above any of the aforementioned factors. Therefore, it can be considered as the most significant factor in the quality dimension factors affecting customers satisfaction of B2C online business firms in Nigeria. Since customers don't have the touch and feel of a product online what they rely mostly on is the quality of the information available to them in order to make purchase decision. In fact, the least considered is the pricing, which could be because of the competitive nature of the market. This means that strategies to promote effective and competitive pricing by B2C online business firms in Nigeria will have the least effect on customers satisfaction.

Furthermore, the analysis of variance (ANOVA) was employed to know if there are significant differences among the components of e-service quality affecting Nigerian online B2C firms' customers satisfaction. The result showed no significant differences. Even though service information quality can be ranked higher than any other e-service quality components in Nigerian online companies in relation to the customer satisfaction, the effectual differences are not so pronouncing.

Using Kruskal-Wallis test to do an intra-industry comparative analysis of e-SERVQUAL among frequently used B2C business firms to know if the perception of quality dimensions is significantly and comparatively different. The result shows that there is no significant difference in the perception of e-service quality dimensions among customers of Nigerian online B2C firms. For instance, it means that as Nigerian customers prioritizes the service information quality on their interactions for Jumia (jumia.com.ng), so also it is for Konga (konga.com.ng) and all other B2C business firms in Nigeria.

IV. RECOMMENDATIONS

The online B2C firms in Nigeria is evolving through several mix of potentials and challenges in which service quality is a major contributor. Since the research has established that quality service dimensions have a positive relationship with customer satisfaction, satisfied customers are most likely to re-purchase and remain loyal hence, increase in revenue from sales and profits for online B2C firms in Nigeria. Based on the research conducted, the following recommendations are requisites if online B2C firms in Nigeria would live up to its potential and overcome its fundamental challenges

Customers need access to quality, correct, comprehensive and consistent information online. This is the priority for most of Nigerian online customers given the fact as opposed to offline purchase where customers can physically interact with the product, e-customers rely mostly on the quality of the information to build their perspectives and most importantly trust on the firm and their services. Therefore, online B2C firms in Nigeria should place premium on the service information quality.

B2C online business firms in Nigeria should create an integrated approach to assure the customers of data protection. This research has revealed that the average online customers are more concerned about their privacy protection online than perceived security. Therefore, B2C online business firms in Nigeria should also tailor some of their strategic advertisements to guarantee personal information, transaction history, search history *etc.*

B2C online business firms should create a quality service user interface from the website landing page (that is the lead / prospect capture touch point) to the pages on the sites. It should enhance ease of navigation and be devoid of information overload. Security perception of online transaction coupled with online payment should be addressed and emphasized by B2C online business firms in Nigeria. That is a means of reducing some unnecessary overhead costs incurred by the firms' using payment on delivery models.

B2C online business firms should engage in service feedback and customer education campaign especially in the area of online security and advocacy. Understanding the impact of the development of e-commerce in Nigeria, the government needs to create a robust e-commerce ecosystem that will help achieve a future e-commerce promises. Driving advocacy for e-commerce through effective policies and collaboration among key partners (which includes telecommunication firms, internet service providers, financial institutions, *etc.*)

Finally, to combat the high cost of doing business in Nigeria by B2C online business firms, the government should do more investment on infrastructure and internet penetration. This in the first case reduces the cost of logistics among B2C online business firms and encourages a deeper participation of existing and potential customers of B2C online business firms respectively.

These recommendations will reduce the gap in quality service and customer satisfaction in Nigeria. It will also expedite the development and contribution of B2C online business firms to Nigeria's economic growth and development.

V. CONCLUSION

Having understood that information technology plays a major role in contemporary business and organization performance. Its impact on the online business-to-customers (B2C) firms is also overwhelming. The B2C firms are evolving to be a major contributor the Nigerian economic growth. Therefore, in their quest to be a major addition to the gross domestic product of Nigeria, the quality of the services offered needs to pass through the litmus test of service quality to review its strength, growth and development as it seeks to contribute to the business culture, customer perception and the overall development of the country.

Nigeria's B2C firms have experienced dynamic growth since its inception in 2012 with several companies of different sizes and different levels of evolution. Its continuous and functional contributions are hinged to its sustenance and continuous development. However, the sustenance of every organization is majorly determined by the customers; therefore, customer satisfaction plays a major role in the success or failure of any organization. The case of online B2C firms is very critical as customer loss or attrition rate is high; so, every firm in the B2C industry is evolving in creating strategies to close every gap that may exist between them and their customers. To achieve this, it's essential for online B2C firms to develop quality process systems and delivery that will convince the customer to have a positive behavioral disposition to their services.

Although B2C's potential and opportunities are limitless, its benefits and successes have come with some major challenges, especially from the customers' perception of the quality of services offered. This position inevitably determines the satisfaction level of the customer.

This research has established a significant and positive relationship between the service quality dimensions and customer satisfaction of online B2C firms in Nigeria. Using the e-SERVQUAL model, the research can analyze the level of impact each component of e-SERVQUAL has on customer satisfaction. The components measured include quality of the service user interface, service information quality, perceived security, perceived privacy, e-commerce customer trust, e-commerce personalization, e-commerce pricing awareness. In the Nigeria context, the result of the research indicated that customers online B2C firms value service information quality ahead of other components followed by perceived privacy. It is also discovered from the research that the impact of these dimensions is not significantly different from the intra-industry perspective.

IMPLICATIONS FOR NIGERIAN ONLINE B2C FIRMS

- Nigerian Online B2C Firms should prioritize Service Information Quality by ensuring that the information provided on their websites is accurate, complete, user-friendly and easy to access.
- Nigerian Online B2C Firms should amplify the levels of Privacy and Data Protection by invest in robust data protection systems and communicate these measures to customers in adherence to data protection laws and regulations.
- Nigerian Online B2C Firms should Mitigate customer attrition via personalisation of services and amplifying trust strategies such as personalized recommendations, loyalty schemes, and instant customer service to build retention and repeat business.
- Nigerian Online B2C Firms should demonstrate consistency across the industry. As service quality dimensions did not differ greatly between companies, there is potential for industry-wide collaboration to establish best practices and decide on quality norms that lift the sector as a whole.
- Nigerian Online B2C Firms should be regulated by relevant policy and Infrastructure support: Policymakers and stakeholders should consider the provision of an enabling environment that encourages digital infrastructure, innovation, as well as capacity building for SMEs in the online B2C market.

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