Understanding the Adoption and Use of E-tail Websites: An Empirical Analysis Based on the Revised UTAUT2 Model Using Risk and Trust Factors

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Abstract. Although electronic retail platforms offer a more efficient means for providing goods and services, its adoption by users in developing countries remains encumbered with deep skepticism. Despite substantial investments, many users are reluctant to use electronic retail websites due to trust and risk issues. The objective of this study therefore is to develop and empirically test a model for predicting the factors affecting users' acceptance of electronic retail websites. We adapted the revised United Theory of Acceptance and Use of Technology (UTAUT) model to evaluate the importance of risk and trust factors on the behavioral intentions and use of e-tail websites within a sub-Saharan African context. For this purpose, we employed the variance-based Structural Equation Model (SEM) to analyze survey data collected from 207 e-tail users in Nigeria. The proposed model explained 67.5% of the variance in behavioral intention and 43.5% in use behavior. While our empirical results show that behavioral intention and use of electronic retail websites are mainly influenced by habit, the risk-trust inter-relationships to behavioral intention portray mixed findings.

Keywords: E-tail websites · UTAUT2 · Technology adoption · Sub-Saharan Africa · E-commerce

1 Introduction

Consumer-use platforms such as electronic retail websites (hereafter, e-tail) provide a medium for various transactions to take place between businesses and consumers. These platforms have long been adopted in developed countries where the necessary institutional conditions underlying its delivery is widely available. However, the increasing internet user penetration around the world in the last decade (GSMA 2018) has meant that the use of e-tail platforms is also beginning to gain traction in developing countries such as those in sub-Saharan Africa. For instance, KPMG predicts that e-commerce activities are expected to make up to 10% of total retail sales in key African markets by 2025 (KPMG 2018). Yet, while there is an extensive body of

literature that has investigated factors that influence the intention and usage of e-tail platforms within the Information Systems (IS) literature, these studies have predominantly been conducted in developed country contexts (Williams et al. 2015). This study therefore aims to fill a gap in the literature by exploring factors that predict the acceptance and use of e-tail websites in a developing country, Nigeria. To fulfil this objective, we use the revised UTAUT model (Venkatesh et al. 2012). Revised by Venkatesh et al. (2012), the UTAUT2 allows for a structured analysis of constructs affecting the decision to use a technology within a consumer-use context. Particularly, we considered that the revised UTAUT model affords a significant explanation of behavioral intention (74%) and technology usage (52%) (Venkatesh et al. 2012). We also considered that the UTAUT2 model provides a better explanation of variance in usage intention and the fact that it has been specifically developed for application in the consumer-use technology contexts.

Nigeria provides a suitable case country to situate our study because it fulfils the requirements of the context, we aim to shed insight on. Located in sub-Saharan Africa, Nigeria is regarded as Africa's most populous country, while its population is projected to become the third largest in the world by 2050 (UN 2017). Along with the high proportion of potential online consumers, that is, 50% of the entire population, Nigeria has been regarded as the largest e-commerce hub in Africa (Paypal 2016). Institutionally, Nigeria is faced with weak institutions, poor consumer rights, online fraud etc. These environmental conditions can impede e-tail adoption. Incorporating the UTAUT2 model in the Nigerian context allows us to expand the conversation around the use of UTAUT2 in sub-Saharan Africa where infrastructures that facilitate the adoption of online retail platforms are not widespread. Hence, we are interested in answering the research question: Drawing on the UTAUT model, what factors influence the behavioral intention and use of e-tail websites?

It is expected that this study will offer useful insights by contributing to the advancement of knowledge for researchers and practitioners in two main ways. First, we evaluate the antecedents of e-tail website adoption and use by using the UTAUT2 model – thereby responding to Venkatesh et al.'s (2012) call for future studies to test the UTUAT2 in different countries and different technologies, particularly developing countries. Secondly, we integrated risk and trust factors in the model to investigate their impact on e-tail website use. In other words, our study follows the suggestion of Venkatesh et al. (2012) to "examine other key constructs that are salient to different research contexts…" (p. 171). The structure of the paper is as follows. The proceeding section presents a review of the literature and background covering the theoretical framework employed in this study. In addition, an overview of the relevant theoretical literature pertaining to technology acceptance leading to the development of hypotheses is presented. Subsequently, the methodology is described, and the results are presented. The paper concludes with a discussion of the research findings and the theoretical and practical implications of this study, as well as limitations and suggestions for future research.

2   Literature Review and Background

2.1   E-tail Use and Adoption in Developing Countries

A growing number of studies have explored electronic commerce adoption in developing countries. Kurnia et al. (2015) argues that developing countries lack adequate technological, social, cultural, legal infrastructures to allow for the effective adoption of e-tail technologies. For example, recent studies have emphasized to the cruciality of institutional factors in facilitating e-commerce adoption at firm and user-level. Using the resource-based view perspective, Boateng (2016) highlights the weakness of institutional underpinnings as significant constraints to the realization of e-commerce benefits for small enterprises in Ghana. Similarly, Okoli et al. (2010) echoes this position using a sample of SMEs in Latin America and sub-Saharan Africa. Overall, these studies suggest that institutions matter in e-tail adoption, and that the characteristically weak institutional environments in developing countries represent significant impediments mitigating e-commerce adoption. We find these characteristics also represented in the context of this study. For instance, while Nigeria is one of the developing countries at the forefront of investments in e-commerce (McKinsey 2014), its institutional infrastructure is weak and highly fragmented. The country is saddled with weak legal environment, poor enabling facilities (such as power), poor consumer rights and weak policies protecting the rights of e-tail customers. As a result, many still treat e-commerce activities with deep skepticism (Ayo et al. 2011). As such, there is still a reluctance to adopt and utilize e-commerce platforms when engaging in online transactions due to associated perceived risk such as internet fraud and advanced fee fraud (Oghenerukevbe 2008). It is therefore crucial to analyze how perceptions of risk and trust relationships influence consumers' behavioral intentions and subsequent use of e-tail websites – the goal of this study.

2.2   Theoretical Approaches Concerning the Adoption and Use of Technology

Since the evolution of e-services in the 1980's, a number of theories have been proposed that attempt to explain their acceptance and use. Two important theoretical positions are worth noting. The first pertains to studies investigating adoption and usage from an innovation standpoint with the view to evaluate the adoption or diffusion among a group of users (e.g. Dwivedi et al. 2011; Lin 2011; Xu et al. 2017). Theoretically, these studies have majorly relied on the Diffusion of Innovation (DOI) perspective (Kapoor et al. 2014a, b; Rogers 1995) which suggests that the adoption of a technology depends on the attributes of the innovation (as measured by its relative advantage, compatibility, complexity, observability, and trialability). The second theoretical position worth noting is with regards to the use of intention-based models to investigate the adoption and use of technology. These models mainly include the Theory of Planned Behavior (TPB) (Ajzen 1991), the Theory of Reasoned Action (TRA) (Ajzen and Fishbein 1977) and the Technology Acceptance Model (TAM) (Davis 1989). The TRA explains the inter-relationships between individuals' attitudes, behaviors and subsequent actions across a variety of domains (Fishbein and

Ajzen 1975). It links individuals' beliefs, attitudes and norms to their ultimate intention and behavior towards a technology. However, one of the key assumptions of TRA is that every individual has free control over their behaviors; however, this may not always be the case (Ajzen 1991). The TPB (Taylor and Todd 1995) is a cognitive framework that seeks to understand and explain human behavior. From a TPB viewpoint, individual actions and behaviors manifest from an underlying intention to perform that behavior. The TAM coalesces both TRA and TPB to propose the use of a technology as determined by two major beliefs: perceived ease of use and perceived usefulness (Davis 1989). Yet, TAM has been criticized for being too simple as it excludes important contextual and process-based variables that might influence the acceptance of a technology (Bagozzi 2007).

By integrating different technology acceptance models, Venkatesh et al. (2003) developed the UTAUT model to provide a broader evaluation of individual adoption and use behaviors within organizational settings. In addition, the model encapsulates the moderating effects of gender, experience, age and voluntariness in the adoption process. However, this model could not be used outside of the organizational environment because it does not account for two critical factors (that is, hedonic motivation and price value) of adoption and use in a consumer use environment (Venkatesh et al. 2012). As a result, the UTAUT model (Venkatesh et al. 2003) was revised to integrate additional constructs related to the consumer environment such as hedonic motivation; price value; and habit. The present study adopts UTAUT2 for a few reasons: first, the context of the study is in a consumer acceptance and use context for which the UTAUT2 was ideally proposed. Second, compared to previous models, UTAUT2 yields a higher variance explained in behavioral intention and actual use compared to other models (Venkatesh et al. 2012). While there is a growing strand of literature that has adopted this model in various technological and research contexts, to our knowledge, no study has attempted to investigate antecedent factors of behavioral intention and usage in Nigeria using the UTAUT2 model. In the next section, we present the set of hypotheses portraying how the risk-trust relationship is incorporated to the UTAUT model.

2.3   Research Model Development

Performance Expectancy. Performance expectancy is conceptualized as "the degree to which using a technology will provide benefits to consumers in performing certain activities" (Venkatesh et al. 2012, p. 159). It represents the perceived value that users attach to a technology and how that perception affects their decision to adopt and use the technology. This construct was found to be the strongest predictor of intention in a study by Venkatesh et al. (2003). In the revised UTAUT2 model, it was also found to be one of the highest predictors of behavior intention (Venkatesh et al. 2012). The role this construct has also been examined by subsequent studies (Dwivedi et al. 2016, 2017a, b; Rana et al. 2016, 2017; Slade et al. 2015a, b). Using this construct within our study, we aim to capture the degree to which using e-tail websites provides benefits (e.g. convenience and ease of accessing retail products) to consumers. Thus, we hypothesize that performance expectancy in relation to the use of e-tail websites plays a significant role in influencing behavioral intention.

H1: Performance expectancy has a positive impact on the behavior intention to use e-tail websites.

Effort Expectancy. Effort expectancy is "the degree of ease associated with consumers' use of technology" (Venkatesh et al. 2012, p. 159). This construct allows us to explore the difficulty faced by users, associated with using a technology. Thus, effort expectancy in this context reflects the extent to which individuals find online shopping easy to engage in. It also examines the extent to which a technology is easy to understand and use without any skillset (Venkatesh et al. 2003). In the Nigerian context, for example, institutional infrastructures such as access to fast and reliable internet connection are limited to urban cities. This invariably may impede on consumers' access to e-tail goods and services. Logically, if a product or service is easy to use, users are more likely to possess a positive attitude towards its use. In Nigeria, while e-tail websites are a growing phenomenon and a large segment of the youth population have readily adopted these websites, several external factors such as access to reliable internet connections mentioned earlier still pose significant adoption challenges.

In this study, the following hypothesis is proposed:

H2: Effort expectancy will have a positive impact on the behavioral intention to use e-tail websites.

Social Influence. Social influence is defined as "the extent to which consumers perceive that important others (e.g., family and friends) believe they should use a particular technology" (Venkatesh et al. 2012, p. 159). It refers to the role that socially-acceptable norms and practices play in influencing the decisions that individuals make. Previous studies have shown that social influence (such as those of friends and family), play a dominant role in explaining the use of IT in the African context (Anandarajan et al. 2002). Positive adoption and use behavior is more likely when more friends and family members use a particular technology (Brown et al. 2010). Dulle and Minishi-Majanja (2011) confirmed this relationship between social influence and behavioral intention to use open access publishing among academics in Tanzania. Therefore, within the African consumer environmental context, we posit that individuals' adoption decisions are likely to be influenced by the opinions of referent others within their social circles. Hence, we hypothesize that:

H3: Social influence will have a positive impact on the behavioral intention to use e-tail websites.

Facilitating Conditions. Facilitating conditions represent the degree to which individuals consider that the technical and organizational infrastructure exists to support the use of a technology (Venkatesh et al. 2003). In the Nigerian context, there are several challenges which impact on the availability and access to internet services needed for online shopping. Challenges such as shortages of energy supply and access to the internet across the country impact on consumers' online behavioral intentions. These challenges limit the extent to which the average Nigerian consumer can access the internet which, in turn, restricts the use of e-commerce sites. Hence, the user's belief

about the availability of all the support that is necessary to use e-tail websites positively influences behavioral intention and their use behavior. Thus, for this study we hypothesize that:

> H4a: Facilitating conditions have a positive impact on the behavioral intention to use e-tail websites.
> H4b: Facilitating conditions have a positive impact on the use behavior of e-tail websites.

Hedonic Motivation. Hedonic motivation is defined as "the fun or pleasure derived from using a technology" (Venkatesh et al. 2012, p. 161). It represents the extent to which users of IS systems find it entertaining (Baptista and Oliveira 2015). Extant research has established the positive relationship between hedonic motivation and behavioral intention (Martins et al. 2014), with Venkatesh et al. (2012) finding that it represents one of the second strongest predictors of behavioral intention in the UTAUT2 model. More recent work by Alalwan et al. (2018) has confirmed hedonic motivation to be the most dominant predictor of behavioral intention to adopt internet banking amongst Jordanian customers. These studies chime with Tamilmani et al. (2019) who have emphasized the importance of ensuring consumer technologies are designed to fulfil the hedonic needs of users in order to facilitate increase adoption. Therefore, the more e-tail websites meet consumers' hedonic needs, the more likely consumers are to adopt and use them. Therefore, it is hypothesized that:

> H5: Hedonic motivation has a positive impact on the behavioral intention to use e-tail websites

Price Value. Defined as "consumers' cognitive trade-off between perceived benefits of the applications and monetary cost for using them" (Tamilmani et al. 2018a; Venkatesh et al. 2012, p. 191), price value is positive when the returns of using a technology are perceived greater than the monetary cost for using them. If the perception of price value to use e-tail websites is that it provides greater returns compared to its monetary cost (e.g. internet connectivity charges, cost of mobile phones), consumers will be more willing to adopt e-tail websites. Using responses from 375 respondents, Dwivedi et al. (2016) have demonstrated that price value is a crucial factor that influences behavioral intention to use mobile health among individuals in Bangladesh. Therefore, the subsequent hypothesis is suggested:

> H6: Price value has a positive impact on the behavioral intention to use e-tail websites.

Habit. Another factor that was also added to the revised UTAUT2 model is habit. Habit was added to the UTAUT model to account for the extent to which individuals perform a behavior automatically as a result of learning (Tamilmani et al. 2018b; Venkatesh et al. 2012). Consistent with several previous studies, habit has been found to be a significant predictor of behavioral intention across a range of technologies. For example, Dhir et al. (2018) demonstrated that habit is the most dominant predictor of behavioral intention to use social network sites among users in India. When users use

e-tail websites to access a range of goods and services routinely, repeatedly and frequently, their habit may influence the behavioral intention to adopt and use e-tail websites. Therefore, it is hypothesized that:

H7a: Habit has a positive impact on the behavioral intention to use e-tail websites.
H7b: Habit has a positive impact on the use behavior of e-tail websites.

Behavioral Intention and Use Behavior. Behavioral intention is defined as the subjective probability that a behavior will be performed (Fishbein and Ajzen 1975), while use behavior represents the actual use of the technology. Behavioral intention assesses the degree to which a technology will be utilized by its intended users. In line with the Venkatesh et al. (2012), use behavior is significantly influenced by behavioral intention. In other words, users that exhibit a strong behavioral intention have a higher propensity of acceptance and use for that technology. Therefore, it is hypothesized that:

H8: Behavioral intention has a positive impact on the use behavior of e-tail websites.

Augmenting the UTAUT2 with Risk and Trust Factors. Trust is defined as the degree to which consumers are willing to believe that their expectations will be met during online transaction (McKnight et al. 2002), while risk represents the consumer's subjective belief about the potential for something to go wrong when undertaking online transactions (Garbarino and Strahilevitz 2004). Within the e-commerce literature, there is a long-standing debate on how the risk-trust relationship influences the uptake of electronic services (Gefen et al. 2008). On the one hand, risk is viewed as an antecedent to trust; studies adopting this view (e.g. Chandra et al. 2010) suggest that risk concerns hinder the trust in online services and that the need for consumers to develop trust is predicated on their perceptions of risk. On the other hand, trust is viewed as an antecedent to risk (Pavlou and Gefen 2005). This perspective recognizes the need to facilitate trusting beliefs that reduce the risk concerns among consumers (Mou et al. 2017). Despite the well-established positions concerning the risk-trust relationships, there are still limited studies that have focused on how the risk-trust relationships might be integrated into the UTAUT model (Schaupp et al. 2009). Moreover, to the best of our knowledge, no study has investigated how the risk-trust relationships might influence behavioral intention to use e-tail websites in a sub-Saharan context.

In this study, trust is investigated with reference to the technology, that is e-tail websites; while risk refers to the consumer's perceived risk of using e-tail websites. Together, these risk and trust factors particularly inhibit the adoption of e-services within several African countries (Ayo et al. 2011). For instance, a recent study carried by Ipsos (2015) in Nigeria has shown that users exhibit high suspicions of online transactions (such through e-tail websites) due to the high levels of cybercrimes reported within the country. Furthermore, spamming has been recognized as one of the most prevalent activities on the Nigerian Internet landscape, with many Nigerians believing they are susceptible to identity theft when they engage in online transactions (Osei and Gbadamosi 2011). The perceived risk of e-tail websites may thus keep potential consumers from engaging with such online platforms. In other words, it can

be argued that the lack of consumer trust in e-tail websites has translated to an increase in the perceived risk of engaging in online shopping transactions. In support, Kim et al. (2008) has portrayed how risk and trust factors influence consumers' e-commerce purchasing decisions such that their disposition to trust e-commerce platforms had the strongest influence on their purchase intention. Hence, in the context of e-tail websites, we hypothesize that:

> H9a: Consumer trust in e-tail websites has a positive impact on their behavioral intention to use e-tail websites.
> H9b: Consumer trust in e-tail websites has a negative impact on consumers' perceived risk of using e-tail websites.

In addition, risk perceptions have been found to have a negative impact on intentions (Slade et al. 2015a). The higher levels of risk perceptions are likely to negatively affect a consumer's intention to use e-tail websites. Empirical findings have confirmed this relationship in different technological contexts (Pavlou 2003). Hence, it is hypothesized that:

> H10: Perceived risk of using e-tail websites has a negative impact on the behavioral intention to use e-tail websites.

Based on the stated hypotheses, Fig. 1 presents the theoretical research model for this study.
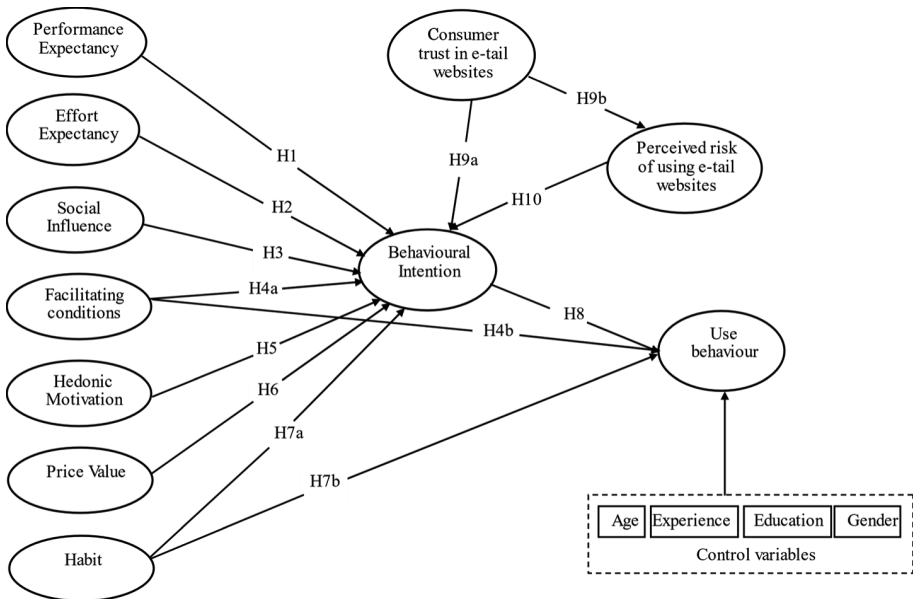
Fig. 1. Modified UTAUT2 model (Source: Adapted from Dwivedi et al. 2017a, b; Rana et al. 2016, 2017; Venkatesh et al. 2012)

3   Methodology

To empirically test the proposed research model (Fig. 1), the study used an online survey. A non-probability convenience sampling technique was used to collect data, first by circulating the URL to the questionnaire setup on Qualtrics to a population of students from a university located in south-west Nigeria. An introduction to the survey, its aims and objectives were provided on first page of the online survey questionnaire. In addition, we asked them to spread the URL to their friends and family members who have used e-tail websites. They were informed that participation was voluntarily and that their answers were confidential, to be used for research purposes only. We also assured respondents of anonymity to ensure that we minimized common method bias (Podsakoff et al. 2003). All constructs were measured using previously validated and well-documented multi-item scales. The scale for the UTAUT2 constructs were adapted from Venkatesh et al. (2012). All UTAUT2 measures as well as risk and trust measures were reflective except use behavior which is a formative measure. Perceived risk of using e-tail websites and consumer trust in e-tail websites were measured using items adapted from Rana et al. (2015) and Chandra et al. (2010) respectively; while demographic data such as age, gender, education, as well as how long respondents had been using e-tail websites was also collected. The items for all constructs are included in Table 1. The reflective constructs were measured using seven-point Likert scales ranging from totally disagree (1) to totally agree (7). Following the example of Venkatesh et al. (2012) to measure use behavior, a list of five popular e-tail websites (that is, Jumia, Konga, SMEMarketHub, Yudala and Gloo) in Nigeria was provided, and respondents were asked to indicate their usage frequency for each. The anchors used for these questions was a seven-point scale that ranged from "less than once a month" to "several times a day".

Harman's single-factor test was computed based on principal component analysis (PCA) and revealed the largest variance explained by one factor was 30%. Since the one factor did not account for more than 50% variance, common method bias was deemed unlikely (Podsakoff et al. 2003). This approach provides easy access to respondents in a practical and quick manner (Neuman 2011). Overall, the survey questionnaire was sent to 404 users of e-tail websites. Among these, a total of 197 responses were disregarded for the following reasons. (1) the responses were completed within 5 min, whereas the researchers had estimated in a pre-test that the questionnaire would take at least 10 min to complete. Such rapid responses therefore suggest that respondents had not completed in a haste; (2) responses were incomplete and could not be used for the data analysis because questions indicating relevant variables were left unanswered; (3) responses collected from participants outside Nigeria were removed using the reported IP address of each participant. This ensured only those based on Nigeria remained for the final sample. In total, we obtained a sample of 207 valid responses, indicating a 51% sample response rate.

This sample size satisfies three different criteria for the lower bounds of sample size for PLS-SEM: (1) ten times the largest number of structural paths directed at a particular construct in the inner path model (therefore for the model tested here the sample size threshold for the model in this study would be 90 cases) (Chin 1998) and (2) according to Anderson and Gerbing (1988), a threshold for any type of SEM is

approximately 150 respondents for models where constructs comprise of three or four indicators. (3) Moreover, the sample size also satisfies stricter criteria relevant for variance-based SEM: that is, the recommended ratio of five cases per observed variable (Bentler and Chou 1987). In this case, the sample size threshold would be 175 cases. Most respondents in our sample were males (63.8%) compared to females (36.2%). Participants varied with respect to their level of education as 66.2% reported having attended and obtained a bachelor's degree, while 16.4% had completed a postgraduate qualification (e.g. master's and PhD program). In addition, most of respondents in the sample were aged between 18–35 years and reported to have been using e-tail websites for at least 2 years or more (67.6%).

4 Analysis and Results

The data collected was analysed using SmartPLS 3.2.7 to perform the Partial Least Square (PLS) (Ringle and Wende 2015). PLS allows the modelling of formative and reflective measures in the same model. It also makes fewer assumptions about how the data are distributed compared to more widespread covariance-based SEM techniques (Hair et al. 2016). Using PLS, our research model was analysed in two stages guided by Hair et al. (2016): (1) the assessment of the measurement model: which includes calculating the reliability and validity of the various constructs in the model; and (2) the assessment of the structural model. These two stages represent the process through which conclusions can be drawn concerning the hypothesized paths among the constructs (Ringle and Wende 2015).

Table 1. Measurement model

Construct/Dimension/Item	Loadings	CA[a]	CR[b]	AVE[c]
Performance Expectancy (PE)		0.832	0.888	0.665
1 I find online shopping useful in my daily life	0.802			
2 Using online shopping increases my chances of achieving things that are important to me	0.826			
3 Using online shopping helps me accomplish things more quickly	0.804			
4 Using online shopping increases my productivity	0.830			
Effort Expectancy (EE)		0.769	0.852	0.592
1 Learning how to use online shopping websites is easy for me	0.764			
2 My interaction with online shopping websites is clear and understandable	0.788			
3 I find online shopping websites easy to use	0.852			
4 It is easy for me to become skillful at using online shopping websites	0.662			
Hedonic Motivation (HM)		0.718	0.840	0.637
1 Using online shopping website is fun	0.814			
2 Using online shopping website is enjoyable	0.817			
3 Using online shopping website is very entertaining	0.763			
Habit		0.893	0.933	0.824
1 The use of online shopping websites has become a habit for me	0.891			
2 I am addicted to using online shopping websites	0.933			

(*continued*)

Table 1. (*continued*)

	Construct/Dimension/Item	Loadings	CA[a]	CR[b]	AVE[c]
3	I must use online shopping websites	0.898			
	Price Value (PV)		0.820	0.893	0.737
1	Online shopping is reasonably priced	0.884			
2	Online shopping is good value for money	0.898			
3	At the current price, online shopping provides a good value	0.789			
	Social Influence (SI)		0.864	0.917	0.786
1	People who are important to me think that I should use online shopping websites	0.864			
2	People who influence my behavior think that I should use online shopping websites	0.902			
3	People whose opinions that I value prefer that I use online shopping websites	0.893			
	Consumer trust in e-tail websites (CT)		0.912	0.938	0.792
1	I trust online shopping websites are reliable	0.873			
2	I trust online shopping websites are secure	0.917			
3	I trust online shopping websites are trustworthy	0.909			
4	I trust the quality of products displayed on online shopping websites	0.859			
	Perceived risk of using e-tail websites (PR)		0.747	0.836	0.561
1	Use of online shopping websites may cause my personal information to be stolen	0.682			
2	I will feel uneasy psychologically when I use online shopping websites	0.787			
3	I think it would be unsafe to use online shopping websites because of privacy and security concerns	0.761			
4	I believe that there could be negative consequences by using online shopping websites	0.760			
	Facilitating conditions (FC)		0.723	0.828	0.547
1	I have the resources necessary to use online shopping websites	0.746			
2	I have the knowledge necessary to use online shopping	0.774			
3	Online shopping is compatible with other technologies I use	0.776			
4	I can get help from others when I have difficulties using online shopping	0.656			
	Behavioral Intention (BI)		0.770	0.866	0.684
1	I intend to continue using online shopping websites in the future	0.776			
2	I will always try to use online shopping websites in my daily life	0.815			
3	I plan to continue to use online shopping websites frequently	0.887			

Note: [a] Cronbach alpha; [b] Composite reliability; [c] Average variance extracted

4.1 Measurement Model

The measurement model for the reflective constructs in our model is examined in terms of construct validity of the measurement scales, indicator reliability, convergent and discriminant validity (Bagozzi and Yi 1988). The internal consistency of each construct was also well above the recommended threshold of 0.7 (Hair et al. 2016). According to Chin and Newsted (1999), all indicator loadings should be greater than 0.7. As can be seen in Table 1, all loadings except two (that is, EE4 and PR1) were above this

recommended threshold. We kept both indicators because their loadings were close to the threshold. Besides, Chin (1998) has suggested that indicator loadings of 0.6 is still adequate for inclusion in the measurement model. To establish convergent validity, we examined the average variance extracted (AVE). The average variance extracted (AVE) measures the amount of variance captured by the focal construct from its indicators relative to the measurement error (Chin 1998). MacKenzie et al. (2011) point out that AVE should be greater than 0.5 to ensure constructs account for more than 50% of the variance in its indicators. As can be inferred from Table 2, the reported AVE values of the constructs met this criterion. Finally, we examined the discriminant validity of our measurement model. It represents the extent to which each of the constructs in our model differ from each other (Fornell and Larcker 1981). To assess whether discriminant validity between the constructs in our model had been established, we used two approaches: the Fornell–Larcker criterion (Fornell and Larcker 1981) and the Heterotrait–Monotrait (HTMT) ratio of correlations (Henseler et al. 2015).

Concerning the Fornell-Larcker criterion, the square root of the AVE was computed for each construct. For adequate discriminant, validity, the diagonal elements should be significantly greater than the off-diagonal elements in the corresponding rows and columns (Fornell and Larcker 1981). As can be seen in Table 2, all reflective constructs satisfy this condition; therefore, the Fornell-Larcker criterion was met. With respect to the second criterion, this study applies the HTMT ratio – which computes the ratio between the average correlations across constructs measuring different phenomena relative to the average correlations of indicators measuring the same construct. In the guidance provided on how to handle discriminant validity issues in covariance-based SEM, Henseler et al. (2015) have suggested that an HTMT threshold value of 0.9 is adequate for the UTAUT model. As can be observed in Table 3, all values were lower than Henseler et al.'s recommended threshold value. Therefore, we can conclude that discriminant validity was established for our study based on the Fornell-Larcker and HTMT criteria.

Table 2. Discriminant validity – Fornell-Larcker criterion.

	BI	EE	FC	Habit	HM	Risk	PE	PV	SI	Trust
BI	**0.827**									
EE	0.539	**0.770**								
FC	0.482	0.640	**0.740**							
Habit	0.644	0.292	0.275	**0.908**						
HM	0.558	0.427	0.430	0.389	**0.908**					
Risk	−0.032	−0.065	−0.022	−0.039	−0.089	**0.749**				
PE	0.654	0.443	0.391	0.576	0.440	−0.064	**0.816**			
PV	0.547	0.266	0.173	0.515	0.451	−0.074	0.539	**0.858**		
SI	0.585	0.296	0.246	0.516	0.362	−0.007	0.548	0.467	**0.886**	
Trust	0.477	0.357	0.319	0.350	0.443	−0.347	0.416	0.443	0.313	**0.890**
Use	0.467	0.315	0.214	0.608	0.301	−0.116	0.462	0.407	0.410	0.407

Note: BI: Behavioral intention; EE: Effort expectancy; FC: Facilitating conditions; HM: Hedonic motivation; PE: Performance expectancy; PV: Price value; SI: Social influence; Square root of AVE is shown in bold at diagonal, while off-diagonal values are the estimates of inter-correlation between the latent constructs.

Table 3. Discriminant validity – Heterotrait-Monotrait ratio (HTMT)

	BI	EE	FC	Habit	HM	Risk	PE	PV	SI	Trust
BI										
EE	0.692									
FC	0.645	0.858								
Habit	0.765	0.346	0.342							
HM	0.730	0.552	0.577	0.480						
Risk	0.137	0.171	0.160	0.082	0.193					
PE	0.800	0.555	0.502	0.663	0.544	0.120				
PV	0.677	0.332	0.221	0.602	0.584	0.132	0.649			
SI	0.707	0.374	0.303	0.585	0.456	0.057	0.646	0.551		
Trust	0.558	0.420	0.381	0.386	0.535	0.394	0.475	0.517	0.351	

Note: BI: Behavioral intention; EE: Effort expectancy; FC: Facilitating conditions; HM: Hedonic motivation; PE: Performance expectancy; PV: Price value; SI: Social influence

4.2   Structural Model

To assess the structural model, we used two main criteria: the level of significance of the path coefficients and the variance explained (R^2) (Hair et al. 2016). T-values were computed based on a bootstrapping procedure using 5000 resamples and the statistical significance of the path coefficients were determined using a two-tailed distribution (Ringle and Wende 2015). In total, the results indicate that nine out of thirteen hypotheses in the model were supported. Performance expectancy ($\beta = 0.152$, $\rho = 0.012$), effort expectancy ($\beta = 0.171$, $\rho = 0.011$), social influence ($\beta = 0.172$, $\rho = 0.000$), hedonic motivation ($\beta = 0.135$, $\rho = 0.031$), consumer trust in e-tail websites ($\beta = 0.097$, $\rho = 0.033$) and habit ($\beta = 0.262$, $\rho = 0.000$) all had a positive impact on the behavioral intention to use e-tail websites. However, contrary to initial predictions, we found no empirical evidence for the direct effect of price value ($\beta = 0.087$, $\rho = 0.074$), facilitating conditions ($\beta = 0.096$, $\rho = 0.062$) and perceived risk of using e-tail websites ($\beta = 0.055$, $\rho = 0.118$) on the behavioral intention to use e-tail websites. In addition, behavioral intention ($\beta = 0.137$, $\rho = 0.022$) and habit ($\beta = 0.493$, $\rho = 0.000$) were found to have a positive impact on use, while the influence of facilitating conditions on use as hypothesized was not supported ($\beta = -0.024$, $\rho = 0.349$). A summary of hypothesized relationships is found in Table 4.

This study went further and included four control variables, namely experience with using e-tail websites, level of education, gender and age. All control variables except gender variables were found to significantly impact on the behavioral intention to use e-tail websites. To assess the quality of the model, the coefficient of determination (R^2), which represents the amount of variance explained of each endogenous latent variable computed (Hair et al. 2016). The literature prescribes R^2 of 0.67, 0.33 and 0.19 as large, moderate and weak, respectively (Chin 1998). Overall, the model was found to explain 67.5% of variance ($\rho < 0.001$) in behavioral intention and 43.5% in use behavior. Therefore, we believe that the research model substantially explains variations in the behavioral intention to use e-tail websites. Finally, we used the

standardized Root Mean Square Residual (SRMR) to assess the approximate fit for the research model. Defined as the difference between the observed correlation and the model implied correlation matrix, Hu and Bentler (1999) have suggested a cut-off value of 0.08. The model presented in this study shows an acceptable fit (SRMR = 0.067).

Table 4. Results of structural model assessments

Direct relationships	β	t-value	Hypothesis validation
Performance expectancy → Behavioral intention	0.152*	2.274	Supported
Effort expectancy → Behavioral intention	0.171*	2.282	Supported
Social Influence → Behavioral intention	0.172***	3.475	Supported
Facilitating conditions → Behavioral intention	0.096	1.539	Not supported
Hedonic motivation → Behavioral intention	0.135*	1.869	Supported
Price value → Behavioral intention	0.087	1.135	Not supported
Habit → Behavioral intention	0.262***	4.687	Supported
Risk → Behavioral intention	0.055	1.183	Not supported
Trust → Behavioral intention	0.097*	1.833	Supported
Trust → Risk	−0.347***	4.399	Supported
Facilitating conditions → Use	−0.024	0.387	Not supported
Habit → Use	0.493***	7.643	Supported
Behavioral intention → Use	0.137*	2.006	Supported
Control variables	β	t-value	Hypothesis validation
Age → Use	−0.110*	1.808	Supported
Gender → Use	0.007	0.133	Not supported
Education → Use	0.156*	2.420	Supported
Experience → Use	0.170*	2.808	Supported

Note. Bootstrap is based on 5000 resamples; [*$\rho < 0.05$; **$\rho < 0.01$; ***$\rho < 0.001$]

5   Discussion

The purpose of this study was to investigate the factors that influence users' behavioral intention and usage of e-tail websites. Specifically, we employed an integrated model which combines the UTAUT2 with risk and trust factors to explore the adoption and use of e-tail websites in Nigeria. The model explained 67.5% variance of behavioral intention and 43.5% variance of the e-tail use behavior. In predicting behavioral intention, performance expectancy, effort expectancy, social influence, hedonic motivation, trust and habit were all significant. On the other hand, risk, price value, facilitating conditions did not exert any influence on behavioral intention. With regards to the direct predictors of e-tail use behavior, the results of the structural model analysis showed that habit and facilitating conditions were significant and non-significant predictors respectively.

With respect to the significant predictors, Habit had the greatest impact on users' behavioral intention to use e-tail websites with a coefficient value of 0.262 (p < 0.001). This suggests that users' behavioral intention regarding the use of e-tail websites is

highly influenced by the extent to which it has become a habit in their day-to-day lives. This finding is consistent with recent studies that has been conducted in developing countries in Africa (Baptista and Oliveira 2015). The second most important predictor of behavioral intention was social influence with a coefficient value of 0.172 (p < 0.001), suggesting that for Nigerian users, the behavioral intention to use e-tail websites is reinforced by the opinions of close social referents. This can be explained by the fact that African countries such as Nigeria tend to score low along the dimensions of individualism-collectivism as it pertains to the influence of national culture. On this dimension, Nigeria scores 30 on a scale of 100, which means it is a collectivist-oriented environment (Hofstede Insights 2018). In other words, the adoption of e-tail websites is likely to be influenced by the recommendations of people with whom close social ties are shared. This result is consistent with the revised UTAUT2 model (Venkatesh et al. 2012) that have also portrayed the significant influence of social influence on behavioral intention in other similar country contexts.

Consistent with previous UTAUT assumptions, the results also show that effort expectancy, with a coefficient value of 0.171 had a significant influence (p < 0.05) on behavioral intention to adopt e-tail websites. This suggests that the intention to use e-tail websites is also reinforced when they are easy to use. In other words, e-tail websites which are easy to use should likely lead to more consumers using them. Also, performance expectancy had a significant effect on the behavioral intention to use e-tail websites. This result reflects the importance of the perceived usefulness of e-tail websites by consumers as a means to encourage adoption behavior. Similar results have been obtained in Kaba and Touré (2014) and Baptista and Oliveira (2015) whose studies focused on the use of Social Network Sites and mobile banking respectively. Finally, hedonic motivation was found to positively influence behavioral intention to use e-tail websites, indicating that making use of e-tail websites fun and enjoyable makes it more likely that the adoption of e-tail websites will be successful. This positive relationship between hedonic motivation and behavioral intention is also in line with recent studies (Alalwan et al. 2018; Dhir et al. 2018).

With respect to the risk-trust inter-relationships to the adoption and use of e-tail websites, the results are mixed. Empirical results showed that while consumer trust in e-tail websites significantly influenced their behavioral intention ($\beta = 0.097$, p < 0.05), the hypothesized relationship between the perceived risk of using e-tail websites and behavioral intention yielded an insignificant result. As a result, the expected relationship between trust and risk as hypothesized was confirmed. In other words, consumer trust in e-tail websites has a negative influence on the perceived risk to use e-tail websites ($\beta = -0.347$, p < 0.001). This shows that trust plays an important role in motivating consumers' adoption of e-tail websites by reducing perceived risk concerns and increasing behavioral intention to use e-tail websites. This finding is in line with previous IS literature regarding the influence of perceived trust and risk on behavioral intention (Kim et al. 2008).

However, contrary to our expectation, perceived risk in e-tail websites had no significant influence on behavioral intention. Given the high levels of skepticism that follows online transactions in Nigeria, we had expected that consumers' perceived risk of using e-tail websites will have a significantly negative influence on their behavioral intention. One plausible explanation for this result may be that most respondents in our

sample are majorly younger adults who are often well-acquainted with technologies. Studies have shown that this user demographic exhibit high risk-tolerant behaviors with regards to technology adoption (Martin et al. 2014). This result is consistent with some extant studies that have been conducted in African countries using similar age-groups (see Kaba and Touré 2014), and contradicts some (such as Martins et al. 2014; Slade et al. 2015a, b), conducted in non-African contexts. Furthermore, contrary to our expectation, the results showed that facilitating conditions and price value all had no significant influence on behavioral intention. With respect to price value, the results show that consumers do not consider it to be a fair trade-off been the associated costs and benefits.

5.1   Theoretical Implications

With the rapid rise in internet penetration experienced in Africa, the use of e-tail websites and the online retail industry is set to gain rapid prominence (McKinsey 2014). Hence, there is a need to evaluate the factors that predict adoption and usage of e-tail websites. To date, the majority of studies investigating these factors have been mainly focused on developed countries. Less attention has been paid to developing countries, such as those in sub-Saharan Africa. Besides, there is limited research that has employed robust theoretical frameworks such as UTAUT to comprehensively explain adoption and use of technology in a sub-Saharan context (Kaba and Touré 2014). This study thus makes a significant contribution by broadening our understanding of factors that predict the adoption of e-tail websites in Nigeria. In this study, it was found that habit was the most important factor influencing e-tail website behavioral intention, as well as use behavior. In other words, this study contributes to expanding the geographical scope of adoption research by focusing on an emerging consumer-use phenomenon.

Second, in addition to evaluating the predictive relevance of the UTAUT2 model in the Nigerian context, this study also assesses risk and trust factors as additional predictors of behavior intention to use e-tail websites. The integrated model provides a more holistic view of a consumer's purchase decision-making process as it pertains to the use of e-tail websites, incorporating the effects of consumer's trust and risk factors alongside the UTAUT2. The support of trust's influence on behavioral intention to use e-tail websites is concurrent with several previous studies in the e-commerce literature (e.g. Bélanger and Carter 2008). Interestingly, while higher levels of trust in e-tail websites decreased consumers' perceived risk of using e-tail websites as expected, perceived risk of using e-tail websites did not decrease their behavioral intention. The perceived risk result in relation to behavior intention contradicts earlier research (Schaupp and Carter 2010; Martins et al. 2014).

Third, our study demonstrates the application of the UTAUT2 model as a valuable theoretical toolkit to explore the adoption of consumer-use technologies in different contexts. It examines the predictive value of the revised UTAUT2 model (Venkatesh et al. 2012). While Venkatesh et al. (2012) found that the UTAUT2 explains 74% of the variance in behavioral intention and 52% of technology use, the authors have highlighted the need for future research to test the model among different age groups, technologies and countries. On account of the partial least squares structural equation

modelling undertaken in this research, this research responds to this call by evaluating predictive relevance of the revised UTAUT2 model on a sample of e-tail users from a relatively under-researched country context – Nigeria. It provides empirical support for most of the hypothesized relationships, thereby validating the revised UTAUT2 model using robust analytical techniques.

5.2   Practical Implications

From a practical perspective, based on our set of empirical results, we suggest e-tail providers in Nigeria to build the trust of e-tail users. In business in general, trust is viewed as one of the most important antecedents of a stable long-term relationship in Business to Consumer (B2C) business models. To build trust, e-tail providers can take necessary actions to ensure security on their platforms and provide clear information about what they are doing on their platforms to consumers. Our results also suggest that e-tail providers could improve packages that appeal to social groups such as family and friends to bolster consumer-use of their e-tail platforms. Also, strategies aimed at improving the adoption of e-tail websites are more likely to be successful if they emphasize the benefits of e-tail usage amongst family and friends within their campaigns. To this end, e-tail service providers could promote their online platforms through social media, for instance. Such marketing activities could utilize social networks when targeting marketing campaigns to different consumers.

6   Conclusion, Limitations and Future Research

This aim of this study was to understand factors that influence the adoption and use of e-tail websites in a sub-Saharan country context. We tested the factors using the revised UTAUT model augmented with risk and trust factors. By understanding the factors that influence adoption and use of e-tail websites, investments into the e-commerce industry can evolve, aligning online service provisions with important consumers' needs. The findings reveal that performance expectancy, effort expectancy, social influence, consumer trust in e-tail websites, hedonic motivation and habit were important to form consumers' behavioral intentions. In other words, we provide researchers and policy makers with insights on how to encourage the adoption and usage of e-tail websites in Nigeria. Given the expected rise in the use of e-tail websites, we recommend that more research is needed to explore the adoption and use of e-tail websites attention in future studies.

However, this study suffers from some limitations which should be considered when interpreting its findings. First, the survey used in the study was conducted using online-based forms and employed non-random convenience sample, because obtaining a larger sample using random sampling method would be costly. As a result, the resulting sample for the study was limited to only respondents with internet access. Thus, to enhance generalizability in a context like Nigeria, future research could utilize the use of paper-based questionnaires to augment online versions. Second, the relationships were assessed using cross-sectional data, resulting in findings that apply to a single point in time. However, perceptions change over time as individuals gain

experience (Venkatesh et al. 2012), and it is likely that perceived risk and trust factors may also be influenced over time. As a result, further studies may enhance our understanding of the interrelationships between the key variables predicting the adoption and use of e-tail websites by utilizing longitudinal research. In addition, future studies can extend this work by investigating how the relationships used in this study might vary among different samples such as older users. Another study may compare results among users in urban and rural contexts to draw attention to the digital divide that often exists in developing country contexts. This empirical study thus provides insights upon which future research can build upon.

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