PHYSICAL SCIENCES

EMPIRICAL VALIDATION OF ONLINE FEATURES IN USER ACCEPTANCE OF WEB SHOPPING CENTERS IN NIGERIA: A PRELIMINARY STUDY

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ABSTRACT
Internet shopping started in the developed world around the 1990s, but in a developing country like Nigeria, it only started around the year 2012. This paper reports on the initial investigation into online features of Web shopping centers (WSCs) and their relationships with the acceptance behaviors of customers in Nigeria. We revised and adopted the model proposed by previous researchers. We were also specifically interested in exploring only the relationships between the online features and technology acceptance model (TAM) constructs in this initial study from the view of information systems research. The results of a sample survey of 51 customers show that TAM is valid for use in predicting the acceptance behaviors of customers. This in one part agrees with the results obtained in earlier studies. However, these preliminary results can serve as a basis for further investigation of customer behaviours towards Web shopping centers.

Keywords: *Web shopping centers, Online features, Technology acceptance model*

INTRODUCTION

E-commerce, short for electronic commerce is a concept which only recently managed to find its way to developing countries including Nigeria, Ghana, and Kenya. Just like e-banking, online shops represent a type of e-commerce. Unlike in the developed countries where Web-based shopping has rapidly grown from the middle of the 1990s, owing to advances in Internet technologies, Web shopping only started in Nigeria around the year 2010. In (Chen *et al*., 2002 & Keeney 1999), the benefits of Web-based shopping were highlighted to include; ease of shopping and having a vast array of products to select from, competitive pricing, easy access to information, quality of product and delivery period of products purchased. Given the rapidly increasing population of Nigeria which now stands at around 170 million people, and coupled with the aforementioned benefits, Web-based shopping in Nigeria is expected to grow very rapidly. However, with traditional shopping centers, customer requirements are easily understood and their satisfaction readily met. This is not the case with Web shopping centers (WSCs) where fulfilling customer requirements and satisfaction have grown to become a great challenge Ahn *et al*., (2004).

A survey of existing literature in e-commerce reveals that researchers and vendors in this field have to some extent investigated the main factors that are related to user satisfaction and their use of Web shopping centers (WSCs). To this end, the customer's perception of the quality of e-commerce delivery became a subject for examination by various researches, and thus giving rise to different views. However, this paper notes that there is no unified view whatsoever regarding the exact factors that affect user satisfaction and usage of WSCs or the examination of the user's perception of the quality of WSCs. In order to support our observation, (Torkzadeh & Dhillon 2002, Aladwani & Palvia 2002, Koufaris *et al.,* 2002) among others in their various studies mainly investigated the factors responsible for WSC success. In the same vein, (Lin & LU 2000) descriptively and generally discussed Internet quality without considering its various aspects. These different views abound due to what birthed WSCs. There is however, the information system (IS) view. According to Lederer 2000, and Lin & Lu 2000, views that are based on IS relies on the quality of service, quality of information and quality of system to measure and predict user's acceptance behavior. There are also the marketing views which we do not focus on in this study. Also, in (Pitt *et al*., 1995), views that emanate from marketing rely on the perception of product, service delivery and price of product. These are known to be traditional marketing factors and the marketing views consider WSCs to be dealing with the consumer satisfaction and the intention to purchase.

In Gefen *et al*., 2003, Web shopping centers are considered as separate business entities that economically engages the user or customer. They should be seen beyond the user-interfaces they present for users to interact with. Just like the traditional shops on the high-streets, customers can use their Internet-enabled laptops, phones or PCs to launch their Web browser, and navigate to the WSC of their choice, search for any product of their choice and place their orders and then wait for delivery products within an estimated period. Unlike offline customers who shop on the high-streets, online customers who patronize WSCs have their unique requirements and issues that are occasioned by the Internet platform. Other characteristics are common to both types of customers. Ahn *et al.* ,(2004), suggested that online and offline quality of WSCs are likely to significantly affect the attitude and perception of customer patronage of WSCs.

In this study, we first carried out an empirical investigation of the online features of shopping websites from the point of view of IS. Secondly, we explore the relationships between the online features and behavioral acceptance of customers via path coefficient analysis using TAM as the theoretical basis for the exploration. We focus on how each online quality factor relates with TAM's individual constructs.

Our major contribution in this study is that we specifically carried out an empirical measurement of online quality features as they affect user's behavioral acceptance of Web shopping centers. Based on our sample data, we showed to an acceptable degree that online quality factors significantly impacts customer acceptance of Internet shopping sites.

In the next section, we introduce literature related to this work. Subsequent sections present the conceptual model development, outcome of the survey and discussions. The last section focuses on the implications of the work, limitations and direction for future work.

The advancement in Web technologies caused Nigeria to witness an upsurge in the number of Web shopping centers. The phenomenon of Online shopping which was rare in developing countries has suddenly changed, promoting online buying behavior for various products and services. Aminu (2013) examined the challenges that militate against adoption of online shopping in the Nigerian retail industry, while Olajubu (2009) identified various issues affecting the development and implementation of e-Shopping for developing nations' businesses,

proposed solutions to these shortcomings and presented an e-Shopping model for developing nations' small and medium enterprises.

Evaluating the acceptance and adoption of business-to-consumer (B2C) e-commerce in Nigeria using the extended technology acceptance model (TAM) with task-technology fit, Ayo (2011) opined that the use of the Internet for B2C e-commerce depends on usefulness, task fit, and trust suggesting that a Web retailer must put up websites that are rich enough for consumers to be certain of making the right choices. Osotimehin *et al.,* (2015) suggested that factors such as quality of products, security and trust in Web retailers have the strongest predictive power of adoption of Web shopping centers while website design and level of income are the least factors influencing customer's adoption of online shopping sites.

The current state of research in Nigerian electronic commerce appears to indicate that majority of the research focused on factors militating against acceptance and adoption of Web shopping centers. There is no research to suggest that online shopping centers have been considered as a Web-based system in the context of information systems (IS), and no research has been targeted at revealing the impact online and offline features have on the user acceptance of online shopping sites in Nigeria. This is therefore the focus of our study and next discussion further highlights our views.

MATERIALS AND METHOD

Web shopping centers involves activities that are both information system and marketing oriented. In this section and within the focus of our study, we consider literature about online features of Internet shopping centers. The online features of shopping websites evolved from information system and Web quality metrics. They are used to refer to the quality of Web shopping centers. These measures include information, service and system qualities of the shopping websites. Ahn *et al*., (2004) introduced the offline features of online shopping malls based on marketing views. Offline features include measures like the quality of product and service delivery. They specifically used TAM as the theoretical foundation for exploring user acceptance of shopping websites.

The Internet is a key driver of electronic commerce. According to Ahn *et al*., (2004), "online features are the quality measures of a Web system or services provided by the Web system". Internet shopping websites make online shopping services available to customers via a website. Web shopping centers share similar characteristics with Internet banking websites based on the unique technology they have in common. According to the work of Palmer (2002), user acceptance of WSCs is driven by system factors such as information quality, design, security and functionality of the Web system. On the other hand, the service factors of the Web system include empathy, reliability and responsiveness (Pitt *et al*., 1995). The information, system and service qualities were introduced by Pitt *et al.,* in their augmented model for IS success. The online features of Web systems can therefore be used to determine the quality of a Web-based system. Online factors such as system quality, service quality and information quality were shown to have a significant impact on user's attitude and behavior to accept and use Web shopping malls as reported in (Ahn *et al*., 2004). The authors used these major factors to determine user's acceptance of online shopping malls which function as a Web system. Similarly, in Zhang & vonDran 2002, Web quality features such as design, information and service were reported to be the major success features for measuring user acceptance of e-commerce.

The Information quality of an information system (IS) has to do with the characteristics and quality of the output offered by that IS (Stacie & McLean 2009). Previous studies have categorized these characteristics into completeness, accuracy, currency (Gorla *et al*., 2010), timeliness, usability, conciseness and understandability (Stacie *et al.,* 2008). These characteristics can be attributed to Web shopping centers. DeLone and Mclean (2003) opined that the success of an IS depended greatly on the information quality offered by such system while Kim *et al.,* (200) opined that information quality can also affect trust. Information quality can enable customers choose and easily use online shopping websites. Thongpapanl & Ashraf (2011) reported that the long term survival and profitability of web retailers does not depend on the amount of information provided on the site, rather the relevance, clarity and accessibility of information which influences customer satisfaction and purchase intention positively, especially when the information is customized to the individual, thereby increasing sales performance. We can therefore relate the success of Web shopping centers to the information quality offered by the Web systems provided by WSC providers. Furthermore, the success of an IS depends also on the acceptance of the IS hence, information quality can be used as a factor to determine the acceptance of WSCs.

A Web shopping center can be viewed as an IS therefore, system quality can be a factor in determining the acceptance of online shopping websites. The system quality of Web systems has to do with the engineering and technical quality of the online shopping site which might be the responsiveness of

the Internet shopping website, content layout, ease of learning, ease of use, availability and other system metrics (Ives *et al.,* 1983, Lin & Lu 2000, Liu & Arnett 2000, Ranganathan & Ganpathy 2002) among others. System quality of a web site has to do with the overall operational efficiency of the information system (Ahn *et al*., 2004, Boudhayan, *et al.,* 2010, Karim 2011). This can be the amount of time it takes to carry out an online shopping transaction on the website or the amount of information to enable easy navigation. The layout of an online shopping platform can determine how long it might take a user to understand how to use the platform efficiently. System quality also has to do with the operational bugs experienced when using an IS (Gorla *et al*., 2010), therefore in terms of online shopping websites, the operational bugs experienced by users can be a factor affecting usage and acceptance of online shopping websites. These bugs can be in the form of error messages when carrying out an online transaction thereby bringing to the fore, issues the user is unable to deal with. Proper documentation is also another factor attributed to system quality (Gorla *et al*., 2010) since it enhances ease of learning (Stacie *et al*., 2008). An online shopper who has access to a favorable set of support tools such as online support chat on the website, demos and well documented help pages is more likely to use Web shopping centers.

In the context of information systems, an organization usually aims to provide to users a service or services that are of high quality. In the context of e-commerce, service quality deals with the mechanisms put in place by Web retailers to ensure that users have high quality experience in their use of Web shopping centers. The factors usually used as a scale for guaranteeing service quality are responsiveness, reliability, assurance and empathy (Pitt 1995, Stacie & Mclean 2009). The amount of time a Web retailer takes to resolve an online shopping issue will determine the Web retailer's reliability and responsiveness in handling customer related complaints thereby giving them a competitive edge over other Web retailers (Dalhatu *et al.,* 2014). Service quality plays an important role because online shopping eliminates face-to-face transactions which call for multiple communication methods to be put in place to handle user complaints and also assist users in efficiently utilizing the services on the online shopping website (Bhattacherjee 2001, Ahn *et al.,* 2004). Therefore service quality can affect the overall acceptance of Web shopping centers by users.

In order to understand the user acceptance behaviors of different forms of technologies, several acceptance models have been developed with the technology acceptance model (TAM) (Davis 1989) being widely and commonly used to investigate user acceptance of various forms of Internet technology driven applications. TAM opines that the use of a system is influenced by user's behavioral intention to use the system and this behavioral intension is in-turn influenced by user's attitude to use the system. As we also stated earlier, Web shopping centers (WSCs) constitute a Web system which enables customers to complete online shopping transactions as they will normally do in a traditional shopping center. Since there is no face-to-face interaction between the Web retailer and the customer, the only medium of communication is the user interface provided by the website. It is therefore not out of context to seek to understand customer's requirements and expectations from their use of the shopping website in order to serve them better. A customer's positive attitude towards using the shopping website significantly and positively influences his behavioral intention to continue using the website.

Previous studies have adopted the TAM in understanding technology acceptance among users especially in the domain of Internet technology-driven applications in recent times (Lin & Lu 2000, Lederer 2000, Bhattacherjee 2001, Ahn *et al*., 2004, Kim *et al*., 2008, Raida & Neji 201) and many others. However, this has seen TAM being extended to include other external constructs. Wu & Wang (2004) integrated the extended technology acceptance model (TAM2) by (Vankatesh & Davis 2000) with the innovation diffusion theory (IDT), risk and cost in order to study the acceptance of mobile commerce. Wu & Chen (2005) extended TAM by integrating it with the Theory of Planned Behavior (TPB) in order to study the acceptance of online tax in Taiwan.

As aforementioned, TAM has been subjected to several modifications that gave birth to different models. Some of these modifications revolve around the inclusion of external constructs or variables that IS researchers argue can further develop TAM and make it more sustainable. For instance, we mentioned that online quality features such as information quality, system quality and service quality have been used as external constructs to successfully explore user acceptance behavior via TAM. Therefore, adopting TAM as a model and as a theoretical foundation towards exploring the acceptance of Web shopping centers in Nigeria is a justified approach since TAM allows the introduction of external variables in determining user acceptance of technology. We align our work with that of (Ahn *et al*., 2004).

In Figure 1, we present the research model for this pilot study. The model is part of the original model proposed by (Ahn *et al*., 2004) to include offline features of Web shopping centers (WSCs). The offline features are based on marketing views while online

features are driven by information system (IS) views. In this initial study, we focus on exploring the online features of WSCs as they relate with technology acceptance model (TAM) constructs. We therefore did not include offline features. The conceptual model combines the popular TAM as formulated in (Davis 1989) and online features as developed and validated in (Barnes & Vidgen 2001; Palmer, 2002; Ranganathan & Ganapathy 2002; Ahn *et al.,* 2004). This study relied on some of the major constructs of TAM which include perceived ease of use (PEOU), perceived usefulness (PU), attitude and behavioral intension to use (BIU) in exploring the relationships between external variables and customer's acceptance of WSCs. This work set out to empirically validate the online features in a Nigerian situation. The basis of the research analysis is therefore the Nigerian user of Web shopping centers and our sample population includes all categories of people who transact with various Web shopping centers.

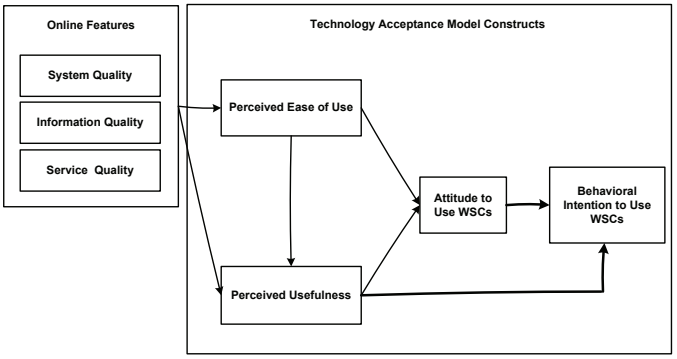

Figure 1: Research Model

Measurement Development

The questionnaire was the survey instrument used for data collection. The measurement items in the questionnaire were formed based on the 7-point Likert scale. Measurement items for the Web quality constructs were originally formulated and validated in (Barnes & Vidgen 2001, Palmer 2002, Ranganathan & Ganapathy 2002) as major instruments for measuring the online quality factors.

We adopted the measurement items given in (Ahn *et. al.,* 2004) in order not to reinvent the way, and excluded sub-measurement items that reported a low reliability score. Some of the statements were rephrased as we deem fit. We equally adopted the original TAM constructs and other related measurements from (Davis 1998, Lederer *et al.,* 2000, Lin & Hu 2000, Ahn *et al*., 2003, 2004). The resulting questionnaire consists of 46 measurement items, all of which measure the seven (7) variables in this study. Table 1 and Appendix A presents the final questionnaire for online features and TAM constructs respectively.

Table 1: Principal Constructs and Measurement Items Adapted from Ahn *et al*., (2004)

Constructs	Measurement Item(s)	Statement(s)
System quality	Design	The Shopping Website has an appropriate style of design for business type
	Navigation	The Shopping Website has an easy navigation to information
	Response time	The Shopping Website has fast response and transaction processing
	System security	The Shopping Website keeps transactions secure from exposure
	System availability	I can use the Shopping Website when I want to use it
	Functionality	The Shopping Website has a good functionality relevant to site type
	Error free transaction	The Shopping Website keeps error-free transactions
	Multimedia	The Shopping Website provides an appropriate video-audio presentation
Information quality	Contents variety	The Shopping Website has sufficient contents which I expect to find
	Complete information	The Shopping Website provides complete information
	Detail information	The Shopping Website provides detailed information
	Accurate information	The Shopping Website provides accurate information
	Timely information	The Shopping Website provides timely information
:	Reliable information	The Shopping Website provides reliable information
	Appropriate format	The Shopping Website communicates information in an appropriate format
Service quality	Responsiveness	The Shopping Website anticipates and responds promptly to user request
	Reliability	The Shopping Website can be depended on to provide whatever is promised
	Confidence	The Shopping Website instils confidence in users and reduces uncertainty
	Empathy	The Shopping Website understands and adapts to the user's specific needs
	Follow-up service	The Shopping Website provides follow-up service to users
	Competence:	The Shopping Website gives a professional and competence image
	Reliability	The E-banking Website can be depended on to provide whatever is promised
	Confidence	The E-banking Website instils confidence in users and reduces uncertainty
	Empathy	The E-banking Website) understands and adapts to the user's specific needs
	Follow-up service	The E-banking Website provides follow-up service to users
	Competence:	The E-banking Website) gives a professional and competence image

Online Survey

Since we intend to undertake a wider study which would enable us make a more meaningful generalization of the case of Nigeria as we would be targeting Nigerian online users after this current pilot study is concluded, we employed a Web-based survey for this study using Lime Survey tool. We recruited volunteers from within the university who have actually engaged in shopping online. In order to respond to the questionnaire, the respondents were invited to the computer science laboratory during scheduled days and times. Others who could not fill in the survey during the scheduled period were given another convenient schedule. We targeted all the major Web shopping centers in Nigeria. The questionnaire opens with a set of instructions to guide the respondents. Respondents were specifically asked to respond to all the statements based on their individual online shopping experiences. They were also instructed to respond to the statements using the Likert scale of 1-7; where 1 corresponds to "strongly disagree" and 7 corresponds to "strongly agree".

A total of fifty one (51) respondents were recruited, resulting in 51 recorded cases and with no missing values. The cases were first harvested from Lime Survey into a CSV file. The CSV file was then imported into SPSS for initial data pre-processing. The resulting data was then saved as an SPSS file for onward importation into LISREL 9.2 for actual data analysis. Due to the small sample involved, analysis with LISREL software was deemed inappropriate (Chin 1998, Gefen *et al*., 2000]. We however relied on SPSS and SPSS AMOS for data analysis. Table 2 shows the descriptive statistics of respondent's profile. About 41 percent of the respondents were male. Majority of the participants were between the ages of 20-29. It is important to emphasize that respondents were carefully selected based on our preliminary interviews which showed that they actively shop online. The data collected therefore, is a reflection of the opinions of actual online shoppers

Table 2: Demographic Information

Measure	Item	Frequency	Percentage (%)
Total		51	100.00
Gender	Male	30	41.18
	Female	21	38.18
Age	Below 20	1	1.96
	20-29	28	54.90
	30-39	18	35.10
	Over 40	4	7.84
Occupation	Student	15	29.41
	Private Sector Worker	3	5.88
	Civil Servant	22	43.14
	House-wife	1	1.96
	Self-employed	10	19.60
Primary place of Internet use	Home	25	49.02
	Office	23	45.10
	Other	3	5.88
Degree of Internet experience	Under 1 Year	1	1.96
	1-4 years	12	23.53
	Over 4 years	38	74.51
Preferred Web Shopping Center	Konga	20	39.22
	Jumia	29	56.86
	Kaymu	1	1.96
	Other		
	1		
	1.96		

We emphasize the fact that the respondents were recruited mainly from within the University. This implies that a respondent has the freedom of either choosing to be captured as a student, staff of the university who in this case is a civil servant, a student who could be working in the private sector, a student who could be self-employed or a student who could be a housewife. We chose these professions to reflect the set of respondents we can have in a university domain. We hope to maintain these set of professions for our future wider survey. It is therefore not out of place to find that majority of the participants are civil servants and students who mainly shop online at home and in the office. The difference between participants who do online shopping at home or the office is negligible. A large proportion of the respondents have a considerable degree of Internet experience of over 4 years. The two competing Web shopping centers of choice are Jumia and Konga, with Konga up ahead by 18 percent.

RESULTS AND DISCUSSION

The conceptual model was analyzed using IBM's SPSS Statistics 20 and IBM's SPSS AMOS 23 software. Maximum likelihood approach was used in estimating the research model. We performed data analysis in two phases. In the first phase, the measurement model was subjected to a critical examination and validation. In the second phase, we performed a structural equation model analysis which is supported in SPSS Amos via path coefficient analysis. This is in order to test the relationships between the constructs in the research model.

The Measurement Model

Our sample data was tested for suitability for factor analysis and the result showed a KMO and Bartlett's test values which were below the recommended values. This again we mainly attributed to the small sample size involved. Exploratory factor analysis (EFA) and LISREL analysis was therefore discontinued. We hope to employ LISREL analysis in our future wider study that will accommodate a larger sample size.

A reliability test is usually given as a measure of the degree of consistency between measurement items corresponding to a scale (Pallant 2004). We used Cronbach's alpha coefficient to measure the internal consistency of the scale. According to (Nunnaly *et al.,* 1994), a reliability score of 0.70 can be accepted as a minimum though [Lance *et al.,* 2006] argued that this acceptable minimum can also be misleading. A review of past literature shows 0.70 is the most common acceptable minimum score and we have adopted it as a standard in this study. The computed Cronbach alpha for each of the items measured and their descriptive statistics is given in Table 3. Due to the small sample size and also low item-total results, we dropped the following measurement items: SYSQ8 (multimedia) for system quality, PEOU1, PEOU2 and PEOU5 for ease of use construct. All constructs indicated a reliability of above 0.80 except system quality and attitude which have 0.776 and 0.773 respectively. The reliability of the scale was therefore found to be sufficient

Table 3: Reliabilities and Descriptive Statistics for Principal Constructs

Constructs	Measurement item(s)	Cronbach's alpha	Mean	Standard deviation
System Quality	SYSQ1	0.776	43.64	3.95
	SYSQ2			
	SYSQ3			
	SYSQ4			
	SYSQ5			
	SYSQ6			
	SYSQ7			
Information Quality	INFQ1	0.860	44.04	3.88
	INFQ2			
	INFQ3			
	INFQ4			
	INFQ5			
	INFQ6			
	INFQ7			
Service Quality	SERQ1	0.843	35.71	4.04
	SERQ2			
	SERQ3			
	SERQ4			
	SERQ5			
	SERQ6			
Perceived Ease of Use	PEOU1*	0.824	24.50	3.80
	PEOU2*			
	PEOU3			
	PEOU4			
	PEOU5*			
	PEOU6			
	PEOU7			
Perceived Usefulness	PU1	0.874	43.35	4.88
	PU2			
	PU3			
	PU4			
	PU5			
	PU6			
	PU7			
Attitude	AU1	0.773	32.35	3.27
	AU2			
	AU3			
	AU4			
	AU5			
Behaviour	BIU1	0.820	30.37	3.89
	BIU2			
	BIU3			
	BIU4			
	BIU5			

*Dropped measurement items

Table 4 shows the correlation matrix for the 7 principal constructs. We found significant correlations between most of the variables under consideration. There were no significant correlations between system quality and perceived ease of use (PEOU), perceived usefulness and (PU) and PEOU, PU and attitude and lastly, PEOU and behavior.

Table 4: Correlation Matrix

	Cronbach Alpha	SysQuality	InfoQuality	Ser Quality	PEOU	PU	Attitude	Behaviour
SysQuality	.776	1						
InfoQuality	.860	.488** .000	1					
SerQuality	.860	.630** .000	.624** .000	1				
PEOU	.824	-.179	-.289 *	-372**	1			
		.209	.039	.007				
PU	.874	.539**	.560**	.429**	-.071	1		
		.000	.000	.002	.620			
Attitude	.773	.418**	291*	.372**	-.106	.662**	1	
.		.000	.038	.007	.459	.000		
Behaviour	.820	.414**	.426**	.344**	. 024	.559**	415**	1
		.003	.002	.013	.867	.000	.002	

***** Correlation is significant at the 0.01 level (2-tailed)***

****Correlation is significant at the 0.05 level (2-tailed)***

Structural Model

We proceeded with path coefficient analysis to test the general model fit. Table 5 presents a summary of the overall model fit indices for the proposed research model. Again, due to the small sample size, we did not expect our Chi-square value to be high. A $\chi 2$ value of 7.008, with 7 degrees-of-freedom and at a significance level of 0.428 was obtained. This is considered quite significant. The values for GFI, CFI and NFI were above the recommended value of 0.90. The RMSEA equaled 0.005 which is acceptable.

We then went on to assess the estimated coefficients between the various constructs in our proposed model. The results are presented in Figure 2.

Table 5: Fit Indices for the Structural Model

Measure	**Research model**	**Acceptable cut-off values (Ives *et al*. 1983)**
Absolute fit measures		
Chi-square ( )	7.008	Better to be lower
Degrees of freedom	7	
Significance level	.428	
Goodness-of-fit index (GFI)	.963**	>.090
Root mean square residual (RMSR)	.005**	<.08
Baseline comparisons		
Adjusted goodness-of-fit index (AGFI)	.851*	>.090
Normed fit index (NFI)	.951**	>.090
Tucker-Lewis index (TLI)	1.000**	>.090
Comparative fit index (CFI)	1.000 **	>.090
Parsimony-adjusted measures		
Parsimony normed fit index (PNFI)	.317*	Higher values are better
Parsimony comparative fit (PCFI)	.333*	Higher values are better

Acceptable thresholds: **(marginal), **(acceptable)*

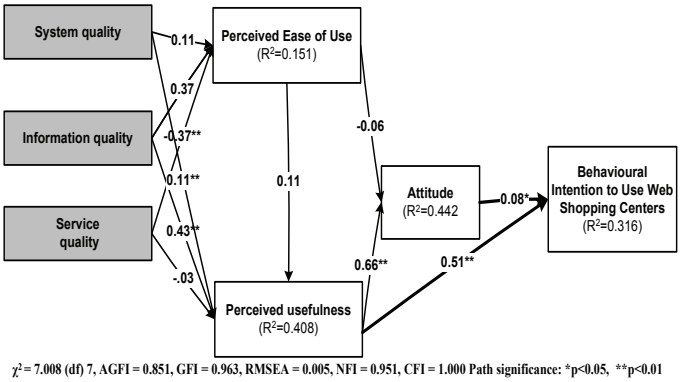

Figure 2: Structural model fit

Following from the structural model in Figure 2, we deduce the following; system quality indicates a strong significant relationship with perceived usefulness (β=0.11, p<0.01) and not so strong a relationship with perceived ease of use. This is also indicated by the low value of R-square for PEOU. Information quality showed a strong significant relationship with both perceived usefulness (β=0.43, p<0.01) and perceived ease of use (β=0.37, p<0.01). Service quality rather indicate an unexpected strong negative influence on perceived ease of use (β=-0.37, p<0.01) and an equally unexpected but not so strong negative influence on perceived usefulness. Perceived usefulness shows a strong significant relationship with both attitude (β=0.66, p<0.01) and behavioral intension (β=0.51, p<0.01). We obtained a rather negative relationship between perceived ease of use and attitude, and that

between perceived ease of use and perceived usefulness, between attitude and behavior were rather not so strong in significance. Information quality indicated a higher impact on usefulness and behavioral intention to use Web shopping centers amongst the entire external variables considered. We expected to see a strong significant and positive relationship between perceived ease of use (PEOU) and both service quality

and attitude; instead the reverse is the case. This quite poor showing by PEOU is consistent with the result of the poor correlations between PEOU and attitude, PEOU and service quality, PEOU and system quality.

Based on our small sample data and the results obtained, TAM produced outcomes which are to some extent are quite consistent with testing the behavioral intention of customers to use Web shopping centers. The attitude towards using Web shopping centers for example, has a great impact on user's behavior to use shopping websites. Customer's attitude is known to be mediated by his or her perceived ease of use and perceived usefulness. Again following from Figure 2, we observed that only perceived usefulness greatly influenced attitude while ease of use had a poor showing. These result are consistent with the submissions of Lin *et al*., (2000) and Ahn *et al*., (2004), thereby confirming that perceived usefulness has a greater and significant relationship with perceived ease of use, and perceived ease of use has a greater and significant impact on perceived usefulness. By implication, perceived usefulness will continue to remain a major determinant of shopping website usage while perceived ease of use will indirectly affect user's intention to use shopping websites. We therefore reason that perceived usefulness is influenced by perceived ease of use. In the same vein, users who find it easy to use shopping websites will equally find Web shopping centers very useful.

The results so far obtained in this initial study shows that online shoppers have identified with online features of shopping websites and some our outcomes are quite consistent with similar research reported in (Ahn *et al.,* 2004). In the online shopping domain, the online shopper represents a system user. The online features of any shopping website play a very significant role in determining the behavioral intention of customer's continuous use of the Web shopping center.

CONCLUSION

This results explore the online quality features of Web shopping centers with respect to customer acceptance behavior towards adopting online shopping websites. It specifically adopted and revised the conceptual model developed by (Ahn *et al*., 2004) by establishing relationships between online features of shopping websites and excluding the offline features thereby focusing only on IS views. We particularly used their model in a Nigerian context. The outcome of our work shows that customers recognize the role online features of shopping websites play in predicting their acceptance of online shopping. The results indicate that online features have positive and significant impact on customer's perceived usefulness and perceived ease of use.

The result we obtained from this pilot survey indicates that online shoppers think shopping websites to be virtual representations of the traditional shopping centers. The online quality features affect the capacity of shopping website providers to retain online shoppers. Providers therefore need to improve the online features of their online shopping platforms in order to boost patronage and also compete favorably.

Our main contributions are that we were able to extend and apply the online quality factors to the Nigerian situation. We specifically carried out an empirical measurement of online quality features as they affect user's behavioral acceptance of Web shopping centers. Based on our sample data, we showed to an acceptable degree that online quality factors significantly impacts customer acceptance of Web shopping centers.

This work is limited by the small sample size of 51 respondents we analyzed. The sample size we relied on means that we are unable to generalize our research findings in order to relate it to the real Nigerian population. The small sample size used also means that we were also unable to perform further advanced statistical data analysis using advanced software like LISREL. This also implies that we cannot generalize the results so far obtained. More so, the respondents recruited were mainly from one sample location which is the university. We intend to recruit respondents who would reflect a wider opinion of the Nigerian population in order to improve the performance figures in our future study.

Based on what we have learnt from this initial study, our future work would be to undertake a wider study. We would aim to recruit up to 1000 or more actual online shoppers to participate in our survey. This will enable us perform better analysis and put us in full position to generalize our research findings. It is also possible to include other external variables such as trust and even use other variations of TAM in exploring user acceptance behaviors.

Appendix A: Adapted and revised from Ahn *et al*., (2004)

A. 1. Perceived ease of use

PEOU1:Learning to use this shopping website is easy for me
PEOU2: It will be impossible to use this shopping website without expert help
PEOU3: My interaction with this shopping website is clear and understandable
PEOU4:It is easy for me to become skillful at using the shopping website
PEOU5:Using the shopping website requires a lot of mental effort
PEOU6:I find it easy to get the shopping website to do what I want it to do
PEOU7:I find the shopping website user friendly

A.2. Perceived Usefulness

PU1:Using this shopping website enables me to accomplish tasks more quickly
PU2:Using this shopping website helps me to get better decision
PU3:Using this shopping website improves the performance of my tasks
PU4:Using this shopping website saves me money
PU5:Using this shopping website increases my task productivity
PU6:Using this shopping website improves my task quality
PU7:Using this shopping website makes my job easier

A.3. Attitude to use

AU1:Using the shopping website is a good idea
AU2:Using the shopping website is a wise idea
AU3:Using the shopping website is satisfactory idea
AU4:Using the shopping website is a positive idea
AU5:Using the shopping website is an appealing idea

A.4. Behavioral Intention to Use

BIU1:I will keep use of this shopping website in the future
BIU2:I will use this shopping website on a regular basis in the future
BIU3:I will frequently use this website provider in the future
BIU4:I will use this shopping website rather than other shopping websites for shopping
BIU5:I will recommend others to use this shopping website

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