



Internet Service Providers: Their Role on Customer's Satisfaction in the Federal Capital Territory (FCT) Abuja - Nigeria

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Abstract

This study critically examines the extent to which the role of interaction of Internet Service Providers (ISPs'), Service Performance and Moderators influences Customer Satisfaction in the Federal Capital Territory (FCT), Abuja, Nigeria. This research adopted a quantitative method. 1,504 responses were obtained online through Google Forms by email and WhatsApp platforms. Non-probability sampling that includes Convenience Sampling and Purposive Sampling Techniques, and a five-point Likert scale were used in this study. Data were obtained through questionnaires administered to 1504 participants. The quantitative data was analysed using inferential statistics. The findings in this study presents the model that shows that network quality and Internet bandwidth are statistically associated with customers' satisfaction. It also reveals that the interaction of network quality and Internet bandwidth have significant mean difference in explaining the variations in customer satisfaction. shows that the model reveals that interaction of information quality and Internet bandwidth has statistically significant influence on customer satisfaction. shows that the interaction of security and privacy, and Internet bandwidth significantly influences customer satisfaction. The study therefore recommended that ISPs should pay more to service performance, Internet bandwidth and prices of Internet users' access among Internet users. They should improve service performance on the key components or dimensions indicated above in order to enhance customer satisfaction. In conclusion therefore, the study shows that the interactions of ISPs' service performance with bandwidth and prices of Internet users' access significantly influence customer satisfaction.

Keywords: Internet Service Providers (ISPs'), Service Performance, Service Quality, and Customer Satisfaction.

1.0 Introduction

Service companies such as ISPs offer tempting discounts to attract new customers but once recruited may not deliver the expected standard of customer service (Kalb, 2013). Therefore, this resulted in the reasons for switching and weakening of customer relationships as the



assurances made by ISPs are not always delivered (Hossain, 2017). However, Internet services are delivered through a complicated network infrastructure that could, from time to time, develop faults that undermine the performance or provision of services. Nevertheless, ISPs still have a legal and contractual obligation to deliver adequate services (ISP Review, 2017) as it is their responsibility to provide consistent and high-quality services to their customers, as well as deliver returns on shareholder investments. However, some challenges prevent them from providing adequate service delivery (Chartered Institute for IT, 2009).

Thus, because of the enormous importance of the Internet, it is therefore significant that the moderators or issues limiting Internet service provision as well as preventing its uptake, need to be considered. This will help to examine their interaction with ISPs' service performance as they relate to customer satisfaction (Fonseca-Hoeve *et al.*, 2017). Hence, this study aims to assess the extent to which the interaction of ISPs' Service Performance and Moderators influences Customer Satisfaction in FCT, Abuja, Nigeria.

Despite the significant growth of the Nigerian telecoms' sector, there are many concerns surrounding the poor quality of Internet services (Nigeria Consumer Satisfaction Survey, 2012). Most of the time, using Internet services in Nigeria is frustrating due to poor network coverage inadequacy of service delivery and charges that are widely perceived as being unjustifiable in the light of the poor quality of services (Uduchukwu, 2013). These are actually barriers to Internet uptakes and poor network coverage are not only limited to Nigeria but are global phenomena that affect both, developing and developed nations (McKinsey, 2014). Since the Internet has become a vital technological tool for the success of businesses Apăvăloaie, (2014), then the concerns for quality by both domestic and business customers, has become necessary to be considered. Addressing quality are fundamental to customer satisfaction as it is widely recognized that perceived quality of service is closely related to customer satisfaction, which in turn, affects future use (Santouridis et al, 2009; William et al, 2016). This have further downstream impacts on social progress and national economic growth (Anie, 2011; Dalberg, 2013; William et al, 2016). In recent years, service quality are mostly measured in many customer domains by customer evaluations of service quality through customers' expectations and perceptions (Zeithaml & Bitner, 2003; Xu, 2007). As customers are becoming more sensitive and critical about the quality of service that they experience such as in Internet service provider sector, there is the need to understand the extent to which their perceptions of quality influence Internet service uptake. Hence, the rationale for this study, to test the extent of which Internet service uptake is being influenced by customer perceptions of quality. Investigations reported in this study include a detailed evaluation of the circumstances of the discrete geographical territory represented by FCT Abuja. This uniquely combines issues faced by rural, urban and migratory communities and includes settlements at different stages of economic development. The FCT Abuja case study, consequently, has potential to explore the contrasting needs of community and consumer types, and to be representative of circumstances experienced in other nations. Because of its global relevance, FCT Abuja also presents an opportunity to evaluate models that are widely used to assess service quality in other customer domains, but are perhaps less frequently applied to the delivery of Internet services. The overall purpose for research reported here is to more fully understand the impact and dynamics of



perceived quality of Internet service provision, and to evaluate instruments or models for assessing service quality.

The general objective of this study is to examine the extent to which the interaction of ISPs' service performance and moderators influences customer satisfaction with the following specific objectives:

- (i) Examine the extent to which the interaction of network quality and moderators influence customer satisfaction.
- (ii) Investigate to what extent the interaction of customer service and technical support; and moderators influence customer satisfaction.

2.0 Literature Review

2.0.1 Conceptual Review

i. MODERATORS - Issues Moderating Or Limiting Internet Service Provision And Their Influence On Customer Satisfaction.

The study by Thaichon *et al.* (2014) was able to present constructs of what ISP customers would expect from an ISP and it demonstrates how they are influenced by the four dimensions, namely network quality, customer service and technical assistance, information quality, security, and privacy. The study by Adeyemi (2022) shows that measuring ISPs' service quality corresponds to assessing ISPs' service performance and also established that ISPs' service performance significantly influence customer satisfaction. This is in line with the study by Hong and Kim (2020) that reveals that when service quality is higher, service satisfaction will become higher, as service performance exceeds expectations.

Considering the issues of moderators, the literature review has helped to identify issues that moderate Internet service provision, which through their interactions with the four dimensions of ISPs' service performance which include network quality, customer service and technical support, information quality, security and privacy would influence customer satisfaction (Adeyemi, 2022). The issues that moderate Internet service provision are:

- (i) Internet Bandwidth Inadequate bandwidth capacity causes data congestion that affects the quality of service causing customers to experience slow connections and interrupted services (Hecht, 2016).
- Prices of Internet Service Users' Access One of the issues of concern mentioned by customers, amongst others, are the high cost of accessing the Internet and incorrect billing (NCC and CTO, 2012; Oketola and Opara, 2013; Uduchukwu, 2013).
- (iii) Internet Backbone Connectivity Infrastructure The need for more Internet backbone infrastructure is crucial as limited Internet infrastructure is the key challenge in providing public access to quality Internet services (Hicks *et al.*, 2016).



- (iv) Policy and Regulation Lack of clearly defined regulation and government commitment, which will enhance quality Internet service provision, has been reported specifically as an obstacle for African nations (Anie, 2011).
- (v) Digital Skills/Literacy (Capability/Self-Efficacy) There is the issue of a lack of digital skills/literacy for providing and accessing Internet services in many countries, especially in the developing world and this has affected the quality of Internet service provision and usage (ITU *et al.*, 2015; World Economic Forum, 2016a).

Two of these issues are considered in this study and are discussed in the following sub-sections.

ii. Internet Bandwidth

There has been much improvement in Internet bandwidth, but service providers still need to keep themselves abreast of the rapid growth in global traffic and further demand for bandwidth to meet the expectations of customers (Hecht, 2016). "The demands from customers for more Internet bandwidth facilities are increasing" (Alton, 2017). A study by McKinsey and Company (2014) shows that consumer barriers to Internet service uptake include, among others, limited access to bandwidth and limited spectrum availability.

Due to the rapid growth of Internet traffic, "service providers face constant operational challenges to efficiently manage the use of existing network resources, plan for network expansion and maintain profitability" (Internet Society, 2012). These have resulted in calls to adopt new approaches to meet bandwidth demand (The Millennium Project, 2011). Improved network performance with better bandwidth will support services such as YouTube Video Streaming that will increase online content sharing (Zheleva et al, 2015). Therefore, since there is an impact of quality of service on customer satisfaction (Ping-Lung et al., 2017), the need to expand bandwidth and efficiently manage bandwidth resources and otherwise enhance network performance is a matter of priority for service providers and policymakers (Fastmetrics, 2017). Hence the need to measure the interaction of Internet bandwidth with ISPs' service performance to examine the moderating effect of this issue on customer satisfaction.

iii. Price of Internet User's Access

The price of services is usually considered by customers as a yardstick to evaluate whether the service meets expectations or not, as price logically corresponds to the quality of service (Hessalmaldin, 2007). This indicates the importance of price as it can moderate users' uptake as well as Internet service provision (Zeithaml and Bitner, 2003). Hence the need to consider the interaction of the price of Internet service users' access and ISPs' service performance to examine its influence on customer satisfaction is essential.

Section 2.1 mentions five moderators and this research is assessing only the two discussed above, which are "Internet bandwidth" and "price of Internet users' access", while the other three moderators are recommended for future study. The two moderators considered in this study are prioritised because of demands from customers for more Internet bandwidth (Alton,



2017) and the price for Internet users' access influences customer perception and is a driver of customer satisfaction (Erevelles *et al.*, 2003).

iv. Customer Satisfaction

Studies by Churchill and Sauprenant (1982) and Oliver (1980) describe satisfaction as a post choice evaluative judgement covering a specific purchase decision. Many researchers agree that satisfaction is an attitude or evaluation that is formed by customers comparing their prepurchase expectations of what they would obtain from a product or service with their subjective perception of the performance they actually have (Oliver, 1980). Thus, studies by Yi (1990), Kotler (2000) and William et al. (2016) show that customer satisfaction is based upon a person's feelings of pleasure or disappointment resulting from comparing a service or product's perceived performance against their original expectation. The studies further reveal that it is the outcome felt by buyers who have experienced a service provider's performance that fulfilled their expectations.

Yi (1990) shows that customers do experience various degrees of satisfaction: when service performance falls short of expectation, the customer is dissatisfied and when performance matches expectations, the customer is satisfied. The foregoing literature gave a clear indication that service performance influences customer satisfaction. Therefore, in the service provision sector, customer satisfaction is of key importance.

2.1 Theoretical Framework

For the purpose of this study, the Resource-based theory was adopted for this study and critized by different scholars as follows:

Resource-based Theory

The issue of firm performance has been resource-based theory central in strategy research for decades and encompasses most other questions that have been raised in the field, as for instance why firm differ, how they behave, how they choose and how they are managed (Porter 1991).

In 1990's, with the rise of the resource-based approach, strategy researchers focus regarding the sources of sustainable advantage shifted from industry to firm specific effects (Spanos & Lionkas, 2011). Initiated in the mid-1980s by wemerfelt (1984), Rumelt (1984) and Barney (1986), the resources-based view (RBV) has since become one of the dominant contemporary approach to the analysis of sustained competitive advantage. A central premise of the resource-based view is that firms compete on the basis of their resources and capabilities (Peteraf & Barney (2003) most resource-based view their look within the enterprise and down to the factor market conditions that the enterprise must contend with, to search for some possible causes for sustainable competitive advantages holding constraint all external environmental factors (Peteraf & Barney (2003).

It adopts two assumptions in analyzing sources of competitive advantage Barney (1991) and Peteraf and Barney (2003). First, this model assumes that firms within an industry (or within a



strategic group) maybe heterogeneous with respect to the bundle of resources that they control. Second, it assumes that resources heterogeneity may persist over time because the resources used to implement firms are not perfectly mobile across firms (i.e some of the resources cannot be traded in factor markets and are difficult to accumulate and initiate). Cool, Almeida, Costa and Dierick (2002). Like the Chicago school tradition, the RBV is an efficiency-based explanation of performance differences Barney (2003) performance differentials are viewed as derived from rent differentials, attributable to resources having. Intrinsically different level of efficiency in the sense that they enable the firms to deliver greater benefits to their customers for a given cost (or can deliver the same benefit level for a lower cost) "Peteraf and Barney (2003).

2.2 Conceptual Framework

The developed conceptual framework that guides this study analysis considered the demographic variables that include age, gender, educational background, and profession as control variables. It shows how the interaction of ISPs' Service Performance and Moderators influences Customer Satisfaction. Thus, the conceptual framework for this study is shown in Figure 1.



Figure 1: Conceptual Framework for the Investigation of the Extent to Which the Interaction of ISPs' Service Performance and Moderators Influences Customer Satisfaction in FCT, Abuja, Nigeria

The key variable constructs in this study are ISPs' Service Performance; Customer Satisfaction; Internet bandwidth; Price of Internet Users' Access; and Demographic.

KNOWLEDGE GAP



There is rapid changing of demands of customers as well as the services that they need (Coste and Tudor, 2013). To meet the expectation in the competitive market environment such as the ISP sector in both developed and developing countries, ISPs have to continue to enhance their service performance (Kim *et al.*, 2007; Brown and Bitner, 2007). Literature has shown that measuring quality of service within the ISP sector corresponds with measuring ISPs' service performance (Sweeney and Soutar, 2001; Neger *et al.*, 2013). Therefore, providing excellent quality of service and high customer satisfaction are important issues and challenges facing the service industry (Hung *et al.*, 2003). Service performance or service quality is an important subject in both public and private sectors as it refers to how a service meets or exceeds customer needs and expectations (Zahari *et al.*, 2008). In the past two decades and at present, service performance/service quality models for overall relevance within the ISPs has become a major issue for practitioners, managers and researchers because of its strong impact on business performance, lower costs, return of investment, customer satisfaction, customer loyalty and gaining a higher profit (Seth and Deshmukh, 2005).

Publications relating to customer perceptions of ISPs' service performance are relatively few, although studies such as Kim et al. (2007); Vlachos and Vrechopoulos (2008); Thaichon et al. (2014) and Quach et al. (2016) amongst others, have endeavoured to evaluate ISPs' service quality or ISPs' service performance as it relates to customer satisfaction at different aspects. The limitations of these studies are that some only focused on the network performance or network quality and did not consider other dimensions such as customer care service. While the study that considered both network performance and customer care service, did not consider other issues such as Internet bandwidth and price of Internet service users' access that could serve as moderators. The interactions of these moderators with ISPs' service performance can influence customer satisfaction. Thus, there exists a knowledge gap in the published literature in relation to investigating the extent to which the interaction of ISPs' Service Performance and Moderators influences Customer Satisfaction in FCT, Abuja, Nigeria. Hence, the need to undertake this study for the purpose of suggesting an appropriate service performance model within the ISP sector to objectively evaluate this. Although this aims to be of global relevance, the primary scope of this research study is for Internet service uptake in developing countries as characterised by the study made on the FCT, Abuja, Nigeria.

3.0 Methodology

3.1 Research Method

This research adopted a quantitative method. The study depended on the active lines available to the researcher being 1,504 responses were obtained online through Google Forms by email and WhatsApp platforms. Non-probability sampling that includes Convenience Sampling and Purposive Sampling Techniques, and a five-point Likert scale were used in this study.

3.2 Methods of Data Analysis

For testing of hypothesis and modelling, multiple regression analysis was adopted. The regression models were used to analyse the hypotheses in line with objectives of this study.



The model statistics (f-statistics, level of significance Adj R-square) from the regression results were used to compare models; while coefficients, p-value and 95% confidence interval were used to interpret the models.

4.0 Data Presentation, Analysis and Findings

4.1 Quantitative Analysis And Findings (Questionnaire Survey)

DEMOGRAPHIC VARIABLES

This section deals with the research participants' demographics (based on responses to questions A1, G2, EB3, P4 & IL5) and this presented in Table 3.

Scale Description	Frequency	Percent	Cumulative Percent							
A1	- Age of respond	lents (A)								
16 years to 25 years	306	20.4	20.4							
26 years to 35 years	412	27.4	47.8							
36 years to 45 years	387	25.7	73.5							
46 years to 55 years	231	15.4	88.9							
56 years and above	168	11.1	100.0							
G2- Gender of respondents (G)										
Male	750	49.1	49.1							
Female	754	50.9	100.0							
EB3 - Education	nal background	of respond	ents (EB)							
A-Levels	199	13.2	13.2							
HND	195	13.0	26.2							
BSc	535	35.6	61.8							
Master's degree	381	25.3	87.1							
Doctorate degree	194	12.9	100.0							
P4 - Pr	ofession of resp	ondents (P)							
Student	231	15.4	15.4							
Apprentice	193	12.8	28.2							
Vocational worker	308	20.5	48.7							
Public sector professional	472	31.4	80.1							
Private sector professional	300	19.9	100.0							
IL5 – Inc	ome Level of re	spondents ((IL)							
Less than N29,000	217	14.4	14.4							
N30,000 – 59,000	173	11.5	25.9							
N60,000 – N89,000	230	15.3	41.2							
N90,000 – N119,000	247	16.4	57.6							
N120,000 - N149,000	221	14.7	72.3							
N150,000 - N179,000	149	9.9	82.2							
N180,000 – N209,000	96	6.4	88.6							

Table 1: Summary of Demographic



N210,000 - N239,000	65	4.3	92.9
N240,000 and above	106	7.1	100.0

Table 1 presents the respondents' age profile and shows that the bulk of Internet users in Abuja (88.9% of participants) are of the age between 16 and 55 years. The gender of the respondents indicates that there is not much significant difference between the male and female respondents. This shows that both males and females are now interested and conversant in the use of Internet services as this has become necessary in our daily activities. It also presents the respondents different levels of educational status that were given opportunities to express their views and this helped in pointing out a further need to look into any significant effect that educational background might have on the perceptions, expectations of quality and Internet uptake in FCT Abuja.

The table further presents the professions of the respondents that indicates that most of the respondents (51.40%) were in the public and private sector, which implies heavy usage of Internet services among the professionals in FCT Abuja. The income level of the respondents were presented as well in the table and it indicates that most Internet users in FCT, Abuja (82.2%) are of income level that is less than N180,000 per month.

4.2 Outcomes of Hypotheses' Analysis

significantly related to customer satisfaction.

(i) The interaction of ISPs' service performance and Internet bandwidth significantly influence customer satisfaction.

Testing the following hypotheses:

 $H1_a$ - The interaction of network quality and Internet bandwidth significantly influence customer satisfaction.

 $H1_b$ - The interaction of customer service and technical support, and Internet bandwidth significantly influence customer satisfaction.

H1 - The overall interaction of ISPs' service performance and Internet bandwidth significantly influence customer satisfaction.

Hypothesis H1 and its sub-hypotheses, $H1_a - H1_d$ are related to the research objective, which states: examine the extent to which the interaction of ISPs' service performance and moderators (Internet bandwidth and prices of Internet users' access) influence customer satisfaction in FCT Abuja, Nigeria.

H1_a- The interaction of network quality and Internet bandwidth significantly influence customer satisfaction.



Table 2 presents the analysis of Hypothesis H1_a

Source	Partial	SS	Df	MS	F	R- square	Adj Square	R-
Model	25943.3484	218	119.006185	15.68	0.0000	0.7268	0.6804	
Internet Bandwidth	4077.08564	20	203.854282	26.86	0.0000			
Network quality	699.604578	12	58.3003815	7.68	0.0000			
Interaction effects	2071.096	186	11.1349248	1.47	0.0001			
Residual	9753.61969	1285	7.59036552					
Total	35696.9681	1503	23.7504778					

 Table 2: The Interaction of Network Quality and Internet Bandwidth Significantly

 Influence Customer Satisfaction

***p<0.05** (p-value)

Key

SS: Sum of Squares – sum of squares associated with the sources of variance i.e., regression and residual (sometimes known as error).

df – degrees of freedom associated with the sources of variance.

MS: Mean Square - sum of squares divided by their respective df.

F- F-value is the mean square regression divided by mean square residual

R-Squared: R² represents the percentage of variance for dependent variables and independent variables.

Table 2 presents the model that shows that network quality and Internet bandwidth are statistically associated with customers' satisfaction. It also reveals that the interaction of network quality and Internet bandwidth have significant mean difference in explaining the variations in customer satisfaction. However, the model shows that network quality, Internet bandwidth and interaction effect account for 72.68% variation in customer satisfaction. Thus, this study accepts the hypothesis and concludes that the interaction of network quality and Internet bandwidth is statistically associated with customer satisfaction. This implies that the outcome of the analysis supports the Hypothesis that the interaction of network quality with Internet bandwidth significantly influence customer satisfaction.

H1_b - The interaction of customer service and technical support, and Internet bandwidth significantly influence customer satisfaction.

Table 3 presents analysis of Hypothesis H1_b.



Source	Partial	SS	Df	MS	F	R- square	Adj R- Square
Model	30888.3398	222	139.136666	37.07	0.0000	0.8653	0.8419
customer service							
and technical	2167.96583	12	180.663819	48.13	0.0000		
support							
Internet bandwidth	3960.98901	20	198.049451	52.76	0.0000		
Interaction effects	2336.45216	190	12.2971166	3.28	0.0000		
Residual	4808.6283	1281	3.7538082				
Total	35696.9681	1503	23.7504778				

 Table 3: The Interaction of Customer Service and Technical Support, and Internet

 Bandwidth Significantly Influence Customer Satisfaction

*p<0.05 (p-value)

Table 3 shows that the model indicates that customer service and technical support (p<0.05), Internet bandwidth (p<0.05) and interaction effects (p<0.05) account for 86.5% variation in customer satisfaction. This study concludes that there is a significant influence on customer satisfaction via interaction of customer service and technical support with Internet bandwidth. Thus, the outcome of this analysis supports the Hypothesis that the interaction of customer service and technical support with Internet bandwidth significantly influence customer satisfaction.

H1 - The overall interaction of ISPs' service performance and Internet bandwidth significantly influences customer satisfaction.

Table 6 presents the analysis for Hypothesis H2.

Table 6: The	Overall Interaction	of ISPS'	Service Perfe	ormance and	Internet 1	Bandwidth
Significantly 1	Influence Customer	Satisfac	tion			

H1	The interaction of overa	all ISPs'	service	performanc	e and internet	bandwidth			
	significantly influence customer satisfaction								
	Customer satisfaction	Coef.	p<0.05	95%CI	R-squared	F statistics (p<0.05)			
	Internet bandwidth	0.523	0.000	0.494- 0.554		4204.26			
	ISPs' performance quality	0.278	0.000	0.263- 0.293	0.8515	(0.000)			

*p<0.05 (p-value)

Table 6 reveals that the study accepts the alternative hypothesis that ISPs' service performance and Internet bandwidth are statistically associated with customer satisfaction at p<0.05 and this can improve customer satisfaction to 85.15% in the study area. Hence, this study supports the view that the interaction of the overall ISPs' service performance with Internet bandwidth is significantly related to customer satisfaction.



(ii) <u>The interaction of ISPs' service performance and price of Internet users' access</u> <u>significantly influence customer satisfaction.</u>

Testing the following hypotheses:

 $H2_a$ - The interaction of network quality and price of Internet users' access significantly influence customer satisfaction.

 $H2_b$ - The interaction of customer service and technical support, and price of Internet users' access significantly influence customer satisfaction.

H2 - The overall interaction of ISPs' service performance and price of Internet users' access significantly influence customer satisfaction.

H2 and its sub-hypotheses $H2_a - H2_d$ are related to the research objective, which states "examine the extent to which the interaction of ISPs' service performance and moderators (Internet bandwidth and prices of Internet users' access) influence customer satisfaction in FCT Abuja, Nigeria".

H2a - The interaction of network quality and price of Internet users' access significantly influences customer satisfaction.

H2_b - The interaction of customer service and technical support, and price of Internet users' access significantly influence customer satisfaction.

THE EXTENT TO WHICH THE INTERACTION OF ISPS' SERVICE PERFORMANCE AND MODERATORS (I.E., INTERNET BANDWIDTH AND **INTERNET** PRICES OF **USERS'** ACCESS) **INFLUENCE CUSTOMER** SATISFACTION IN FCT ABUJA, NIGERIA

 Table 1: The Extent to Which the Interaction of ISPs' Service Performance and

 Moderators (i.e., Internet Bandwidth and Prices of Internet Users' Access)

 Influence

 Customer Satisfaction in FCT Abuja, Nigeria

	Custon	ners' Sati	sfaction	Custon	Customers' Satisfaction			
ISPS' Service Performance	Coef.	p- value	95% CI	Coef.	p- value	95% CI		
Network Quality								
Experience Internet Disconnection	0.375	0.000	0.257 – 0.494	0.214	0.000	0.111 – 0.316		
Downloading and uploading Internet speed	0.467	0.000	0.328 – 0.607	0.087	0.168	-0.037 – 0.212 –		
Peak or off-peak hours	0.434	0.000	0.298 – 0.570	0.074	0.238	-0.049 – 0.197		
Components of Customer Service and Technical								
Knowledgeable.	-	0.815	-0.164 –		0 000	-0.118 –		
	0.017	0.015	0.129	0.009	0.000	0.137		
Willing to respond to enquiries.	0.075	0.372	-0.090 – 0.248	0.166	0.023	0.234 – 0.309		



Resolving of technical problems	0.614	0.000	0.471 0.756	_	0.300	0.000	0.173 0.427	_
Components of Information Quality								
Provides sufficient information	0.070	0.401	-0.093 0.233	_	- 0.004	0.955	-0.144 0.136	_
Provides up-to-date information	0.321	0.000	0.148 0.495	_	0.335	0.000	0.185 0.485	-
Provides relevant information	0.395	0.000	0.221 0.569	-	0.263	0.001	0.112 0.414	_
Moderators								
Components of Internet bandwidth					0.203	0.004	0.065 0.341	_
Surfing Expectation					0.251	0.000	0.103 0.399	-
Streaming Videos					0.301	0.000	0.151 0.450	-
Downloading Fast					0.409	0.000	0.260 0.557	_
Online Transaction					0.237	0.001	0.099 0.374	-
Speed Advertised Components of price of Internet users' access								
Reasonable Prices					0.161	0.014	0.032 0.290	_
Competitive Prices					- 0.107	0.140	-0.251 0.035	_
Various Prices Offers					0.191	0.008	0.051 0.332	_
Keeps Records and Bills Accurate					0.021	0.761	-0.115 0.157	_
Model statistics	Model	1			Model	2		
Prob>f	445.54	(0.000)			383.10	(0.000)		
R-squared	0.7857				0.8444			
Adj R-squared	0.7840				0.8422			

*p<0.05 (p-value)

Table 12 presents two models that show the extent to which the interaction of ISPs' service performance and moderators (i.e., Internet bandwidth and prices of Internet users' access) influence customer satisfaction.

In model 1, network quality significantly predicts extent of relationship between non-experience of Internet disconnection (coef=0.375, p<0.05, 95%CI: 0.257 - 0.494) downloading and uploading speed (coef=0.467, p<0.05, 95%CI: 0.328 - 0.607), peak or off-peak hours (coef=0.434, p<0.05, 95%CI: 0.298 - 0.570) and customer satisfaction.

For customer service and technical support, the component prompt to resolving technical problems explain 61.4% variation in customer satisfaction (p<0.05, 95%CI: 0.471 – 0.756). With respect to information quality, the component "providing up to date information" (32.1%) and "provision of relevant information" (39.5%) have a positive relationship with customer



satisfaction. While for security and privacy, the components, "protection on financial information" (p<0.05, 95%CI: 0.127 – 0.505) and "secured transaction" (p<0.05, 95%CI: 0.543 – 0.906) indicate 31.6% and 72.4% significant variability in customer satisfaction respectively, indicating that these components have significant relationship with customer satisfaction.

In Model 2, the inclusion of Internet bandwidth and prices of Internet users' access as moderators shows that non-experience of Internet disconnection explains 21.4% variation in customer satisfaction (p<0.05, 95%CI: 0.111 - 0.316). The impact of prompt to resolve technical problems shows an increase 30.0% in customer satisfaction. With respect to information quality, the component "provision of up-to-date information" (p<0.05, 95%CI: 0.185 - 0.485) and "provision of relevant information" (p<0.05, 95%CI: 0.112 - 0.414) indicate significant increase of 33.5% and 26.3% in customer satisfaction respectively. Furthermore, the impact on security and privacy, the components, "protection of financial information" (p<0.05, 95%CI: 0.182 - 0.511) and "secured transaction" (p<0.05, 95%CI: 0.321 - 0.638) significantly influence customers satisfaction to 34.6% and 47.9% respectively.

The analysis shows further that the interaction of ISPs' service performance with Internet bandwidth have a positive significant influence on customer satisfaction by indicating that the components, Internet bandwidth provided for streaming of videos is adequate (coef=0.301%, p<0.05, 95%CI: 0.151-0.450) and Internet bandwidth provided for downloading files is fast (coef=0.409, p<0.05, 95%CI: 0.260-0.557) significantly predict the extent of influence of the interaction of ISPs' service performance and Internet bandwidth on customer satisfaction.

The interaction of ISPs' service performance and prices of Internet users' access fairly predict customer satisfaction. For instance, the components, reasonable price (coef=0.161, p<0.05, 95%CI: 0.032 - 0.290) and various price offers (coef=0.191, p<0.05, 95%CI: 0.051 - 0.332) indicate weak but positive variation in customer satisfaction.

However, the model statistics show that ISPs' service performance could explain 78.5% variation of customer satisfaction. While the interaction of ISPs' service performance and moderators (Internet bandwidth and prices of Internet users' access) indicate 84.4% variation in customer satisfaction. This implies that the interaction of ISPs' service performance with moderators (i.e., Internet bandwidth and prices of Internet users' access) have a stronger significant influence on customer satisfaction than the influence of ISP's service performance directly on customer satisfaction.

Model 2 further indicates that the need to also include and focus on Internet bandwidth and prices of Internet users' access as part of their strategies cannot be underestimated. Statistically, the analysis reveals that it is important for ISPs to also develop more Internet bandwidth and regulate price of Internet user's access with huge attention on their service performance in order to improve customer satisfaction. Thus, the model indicates that statistically, improvement in customer satisfaction will increase to 84.44% if ISPs pay attention to service performance, Internet bandwidth and prices of Internet users' access among Internet users in Abuja Nigeria.



5.0 Findings Discussion, Conclusion and Recommendation

Focus: The extent to which Interaction of ISPs' Service Performance and Moderators Influence Customer Satisfaction in FCT Abuja, Nigeria.

As stated in the research objective, which is set to "examine the extent to which the interaction of ISPs' service performance and moderators influence customer satisfaction.

Sections 2.1 - 2.1.2 shows literature review of issues that moderate Internet service provision. Considering the enormous tasks that would be involved in testing the interactions of the five moderators with ISPs' service performance as they relate to customer satisfaction, this study considered the interactions of two of these moderators (i.e., Internet bandwidth and prices of Internet users' access) with ISPs' service performance. Literature reviews show that an affordable cost has influence on customer satisfaction (Paulrajan and Rajkumar, 2011; Joudeh *et al*, 2018). In line with this, Erevelles *et al*. (2003) opined that the price of what the consumer pays for access to Internet services from ISPs have influence on customer satisfaction.

Thus, testing of the Hypotheses H1 and its sub-hypotheses $H1_a - H1_b$ indicated in Tables 1–2, accept and support that the interaction of network quality; information quality; security and privacy; customer service and technical support with Internet bandwidth respectively, significantly influence customer satisfaction. The **H1** - The overall interaction of ISPs' service performance and Internet bandwidth significantly influences customer satisfaction.

Also, Hypotheses H2 and its sub-hypotheses $H2_a - H2_b$ accept and support that the interaction of network quality; customer service and technical support; information quality; security and privacy with price of Internet users' access respectively, significantly influence customer satisfaction. The **H2** - overall interaction of ISPs' service performance and price of Internet users' access significantly influence customer satisfaction.

To corroborate the above findings: quantitative analysis as presented in Section 1.2, Table 1-2 shows that ISPs' service performance explains 78.5% variation of customer satisfaction. While the interaction of ISPs' service performance and moderators (Internet bandwidth and prices of Internet users' access) indicate 84.4% variation in customer satisfaction. This implies that the interaction of ISPs' service performance with moderators have a significant influence on customer satisfaction than does the influence of ISP's service performance directly on customer satisfaction.

Thus, statistically, there will be 84.4% improvement in customer satisfaction if the ISPs pay attention to service performance, Internet bandwidth and prices of Internet users' access among Internet users in FCT Abuja, Nigeria. However, network quality, information quality, security and privacy are the most statistically significant components of ISPs' service performance that make the interactions improve customer satisfaction. It also indicates clearly the need to always consider prices of Internet users' access along with quality of service to enable affordability of quality service that would enhance Internet service uptake.



6.0 Conclusion and Recommendation

The research findings provide a framework and methodology to assess the extent to which Interaction of ISPs' service performance and moderators influence customer satisfaction within the ISP Sector. It helps to identify issues for remedial actions as it enables ISPs to make provisions for expected future needs that will enhance the satisfaction of customers. It also shows that ISPs should pay attention to service performance, Internet bandwidth and prices of Internet users' access among Internet users and indicates that network quality, are the most statistically significant components of the ISPs' service performance that make the interactions with the moderators improve customer satisfaction.

Therefore, it is recommended that ISPs should pay more to service performance, Internet bandwidth and prices of Internet users' access among Internet users. They should improve service performance on the key components or dimensions indicated above in order to enhance customer satisfaction. They should also always consider prices of Internet users' access along with quality of service to enable affordability of quality service that would enhance Internet service uptake.

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