

**Customers' Affective Responses Towards
the Key Factors Influencing E-Commerce
Adoption: Extended Technology
Acceptance Model (TAM) Approach**

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Abstract

The rate of e-commerce (EC) adoption in developing countries is generally lower than in developed countries. Moreover, little is known about the emotional dimensions of adopting EC in the retail sector of a developing country, with evidence from Nigeria. Therefore, this study uniquely focused on the importance of customers' affective responses to the critical, context-specific EC adoption factors in a developing country. The aim was to investigate how customers' emotional responses influence their online purchase intention and EC adoption. Subsequent to reviewing relevant literature, a preliminary conceptual research framework was developed. Grounded in a duality of the Technology Acceptance Model (TAM) by Davis (1989) and the Stimulus Organism Response (SOR) theory by Mehrabian and Russel (1974), the developed conceptual framework provided a robust foundation for further empirical research. Data was collected in two phases: (1) quantitative data was collected in the first phase to test the integrated TAM and SOR framework using a survey questionnaire (312 adult internet users); and (2) qualitative data was collected in the second phase through semi-structured interviews (eight online shoppers). The quantitative data was analysed using robust analytic tools such as SPSS and AMOS. Whilst Structural Equation Modelling (SEM) was employed to examine the model fits and hypothesis testing, the NVivo Software was used to analyse the qualitative data.

The findings indicated that six factors, perceived usefulness, legal factor, EC adoption awareness, reputation, customers' positive emotional responses and IT infrastructure were found to be the significant predictors of online purchase intention within the Nigerian context. Whilst perceived usefulness was the most influential predictor of purchase intention to adopt EC; however, IT infrastructure was found to be the least influential factor. Moreover, positive and negative emotions played an amplifying role in mediating the effects of compatibility and EC awareness on purchase intention of the Nigerian customers. Whilst customers' emotions partially mediated the relationship between EC awareness and purchase intention, the same fully mediated the relationship between compatibility and purchase intention. Overall, the study illustrates that the proposed model has a good explanatory power, hence robust in predicting and explaining EC adoption in Nigeria.

The study provides an update to existing literature on technology acceptance and EC adoption factors. The theoretical implications include contributing to the debate on the impact of human emotions (affective responses) on, and their interconnections with, EC adoption. The proposed framework could facilitate domestic and multinational organisations to streamline online retailing strategies to gain business opportunities in developing economies. The findings may also benefit online retailers, policy makers and the society at large. This research also provides managers and online business retailers with the practical knowledge of the EC key factors' ranking of importance and the influence of emotional responses variables from customers' standpoint. Retailers could leverage on these valuable insights to formulate their business operations. Furthermore, the study provides useful recommendations to boost EC adoption in developing countries. These include awareness creation for customers, and collaborations between governments, the private sector, website designers and retailers on using digital channels for EC success through informative training. Finally, the work identifies key avenues for future research.

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Declaration

I hereby declare that no portion of this work has been submitted in support of an application for any other degree or qualification at this or any other university or institution of learning. In addition, I hereby confirm that, this thesis is solely my work and all work of others cited in this thesis have been acknowledged.

Signed: *Bukola O. Fatchun*

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List of Abbreviations

AGFI	Adjusted Goodness-of-Fit Index (Model appropriateness measure)
AMOS	Analysis of Moment Structures ((Quantitative data analysis software)
AVE	Average variance extracted
B2C	Business to Consumers
CARs	Customers' Affective Responses
CERs	Customers' Emotional Responses
CERN	Customers Emotional Response (Negative)
CERP	Customers Emotional Response (Positive)
CFA	Confirmatory Factor analysis
CFI	Comparative Fit Index (Model appropriateness measure)
CMB	Common Method Bias
CRF	Cultural Factor
COMP	Compatibility
DOI	Diffusion of Innovations
EC	Electronic Commerce or E-commerce
ECA	E-commerce Awareness
EFA	Exploratory Factor analysis
EtailQ	Electronic Retail Quality (Website quality measure)
GFI	Goodness-of-Fit Index (Model appropriateness measure)
FMoCDE	Federal Ministry of Communication and Digital Economy
ITF	Information Telecommunication Infrastructure
ITU	International Telecommunication Union
KMO	Kaiser-Meyer-Olkin (Sampling adequacy measure)
LGF	Legal Factor
MI	Modification Indices (SEM measure)
MMR	Mixed Methods Research
NFI	Normed Fit Index (Model appropriateness measure)
OS	Online Shopping
OSE	Online Shopping Environment
PEOU	Perceived Ease of Use
PIT	Purchase Intention
PU	Perceived Usefulness
QUAL	Qualitative
QUAN	Quantitative
REP	Reputation
RMR	Root Mean Square Residual (Model appropriateness measure)
RMSEA	Root Mean Square Error of Approximation (Model appropriateness measure)
SED	Sequential Explanatory Design
SEM	Structural Equation Modelling
SMC	Squared Multiple Correlations (SEM measure)
SMEs	Small and Medium-Sized Enterprises
SRMR	Standardised Root Mean Square Residual (Model appropriateness measure)
SOR	Stimulus Organism Response
SPSS	Statistical Package for Social Science (Quantitative data analysis software)
TAM	Technology Acceptance Model
TLI	Tucker Lewis Index (incremental fit index)
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action

List of Publications

Conference Papers

1. **Fatokun, B.**, Foster, S., Kelly, P. and Nawaz, M. (2021) Investigating the Predictors of E-commerce Adoption: The Mediating Role of Customers' Affective Responses. [Extended Abstract] *In: Proceedings of the Faculty of Business and Law Annual Doctoral Conference. Dec 7, 2021, Liverpool, UK* <https://doi.org/10.24377/BLRD.2021>

Won Best Poster Award, LJMU Faculty of Business & Law Annual Doctoral Conference (2021)

2. **Fatokun, B.**, Foster, S., Kelly, P. and Nawaz, M. (2022) Positive Responses Enhance Online Purchase Intention: Illuminating the Explanatory Power of Customers' Emotions in E-Commerce Adoption. [Extended Abstract] *In: Proceedings of the Faculty of Business and Law Annual Doctoral Conference. Dec 8, 2022, Liverpool, UK* <https://doi.org/10.24377/BLRD.2022>

Won Best Presentation Award, LJMU Faculty of Business & Law Annual Doctoral Research Conference (2022)

Papers in Progress

1. Investigating the online purchase behaviour of customers in a developing economy: Technology Acceptance Model and Stimulus Organism Response Model (TAMSOR) approach.

2. The influence of response mediators on the online purchase behaviour of customers in a developing economy – Empirical evidence from Nigeria.

Chapter 1: Introduction

1.1 Introduction

This chapter introduces the background to the study (Section 1.2) and then presents the purpose of the study (Section 1.3). It then goes on to identify the research problem (Section 1.4), after which the study's overarching aim, objectives and research questions are presented (Section 1.5). The significance of the research is then outlined (Section 1.6), before ending with an overview of the thesis outline (Section 1.7).

1.2 Research Background

Chevalier (2021) reported 1.4 billion people globally shopped online on a weekly basis in 2018, which translated to a staggering online shopping frequency equating to around 20% of the world population. This is an indication that the Internet is connecting people in a tremendous way and transforming not only customers' shopping behaviour, but also a staggering range of traditional retailers who are redefining their business strategies: either by complementing a physical with an electronic channel in a multichannel strategy, or by entirely switching to online channels (Chen, Gillenson and Sherrell, 2002; Blazquez, 2014). A fierce competition in today's retailing system, which is heightened in part by the popularity of online shopping (Paul and Rosenbaum, 2020), has resulted in online retailers changing their pre-existing ways of doing business, collaborating and competing (Singh and Pathak, 2020). In the same vein, a global increase in Internet penetration and a surge in phone usage have spurred accelerated growth of EC, leading to a sharp decline in offline commerce (Esho and Verhoef, 2021; Yu and Han, 2021). No wonder then that EC continues to draw the attention of researchers, as exemplified by this piece of research work.

The sudden advent of the COVID-19 pandemic has led to a further unprecedented, global surge in EC. For instance, worldwide in 2020, there were 22 billion retail website visits during the pandemic, over 2 billion people purchasing online, and \$4.28 trillion retail EC sales, representing 25% more than the previous year (Coppola, 2022; Clement, 2021). These are significant figures that not only validate an accelerated growth of online shopping but also indicate the increasing importance and relevance of EC to the retail industry in the current times. During the pandemic, the EC provided a safer means (no risk of getting infected) for customers to make their purchases as and when needed. The pandemic has accelerated EC adoption and strained supply chains, while consumer expectations around delivery speed and visibility have

reached an all-time high, and, overall, retail has experienced more change over the past five years than the prior fifty (Barbee et al., 2021).

However, according to the United Nations Conference on Trade and Development (UNCTAD), EC uptake in low-income economies (developing markets or developing economies) is considerably lower compared to advanced economies, since the former have limited resources and capacities (UNCTAD, 2019). Furthermore, the latter seem to be better prepared in responding to the various challenges relating to the adoption of digital platforms. Moreover, the lower levels of preparedness for EC adoption in the developing economies not only relate to wireless connectivity issues but are also found in the technological and logistical domains, including weak regulatory and organisational capacities. In their investigation of online purchase intention among customers in different regions of the world, Peña-García et al. (2020) concluded that substantial differences were found with respect to EC adoption: the customers in developing countries are characterised with being used to face-to-face transactions and not trusting the electronic processing because of the risks involved. Notwithstanding, Foster and Rosenzweig (2010) stated that technological adoption and diffusion are one of the means by which poorer countries can catch up with richer countries. Therefore, Skaletsky et al. (2016) asserted that if the development of poor countries hinges majorly on technological diffusion, the digital situations portrayed in these economies must be explained by one of these two cases: technology adoption is not complete or there is an underutilisation of technological inputs.

One of the areas in which technology adoption can help developing countries to grow better is in diversifying their economies. However, Africa, with many of its developing countries, still faces a major challenge of deficiency in infrastructure and data policy, which invariably hinders the continent's efforts towards digital development (Okunoye and Sesan, 2018). Although Nigeria is Africa's largest economy, 80 percent of the nation's exports are from the oil sector, which has a defining role on her economy (Emediegwu and Okeke, 2017; African Development Bank, 2023). Unfortunately, the instability of the oil sector poses a negative impact on this oil-reliant mono-economy. Thus, EC could be a major panacea that addresses this concern. As a result, Federal Ministry of Communication and Digital Economy (FMoCDE) stated diversifying the economy through emerging Information Communication Technology (ICT) seems a

viable option and an important long-term growth prospect (FMoCDE, 2020). Thus, the ministry acknowledged the growing importance of EC in their 2020-2030 National Digital Economy Policy and Strategy report and envisioned Nigeria being transformed “into a leading global digital economy providing quality life and digital economies for all”. This initiative recognises that, for a successful and sustainable adaptation of technology, countries should maximise their strengths and reduce the associated risks. One of the potential strengths of Nigeria is its significant young population (the “age advantage”) where 60% of the total population are youth. Given that youths are the main enablers of any digital revolution (FMoCDE, 2020), Nigeria is on a promising pedestal for a sustainable EC uptake.

A study by Costa and Castro (2021), portrayed EC as an ‘escape hatch for resilience and survivability’. They explicitly showed that technology enables a closer relationship between buyers and sellers, thus affording the associated benefits of more efficient supply-chains, cost reduction, and mobility of goods and services. Therefore, the growing importance of EC in the developing economies cannot be overemphasised. This suggests the need to study the critical factors that may lead customers in developing countries to adopt EC to be able to enjoy the economic and social benefits of it that developed countries are already enjoying (Peña-García et al., 2020).

According to African Development Bank (2023), Nigeria was ranked 5th in Economic Community of West African States (ECOWAS) for overall economic integration on the 2020 Africa Regional Integration Index. This is a means of comparing each country to the other countries in its regional economic community and to the countries of Africa. The potential in the Nigerian Information Technology (IT) Industry is substantial, which is largely due to the vast market and the readiness of citizens to utilise new technologies in realising sustainable socio-economic development (MoCT 2012). According to Rahayu and Day (2017), in their study on Small and Medium Enterprises in developing countries, accessing and enjoying the advantages of EC are contingent on its continuous adoption by customers. However, in order to facilitate the adoption of EC, understanding and finding answers to how and why people choose to adopt or reject technology is vitally important (Schuster, Drennan and Lings, 2015; Villa et al., 2018). Therefore, it is necessary to fill the key gaps in our understanding of how people adopt EC (Klopping and Mckinney, 2004; Villa et al., 2018), and also their responses,

which represent a conscious feedback mechanism (Clore et al., 2001; Schwarz, 1990 in Wakefield, 2015). For example, some approach the importance of EC with doubt, while others fear being a victim of cyber-attacks (Chidike, Osuagwu and Ekwuonwunne, 2018; Kshetri, 2019); thus, investigating these customers' experiences and their responses to EC in Nigeria could prove useful.

Studies have revealed that affective experience in an online ecosystem has higher importance and holds a stronger influence on customers' emotional and behavioural responses than previously acknowledged (Rose et al., 2012; Scarpi, Pizzi and Visentin, 2014), either in accepting or rejecting EC. Generally, research on EC adoption to date has focused primarily on identifying the factors influencing users' decision to adopt technology innovation without placing much emphasis on associated customers' emotional behaviour (as seen in Lawrence and Usman, 2010; Adalikwu, 2012; Izogo, 2012; Awa, Awara and Lebari, 2015; Izogo and Jayawardhena, 2018; Bashir et al., 2018; Esho and Verhoef, 2021; Ezennia and Marimuthu, 2022). Such approach overlooks the fact that customers responses contribute to EC adoption, thus leaving a vital gap in the technology acceptance literature, especially with regard to developing countries.

Therefore, in addition to identifying the key factors for successful technology adoption, this study shows its distinction by investigating how such factors affect customers' emotional behaviour. The work advances knowledge beyond the commonly-adopted but limited viewpoint on the EC adoption concept by clearly embedding a holistic EC adoption-response feedback process into the study's framework to explain the relationships between customers and online retailers.

According to Plouffe, Hulland and Vandebosch (2001), the 'where, how, and when' issues can influence responses by individuals to new information systems and technologies as they relate to the implementation process. Therefore, it is also necessary to understand the effects of customers' responses on their purchasing decisions in the context of EC. Moreover, while several studies from the USA, UK and some Asian countries are found in the literature on cognitive, emotional response and online shopping, rarely do studies connect customers' emotion with adopting or rejecting EC, especially in sub-Saharan Africa (Sila, 2019).

The issues so far identified, and their interplay form the background for this research and inform the purpose of the study as presented in the next section.

1.3 Purpose of the Study

The purpose of this study is to identify and understand what determines customers' usage of an electronic channel as a medium of purchase, and their emotional responses to it in the retail sector of a developing country like Nigeria. As the business world increasingly adopts the online platform as a major tool of transaction, the kinds of experiences people have in the online environment could influence their feelings about adopting or avoiding such purchase channels, especially where the levels of uncertainties and risks are higher compared to the offline traditional stores that they are more familiar with.

Essentially, this present research provides a rounded perspective on customers' affective responses in a unique cultural context, as found in Nigeria, thereby offering online retailers and managers the much-needed insights. Moreover, the work makes recommendations to policy makers, web designers, and online retailers on how to enhance EC adoption.

1.4 Research Problem

In comparison to the brick-and-mortar stores, recent research showed decisions about adopting EC are influenced by aspects such as its relative novelty in some countries and the greater uncertainty associated with adopting it (Villa et al., 2018). Broadly speaking, EC is still at an early stage in emerging markets (Dakduk et al., 2017), and EC adoption in Africa has been below 10% (Chidike, Osuagwu and Ekwuonwunne, 2018). Specifically, based on a global benchmark, Nigeria a west African country is still at its nascent EC stage (Awa, Awara and Lebari, 2015; Izogo, 2017; Ogbuji and Udom, 2018). Although Nigeria's retail EC market harbours a high growth potential, the main problem has been low EC adoption rate (Chidike, Osuagwu and Ekwuonwunne, 2018). Thus, EC fulfilment in the country's retail sector remains a major problem. However, it is projected that in 2025, 14% of all sales in Nigeria will be conducted over the internet via electronic systems (Statista, 2022).

Another major problem identified is the inequality regarding access to the internet. Unfortunately, EC adoption remains unequal among and within countries and its implementation, especially in developing economies, is limited (Xing, 2018). Compared to the developed countries, people from the developing world have limited access to the Internet and digital literacy is lower (Chetty et al., 2018). Recent research by Pérez-Amaral et al. (2020) amplified the stark reality of the undesirable gap in the use of digital systems globally, especially in most of the developing world, including Nigeria. This manifestation of global inequalities is known as the digital divide (Chetty et al., 2018). The differences in technology levels across countries is an increasing concern that accounts for the major differences in wages and per-capita Gross Domestic Product worldwide, and could worsen existing political and social inequities especially in low and middle income countries (Foster and Rosenzweig, 2010; Chetty et al., 2018). This intractable issue apparently remains a serious concern in most of the developing countries (Skaletsky et al., 2016), and Nigeria being a developing country is no different.

According to Molla and Licker (2005b) whilst Internet connectivity offers many advantages such as greater access to information, cost reduction in the labour sector, greater integration between people and organisations, etc., digitalisation is not happening equally all over the world, because imbalance exists (Foster and Rosenzweig, 2010). Therefore, the important question is: how can EC benefits be enjoyed when there are issues around the accessibility and connectivity to the digital landscape that would afford customers the opportunity? Thus, it is crucial to include everyone in the digital society to afford them access to online opportunities, transactions and services (Carmi and Yates, 2020).

A recurring problem in EC research is that some customers use the Internet make purchases online while others do not (Brusch, Schwarz, Schmitt, 2019). Therefore, many customers still have not adopted EC as a modality for purchase (Adalikwu, 2012; Moon et al., 2017; Ogbuji and Udom, 2018; Mainardes, Melo de Souza and Correia, 2020), especially in the developing countries. For instance, some customers search for information on the websites of online businesses, but make their purchases using 'good' old-fashioned ways, such as open markets or roadside stalls (Economist, 2014). This disposition, in turn, influences online business outcomes. Therefore,

understanding the drivers of technology adoption remains a critical problem for organisations offering online products and services (Jackson, Yi and Park, 2013).

There was also the problem of inadequate infrastructure and lack of competency in technical skills, which constituted hurdles for adoption of EC (Agwu, 2018, Sila, 2019). For example, in the World Bank's "Doing Business" survey, Nigeria is ranked 185th out of 189 countries for ease of getting electricity and a shortage of electricity is one of the worst problems, as power cuts are frequent (The Economist, 2014). In fact, Nigeria's National Integrated Infrastructure Masterplan forecasts the country would need over \$2 trillion for infrastructure development over the next three decades (Toesland, 2017). The scholar went further to emphasise Internet accessibility as central to business models of many start-ups, adding that lack of connectivity, data unaffordability, and inadequate electricity generation, distribution and supply form the major infrastructural challenges facing businesses in Nigeria.

Further, there have been some doubts about the successful adoption of EC within developing countries such as Nigeria and this is mainly due to the lack of adequate ICT infrastructure and major concerns related to online security issues (Chidike, Osuagwu and Ekwuonwunne, 2018). Moreover, in a study conducted in two states and the capital city of Nigeria (Enugu and Lagos States and the Capital, Abuja) by Agwu (2018) the results revealed the total absence of effective regulatory framework on EC security to provide adequate safeguards and create an environment of trust for EC transactions to take place.

Based on this backdrop, it is worthwhile investigating the key factors that may enhance the successful adoption/implementation of EC in less developed countries. Having outlined the research problems and gaps, the next section highlights the aim and objectives of the study.

1.5 Research Aim and Objectives

This study uniquely focuses on the importance of customers' affective responses to the critical, context-specific EC adoption factors in the retail sector. Therefore, the primary aim is to investigate online customers' affective responses towards the key factors influencing EC adoption, with evidence from Nigeria.

Based on the overall aim, this study addresses the following research objectives:

1. To critically investigate the key factors influencing customers' intention to adopt EC.
2. To examine how customers' affective responses (emotions) impact their EC adoption and online purchase intention.
3. To develop an explanatory model relating to the technology acceptance of EC and customers' emotional responses.
4. To empirically test the applicability of the proposed model in explaining and predicting the impact of the internal and external factors on purchase intention.

1.6 Research Questions

In order to achieve the aim and objectives of this research, the following research questions were devised:

1. What are the key factors that influence the adoption of EC?
2. How do customers' affective responses (emotions) impact their EC adoption and online purchase intention?
3. Why do customers respond positively or negatively to EC adoption factors?
4. How effective is the applicability of the proposed model in explaining and predicting EC adoption behaviour in Nigeria?

1.7 Significance of the Study (SoS)

Tihanyi (2020) emphasised the need to study issues that are interesting and equally relevant to the society. He aptly noted, "*important management research can positively influence individuals and groups within and outside organisations, has the potential to improve living conditions in societies, shows ways to build or strengthen ties across nations, or provides findings that consider the interests of future generations*" (p.329). In light of the above statement, the researcher considered the significance of this vital and interesting research in the retail industry from various aspects. This is with a particular reference to its relevance to and influence on the society, organisations, and individual customers and the desired outcome – response to EC for adoption. Thus, making research efforts towards understanding customers' responses to adopting EC is essential.

First, the emotional dimension of EC being investigated in this study is novel in a developing economy such as Nigeria. Broadly speaking, apart from the topicality of EC, it is also a prolific research field - one of the fastest-growing topics and current research markets research (Villa et al., 2018; Valencia et al., 2019). The significance of the study is further revealed through the COVID-19 pandemic period and its consequences on EC adoption of online shopping, when brick-and-mortar stores closed, forcing customers and companies to re-evaluate their shopping behaviour and preferences, and switch their transaction channels, respectively. The social distancing directives reinforced a big shift of customers from physical to digital shopping, despite the uncertainties and the potential risks associated with the online channels. The COVID-19 era brought with it both health and economic crises, with enormous untoward impacts, and it converted more people to shopping online in order to lower the risks of infection (Akhtar et al., 2020). This does not only highlight accelerated growth of online shopping globally but further justifies the importance and relevance of EC research for the 21st century customers, retailers, and society. To date, EC is and remains one of the useful purchasing channels that people and companies employ in providing a safer means of transaction (Pantano et al., 2020; Sheth, 2020) and economic survival. Fedorko (2018) confirmed that the issue of EC is a broad area of knowledge, the importance of which is now undeniable and is expected to grow, thus necessitating and justifying increased research in this area.

Second, as customer-oriented technology has become an integral part of today's society (Drucker, 2011), customers are also central to the current research. Hence, this research considers the potential health and well-being impacts that positive or negative emotional responses may have on the 21st century online customers, as well as the overall impacts on society and future generations. This is because customers view EC adoption as both technological and personal decisions that can impact their sanity and emotional well-being socially, mentally, and psychologically (Racolta-Paina and Luca, 2010; Loketkrawee and Bhatiasevi, 2018). Moreover, scholars in the ethics of technology, responsible innovation, and Science and Technology studies are increasingly interested in emotions (Steinert and Roeser, 2020). According to Richins (1997), human emotions are important components of customer response and are associated with health and well-being. Therefore, this work seeks to provide insights into this concerning area.

Third, from a business point of view, online retailers and managers cannot afford to neglect knowledge gaps in customers' emotional intelligence or dismiss its critical importance because it has been identified as one of the key factors in creating a sustainable business (Pîrvu, 2020). Moreover, Tur-Porcar, Roig-Tierno and Mestre (2018) stated that whilst sustainable entrepreneurship consists of actions on generating profits and improving the environment, it also includes advancing social well-being. Based on this premise, the top-of-mind issues of customers' needs (for customers) and what drives their online behaviour are a significant societal concern which should be paramount to business organisations, too. For example, a large share (67%) of marketplaces for the 100 firms investigated by Täuscher and Laudien (2018) which focused on B2C and C2C transactions clearly acknowledged the significance of creating emotional value through the image of the platform and superior user experience. Accordingly, they affirmed such a value proposition-centred perspective, therefore, has important implications for investors and managers in evaluating the growth and profit potential of these ventures and developing competitive strategies and novel marketplace business models.

Fourth, from a geographical standpoint, this research is unique and significant because it is possibly the first in-depth study to connect EC adoption and emotions in a new cultural context. Clearly, part of the essentiality of conducting research in a different cultural or geographical context is that the research presents a unique set of results (Dakduk et al., 2017). Moreover, recent studies such as Villa et al. (2018) and Fedorko (2018) cautioned that consumer behaviour research field, a key aspect of the success of e-business, is one of the research fields in decline. More specifically, little is known about the behaviour of Nigerian customers (Izogo and Jayawardhena, 2018). Aldousari et al. (2016) confirmed that the study of online shopping behaviour is largely out of scholarly focus in developing countries. In view of these points, this work addresses the research gaps. To best of the researcher's knowledge, this is the first study that considers the online shopping behaviour (psychological response) of urban customers in Nigeria in addition to identifying important EC adoption variables.

Fifth, theoretically, various empirical studies have used the TAM and SOR; however, those studies have largely focused on the Western world (Kurnia et al., 2015). This study attempts to fill the missing gap by incorporating customer-related, internal and

external environment-related concepts together in the research model, in addition to the original constructs of the two models. Therefore, the study develops a technology adoption-response model, a robust and richer combination of the two models (**T**echnology **A**cceptance **M**odel & **S**timulus **O**rganism **R**esponse – termed TAMSOR), with a holistic approach that could help Nigeria, as well as other countries with a similar context, in implementing EC adoption.

Sixth, in an economic context, as seen in Section 1.4, there is a gap in our knowledge relating to EC adoption among Nigerians when benchmarked against global standards (Esiri, 2015; Gabriel, Ogbuigwe and Ahiauzu, 2016). This study, therefore, seeks to present an opportunity to extend the knowledge of retailers in fostering online shopping for competitive advantage and profitability, thus increasing the chances of successful EC investments. The study could be advantageous in helping Nigeria to understand underlying issues associated with the digital divide. This is important in order to be able to identify the policies that would help in improving the associated injustices and digital inequities (Skaletsky et al., 2016). The insights gained could be useful for Nigeria as a developing country to build functional and transactional ties across nations and to improve her economic growth and the living conditions of her citizens.

Strategically, people adopt or use technology not only for its functional benefits but also for the emotional advantages. Mascarenhas, Kesavan, and Bernacchi (2006) substantiated this statement by stating that emotional connections between companies and customers are difficult for competitors to imitate. Such knowledge could help companies to compete best in the ever-changing digital landscape. This is important because, as customers transition from bricks to clicks, online shopping is done, not by mere numbers but by human beings with thought-driven, decision-making preferences and feelings about (new) technology innovations (Perlusz, 2004). It is anticipated that the findings and recommendations could help companies and managers understand customer behaviour better, leading to creating effective customer experience (CX) goals and therefore making online shopping adoption more desirable.

Additionally, some of the anticipated contributions to knowledge are:

Conceptual: Through the developed adoption-response model (TAMSOR), the study highlights the much-needed, crucial, stepwise processes involved in customers' decision making in order to be able to predict their online purchase intentions, which is lacking in some existing technology acceptance literature (Moon et al., 2017). Simply put, the key EC adoption factors first prompt responses in customers. The responses elicited then influence customers' intention to purchase online.

Empirical: Nigeria is Africa's largest economy (Ogbuji and Udom, 2018), multi-ethnic, culturally diverse and the continent's most populous country (Hasbi and Dubus, 2020). Thus, it is expected that the empirical evidence from the perspective of a developing country such as Nigeria could broaden our understanding of cultural dispositions to technology usage and provide unique and new insights into this less-explored area of research.

Finally, the significance of this study is linked with its **practical** implications. According to Idang (2015, p.100), "Africans do share some dominant traits in their belief systems and have similar values that mark them out from other peoples of the world". Therefore, the findings and recommendations of the study could prove invaluable in enhancing the understanding of managers and policy makers, online retailers and African countries facing challenges related to successfully adopting EC. The study could also alleviate the doubt on EC's importance, increase the chance of successful EC investments and boost customers' EC adoption rate.

1.8 Outline of the Thesis

Chapter 1: Introduction

The first chapter introduces the background to the research under investigation. It presents the purpose of the study and provides a clear statement of the research problem, aim, objectives and research questions. The chapter also highlights the significance of the study and the anticipated contributions to knowledge. Finally, the thesis outline is provided.

Chapter 2: Literature Review

This chapter critically reviews prior studies on EC and factors that influence its adoption. It highlights EC benefits and presents the research context. It identifies recent gaps in EC adoption research. Then it clearly describes customers' emotional responses, clarifies the related inclusion and exclusion concepts, and discusses affect and affective responses and emotional intelligence. It explicitly showcases the importance and roles of emotions in EC adoption and presents debates on the online shopping environment and the online shopping experience.

Chapter 3: Development of the Research Framework

This chapter lays the foundation for the development of the theoretical framework used in this study, namely TAM (adoption model) and SOR (response theory). Justifications for both TAM & SOR are provided. The chapter establishes the conceptual framework for the study by considering four major pillars of variables relating to EC adoption, which are categorised as: internal and external factors, individual-related factors, affective variables and their mediating roles, and technology acceptance factors for a developing country. These specific factors are then thoroughly reviewed and discussed, and respective hypotheses proposed to predict customers' EC adoption behaviour in Nigeria.

Chapter 4: Research Methodology

Chapter four introduces the research methodology adopted to achieve the study's aim and objectives. It then presents the different philosophical positions and the rationale for the research's philosophical stance. Then, it highlights the research approach, before discussing the research strategy employed, comparing and contrasting both quantitative and qualitative data. The rationale for mixed methods and a roadmap for the research design process showing the big picture of the stages involved in each phase are fully described. Also, included in this chapter are the methods for data collection i.e., online questionnaire survey and semi-structured interview questionnaire development. The ethical consideration is provided followed by the pilot study, validity and reliability, the target population and the sampling approach, full-scale data collection process (online survey and semi-structured interview). Finally, the summary of the section is provided.

Chapter 5: Quantitative Data Analysis and Results

This chapter presents the analysis and findings of the first phase of research (quantitative, using questionnaire-based survey). The researcher uses the IBM Statistical Package for Social Sciences (SPSS 27) and Analysis of Moment Structure (AMOS 27 Graphics) to analyse the questionnaire answers. The chapter begins with data management, data screening and cleaning, examination of sample demography, T-test and ANOVA, exploratory factor analysis and factor loadings, and confirmatory factor analysis. It then presents structural equation modelling (SEM), assessment of model fit, research hypotheses findings, and mediation effects analysis and conclusions.

Chapter 6: Qualitative Data Analysis and Results

Chapter six presents the analysis of the qualitative data gathered through the second phase of the semi-structured interviews with EC customers to complement and provide further explanations of the findings from the quantitative analysis. The chapter begins by presenting the demographic profiles of the interviewees and then proceeds to report the findings relating to the factors that influence EC adoption and customer responses in Nigeria. Finally, the chapter presents other emerging themes/factors from the research, based on qualitative findings using the NVivo enterprise software.

Chapter 7: Discussion

This chapter provides an interpretation of the key findings of both quantitative and qualitative research phases, comparing and contrasting them with the literature reviewed in Chapter 2 and Chapter 3. It focuses on how these findings provide answers to the research questions and help to achieve the three objectives of the study.

Chapter 8: Conclusion

The final chapter summarises the key findings of the research, draws conclusions based on these findings, discusses the limitations of the research, presents theoretical and managerial implications, and highlights the contributions of the research to the existing body of knowledge. Finally, suggestions for future research are offered.

Chapter 2: Literature Review

2.1 Introduction

The previous chapter provided the introduction, research background, purpose of study, statement of the research problem, aim, objectives and questions, significance of the study and contributions to knowledge.

This chapter presents a critical review of extant literature on the concept of EC adoption as well as the context of the research. The first part provides an overview of EC, its definitions, benefits and its adoption. The second part discusses the current state of research on EC - the impacts of the Covid-19 pandemic on adoption and customers' decision to use or not use the internet as a modality of purchase. Next, the chapter reviews and analyses relevant literature on affective responses, its importance, and its mediating role and relevance in technology acceptance research. The fourth part provides insights on the online retail environment (ORE) and its impacts on customers' online shopping experiences (OSE), and how customers respond positively or negatively to adopting or rejecting EC. Finally, the chapter identifies and discusses current research gaps in knowledge.

2.2 E-commerce: An Overview

EC encompasses online marketing, ordering, payment, support for delivery, and the electronic provision of services, such as after-sales support or online legal advice and collaborative designs; and sharing information, maintaining of business relationship and conducting of business transactions by means of telecommunications networks (Zwass, 1996; Timmers, 1998; Ayo, Adewoye and Oni, 2011; Zhang et al., 2015; Matthias, 2017; Villa et al., 2018; Valencia et al., 2019; Waseem et al., 2019).

EC is currently a widespread form of business and almost every modern company in the retail industry offers its products and services via online shops (Rajnoha et al., 2016). For example, in 2020, \$4.28 trillion retail EC sales worldwide were recorded and over 2 billion people globally made purchases online, a 25% increase from previous year (Coppola, 2022), so evidently EC usage is on the rise. Undoubtedly, EC keeps changing the retailers' pre-existing ways of doing business, collaborating and competing (Singh and Pathak, 2020). This shift by customers towards digital platforms has made global trade more competitive than ever. For businesses and customers in

the modern age, accessibility, flexibility, and convenience make EC the perfect platform for transactions (Costa and Castro, 2021).

Generally, whether offline or online, shopping is a key part of age-long human activities for supplying everyday human needs of goods and services. However, compared to the conventional shopping, the digital environment of today's retailing system has fiercer competition due to its globalised nature, and is further challenged by the popularity of online shopping (Paul and Rosenbaum, 2020). Thus, the strategies of companies and the behaviours of end-users are ever-changing to adapt to growing competitions and expectations, respectively.

This resonates with Raaju's (2013) earlier description of EC as the electronic age or the future of business. He posited that not only is EC becoming an integral component of our daily lives, but apparently it is also intertwining with our future. However, in spite of the worldwide technology advancement and recent exponential increase in online shopping, EC adoption for most developing countries is still in its infancy stage. According to Alwan et al. (2023), there are other categories of EC such as business to business (B2B), consumer to consumer (C2C), business to consumer (B2C) and business-to-government (B2G). However, B2C EC is the most visible and well-known online retailing, offering untapped opportunities for companies and customers alike in developing countries (Hallikainen and Laukkanen, 2018).

2.2.1 Benefits of E-commerce

Extant literature has highlighted the many benefits of online shopping (a component of EC), in comparison with off-line shopping (brick-and-mortar store). The convenience of purchasing online can increase customers' intention to transact more in the online ecosystem, thereby contributing to environmental sustainability by reducing the number of shopping trips and eventually reducing people's carbon footprint (Saha et al., 2020). Since EC has been found to drive carbon emissions reduction (Chang and Li, 2022), consequently businesses could become more environmentally friendly and socially responsible (Wang et al., 2023).

According to Pulliam (1999) customers may migrate between channels and/or retailers, depending on their shopping benefits. For instance, the fundamental reasons for the existence of true market segmentations depend on the various benefits customers are seeking when they purchase a given product or service (Haley, 1968). Apart from the convenience afforded customers buying various goods from the comfort of their homes 24/7, other potential benefits of EC, as mentioned by prior studies are variety seeking (Rohm and Swaminathan, 2004); time saving (Overby and Lee, 2006; Hu and Jasper, 2015); effort saving (Zhang et al., 2015) and cheaper products and services (Alwan et al., 2023).

Through the EC channel, online retailers are afforded opportunities for greater customer reach and interactions (Kühn and Petzer, 2018). This could lead to operating costs reduction, improved efficiency (Wang et al., 2023), more profits, market relevance and growth. It is, therefore, not surprising that the benefits of online shopping for both customers and companies make EC a popular concept and a target of studies, which continues to attract the interest of both academic research and managerial practice (Rose et al., 2012; Homburg et al., 2015; Bilgihan et al., 2016; Lemon and Verhoef, 2016).

According to Frambach, Roest, and Krishnan (2007), customers use the desired benefits as an important means of evaluation and a decision-making checker when choosing between the online shopping channel and the offline shopping channel. In term of global benefits, these extend to enhancing EC in developing countries through easier and greater access to global markets, internationalisation of information and labour, easier incorporation into global supply chains, expansion of markets, cost savings on transactions, and elimination of intermediaries (Molla and Licker, 2005a; 2005b; Molla and Heeks, 2007). Also, for businesses, EC fosters efficient operations and competitive advantage (Davis, 1999), helps in re-engineering their offerings and distribution processes (Molla and Heeks, 2007), and affords the convenience of doing business (Alwahaishi, Nehari-Talet and Snasel, 2009).

Further, Barua et al. (2004) emphasised that EC not only creates the platform for firms' products' differentiation (the goods and services they offer), but it also provides businesses the opportunity to develop better relationships with both customers and

suppliers. In addition to creating an enhanced connection with partners and customers, it offers larger market placement, organisational efficiency, and innovative orientation (Costa and Castro, 2021). In other words, it makes it possible for companies to build and boost their capabilities for online information, thereby avoiding hindrances related to intermediary activities, costs, and delay.

From the economic point of view, according to Makame, Kang and Park (2014), EC improves the economy of a country, besides benefitting customers and businesses, as it helps resources usage and efficiency. It has been considered a significant tool in reducing the economic growth gaps between countries (Peng and Kurnia, 2008; Villa et al., 2018) and a channel for delivering products and services (Abdel Nasser, 2012; Qu et al., 2015).

In the study conducted by Molla and Heeks (2007) on EC and development, they identified four categories of potential EC benefits in developing countries as follows: improvement of market efficiency, improvement of operational efficiency, creating market access, and linkage to global supply chains. For developing economies like Nigeria, it holds the possibility of changing the way business is done and promoting the emergence of new economic actors, new business models (Dai et al., 2019), and new opportunities for companies and customers (Hallikainen and Laukkanen, 2018).

2.2.2 E-commerce Adoption

The focus of this study is on technology and ICT acceptance to use EC as a purchasing channel, since the Internet is a medium through which consumers interact, communicate and respond (Cho and Khang, 2006). Broadly speaking, EC adoption refers to a customer's intention to conduct online transactions, and an individual's positive decision to integrate e-business into their life (Taherdoost, 2018; Poushneh and Vasquez-Parr, 2019). Similar to Klopping and Mckinney (2004) and Izogo (2012), this study views EC and online shopping (OS) as an example of technology adoption, and the adoption theory is one which examines the choices an individual makes to accept or reject a particular innovation (Straub, 2009). However, Zwass (1996) argued that explaining EC as an entirely technological development is not completely right. His disagreement was based on the premise that EC is multi-dimensional and involves other broad aspects such as infrastructure, services, and products and structures.

These dimensions further consist of other functional levels, ranging from the wide area of telecommunications infrastructure to e-marketplaces and electronic hierarchies enabled by EC. This study agrees with this holistic perspective, and this position will be further uncovered in the subsequent chapters.

Pavlou and Chai (2002) argued that the adoption of EC depends primarily on consumers' behavioural intentions to engage in product purchases. Simply put, EC adoption is about a personal decision customers make to transact via an electronic channel. Bagozzi and Lee (1999), however, cautioned that, people can decide to adopt or try the innovation, to resist adoption, or to keep their decision open by remaining undecided. In support, Laukkanen (2016) expanded Bagozzi and Lee's reasoning by explaining that people may choose to adopt an innovation because it improves aspects other than profit, or they may choose not to adopt because adopting would be in conflict with their values or existing practices. Earlier research summarised these propositions by referring to the typical human tendency as striving for consistency and maintaining the status quo, instead of continuously searching for and embracing new behaviours (such as adoption of EC), as the latter conflicts with the familiarity of shopping in offline stores (Sheth, 1981).

Furthermore, Straub (2009) clarified that EC adoption transcends the choice an individual makes to accept an innovation and rather extends to the degree to which the innovation is integrated into the appropriate context. Moreover, Karahanna, Straub and Chervany (1999) suggested adoption research should explore the impact of contextual factors. In congruence, there is evidence to suggest that factors contributing to the acceptance of a new information technology are likely to vary with the technology, target users, and context (Moon and Kim, 2001). This is consistent with the work of Garretson, Fisher and Burton (2002), who affirmed that context plays an important role for consumer attitudes, especially in retail environments. Rahayu and Day (2017) similarly remarked that, the attitudes of people in a particular society may influence their ICT adoption decisions, which may yet differ in another context. For example, Nittala (2015) in a study examining factors influencing online shopping behaviour of urban consumers in India called for investigating online shopping (OS) in developing countries. Likewise, Cummins et al. (2014) advocated additional studies of African cultures. There is no doubt that numerous studies have been conducted

regarding EC adoption; nonetheless, compared to the economies of the United States of America, Europe and the BRIC countries (Brazil, Russia, India and China), developing economies which include Nigeria have recorded limited research in the same area (Kurnia et al., 2015; Dakduk et al., 2017).

Molla and Licker (2005a) observed that businesses in the developing countries face challenges different from those in the developed countries. They further elaborated that those contextual differences (both organisational and environmental) have not supported the generalisability of findings in the developed countries to other markets (developing countries). They concluded that, comparatively, organisational factors, especially the human, business and technological resources and awareness, are more influential than environmental factors in the initial adoption of EC. This is mirrored in a recent finding that the adoption of EC by a population requires an analysis of its social, cultural and economic environments (Valencia et al., 2019). In fact, the lack of human and social elements when considering (EC) technology adoption has been identified as one notable weakness hindering the growth of EC (Fedorko, 2018).

In order to investigate the key factors influencing EC adoption, various studies have used the TAM, but in addition to identifying these factors, the important question (gap in knowledge) remains “how are the Nigerian customers in particular responding to these factors in relation to buying online?”. According to Aggarwal and Rahul (2017), integrating a suitable theory such as the Stimulus Organism Response (SOR) Theory with the traditional TAM is set to address this critical knowledge gap and should therefore contribute to existing knowledge in consumer behaviour and technology acceptance fields. Summarised in Table 1 below are recent key EC adoption research gaps in the literature as identified in this study.

Sources	Recent gaps in ecommerce adoption and technology acceptance research
Valor, Antonetti, and Crisafulli (2022)	Key models of innovation adoption have overlooked the role of emotions, despite its relevance in consumer decision-making
Peña-García et al. (2020)	There is need to study the crucial factors that could lead customers in developing countries to adopt e-commerce
Sila (2019)	There are major gaps in the implementation of the factors that influence the use of EC in a developing country context
Lu, Papagiannidis and Alamanos (2019)	Gaps in research on the impact of emotional influence and emotional responses in enhancing technology acceptance theories
Ozlem (2019)	Studies on online shopping behaviour are still insufficient compared to studies on traditional consumer behaviour
Choi (2019)	Few studies have attempted to measure the impact of the cognitive and affective processes leading to behaviours sought by e-retailers
Bettiga and Lamberti (2018)	Studies of the role of emotions in business decisions are relatively rare
Rieple and Snijders (2018)	Affective dimensions are under-represented in innovation adoption research, especially by businesses
Moon et al. (2017)	Gaps on the joint effect of external and internal factors on customers' emotional and behavioural responses in an online retailing context
Aggarwal and Rahul (2017)	Applicability of TAM along with S-O-R model will fill the gap in the current literature
Hoong, Thi and Lin (2017)	EC acceptance of technology research that considers emotion and affect are still less. This creates a gap on the role of emotion in TAM model

Table 1: Selected recent gaps in e-commerce adoption research
Source: Developed by the author

As highlighted in Table 1, there is paucity of research on the combination effect of external and internal factors on customers' emotional and behavioural responses in an online retailing context (Moon et al., 2017; Sila, 2019). Therefore, in order to fill the knowledge gaps, the current study attempts to investigate how customers are responding to both the internal and external environmental factors that influence their EC adopting behaviour in Nigeria. This study, employing an extended TAM approach, seeks to address the shortcoming in previous studies of EC adoption of ignoring the impacts of customers' emotional response on their purchase behaviour (Izogo and Jayawardhena, 2018; Bashir et al., 2018; Esho and Verhoef, 2021; Ezennia and Marimuthu, 2022).

Generally, research on EC adoption and customers in online contexts to date has focused primarily on examining the different factors influencing EC adoption in developed markets such as the Western countries and the BRIC economies - Brazil, Russia, India and China; as such, developing economies have recorded scant research in the same area (Dakduk et al., 2017). In their study, Rahayu and Day (2017) mentioned Nigeria as part of the popularly known “MINT” economies (Mexico, Indonesia, Nigeria, and Turkey). Therefore, it is particularly vital, interesting and topical to study EC adoption in Nigeria, as some customers in the country still doubt the importance of EC (Chidike, Osuagwu and Ekwuonwunne, 2018).

From the business perspective, there is a consensus that companies in developing countries have been slow to adopt EC (Odedra-Straub, 2003; Tarafdar and Vaidya, 2004). Given that a major measure of the success of a system is its acceptance and use (Delone and Mclean, 2003), the success of a B2C electronic market largely depends on customers’ willingness to accept it (Chen, Gillenson and Sherrell, 2002). Likewise, in order to take advantage of these potentials, businesses must adopt EC (Costa and Castro, 2021). Molla and Licker (2005a) categorised EC realities in the developing context into six stages as shown below:

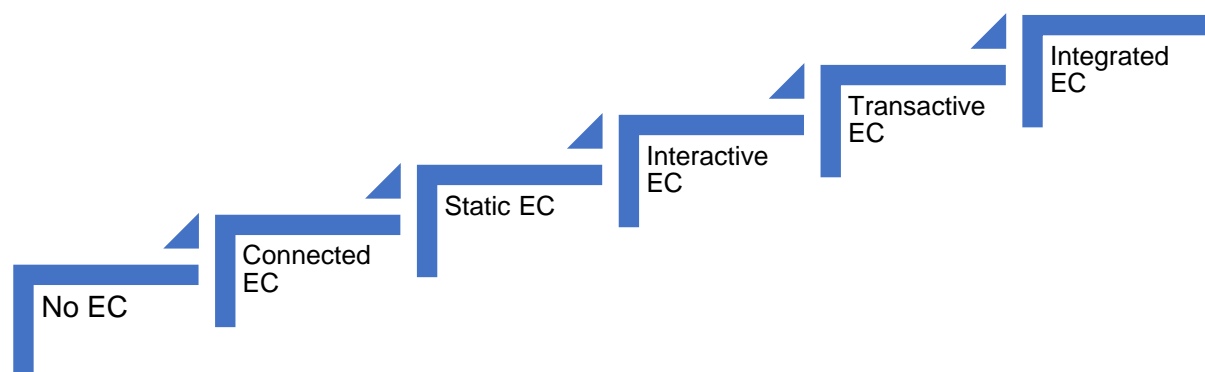


Figure 1: The 6 stages of EC realities for the developing countries (adapted from Molla and Licker, (2005a)

The illustration in Figure 1 typifies an evolutionary process of EC, and there are different rates of EC adoption in different countries (Dakduk et al., 2017). In congruence, Waseem et al. (2019) and Hariharaputhiran (2012) held the view that EC adoption in a country is a gradual development. Research shows that EC is still at an early stage in developing e-retailing markets, including Nigeria (Adaliku, 2013; Awa,

Awara and Lebari, 2015; Ogbuji and Udom, 2018); specifically, Faloye (2014) stated that businesses that have adopted EC in such markets are at its early stage.

2.2.3 Nigeria: The Research Context

This section provides background information about Nigeria, the research context. It presents information about the characteristics, history, economy, resources, and culture of Nigeria, as well as the shopping habits of its people.

Nigeria became independent on October 1, 1960. Situated along the eastern coast of the gulf of guinea, and north of the equator, it is bordered on the west by Benin, to the north by Niger and Chad, and to the east by Cameroun. It covers an area of 356,669 square miles (923,768 square kilometers) (Udo et al., 2023). Nigeria is “West Africa’s unrivalled economic powerhouse” (Deloitte, 2018). It is a multi-ethnic and culturally diverse federation of 36 states, 6 geopolitical zones, and a (FCT) Federal Capital Territory (McKinsey, 2014; Bakare, 2015), as depicted in the map below.

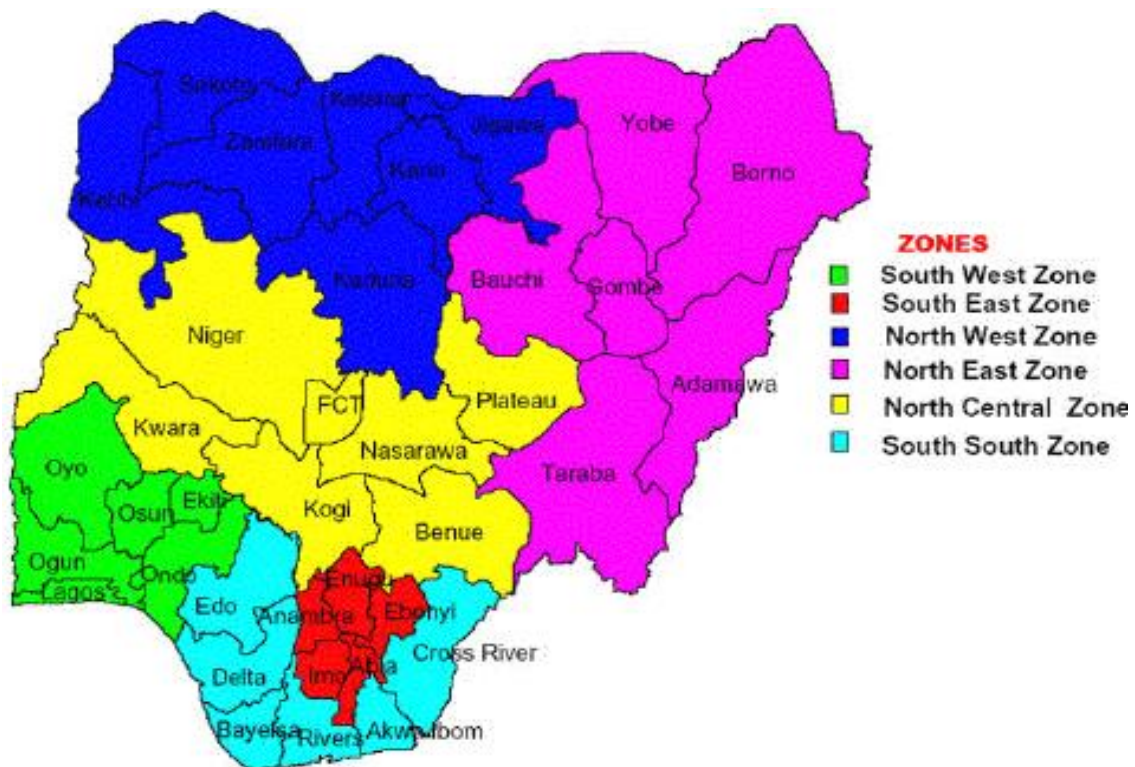


Figure 2: Map of Nigeria with the FCT, 36 states and the 6 geopolitical zones

Source: Bakare (2015) doi:10.4172/2380-5439.1000150
<https://www.hilarispublisher.com/open-access/>

It is the most populous country in Africa (Hasbi and Dubus, 2020). With a nominal GDP estimated at US\$586.5 billion in 2022, Nigeria is the continent's largest economy - an economic size the country could more effectively leverage as a regional hub, both in West Africa and continentally (African Development Bank, 2023). Growing at a rate of 2-3% a year with a population of over 200 million, it means roughly one in five of Sub-Saharan Africa's over 1 billion people lives there (The World Bank, 2023).

Whilst Nigerian urban cities such as Abuja, Lagos and Kano and their neighbouring areas enjoy high quality and strong network signals, rural areas still lag behind, with almost no connectivity (Hasbi and Dubus, 2020). For the current study, the four major cities used for sampling benefit from better network connection and are the key economic base of the country, namely Lagos, Port Harcourt, Abuja and Ibadan. They are located where urbanisation economies are concentrated, and Abuja is the capital city of Nigeria. These are discussed in more detail under population and sampling in Figure 19 on page 163.

Economist (2014) stated, 'to make it big in Africa, a business must succeed in Nigeria'. International Trade Administration (ITA) explained that online commerce and financial technology in Nigeria are enhanced by fast-growing youth population, expanding consumer power, and increased smartphone penetration (ITA, 2021). Although the potential of the country's markets, human capital and natural resources is enormous (Gov.UK, 2022), lack of necessary infrastructure and the necessary knowledge of the internet and online shopping are major factors inhibiting Nigerians from shopping online (Agwu and Murray, 2014; Ezennia and Marimuthu, 2020).

Despite the low level of IT infrastructure for businesses and customers, Nigeria ranks 7 among the top 20 Internet users in the world and has recorded a staggering internet usage growth of 101,484% between the years 2000-2021 (Internet World Stats, 2021). As of the year 2022, Nigeria had more than 109 million internet users - the highest number reported all over Africa (Johnson, 2022). However, interestingly, the high level of internet use (as seen above) does not translate to high online shopping (Moon et al., 2017). According to Ibam, Boyinbode and Afolabi (2018), Nigeria had an average of 3.8 million online shoppers in 2014, equating to a small fraction (2.2%) of the country's population of 176.4 million people, thus leaving out more than 97% as non-

online shoppers. Evidently, the adoption of EC in Nigeria is still low by global standards (Adalikwu, 2012; Esiri, 2015; Ogbuji and Udom, 2018). This situation is an imperative for further research, and calls for more context-specific research have been made in previous studies (Valencia et al., 2019; Villa et al., 2018).

Inegbedion, Obadiaru and Bello (2016) portrayed buying online as incompatible with the Nigerian culture. A small fraction of the country's population shopping online is further evident from the IPSOS's report (2019) on Nigerians' shopping habits: 95% still prefer to patronise open markets and 44% neighbourhood shops and transaction for goods and services is mostly cash based. Consistent with this statistics, the latest World Bank Global Financial Inclusion (2021) report for Nigeria, sampling ages 15 and above, shows that only 6.8% make online purchases and or pay bills online and only 2.6% have credit cards. This indicates a low percentage in digital payment usage and online transaction. Nigerian culture is cash-based, as people associate a successful transaction with receiving the monetary payment in their hands (Agwu and Murray, 2014). Consequently, the high rate of cybercrime on digital platforms has made most Nigerians to be naturally cautious about making purchases online (Toesland, 2014). Although the Nigerian government claims to prioritise the tech sector, it is imperative to evidence this by improving the essentials for the business environment to thrive (ITA, 2021).

2.3 The Impacts of COVID-19's on E-Commerce

In the process of conducting this study, the COVID-19 pandemic struck suddenly, with unprecedented, far-reaching, and on-going impacts on global business, including with respect to EC adoption. This study, therefore, necessarily expanded its remit to include an assessment of the topical issue of the differential impacts of the COVID-19 pandemic on EC adoption in the developing versus the developed countries. This section discusses COVID-19's influence on EC.

2.3.1 The Growth of E-Commerce Before and During the COVID-19 Pandemic

According to a pre-COVID-19 report conducted by Shopify (a global EC software giant), online sales worldwide saw an enormous growth of \$3.5tn in 2019 (Lufkin, 2020). Quite uniquely and unexpectedly, the sudden advent of the COVID-19

pandemic has led to a further significant global increase in the popularity of EC. Generally, many people, either in the developed or developing countries, now face the transactional choice of changing their shopping habits by switching to an online platform, as COVID-19 precautionary measures included practices such as increased adherence to social distancing and opting for online shopping (Merkley et al., 2020).

As a result of the pandemic, online sales heightened from 18.9% to 30% between February and April 2020 in the United Kingdom. Similarly, the USA recorded a 49% leap in total EC sales, including witnessing an unusual 110% surge in daily sales of online grocery between March and April 2020 (Lufkin, 2020). For Nigeria, based on an online survey conducted in 2020 and 2021 by Saleh (2021), an unusual 81% of customers in Nigeria were found to have shopped online as a necessity during the pandemic. These are significant global figures that validate not only an increase in the importance of EC but also an accelerated growth of online shopping, since it provided the major and perhaps the only means for customers to satisfy their consumption needs (Pantano et al., 2020; Sheth, 2020). Despite significant variance in customers' behaviours across countries (emerging and advanced economies), one commonality during the crisis was the over 30% growth in international online customer base in the categories of food and household items (McKinsey, 2020).

António Guterres, the Secretary-General of the United Nations, in his address at the wake of the pandemic stated that COVID-19 was not only infecting and killing people but also attacking the real economy at its core – trade, supply chains, businesses and jobs. He cautioned, “we are in an unprecedented situation and the normal rules no longer apply. We cannot resort to the usual tools in such unusual times. In managing this crisis, we also have a unique opportunity” (United Nations, 2020). The fear of the deadly and rapidly spreading infection caused factories to halt production and resulted in a global disruption to supply chains, causing unemployment, uncertainties, and an economic recession (Laato et al., 2020).

During the COVID-19 pandemic lockdown, most customers switched to online shopping when brick-and-mortar stores closed (Alwan et al., 2023). EC was obviously one of the useful tools and unique opportunities that people and companies tapped into and are still employing for meeting physiological needs and ensuring global

economic survival. It is apparent that online shopping has also changed the ways companies reach their customers and deliver their products and services (Punyatoya, 2019; Frommeyer and Schewe, 2020). As such, many companies have had to review their commercial strategies to maintain market relevance during the unprecedented times.

The next section considers the differences in customers' behaviours across the pre- and post-pandemic times.

2.3.2 Customers' Behaviour Before, During and After the Pandemic

Richard and Chebat (2016) pointed out a need to better understand the behaviour of online customers or visitors to commercial business websites. Times are changing with the associated uncertainties in many sectors, and so are customers' behaviours in the 21st-century information age, as well as retailers' operational strategies in the highly competitive landscape of digital ecosystem. Indeed, the worlds of digital and offline shopping are converging (Grewal, Roggeveen, and Nordfält, 2017). With regard to the customers' standpoint, Mason, Narcum, and Mason (2020) conducted a survey in the USA exploring customer behaviour pre- and post-COVID-19 and confirmed that the pandemic has influenced individuals' purchasing behaviours, thereby significantly increasing their usage of online shopping.

Interestingly, research shows that, pre-COVID, customers who were risk-tolerant (those who had lower risk aversion) were more likely to shop online (Chen and He, 2003; Dholakia et al., 2005). However, the peculiarity of the pandemic and the enormity of its impacts led to more people shopping online, purposely to lower their risks of contracting the infection (Akhtar et al., 2020), without minding the related risks and uncertainties of using the online channels. Hence, EC offers a safer means of purchase in a dire time (Alwan, et al., 2023). This means that safety seemed more critical to customers than the uncertainties or the downsides of buying online. Frommeyer and Schewe (2020) stated that the perceived usefulness of online shopping was positively related to consumers' intention to engage in online shopping behaviour during the COVID-19 lockdown.

To fully appreciate the significance of EC and the COVID-19 impacts on customers' behaviour in the online retailing sector in particular, it is essential to consider how customers perceive their consumption needs as a priority, especially during the pandemic. Earlier, Lester (2013) furthered Maslow's (1954) work to create a five-classification, hierarchy-of-needs pyramid, consisting of: consumption need; safety, consumer protection and well-being; love and belonging; self-esteem; and, finally at the apex is self-actualisation or personal growth. Here, consumption need is amplified as primary, suggesting that, to customers, meeting their physiological (consumption) needs first is critical, which subject to the lockdown situation was made possible majorly by shopping online.

In a more recent study, Loxton et al. (2020) lent credence to this line of argument that, during crisis, customers are more likely to focus on satisfying their physiological needs first. Thus, COVID-19 prompted customers' emotional reactions from the base of Maslow's hierarchy-of-needs pyramid (Mason, Narcum and Mason, 2020), leading to changes in customer decision-making in favour of online shopping and a spike in various behaviours, such as stockpiling (Micalizzi, Zambrotta and Bernstein, 2021) and panic-buying (Schmidt, Benke and Pané-Farré, 2021).

COVID-19 could be viewed as both a health and an economic pandemic. Research conducted by Yuen et al. (2020) in response to the Coronavirus crisis established four key factors that caused panic buying: perception, social psychology, coping behaviour and fear of the unknown. They indicated that negative affects like fear and anxiety influenced shopping behaviour. Moreover, Laato et al. (2020), who examined unusual purchasing behaviour during the early stages of the COVID-19 pandemic using the stimulus-organism-response (a similar approach employed in this present study), established a link between self-isolation and unusual buying behaviour.

In the words of Zhao, Wang and Han (2015), the purchase of a product is no longer a simple function of the product's utility. One of the earliest efforts to identify and classify the reasons people shop by Tauber (1972) established that other than utilitarian motivation, the channel of shopping could also be driven by other goals such as a form of depression relief or as a means to avert loneliness and enjoying the buying process itself – hedonic motivation (e.g., online price comparison, varieties of choices,

entertainment). The scholar suggested that personal needs (self-gratification, learning about new trends) and social needs motivate shopping. These observations were found to continue to be valid even more than two decades after as, according to Tauber (1995), consumers shop beyond the simple need to acquire some products and services, as they seek social interaction and enjoyment. Even more recently, advances in technology and the emergence of the digital media are bringing a new wave of consumerism (Eroglu, 2014), and this has increased the need to effectively connect with customers.

The study conducted by Frommeyer and Schewe (2020) about online shopping motives during the COVID-19 pandemic showed that the best predictor for online purchase intention is hedonic motivation. A plausible explanation for this entertainment-seeking motivation could be the lockdown restrictions, governmental social distancing measures, a relief or panacea from isolation, or a reduction of boredom. Ernst & Young - EY (2020) offered their perspectives on customers' attitudes toward COVID-19, spending habits, data privacy and consumer trust, and projected that some customers may likely revert back to their pre-pandemic behaviours in the near future.

In the post-COVID era, there is little doubt that EC will continue to shape the consumers and retail industries, not only by changing shopping behaviour but also by contributing to the digital transformation of retail business models. The next few years may see a tremendous growth of B2C EC in the retail industry, with global revenues expected to grow by 85% until 2023, compared to 2019 with 4 trillion USD recorded for global EC retail sales worldwide (Statista, 2022). Moreover, from the post-COVID experience, there is the likelihood that in addition to EC users, some non-users (potential adopters) of online shopping may find compatibility with it and eventually adopt it as an alternative or their major purchasing channel.

Having now reviewed the effect of COVID-19 on EC, this study now reviews the emotional responses of customers in conjunction with adopting EC.

2.4 Customers' Emotional Responses to EC Adoption

Oftentimes, our world is infused with diverse changes and people respond or react to them differently. As seen in the previous section, the global, fast-spreading COVID-19 infection created fear and most people remain worried. As humans, the news of losing a friend makes us feel sad. In contrast, the birth of a new baby brings us joy. When the weather is bright and sunny, we feel happy, but a bad driver on the road makes us angry, and when we have no clue about a situation, we feel frustrated. In like manner, there is a connection of our emotions with technology acceptance/usage, i.e., how online customers respond to transaction cues when choosing which digital channel to shop on could be defining for EC adoption and may influence customers' purchase intentions. According to George and Dane (2016), investigating affective responses would not only enhance our understanding of choice processes but also contribute to our appreciation of the functioning of the human mind. Therefore, it is only fitting to focus on this vital topic. Next, we consider inclusion and exclusion criteria for what 'affect' and 'affective responses' connote in the EC context.

2.4.1 Inclusion and Exclusion Concepts

It is important to note that, for example, in the social psychology literature, the terms 'affect' and 'emotion' are often used interchangeably (Bagozzi, Gopinath and Nyer, 1999; Izard, 2010; Wakefield, 2015; Jeon, 2017). Thus, to sharpen our perspectives on what affect connotes, its many different definitions have been examined by seasoned scholars in extant literature, who explored its depths. This includes Éthier et al. (2006) who described affect as a set of specific mental processes, including feelings, moods, and emotions, which are important in explaining the behaviour of customers. In a remarkable similarity of definition as provided by various authors (Bagozzi, Gopinath and Nyer, 1999; Liljander and Mattsson, 2002; Russell, 2003 cited in Zhang, 2013), affect is conceived as an umbrella term for a set of more specific concepts that include emotions, moods, and feelings. In confirmation, Russell and Carroll (1999) and Puccinelli et al. (2009) also defined affect as an internal feeling state and a general representation of moods and emotions. However, they went further than these definitions to make a distinction between the two subsets of affect, i.e., emotions and moods: they categorised emotions as affective states with clear causes, contrary to moods that operate in a diffuse state. To differentiate between the two, emotions are more likely to change beliefs than mood (Hoong, Thi and Lin, 2017).

Additionally, Frijda, Kuipers and Schure (1989) and Lazarus (1991) argued that emotions are about and directed toward something, whereas moods relate to who we are and how we are doing in life and can rarely be pinned down to anything specific. To clarify, in this study, when we refer to affect we mean its related construct of emotion, and we are not focused on mood. In congruence, Pham et al. (2001) maintained that affect deserves a central place in evaluation- and choice-focused research, of which EC adoption is one. Therefore, since this present research focuses on specific concepts (EC adoption, technology acceptance and affective responses), with a clear cause (key factors), we excluded mood and concentrate and give attention to emotions and feelings - which are considered evidence of an affective reaction (Griffiths, 1997 in Wakefield, 2015).

Generally, whilst the cognitive component in business research has been well investigated, there is a deficit of studies on the influence of affective (emotional) dimensions on adopting EC (Perlusz, 2004; Rieple and Snijders, 2018). In other words, the affective (emotions) aspect has received surprisingly very little attention (Table 1). Consequently, a comprehensive understanding of how customers respond to key factors influencing EC adoption could provide a well-rounded perspective on EC technology adoption, to help e-marketers in their strategic moves into this promising and newly-emerging market (Cummins et al., 2014), such as the Nigerian EC. Therefore, this present research identifies an important opportunity to link customers' emotion with the adoption of EC and the related behaviours in the context of Nigeria, a developing country. As earlier emphasised, the adoption process refers to an individuals' decision on whether or not to integrate an innovation into their lives (Straub, 2009). This profound connection is in line with prior research that confirmed the influence of affective responses on attitudes, evaluations, and risk-taking (Cohen, Manion and Morrison, 2000), such as experienced in adopting online shopping.

From the customers' perspective, Kimiagari and Asadi Malafe (2021) stated that affective responses are emotional reactions that occur when customers interact with an environment. In support, Gaur et al. (2014) stated that affective responses have been recognised as one of the most valuable predictors of consumer behaviour. Cenfetelli's (2004) work also defended emotions as significant antecedents of technology usage. However, the study of online shopping behaviour of customers,

which is a key aspect of the online business success (Fedorko 2018), is largely out of scholarly focus in developing countries (Aldousari et al., 2016), and this present study addresses the research gap. Therefore, we argue that customers could find EC adoption a lot more desirable and useful if attention is paid to how they feel towards it. Cenfetelli (2004) put it succinctly when he noted that the technology we adopt or use could have a huge impact on how we feel.

For the purpose of this study, it is needful to distinguish between the terms customers and consumers and to define affective response. An online customer is an individual that buys a product from an online retailer and pays for it, i.e., a buyer (Parasuraman and Grewal, 2000; Webster, 2000), while a consumer is a person who uses or consumes the goods/products. Moreover, the online customers are central to B2C EC (Business-to-Consumer EC), linking together information technology (IT), organisation and its management (Zhang, 2013). Customers (current or potential) are considered the most important external stakeholders (Majava et al., 2013) for marketers and salespeople. As a result, Puccinelli, et al. (2009) argued that retailers can leverage understanding of customer behaviour to ensure greater predictability and enhance sustainable retail advantages. Notably, customer-oriented technology has become an integral part of today's society (Drucker, 2011).

According to Bagozzi and Lee (1999), customers exhibit voluntary behaviour and have goals that favour their subjective well-being when making decisions about innovations. This is further exemplified by a recent survey by Phrasedee (2019) of 4,000 customers across the UK and the USA, which reported how marketing could make them feel: 48% angry, 38% anxious, 38% sad, and 39% inadequate. Thus, it is important that online companies consider the customer's likes and dislikes in offering them goods and services. The next section defines affect and affective responses in detail.

2.4.2 Affect and Affective Responses

To start with, affect has increasingly become an important area of research and affective variables are an important research issue (Hwang and Kim, 2007; Zhang, 2013). Especially in decision research, affect has gained prominence and, as such, researchers have identified more opportunities to evoke it through various areas such as the retail environment, interactions among employees, and advertisement

(Puccinelli et al., 2009). Scholars have extolled its importance and emphasised how critical it is to seek to understand its remarkable role as a driver of customer behaviour.

Affect is rooted in behavioural sciences, especially human psychology (Lerner, Valdesolo and Kassam, 2015), and has been referred to as a critical factor in human decision behaviours within many social contexts (Zhang, 2013). According to Davis, Bagozzi and Warshaw (1989), taking affect into account would enable researchers to explain more variance in users' intention and behaviour. Thus, it is crucial to pay close attention to the affective side of customers' response and its impact on their adoption of EC.

Next, we attend to the meaning of affective responses. Affective response (or emotional response) includes a person's emotions (a feeling state) induced by a stimulus, which in turn influence their behaviour (Bagozzi, Gopinath and Nyer, 1999; Fineman, 2003; Zhang, 2013). Beaudry and Pinsonneault (2010) connected affective responses to ICT usage by regarding them as a set of emotional reactions (responses) elicited by a user's experiences, such as happiness, anger, anxiety, excitement, etc. Furthermore, customers' responses represent a conscious feedback mechanism (Clore et al., 2001; Schwarz, 1990 in Wakefield, 2015). There is a cornerstone reference to technology change by Straub (2009) and Bettiga and Lamberti (2018). They opined that such change as EC adoption does have affective dimensions, yet their impacts in EC adoption decision makings have received only limited attention. Their under-representation in research is also echoed by more recent research (Rieple and Snijders 2018; Choi, 2019). Lim and Kim (2020) emphasised that a better understanding of emotional responses could have considerable value in extending our knowledge of consumer behaviour. To clarify, affective response in this study is conceived as how customers evaluate and interpret the online experiences, events or circumstances through the expression of their emotions, with a particular reference to their intention to purchase online. Table 2 provides the lists of some affective response studies and their respective findings.

Research Areas	Sources	Key Findings
Affective reward and the adoption Group Support Systems (GSS)	Reinig et al. (1996)	Lack of engagement shown to be a cause of user resistance to adopting GSS technology. Participants' sense of emotional gratification plays an important role in adoption
Affect in organisational communication behaviour	Te'eni (2001)	Understanding the way people choose to behave will make it possible to design support that is more relevant to actual communication behaviour
Affective user interface	Lisetti and Nasoz (2002)	Performance of real-life experiments to measure affect and emotion was possible via an interface agent that responded to the current emotional states of its user, and provides intelligent multi-modal feedback to the user
Design Factors and Emotional Dimensions	Kim, Lee and Choi (2003)	Several design factors are closely related to the evocation of certain emotions or aesthetic responses when people interact with homepages
Affective quality of a website	Zhang and Li (2005)	Users' affective reaction such as their perception of affective quality of a website has a positive impact on their consequent thought evaluations about perceived usefulness and perceived ease of use, which in turn can influence their behavioural intention to use the IT
The direct and indirect effects of emotions on IT use	Beaudry and Pinsonneault (2010)	Happiness was directly positively related to IT use Anxiety was negatively related to IT use, both directly and indirectly through psychological distancing. Anxiety was also indirectly positively related to IT use. Anger was not directly related to IT use, but it was positively related to seeking social support, which in turn was positively related to IT use
Affective concepts and their relationships in the ICT context	Zhang (2013)	Distinguishing and understanding the roles of affective concepts allows designers to focus on areas that can be most effective in receiving desired user affective reactions. Affective response model points out the potential affective contributors that may influence users' attitudes
Online purchase intentions: A cognitive-affective attitude approach	Moon et al. (2017)	Cognitive and affective attitudes are significant and positive predictors of consumers' purchase intentions
Emotions in utilitarian service settings	Ladhari, Souiden and Dufour (2017)	Positive emotional satisfaction leads to a high perception of product quality, high recommendation, patronage intention, and likelihood of purchase
Customer intentions, service quality and the mediation of emotional and cognitive responses	Alsaggaf and Althonayan (2018)	A positive effect of customer perceptions of service quality on their electronic word of mouth, and switching intentions through their cognitive and emotional responses confirmed
Mobile payment loyalty: Cognitive and affective perspectives	Yuan et al. (2020)	Users' emotions are an important resource in strategic management

Table 2: Selected affective response-related studies
Source: Developed by the author

The emotional intelligence (EI) of customers is examined next in this thesis, in alignment with customers' purchase decision-making.

2.4.3 Customers' Emotional Intelligence

Defining emotion is both challenging and problematic, especially when distinguishing it from other related constructs such as mood, etc. (Vallerand and Blanchard, 2000 cited in Uphill and Jones, 2007). To differentiate between the two, emotions are more

likely to change beliefs than mood (Hoong, Thi and Lin 2017). Affective literature lacks unified conceptualisation of emotion; for example, in a study conducted by Izard (2010) more than a decade ago, no consensus on the definition of emotion was reached by 35 reputable scientists from multiple disciplines of behavioural and cognitive neuroscience, artificial intelligence, and clinical, cognitive, developmental, and social psychological science. However, to deepen our understanding, they agreed on its functions, influences and impacts, that emotions have multiple and quite significant functions in motivating and focusing individual endeavours, and facilitating social interactions, among others. One consensus emerged that emotions are a subset of the broader class of affect (Fredrickson, 2001).

According to Bagozzi, Gopinath and Nyer (1999), emotion is “a mental state of readiness that arises from cognitive evaluation and interpretation of events”. Linking both emotion and feelings together, Damasio (1999) stated that feeling is the subjective experience part of emotion. Therefore, it seems emotions and feelings are not mutually exclusive, but instead are closely related, and feeling conveys our emotion. So, they both “speak to” the same core idea. Extensive literature linking affect with decision-making shows that affect (emotions, feelings) is a fundamental aspect of being human and a strong driver of a customer’s choices and decision-making (Saadé and Kira, 2006; Reeve, 2005 in Zhang, 2013; Bettiga and Lamberti, 2018).

In the current research, we describe a customer’s emotion as emotional reaction to a product or service, due to a stimulus from an outside situation in the process of consumption, which can be described as happy, relaxed, angry, etc. (Gross, 2002). Moreover, customers’ emotions are considered as direct antecedents to shopping behaviours and operationalised as mental states of readiness arising from the appraisal of events (Éthier et al., 2006). They are universal across gender and age groups and can be found in all cultures (Bagozzi and Lee, 1999). In order to provide a nuanced understanding of adoption and ICT, Riedl et al. (2020), whilst examining information systems through the lens of neuroscience, identified emotion and technology acceptance as a category of key topics in extant literature. In their work, “A Decade of NeuroIS Research: Progress, Challenges, and Future Directions,” they particularly emphasised the importance and relevance of researching emotion in information systems, both now and in the future.

Hoong, Thi and Lin (2017) argued that customers are emotionally intelligent and are actively capable of identifying, understanding, processing, and influencing their emotions and those of others to guide their feeling, thinking, and actions. To further emphasise the importance and the relevance of customers' emotional intelligence in making choices such as EC adoption, Antonio Damasio, director of the Brain and Creativity Institute at the University of Southern California, clearly pointed out one of the great findings of modern neuroscience, which is that human intelligence has an emotional side to it and rational decision-making could be influenced by an individual's feelings (Cholle, 2012). Customers become smarter and exercise this choice by shopping around, making price comparisons, and seeking greatest value in a more assertive way. Therefore, to develop good relations with customers and other stakeholders in online environments, it is important for retailers to pay close attention to emotional intelligence (Yeke, 2023).

Emotion is an aspect of human intelligence, and emotional states are capable of influencing people's reasoning processes, and therefore their logical rational decision-making (Pham, 2007). Moreover, Perlusz (2004) explained that people form judgments and rely on their feelings, which are important factors in evaluating (Cenfetelli, 2004; Izard, 2010; Ladhari, Souiden and Dufour, 2017). This process informs their adoption decision-making on a new innovation technology such as online shopping. This is an important area of research that needs urgent attention because, as customers transition from bricks to clicks, e-retailers ought to remember that online shopping is done, not by "zombies", but by human beings with thought-driven and decision-making preferences. Perlusz (2004) maintained that customers' judgments and feelings are important factors that inform their adoption decision-making of new technologies. Therefore, our study bridges the identified gaps in EC research on developing countries, in order to demonstrate that customers do use, not only cognitive ability (perception) in the decision-making processes as they respond to EC ecosystem experiences, but also their emotional intelligence.

Based on this premise, research on the antecedents of affective responses as evidenced by emotion is of particular interest and high importance to EC, in order to further elucidate why customers respond not only cognitively but also emotionally to technology acceptance. We argue that emotion should not be excluded from studies

that investigate customers' behaviour and human interactions with technology, if we would have an appreciation of human nature and functioning, and a holistic view of technology usage. We thus emphasise the need to take emotional responses into account when studying EC adoption.

2.4.4 Antecedents of Emotion in EC Purchase Decision-Making

To adopt EC customers make a personal decision. Puccinelli et al. (2009) established that a customer's evaluation when making a purchasing decision has emotional motivation in its complex dimensions. Clore and Huntsinger (2007) described emotions as forms of evaluation. Zhao, Wang and Han (2015) concluded that this decision-making process for buying products and services is a "black box" whose content needs to be unlocked for a better understanding.

To an extent, it clearly implies that our emotion can act as a driver for unravelling the black box of customers' decision making when we are confronted with the problem of making a critical choice of where to purchase from. Much still remains unknown with regard to emotion and decision-making and further investigations are needed on the application of emotion in decision making. Empirical research has provided clear evidence that exploring the antecedents and outcomes of EC adoption from the psychological and emotional perspectives remains an area that warrants further investigation (Lu, Papagiannidis and Alamanos, 2019). Thus, there is a call for researching this gap, especially in a developing country context, in which such studies are even scarcer (Sila, 2019).

Notably, Cenfetelli (2004) pointed out the essentiality of considering the broad range of human emotions that are possible as we consider how users respond to technology. In his findings he concluded that emotions are important antecedents to technology usage/adoption. He clearly reminded us that we will need to understand the influence of technology "beyond our heads and into our hearts" as it becomes increasingly a part of our lives. Moreover, research has shown that emotions are mediators of behaviour and decision-making (Izard, 2009); they influence purchase preference and choice (Dawson, Bloch and Ridway, 1990); they are major elements of organisational life (Fineman, 1993); they are connected with well-being (Richins, 1997); they

represent a feedback mechanism (Wakefield, 2015); and they are a catalyst for business sustainability (Pîrvu, 2020).

This current research suggests online customers demonstrate not only their cognitive ability but also their emotional intelligence in the decision-making processes in the EC ecosystem. This is expected to help online retailers develop management strategies and business operations that prompt, reinforce and motivate positive and rewarding outcomes towards online transactions. Below are the various theorists on the emotion and cognition debate (see Table 3).

Theorists / Proponents	Sources	Propositions
Experiential theorists	Hirschman and Holbrook 1982; Thompson, Locander and Pollio 1989; Arnold and Price, 1993	They recognised the importance of the emotional aspects of decision making and experience by encouraging a broader view of human behaviour. Consumers are feelers as well as thinkers. They stressed the role of positive and negative emotional responses in experiential consumption
Cognitively oriented	Ekkekakis and Petruzzello, 2000	Emotion succeeds cognitive appraisal of an event that is significant for an individual's well-being
Functionalist perspectives	Cosmides and Tooby, 2004	Argue in favour of the crucial benefits of emotion as antecedents of preparing time tested behavioural responses
Psychologist, behavioural neuroscientists	Izard, 2010	Emotion influences thinking, decision-making, actions, social relationships, well-being, and physical and mental health
Scientific perspectives	Hill, 2008; Cholle, 2012	Breakthroughs in brain science have revealed that people are primarily emotional decision makers. Emotion is regarded as an inner knowing that precedes rationality

Table 3: Debates of various proponents of emotion and cognition in the literature
Source: Developed by the author

In sum, it is strategically paramount to understand psychological factors such as what can trigger pleasant emotional reactions in customers to reinforce EC adoption. This could help businesses to meet actual customers' needs and feelings (Di Crosta et al., 2021).

2.4.5 Important Roles of Customers' Emotions

Customer's emotion plays a significant role in the decision-making process to buy a product (Laros and Steenkamp, 2005). Emotions represent the "wisdom of the ages" (Lazarus, 1991), providing time-tested responses to recurrent adaptive problems. In line with this, Koo and Ju (2010) posited that when customers do not have any particular goals for evaluation, they depend upon their emotions to decide a channel of purchase.

Historically, the role of emotion (or affect, more generally) in decision making rarely appeared for most of the 20th century and, compared to affective states, most studies focused primarily on understanding cognitive processes (Lerner, Valdesolo and Kassam, 2015). In congruence, recent studies also emphasised that emotions or how people feel can have more explanatory power in predicting their purchasing behaviour than cognition, under certain circumstances (Zhang, 2013). Moreover, emotion is an important component of customer response, and our well-being is inextricably connected to it (Richins, 1997; Ekkekakis and Petruzzello, 2000; Gross, 2002). Thus, it could be inferred that shopping, emotions, and well-being are interlinked.

It is also paramount to critically investigate emotion as a vital intervening variable in the EC ecosystem to provide much-needed, customer-centred insight into the issues affecting EC adoption. Hoong, Thi and Lin (2017) stated that research on acceptance of technologies such as EC and Mobile and Enterprise Resource Planning (ERP) that considered emotion and affect was still less. This creates a gap in the technology acceptance research, which considers the role of affect in the technology acceptance model. In addition, and importantly, this current study focuses on customers' responses in the online retailing sector and proposes emotion as a principal determinant of online purchase intention.

A rich tradition of consumer behaviour research indicates that affect has a universal influence in everyday life. The omnipresence of affect in everyday life makes it critical to understand its role in driving customer behaviour (Puccinelli, 2009). In congruence, Pham et al. (2001) maintained that affect deserves a central place in evaluation- and choice-focused research, of which EC adoption is one. Zhang (2013) amplified that a robust understanding of affect may also have practical implications for design, acceptance, use, and management of ICTs. This should not be overlooked. According to Djasasbi, Strong and Dishaw (2010), making rational choices without affect is, at best, impractical, and, at worst, impossible. Hence, in order to have anything like a complete theory of human rationality, we have to understand what role emotion plays in it (Herbert, 1983, p.29), thus pointing to the critical attention that contemporary research is now beginning to give emotion in decision research.

Hill (2008) said emotions are central to both marketplace and workplace behaviour. As a result, companies are able to identify, quantify and thereby act on achieving emotional acceptance from consumers, and employees alike will enjoy a tremendous competitive advantage. Emotions improve decision making for events that are personally relevant (Damasio, 1999), enhance memory for events that are important to remember (Phelps, 2006), facilitate social interactions (Keltner and Kring, 1998), and are critical for successful persuasion (Rucker and Petty, 2004). However, emotions are not always helpful and can sometimes work against us (Parrott, 1993). Furthermore, extant literature from different fields and vantage points also evidenced the importance of studying online shoppers' emotions in marketing (Bagozzi, Gopinath and Nyer, 1999), consumer behaviour research (Perlusz, 2004; Machleit and Eroglu, 2000; Eroglu, Machleit and Davis, 2003; Éthier et al., 2006), sport participation (mediating role of emotion) (Uphill and Jones 2007; Mohiyeddini, Pauli and Bauer, 2009), and informal learning (Straub, 2009).

Sutton and Rafaeli (1988) studied and untangled the relationship between displayed emotions and organisational sales in an offline retail context. They proposed there is a higher probability for customers to visit a store when sales attendants display positive emotions during transactions. They confirmed affect as a strong determinant of job satisfaction (Weiss et al., 1999), decision-making behaviour (Mittal and Ross, 1998), consumer shopping behaviour (Childers et al., 2001), creative problem-solving (Isen, 1987 in Jeon, 2017) and attitude change or persuasion (Petty, DeSteno, and Rucker, 2001). The suitability of this proposition is further supported by findings from psychological scientists and behavioural neuroscientists who affirm that emotion is capable of influencing thinking, decision-making, actions, social relationships, well-being, and physical and mental health (Morris and Feldman, 1996; Izard, 2010).

Lerner, Valdesolo and Kassam (2015) emphasised that, despite the nascent state of research on emotion and decision-making, the field has accumulated enough evidence to move towards a general model of affective influences on decision-making. They revealed that emotions constitute powerful, pervasive, and predictable drivers of decision-making. They also explained that, although the field of emotion and decision-making is growing at an accelerating rate, it is far from mature. Moreover, most sub-areas of this concept contain few competing theories, while many areas still remain

relatively unexplored. This is particularly relevant to the present study on EC adoption and the impact of emotional responses of customers in Nigeria, as this aspect is rarely researched.

As technology continues to advance remarkably, apart from all the rational considerations that customers factor in when adapting or choosing a retailing channel to purchase from, leveraging or reinforcing positive emotional responses to the idea of EC adoption is also vital for its success (e.g., interest, satisfaction, happiness) and for alleviating negative responses from customers (e.g., fear, worry, frustration). Reeve (2005) cited in Zhang (2013) and Bettiga and Lamberti (2018) stated that, emotion being a fundamental aspect of being human and a strong driver of customer choices and customers' decision-making, it can play an integral role in human motivation.

According to Zhao, Wang and Han (2015), the power of emotions has been demonstrated in several studies conducted in the context of advertising and brand attitudes. They explained that customers' emotion plays a significant role in the decision-making process to buy a product, such that the association of a particular product with eliciting a positive emotion in the customer is becoming an increasingly important marketing tool. This approach to marketing requires an understanding of the factors that induce consumer emotions, e.g., in products and brands, advertising, etc. Evidently, emotions can influence buying decisions and purchase intentions.

In sum, this present study conceptualises emotion as informative in nature. It argues that, emotion is also capable of playing a prominent role of influencing customers' behaviour as they evaluate and interpret online events or experiences. In particular, with reference to their intention to purchase and make decision to adopt EC.

2.5 Online Shopping Environment and Online Shopping Experience

2.5.1 Online Shopping Environment (OSE) and Customers' Response

In the online shopping environment (OSE), the website is representative of the traditional retail store and is the primary interface for online retailers, thereby creating the first impression for intending customers (Éthier et al., 2006). According to Watson

(2008), “when the customer sees the website and not the firm, the website becomes the firm”. Research has shown that whether the retail store is offline (physical) or online (digital), customer interactions with the store environment influence their emotional responses and shopping behaviours (Baker, Grewal and Levy, 1992; Donovan et al., 1994; Mummalaneni, 2005; Chang, Eckman and Yan, 2011). Therefore, the emotional states of the individual mediate the influence of the environment on the individual’s behaviour. Research shows that customers are in reality as emotional as they are rational (Puccinelli et al., 2009).

Bagozzi and Lee (1999) substantiated the widely accepted psychology notion that people have emotional responses to their immediate environment. Further, it has been found by Frambach, Roest and Krishnan (2007) that, in general, a customer goes through three stages in their buying process, namely pre-purchase, purchase, and post-purchase. As a result, customers shift between the online and offline channels when they move through these three stages (Ahuja et al., 2003). LaRose (2001) clarified that the EC environment includes features that could stimulate emotional purchase. Therefore customers could purchase brands for the status and experiences that they confer, rather than merely on the utility that they provide (Puccinelli et al., 2009).

Nowadays, online customers have more control and bargaining power than physical-store consumers (Eroglu, 2014). Customers’ goals tie with their perception of the retail shopping environment and its individual elements, their shopping behaviour, and their satisfaction with the shopping experience. This shows that the environment of the retail store does indeed have significant and measurable effects on shopping behaviours (Puccinelli et al. 2009). In addition, the shopping environment provides customers with experiencing a vast array of emotions, ranging from, for example, liking, excitement, joy, interest, and pleasure to anger, surprise, frustration, etc. Knowledge of the specific feelings produced by manipulations in the retail environment can lead to a greater understanding of the role emotions play in influencing shopping behaviours and thus produce favourable outcomes (Machleit and Eroglu, 2000; Eroglu, Machleit and Davis, 2001).

Mehrabian and Russell (1974) stated that affective reactions represent the common core of human response to all types of environments, while Ittleon (1973) emphasised that these emotional responses impact customers' subsequent interactions within the environment, stressing that the first response level to any environment is affective. However, in contrast with the traditional brick and mortar, the perceived risk is higher and so is the level of uncertainties in the digital ecosystem (Kim, Yang and Kim, 2013). Both offline and online retail channels can create an atmosphere that influences customers' responses (Eroglu, Machleit and Davis, 2001). Nevertheless, in the online stores, customers cannot touch their desired products (Naegelein, Spann and Molitor, 2019) because they are digital instead of physical. For example, the most widely used visual presentation modes such as texts, pictures and videos, which may not be enough to reduce customers' perceived risks or support their final purchase decisions. One of the primary antecedents to the high level of perceived risk in the digital ecosystem compared to the traditional modalities is the inability of the customers to have a direct experience with e-retailing offerings (Nayak, et al., 2022).

Moreover, as customers shop around, make price comparisons and seek greatest value, it is more difficult to make purchase decisions because they can only see the real product digitally but cannot touch it physically (Cheng, Wu and Yen, 2009). Wang, Minor and Wei (2011) cautioned negative feedback from the environment may lead a customer to adjust their behaviour avoiding such a platform. Bitner (1992) in their investigation of the impact of physical surroundings on customers and employees suggested that the service environment influences the customers' emotional, cognitive, and physiological reactions and thus affects their behaviour. Frambach, Roest and Krishnan (2007) noted that what drive channel preference/choice across these stages are considerably different due to the benefits desired by customers as they evaluate the channels (Keeney, 1999), and the channels 'capabilities to offer them (to their satisfaction). Nayak et al. (2022) observed that customers are more likely to stay online if the website has an interesting and pleasing environment.

In evoking positive psychosocial benefits (these involve consumer feelings related to using a particular marketing channel), which are important drivers of channel choice in both the pre- and post-purchase stages, the service provider should try to enhance feelings of confidence, excitement, happiness, and self-assurance (Frambach, Roest

and Krishnan, 2007). The various channel characteristics which correspond to its functional benefits such as accessibility, ease of use, usefulness, and social presence have been recognised as important drivers of customers' channel preference (Guha et al., 1997; Neslin et al., 2006).

Next, this study examines the link between customers' experience in the digital retail economy and their behavioural responses to EC adoption. The customer's dynamic external environment can have a significant influence on customer experience (CX) (Lemon and V 2016) Which in turn is regarded as the new differentiator and a tool for gaining a sustainable competitive advantage in the retail environment (Klaus, 2014).

2.5.2 Online Customer Experience (OCE)

Holbrook and Hirschman (1982) were the pioneers who introduced experience as a component of consumer behaviour and proposed recognising the perception of experience as a key variable in understanding the internal behavioural process and consumer response. Experiences are built on the preface of both cognitive and affective components (Chopdar and Balakrishnan, 2020). However, emotion has been acknowledged as an outcome of customer experience (Radia et al., 2022). Evidently, from human-technology interaction logics, Barari, Ross and Surachartkumtonkun (2020) identified two main components of online customer experience, namely cognitive and affective (these are essential for adopting EC, regardless of their sequence of operation in human behaviour).

Notably, Aldousari et al. (2016), Bettiga and Lamberti (2018) and Izogo and Jayawardhena (2018) emphasised that empirical research relating to customers' online experiences and behaviours is scarce, particularly in less developed economies. In support, Zhang (2013) and Lu, Papagiannidis and Alamanos (2019) found that customers' psychological experiences and their affective responses in the online environments are generally overlooked and less explored.

Evidence has shown there is an association between customers' experience with the channel and their evaluation of the benefits they offer (Montoya-Weiss, Voss and Grewal, 2003; Frambach, Roest and Krishnan, 2007). Furthering this path, online customer experience is defined as the customers' affective and cognitive assessment

of direct or indirect interaction with a company (Klaus and Maklan, 2013; Rose, Hair and Clark, 2011). The experience could originate from the customers' interactions with a product, the company, or a part of its organisation (Gentile, Spiller and Noci, 2007). Barari, Ross and Surachartkumtonkun (2020) found that customers' priority in a successful shopping context is affective experience. This means that there is a connection between customers' experience and their affective responses in decision-making (Hossain and Rahman, 2022). The kind of experiences customers have in the online environment is capable of prompting their responses towards either accepting or rejecting EC.

Moreover, previous research in shopping experience indicates that, compared to cognitive experience, the affective experience has higher importance for the customer and holds a stronger effect on the customers' emotional and behavioural response (Rose et al., 2012; Scarpi, Pizzi and Visentin, 2014). A combination of the increasingly complex online retail landscape and the importance of customer experience to business performance means that retailers must understand how to ensure an optimum online experience for the customer, both within and across channels (Rose et al., 2012). An experience is also built up through a collection of the touch points in multiple phases of a customer's decision process or purchase journey (Puccinelli et al., 2009; Verhoef et al., 2009).

Friestad and Thorson (1986) argued that it is more important to emphasise the processes and experiences comprising a person's response. Retailers can develop affect and make retail experiences fun. Recent business practice has also broadly defined the customer experience as "encompassing every aspect of a company's offering - the quality of customer care, of course, but also advertising, packaging, product and service features, ease of use, and reliability. It is the internal and subjective response customers have to any direct or indirect contact with a company" (Meyer and Schwager, 2007, p.2).

Multiple definitions of customer experience exist in the literature. For instance, Schmitt (1999) takes a multidimensional view and identifies five types of experiences: sensory (sense), affective (feel), cognitive (think), physical (act), and social-identity (relate). Verhoef et al. (2009) explicitly defined customer experience in a retailing context as a

multidimensional construct and specifically stated that the customer experience construct is holistic in nature and involves the customer's cognitive, affective, emotional, social, and physical responses to the retailer. In general, scholars and practitioners have come to agree that the total customer experience is a multidimensional construct that involves cognitive, emotional, behavioural, sensorial, and social components (Verhoef et al., 2009).

Brakus, Schmitt and Zarantonello (2009) conceptualised brand experience by customers as subjective, internal responses (sensations, feelings, and cognitions) and behavioural responses elicited by brand-related stimuli that are part of a brand's design. Mascarenhas, Kesavan, and Bernacchi (2006) reminded us that, for business to be successful, the shopping experience for customers should become something as real as any service, good, or commodity. They added that businesses should be intentional in designing engaging experiences in what they produce, design and offer to customers so as to realise the full benefit associated with such deliberate delivery.

Empirical research relating to customers' online experiences and behaviours is scarce, particularly in less developed economies (Aldousari et al., 2016; Bettiga and Lamberti, 2018). A business website is also capable of eliciting positive perceptions about the store and its products (Oh, Fiore and Jeoung, 2007). Sharma and Raouf (2017) maintained that customer experience is the key driver of their satisfaction. Bhandari (2016) argued that there has been a paradigm shift of focus from merely developing product brands to building customer relationships and to creating and delivering engaging and compelling customer experiences.

Lemon and Verhoef (2016) stated that an important question, however, is how novel the customer experience focus actually is. This is highly related to marketing, such as customer satisfaction, service quality, customer relationship management, customer centricity, and customer engagement. They believed that customer experience is a multifaceted construct focusing on a customer's cognitive, emotional, behavioural, sensorial, and social responses to a company's offerings during the customer's entire purchase journey.

2.6 Summary

This chapter began with an overview of EC and defined the concept in relation to adoption, critically reviewing several empirical studies to understand its related dimensions. It featured the benefits of EC and the research context of Nigeria, not only from a new cultural and geographical lens but also from a demographic vantage point as the most populous nation in Africa, with a high percentage of youth as an advantage. This is indicative of the country's promising outlook as a fertile ground for EC uptake to boost its economic trajectory.

The chapter also looked at the growing importance of EC in developing economies and the steps taken to facilitate the adoption and implementation of EC. Pre- and post-pandemic shopping behaviours of customers were reviewed, as well as the impacts of COVID-19 on EC growth. This was relevantly linked with customers' emotional responses (both positive and negative), their emotional intelligence in choosing their channel of purchase, and the roles of human emotions in adopting online shopping. The section was in alignment with and well situated within what takes place in the digital ecosystem, i.e., the online environment where customers' experience (CX) can trigger their behavioural responses either to approach or avoid EC.

Recent gaps in EC adoption research were uncovered after extensively reviewing the relevant literature as shown in Table 1 on page 38. Relatedly, some key findings from affective response studies were presented in Table 2 on page 51. There were aspects of the study domain that were known, such as the EC being well-researched in advanced countries, but, in contrast, empirical research relating to customers' online experiences is scarce, particularly in less developed countries. Further, what is yet to be known and thus remains unclear is customers' emotional behaviour in connection with the technology they intend to adopt. Specifically, little is known about the behaviour of customers from the urban cities of a developing economy such as Nigeria.

Broadly speaking, the vital importance of human emotions, though recognised, are still under-represented in innovation/EC adoption research, especially by businesses. This leaves a vital knowledge gap in emotional influence and emotional responses of customers towards technology acceptance of online shopping, and the situation thus

calls for more attention. Generally, there is a deficit of studying emotional responses of customers in relation to EC adoption. Even scarcer is such study in a country like Nigeria compared with those conducted in advanced countries (See Table 5). Moreover, in contrast to the studies on traditional shopping behaviour of customers, studies on their online shopping behaviour are still insufficient. Thus, examining these critical factors and the systematic processes that may lead customers in developing countries to adopt EC and its implementation is needful. Therefore, in order to address the current research gaps, this study investigates the emotional responses of customers towards the key factors that influence EC adoption, with evidence from Nigeria. The following chapter discusses the research framework for the study.

Chapter 3: Development of the Research Framework

3.1 Introduction

Based on the review of the EC literature, the chapter presents proposed conceptual framework which will be used as a road map for empirical data collection and analysis to establish a comprehensive overview of EC adoption and implementation in the context of Nigeria. The proposed conceptual theoretical framework highlights the critical factors that may influence successful EC adoption.

3.2 Theoretical Foundation: Technology Adoption Models & Response Theory

In technology acceptance research, no single model provides a complete understanding of the processes of adopting a new innovation by an individual (Straub, 2009). Key theoretical frameworks adopted in research literature to study EC adoption and consumer behaviour include the Theory of Reasoned Action, the Theory of Planned Behaviour, the Diffusion of Innovations Theory, the Technology Acceptance Model, and the Stimulus Organism Response Theory. As deemed appropriate, researchers have combined some of these frameworks in their studies. In order to provide a rationale for the models chosen to support the current research, a concise review of these key frameworks is provided here to evaluate their strengths and weaknesses.

1. Theory of Reasoned Action (TRA)

Introduced by Fishbein and Ajzen (1975), the Theory of Reasoned Action (TRA) states that a person's behavioural intention (BI) is a precursor of their actual behaviour. This theory postulates that an individual's behaviour depends on their attitudes and social norms about a particular behaviour (Ajzen, 2011). In other words, BI is jointly predicted by attitude and subjective norm (Moon et al., 2017). In technology context, subjective norm (SN) is the degree to which a person feels the social pressure in relation to using a particular information technology (Dinev and Hu 2007). However, Davis, Bagozzi and Warshaw (1989) argued that, unlike the TAM, the TRA is a general model that does not specify the beliefs that are operative for a particular behaviour. Venkatesh and Davis (2000) also stressed that the influence of social norm on behavioural intention is likely to be significant in a mandatory environment while insignificant in a voluntary setting, such as customers' behavioural intention towards EC adoption in this current study. This is because individual technology usage is personal and

voluntary, not mandatory (Davis, Bagozzi and Warshaw, 1989). The TRA framework is presented in Figure 3.

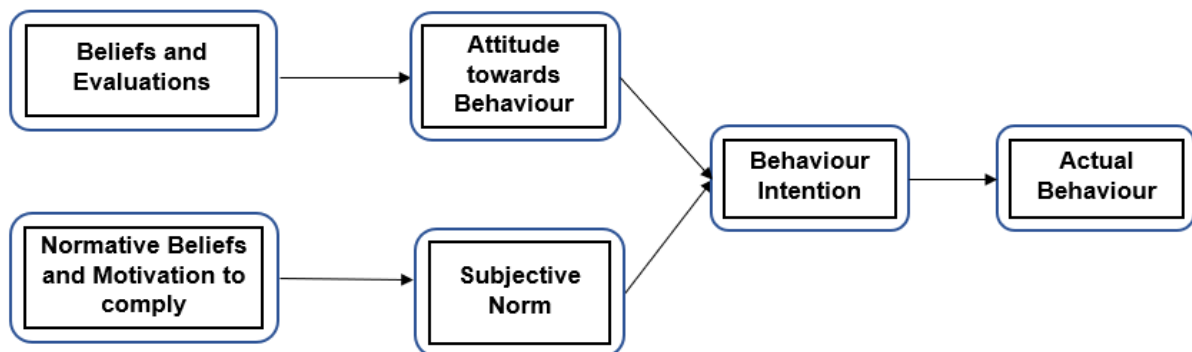


Figure 3: The Theory of Reasonable Action (TRA) (Fishbein and Ajzen, 1975)

2. Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour extended the TRA model with the inclusion of a volitional control variable (Ajzen, 1991), as outlined in Figure 4. This is due to limitations in the TRA that assume people do not have intentional control over situations (Madden, Ellen and Ajzen, 1992). Similar to the TRA, the TPB also postulates that behaviour is predicted by intention, while attitude towards behaviour and subjective norm are determinants of intention. The major difference between the two theories is that unlike the TRA, the TPB is based on the assumption that people may have a degree of control over their behaviour in certain circumstances (Ajzen, 1991). Mathieson (1991) argued that the TPB is more difficult to apply across diverse user contexts than the TAM. The scholar claimed TAM's constructs (perceived usefulness and perceived ease of use) are measured in the same way, whilst TPB requires identifying relevant control variables in every context in which it is used.

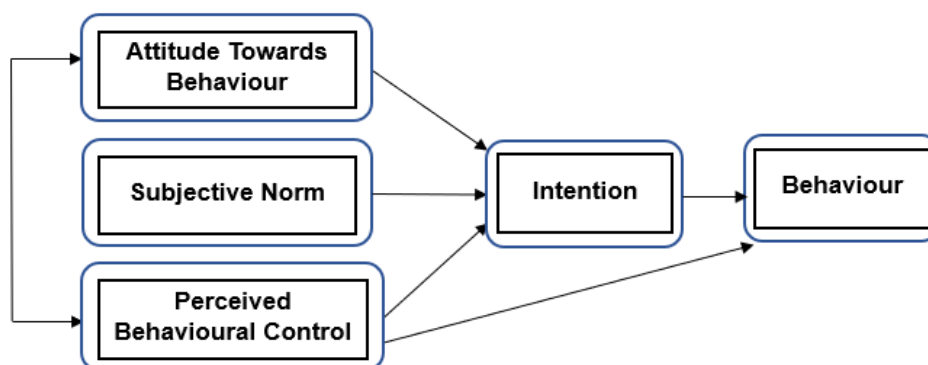


Figure 4: The Theory of Planned Behaviour (TPB) (Ajzen, 1991)

3. Diffusion of Innovations Theory (DOI)

According to Rogers (1983), the Diffusion of Innovation Theory as seen in Figure 5 explains the sequential process in which an innovation is communicated between members of a social system. This model describes the steps of innovation development up to users' attitudes' formation and the final decision of an adoption or a rejection (Moore and Benbasat, 1991; Rogers, 1995). Taking a macro perspective on the spread of an innovation, DOI takes these factors into consideration: the time, channels of communication and the social system (Straub, 2009). Rogers (1995) stated that the rate of adoption is influenced by attributes of the innovation, such as relative advantage, complexity, compatibility, trialability and observability of the innovation. Roger's theory (Figure 4) integrates these main components: adopter characteristics, characteristics of the innovation, and innovation decision process (Taherdoost, 2018). However, Taherdoost observed that, in comparison with other adoption models, DOI has less power in explaining outcomes and it is less practical for predicting adoption. Earlier, Straub (2009) highlighted another weakness of DOI as being not always easily applied to understanding adoption.

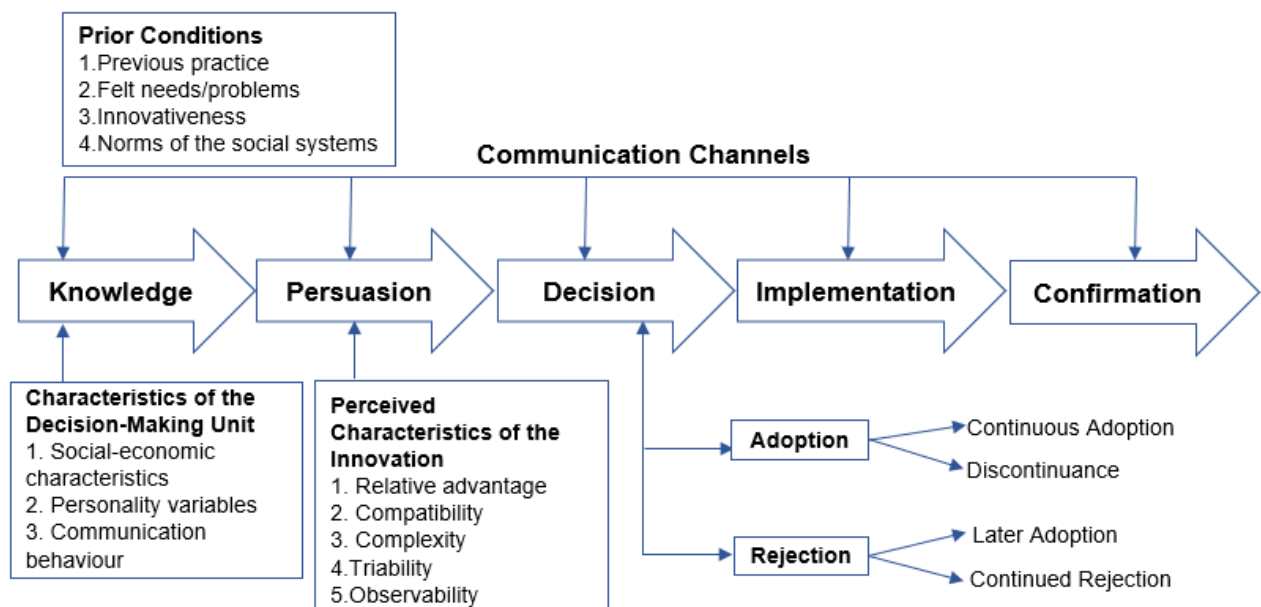


Figure 5: The Diffusion of Innovations (DOI) Theory Framework (Rogers, 1995)

3.2.1 The Technology Acceptance Model (TAM) and Its Extension

The TAM, driven by two distinct determinants, namely perceived usefulness and perceived ease of use, is parsimonious, operationally efficient, and offers explanatory power (Davis, 1989; Venkatesh and Davis, 2000; Venkatesh et al., 2003). Over the years, a number of EC studies have used the TAM as a theoretical foundation to predict online shopping. The TAM states that customers' acceptance of a new technology is significantly driven by two distinct determinants representing human beliefs on technology acceptance, namely perceived usefulness and perceived ease of use (Davis, 1989). The TAM specifies the relationship between perceived usefulness, perceived ease of use, attitude towards computer use, intention to use technology and actual use, as seen in the original TAM shown in Figure 6.

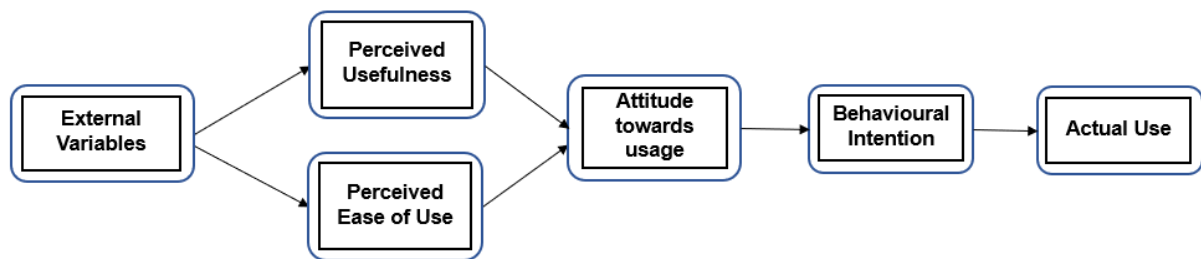


Figure 6: Technology Acceptance Model (TAM) Framework (Davis, 1989)

TAM's value in technology-driven contexts has been consistently important. Therefore, employing it in the technology-driven context of EC is a rational undertaking (Pavlou, 2003). Of all the theories for understanding EC, the TAM is considered the most influential and commonly-employed theory because of its predictive power for customer's adoption of innovation technology in both developed and developing countries (Venkatesh, 2000; Chen, Gillenson and Sherrell, 2002; Tong, 2010; Fedorko, 2018). Thus, it is extensively employed and has gained reputation as a highly valid approach in the online shopping context (Ha and Stoel, 2009; Klopping and Mckinney, 2004).

Although originally proposed for organisational IT usage, the TAM has received extensive empirical support through validations, applications, and replications in different countries and research fields, including EC and its adoption (Venkatesh, 2000). According to Davis, Bagozzi and Warshaw (1989), TAM is capable of

explaining user behaviour across a broad range of end-user technologies and user populations, while at the same time being both parsimonious and theoretically justified.

A number of recent EC studies have used TAM as a theoretical foundation (Chen, Gillenson and Sherrell, 2002). The TAM has been applied in a wide variety of fields and domains to predict usage and users' behaviour, such as in electric car usage, product usage, online auction, computer usage, education, e-gov, etc.

3.2.2 Extended TAM Studies

Perceived ease of use (PEOU) and perceived usefulness (PU) are believed to be fundamental factors in determining the acceptance and use of various corporate Information Technologies (Moon and Kim, 2001). However, we argue that the basic TAM cannot be used to fully explain online consumer behaviour, as EC adoption is considerably different from technology adoption within an organisation. One difference is that the decision to buy online is personal, transactional and voluntary, while the decision to use new software in an organisation is typically mandatory under the organisational policy.

Some scholars have suggested TAM be integrated with other acceptance theories to improve its predictive and explanatory power (Moon and Kim, 2001). "Extensions to the various models identified in previous research mostly enhance the predictive validity of the various models beyond the original specifications" (Venkatesh et al., 2003, p. 445). Davis, the originator of TAM, emphasised the research implications in his work three decades ago stating that future research was needed to address how other variables relate to usefulness, ease of use and acceptance. For instance, he pointed out that the role of affective attitudes was also an open issue and that users' reactions to computers were complex and multi-faceted. He furthered, "if the field continues to systematically investigate fundamental mechanisms driving user behaviour, cultivating better and better measures and critically examining alternative theoretical models, sustainable progress is within reach" (Davis, 1989, p.335). Therefore, in order to fill the knowledge gap and address the shortcomings of previous studies, the present study attempts to investigate customers' affective responses, in

addition to both the internal and external environmental factors that influence EC adoption according to the extended TAM approach.

Over the years, TAM has made possible extensions and elaborations for the contextualisation of Information Technology (IT) studies (Lee, Kozar and Larsen, 2003) beyond the ease of use and usefulness constructs. As an illustration, extensions to TAM have been introduced by Venkatesh and Davis (2000); Venkatesh, Morris and Davis (2000) and Venkatesh et al. (2003). They extended original TAM to TAM 2 and TAM 3 and also included an emotion variable, in particular, anxiety. This was to test a new system usage behaviour in the workplace of an advanced country, but the main weakness of the study is the failure to include any positive emotions. Whilst the work of Wixom and Todd (2005) included satisfaction - a positive emotion, the research did not take into account a negative emotion. Research shows that it is valuable to consider both. According to Perlusz (2004) positive emotions are as important as negative emotions in determining behaviours. Moreover, recent studies argue that including individual characteristics with the TAM can improve our understanding of those conditions under which basic TAM is not adequate for explaining acceptance behaviour (Djamasbi, Strong and Dishaw, 2010).

Straub (2009) also pointed out that technology adoption is a complex process, and some variables need to be added as external variables to TAM to provide more consistent prediction of system use. Given that psychological states and individual differences are gaining importance in technology acceptance studies (Lu, Papagiannidis and Alamanos, 2019), this study consequently extends TAM by incorporating EC factors and affective variables. The study aims to advance and complement existing research by extending the technology acceptance model's two foundational determinants (PU and PEOU) to empirically investigate and analyse the factors influencing EC adoption in Nigeria. Additionally, it aims at developing the extended TAM theoretical perspective for how internal and external factors may influence customers' choice of adopting EC by taking into consideration customers' affective responses, i.e., the role of emotions experienced while shopping online. It thus extends the original technology adoption model to describe the process of technology acceptance as comprising cognitive (TAM constructs - PU and PEOU),

emotional, and behavioural intention (response to the external stimulus) factors in an online environment (Davis, 1993).

Various empirical studies conducted in different countries using the TAM contribute to providing a strong theoretical understanding of the TAM factors. Below are some examples:

Using an extended version of the TAM, Moon and Kim's (2001) work from South Korea was among the first to extend the TAM in the World-Wide Web (WWW) context. They stressed the importance of adding explanatory variables beyond the ease of use and usefulness constructs to the original TAM constructs PU and PEOU. Moreover, the pioneer of TAM himself argued that future technology acceptance research needs to address how other variables affect usefulness, ease of use, and user acceptance (Davis, 1989). Thus, perceived playfulness was added to the original TAM constructs to empirically validate TAM and increase the model's explanatory power. Evidently, their findings showed that extended TAM explained the individual's WWW acceptance behaviours better than the original TAM - whilst TAM explained 35% of variance, extended TAM explained 39% of variance of behavioural intention to use the WWW. Also, perceived playfulness had a significant positive effect on behavioural intention to use. Similar to TAM, the positive influences of PU and attitude towards use were confirmed.

A more recent study by Oyman, Bal and Ozer (2022) extended the TAM to explain how perceived augmented reality affects consumers' perceptions in Turkey. They surveyed 278 female consumers to investigate how an augmented reality-supported mobile application makes putting cosmetic products virtually on possible. Their findings indicated that consumer novelty seeking (CNS) (i.e., the desire to seek information on new products and purchase new products) had a positive and direct effect on perceived augmented reality (PAR). It was also discovered that the perceived enjoyment, perceived usefulness and perceived informativeness had positive and direct effects on the behavioural intentions to use the application. Unexpectedly, however, the perceived ease of use variable did not have a significant effect on behavioural intentions of female consumers in Turkey to use the application. Also

surprisingly, technology anxiety did not have a significant negative effect on perceived augmented reality.

Another extension to TAM was also introduced by Aref and Okasha (2020) in their research examining the factors that affect the actual online shopping behaviour and re-purchase behaviour among Egyptian college-educated community. Four external variables were added to the TAM, including perceived enjoyment, perceived risk, social norms and online subjective norm. The findings suggested that perceived enjoyment, perceived ease of use, social norm and perceived risk had significant influences on the respondents decision to shop online, while the effect of website language was insignificant.

Valencia et al. (2019) extended the TAM by adding trust and perceived security in EC to ease of use and PU in their analysis of EC acceptance using the TAM in Colombia. The findings revealed the strongest positive relationship was found between perceived usefulness and attitude towards use. Furthermore, the scholars emphasised that perceived usefulness (PU), perceived ease of use (PEOU) and trust were antecedents of online shopping intention.

Chi (2018) applied extended TAM approach to understand Chinese consumer adoption of apparel mobile commerce (m-commerce). The scholar added brand equity and website quality to PU and PEOU to predict consumer intention to use apparel m-commerce. Based on the analysis of data collected from 786 online-surveyed respondents, the research model demonstrated a high explanatory power that accounted for 64.6% of the variance in Chinese consumer intention to use apparel m-commerce. All dimensions of website quality such as website system quality, information quality, and service quality significantly influenced consumers' perceived usefulness. Both perceived usefulness and perceived ease of use resulted in positive consumer attitudes towards shopping for apparel via the m-commerce channel.

Makame, Kang and Park (2014) tested an extended TAM to investigate the factors influencing EC adoption in developing countries, with evidence from Tanzania. They incorporated PU, PEOU with national policy initiatives, technology infrastructure, and trust. The researchers found that PEOU had a strong relationship with PU and

intention to use EC, and PU had strong significance on intention to use EC. Moreover, national policy initiatives were important in building online trust and improving technology infrastructure.

Tong (2010), in a cross-national investigation of an extended TAM in the online shopping context of both the USA and China's retail apparel sector, included the following variables with PU and PEOU - perceived risk, perceived enjoyment, prior online shopping experience and online shopping intention. Agreeing with Davis (1989), his findings revealed a strong association between PU and PU of purchasing apparel online in both markets. Moreover, consumers' perceived usefulness of a virtual store consistently had a positive impact on their future purchase intentions in both the US and China. The mean comparison test revealed that the American buyers had higher perceived ease of use score for online shopping than the Chinese buyers. Also, prior online shopping experience had an equivalent positive effect on perceived ease of use and an equivalent negative effect on perceived risks. The study concluded that both cultural and economic differences significantly moderated consumers' perceptions of online shopping, based on the extended TAM model.

From an extended TAM perspective, Chen, Gillenson and Sherrell (2002) worked on how to incorporate the "online consumers' integrated compatibility" variable into their model to understand consumer acceptance of the virtual store in the USA. Findings from the study showed that compatibility, PU and PEOU were the primary determinants of consumers' attitude towards using the online store. Both compatibility and PEOU influenced PU of the virtual store. Additionally, consumer acceptance and use of the online store could be predicted from consumers' intention. Central to their conclusion was that the more positive attitude consumers had, the more likely they were to use the virtual store.

In sum, this section has analysed the empirical literature underpinning the TAM framework and presented a detailed review of studies that draw on the TAM theory. The TAM framework has consistent empirical support, although specific factors identified varied across different studies. Table 4 provides a list of both more recent and older studies that used the TAM framework to investigate the factors related to the adoption of EC and technology acceptance.

S/N	Source	Country / Context Method & Sample Size	Research using TAM	Factors Investigated	Key Findings
1.	Oyman, Bal and Ozer (2022)	Turkey Quantitative Survey of 278 female consumers Judgmental sampling technique, non-random sampling methods	Extending the technology acceptance model to explain how perceived augmented reality affects consumers' perceptions.	Extended TAM: PU PEOU with perceived information, perceived enjoyment, technology anxiety, consumer novelty seeking and perceived augmented reality	The results indicated that the consumer novelty seeking had a positive and direct effect on perceived augmented reality. Perceived enjoyment, perceived usefulness, and perceived informativeness had positive and direct effects on the behavioural intentions to use the application.
2.	Aref and Okasha (2020)	Egypt Quantitative Survey of 244 college students	Evaluating the online shopping behavior among Egyptian college-educated community	Extended TAM: PU PEOU with perceived enjoyment, perceived risk, social norms, online subjective norm and actual shopping	Perceived enjoyment, perceived ease of use, social norm and perceived risk have significant influences on the respondents to shop online, while the site language effect was insignificant
3.	Valencia et al. (2019)	Colombia 369 university students Survey Convenience sampling Somers' D & Cramer's V	Analysis of ecommerce acceptance using the technology acceptance model	Extended TAM: PU, PEOU, trust, perceived security	PU, PEOU and trust, are antecedents of online shopping intention. The strongest positive relationship was found between perceived usefulness and attitude towards use
4.	Dakduk et al. (2018)	Colombia 386 respondents Snowballing Questionnaire survey The Bayesian approach	Customer Behavior in Electronic Commerce: A Bayesian Approach	Extended TAM: PU, PEOU, subjective norm, attitude, acceptance of internet, internet use frequency, self-efficacy, perceived behavioural control	The intention to purchase online is mostly determined by the attitudes to e-commerce which, in turn, are explained by PU, PEOU, and the subjective norm
5.	Roy (2017)	India Study 1: 268 respondents Study 2: 281 respondents Survey questionnaire	App adoption and switching behavior: applying the extended TAM in smartphone app usage	Extended TAM: PU, PEOU subjective norm, self-efficacy, anxiety, playfulness, external control, output quality, job relevance, image, result demonstrability, perceived enjoyment, behavioural intention, use behaviour, switching intention	There was a significant effect of behavioural intention on use behaviour and subsequent switching intentions to apps from computers/laptops.
6.	Li, Chung and Fiore (2017)	China Online Survey 210 current users of e-auctions SEM	Factors affecting current users' attitude towards e-auctions: An extended TAM study	Extended TAM: PU PEOU with security, social motives, playfulness, connection speed, time consumption, economic gain, playfulness	Security had a positive influence on PEOU of e-auctions. Connection speed had a positive effect on a consumer's overall experience on the e-auction website, PEOU, enjoyment, and trust of e-auctions
7.	Ros et al. (2015)	Spain Online survey Purposive sampling 80 students of an e-learning module	The use of extended TAM to assess students' acceptance and intent to use third generation learning management systems	Extended TAM: PU, PEOU, Perceived experience, perceived interaction, container design, gadget design and use intention	Previous experience does not determine the use intention e-learning learning management system

8.	Abu-Shamaa and Abu-Shanab (2015)	Jordan 358 questionnaires Multi-regression Convenience sampling	Factors Influencing the Intention to Buy from Online Stores: An Empirical Study in Jordan	Extended TAM: PU, PEOU and technology trust, online shopping site trust, buying intention, payment method	PU and PEOU and trust were significant predictors of buying intention
9.	Makame, Kang and Park (2014)	Tanzania 111 respondents, including government officers Survey SEM	Factors influencing electronic commerce adoption in developing countries: The case of Tanzania	Extended TAM: PU, PEOU with national policy initiatives, technology infrastructure, and trust	PEOU had a strong relationship with PU and intention to use e-commerce PU had a strong significance with intention to use e-commerce National policy initiatives are important in building online trust and improving technology infrastructure
10.	Hernández Jiménez and Martín (2011)	Spain 225 experienced online customers; SEM	Age, gender and income: Do they really moderate online shopping behaviour?	PU, PEOU, self-efficacy, satisfaction, purchase intention, e-purchasing experience, internet acceptance	PU had a positive effect on the attitude toward e-commerce in both samples PEOU did not significantly affect shoppers' behaviour. Age, gender and income did not moderate the influence of previous use of the internet or EC perceptions
11.	Saifullah Said and Noordin (2011)	Malaysia 349 survey questionnaires of university students Convenience sampling Descriptive & exploratory factor analysis	Factors influencing the adoption of M-commerce: An exploratory Analysis	PU, PEOU, personal innovativeness, perceived trust, perceived cost, subjective norms, perceived behavioural control, facilitating conditions, self-efficacy, attitude towards use, connection speed, secure systems, easy transaction method	Perceived usefulness found to be one of the critical factors affecting these services. Trust in m-commerce was key Perceived ease of use was an important factor influencing the consumers' intention to use M-commerce
12.	Tong (2010)	US and China 246 and 273 responses from the USA and China respectively Multi-group confirmatory analysis	A cross-national investigation of an extended technology acceptance model in the online shopping context	Extended TAM: PU, PEOU, perceived risk, perceived enjoyment, prior online shopping experience and online shopping intention	PEOU showed positive effects on PU and negative effect on perceived risk
13.	Li and Huang (2009)	Taiwan 637 online survey SEM	Applying theory of perceived risk and technology acceptance model in the online shopping channel	PEOU, PU, Perceived risk, Behavioural intention, actual purchase behaviour	Perceived risk was an antecedent in the TAM
14.	Chiu, Lin and Tang (2005)	Taiwan 376 customers, SEM Questionnaire survey Stratified and systematic sampling	Gender differs: assessing a model of online purchase intentions in e-tail service	PU, PEOU, awareness of security, innovativeness, attitude towards online buying, purchase intention	The influences of personal innovativeness and PU on attitude and online purchase intentions were similar for male and females

15.	Klopping and Mckinney (2004)	USA 263 students Web-based survey	Extending the Technology Acceptance Model and the Task-Technology Fit (TTF) Model to Consumer EC	Extended TAM: PU, PEOU and TFF, actual usage	Task technology fit model was a valuable addition to TAM for online shopping tasks to predict intentions TFF affects PEOU
16.	Gefen, Karahanna and Straub (2003)	USA 213 Student online shoppers Questionnaire	Trust and TAM in online shopping: An integrated model	Trust, PEOU, PU, familiarity, situational normality, structural assurances and calculative-based trust, intended use	Consumer trust was as important to online commerce as the PU, PEOU
17.	Chen, Gillenson and Sherrell (2002)	USA 253 Web-based survey SEM	Enticing online consumers: An extended technology acceptance perspective	Compatibility, PU, PEOU, behavioural intention to use, attitude to use	Compatibility, PU, PEOU, were the primary determinants of consumers' attitude towards using online store. Consumer acceptance and use of online store could be predicted from their intention. Both compatibility and PEOU influenced PU of virtual stores
18.	Venkatesh (2000)	USA Survey SEM	Determinants of perceived ease of use: integrating control, intrinsic motivation, and emotion into the technology acceptance model.	PU, PEOU; Usability, Playfulness, Self-efficacy, enjoyment control (internal and external conditions), intrinsic motivation, and emotion (anxiety)	Control, intrinsic motivation and emotion (computer anxiety) served as anchors for perceived ease of use about a new system.
19.	Lee, Park and Ahn (2001)	USA 176 Web-based Survey SEM	On the explanation of factors affecting e-commerce (e-CAM)	Perceived risk, PEOU, PU, Purchasing behaviour	Firms should consider contextual factors to facilitate e-commerce adoption behaviour
20.	Moon and Kim (2001)	South Korea Multiple Regression 152 students questionnaire	Extending the TAM for a World-Wide-Web Context	Extended TAM: PU, PEOU with perceived playfulness	Similar to TAM, the positive influences of PU and attitude towards use were confirmed Perceived playfulness had a significant effect on positive behavioural intention to use
21.	Venkatesh and Davis (2000)	USA four organisations Interview Survey questionnaire SEM	A theoretical extension of the technology acceptance model: Four longitudinal field studies	Extended the original TAM: PU, PEOU with social influence processes (subjective norm, voluntariness, and image) and cognitive constructs (TAM 2)	Social influence processes (subjective norm, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived ease of use) significantly influenced user acceptance
22.	Davis (1989)	USA Field study 112 Lab study 40	Perceived usefulness, perceived ease of use and user acceptance of information technology	Perceived Usefulness (PU) and perceived ease of use (PEOU)	PU had a significantly greater correlation with usage behaviour than PEOU. PEOU may be a causal antecedent to PU

Table 4: More recent and prior extended TAM-related studies

Source: Developed by the author

3.2.3 Stimulus Organism Response (SOR) Theory

This section will discuss the principles underlying the Stimulus Organism Response (SOR) Theory. First, there are three aspects to SOR, namely environmental stimulus, user as organism, and behavioural response. Specifically in this study, the stimuli are the internal and external environmental factors as they affect the emotional responses of the customer. Organism refers to the customer's internal processes that intervene between the stimuli external to the individual, and the response refers to the final outcomes (actions, reactions, or responses elicited) which can be the approach or avoidance behaviours, whether positive or negative – that subsequently arise (Mehrabian and Russell, 1974; Donovan and Rossiter, 1982; Chen and Yao, 2018). Simply put, Mehrabian and Russell's (1974) S-O-R addresses the process by which environmental factors (S) affect individuals' internal states (O) and how their responses (R) are reflected in their approach or avoidance behaviour to adopting EC.

The SOR Theory is a highly valid environmental psychology framework extensively used for predicting consumer responses to variations of product formats (Bloch, 1995). It not only applies to psychology, but is also widely accepted in the fields of marketing, EC research and consumer behaviour in particular (Eroglu and Machleit, 1990; Eroglu Machleit and Davis, 2001, Kim, lee and Jung, 2020; Laato et al., 2020; Lian, 2021). Thus, this framework can be used to investigate how the environment influences people's behaviour (Laato et al., 2020; Sun et al., 2021; Zhang et al., 2023)

Suitably, Mehrabian and Russell's (1974) SOR framework (Figure 7) fits into the affective component of this research, and broadly supports behavioural response, whether in technology environments or online settings, which further ascertains its suitability. A mediator helps to identify the focal elements of a given theory (Khan et al., 2020). Therefore, S-O-R showcases the mediators and the focal elements of the integrated theories of the present study to build a stronger, robust, bi-focal, conceptual model of the study. The organism element of the S-O-R framework serves as an intermediary between the stimuli and customers' responses (Loureiro and Ribeiro, 2011). Using an extended Stimulus-Organism-Response (SOR) model, this study investigates the effects of EC adoption factors on emotional processes that lead to an intention-to-purchase outcome.



Figure 7: Stimulus Organism Response (SOR) framework (Mehrabian and Russell, 1974)

The model has received support from researchers as a robust framework for predicting consumer responses to variations of formats of products (Bloch, 1995). Moon et al. (2017) suggest that researchers can use the SOR Model to better explain such affective responses (emotions, feelings) and online purchase intentions. The theoretical constructs for this research are behaviour prediction, purchase intention, user acceptance, EC adoption and affective responses.

What follow are examples of related studies on EC adoption that used the SOR as their theoretical basis for investigation.

Using mixed methods, Agrawal and Mittal (2022) conducted a study on optimising Indian customers' engagement content strategy in retail and e-tail available in online product review videos. They analysed 97 videos on YouTube, with 18,452 comments, including likes, replies, and positive and negative emotions, using content analysis (sentiment analysis) for the qualitative phase and regression analysis for the quantitative phase. Their findings revealed that positive sentiment and associated emotions expressed in online customer engagement content strongly influenced purchase intentions compared to negative sentiment and related emotions available in the YouTube videos. In addition, replies to comments were found to be empirically significant and influence purchase intentions.

Laroche et al. (2022) applied the SOR framework in a study to investigate online atmospherics - the effects of animated images on emotions, cognition, and purchase intentions in North America. They included image type and website attitudes, with SOR attributes - pleasure and arousal and purchase intention - as the dependent variables. Findings from the study showed that, compared with static images, animated images elicited greater pleasure, which, in turn, induced more favourable website attitudes

and led to higher purchase intentions. Website attitudes mediated the effect of animated images on online purchase intentions.

Another study using the SOR as its theoretical base was by Cachero-Martínez and Vázquez-Casielles (2021) who examined the influence of five e-shopping experiences of online shoppers in Spain. They investigated components including emotional experience and visual, intellectual, social and pragmatic experiences of online shopping. Attitudinal loyalty and behavioural loyalty were the targeted outcomes. The results of their surveying 496 online consumers showed that emotional experience was a partial mediator of the impact of customer experiences on attitudinal loyalty. Emotional experience fully mediated the impact of customer experiences on behavioural loyalty.

Also employing the SOR Model, Laato et al. (2020) examined unusual purchasing behaviour of Finland customers during the early stages of the COVID-19 pandemic. Their findings showed a strong link between self-intention to self-isolate and intention to make unusual purchases. Also, exposure to online information sources led to increased information overload and cyberchondria, i.e., a state of health anxiety that is created by using the internet to search for medical information. Moreover, information overload was also a strong predictor of cyberchondria.

Using an extended SOR model, Kim, Lee and Jung (2020) explored consumer behaviour in virtual reality tourism. They examined the visit intention of 408 surveyed respondents in South Korea by the random sampling method. They included in the SOR framework customer response and experiential variables such as authentic experience, cognitive response, enjoyment, emotional involvement, flow state and attachment to virtual reality. The study identified cognitive and affective responses as significant mediators in predicting attachment and visit intention. Moreover, their results revealed that cognitive response had a stronger influence than affective response on the intention to visit a destination in virtual reality.

Kühn and Petzer (2018) extended the SOR by including website trust, visual appeal, perceived usability and flow to examine the purchase intentions towards online retailer websites in an emerging market such as South Africa. Their findings showed the

validity of the S-O-R framework to better understand how purchase intentions can be fostered through effective website design. They also discovered that visual appeal and perceived usability were important in affecting the consumers' purchase intentions. Overall, they concluded that website trust and flow partially mediated the influence of visual appeal on purchase intentions, and that website trust fully mediated the influence of perceived usability on purchase intentions. It was determined that visual appeal and perceived usability (stimuli) influenced customers' purchase intentions (response) via flow and website trust (organism's cognitive and emotional states).

Furthermore, Moon et al. (2017) examined online purchase intentions in Pakistan through a cognitive-affective attitude approach. The data was collected from 335 adult customers from four urban cities via the convenient sampling technique. The findings revealed that cognitive and affective attitudes were significant and positive predictors of the consumers' purchase intentions. The results of this study provided support for the modified S-O-R model to better explain online purchase intentions. The researchers further concluded that online retailers should not only put a heavy emphasis on utilitarian attributes but also take hedonic attributes into consideration while formulating online retail strategies.

Peng and Kim (2014) applied the SOR Framework to investigate online shopping repurchase intention behaviour in China. They included these variables in their model: attitudes towards online shopping, hedonic shopping value, the utilitarian shopping value, and environmental stimuli. 416 respondents from four Chinese metropolitan cities were surveyed through convenience sampling. Their findings showed that environmental stimuli positively influenced consumers' attitudes towards online shopping and emotional purchases. As a result, they suggested that online retailers should value customers' subjective feelings.

Also, using the SOR as a theoretical base, Loureiro, Koo and Ribeiro (2013) conducted a study in Portugal on the effects of atmospherics on emotions and intention, with respect to involvements in different shopping environments. They included word of mouth (WOM), delight, design, layout, information, arousal and pleasure in their model. The results from the data analysis of 363 users of both offline store and website channels in four Portuguese cities via convenient sampling revealed

that information and layout were two important factors in pleasing consumers and delight was a determinant of WOM and intention to purchase for both online and offline consumers.

Mummalaneni (2005) used the SOR to conduct an empirical investigation of website characteristics, consumer emotional states and online shopping behaviours. Two hundred and fifty (250) responses from USA consumer behaviour undergraduate students were analysed by regression. Aside the examination of factors such as online store environment (design and ambience factors), satisfaction, emotional states (pleasure and arousal) and intended loyalty, they investigated three shopping behaviours relating to time spent at the store, number of items purchased, and money spent. The study's finding showed that the influence of website characteristics was statistically significant in cases of shopper satisfaction, intention of loyalty and the number of items purchased, but not in case of time or money spent by the shopper. Overall, the researcher found the SOR a useful framework to understand the relationships between website characteristics, emotional responses of shoppers and their purchasing behaviours. They suggested retailers must direct their efforts to generating pleasure response to ensure advantageous marketing outcomes.

Lu, Papagiannidis and Alamanos (2019) also suggested incorporating individual characteristics such as psychological states and emotional responses could be a viable approach to enhancing technology acceptance theories. In order to bridge the gaps already highlighted above, this present study develops a significant conceptual framework that aims at testing the impact of customers' affective responses on key EC adoption factors and their intention to purchase online. Table 5 shows some extended S-O-R studies in the field of retailing.

Key Research Using S-O-R Framework								
S/N	Country	Author / Source	Research Area (SOR)	Sample Size and Source	Methods & Analysis Technique	Independent Variable	Dependent Variable	Findings
1.	Bangladesh	Hossain and Rahman (2022)	Detection of potential customers' empathy behavior towards customers' reviews	30263 reviews from the Yelp dataset of financial service companies	Quantitative lexicon-based machine learning approaches sentiment analysis	Review statement, length of review, sentiment of reviewer, customers'	Empathy behaviour	The various types of customer sentiment have a significant impact on potential customers' emotional experiences on social media platforms, prompting them to behave differently.
2.	China	Hewei and Youngsook (2022)	Factors affecting continuous purchase intention of fashion products on social E-commerce: SOR model and the mediating effect	Questionnaire survey, 776 invited respondents	Quantitative using structural equation modelling	Social media interactivity, perceived value, immersive experience	Continuous purchase intention	Perceived value and immersive experience play a mediating role in the relationship between social media interactivity and continuous purchase intention. Social media interactivity has a significant impact on perceived value, immersion experience and continuous purchase.
3.	India	Agrawal and Mittal (2022)	Optimizing customer engagement content strategy in retail and E-tail: Available on online product review videos	97 videos on YouTube 18452 comments	Mixed Methods content analysis (Sentiment analysis; Poisson and negative binomial regression)	Comments, replies, positive and negative emotions	Like (purchase intention)	Positive sentiment and associated emotions expressed in online customer engagement content available on YouTube videos strongly influence purchase intentions compared to negative sentiment and related emotions. Replies to comments were also found to be empirically significant and influence purchase intentions
4.	North America	Laroche et al. (2022)	An investigation into online atmospherics: The effect of animated images on emotions, cognition, and purchase intentions	Online Survey Study 1: 128 university students Study 2: 150 Amazon MTurk participants	Quantitative Equation modelling by PROCESS	Image type, website attitudes, arousal and pleasure	Purchase Intention	Compared with static images, animated images elicit greater pleasure, which in turn induces more favourable website attitudes, and lead to higher purchase intentions Website attitudes mediate the effect of animated images on purchase intentions.
5.	Spain	Cachero-Martínez and Vázquez-Casielles (2021)	Building consumer loyalty through e-shopping experiences: The mediating role of emotions.	Electronic survey of 496 online consumers Stratified sample	Quantitative SEM	Perceived experiences: visual experience, intellectual experience, social experience pragmatic experience, emotional experience	Attitudinal loyalty, behavioral loyalty	Emotional experience is a partial mediator of the impact of customer experiences on attitudinal loyalty Emotional experience fully mediates the impact of customer experiences on behavioral loyalty

6.	South Korea	Kim, Lee and Jung (2020)	Exploring Consumer Behavior in Virtual Reality Tourism Using an Extended Stimulus-Organism-Response Model.	Online survey 408 respondents Random sampling method	Quantitative SEM	authentic experience, cognitive response, enjoyment, emotional involvement, flow state, attachment to VR	Visit Intention	Cognitive and affective responses identified as significant mediators in predicting attachment and visit intention. Cognitive response had a stronger influence than affective response on the intention to visit a destination in VR
7.	Finland	Laato et al. (2020)	Unusual purchasing behavior during the early stages of the COVID-19 pandemic: The stimulus-organism-response approach	Online Survey 211 university students and employees	Quantitative SEM	CyberChondria (a state of health anxiety), information overload, online Information source, perceived severity, purchase self-efficacy, self-isolation self-efficacy, self-isolation intention	Intention to make unusual purchases	Strong link existed between self-intention to self-isolate and intention to make unusual purchases Exposure to online information sources led to increased information overload and cyberchondria. Information overload was also a strong predictor of cyberchondria.
8.	India	Yadav and Mahara (2020)	Exploring the Role of E-Servicescape Dimensions on Customer Online Shopping: A Stimulus-Organism-Response Paradigm	Online survey of 304 e-commerce websites users	Quantitative SEM	E-servicescape dimensions, trust and gender	Purchase intention	E-servicescape dimensions are a strong predictor of trust that strongly impacts customer purchase intention
9.	India	Chopdar and Balakrishnan (2020)	Consumers response towards mobile commerce applications: S-O-R approach	420 mobile shoppers Quota sampling	Quantitative Survey SEM	Contextual offering, visual attractiveness, impulsiveness, perceived value, app incentives	Repurchase intention & satisfying experience	Satisfying experience acts as a partial mediator between perceived value and repurchase intention of m-shoppers
10.	China	Yuan et al. (2020)	Determining the antecedents of mobile payment loyalty: Cognitive and affective perspectives	343 respondents of 3 eastern Chinese cities	Quantitative Survey SEM	Trust, satisfaction, service quality, information quality, system quality, intimacy – cognitive and affective	Loyalty	M-payment loyalty is predicted directly by satisfaction and intimacy - an accumulatively affective factor, which in turn is affected by trust. Satisfaction and trust are determined by overall quality
11.	Croatia	Tankovic and Benazic (2018)	The perception of e-servicescape and its influence on perceived e-shopping value and customer loyalty	Internet survey in which 221 active online shoppers	Quantitative SEM	Aesthetic appeal, Layout, functionality, financial security, perceived value	Attitudinal loyalty, behavioural loyalty	Consumers' interpretation of e-servicescape exerts a positive influence over perceived e-shopping value and loyalty
12.	South Africa	Kühn and Petzer (2018)	Purchase intentions towards online retailer websites in an emerging market	165 respondents purposive sampling	Quantitative Survey questionnaire SEM	visual appeal, perceived usability, flow, and website trust	Purchase Intention	Visual appeal and perceived usability are important in affecting consumers' purchase intentions Findings show the validity of the S-O-R framework to better understand how

								purchase intentions can be fostered through effective website design
13.	India	Kaur, Lal and Bedi (2017)	Vendor cues influence on purchase intention of online shoppers	592 internet users Quant Convenience sampling	Quantitative Online Survey questionnaire SEM Chi-Square	Brand reputation; brand familiarity; offline presence trust and attitude	Purchase intention	Trust has a strong relationship with purchase intention as compared to attitude. External vendor cues like brand familiarity, brand reputation, and offline presence have a positive influence on trust
14.	Pakistan	Moon et al. (2017)	Online purchase intentions: A cognitive-affective attitude approach	335 adult customers of 4 urban cities convenient sampling technique	Quantitative online survey questionnaire SEM	Cognitive attitude, affective attitude, Product information, monetary saving, convenience perceived ease of use utilitarian attributes role, best deal, social and hedonic attributes	Purchase intentions	Cognitive and affective attitudes are significant and positive predictors of consumers purchase intentions
15.	India	Ul Islam and Rahman (2017)	The impact of online brand community characteristics on customer engagement: An application of Stimulus-Organism-Response paradigm	430 Active Facebook users	Quantitative Questionnaire survey SEM	Information quality, system quality, virtual interactivity, rewards, customer engagement	Brand loyalty	Customer engagement also exhibits a strong positive impact on brand loyalty. gender gap in the online environment is declining
16.	USA	Richard and Chebat (2016)	Online consumer behavior: emotions and moderating influences of need for cognition	1443 student respondents Random sampling	Survey Questionnaire Quantitative Multivariate LMx2/SEM	Website attitudes, Entertainment information content, Product attitudes, flow, pleasure, dominance, arousal	Purchase intention	Emotional reactions are first developed upon exposure to the website Emotions precede cognitions
17.	China	Peng and Kim (2014)	Application of the stimulus organism response S-O-R Framework to online shopping behavior	416 respondents of 4 Metropolitan (large cities) convenience sample	Survey questionnaire SEM	Attitudes toward online shopping, hedonic shopping value, the utilitarian shopping value, and environmental stimuli	Repurchase intention	Environmental stimuli positively influence consumers attitudes toward online shopping and emotional purchases Suggests online retailers should value customers' subjective feelings
18.	USA	Kim and Lennon (2013)	Effects of reputation and website quality on online consumers' emotion, perceived risk and purchase intention	219 Students respondent	Quantitative online survey convenient sampling	Reputation, Emotion, perceived risk, website design, customer service fulfillment/ reliability, security /privacy	Purchase intention	Emotion and perceived risk had a significant impact on purchase intention Reputation had a significant positive effect on emotion and significant negative effect on perceived risk

19.	Portugal	Loureiro Koo and Ribeiro (2013)	Effects of atmospherics on emotions and intention with respect to involvements in different shopping environments	363 users of both offline store and websites channels in 4 Portuguese cities Convenient sampling	Questionnaire survey SEM/PLS	Word of mouth (WOM), delight, design, layout, information, arousal, pleasure	Intention WOM	Delight is a determinant of WOM and intention for both online and offline consumers Information and layout are two important factors in pleasing consumers
20.	China	Cui and Lai (2013)	E- loyalty to Online Auction Websites	449 validated online bidders Random sampling	Online survey SEM	Utilitarian perception, hedonic perception, effective, network effect, product diversity, bidding agent, WTI –Watch the Item	E-loyalty	E loyalty to an online auction website is significantly influenced by the factors proposed
21.	USA and Korea	Kim, Yang and Kim (2013)	Online retailer reputation and consumer response: examining cross cultural differences	202 US 282 Korean students' respondents Purposive sampling	Online survey Questionnaire SEM	Online retailer reputation, retail quality, emotion and perceived risk	Purchase intention	Differences are found in the relative importance of the factors determining consumers' cognitive and emotional reactions as well as their intention to purchase online
22.	South Korea	Koo and Ju (2010)	Effects of atmospherics and perceptual curiosity on emotions and online shopping intention	356 respondents of 3 major cities of South Korea	Quantitative Questionnaire SEM	Graphics, colours, links and menus, perceived curiosity	Purchase intention	Environmental cues such as colours, graphics and links influenced customers' emotions and subsequently intention
23.	USA	Mummalaneni (2005)	An empirical investigation of Web site characteristics, consumer emotional states and online shopping behaviors	130 participants: Consumer behaviour students	Survey Questionnaire Regression	Online store environment (design and ambience factors), satisfaction, emotional states (pleasure and arousal) Intended loyalty	Shopping outcome and behaviour	Web site characteristics are found to be statistically significant with satisfaction, intention of loyalty and the number of items purchased, however they do not influence time or money spent by shoppers.

Table 5: Related S-O-R studies in the field of online retailing
Source: Developed by the author

Having highlighted key research that utilised the SOR Framework in the context of the online retailing sector in different countries (with only one African country), it can be seen that there is a theoretical gap in research that this present study could address. The following section examines the integration of the TAM and the SOR models in this research and provides the justifications for combining the theories to predict and explain customers' purchase intention towards EC adoption.

3.2.4 Integrating TAM and SOR

The mapping of the Technology Acceptance Model (TAM) antecedents with factors that influence organism (customers) and consequently their purchase intention introduces a new theoretical viewpoint in a specific context, such as Nigeria. Underpinned by a deductive research approach, this study is grounded in two influential theories: the Technology Acceptance Model (TAM) by Davis (1989) and the Stimulus Organism Response (SOR) Theory by Mehrabian and Russell (1974).

This study demonstrates the importance and usefulness of combining the TAM Framework and the SOR Theory for understanding EC adoption. The integration of more than one theories and models is capable of generating new insights, which would have remained undiscovered with a single theory (Hubert, 2019). In the extant literature, research often focuses on either the TAM Framework or the SOR Theory, but not on both. This study addresses this vital gap. Noticeably missing from the literature is a robust model to study the affective dimension of EC adoption in developing countries, especially Nigeria. Therefore, drawing from relevant literature, we selected two models, the TAM and the SOR to evaluate their suitability to predict customers' EC adoption. This study is unique in that it brings together and integrates psychology and technology, in the context of online retailing, and consumer behaviour in a developing economy's EC adoption, such as obtains in Nigeria.

As a useful approach to enhance technology acceptance theories, it is needful to incorporate individual characteristics, e.g., psychological states and emotional responses variables, with a view to developing theoretical frameworks for understanding the antecedents to successful buyer–seller relationships across all phases of the customer decision process (Moon et al. 2017; Lu, Papagiannidis and Alamanos, 2019; Cummins et al., 2014; Zhang, 2013).

Thus, technology acceptance factors, EC adoption and emotional responses variables, and purchase intention are the principal theoretical constructs for this research and the TAM and the SOR theories have focused on these constructs. According to Straub (2009), there is no one model for understanding the processes in which an individual engages before adopting a new innovation. Complementing this

work, Moon et al. (2017) and Lu, Papagiannidis and Alamanos (2019) suggested incorporating individual characteristics, e.g., psychological states and emotional responses variables, as a useful approach to enhancing technology acceptance theories.

3.2.5 Rationale for TAMSOR

Relating to the field of consumer research, Firat and Venkatesh (1995, p. 260) succinctly summarised the justification for combining more than one theories as follows: “It means that we must opt for multiple theories of consumer behaviour rather than a single theory that silences all other theories... the joys of doing research must be found, not in the pursuit of a holy grail of singular knowledge, but in capturing many exploratory moments.”

For this present study, the rationale for integrating the TAM and the SOR is in five folds. First, the two core cognitive constructs of the TAM - perceived ease-of-use and perceived usefulness - are not sufficient to explain a customer’s acceptance of technology (Mathieson, 1991). The inclusion of affective constructs (customers’ emotions) in the TAM is believed to be crucial to a successful adoption of EC by the Nigerian customers. According to Bettiga and Lamberti (2018), these constructs are not yet well explored in the business literature. Moreover, we argue that customers are likely to access an EC ecosystem that offers them usefulness such as convenience and flexibility and also the ease that they need (TAM components), but which additionally offers them, for example, satisfaction and happiness (SOR dimensions). In like manner, Yang, Kim and Yoo (2013) echoed the necessity of incorporating emotional dimensions that influence users’ attitude formation and individual judgments. The ability of TAM to apply in a customer context where the acceptance and use of information technologies are not only to achieve organisational tasks but also to fulfil their emotional needs may be limited in research (Taherdoost, 2018).

As earlier said, the TAM has been criticised for lacking the affective component of human-technology interaction (Lin, Fofanah and Liang 2011; Taherdoost, 2018). The proponents of the experiential view of consumer behaviour strongly support the consideration of feelings and emotional reactions in decision models (Holbrook and

Hirschman, 1982). Complementarily, Mehrabian and Russell's (1974) is a highly valid SOR framework and it fits into the affective component (positive and negative shoppers' emotions) lacked in TAM. It broadly supports predicting customers' behavioural response, whether in technology environments or online settings, which further ascertains its suitability (Eroglu, Machleit, and Davis, 2003; Wakefield, 2015).

Second, integrating the TAM with the SOR provides more robust, stepwise technology acceptance-response processes, as recommended by Moon et al. (2017). The SOR is compatible with the TAM variables, as both examine some aspects of user decision making; however, the TAM addresses the customer's technological acceptance ramifications that the SOR Model lacks. Additionally, the SOR makes the integrated framework stronger in predicting and explaining people's behaviour - how customers feel and how the feelings influence their decision making to adopt EC. Thus, we have a richer hybrid model. This simultaneously examines the relationships of the Stimuli (internal and external factors) with the Organism (customer), and their interactions which can prompt either positive or negative emotions and ultimately influence their behavioural outcome of online purchase intention – Responses. To elaborate, the proposed model in Figure 15 postulates that the TAM's core constructs (perceived usefulness and perceived ease of use) are extended with the stimuli being the seven key internal and external factors (reputation, website quality, IT infrastructure, legal factor, cultural factor, EC awareness, compatibility) and the outcome/dependent variable being customers' online purchase intention.

Third, the complexity of EC research necessitates the duality of the influential theories (TAM and SOR) to capture both the technology and customer decision-making viewpoints. TAM's main strength is its parsimony, whereby intention to use a technology influence usage behaviour, and perceived usefulness (PU) and perceived ease of use (PEOU) determine intentions to use (Bagozzi, 2007). However, Plouffe, Hulland, and Vandenbosch (2001) pointed out that even though parsimony is an important issue, building richer models that take the context into consideration is essential to the advancement of the discipline. They added that while parsimony is great, richness of the model is of greater importance because it adds meaning to the situation under investigation and helps to capture and understand the complexities of the system implementation process. Therefore, context-specific technology

acceptance factors, emotional responses variables, and purchase intention are the principal theoretical constructs for this research. Although the SOR is also parsimonious like the TAM, it is deficient in presenting appropriate classification of factors ('stimulus taxonomy') influencing consumers' behaviours (Donovan and Rossiter, 1982). Notwithstanding, the scholars claimed the Mehrabian-Russell's (1974) SOR Model is particularly strong in the intervening variables and responses areas. Therefore, the SOR is found to be complementary with the TAM.

Fourth, embarking on this present study is conceptually justified, as the usual line of study is identification of EC adoption factors, leaving a void of responses from customers (Lawrence and Usman, 2010; Adaliku, 2012; Awa, Awara and Lebari, 2015; Izogo, 2012). This undertaking enables researchers to examine both cognitive and affective influences on behaviour (Lee and Yun, 2015). Thus, it bridges the gaps in research, as few studies have attempted to measure the impact of both cognitive (belief) and affective (emotion) processes (Choi, 2019). By including both the TAM and the SOR dimensions, aspects from behavioural psychology as well as the technology literature are integrated into the study's model.

Fifth, few studies have used the TAM and the SOR in the context of developing countries and this theoretical model will be a novel addition to the literature if tested in the context of Nigeria – a developing country. As a result, the model can enhance understanding of consumer behaviour in the online setting in a developing country context. Theoretically, applicability of the TAM along with the S-O-R Model will bridge the knowledge gap in the literature (Aggarwal and Rahul, 2017). Moreover, since the SOR is both compatible and complementary with the TAM variables, we build and present a unique, stronger, and robust conceptual model, TAMSOR. This holistic model considers both the customers' affective responses and the technology acceptance dimensions for the study. It highlights the customers (organisms) as the mediators – the focal elements (Khan et al., 2020) - through their emotional responses. They are positioned between the EC key factors and purchase intention. This will help to investigate the indirect effects of some key EC adoption factors on the purchase intention of customers.

In sum, not only is the integration of both the SOR with the TAM theoretically appealing within the domains of consumer behaviour and technology acceptance research, but it is also empirically significant and practically relevant. This is because it examines the systematic decision-making process and how customers respond, and also better explains why customers might avoid or approach online shopping than is indicated by the TAM's traditional constructs (PU and PEOU) on usage intentions. Doing so substantially improves the TAM's original model predictive power for EC adoption, by bridging the adoption-response knowledge gap. Therefore, supplementing the TAM with the SOR paradigms is justified.

3.2.6 TAMSOR Studies

Many researchers believe that integrating the TAM and the SOR in one model will provide a better explanation of technology acceptance behaviour than either of the two models could offer. For example: Kimiagari and Asadi Malafe (2021) investigated online impulsive buying behaviour of Iranian customers in social commerce (Instagram) and the role of cognitive and affective responses in the relationship between internal and external stimuli. The TAM and SOR factors examined were utilitarian browsing (PU), hedonic browsing (PEOU), self-confidence, trust propensity, variety of selection, visual appeal, quality of information, navigability, product availability, price attribute, sensory attribute and willingness to buy. They discovered that all stimuli in the study provided support for the TAM and SOR Model, which explained 70% of the variance in the online impulse buying behaviour of social EC.

Based on the TAM and SOR integrated Model, Choi (2019) investigated the use intention of South Korea consumers in Social Commerce. Their model incorporated perceived usefulness and perceived ease of use from the following TAM and SOR affective variables: positive and negative emotions, liking, joy, pride, dislike, frustration, and fear, with social commerce intention as the dependent variable. Cognitive and affective process played a more critical role in predicting the use intention of the customer. In addition, PU and PEOU influenced user's social commerce intention positively and increased user intention. Whilst joy and pride increased customer intention of social commerce, fear decreased it. The results revealed the critical influence of the SOR variables and affective process on TAM's

user intention; thus, the integrated TAM and SOR offers an improvement in the explanatory power, in contrast to either the SOR or the TAM.

Chu and Liang (2018) utilised the TAM and SOR models together by extending the TAM constructs with consumer emotions and other factors such as perceived quality, value risk, consumer emotions attitude and behaviour intention (dependent variable) to investigate Taiwan customers' behaviour intention for using an app service in convenience stores. They found that the consumers' response (SOR factor) resulted from perceived ease of use and perceived usefulness (TAM constructs). This revealed a useful alignment and a valuable theoretical insight into the two integrated models. Their findings confirmed that the TAMSOR's ability to explain customers' behavioural intentions to use an app service in a convenience store setting was better than that of the TAM alone. Nevertheless, Chu and Liang's (2018) work, failed to evaluate discrete emotional responses of customers, whereas our study addressed this shortcoming.

Based on a similar TAM and SOR integrated model, Aggarwal and Rahul (2017) examined the impact of perceived usability and perceived information quality on India customers' purchase intentions in an online shopping context. In addition to TAM constructs, they added four independent variables: perceived usability, perceived information quality, trust, and satisfaction. The quantitative data analysis of 500 surveyed online shoppers from four major cities in India by structural equation modelling revealed that perceived usability and perceived information quality had positive effects on trust and satisfaction. Trust and satisfaction then had a positive effect on consumer purchase intentions. The study concluded that maximising customer satisfaction and trust could generate positive intentions to buy online. Moreover, their application of the TAM along with the S-O-R Model was a useful addition in bridging the gap in the current literature.

Wakefield (2015) employed the TAM and SOR Model to investigate whether positive and negative feelings of the Americans mattered in the acceptance and use of innovative technology. This was done via TAM: PU, PEOU; and SOR: Positive affect (happy, thrilled, excited, pleased, enthusiastic) and negative affect (fearful, upset, nervous, distressed). The responses of 358 adult technology users provided empirical support for the research model in the sense that the evaluation of a technology's

features resulted in both positive and negative affective responses that directly influenced use intentions. The research showed that understanding how users' affect-based processes relate to instrumental appraisals has implications for managing user perceptions that could encourage technology adoption and use. Moreover, both positive and negative affects partially but significantly mediated the influence of PU on usage intentions, but PEOU demonstrated no significant relationship with positive affect among the technology users in the USA.

Yang, Kim and Yoo (2013) developed the integrated mobile advertising model to investigate the effects of technology-based evaluations (TAM: usefulness and ease of use) and emotion-based evaluations (SOR: enjoyment and irritation) in the Republic of Korea. Their model included four additional variables: credibility, acceptance of mobile technology, attitude toward mobile ads, and user experience. They submitted that mobile technology acceptance and attitudes towards mobile advertisements are derived from different sources of beliefs, that is, technology-based evaluations (usefulness and ease of use as external motivators) and emotion-based evaluations (enjoyment and irritation as internal motivators), respectively. Expressly, in addition to TAM's basic perceived usefulness and ease of use, factors such as affect and emotion may play a major role in consumers' decisions on mobile services. Their analysis of data from the surveyed 439 Korean Business School students confirmed that the combined model of technology- and emotion-based evaluations provided a more robust framework with a superior ability to predict consumer response to mobile ads than would have been the case with either research stream.

In the USA, Lee, Ha and Widdows (2011) utilised the TAM and SOR to predict the associations between technology product attributes and customers' internal states (cognitive and affective states). They combined the TAM's perceived usefulness and ease of use with innovativeness of technology as performance attributes. The appearance attributes were operationalised as visual appeal and prototypicality ("the degree to which an object is representative of a category" (Veryzer and Hutchinson, 1998, p. 375), with communication attribute as the customer's self-expression. They also included the SOR components: emotions, cognition, and attitude. In order to investigate the underlying process of consumer responses to, and adoption of, high-technology products, 408 students were surveyed via the convenience sampling

method. Their findings revealed that innovativeness of technology, visual appeal, prototypicality, and self-expression had major influences on customers' approach behaviour through attitude (cognitive state) and pleasure (affective state). Their results confirmed the significant and positive influences of psychological mechanisms (pleasure and attitude) on approach behaviour. They concluded that the need to enhance positive attitudes and pleasure (i.e., the degree to which a consumer feels good, happy, or satisfied with technology products in use) will encourage users to adopt new technology products. Table 6 provides a list of prior studies that combined the TAM and SOR frameworks to investigate the factors related to EC.

S/N	Country	Author	Research Area TAM and SOR	Sample, Sampling Method	Method and Analysis Techniques	Independent Variables	Dependent Variables	Key Findings
1.	Iran	Kimiagari and Asadi Malafe (2021)	The role of cognitive and affective responses in the relationship between internal and external stimuli on online impulse buying behavior	303 Instagram users/buyers Online Survey Snowball sampling	Quantitative Survey SEM	Utilitarian browsing (PU), hedonic browsing (PEOU), variety of selection, visual appeal, quality of information, navigability, product availability, price attribute, sensory attribute, trust propensity, willingness to buy, self- confidence.	Online Impulsive buying	External stimuli explained 58% of utilitarian browsing behavior and explained 50% of hedonic browsing behavior. All stimuli explain 70% variance of online impulse buying behavior
2.	South Korea	Choi (2019)	The use intention of consumers in Social Commerce	331 students' respondents snowball sampling	Quantitative Common Methods Variance (CMV) Partial correlation	TAM - perceived usefulness, perceived ease of use S-O-R: liking, joy, pride, dislike, fear, frustration	Social Commerce Intention	Cognitive and affective process plays a more critical role in predicting the use intention. Perceived usefulness and ease of use influence user's social commerce intention positively PU and PEOU increase user intention, joy pride increase user intention of social commerce while fear decrease it
3.	Taiwan	Chu and Liang (2018)	Behaviour intention of app service convenience store	378 consumers Convenience sampling	Online survey questionnaire Quantitative SEM	TAM: PU PEOU SOR: emotions value risk, perceived quality, attitude	Behavioural intention	Consumers' response will come from the perceived ease of use and perceived usefulness (TAM constructs)
4.	USA	Wakefield (2015)	The acceptance and use of innovative technology (Positive and negative feelings)	358 adult technology users Random sampling	Survey Online questionnaire SEM	TAM: PU, PEOU SOR: Positive affect (happy, thrilled, excited, pleased, enthusiastic), negative affect (fearful, upset, nervous, distressed)	Usage intentions	Evaluation of a technology's features results in both positive and negative affective responses that in turn directly affect use intentions
5.	India	Aggarwal and Rahul (2017)	Perceived usability and perceived information quality on consumer purchase in online shopping	500 online shoppers from 4 major metropolitan cities of India Purposive sampling	Quantitative Survey questionnaire SEM	TAM and SOR Perceived usability, perceived information quality, trust, satisfaction	Purchase intentions	Trust and satisfaction had a positive effect on consumer purchase intention Customer satisfaction and customer trust enhance the understanding of acceptance and usefulness of online shopping

6.	Republic of Korea	Yang, Kim and Yoo (2013)	The integrated mobile advertising model: The effects of technology- and emotion-based evaluations	439 Korean Business school students Convenience sampling	Quantitative Survey questionnaire SEM	TAM: PU, PEOU (technology-based evaluations) SOR: entertainment - enjoyment and fun (positive emotions); Irritation - annoyance (negative emotion) - Emotion-based evaluations Credibility, acceptance of mobile technology, attitude toward mobile ads, user experience	Response to mobile ads	In addition to TAM's basic perceived usefulness and ease of use, factors such as affect and emotion may play a major role in consumers' decisions on mobile services.
7.	USA	Lee, Ha, and Widdows (2011)	Consumer responses to high-technology products: Product attributes, cognition and emotions	408 student respondents Convenience sampling	Quantitative Paper Survey Questionnaire SEM	TAM: Usefulness, ease of use SOR: Attitude, pleasure (emotions), arousal Innovativeness of technology, visual appeal, prototypicality, and self-expression	Avoidance and approach behaviour	Innovativeness of technology, visual appeal, prototypicality, and self-expression have major influences on approach behavior through attitude (cognitive state) and pleasure (affective state). Attributes of a technology product influence consumer reaction to the product

Table 6: Selected TAMSOR studies
Source: Developed by the author

In sum, this section has thoroughly analysed the empirical literature on the TAM, SOR and TAMSOR frameworks and presented a detailed description of studies that drew on these theories, with a view to predicting and explaining phenomena. As a theoretical framework is derived from a theory, a conceptual framework is derived from concepts, with a view to helping researchers clearly see the main variables and concepts in a given study (Imenda, 2014). This is examined in more detail in the next section.

3.3 Conceptual Framework and Hypotheses

A conceptual framework is primarily a model that helps researchers to better understand the research problem, explain what and why things are happening, and include their own ideas about the phenomenon being studied (Maxwell, 2005). Moreover, a conceptual framework provides a relationship between the dependent and independent variables by outlining possible courses of action or preferred approaches that the researcher may take in order to achieve the research objectives (Maxwell, 2018). It is a network of interlinked concepts which provides an understanding about a phenomenon under study, showing the relationships between the variables (Tamene, 2016). Models based on this perspective cover the four main domains of adoption (innovation, management, organisation, and environment) and provide better explanatory power than models that mainly depend on only one of the views (Montealegre, 1999; Wang and Cheung, 2004).

In light of the preceding discussions, we note that online shopping behaviour and EC adoption are complex processes that involve various factors (Ozlem, 2019). This study focuses on affective responses from customers and key contextual factors (both internal and external) as the independent variables, and intention to purchase as the dependent variable in the proposed model. Historically, adoption is understood in terms of some kind of behaviour change (Straub, 2009). Resultantly, understanding EC in developing countries therefore requires approaches and models that are flexible enough to capture change (Molla and Licker, 2005a).

In this regard, prior research on the factors that influence EC adoption found that they vary in terms of object of study, as well as the social, cultural and economic contexts in which the technology is adopted. Such variation in influencing factors has hindered establishing generic models to permit an adequate evaluation of the issue (Villa et al., 2018). However, Straub (2009) states that successful facilitation of adoption is most likely to occur at the intersection of the cognitive, affective and contextual factors. This implies that technology adoption concept refers to multi-dimensional processes and factors, including technology, the implementation context and people's responses (cognitive and affective) to such key factors. Therefore, in order to achieve the study's objectives, the current research narrowed and extensively refined relevant

antecedents from extant literature, with the goal of conceptualising key constructs that reflect important, yet distinct aspects of the EC adoption and what customer responses are towards them. These antecedents are now discussed one after the other.

3.3.1 Internal and External Environmental Factors

Peoples' decisions for shopping online are a function of many variables, and the online buying process is affected by various internal and external stimuli as has been studied by many researchers (Lim and Yazdanifard, 2015; Suryawardani, Sastika and Hanifa, 2017). Previous research on EC in developing countries identified technological, social, cultural, legal, and institutional constraints as major inhibitors of online shopping (Molla and Licker, 2005b). In support and as evidenced by Okundaye, Fan and Dwyer (2019), the barriers to ICT adoption for Small and Medium-Sized Enterprises (SMEs) include internal and external barriers. Tarute and Gatautis (2014) cited the internal barriers as the characteristics of the owner/manager, organisational characteristics, cost of adoption and implementation, and return on investment. They went further to classify external barriers as state of infrastructure and social, cultural, political, legal and regulatory barriers. In support, Junglas and Watson (2004) also suggested that, apart from national culture, other factors such as technological infrastructure and economic development can affect the conduct of EC. Nevertheless, little research has emphasised the joint effect of external and internal factors on customers' emotional and behavioural responses in an online retailing context (Moon et al., 2017), and particularly in developing countries such as Nigeria. Molla and Licker (2005a) maintained that in developing countries, internal organisational and external contextual determinants of EC provide meaningful predictors of EC adoption. Notwithstanding, Moon and Kim (2001) comparatively stated that the intrinsic motivational factors have more powerful effect than the extrinsic factors in building positive attitude.

The focus of this study is technology acceptance of EC and how internal and external factors may influence customers' choice of adopting EC. We conceptualised external factors as (reputation of online retailers), cultural factor, resources (IT infrastructure) and regulations (legal factor). These factors are external to customers and may either directly or indirectly impact purchase processes and EC adoption, whilst internal

factors (organisational) are those related to customers and may influence their decision-making process and intention to purchase, e.g., website quality. Individual-related factors are compatibility and EC awareness. In a study of both the online environment and the external environment, Eroglu, Machleit and Davis (2001) considered the rationality of customers, being humans, to respond or react to certain adoption factors as a result of various internal and external factors.

More importantly, whether customers are stimulated by external or internal factors, the initial customer response to technology innovation is likely to be any of these three cases: resistance, openness to communication, or a felt internal need (Bagozzi and Lee, 1999). This could have great implications for EC growth and should become a strategic priority for online retailers to understand these extrinsic and intrinsic factors that drive online shopping acceptance and purchase behaviours (Shang, Chen and Shen, 2005; Zhang et al., 2023). Table 7 presents the different external and internal factors as identified in previous studies.

Category	Factors	Source
Internal factors	Website quality (Online company)	Wolfenbarger and Gilly, 2003; Éthier, et al. 2006; Kim, Yang and Kim, 2013; Kim and Lennon, 2013
	Emotion (Customers' internal state)	Mehrabian and Russell, 1974; Roseman et al., 1996; Richins, 1997; Venkatesh, 2000; Machleit and Eroglu, 2000; Éthier, et al., 2006; Bagozzi, 2007; Izard, 2010; Rose et al. 2012; Kim and Lennon, 2013; Ladhari, Souiden and Dufour, 2017; Lu, Papagiannidis, and Alamanos, 2019
External factors	Reputation Trust	Pavlou, 2003; Shang, Chen and Shen, 2005; Kim and Lennon, 2013; Kim, Yang and Kim, 2013; Abu-Shamaa and Abu-Shanab, 2015; Kaur, Lal and Bedi, 2017; Izogo and Jayawardhena, 2018; Sudip, 2019
	Awareness	Anigan, 1999; Panagariya, 2000; Abdel Nasser, 2012; Lu, Papagiannidis, and Alamanos, 2019
	Personal values	Jayawardhena, 2004
	Social influence	Peiris, Kulkarni and Mawatha, 2015
	Perceived risk	Pavlou, 2003; Li and Huang, 2009; Kim and Lennon, 2013; Kim, Yang and Kim, 2013
	Compatibility	Rogers, 1983; Chen, Gillenson and Sherrell, 2002; Vijayasarathy, 2004; Moons and De Pelsmacker, 2012
	Culture	Hofstede, 1993; Newman and Nollen, 1996; Junglas and Watson, 2004; Laosethakul and Boultan, 2007; Davis, Wang and Lindridge, 2008; Dinev et al., 2009; Kim, Yang and Kim, 2013
	Infrastructure IT infrastructure	Laosethakul and Boultan, 2007; Billon, Lera-Lopez and Marco, 2010; Abdel Nasser, 2012; Rahayu and Day, 2017; Toesland, 2017; Xing, 2018
	Legal and lack of government support	Cloete, Courtney and Fintz, 2002; Laosethakul and Boultan, 2007; Lawrence and Usman, 2010; Oluyinka et al., 2013; Gbadegeshin et al., 2019
	Privacy and cyber security issues	Anigan, 1999; Cloete, Courtney and Fintz, 2002; Laosethakul and Boultan, 2007; Adalikwu, 2012; Johnson, 2018; Kshetri, 2019
Perceived usefulness and perceived ease of use	Davis, 1989; Moon and Kim, 2001; Lee, Kozar and Larsen, 2003; Klopping and Mckinney, 2004; Tong, 2010; Hernández Jiménez and Martín, 2011; Makame, Kang and Park, 2014; Dakduk et al., 2017; Chi, 2018; Valencia et al., 2019; Aref and Okasha, 2020; Oyman, Bal and Ozer, 2022	

Table 7: Internal and external factors for EC adoption identified in previous studies

Source: Developed by the author

From the table, many scholars have recognised the significance of internal and external contextual factors and investigated these in various countries and settings. Therefore, this study has classified the factors into internal factor (website quality, which includes privacy and security); company's external factor (reputation); external environmental factors (IT infrastructure, legal factor and cultural factor); customers' emotion (both positive and negative); and technology-related factors (perceived usefulness (PU), perceived ease of use (PEOU), individual factors (awareness and compatibility - and these include personal values). Social influence did not fall into any

of these categories and was excluded, but this could be considered for future research. Perceived risk was also excluded because the perception constructs such as perceived usefulness and perceived ease of use of technology acceptance have already been incorporated into the study. Moreover, this study has a particular emphasis on the affective component of EC. Next, these key EC factors are examined in detail and propositions for their respective hypotheses made.

1. Reputation (REP)

A company's reputation refers to an overall assessment by stakeholders over a long period of time (Yu and Han, 2021); a cumulative account of all previous transactions that requires consistency of a retailer's actions over extended periods of time (Herbig and Milewicz, 1995). In addition, reputation is attributed to the collective judgment of individual impressions and reactions of customers, employees, investors, or other stakeholders (Gottschalk, 2011). According to Deephouse (2000), reputation is considered one of the most important intangible assets a company can have for creating market value. Given the uncertainty present in EC, initial trust from customers can be based upon an organisation's reputation (McKnight, Choudhury and Kacmar, 2002). Previous literature shows that good online retailer's reputation can reduce product uncertainty (Dimoka, Hong and Pavlou, 2012). Also, in order to assess the credibility and trustworthiness of the provided reputation information, trust and reputation systems have been widely used for various EC applications (Rahimi and El Bakkali, 2017).

Further, Gottschalk (2011) stated that reputation enhanced the rational and emotional relationships between companies and their stakeholders. Just as companies compete for customers, likewise they compete for reputational status (Fombrun and Shanley, 1990). The study opines that the reputation of an online company not only enhance their competitive advantage but also signal the firm's trustworthiness to customers in their purchase decision making and EC adoption. Standifird (2001) studied reputation and EC by examining eBay auctions and the asymmetrical impact of positive and negative ratings, and found strong evidence for the importance of reputation when engaging in EC.

Pavlou (2003) found that reputation was a significant antecedent of trust and intention to transact, suggesting that online retailer reputation plays a role in customer transaction intentions (Jarvenpaa, Tractinsky and Vitale, 2000). In investigating the relationship between antecedents of trust in online shopping and purchase intention in Pakistan, Qalati et al. (2021) found a significant role of trust in mediating between perceived reputation and purchase intention.

In Vietnam, Tran and Nguyen (2022) recently examined the impact of security, individuality, reputation, and consumer attitudes on purchase intention of online shopping. They found that the 'domino effect' of security and reputation positively affected cognitive trust, and then cognitive trust had a positive influence on attitudes towards online shopping. In turn, the attitude towards online shopping positively affected customers' intention to purchase online. In other words, security, reputation and trust, and attitude towards online shopping are all linked to purchase intention. Earlier, Keen argued that trust is the foundation of EC and cautioned that a lack of trust may be the most significant long-term barrier to realising the full potential of EC (Keen, 1997). Reputation is about an external frame of reference for an online retailer, which is an important antecedent of trust, and customer purchase intention is directly related to it (Kim and Lennon, 2013). This could bring favourable or unfavourable consequences.

In Eastern Slovakia, Fedorko (2018) investigated the importance of the selected variables of websites of EC in terms of reputational management. The researcher found that the most important variables for respondents in relation to companies' reputation are clarity of the website and easy intuitive use of an online shop. Moreover, in China's C2C platform, price is not the major determinant of sales anymore. Reputation and past trading record are more relevant in buyers' decision-making process (Zhang and Zhang, 2011). A most recent study of EC in Bangladesh also confirmed price does not have a direct impact on purchase intention (PI). Instead, operational performance (OP) and trust both have potential impact on customers' purchase intention (Shareef et al., 2021).

In both EC and online service applications, a seller's reputation is a big concern for buyers prior to placing an order or making a payment. Li and Wang (2008) posited that

trust evaluations are usually based on these three reputation evaluation parameters: service, transaction, and interaction history. In agreement, we argue that customers can query an online retailer's service, transaction and history of interaction to ascertain if transacting with such a vendor is worth the effort (perception of its ease of use (PEOU), if they cannot be trusted, and of what use it is (PU). For example, Ventre and Kolbe (2020) indicated that perceived usefulness of online reviews influences trust and online purchase intention. Therefore, we hypothesise:

H1a: REP has a significant impact on PIT

H1b: REP has a significant impact on PEOU

H1c: REP has a significant impact on PU

2. Website Quality (EtailQ)

In online shopping, retailers' websites are in the middle of retailers and customers (Moon et al., 2017). In other words, the websites represent the retailers' store. Thus, by making it easy for customers to immerse themselves in their website, vendors can trigger customer impulse to browse their products and ultimately make a purchase (Yin and Xu, 2021). Therefore, website quality plays an important role in distinguishing a brand from other brands in online retailing, thereby making it an essential factor of an online business success (Shin et al., 2013). Luo, Han and Yu (2016) exemplified the case of traditional store environment and emphasised the great influence the quality of the website has on psychological perception of users, which further affects their attitude or behaviour towards shopping. The findings of Chang, Eckman and Yan (2011) showed direct effects of ambient/design characteristics of the retail environment on customers' positive emotional responses to the retail environment.

In studying whether trust or website quality influences online shopping in Nigeria, Esho and Verhoef (2021) sampled bank employees and the results showed a high correlation between trust and perceived website quality, both of which positively affected consumers' online purchase intentions. In comparison, customers were more likely to make online purchases from websites they perceived to be of quality, just as they were more likely to make purchases from traditional stores that they perceived as quality stores. Results of several studies indicate that both the perceptions of quality

about a website and the brand name of the virtual store affect consumers' trust and purchase intention (Brown, Crosno and Tong, 2019).

Earlier, Eroglu et al. (2003) demonstrated that the atmospheric qualities of the website influenced different affective states during a shopping episode and that this, in turn, influenced shoppers' attitudes, their level of satisfaction with the experience, and their approach/avoidance behaviour. A similar study by Kawaf and Tagg (2012) found that online environmental stimuli affected users' perceived risks, emotion and trust, which in turn influenced their behaviour. Hence, it is important that e-retailers pay close attention to the quality of their websites and other salient factors in this regard.

To assess the quality of a website, Wolfinbarger and Gilly (2003) and Kim and Lennon (2013) recommended four e-tailQ dimensions, which are not limited to website design but also include customer service, fulfilment/reliability and security/privacy. Electronic shopping quality refers to consumer perceptions of an online store's performance and effectiveness in terms of its product and/or service offerings (Ha and Stoel, 2012). Research shows that the environment of the retail store (such as the website) does have significant and measurable effects on shopping behaviours (Éthier, et al., 2006).

Vila and Kuster (2011) found that the first two most relevant variables for measuring website success are ease of navigating the website and satisfactory experience of navigating the website. Moreover, Di Fatta, Musotto and Vesperi (2016), conducted a meta-analysis on user-perceived web quality and concluded that it had a significant influence on ease of use, usefulness, and playfulness; they proposed that it encourages website use in online shopping. Consequently, we propose:

H2a: Website quality has a significant impact on PIT

H2b: Website quality has a significant impact on PEOU

H2c: Website quality has a significant impact on PU

3. IT Infrastructure (ITF)

As mentioned earlier, major inhibitors of a thriving EC development in Nigeria are infrastructure barriers (Research and Markets, 2019), of which lack of adequate IT infrastructure is a limiting factor. According to Lawrence and Usman (2010), EC

accomplishment depends heavily on a number of infrastructure provisions. Billon, Lera-Lopez and Marco (2010) in their multivariate analysis study of the global digital divide found infrastructure to be the most important predictor of initial digital development for countries with the lowest levels of digitalisation. In a similar study, while investigating barriers to EC adoption in Egyptian SMEs, Abdel Nasser (2012) found technical obstacles were the most important barriers identified, including lack of telecommunications infrastructure and lack of timely and reliable systems. In order to promote EC adoption, these need to be adequately addressed. Lack of necessary infrastructure and knowledge of the operational modalities of the internet and online shopping are also major factors that deter Nigerians from shopping online (Agwu and Murray, 2015; Ezennia and Marimuthu, 2022).

Further, Xing (2018) conducted a study on the impacts of Information and Communications Technology (ICT) and EC on bilateral trade flows. The result revealed that the efficient use of ICT equipped with high-speed internet and secured servers was a crucial milestone for unlocking the e-trade potentials for developing and least-developed countries. From the study of ICT adoption by SMEs in Nigeria by Okundaye, Fan and Dwyer (2019), the unreliable power supply, limited and expensive internet service, unreliable and expensive telecommunications, bad roads, and other infrastructural services not readily available in Nigeria were some of the examples cited as influencing organisations' decision to adopt technology. One of the major factors that Lai (2017) emphasised for fast acceptance of technology application by customers was availability of technology. Consequently, from the customers' viewpoint, adequate IT infrastructure (ITF) would be influential for online buyers in Nigeria to fully appreciate the PU – usefulness of EC and the PEOU - how easy it is to use the internet as a purchasing channel. This could, in turn, significantly impact on their purchase intention. Based on the above discussion, the following set of hypotheses is proposed:

H3a: ITF has a significant impact on PIT

H3b: ITF has a significant impact on PEOU

H3c: ITF has a significant impact on PU

4. Legal factor (LGF)

Legislative frameworks underpinning societies' maximum realisation of internet data are vitally needed (Okunoye and Sesan, 2018). In Nigeria, legal and judicial institutions are underdeveloped, and individual consumers and enterprises lack confidence and trust to engage in internet transactions (Lawrence and Usman, 2010). Chidike, Osuagwu and Ekwuonwunne (2018) also identified privacy and cybersecurity issues, all of which could be tackled and reduced by effective legal enforcement to support EC. Many consumers are wary of purchasing goods online because of the prevalence of internet scams (Esho and Verhoef, 2021).

Johnson (2018) explained that Nigeria's present situation featuring online crimes and data policy deficits is causing damage to her image well-being among the community of nations. For example, Kshetri (2019) reported that cybercrime cost for Africa's economies stood at \$3.5 billion in 2017 and in the same year annual losses to cybercrimes for Nigeria were estimated at \$649 million. This regulatory issue could serve as a roadblock to customers adopting EC. In a similar study, Abdel Nasser (2012) determined the factors that promoted the adoption of EC among SMEs adopters and non-adopters of EC in Egypt. One of the most important inhibitors of adoption of EC was legal and regulatory barriers, whereas lack of internet security was the highest barrier that impeded the SMEs' implementation of EC.

In Nigeria, because the legal support for EC is low while the level of scams and cybercrimes is high, there is a deficit of trust in the non-effective data protection regulation to combat these vices. This could eventually influence individuals' online buying. Therefore, we propose that legal factors would have significant impact on customers' purchase intention.

H4: LGF has a significant impact on PIT

5. Cultural Factor (CRF)

Hofstede (1993) defined culture as the collective programming of the mind which distinguishes the members of one group or category of people from another. One of the distinct dimensions of culture that can affect behavioural intention is the uncertainty avoidance index (UAI). UAI measures the degree to which the people in a

country have a preference for structured over unstructured situations or how they feel threatened by the high levels of uncertainty in the environment (Hofstede, 1993; Dinev et al., 2009). Research shows that the developing countries are more likely to record a high UAI compared to the developed countries. In examining cross-cultural differences in how retailers' reputation affects consumer response to EC, Kim, Yang and Kim (2013) compared and contrasted two countries' cultural characteristics. The results indicated that while the overall mechanism underlying the decision-making process was similar for the two countries - US (individualism, low uncertainty avoidance) and South Korea (collectivism, high uncertainty avoidance), differences were found in the relative importance of the factors determining consumers' cognitive and emotional reactions as well as their intention to purchase online.

Previous studies also related the challenges posed by various national differences, including the effects of culture on Internet use and commercialisation in general. For example, Straub (1994) conducted a study on electronic mail in Japan and in the US, and found they had different levels of use and importance attached to the e-mail, due in part to language and to national cultural differences. This means that the Western countries' EC models may not be transferable or applicable to the developing countries' situations, cultures and business philosophies (Molla and Licker, 2005a; 2005b). Giavazzi, Petkov and Schiantarelli (2019) concluded that the cultural setting of a nation is crucial to investors for outsourcing services, marketing products, conducting business transactions, or developing strategies. Arguably, this is equally important for technology acceptance, such as for EC.

Herskovits (1966) earlier noted that experience is culturally defined. This includes digital shopping experience. He tied culture with experience and explained that culture is universal to man's experience, yet it is contextual in its expression or regional manifestation. Following the same line of thought, EC is a global way of transacting, yet research shows that the electronic shopping experience has cultural connotations to it. This is congruent with the submission by Junglas and Watson (2004) that national characteristics can influence the behaviour of customers and invariably act as a major predictor of EC. The scholars stressed that these national characteristics are key determinants of human interaction of all forms, including electronic communication. Likewise, Pavlou and Chai (2002) emphasised the role of cultural differences on

customer EC adoption, and Davis, Wang and Lindridge (2008) found that cultural classifications are relevant to understanding customer behaviour on the Internet. For example, Peña-García et al. (2020) discovered substantial differences between an emerging country and a developed country in the main factors for predicting online purchase intention among customers.

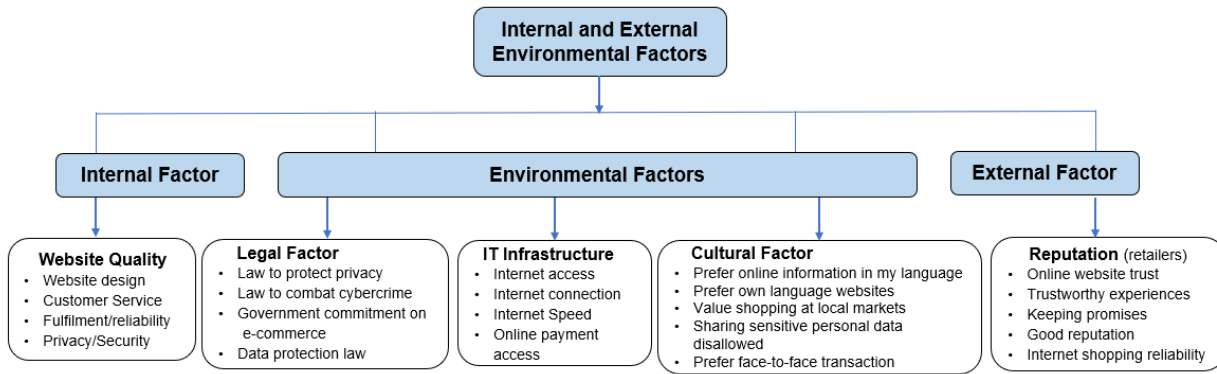
Further, Hallikainen and Laukkanen (2018) discovered that national culture explained 23% of the variance in the consumer's general disposition to trust. Thus, we argue that the trust reposed in online firms can eventually affect customers' dispositions to EC and influence their perception of its usefulness and ease of use. In the context of Nigeria, Inegbedion, Obadiaru and Bello (2016) observed that it seemed online buying culture had not found compatibility with the Nigerian culture. Therefore, it becomes imperative to understand the role of these cultural dimensions on EC. Therefore, we propose the following hypotheses:

H5a: CRF has a significant impact on PIT

H5b: CRF has a significant impact on PEOU

H5c: CRF has a significant impact on PU

Figure 8 summarises the internal and external EC adoption factors discussed in this section, the literature sources and their corresponding indices of measurement.



Components	Factors	Source
Internal (Company's)	Website quality	Moon et al., 2017; Yin and Xu, 2021; Shin et al., 2013; Luo, Han and Yu, 2016; Chang, Eckman and Yan, 2011; Esho and Verhoef, 2021; Brown, Crosno and Tong, 2019; Eroglu et al. 2003; Kawaf and Tagg, 2012; Wolfenbarger and Gilly, 2003; Kim and Lennon, 2013; Ha and Stoel, 2012; Éthier, et al. 2006; Vila and Kuster, 2011; Di Fatta, Musotto and Vesperi, 2016
External (Company's)	Reputation	Yu and Han, 2021; Herbig and Milewicz, 1995; Deephouse, 2000; McKnight, Choudhury and Kacmar. 2002; Dimoka, Hong and Pavlou, 2012; Rahimi and El Bakkali, 2017; Gottschalk, 2011; Fombrun and Shanley, 1990; Standifird, 2001; Pavlou, 2003; Jarvenpaa, Tractinsky and Vitale, 1999; Qalati et al. 2021; Tran and Nguyen, 2022; Keen, 1997; Lee and Shavitt, 2006; Kim and Lennon, 2013; Fedorko, 2018; Zhang and Zhang, 2011; Shareef et al. 2021; Li and Wang, 2008; Ventre and Kolbe, 2020
Environmental	IT Infrastructure	Research and Markets, 2019; Lawrence and Usman, 2010; Billon, Lera-Lopez, and Marco, 2010; Abdel Nasser, 2012; Agwu and Murray, 2015; Ezennia and Marimuthu, 2022; Xing, 2018; Lai, 2017
	Legal Factors	Okunoye and Sesan, 2018; Lawrence and Usman, 2010; Chidike, Osuagwu and Ekwuonwunne 2018; Esho and Verhoef, 2021; Johnson, 2018; Kshetri, 2019; Abdel Nasser, 2012; Okundaye, Fan and Dwyer, 2019
	Cultural Factor	Hofstede, 1993; Dinev et al., 2009; Kim, Yang and Kim, 2013; Straub;1994; Molla and Licker, 2005a; 2005b; Giavazzi, Petkov and Schiantarelli, 2019; Herskovits, 1966; Junglas and Watson; 2004; Pavlou and Chai 2002; Davis, Wang and Lindridge, 2008; Peña-García et al. 2020; Hallikainen and Laukkanen, 2018; Inegbedion, Obadiaru and Bello, 2016

Figure 8: Internal and external factors of EC adoption with sources & related items
Source: Developed by the author

3.3.2 Individual-Related Factors

1. EC awareness (ECA)

In general, awareness has been described as human perception and intellectual response to the condition of what is consumed or used (Ambali and Bakar, 2014). EC awareness is regarded as the first step of the buying process, in which consumers who initially are not well conversant with the product or service become familiar with it, which could lead to customer's interest, followed by other stages in the buying process (Ansari and Alhazemi, 2016; Bashir et al., 2018). "Awareness describes consumers' knowledge and information about the capabilities of a system or technology, its features, potential use, benefits and costs" (Rogers, 1995 p. 372). It has been determined that the higher the educational level, the more the tendency to

shop online (Çebi Karaaslan, 2022). Abdel Nasser (2012) asserted that awareness of EC and other new e-services need be addressed to raise and promote the EC benefits. For example, Yaqub et al. (2013) and Agbaeze (2020) cited lack of awareness of advantages of the system as a reason for slow adoption of e-payment in Nigeria. Bashir et al. (2018) further indicated that there is a significant relationship between awareness and buying behaviour.

Prior studies emphasised that awareness has a positive effect on consumer intention (Abubakar and Ahmed, 2013; Bashir et al., 2018). As observed by previous research, lack of awareness and understanding of the potential advantages of online purchase is one of the fundamental barriers to its acceptance and use. Moreover, internet shopping in some parts of Nigeria is still a relatively new concept to many users and lack of its awareness may prevent customers from adopting (Usman and Kumar, 2021). In support, Inegbedion, Obadiaru and Bello (2016) further emphasised that the level of computer awareness is low in Nigeria when compared with the developed countries. They went further to state that buying online is a practice which has not found compatibility with the Nigerian culture.

EC awareness is another major factor affecting initial adoption of EC, a finding that gives empirical support to the awareness challenge of EC adoption in Ethiopia, Bekele (2000) in Spain Davis (1999). Dinev and Hu (2007) defined technology awareness as the user following, being interested in, and knowledgeable about technological issues, problems, and techniques to solve them. They showed that a new construct, namely technology awareness, emerged as a central and strong determinant of user behavioural intention. The literature on technology diffusion unequivocally agrees that awareness of an innovation and its benefits, in this case PU, is an important initial stage that may affect the decision to adopt or reject the innovation (Rogers, 1995). Accordingly, our study hypothesises that:

H6a: ECA has a significant impact on PIT

H6b: ECA has a significant impact on PEOU

H6c: ECA has a significant impact on PU

2. Compatibility (COMP)

Compatibility is defined as “the degree to which using an innovation is consistent/compatible with the user’s existing sociocultural values and beliefs, past and present experiences, and needs of potential adopters” (Rogers, 1995 p.228). Compatibility is the perception that a particular innovation is similar to and congruent with existing understanding of current and past ideas. Straub (2009) classified innovation characteristics on how easy an innovation is to use and how the use of an innovation is compatible with the lifestyle of an individual.

Recently, Moeti, Mokwena and Malebana (2021) found that compatibility had positive correlation with online shopping acceptance and use in the Limpopo province of South Africa. Also, a study conducted by Shi et al. (2020) showed compatibility was positively associated with omnichannel shopping intention in China. Furthermore, Ariansyah et al. (2021) in a study conducted in Indonesia argued that the compatibility of EC with individuals’ needs and values can drive its adoption. Faqih (2016) revealed that PU, PEOU and compatibility are among the essentially influential predictors of behavioural intention to adopt the Internet technology for shopping among online non-shoppers in Jordan. In addition, the findings of Ozturk et al. (2016) revealed that compatibility significantly influenced PEOU.

According to Tarhini et al. (2018), customers who believe using online shopping is compatible with their values, lifestyles and needs are more likely to express positive attitudes to such technology. From the highlighted studies, compatibility is a motivator of intention to purchase online. Thus, the inclusion of the compatibility construct in the research model is reasonable, as people tend to have affinity for what they deem compatible with their lifestyles, needs and values, shopping preferences and experiences. Therefore, greater compatibility is more likely to result in a faster rate of technology adoption.

It is noteworthy that compatibility is an important factor recurrent in technology acceptance studies but missing from TAM (Chen, Gillenson and Sherrell, 2002). Vijayasathy (2004) in his study to predict consumer intentions to use online shopping in the USA included compatibility in his proposed extended TAM and discovered that COMP was a significant predictor of customers’ attitudes towards online shopping.

Moreover, it has been established that the adoption process will be easier if customers perceive that the online purchase does not conflict with their interests and tastes (Peña-García et al., 2020). Resultantly, Chen, Gillenson and Sherrell (2002), while testing a modified TAM model, made a case for compatibility inclusion in explaining consumer attitudes of Americans in their use of virtual stores for shopping. Based on that reasoning and considering compatibility has been tested as an important antecedent of electronic shopping adoption in different contexts, we include compatibility in the current theoretical model to further examine its impacts on PIT and PEOU in the context of Nigeria. Accordingly, the following three hypotheses are proposed:

H7a: COMP has a significant impact on PIT

H7c: COMP has a significant impacts on PU

A summary of the individual-related EC adoption factors, the literature sources and their corresponding indices of measurement is provided in Figure 9 below.

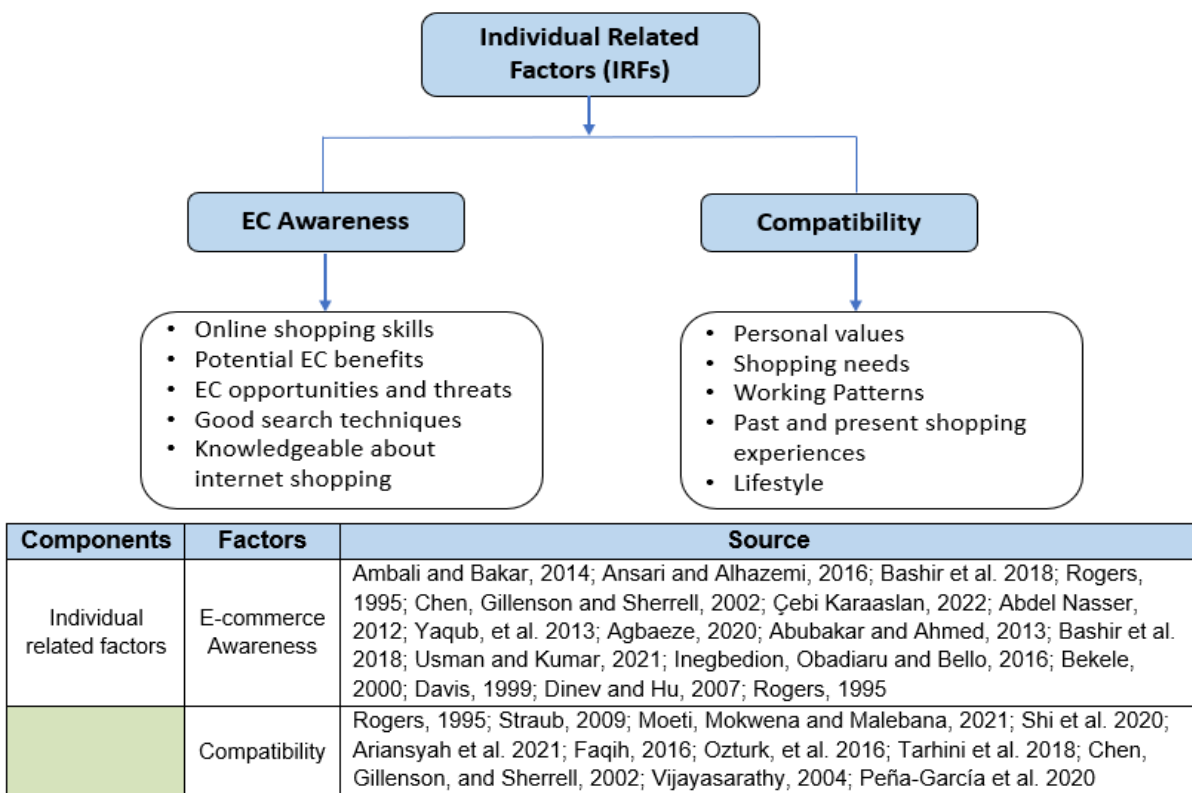


Figure 9: Individual-related factors for EC adoption with sources and related items
Source: Developed by the author

3.3.3 Affective Variables and The Mediating Roles of Emotion

Consumer behaviour scholars have acknowledged that affective variables have increasingly become an important area of research in relation to customers' decisions and behaviours (Yeung and Wyer Jr., 2004; Hwang and Kim, 2007). Therefore, in investigating EC adoption factors, this present study considers the shortcomings of prior EC adoption studies which failed to include the fundamental aspect of human thought and behaviour, i.e., affect variables (Bashir et al., 2018; Esho and Verhoef, 2021; Ezennia and Marimuthu, 2022). Hoong, Thi and Lin (2017) discovered that positive and negative affects (emotions) are major determining factors in technology acceptance. Modern digital technology interrelates with affective processes to influence individuals, interactions, culture, and society; that is to say, technology alters how people feel (Shank, 2014).

(A). Positive and Negative Emotions

Extant literature suggests that it is feasible to qualify, contextualise, and define functionally discrete emotions like interest, joy, sadness, anger, fear, shame, and guilt (Izard, 2010). Positive affect is experienced when a person feels enthusiastic, in a pleasurable condition, e.g., surprises, interest and happiness, while negative affect is the experience of an unpleasant condition, e.g., fear, worry, anger and anxiety (Perlusz, 2004). In this study, we define positive emotions as the extent to which a person feels interested, happy, satisfied and has a 'like' feeling for OS. Negative emotions refer to the extent to which a person feels angry, afraid, frustrated and worried. Kim and Kim (2012) called for research on an integrative model that illustrates how human-related environmental cues (stimuli) affect customers' cognitive, emotional, and behavioural responses. Drawn from extant literature, these stimuli in our study are essentially the EC adoption factors that fit into the Nigerian context.

In the present study, the dimensions of emotion were measured purely as negative and positive feelings, in conjunction with the intention to purchase. Drawing from prior literature (e.g., Bagozzi and Lee, 1999; Jang and Namkung, 2009; Kim and Lennon, 2013; Pappas et al., 2014), this study seeks to measure eight crucial primary emotions that are related to EC and online shopping: (PA-Positive affect: interested, happy, like, and satisfied) and (NA-negative affect – worry, anger, frustration, fear). See Section 3 of questionnaire in Appendix A.

From the SOR concept, the “stimulus,” in the context of this study, is represented by reputation, website quality, IT infrastructure, legal factor (regulation and law),, cultural factor, EC awareness, compatibility. These are capable of prompting positive emotions or negative emotions - a representation of the internal state of the “organism,” and the “response” from the customer is purchase intention. Although emotions are a substantial aspect of human thought and behaviour, they have received only limited attention in information system research (Cenfetelli, 2004). Models and theories of technology adoption have been so far largely agnostic about feelings and emotions, especially in relation to businesses (Perlusz, 2004; Rieple and Snijders, 2018; Choi, 2019). Therefore, it is important to pay close attention to the affective side of customer response and investigate its impact on customer adoption of EC as a channel of purchase. Thus, we hypothesise:

H8₍₁₋₆₎: EC adoption factors have significant impact on positive customers’ emotional responses (**CERP**)

H9₍₁₋₆₎: EC adoption factors have significant impact on negative customers’ emotional responses (**CERN**)

(B). Impacts of Customers’ Emotional Responses on PEOU, PU and PIT

Wakefield (2015) showed evaluation of a technology’s features results in both positive and negative affective responses that directly influence use intentions. Chierotti (2018) cited a Harvard Professor Gerald Zaltman who stated that 95% of purchasing decisions are subconscious, the biggest of which is emotion. He argued that emotion is what really drives the purchasing behaviours and decision making in general (online purchasing inclusive). Therefore, the idea that online purchase decision can be done without considering the fundamental aspect of human nature of responding emotionally simply defies logic. For instance, positive emotional experiences reinforce consumer repurchase intentions (Malak et al., 2021).

According to Rose et al. (2012) and Khan and Mohsin (2017), rational and emotional factors play an important role in purchasing decision and influence customers’ intentions to purchase online. However, in business research there is a deficit of studies on the affective (emotional) dimensions of adopting EC, especially in the retailing sector and, in particular, in the developing countries. Remarkably, prior

studies from advanced countries provide evidence that users' emotions (both positive and negative) critically influence beliefs, intentions, and behaviours in technology acceptance and adoption contexts (Beaudry and Pinsonneault, 2010; Kim and Lennon, 2013; Venkatesh, 2001; Pham, 2004; Perlusz, 2004; Russell, 2003).

When an innovative technology is perceived as easy to use, the mental effort regarding how to operate the technology is lifted and users are likely to form greater positive feelings about the technology (Wakefield, 2015). Regarding perceived usefulness, an expectation of usefulness would not eliminate the perception that a technology has limits. Thus, it is expected that a cognitive assessment of the PU of a technology will result in both positive and negative integral affects. A technology perceived as more useful will elicit greater positive affect. The findings of Hoong, Thi and Lin (2017) also showed that positive affect has a very significant positive influence on PU and PEOU. This calls for greater empirical attention, thus these proposed hypotheses:

H10a: CERPs have significant impacts on PIT

H10b: CERPs have significant impacts on PEOU

H10c: CERPs have significant impacts on PU

H11a: CERNs have significant impacts on PIT

H11b: CERNs have significant impacts on PEOU

H11c: CERNs have significant impacts on PU

A summary of the affective variables influencing EC adoption, related literature sources and their corresponding indices of measurement is provided in Figure 10 below.

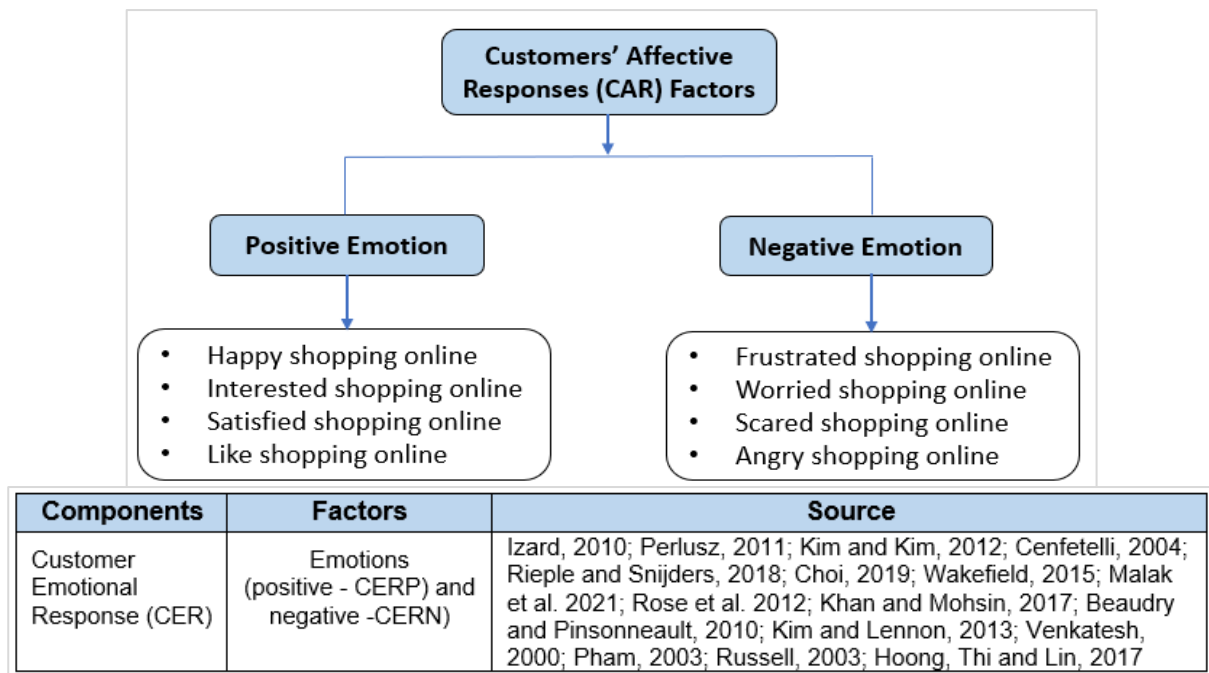


Figure 10: Affective variables for EC adoption with sources & related items
Source: Developed by the author

(C). An Important Link in EC Adoption

Emotions do not only influence how customers process information, but they also mediate responses and measure the effects of marketing stimuli (Bagozzi, Gopinath, and Nyer,1999). Therefore, investigating the mediating factors that are unique to online customers would be beneficial and could enrich our understanding of online consumer behaviour (Ha and Stoel, 2011). Yet, there is a lack of empirical evidence based on studies that consider such mediators (the mediating effects of environmental /contextual factors – the emotions–purchase intention missing link) in the context of Nigeria’s online retail sector. Based on these backdrops, the focus of this study is to empirically capture how customers respond affectively to the external and internal factors of shopping online and how in turn these responses (either positive or negative) mediate between these factors and customers’ intention to purchase. See Figure 11.

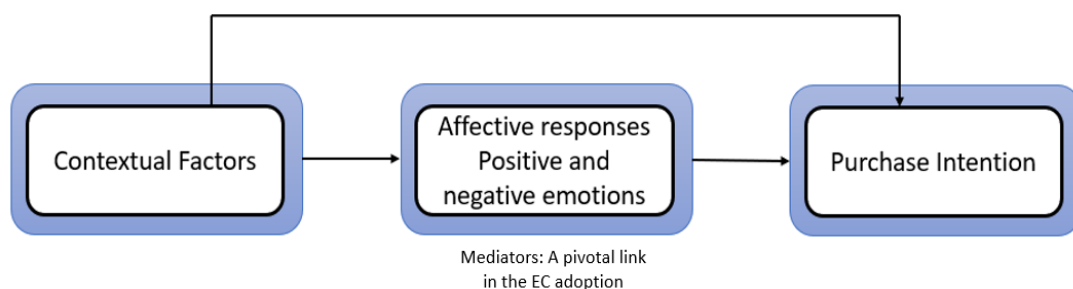


Figure 11: Mediating roles of customers’ emotions
Source: Developed by the author

A mediator addresses how or why effects of external stimuli on behaviour are mediated by internal psychological influence (Baron and Kenny, 1986), which suggests transformation processes are internal to the organism (emotions). Friestad and Thorson (1986) argued that it is more important to emphasise the processes and experiences comprising a person's response. Here, we make a proposition that both customers' positive and negative emotions are functioning as mediators, suggesting they account for the relationship between the various contextual factors (predictors) and the outcome (purchase intention). Moon et al. (2017) argued that more studies should analyse the mediating effects of cognitive and affective attitude on purchase intentions.

To add to this growing body of work, this present study proposes that customers' affective responses (as evidenced by their emotions) mediate the relationships between key EC factors and purchase intention. It further suggests this important process can substantially improve the original, traditional model's predictive power for EC adoption by bridging the adoption-response gap. Thus, this study conceptualises emotion as informative in nature and also capable of playing a prominent mediating role of influencing customers' behaviour as they evaluate and interpret online events or experiences. This is done with a particular reference to their intention to purchase and the processes of making decision to adoption EC.

The role of customers' emotions (affective responses – negative and positive) in EC adoption decision-making has not been explored (Bettiga and Lamberti, 2018), in particular in the context of online shopping in the Nigerian retailing sector. Therefore, specifically, this study sets out to examine the mediating effects of emotions on the customers' behavioural response towards their purchase intention. This important aspect of EC adoption research has been largely overlooked, especially in the Nigerian context.

The organism element of the S-O-R Framework serves as an intermediary between the stimuli and customers' responses (Loureiro and Ribeiro, 2011). In this study organism serves the mediating the role of emotion and bridging an important gap in EC adoption. Thus, to provide the much-needed, customer-centred insight into the

issues affecting EC adoption, it is paramount to critically investigate emotion as a vital intervening variable in the EC ecosystem.

(D). Justification for Mediation

The justification for employing mediator variables such as positive and negative emotions in this study is that such approach enables a researcher to test a model beyond the limitation of the conventional method (Khan et al., 2020). The quoted study further explained that central to the mediation concept is its power to extend a simple causal inference, where the predictors influence an outcome and the mediator in turn intervenes in the relationship. In other words, mediators are the intermediate variables between an independent variable and a dependent variable.

Another salient rationale is that human behaviour is dynamic and presents 'systemic effects' that are impossible to capture completely and mediation analysis is a useful tool for describing, testing and discovering such possible causal relationships (Aglar and De Boeck, 2017). Whilst some effects of our behaviour are direct, some remain indirect. These indirect aspects of consumer behaviour that need to be investigated are measured as the mediating effects. Moreover, the process of examining the mediating effects involves the consideration of both the direct effects (DE) and the indirect effects (IE), whereby the 'total effects' (TE) is the addition of both effects. Therefore, to estimate the extent to which the mediation process explains the relationship between predictors (such as EC adoption factors) and an outcome (purchase intention), it is also necessary to consider their direct effects. Figure 12 depicts the mediating effect hypothesis, in which Customers' Emotional Responses (CERs) mediate the relationship between EC adoption factors and purchase intention.

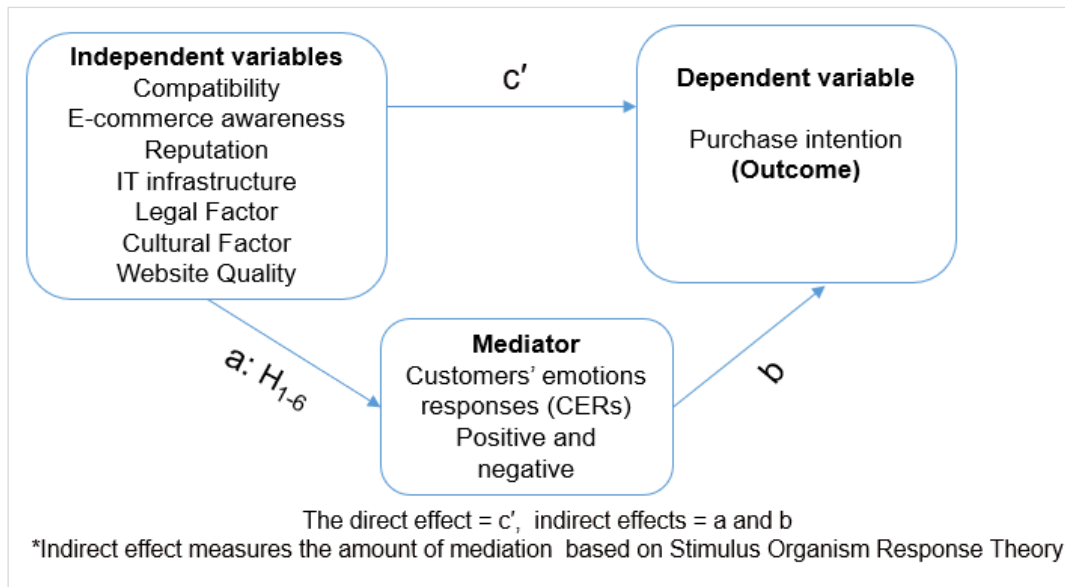


Figure 12: The mediation hypothesis
Source: Developed by the author

This present study proposes that customers' emotional responses mediate the relationship between (1) compatibility (2) EC awareness (3) reputation (4) IT Infrastructure (5) legal factor (6) cultural factor (7) website quality and customers' purchase intention in online shopping. We suggest that the influence of key EC adoption factors such as reputation, website quality, IT Infrastructure, legal factor, EC awareness and compatibility on customers' purchase intention is mediated by both their positive and negative emotions (their internal states), as seen in these hypotheses:

H12a ⁽¹⁻⁶⁾: CERP mediate the relationship between EC adoption factors and purchase intention

H12b ⁽¹⁻⁶⁾: CERN mediate the relationship between EC adoption factors and purchase intention

3.3.4 Technology Acceptance-Related Factors

1. Perceived Usefulness (PU)

Moon and Kim (2001) noted that the two main constructs of TAM, ease of use and usefulness, are believed to be fundamental in determining the acceptance and use of various corporate ITs. In the past decades, the two constructs were seen as an individual's motivational factors and considered important determinants for using and accepting IT. Thus, perceived usefulness is defined as the degree to which a person

believes that using a particular system would enhance their job performance (Davis, 1989; Vijayasarathy, 2004; Paim and Khatibi, 2016). In the context of EC, perceived usefulness refers to the degree to which a customer believes that shopping online enhances their effectiveness in purchasing goods or services (Nguyen Phan Thu Hang, 2021).

For both customers and retailers, the many benefits of EC are product promotion, cost saving, timely information, better customer value, customisation of the products, competitive advantage, and convenience of doing business (Alwahaishi, Nehari-Talet and Snasel, 2009). Davis (1989) has shown perceived usefulness (PU) to be a strong predictor of intentions to transact in EC. He concluded that PU is a strong correlate of user acceptance. His finding also suggests that PU could be useful in explaining purchase intentions when technology is present. Therefore, we hypothesise as follows:

H13: PU has a significant impact on PIT

2. Perceived Ease of Use (PEOU)

Perceived ease of use (PEOU) is the degree to which a person believes that using the system will be effortless (Davis, 1989; Shannon and Gardner, 2016). PEOU can be considered an assessment of the psychological and mental effort exerted by the individual in dealing with the new technology. In EC, PEOU is described as the degree to which shoppers believe buying online would be easy and free of effort. Additionally, a meta-analysis by Lee, Kozar and Larsen (2003) showed that a majority of studies support the idea that PEOU is related to PU, and both PU and PEOU are related to intention to use. The relationships between perceived usefulness (PU) and perceived ease of use (PEOU) and intention have been retained in most TAM-based empirical studies (Lee, Kozar and Larsen, 2003). Moreover, it is believed that the two most important individual factors about using information technology are able to explain an individual's intention to use the technology.

In extending TAM with other variables and investigating the determinants of perceived ease of use, Venkatesh (2000) found that the model explained up to 60% of variance relating to system-specific perceived ease of use and twice more than the basic TAM.

In the context of EC, it is theorised that effort-free services could lead to better utilisation of the website features and enhance the individual's efficiency by reducing the required shopping time and effort. A recent study by Nasution et al. (2019) found that usefulness, ease of use and price were the major factors influencing purchase intentions towards internet shopping among students in the Malaysian context. In order to test that in the Nigerian context, the following hypotheses are proposed:

H14a: PEOU has a significant impact with PIT

H14b: PEOU has a significant impact with PU

A summary of technology-related EC adoption factors, the literature sources and their corresponding indices of measurement is provided in Figure 13 below.

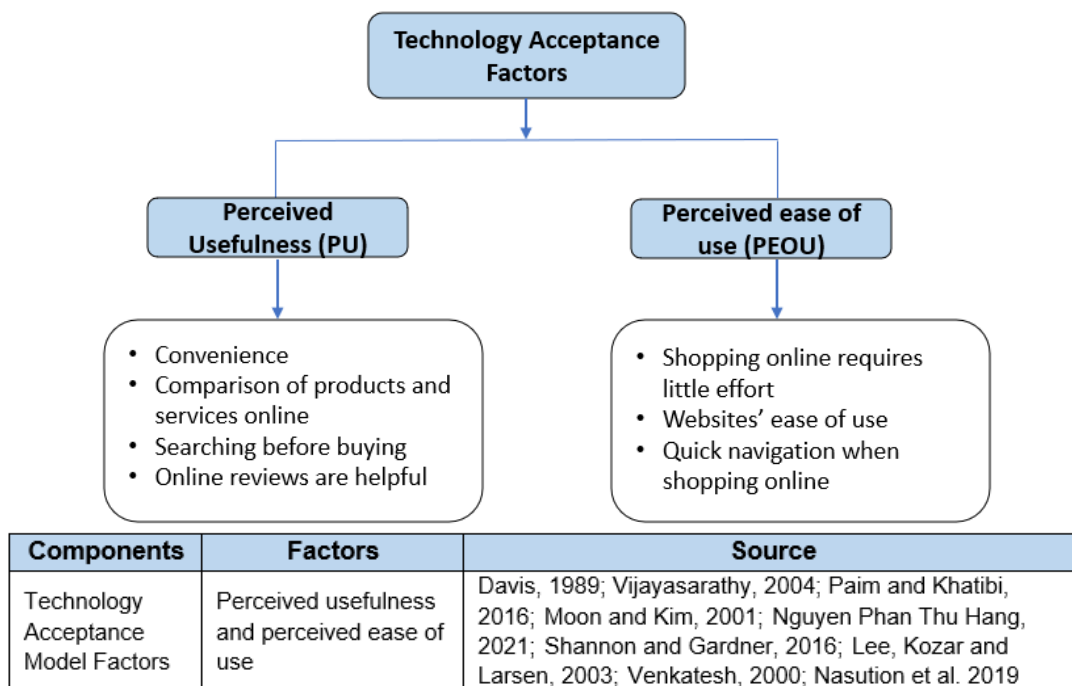


Figure 13: Technology Acceptance Model factors with sources and related items

*The TAM table in Section 3.2.2 provides more sources

Source: Developed by the author

For the purpose of this study, the dependent variable (DV) is online purchase intention (PIT). The term 'purchase behavioural intention' has received thoughtful consideration in recent times and is generally applied in models related to adoption and acceptance of technology. In other words, intention is defined 'as an individual's subjective possibility that they will perform some behaviours' (Fagan, Neil and Wooldridge, 2003).

As such, behavioural intention is viewed as a direct precursor of usage behaviour and provides an indication about a person's readiness to perform a particular behaviour (Ajzen, 2011; Saprikis et al., 2018). Thus, this study employs online purchase intention as the main antecedent of purchase behaviour of online customers.

Moreover, purchase intention is regarded as a key predictor of customers' actual behaviour (Montano and Kasprzyk, 2015; Zhang et al., 2023). Aldousari and El-Sayed (2017) found that payment options, nationality and day of the week were major determinants of behavioural intentions among consumers in Kuwait. Many studies have used purchase intention as an indicator of website success (Vila and Kuster, 2011). According to Pavlou (2003), the intention to engage in an online exchange relationship with online retailers could mean sharing business information, maintaining business relationships, and conducting business transactions.

The channel usage intention at a particular stage of the buying process across the three buying stages, namely pre-purchase, purchase, and post-purchase, is moderated by the consumer's internet experience (Frambach, Roest and Krishnan, 2007). For many marketers, the most important approach behaviour is purchase (Roy, 1994 in Bloch, 1995). Abu-Shamaa and Abu-Shanab (2015) mentioned the intention to buy online is affected by both technology factors and socio-cultural factors, specifically trust. According to The et al. (2008), lack of intention to purchase online is the main obstacle in the development of EC. The factors examined so far are integrated into a research framework as seen in the next section.

3.4 Framework for EC Adoption and Customers' Affective Responses

It is imperative to bring the necessary attention needed to the subject of customer responses in connection with adopting EC in Nigeria. Based on this premise, we present a conceptual model and several propositions that describe how internal and external environmental factors relate to customers' psychological responses (emotions) and behavioural responses (purchase intention). This could enable online retailers, website designers and policy makers to understand better the vital interconnectivity of human interactions with the technology that humans use.

Figure 14 distinctly presents the final research framework developed for this study. It details the convergence of all the eleven (11) key factors earlier identified, with a special focus on the central concepts under investigation in this research, i.e., EC adoption and customers' affective responses. Structured and grounded on two valid theoretical foundations, the TAM and the SOR, these crucial factors are depicted as the 'building blocks' consisting of the various dimensions that each of the factors measured. These are held by the four supporting pillars constituting the framework for EC adoption variables earlier categorised in sections 3.3.1 to 3.3.4.

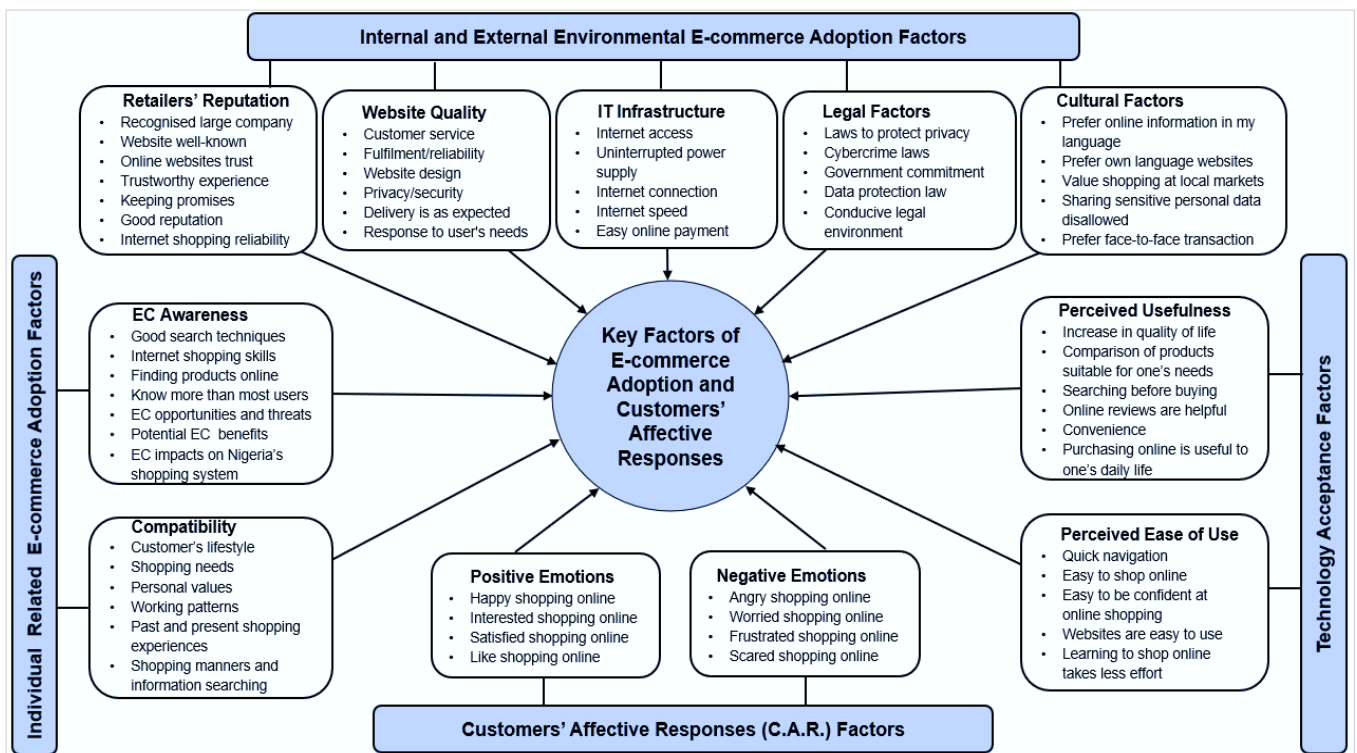
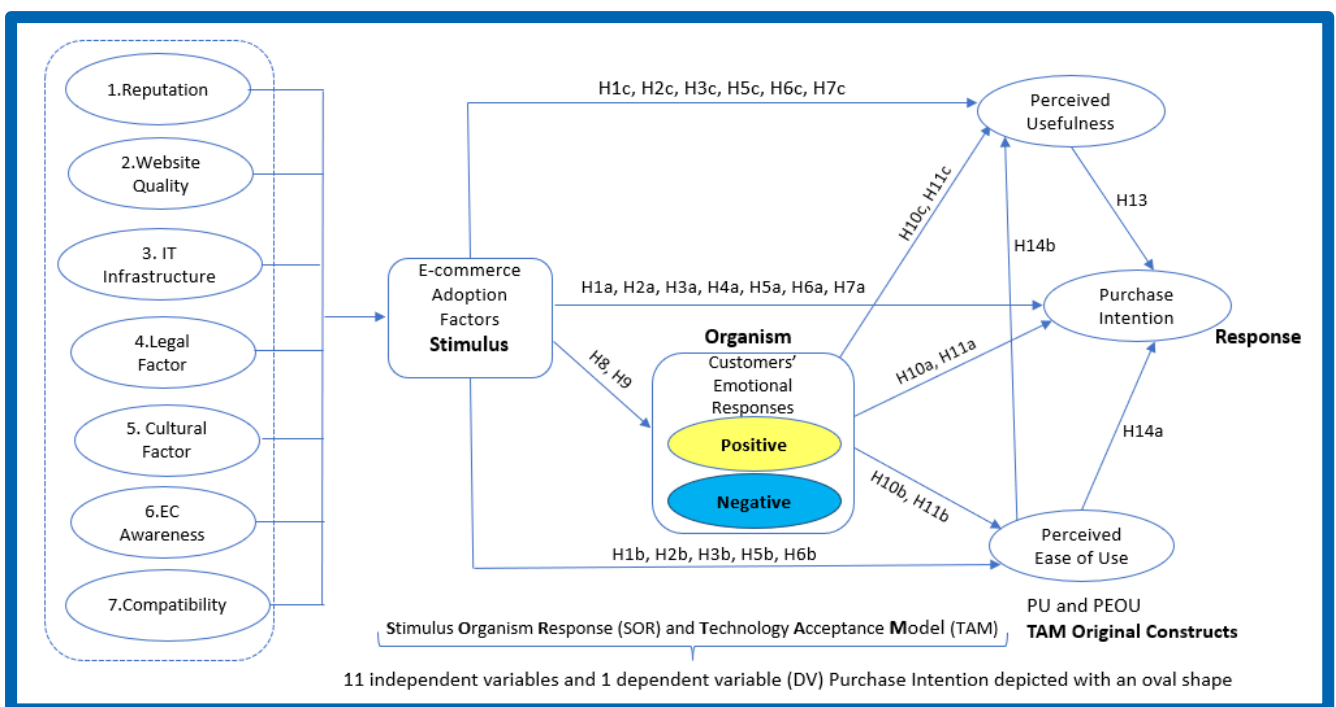


Figure 14: Research Framework for EC Adoption and Customers' Affective Responses
Source: Developed by the author

Next, these key factors are discussed in the next section, to better appreciate the multi-dimensionality of EC adoption as it interlinks with customers' emotional responses (CERs) in an extended TAM approach. This showcases the theories on which the study is grounded - it can be likened to a blueprint or a guide for building the conceptual model (Imenda, 2014).

3.5 The Proposed Extended TAM Research Conceptual Model (TAMSOR)

The proposed holistic TAMSOR research model developed is shown in Figure 15 illustrating the hypothesised pathways of the extended TAM with the SOR Theory. Situated within the conceptual model, the two theories (TAM and SOR) adopted for the present study depict the various elements/factors integrated together, and the relation between one factor and the other. It also showcases the decision-making process for customers in the online context, in relation to the key EC adoption factors - as stimuli that prompt either positive or negative emotions (psychological responses) from the organism (customers). These processes eventually result in their behavioural response (online purchase intention). In connection with the study's objective, the developed TAMSOR model is clearly presented with the proposed hypotheses below. This will be validated later in the thesis.



The proposed holistic research model **TAMSOR**: Extending **Technology Acceptance Model** with **Stimulus Organism Response theory** - presenting the hypothesised pathways of key e-commerce adoption factors as stimuli that prompt positive and negative emotions (psychological responses) from the organism (customers) eventually resulting in their behavioural response (online purchase intention). *H12 (See mediation hypothesis)

Figure 15: The proposed TAMSOR conceptual model with the hypotheses
Source: Developed by the author

*Mediation hypothesis: H12₍₁₋₆₎ Customers' emotional responses mediate the relationship between EC factors and purchase intention as presented separately in Figure 11 (mediation hypothesis). All the proposed hypotheses of the study are presented in Table 8.

3.6 The Study's Proposed Hypotheses

Codes	Proposed Hypotheses	Classifications
H1a	REP has significant impacts on PIT	External factor
H1b	REP has significant impacts on PEOU	
H1c	REP has significant impacts on PU	
H2a	Website Quality has significant impacts on PIT	Internal factor
H2b	Website Quality has significant impacts on PEOU	
H2c	Website Quality has significant impacts on PU	
H3a	ITF has significant impacts on PIT	External environmental factors
H3b	ITF has significant impacts on PEOU	
H3c	ITF has significant impacts on PU	
H4	LGF has significant impacts on PIT	
H5a	CRF has significant impacts on PIT	
H5b	CRF has significant impacts on PEOU	
H5c	CRF has significant impacts on PU	
H6a	ECA has significant impacts on PIT	Individual-related factors
H6b	ECA has significant impacts on PEOU	
H6c	ECA has significant impacts on PU	
H7a	COMP has significant impacts on PIT	
H7c	COMP has significant impacts on PU	
H8 ₍₁₋₆₎	EC adoption factors have significant impact on positive customers' emotional responses (CERP)	E-commerce adoption factors and emotional responses constructs
H9 ₍₁₋₆₎	EC adoption factors have significant impact on negative customers' emotional responses (CERN)	
H10a	CERP has significant impacts on PIT	Emotional responses SOR factors and TAM factors
H10b	CERP has significant impacts on PEOU	
H10c	CERP has significant impacts on PU	
H11a	CERN has significant impacts on PIT	
H11b	CERN has significant impacts on PEOU	
H11c	CERN has significant impacts on PU	
H12a ₍₁₋₆₎	CERP mediates the relationship between EC adoption factors and PIT	Mediation role of emotional responses
H12b ₍₁₋₆₎	CERN mediates the relationship between EC adoption factors and PIT	
H13	PU has significant impacts on PIT	TAM Factors
H14a	PEOU has significant impacts on PIT	
H14b	PEOU has a significant impact on PU	

Table 8: The research hypotheses

Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Reputation (REP), Website Quality (ETAILQ), Legal Factor (LGF), IT Infrastructure (ITF), E-Commerce Awareness (ECA), Compatibility (COMP), Customers' Emotional Responses - Positive (CERP), Customers' Emotional Responses - Negative (CERN), and Purchase Intention (PIT)

3.7 Summary

This chapter has reviewed several empirical studies of EC adoption and customers' emotional responses in order to develop a theoretical framework and to identify the factors that are considered important antecedents of customer adoption of EC in Nigeria. One of the key objectives of the research was to develop an EC adoption-response conceptual model that integrates the TAM with the SOR, with a view to

demonstrating the hypothesised relationships between the model factors. First, Figure 14 showcased a holistic, multi-factorial research framework for EC adoption and customers' affective responses. It showed that four types of factors (presented as 4 pillars) have a major influence on the customer's behavioural intention to adopt EC transaction provided by online retailers in Nigeria. They are internal and external, individual-related, technology-related and affective/emotional-related variables. This translated to the research model depicted in Figure 15 including the twenty-seven hypotheses proposed relating to the contextual factor, with both the positive and negative emotions acting independently as the model's mediators. Table 8 provides a summary of these key factors and the proposed hypotheses.

In the next chapter, the methodology and methods employed in the study in order to achieve the research aim and objectives are discussed.

Chapter 4: Research Methodology

4.1 Introduction

This chapter presents the research methodology utilised to achieve the research aim and objectives of the current study. It investigates the key factors influencing customers' intentions to adopt EC in Nigeria, an example of a developing country, located in West Africa. It also examines customers' responses to the associated processes of purchasing online.

The chapter first reviews the existing research paradigms and then underpins the philosophy that justifies the approach taken with the research, highlighting the post-positivism stance to investigate the phenomenon under study and the subsequent selection of a mixed methods approach. Section 4.3 provides the current study's philosophical stance and Sections 4.4 and 4.5 present the research approach and research strategy. The rationale behind the selection of the research methodology is clearly highlighted in 4.5.2. The chapter clearly illustrates the steps required to design the study effectively and then presents the methods used for data collection (quantitative data) in Sections 4.6, 4.7. It presents the ethical considerations and pilot study in Sections 4.8.2 and 4.8.3 followed by the qualitative research strategy in 4.9.

Research methodology refers to a system of explicit rules and procedures to understand how the research will or should be conducted, and against which claims for knowledge are evaluated (Eldabi et al., 2002). Robson (2002) made a distinction between the concepts of methodology and the methods. They referred to research methods as techniques, processes, and means of data collection, while methodology has been defined as "the theoretical, political and philosophical backgrounds to social research and their implications for research practice and for the use of particular research methods" (p.549).

According to Sarantakos (1998), research methodology is the theory of methods. In simple terms, a methodology translates the principles of a paradigm into a research language, and shows how the world can be explained, handled, approached or studied. Research methodology can be classified into three categories, namely quantitative, qualitative and mixed methods (Creswell, 2014). It serves as guidance for the researcher to understand the research problem from different angles and use different methods accordingly. "Methods" refer to the tools or instruments employed

by researchers to gather empirical evidence or to analyse data. The core methodology question is how can the inquirer (researcher) go about finding out whatever they believe can be known? It focuses on how we obtain knowledge about the world and indicates which research techniques are considered appropriate for collecting valid empirical evidence. Guba and Lincoln (1994) added that methods must be fitted into a predetermined methodology.

The next section considers the relationship between methodology and methods and the other two elements that encompass the definition of research philosophy.

4.2 Research Philosophy

Research philosophy or paradigm is regarded as a set of basic beliefs that deals with first principles - a representation of a worldview that defines, for its holder, the nature of the world, the individual's place in it, and the range of possible relationships to that world and its parts (Guba and Lincoln, 1994). To provide further clarity, Denzin and Lincoln (2005) described research philosophy as the researcher's "net" that holds the ontological (the nature of social reality), epistemological (how we should study the reality), and methodological beliefs (what study designs and methods we might use).

In agreement, Guba and Lincoln (1994) and Collins and Hussey (2009) emphasised that the three underpinning philosophical assumptions embody a researcher's basic beliefs about how they see the world (worldview). Moreover, they guide the researcher and the research process from the point of choosing a suitable research design, through data collection and analysis methods, and to the way in which the findings are reported. Based on these explanations, Figure 16 depicts an interrelationship between ontology, epistemology and methodology and methods as a research philosophy mix to navigate and consolidate a research process.

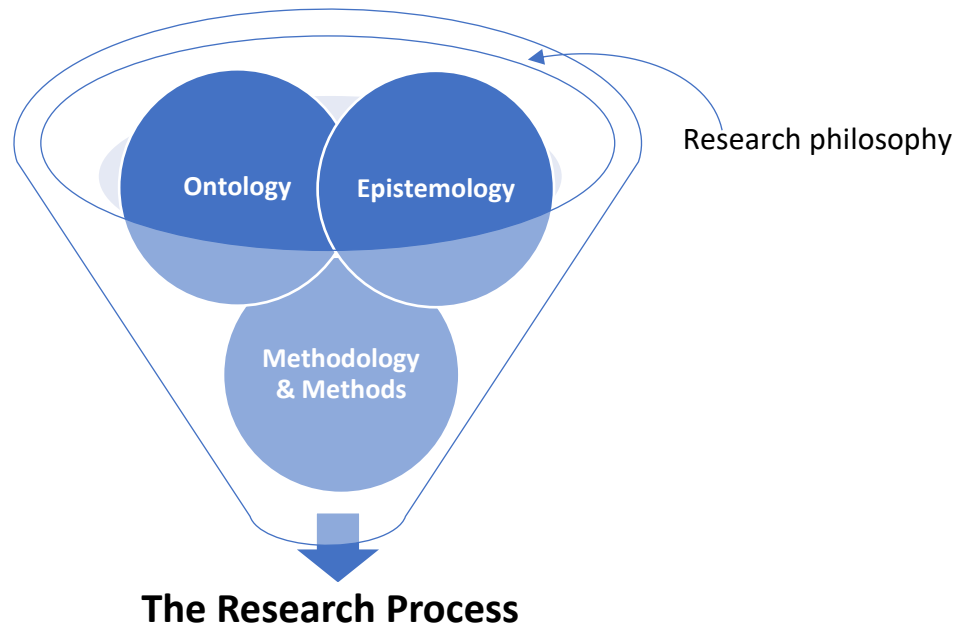


Figure 16: The research philosophy (showing the research process funnel)
 Source: Developed by the author

Moreover, scholars have shown the importance of understanding the philosophical foundation of social science research (ontology and epistemology), as it determines the methodology adopted by the researcher to investigate any phenomena. Individual researchers maintain different types of beliefs that will often result in embracing a qualitative, quantitative, or mixed-methods approach in their research (Creswell, 2014).

Ontology and epistemology constitute the central debates among philosophers. Moreover, scientists and social scientists draw from different ontological and epistemological assumptions when developing their methodologies for conducting research (Easterby-Smith, Thorpe and Jackson, 2012). They suggest researchers should clearly state the philosophical ideas they adopt and the nature of the assumptions that they bring to the study. According to Creswell and Creswell (2018), philosophical worldviews influence the practice of research. Therefore, researchers in the social sciences must start their research design by recognising the theoretical and philosophical assumptions supporting their investigations (Saunders, Lewis and Thornhill, 2009).

4.2.1 Ontology and Epistemology

The ontological assumption is concerned with the nature of reality and existence (Bryman and Bell, 2015; Bell et al., 2018). In philosophical terms, it refers to the study or inquiry of our existence and the fundamental nature of reality or being (Orlikowski and Baroudi, 1991) The central ontological questions are what is the form and nature of reality and, therefore, what can be known about it? (Guba and Lincoln, 1994). Malhotra et al. (2012) noted that the ontological position made by the researcher can act as a pre-requisite to epistemological decisions. This is due to the clear links that can be made between ontology and epistemology (Easterby-Smith, Thorpe and Jackson, 2012) In other words, ontological beliefs - the nature of reality, drive epistemology - the ways in which the researcher is going to gain the knowledge (Creswell and Clark, 2007).

Epistemology is the study of the nature, extent and justification of knowledge (Rosenberg, 2005) and concerns the nature of the relationship between the knower and what can be known, and what counts as knowledge. Saunders, Lewis and Thornhill, (2015) put it this way: the epistemology assumption is a basic set of beliefs regarding what constitutes adequate knowledge in a field of inquiry. According to Bryman and Bell (2015), epistemology refers to a theory of knowledge which refers to a viewpoint on what should be regarded as acceptable knowledge, in this case, the social world. It reflects how people acquire what they know and how they know about the existence of the reality (Crotty, 1998).

In questioning what is acceptable knowledge (Bryman, 2012), epistemology provides a useful foundation to research design along with the ontological philosophy to assist or improve the power of explanation, predictions, and understanding of research outcomes (Malhotra et al., 2012). The primary epistemology questions are: What is the nature of the relationship between the knower, or the would-be knower (the inquirer), and what can be known? It is concerned with how we know the world and constitutes what the relationship is between the inquirer and the known. In other words, epistemology is the ways in which the researcher is going to gain the knowledge of inquiry (Creswell and Plano Clark, 2007; Guba and Lincoln, 1994).

1. Ontological Position

Bryman and Bell (2015) and Saunders, Lewis and Thornhill (2012) highlighted two ontological positions in the social sciences which study the nature of social realities and the behaviour of people, these being objectivism and constructivism. Ontology considers whether there is a reality external to social actors where being objective holds or whether this reality is constructed from individuals' perceptions and actions of a social phenomenon (Bryman and Bell, 2015). Objectivism describes external facts beyond our reach or influence and that social reality phenomena are independent of individuals. Constructivism, on the other hand, portrays social phenomena and their meanings, which are not only being produced through social interactions but also need to be revised constantly by the individuals and their subjective perceptions in the social context. In addition, people usually develop different meanings about reality, based on their own experiences; as a result, a complex form of reality exists based on multiple and diversified meanings (Creswell, 2014).

2. Epistemological Position

In the social research field, there are two key epistemological positions debated by philosophers, namely positivism and interpretivism (Bryman and Bell, 2015). Some studies refer to the positivist paradigm with different terms such as scientific, experimentalist, traditionalist, rationalistic, empiricist, quantitative, and objectivist; and to interpretivism as naturalistic, constructivist, phenomenological, humanistic, qualitative, and subjectivist (Creswell, 2014; Easterby-Smith, Thorpe and Jackson, 2012; Guba and Lincoln, 1994).

A) Positivism

Positivist school of thought advocates the application of natural sciences methods in order to study social reality (Bryman and Bell, 2015). Social science positivists promote research studies that are value-free, using rhetorical neutrality that results in discoveries of social laws, from which in-time and context-free generalisations ensue. Further, the proponents of positivism argue rigorous testing of hypotheses by means of quantitative measurements in which mathematical and statistical procedures are utilised to explore, to describe, to explain, to predict, and to control social and behavioural phenomena (Onwuegbuzie and Leech, 2005). The assumption of this paradigm is associated with a quantitative approach such as mathematical and

statistical techniques, in which the researcher objectively tries to describe the objective/value-underlying relationships in terms of research questions or hypotheses developed from an existing theory (Carson et al., 2001). Contending that truth as an independent part of a whole, they argue that theory should be deductive. They assert that rational 'cause and effect' is possible, and that scientific research is free. Further, they base their assumptions on the changes observed in experiments as a function of the variables rather than individual experiences of the external world. In contrast to the assumptions about interpretivism, that understanding of a phenomenon should come from multiple realities, with the possibilities of an emerging theory and contextual processes that focus on meanings and people's perceptions (Henderson, 2006).

B) Interpretivism

Interpretivist researchers attempt to understand how and why individuals, give their own subjective meanings to certain construct or phenomenon through their social interactions with the world around them (Orlowski and Baroudi, 1991). Interpretivists reject what they refer to as positivism and look for "culturally derived and historically situated interpretations of the social life-world" (Crotty, 1998, p. 67). Unlike positivism, the inquiry of knowledge in interpretivism is not grounded on facts and scientific laws but derived from the researchers' interpersonal experiences and subjective views (Gill and Johnson, 2010). In other words, interpretivism requires social scientists to grasp the subjective meaning of social action (Bryman and Bell, 2015). The interpretivist approach is applicable in gaining deep understanding of human behaviours as to reveal people's values, interpretive schemes and belief systems (Cavana et al., 2001). The advocates of interpretivism believe it is difficult to generalise findings and draw inferences simply on the basis of quantitative research. Instead, they use observations to identify themes and patterns for further exploration (Creswell, 2009).

C) Post-positivist

Based on the preceding section, postpositivism offers researchers another choice besides positivism (realism) or interpretivism /constructionism (relativism). The appeal for postpositivism increased in the social sciences a few decades ago (1950-1960) when it was called the intellectual heir to positivism (Frey, 2018). Other scholars have called it a modified, revised, or transformed version of positivism. They argue that postpositivism is currently the predominant philosophy for quantitative research in the

human sciences (Teddlie and Tashakori, 2009). Creswell (2014) denotes it as a 're-think of the positivist' main principle about the nature of knowledge, which accepts the difficulty of establishing objectivity when dealing with human behaviours and actions.

As a clear picture of what post-positivism looks like, Henderson (2011) describes it as another paradigm that can move positivism from a narrow perspective into a more encompassing way to examine real-world problems. For Guba and Lincoln (1994), postpositivist methodology redresses some of the positivism problems, particularly in the social sciences, by conducting an inquiry in more natural settings while collecting more situational data to investigate the meanings that people ascribe to their actions (Johnson and Onwuegbuzie, 2004).

Ryan (2006) describes the characteristics of postpositivism as broad, bringing together theory and practice, allowing acknowledgment and encouragement for the researchers' motivations and commitment to the topic, and recognising that many correct techniques can be applied to collecting and analysing data. It is noteworthy that postpositivism does not suggest that positivism is no longer relevant but rather offers that something exists subsequent to positivism that is also worth considering (Henderson, 2011).

A postpositivist paradigm holds a deterministic philosophy in which causes (probably) determine effects or outcomes (Creswell, 2014). Post-positivists acquire knowledge through attentive and careful observation and assessment of the objective reality that already exists in the world. Thus, post-positivist researchers predominantly attempt to establish numeric measures of observations and investigate the behaviour of individuals. They start with proposing a theory, proceed to gathering data that either support or reject the theory, and then make required modifications and carry out further tests and analyses.

Post-positivists accept that their value systems play an important role in how they conduct their research and interpret their data (Teddlie and Tashakkori, 2009). In addition, postpositivism subsumes a plurality of epistemological stances of being objective and subjective in the same study (Denzin and Lincoln, 1994; Hicks, 2018). Annells (1997) states that the postpositivist paradigm is conceptualised as having an

objectivist epistemology and critical realist ontology. This means that the 'critical' aspect appreciates the need for rigour, precision, logical reasoning and attention, to evidence the reflections of the positivism school of thought. However, unlike the positivist approach, this is not confined to what can be physically observed (Crossan, 2003). To put it in another way, although they do not abandon the tenets of objective reality, they use qualitative data with a belief in the importance of subjective reality.

Post-positivism does not negate these assumptions of positivism valuing rationalism and empirical knowledge over other ways of knowing (Ryan, 2006); rather, it suggests that the social sciences are often fragmented, and that knowledge is not neutral. Guba and Lincoln (1994) stated that while positivism has dominated the physical and natural sciences for many centuries, postpositivism has represented efforts of the past few decades to respond to some criticisms of positivism. For example, Erickson (1986) notes that a certain behaviour may have different meanings in different contexts. He rejects the assumption of uniformity and contends that there is "variability between behavioural form and intended meaning" (p. 132). The rejection of some of the tenets of positivism saw the emergence of post-positivism. Samdahl (1999) and Brand (2009) noted that postpositivism is the offspring of positivism in the business world and has evolved because of the artificial aspects of positivism. Post-positivism represents a compromise between the quantitative and qualitative research paradigms. While believing that reality is constructed and that research is value-laden, the postpositivist also believes the importance of the scientific method in general and methodological appropriateness in particular (Onwuegbuzie and Leech, 2005).

Further, the initial positivists assert that research is carried out in an entirely objective, value-free environment, claiming that the observer's values do not contaminate the way the research is conducted and how the data is interpreted, whereas post-positivists accept that their value systems play an important role in how they conduct their research and interpret their data (Teddlie and Tashakkori, 2009). The main tenets of postpositivism (and where it differs from positivism) are the fact that the knower and the known cannot be separated, and the absence of a shared, single reality (Hirschheim, 1992). In sum, the reality is that all human experiences are multiple and complex (Ryan, 2006). To move beyond the inadequacy of positivism, postpositivism enables researchers to expand their options for data collection methods such that

qualitative and quantitative approaches could be mixed (Henderson, 2011). Table 9 summarises the different epistemological positions:

Orientation	Interpretivism/ constructionism	Positivism	Post positivism
Ontological assumption	Relativism	Naive realism (an objective external reality that can be comprehended)	Critical realism - external reality that is understood imperfectly and probabilistically; absence of a shared, single reality
Epistemological assumption	Subjective point of view	Objective point of view	Modified dualism, findings probably true
Methodology	Qualitative	Chiefly quantitative	Methodological multiplism, primarily quantitative may include qualitative methods e.g., sequential
Axiology	Value-bound inquiry (Biased)	Value-free inquiry (unbiased)	Bias is undesired but inevitable. Values in inquiry but their influence may be controlled
Researcher and participants	Interactive	Independent	The knower and the known cannot be separated
Role of researcher	Focus on meaning (understanding)	Focus on facts (explanation)	Mixed (Integrating both explanation and understanding)
Research approach	From particular to general (inductive)	From general to particular (deductive)	Mixed (Hypothetico-deductive)
Research methods	Action research, case studies, ethnography, grounded theory	Survey, experiments, observations	Mixed methods
Analysis /interpretation	Meanings, sense-making, understanding and insights	Verification / falsification	Mixed
Concepts	Should include stakeholders' perspectives	Needs to be defined to be measured	Mixed
Explanations	Aims to increase general understanding of the situation	Must demonstrate causality	Mixed

Table 9: Epistemological positions

Source: Adapted from Teddlie and Tashakkori, 2009; Creswell, 2014; Easterby-Smith, Thorpe and Jackson, 2012; Guba and Lincoln, 1994

4.3. The Current Study's Philosophical Stance

The epistemological position that underpins the current study is post-positivism. It is suitable for the following reasons:

Bearing in mind that the aim of the study includes exploring some unobservable aspects of the research problem relating to customer emotional responses borne out of their shopping experiences, the traditional positivist approach with its quantitative

instrumentation will not be sufficient. Therefore, the researcher believes a modified version of the positivist paradigm would be more suitable, which incorporates a qualitative dimension, an approach that Henderson (2011) called methodological pluralism, which exhibits and encompasses the main features of postpositivism, thus allowing and justifying the potential for using mixed methods. This stance allows researchers to use a variety of methods to best understand the research problem (Feilzer, 2010).

Moreover, researchers have observed that the use of several methods as supported by the post-positivism approach is suitable in order to support the reliability of research findings. As pointed out by Goulding (2003), there is the need for a greater focus on using varied methods of consumer behaviour data collection. Consequently, this would help to obtain a richer and deeper understanding of the research problem in the current study – low adoption of EC and investigating customers' affective responses towards the key factors which generally influence EC adoption in Nigeria.

Greenhalgh (2018) states that social science research can be conceptual or empirical, quantitative or qualitative, and descriptive or analytical – or a combination of these. Further, this current study agrees with Levers' (2013) reasonings that, in social sciences (i.e., the scientific study of human society and social relationships), post positivism approach recognises that the tools of study are human beings' own capacities as interpreters of the world. Since at the heart of this study are the Nigerian human society and their intention to shop online, it is essential to understand not only the rational viewpoints (objective) but also the affective components that contribute to the construction of social reality (subjective). In other words, these customs may be based in rationalisations, but it is also possible to extend these constructions to encompass emotional or affective responses (the emotional dimension). Furthermore, the failure to recognise and account for the role our emotions and personal experiences play in EC research in the developing countries is a shortcoming that this current research seeks to address.

Moreover, according to Henderson (2011), direct experience can be better understood using post-positivist perspectives. For instance, Stewart and Floyd (2004) observed an increased need for using post-positivism to better understand the experiences of

people in leisure research. Bäckström (2011) portrayed shopping as an example of leisure seeking activity. Thus, stemming from the preceding submissions, this current research investigates, through the lens of postpositivism, customers' direct experience (when shopping for leisure or for utility) in the online setting. This is also premised on Guba and Lincoln's (1994) recommendation of post-positivism as one of the several paradigms that might be used in the study of human behaviour, which, in this case, is consumer behaviour in adopting EC.

Similar studies which investigated the best ways of adoption and successful implementation of EC in different contexts also used the post-positivist approach effectively. They echoed its importance for understanding the complex nature of social science phenomena. For example, in the context of the USA, Gale and Beeftink (2005) used the post-positivism approach to interpret the process of tourist satisfaction evaluation by developing a tourism behaviour model and then using the mixed methods to collect data in order to gain insights into the complex tourism experiences. In like manner, as EC is a complex concept and its adoption is multi-factorial, the postpositivism approach could expand our knowledge (Given, 2012) and help to shed light on the processes of adoption in both the quantitative and qualitative contexts. This will make it possible to achieve the research objective of identifying and investigating the key factors that influence EC adoption in Nigeria through the use of a natural setting, while also allowing the gathering of contextual data. This requires the empirical testing of a proposed model (an extended TAM approach) using quantitative data and a semi-structured interview technique to achieve more in-depth understanding of the data. In this way, the approach helps to uncover meanings from people about their multiple interpretations of reality.

4.4 Research Approach

Saunders, Lewis and Thornhill (2015) defines the research approach as the path taken for data collection and the testing of the phenomenon, concept, theory or framework that is being studied. These include deductive and inductive approaches. Moreover, it is very important to decide which one works best with the research problem (Soiferman, 2010).

Deductive and inductive approaches

Deductive approach advances on theories derived from the academic literature and uses data collected for the research to evaluate propositions or hypotheses related to an existing theory (Bryman and Bell, 2015). The authors explained further that it is the theory that guides such research. This is because it is based on theoretical frameworks, in which observations and findings are deduced from theory. On the other hand, an inductive approach develops a theory based on the result of the analysed data collected for the research. In other words, theory is the outcome of the research (Saunders, Lewis and Thornhill, 2015; Bryman and Bell, 2015).

Creswell and Plano Clark (2007) stated that the deductive researcher “works from the ‘top down’, from a theory to hypotheses, and to data, in order to add to or contradict the theory”. In contrast, Onwuegbuzie and Leech (2005) defined the inductive researcher as someone who works from the ‘bottom up’, by using the views of participants to build broader themes and generate a theory interconnecting the themes. Many researchers associate these two broad methods of reasoning (deductive and inductive approaches) with quantitative and qualitative research approaches, respectively (Collins and Hussey, 2009; Creswell, 2014).

According to Creswell and Creswell (2018), all research has a theoretical view that explains how the knowledge in a particular field is developed. The present research bases its theoretical frameworks on the environmental psychology of the SOR and the TAM, in which observations and findings will be deduced from the theories by seeking to build on existing literature and complement these theories by addressing the problem of low adoption of EC as a technology innovation. Based on the developed model, sets of hypotheses are derived to collect quantitative data and test the propositions of the theory. Through hypotheses and measuring facts, conclusions to the research’s phenomena and realities will be gained (Gill and Johnson, 2010). A researcher is encouraged to deduce hypotheses from a theory that is relevant to the concept.

Creswell (2014) highlights the possibility of employing both approaches in different stages of the same study. Given the primary aim of this study, a deductive reasoning involving the testing of several hypothesised relationships between the proposed

model variables is deemed an appropriate approach. Primarily, this study adopts a deduction-based approach, which is linked to a realist ontology and post-positivist form of epistemology that agrees with the reality-existence assumption that “causes probably determine effects or outcomes” (Creswell, 2009). However, since the real world is not simple, and little is still known about Nigerian customers’ EC behaviour regarding their affective responses, inductive reasoning is also used. This can facilitate greater understanding of the meanings that customers in Nigeria attach to EC. These two approaches are used in different stages.

The deductive approach (quantitative) provides guidance for measurements and statistical tests (Casula, Rangarajan and Shields, 2020). Deduction is used in the first stage to develop the theoretical model, based on the related literature. Quantitative data are collected and statistically analysed in order to test the hypothesised associations between the model variables. Induction is then used additionally at a subsequent stage when qualitative data are collected and classified in order to arrive at inferences and patterns regarding the adoption of EC in Nigeria. The different features of the two approaches adopted in this study are presented below in Table 10.

Entity	Deduction	Induction
Definition	From general to specific	From the specific to the general
Argument	Based on laws, rules, or other widely accepted principles	Based on experience or observation
Researcher	Works from the ‘top down’	Works from the ‘bottom-up’
The position of theory	From a theory to hypotheses to data to add to or contradicts the theory	Using participants’ views to build broader themes and generate a theory interconnecting the themes
Methods	Quantitative	Qualitative

Table 10: Research approach - deductive and inductive features
Source: Adapted from Creswell and Plano Clark (2007)

The study’s proposed integrated model is tested to identify cause-effect relationships in order to provide a better understanding of the main research problem, achieve the research objectives, and provide insights into the research questions. Next, the research utilises an inductive approach (qualitative) to provide deeper and broader insights (Frey, 2018). Semi-structured interviews are proposed and conducted to secure more insight into the key factors and barriers specifically in relation to EC adoption by Nigerian customers. Having provided justifications for using both the deductive and inductive approaches, the next section considers the research strategy.

4.5 Research Strategy

One of the two major categories of the research process is the research strategy and the other is the research design (Bryman and Bell, 2015) - the latter is discussed in Section 4.6. By definition, a research strategy is a broad plan of action to achieve the study objectives (Saunders, Lewis and Thornhill, 2015). Further, Bryman and Bell (2015) identified two research strategies, namely quantitative and qualitative. However, Johnson, Onwuegbuzie and Turner (2007) and Denscombe (2008) earlier argued that mixed methods research is one of the three major research strategies, namely quantitative research, qualitative research, and mixed methods research. Historically, towards the end of the 19th century, quantitative research was considered the only way to conduct research and was characterised by an implied objectivity. However, it was at the start of the 20th century that the qualitative research method emerged, and this research strategy holds that “social reality was constructed and thus was subjective” (Onwuegbuzie and Leech, 2005, p. 269).

While both positivists (quantitative) and interpretivists (qualitative) view their paradigms as most appropriate for research, Howe (1988) advocated that qualitative and quantitative research paradigms and their associated methods can indeed be mixed. He further stressed that a mixed method research has moved beyond the argument of qualitative versus quantitative research.

Quantitative Research

Onwuegbuzie and Leech (2005) defined quantitative research as research in which “mathematical and statistical procedures are utilised to explore, to describe, to explain, to predict, and to control social and behavioural phenomenon”. In quantitative research, the intent is usually to test theories deductively, searching for evidence to either support or to refute the hypothesis, while qualitative researchers gather information from individuals to identify themes which allow them to develop theories inductively (Creswell and Plano Clark, 2007). The quantitative researcher believes in maintaining an objective approach to the experiment by remaining in the background. Steps are taken to ensure that any preconception is minimised so that the information gathered is not contaminated by the personal beliefs of the researcher (Creswell and Plano Clark, 2007).

The concept of identifying relationships between variables, correlations of different variables, or comparison of the values of particular variables, across persons or other units of analysis, is fundamental to quantitative research (Frey, 2018). Surveys are generally associated with the quantitative approach and allow the low-cost gathering of quantitative data that can be representative of the whole population (Saunders, Lewis and Thornhill, 2007). Surveys can be carried out in person, over the phone, by post, through a website, or via email (Easterby-Smith, Thorpe and Jackson, 2012). Quantitative research strategies include survey, experiment, and cross-sectional and longitudinal studies. Quantitative studies show relationships of numerical data or differences (Sabi et al., 2017). Whilst it is objective where a human is involved, it has the limitation of neglecting the meanings to their experiences. This study takes cognisance of this limitation. According to Orlikowski and Baroudi (1991, p. 13) “Meaning and intentional descriptions are important, not merely because they reveal subjects' states of mind which can be correlated with external behaviour, but because they are constitutive of those behaviours”.

Qualitative Research

In contrast, qualitative researchers identify their personal stance with regard to how their experiences and backgrounds shape the interpretations they make through the coding and theme process (Creswell and Plano Clark, 2007). Qualitative research includes biography, interviews, action research, grounded theory, case study and ethnography (Creswell, 2014). Conversely, qualitative research is considered as subjective and mostly concerned with reporting in-depth views of participants and elicitation of meanings (Creswell, 1994).

The major difference between the two strategies is centred on how they view the nature of reality. The quantitative theorists believe “in a single reality that can be measured reliably and validly using scientific principles,” while the qualitative theorists “believe in multiple constructed realities that generate different meanings for different individuals, and whose interpretations depend on the researcher’s lens” (Onwuegbuzie and Leech, 2005, p. 270). In terms of the research question asked, quantitative research is better at answering “what” and “how much” questions, while qualitative research is better at answering “how” and “why” questions.

Features	Quantitative	Qualitative
Data collection strategy	Gathering numeric data	Collecting text, e.g., interview data
Data types and researcher	Discrete set of variables. Testing specific hypotheses or research questions	Participants' views recorded by the researcher
Data collection Instrument	Validated items (e.g., survey questionnaire)	Researcher
Ontology assumption	Believe in a single reality that can be measured reliably and validly using scientific principles. Objectivism	Believe in multiple constructed realities that generate different meanings for different individuals, and whose interpretations depend on the researcher's lens. Constructivism
Epistemology	Positivism - Generalise and draw inferences about the general population from a selected sample	Relativism - Analyse a phenomenon using individuals' experiences and perceptions of the phenomena. Each individual has a different view of the world
Relationship	Researchers separate themselves from the participants. Objective, no biases	Researchers and the participants have interactive relationship. Subjective, biased
Axiology	Research should be value-free	Research is influenced to a great extent by the values of the researcher
Setting	Experimental / artificial	Natural
Instrument of data collection	Validated items from previous studies	The researcher
Data collection means	Survey, etc	Participant's views/texts/words
Analysis	Statistical (descriptive or inferential), visual representations for the data using graphs, plots, charts, and tables	Thematic, coding, categorising
Conclusions	Drawn from logic, evidence, and argument	Understand factors that cannot be measured with tests or surveys
Approach	Deductive	Inductive
Intent	To test theories, searching for evidence to either support or to refute the hypothesis	To gather information from individuals to identify themes which allow them to develop theories
Questions	Close-ended	Open-ended

Table 11: Research strategy (qualitative and quantitative)

Source: Adapted from Onwuegbuzie and Leech (2005); Creswell (2005); and Creswell and Plano Clark (2007)

4.5.1 The Mixed-Methods Approach

Historically, the debate over the relative value of each research methodology has been ongoing since the start of the 20th Century (Onwuegbuzie and Leech, 2005). Nevertheless, in the social and behavioural sciences, mixed methods research (MMR,

hereafter) is becoming increasingly articulated in research practice, and has been recognised as the third major research approach, along with qualitative research and quantitative research (Denscombe, 2008). The cited author expounded on the purpose of mixed methods, which is to improve accuracy (positivist assumptions), and also described the value of mixed methods for getting a more complete picture of a phenomenon and a means to build analyses, which is perhaps more of interpretivism assumptions. In other words, MMR synthesises ideas from qualitative and quantitative research (Creswell, 2009).

In support, Johnson, Onwuegbuzie and Turner (2007) summarised MMR this way: "Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration" - p.123. Johnson, Onwuegbuzie and Turner (2007) went further to assert that MMR is an approach to knowledge (theory and practice) that recognises the importance of traditional quantitative and qualitative research but also offers a powerful third paradigm choice that often will provide the most informative, complete, balanced, and useful research results. Stewart and Floyd (2004) argued that researchers have recognised that traditional survey research has limits, and other forms of inquiry such as visual analysis are needed. MMR researchers believe qualitative and quantitative viewpoints and methods would be useful as they address their research questions. For instance, Denscombe (2008) found in leisure sciences that MMR represents a continuum of combining methods and may provide the most useful information for many of the research questions asked. It also involves the use of both approaches in tandem so that the overall strength of a study is greater than what is derived from either qualitative or quantitative research (Creswell and Plano Clark, 2007).

According to Russek and Weinberg (1993), each method (qualitative and quantitative) provides distinct strengths to broaden the study and affords deeper insights into the nature and extent of the research concepts. Johnson, Onwuegbuzie and Turner (2007) noted this debate continues to affect how we view knowledge, what we look for, what we expect to find, and how we believe we are to go about finding and justifying

“knowledge.” Creswell and Plano Clark (2007) observed that one method alone cannot answer all the questions that will emerge in the course of researching a topic. MMR acknowledges that all methods have inherent biases and weaknesses and using a mixed method approach increases the likelihood that the sum of the data collected will be richer, more meaningful, and ultimately more useful in answering the research questions. The next section places a special emphasis on the justifications for using mixed methods in this research.

4.5.2 Rationale for Mixed methods

The present research employed a mixed method strategy – using a combination of both qualitative and quantitative data collection techniques and analysis procedures in tandem so that the overall strength and benefits of the study are greater than from either of the two methods (Saunders, Lewis and Thornhill, 2015; Maxwell, 2018). This helps to bridge the gaps between quantitative and qualitative research (Onwuegbuzie and Leech, 2004) and to establish a meaningful contribution to investigating how customers respond to technology acceptance by combining both their numerical and experiential data. The research strategy employed in this present study involved an online survey questionnaire for collecting the primary research data and subsequently a semi-structured interview, for quantitative parts and qualitative parts, respectively. Generally, EC adoption research has recommended more mixed methods, as the lack of genuine integration of qualitative and quantitative designs in social sciences has been frequently criticised (Greene, Caracelli and Graham, 1989; Bagozzi, 2007; Bell and Bryman, 2007; Pappas et al., 2014; Peiris, Kulkarni and Mawatha, 2015).

A major rationale for combining the two approaches is the complementarity nature of mixed methods. Maxwell (2018) further justifies this by asserting that the answers to the ‘what, how and why’ types of research questions are important for policy and practice, and a mixed methods study could be more capable of answering them. Specifically, this research (the research objectives and the research questions are stated in Chapter 1, Sections 1.5 and 1.6) aims to investigate the various factors that may have an impact on the adoption of EC by Nigerian customers, as well as how these key factors influence their emotional responses, which could be consequential to online transactions. Moreover, it seeks to answer how the identified factors help to

explain why customers' affective responses (both positive and negative) influence EC adoption. For instance, investigating the causal relationship between EC adoption and online retailers' reputation addresses the 'what' questions (quantitative). However, a qualitative approach will be better and useful in answering the 'how and why' questions. For example, the research investigates "how do emotional responses from customers impact their EC adoption and online purchase intention?" Moreover, it asks: "why did we achieve these results in relation to EC adoption in the Nigeria context?" Consequently, both quantitative and qualitative techniques are used in the study. In this respect, robust in-depth answers to what, how and why people choose to adopt or reject technology are discovered using mixed methods. The answers to these types of questions are important for policy and practice (Frey, 2018).

Accordingly, Yin (2009) and Sabi et al. (2017) stated that quantitative studies show relationships and numeric analysis but may not explain the reason for their existence in the first place. Therefore, the qualitative approach is further utilised to better capture the reasons for the relationships between the constructs and also explore customers' intentions. Vijayasathy (2004) noted this could provide revealing evidence so that a broader, richer and more in-depth understanding of why consumers accept or reject electronic medium for purposes of commerce can be gained. Similarly, Guba and Lincoln (1994) were of the opinion that mixed method strategies may make "perfectly good sense" and Johnson, Onwuegbuzie and Turner (2007) amplified a healthy outcome from a three-paradigm methodological world because each approach has its strengths and weaknesses, and times and places of need.

From the organisational context, George and Dane (2016, p.52) acknowledged the challenges confronting the study of affect, emotion, and decision-making and suggested that approaching "these challenges head-on in both qualitative and quantitative studies has the potential to have big payoffs in terms of both increasing our understanding of affect, emotion, and decision-making in organisations as well as stimulating future theorising and research on this topic, both in the field and the lab." The integration of qualitative and quantitative approaches is an interesting issue which has generated and continues to generate much debate (Bryman, 2006; Morgan, 2007). Notwithstanding, Cook and Reichardt (1979) advocated for researchers not to be restricted to either paradigm (quantitative or qualitative) when they can utilise both

and derive the best outcome. This largely depends on the research design which includes the aims and objectives of the study, the rationale for employing mixed methods, and the weighting of each method.

In explaining the findings of a study, some researchers have suggested triangulation, a method used to increase the credibility and validity of a research finding (Cohen, Manion and Morrison, 2000). Further, Noble and Heale (2019) stated that combining theories, methods or observers in a research study can help ensure that fundamental biases arising from the use of a single method or a single observer are overcome. For example, methodological triangulation is recommended by Erzberger and Kelle (2003) to facilitate the integration of qualitative and quantitative findings. This is dependent upon the outcome from the study's analysis, whether it is (1) convergent, where qualitative and quantitative findings lead to the same conclusion; (2) complementary, where qualitative and quantitative findings can be used to supplement each other; or (3) divergent, where the combination of qualitative and quantitative findings provides different outcomes (Erzberger and Kelle, 2003). Since this research adopts sequential mixed methods approach, where quantitative findings clearly inform an in-depth qualitative investigation (Östlund et al., 2010), the rationale for integrating the two methods is complementarity, and it is explanatory-based. In other words, the qualitative results support, complement and offer more explanations to the quantitative empirical findings. Table 12 summarises various justifications from prior studies for why scholars integrated mixed methods.

Rationale for Combination	Source/Author
Complementarity: Need arises to elaborate, enhance, and clarify the results from one method with the results from the other method	Greene, Caracelli, and Graham, 1989; Frey, 2018
Explanatory: To explain quantitative results with qualitative data leading to a more in-depth understanding of quantitative results (cultural or contextual relevance), e.g., to explain some of the interesting/unexpected results.	Creswell and Creswell, 2018
Validation / Verification: Using qualitative data to interpret, clarify and describe quantitative results	Sieber, 1973; Sechrest and Sidana, 1995
Supplementary: Using qualitative method to supplement the finding from the quantitative study, e.g., to provide important contextual interpretation of the statistical analyses	Bryman and Bell, 2015
Triangulation: The use of one approach to test or confirm the results of the other. Seeking convergence and corroboration of results from different methods studying the same phenomenon	Frey, 2018; Greene, Caracelli, and Graham, 1989
Expansion: When seeking to expand the breadth and range of inquiry by using different methods for different inquiry components	Greene, Caracelli, and Graham, 1989
Initiation: To discover paradoxes and contradictions that lead to a reframing of the research question	Greene, Caracelli, and Graham, 1989
Significance enhancement /development of analysis: Using the results from one method to help inform the other method To develop analysis in order to provide richer data, augment interpretation, and usefulness of findings	Rossmann and Wilson 1985; Greene, Caracelli and Graham 1989; Collins, Onwuegbuzie and Sutton, 2006
Probing: To probe a data set to determine its meaning	Sechrest and Sidana 1995
Estimation of error: To provide some basis for estimating possible error in the underlying measures	Sechrest and Sidana 1995
Better instrument development: Qualitative research can assist the quantitative component of a study by helping with instrument development	Sieber, 1973; Creswell and Creswell, 2018; Frey, 2018
Facilitating participant enrichment: Quantitative data can prepare the ground for the qualitative research data collection process, e.g., by facilitating the selection of the people to be interviewed / optimising the sample using techniques that include recruiting participants	Collins, Onwuegbuzie and Sutton, 2006; Bryman and Bell, 2015
Comparison: To understand the differences and similarities among several case studies	Creswell and Creswell, 2018
Evaluation: To understand the need for the impact of a programme, intervention, or policy (a formative and summative evaluation)	Creswell and Creswell, 2018
Findings' credibility: To improve the integrity of findings; assessing the appropriateness and/or utility of existing instruments, creating new instruments	Bryman, 2006; Collins, Onwuegbuzie and Sutton, 2006

Table 12: Rationale for mixed methods
Source: Developed by the author

Table 13 showcases key relevant previous studies of TAM, SOR and TAMSOR that utilised the mixed methods approach. They are from different countries, mainly advanced contexts such as the USA, UK, and Canada; the Asian countries (such as India, China, and Vietnam); and Spain, a country in Europe. Evidently, there is a clear gap in the literature about African countries employing a mixed method approach for the purpose of creating a nuanced understanding through consumer research of the retailing sector that is characterised with a robust theoretical appeal as highlighted in the Table 13 below. This study attempts to fill that gap.

S/N	Country	Author	Research Area	Sample Size & Source	Methods and Analysis Technique	Independent Variable	Dependent Variable	Findings
1.	India	Agrawal and Mittal (2022)	Optimizing customer engagement content strategy in retail and E-tail: Available on online product review videos	97 videos on YouTube/18452 comments	Mixed Methods quantitative and qualitative Conventional content analysis (Sentiment analysis; Poisson and negative binomial regression applicability of MRT, CET and SOR	Comments, replies, positive and negative emotions	Like (Purchase Intentions)	Positive sentiment and associated emotions expressed in online customer engagement content available on YouTube videos strongly influenced purchase intentions compared to negative sentiment and related emotions. Replies to comments were also found to be empirically significant and influence purchase intentions
2.	Vietnam	Nguyen Phan Thu Hang (2021)	The factors influencing consumers' online purchasing behavior: a case study of Vietnam	Survey of 900 consumers Interview of 31 customers Convenience sampling method	Mixed Methods Qualitative and quantitative SEM TAM	Risk, usefulness, ease of use, behavioural control, and suitability	Online purchasing behaviour	Risk, usefulness, ease of use, suitability, and behavioural control affected consumers' attitude, attitude affected intent, and intent affected consumers' online purchasing behavior
3.	China	Shi et al. (2020)	Conceptualization of omnichannel customer experience and its impact on shopping intention: A mixed-method approach.	In-depth interview of 16 managers of 8 omnichannel retailers Online survey of 548 respondents	Mixed Methods Qualitative and quantitative SEM PLS Innovation diffusion theory (IDT)	Omnichannel customer experience - connectivity, integration, consistency, perceived compatibility, personalization, flexibility perceived risk	Shopping intention	The model explained 54.5%, 25.2%, and 56.1% of the variances in perceived compatibility, perceived risk, and omnichannel shopping intention, respectively. Perceived compatibility was positively and perceived risk was negatively associated with omnichannel shopping intention.
4.	United Kingdom	Hampshire (2017)	A mixed methods empirical exploration of UK consumer	101 survey participants	Mixed Methods Quantitative and qualitative TAM Framework	Risk, trust and perceived usefulness	System usage	Perceived usefulness significantly and positively influenced UK consumer

			perceptions of trust, risk and usefulness of mobile payments	10 semi-structured interviews Purposeful sampling	Descriptive			attitude which could lead to adoption. UK consumers had significant risk and trust concerns with mobile payments. Perceived trust positively influenced perceived usefulness and mitigated perceived risk, whilst perceived risk negatively influenced perceived usefulness
5.	Spain	Vila and Kuster (2011)	Consumer feelings and behaviours towards well designed websites	Survey of 350 Internet users Seven focus groups (6-8 participants)	Mixed Method Quantitative and qualitative SEM	Positive attitudes, trust, satisfaction and perceived risk. Web security; customer service; quantity and quality of information provided and usability	Purchase intention	A well-designed website was mainly associated with satisfaction and low perceived risk
6.	USA and Canada	Sutton and Rafael (1988)	Untangling the relationship between displayed emotions and organizational sales: The case of convenience stores.	576 Convenience stores 4 case studies/semi-structured interviews	Mixed Method Quantitative and qualitative ANOVA Multiple Regression	Display of positive emotions, Control variables: gender of customers and store attendant, attendant's image, length of line, stock level	Total sales	Store attendants in fast-paced stores with high sales and long lines were less likely to display positive feelings than those in a slow-paced store

Table 13: Prior studies of TAM, SOR and TAMSOR that used MMR
Source: Developed by the author

Having justified the reasons for adopting a mixed methods strategy, the following section examines in detail the research design for this study.

4.6 Research Design

Research designs are types of inquiry within qualitative, quantitative, and mixed methods approaches that provide specific direction for plans and procedures in a research study - from broad assumptions to detailed methods of data collection and analysis (Creswell and Creswell, 2018). The selection of a research design is based on the nature of the research problem or issue being addressed, the researchers' personal experience, resources and the audience for the study (Creswell, 2014).

Brewer and Hunter (2006) pointed out that one cannot separate the methods of research from the larger process of design in which it is embedded. Whilst some action plans involving using mixed methods are convergent where triangulation is used, others are concurrent in their designs, i.e., both quantitative and qualitative methods are being carried out simultaneously. Moreover, in some studies, the two methods are not used concurrently but sequentially. In simpler terms, sequential design involves using two phases, with the second phase building on or extending the first phase of research. This allows the use of one method to develop the second method - for example, by using qualitative interviews or observations to develop a survey questionnaire or by further exploring the results of a quantitative survey through an interview.

This study employs a two-part, explanatory, sequential research design of using a mixed method (both qualitative and quantitative data collection techniques and analysis procedures) (Saunders, Lewis and Thornhill, 2015; Maxwell, 2018). A type of the mixed method design is explanatory if it starts with the quantitative and is then followed with the qualitative to seek explanations to the quantitative findings. However, it is exploratory if the first phase uses the qualitative and is then followed by the quantitative.

The first phase of this research adopted a survey-based, quantitative approach using numerical data. Then, in the second phase, the research utilised a qualitative approach to provide deeper and broader insights into the key findings extracted from the quantitative phase of the study (Frey, 2018). This means the quantitative data collection and data analysis preceded the qualitative one; therefore, the qualitative

data type played a supplemental role and enhanced interpretation of the quantitative findings (Schoonenboom and Johnson, 2017).

The quantitative data collection stage of this study facilitated the selection of the people to be interviewed in that some of the survey respondents indicated an interest in participating in the qualitative research data collection process. Quantitative-dominant mixed methods research is the type of mixed research in which one relies on a quantitative, postpositivist view of the research process, while also recognising that the addition of qualitative data and approaches is likely to be beneficial for the research (Johnson, Onwuegbuzie and Turner, 2007). This is adapted and depicted in the figure below – showing how the MMR will be executed via the methods, the sequence and the weight. These three attributes are portrayed in Figure 17- first is the quantitative method as ‘QUAN’ in capital letters, illustrating its principal component in the design, followed by the qualitative method represented as ‘qual’ in small letters, indicating its supplemental role within a single study.

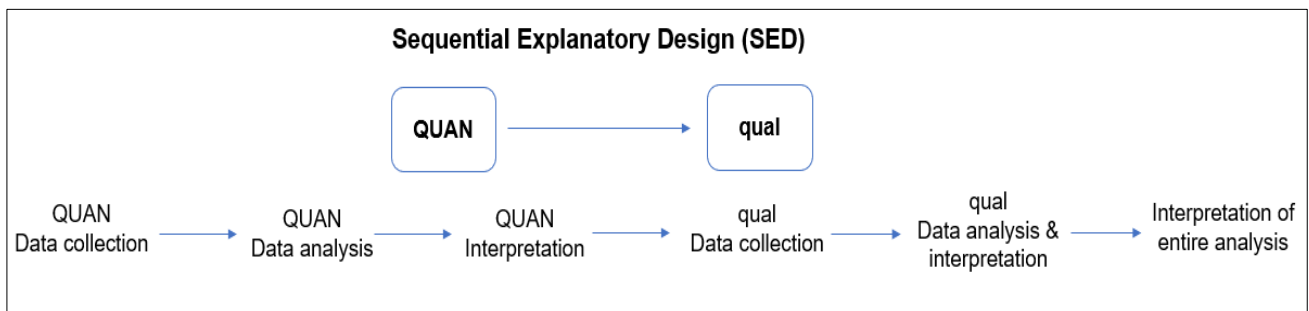


Figure 17: Mixed methods sequential explanatory design (SED)

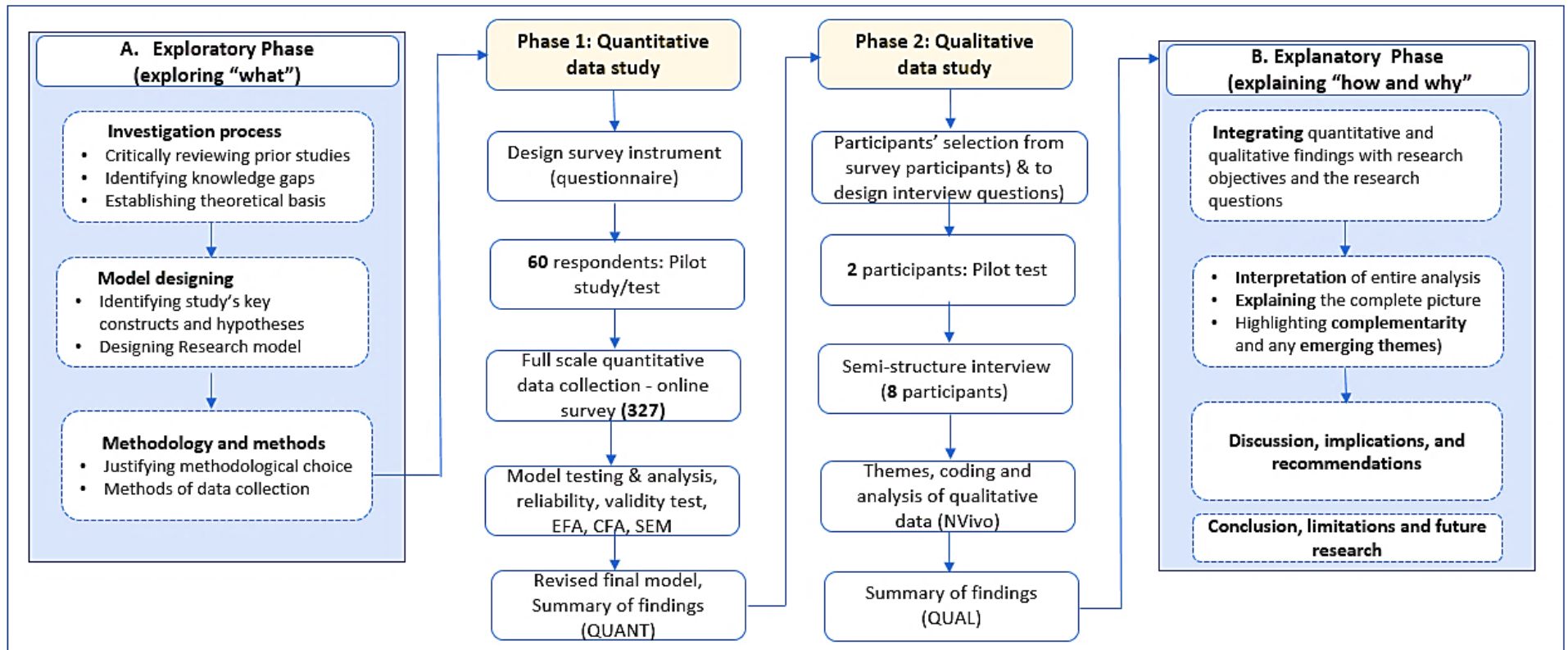
Source: Adapted from Morse, 1991 in Creswell and Creswell (2018)

Note: Quan is quantitative; Qual is Qualitative

Sieber (1973) advocated the integration of research techniques within a single study, suggesting that such a combination opened up “enormous opportunities for mutual advantages in each of the designs, data collections and analyses” p.1337. Onwuegbuzie and Leech (2005), in support, advocated that bridging the gaps between the two methodologies could result in complementarity of research outcome. The current study’s aim and objectives reveal that both exploratory and explanatory motives are present. For these two phases, a mixed methods approach that involves both quantitative and qualitative techniques seemed suitable, as suggested by the post-positivist paradigm. The exploratory phase sought to investigate the Nigerian

customers' perspectives on the interconnection of their affective response (human emotions/how they feel) in adopting EC, an area that is still less explored. Moreover, from a theoretical point of view, the use of TAMSOR as seen in Table 6 is still very much absent in Nigeria. The explanatory phase, which is purposely to explain a phenomenon by looking for causes and reasons (Adler and Clark, 2008), answered the "why" question, e.g., Section 1.6 of the current study.

The bigger picture of the two-part MMR sequential research design on the next page shows the visual presentation of both the qualitative and quantitative data collection and analysis procedures. Figure 18 sequentially and systematically connects various parts of the research process, such as identifying the study's variables, choice of data, statistical tests, etc. It also shows that the reviewing of literature is a process that continues throughout the research phases.



•-----> **Literature Review** ----->•

Figure 18: The present study's research design showing sequential explanatory process

Source: Developed by the author

As seen in Figure 17, in the exploratory part of the study extensive literature review was conducted to explore the various theories and models and the EC adoption factors, and to identify their potential influences towards the adoption of EC in Nigeria (reviewing the literature continues to the end). In the explanatory phase of the study, a conceptual model TAMSOR incorporating the critical factors influencing the adoption of EC in Nigeria was developed. The next section considers data collection and the research methods.

4.7 Research Methods for Data Collection

Research methods describe the tools and resources used for data collection, and the tools and techniques applied for data analysis. According to Krathwohl (1997), the key activity in a research project is data collection, which depends on the study objectives and is influenced by the researcher's environmental factors. In this research, the data collection methods were selected based on the underlying philosophy and research objectives. As discussed earlier in section 4.5, the study employed a mixed methods approach, which suggests the use of mixed quantitative and qualitative data collection methods. This section discusses the data collection techniques adopted for each phase of the research.

As indicated earlier, the study adopted two data collection techniques: questionnaires and semi-structured interviews. The quantitative phase utilised survey questionnaires via an online survey and e-mail invitation as the data collection methods to measure and test respondents' emotional responses and shopping intentions. This saves time and costs, as well as making primary data collection easier (Gill and Johnson, 2010). The survey questionnaire was written in English language. Google drive was utilised to host the research instrument survey and collect data in the first stage of the study, through social media recruitment via Facebook. Previous research in the area of online shopping has claimed online surveys are one of the best ways of data collection (Chen and Barnes, 2007). Additionally, an online survey is suitable for this research topic on EC.

In the second stage, after participants had submitted their responses to the online survey anonymously, they were directed to a separate page that provided the participant information sheet for the interview and asked them to submit their contact

details if they were interested in being interviewed. Primary data was predominantly generated from a self-completed questionnaire to measure relationships (Bryman and Bell, 2015) and from semi-structured interviews to uncover customers' experiences (Malhotra et al., 2012). A critical review of the literature e.g. academic journals provided theoretical insights as secondary data sources - a helpful prerequisite to the collection of primary data in designing the research and also validated and justified the outcomes (Saunders, Lewis and Thornhill, 2015).

4.8 Phase One: Quantitative Approach Using a Questionnaire-Based Survey

The research instrument (questionnaire) was developed after an extensive review of the literature related to EC adoption factors and customers' responses. With respect to the design of the questions, the suggestions of Lietz (2010) that questions should be constructed to be as clear, simple, specific and relevant for the study's research aims as possible were taken into consideration. Each construct was measured using a five-point Likert scale, with 1 and 5 indicating 'strongly disagree' and 'strongly agree' endpoints, respectively, to explore participants' agreement or disagreement with each statement. Research shows that a desirable Likert-type response scale length ranges from five to seven response options (De Winter and Dodou, 2012). Furthermore, a Likert scale is commonly used to measure attitudes (Miller and Brewer, 2003). A Likert scale was adopted in the survey partly because the reliability of Likert scales tends to be good and partly because it affords respondents many options to choose when providing their answers (Oppenheim, 2009). Thus, the final questionnaire as shown in Appendix A had considered all the necessary recommendations.

As mentioned previously, all measurement scales used in this study's questionnaire were based on a combination of previously validated instruments in the EC adoption field. Appendix C shows various sources from which the current research instrument has been developed. Surveys are commonly used because they allow researchers to collect a considerable amount of data by investigating a large number of subjects in a highly effective manner, thereby facilitating the generalisability of research findings to the whole research population (Sekaran, 2003; Saunders, Lewis and Thornhill, 2012). Therefore, it was necessary to conduct a survey to determine if the generalisations about the key factors for EC adoption could be accepted. Since CFA/SEM model requires a larger sample than other multivariate techniques, Muthén and Muthén

(2002) recommended between 150 and over 300 as sample size. Hence, in this study, quantitative data from over 300 participants was required on the basis that this number (sample size) would provide the researcher with sufficient data to be able to generalise the research findings to the whole research population. Thus, the researcher chose to utilise a survey questionnaire to collect the needed quantitative data in the first phase of the current study.

4.8.1 Research Questionnaire Development

In EC adoption studies as seen in Tables 4, 5 and 6, many researchers have used the survey instrument to collect data. The questionnaire for this study was developed in English language, which is the official language of Nigeria, and the cities of sampling are urban, with a majority of the residents who are internet users being literate (Esho and Verhoef, 2021). The questionnaire contained a detailed brief and clear instructions and was arranged to facilitate ease of response. Respondents were advised through the information letter (Appendix B) about the nature of the research, the researcher's background, and why the research was being carried out. They were also informed of the maximum time frame for completing it: between 15-20 minutes.

The questionnaire was supported with the 'Participant Information Sheet' (Appendix B) that contained detailed terms and clear instructions relating to the completion of the validated questionnaire. It also informed the participants about the nature, background and purpose of the research. Further, respondents were assured of privacy and confidentiality and offered the opportunity to receive a copy of the research upon its completion, should they wish to. Also, as suggested by Rowley (2014), to ensure order and clarity the items were arranged under specific themes and section headings, with shorter questions appearing first. The different sections included concise instructions on how to complete them.

The arrangement and length followed the suggestions of Saunders, Lewis and Thornhill (2009) that a longer and more detailed survey/questionnaire could be used when the population was very specialised in the topic. The questionnaire was structured and arranged as follows:

Part One: EC usage (An indication of yes/no)

Part Two: Background information about the participants: Demographic questions such as gender, age, location, education, and occupation

Part Three: Key factors for EC adoption and customers' attitudes towards it

Section 1: Internal factor

- Website quality

Section 2: External environmental factors

- Reputation (online retailers')
- Cultural factor
- Legal factor
- IT infrastructure

Section 3: Positive and negative affective responses (emotions)

- Positive emotions (happy, interested, satisfied, like)
- Negative emotions (angry, worried, frustrated, scared)

Section 4: Technology factors

- Perceived ease of use
- Perceived usefulness

Section 5: Individual-related factors

- EC awareness
- Compatibility

Furthermore, the last section (6) of the questionnaire (also on the same five-point scale question) was added to investigate customers' intention to purchase online, totalling 12 factors. Appendix D presents the definitions of the study's constructs.

4.8.2 Ethical Considerations

According to Zikmund (2010) and Saunders, Lewis and Thornhill (2012), it is important to pay attention to ethical issues in all research, since this establishes trust between researchers and research participants and enhances the overall reliability and credibility of the findings. Prior to any data collection (Questionnaire and Interviews), the research design application was completed and submitted to the University Ethics Committee for approval. In April 2020, the application to implement the research obtained ethical approval (Ref: 20LBS008). The study ensured ethical conduct by following the ethical standards laid down by the Liverpool John Moores University Research Ethics Committee. The research was conducted according to the prescribed guidelines, including observing confidentiality of information obtained and accessed during the conduct of the research. The informants were informed of their rights to remain anonymous and to withdraw their participation whenever they so desired, and there was a statement in the consent form advising them of such options and asserting their confidentiality.

4.8.3 Pilot Study

A pilot study is defined as a small study for helping to design and develop research instruments (questionnaires) prior to a full-scale study and to obtain early indications that the validity and reliability for the research instrument to be used are at an acceptable level (Arain et al., 2010; Saunders, Lewis and Thornhill, 2015). Measurement items of the research constructs had been established from existing measures used in previous studies in order to ensure the content validity of the scale used. The main reasons for using these scales were: first, the scales were highly suitable in the context of this study; second, the scales had been extensively employed in the literature for measuring similar constructs. Subsequently, two research experts reviewed the developed survey instrument (questionnaire) to rectify any errors, potential wording confusion and ambiguous information. The pilot study was conducted to further assess the validity and reliability of the measurement items in the questionnaire. The internal consistency of the 12 constructs was assessed using Cronbach's alpha. There were no significant complaints from respondents about understanding the questionnaire's instructions. The pilot study was based on a convenient sample of 60 internet users who completed the survey.

4.8.4 Validity and Reliability of the Questionnaire

According to Saunders, Lewis and Thornhill (2015), a valid questionnaire is one that enables the researcher to collect the best possible accurate data. Reliability, on the other hand, means the consistency of the collected data in different research settings. The next sections discuss the validity and reliability issues of the research in detail.

A) Validity

Content validity is the most widely recognised type of validity, employed to measure the concepts of the survey questions (Bryman and Bell, 2015). Content validity of the research instrument was enhanced by outlining the research topic through an intensive literature review, and using a panel of two experienced academics to judge the adequacy of the questionnaire for assessing the intended concepts. Feedback was obtained about the length of the instrument, the format of the scales, construct validity, and questions' ambiguity. In this way, the content validity of the instrument was assessed.

According to Kumar (2014), research validity is the degree of precision to which the researcher measures what they set out to measure. Thus, validity answers the question of whether the actual measurement corresponds to the intended measurement. Validity can be viewed from two dimensions – internal and external. Internal validity ensures that the researcher investigates what they claim to be investigating, while external validity is the extent to which the research findings can be generalised to a wider population (Winter, 2000). However, one of the most common type of validity in the social sciences is content validity (Sekaran, 2003). Content validity refers to the degree of adequacy with which the research instrument covers all aspects of the intended research concepts (Saunders, Lewis and Thornhill, 2009; Sekaran, 2003). In simpler terms, content validity refers to the extent to which all sides of a given research construct are represented by questions in the research instrument.

To ensure the current research instrument's validity in general and content validity in particular, the following steps were taken:

- The development of the research instrument was based on related literature review and previously validated questionnaires.

- A panel of two experienced individuals (two research experts from LJMU) reviewed the questionnaire. Suggestions and recommendations provided by the experts were incorporated into the final version.
- A pilot study was conducted to find possible difficulties and problems respondents might face while answering the questions. Comments about clarity of wording, questions' order, instructions and time were taken into consideration in preparing the final version of the questionnaire.

B) Reliability

Reliability is concerned with the robustness of the study's survey instrument and the extent to which it will produce consistent findings if replicated under different conditions (Saunders, Lewis and Thornhill, 2015). The Cronbach's alpha (α) coefficient is considered the most frequently used test of inter-item consistency reliability (Saunders, Lewis and Thornhill, 2009). Therefore, in order to assess the internal consistency of the measured items in the questionnaire for the current study, a Cronbach's alpha test was carried out (α) for the 12 constructs using IBM SPSS version 27. All Cronbach's alpha values had a suitable internal consistency of the measurement scale higher than the minimum 0.70 value required. (Field, 2009; Hair et al., 2010). The summary of the reliability result for the pilot study is presented in Table 14.

S/N	Constructs / Factors	No of Items	Labels	Cronbach's Alpha α	Comments
1.	Website Quality	8	ETAILQ	.900	Accepted
2.	Emotion: Positive	4	CERP	.874	Accepted
3.	Emotion: Negative	4	CERN	.846	Accepted
4.	Perceived Ease of Use	5	PEOU	.868	Accepted
5.	Perceived Usefulness	6	PU	.815	Accepted
6.	Reputation	7	REP	.838	Accepted
7.	EC Awareness	7	ECA	.794	Accepted
8.	Compatibility	6	COMP	.932	Accepted
9.	Cultural Factor	5	CRF	.718	Accepted
10.	Legal Factor	5	LGF	.751	Accepted
11.	IT infrastructure	5	ITF	.837	Accepted
12.	Purchase Intention	4	PIT	.740	Accepted
	Total	66	ALL	.918	Accepted

Table 14: Cronbach's alpha (reliability pilot test) results
Source: Developed by the author

4.8.5 Population and Sampling

In general, decisions regarding the sampling method and the minimum sample size required for research purposes are influenced mainly by the availability of resources, specifically information about the research population, financial resources available to the researcher, and time available to select the sample and to collect and analyse the required data (Saunders, Lewis and Thornhill, 2009). The setting of the study was Nigeria. For the quantitative data, a convenience sampling of four urban cities from a target population of adult internet users and online shoppers was used. The four cities are the economic base of the country. According to Urbanisation Research Nigeria (URN, 2015), they are located within the three main zones (clusters) where urbanisation economies are concentrated (see Figure 19). As a result, they are also the most populous cities in the country. The first zone is the South West, including Lagos, a leading tech hub in West Africa (Deloitte, 2018), specialising in ICT with evident urbanisation economies. Ibadan is also a major city that represents the country's highly professional and financial services sector. The second zone is an industrial corridor that runs from Abuja to Kano in the north of the country, and the third and final zone is the South East, including Port Harcourt, one of the main manufacturing cities (URN, 2015).

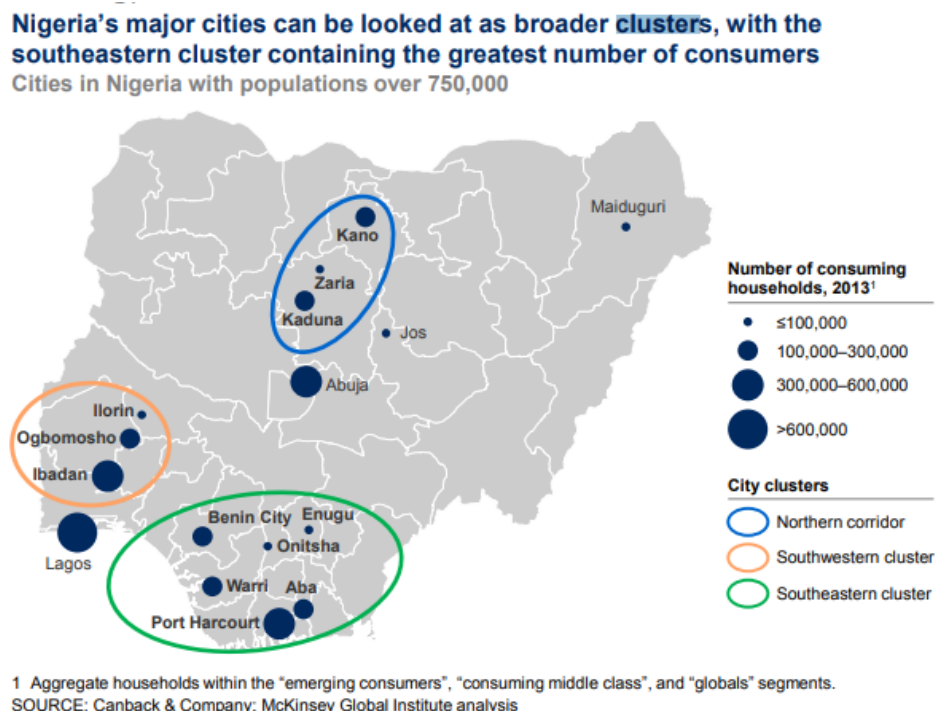


Figure 19: Nigeria's major cities in clusters (research sampling cities)

The current populations of the four cities are as follows:

Abuja = 3,278,000; Ibadan = 3,552,000; Lagos=14,368,000; Port-Harcourt =3,020,000. Source: Populationstat.com (2020)

The total population size for the proposed four cities (N) = 24,218,000 and the degree of error (e) usually is 0.05

Using Yamane's formula for calculating sample size (n) (Yamane 1978):

The sample size (n) = 394

Waseem et al. (2019) in their study of factors affecting the EC potential of any country examined the data for 145 countries for the year 2014. Their findings revealed education level and urbanisation to be significantly associated with EC potential. Thus, this further justified the choice of the four urban cities for data collection. However, other considerations concerning the adequacy of the sample size for specific statistical techniques also influenced the sample size decision (Field, 2009; Zikmund, 2010).

As the current research employed several sophisticated multivariate statistical techniques such as Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM), the researcher ensured that the sample size was appropriate. Hair et al. (2010) recommended 10 cases per variable, and in this study there were 12 different variables, thus resulting in a sample size of 120. However, Kline (2005) cautioned that a sample size less than 100 is considered "small" and may result in technical problems when running the CFA/SEM analysis, and greater than 200 is "large" and acceptable for most models (Kline, 2005). Since CFA/SEM model requires a larger sample than other multivariate techniques, Muthén and Muthén (2002) recommended between 150 and over 300 as sample size. They stated the rule depends on many factors, including the model size, distribution and reliability of the variables, amount of missing data, and strength of the relations among the variables. Based on these rationales, the sample size for this research ($n=327$) seemed adequate to represent the research population and undertake sophisticated statistical analyses.

4.9 Phase Two: Qualitative Strategy Using Semi-Structure Interview

While social research scholars agree that the questionnaire is an appropriate method to collect both quantitative and qualitative data, they admit that it would not enable the

researcher to delve further into a respondent's mind. Therefore, the main goal of interviews, as an alternative data collection method, is to secure an individual's perspective on what is happening in the research context (Patton, 2002). Interviews thus represent a commonly used approach to collect rich and highly informative data regarding a particular research problem and are referred to as purposive conversations in which a researcher collects detailed research-related information in a flexible manner (Robson, 2002). According to Easterby-Smith, Thorpe and Jackson (2012) and Saunders, Lewis and Thornhill (2015), interviews as a method of collecting primary research data can be classified into three types, depending upon their level of formality and structure.

The structured interview is essentially a means of collecting quantitative data via a set of standardised questions asked of all participants. This type of interview is usually employed as an alternative to self-administered questionnaires. The semi-structured interview is a more flexible approach, which still involves the researcher in asking a list of questions about a particular theme but allows the researcher to change their sequence and their wording, to include new questions and/or omit some of the questions s/he intended to ask, depending on how the conversation develops. The unstructured interview is an encounter in which the researcher aims to explore aspects of a given research problem in more depth and, in this case, there may not be any pre-planned sequence or a specific type of questions, with most of the questions emerging from the immediate conversation setting (Easterby-Smith, Thorpe and Jackson, 2012; Saunders, Lewis and Thornhill, 2015).

Semi-structured and unstructured interviews, usually called qualitative interviews, are commonly used methods for data collection in qualitative research (Bryman and Bell, 2012). However, they might be used in different research settings according to the nature of the research problem. For example, in exploratory studies where the researcher's primary aim is to gain a considerable understanding of the participants' perspectives on a particular phenomenon or to develop broad preliminary ideas about a given research problem, unstructured interviews represent the most appropriate data collection technique. On the other hand, semi-structured interviews are more suitable for collecting data for explanatory studies, as the goal is to understand the nature of

relationships among all variables in more specific research situations (Sekaran, 2003; Bryman and Bell, 2012; Saunders, Lewis and Thornhill, 2015).

Given these observations, and consistent with the current research objectives, semi structured interviews were found the most appropriate technique to gather the qualitative data required for the explanatory phase in this study. Hence, they were used as a means of supplementing the quantitative data obtained via the questionnaires, and for providing a richer narrative of respondents' motives and beliefs underpinning their questionnaire responses. The insights gained from the interviews provided an in-depth understanding of the research problem as well as the factors affecting customers' adoption of EC in Nigeria.

4.9.1 Sampling for Semi-Structured Interviews

According to Creswell and Plano Clark (2007), in mixed-methods research, it is possible to use the quantitative sample for further sampling of subjects required for the qualitative dimension of the study. This can operate by choosing respondents, based on their fulfilment of certain criteria, as interviewees who can offer further, qualitative data as a supplement to the quantitative data already collected. This strategy ensures that interviewees possess the appropriate knowledge, as they already meet the criteria for participation in the survey. Hence, they should be good examples.

The number of examples in qualitative interviews should not be too small to prevent the researcher from gaining new insights, and not too large to prevent them from conducting a deep analysis (Onwuegbuzie and Leech, 2007). Essentially, it should be big enough for the researcher to know when saturation has been reached. Hence, the sample size is largely determined by the interview objectives, the quality of the data being collected, and the availability of time, effort, and financial resources. In the current study, the sample size was determined to be ten, and the individuals were selected from the survey respondents using purposive non-probability sampling. The criteria applied to recruit the interviewees were: first, they would be familiar with the EC services and usage; and, second, they had to have completed the survey questionnaire.

4.9.2 Interview Pilot Test

Pilot interviews were conducted with two EC customers to obtain their initial feedback regarding the validity of the factors of interest, the intended interview questions and themes, and the general interview procedures. These pilot interviews helped the researcher to estimate the average time required for completion of the interviews, information that was needed not only for the researcher's planning but also for that of the interviewees. The pilot interviews were useful to the researcher by helping to improve performance during the interview, enable clarity of thoughts, probe and encourage participants to engage in discussion, and facilitate note-taking when needed.

4.9.3 Interview Procedures

The semi-structured interviews were conducted with eight EC customers, following the recommendation by Teddlie and Tashakori (2009) of between 6 -10 participants. The number could be larger or dependent on when saturation occurs, i.e. the point of not getting new information or ideas from the interview. As COVID-19 directive of social distancing was in place at the time of the interview invitation, ten potential interviewees who showed interest via the questionnaire survey were contacted through telephone or e-mail and invited to participate. Eventually, eight participants responded who were willing and available. Before the interview, Participant Information Sheet (Appendix E) was sent to participants; it contained the necessary information about the purpose of the research, the expected interview duration, confirmation of anonymity and confidentiality, the voluntariness of participation, and the interviewee's right to withdraw at any time of the interview. Also, the Consent Form (Appendix F) was e-mailed to participants to acknowledge the interviewee's voluntary participation and to provide the researcher's assurance of confidentiality and anonymity. This was to be read, signed and e-mailed back to the researcher prior to the interview day. Thereafter, each potential interviewee was contacted again to establish the most appropriate date, time, and place for the interview (which was done using Skype and Zoom because of the social distancing directive).

At the start of each interview, the researcher introduced herself and the purpose of the research, and sought an agreement to record the conversation. Questions were asked based on the factors identified in the quantitative stage. This qualitative stage was to

further elicit responses from participants and facilitate more interpretations for the quantitative variables, findings and conclusion of the study. In addition, some other relevant question items were adopted from Jarvenpaa and Todd's (1997) study conducted in the USA on consumer reactions to electronic shopping on the World Wide Web. The interview guide (themes and questions) can be found in Appendix G. These questions were directly related to the research objectives and were asked to all interviewees. However, the order of questions was sometimes changed, and new questions were introduced depending on interviewees' responses (Saunders, Lewis and Thornhill, 2015). The duration was between 30-45 minutes. Using open-ended questions, the researcher was able to gather much richer data, since interviewees were able to speak without any restriction and elaborate on any issue they felt might be important. The procedures were repeated in the same sequence with each interviewee until saturation of the data was reached, where no further marginal information was contributed. This occurred after the eighth interview. Once it became clear that the interviewees were offering no new ideas, the researcher ended the interview exercise, as continuation of the process would not add new insights to the dialogue.

The researcher transcribed the eight recordings. As recommended by Creswell (2014), notes were made by the researcher during the recorded interviews as a means of assisting in the interpretation of the transcripts during subsequent analysis. Moreover, interview recordings and transcripts were stored on password-protected LJMU university computers. The collected qualitative data was then uploaded to the NVivo enterprise software in order to code the data, clarify meanings, organise and explain the data, search for relationships, and gain an understanding of the various dimensions explored. Conducting a qualitative investigation helps to explore the relationship between the variables further (Bryman and Bell, 2015). After the interview, a formal thank you letter was sent to all interviewees.

4.9.4 Interview Validity and Reliability

According to Guba and Lincoln (1994), researchers usually employ two key criteria to evaluate the quality and credibility of their research work, these being validity and reliability. These constructs have already been discussed, validity being noted as the

extent to which the data collection method correctly measures what it is intended to measure, and reliability as concerning the consistency of the measurement instrument over time. In order to ensure the validity and reliability of the qualitative data collected via the interviews, clear and standardised procedures (as described in the earlier section 4.9.3) were followed when conducting each interview, when recording the proceedings, when transcribing the data, and when interpreting the data.

Additionally, only themes supported (triangulated) by several different sources (interviewees, policy documents and government guidelines) were taken into consideration, thus enhancing the validity of the process when transcribing and interpreting the data.

4.10 Summary

This chapter provided a detailed discussion of the methodology and methods adopted for the study. After considering various alternatives, a mixed methods approach was selected. This rationale was based on the nature of the study, the research aims and objectives, and the research questions the study sought to answer. A post-positivist philosophical paradigm was found to be the most suitable, enabling both quantitative and qualitative data to be collected using a survey-based questionnaire and semi-structured interview. The interview was purposely conducted to complement and elaborate on the findings from the quantitative data. The rationales for the chosen methodology and data collection methods have been justified, and the ethical considerations have been clearly reported. The next chapter presents the results (quantitative data) and data analyses for phase one of the research (where survey questionnaires were utilised).

Chapter 5: Quantitative Data Analysis and Results

5.1 Introduction

This results chapter presents both the descriptive and inferential analyses of quantitative data that included Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and hypothesis testing using Structural Equation Modelling (SEM). The first section reports the results of the descriptive data analysis and starts with a preliminary consideration of the data; this includes the response rate and the process of data screening and cleaning. The demographic profiles of the respondents are discussed, and a preliminary reliability check of the questionnaire's main constructs is described. Next, the data reduction and factor extraction, achieved through the EFA, reports the findings of the CFA, describes the procedures of the measurement model validation and the final section provides a detailed exploration of the structural model and the testing of the hypothesised causal relationships between the proposed model variables.

5.2 Data Management

This study's quantitative data collection was undertaken from April 2020 to October 2020 through an online survey of 327 customers. Google drive was utilised to host the survey questionnaire and collect data in the first stage of the study, through social media recruitment via Facebook and a call for participant platform (LJMU). The survey questionnaire targeted adult internet users selected by random sampling from four major urban cities in Nigeria (see Figure 19): Abuja, Lagos, Ibadan and Port Harcourt), who have used and could be interested in adopting EC, e.g., online shopping. The participants were adult residents of the target cities who were of different age groups, levels of education, levels of occupation and online experiences. Participants voluntarily completed the online form at their convenience (suitable time and place).

The Statistical Package for the Social Sciences (SPSS) version 27 was used for the descriptive statistics and the EFA. Following EFA, the factors were assessed via the CFA based on SEM, and the Analysis of Moment Structures (AMOS) software version 27 was applied to assess the model fit of the study. In the name column of SPSS, questionnaire items were coded with numbers along with an abbreviation of the variable. Similarly, in the label column, question items were written in abbreviated formats: from '1' for 'Strongly Disagree' to '5' for 'Strongly Agree,' on a five-point Likert scale. To exclude any possibility of sample bias, only one response was permitted

from each respondent. Finally, data was cleaned by descriptive statistics tests to gauge the responses to each question according to both row and column section entries in order to confirm that the correct figures had been entered.

5.3 Data Screening and Data Cleaning

As noted by Kline (2010), while they may be time-consuming and exhaustive, data screening and data cleaning are considered important procedures for multivariate analysis to ensure the collected data is suitable for further analysis. First, data screening was performed by checking the basic frequency and descriptive statistics distributions. Whilst some entries were found to be missing responses, three (3) cases were also found of duplicated entries (exact data repeated), which were resolved by deleting the duplicate entry. For the purposes of data cleaning, initially two types of data were targeted, which were missing data and outliers. This study further confirmed the validity of the data by screening for normality, linearity and reliability before inferring results from the data.

5.3.1 Missing Data: Row Cases

During the initial data screening process, 7 responses/cases were discarded from a total of 327 responses: These seven cases missed between 17% and 63% of data. According to Bennett (2001), there is the likelihood for statistical analysis to be biased if there is more than 10% of missing data. Therefore, in order to avoid bias in the data, cases that had such level of missing data were then no longer considered for further analysis. In total, 10 cases (3.06%) – 7 missing data and 3 cases duplicated data (in Section 5.3) were excluded because they were unusable. After the screening process, 317 respondents (cases), 96.94%, were considered usable/valid for further analyses. Table 15 shows the frequencies and the percentages of missing/repeated data from the row cases.

Online Survey Questionnaire	Cases (n)	Percentage %	ID Deleted	Comments
Initial total responses	327	-	-	High responses
Missing responses / Incomplete cases	7	2.14%	27, 240, 87, 60, 134, 188 and 195	Missing row data of between 17% - 63%. If missing more than 10% data, deletion is recommended; case-wise deletion applied
Duplicated row cases / responses (the same data submitted twice)	3	0.92%	71 & 72; 110 & 111; 205 & 206	Deleted one row each of duplicated entries
Total left after initial data screening	317	96.94%	-	Overall, 10 rows of case-wise deletion were effected/carried out

Table 15: Frequencies and percentages of missing/duplicated data
Source: Developed by the author

5.3.2 Missing Data: Column Cases

Hair et al. (2010) stated that the problem of missing data affects statistical analysis of an original dataset in two ways; firstly, by reducing the power of the statistical techniques in indicating any relationships in the dataset; and, secondly by generating bias in the process of parameter estimations. In this case, the percentages of missing values in terms of the responses to variables were very small/low, ranging between 0.3% and 1.6% (as seen in Table 15) and within the satisfactory level.

However, to compensate for those missing values, median-nearby-point missing data replacement method in SPSS was used to input the few missing column values in the remaining 317 data sets. The literature suggests that less than 1% missing values of any variable is usually considered very slight and unimportant, 1-5% remain manageable by many statistical methods, 5-15% require more unconventional and complicated techniques to deal with, and more than 15% missing values for a given dataset could distort any kind of further data interpretation (Acuna and Rodriguez, 2004; Cohen et al., 2013). Table 16 shows the missing value counts.

Univariate Statistics							
	N	Missing					
		Count	Percent				
EtailQual7	315	2	0.6	ECA2	316	1	0.3
CERPositive3	315	2	0.6	ECA3	316	1	0.3
CERPositive4	315	2	0.6	ECA4	315	2	0.6
CERNegative2	316	1	0.3	ECA5	315	2	0.6
CERNegative4	316	1	0.3	ECA6	316	1	0.3
PEOU1	316	1	0.3	COMP2	315	2	0.6
PEOU2	314	3	0.9	COMP3	315	2	0.6
PEOU3	316	1	0.3	COMP4	315	2	0.6
PEOU4	316	1	0.3	COMP5	314	3	0.9
PEOU5	316	1	0.3	COMP6	314	3	0.9
PU1	316	1	0.3	CRF3	315	2	0.6
PU2	316	1	0.3	CRF5	316	1	0.3
PU4	315	2	0.6	LGF1	315	2	0.6
PU6	315	2	0.6	LGF2	315	2	0.6
REP1	316	1	0.3	LGF3	315	2	0.6
REP5	316	1	0.3	LGF4	315	2	0.6
REP7	316	1	0.3	LGF5	313	4	1.3
PRK2	314	3	0.9	ITF1	316	1	0.3
PRK3	313	4	1.3	ITF3	313	4	1.3
				ITF4	315	2	0.6
				PIT3	312	5	1.6

Table 16: The missing column value counts of research variables
Source: Developed by the author

5.3.3 Outliers (Cook's Distance and Mahalanobis Distance)

After adjusting for the missing values, the next logical step was to consider outliers (univariate and multivariate), which were cases with odd and/or extreme scores relative to other dataset observations. It is known that errors in data entry, erroneous sampling techniques, missing values in calculation, and extreme responses on multi-point scales are among the many causes of outliers (Kline, 2010).

First, univariate outliers were identified by using z-score frequency distributions. All of the scores for each variable were converted to standard scores (z-scores) and then checked against the intended range. As a rule of thumb, a range of ± 3 to ± 4 Z-scores for samples larger than 80 is considered acceptable, with any individual observation exceeding that limit being treated as a univariate outlier (Hair et al., 2010). Z-scores of ± 3.29 were used in order to identify any odd values within each variable's observations. According to Tabachnick and Fidell (2007), if the z-score is more than ± 3.29 the data is considered a univariate outlier and will be excluded from the data analysis, although research suggests that with a very large sample size a few standardised scores in excess of 3.29 are expected. One univariate outlier (within the LGF variable) with a very high standard score value of -4.66 was deleted (case 97 was

therefore excluded). All other cases were retained for further considerations. This is shown in Table 17.

Z-scores	ID/Cases
-3.30	4
-4.06	9
-3.47	18
- 4.66	97
-3.47	109
-3.47	110
-3.59	184
-3.32	192
-3.36	211
-4.06	226
-3.71	272

Table 17: Univariate outlier calculations of cases
Source: Developed by the author

Next, multivariate outliers were detected by calculating both Cook's distance and Mahalanobis distance (D^2), which represents the distance of a case from the multidimensional mean of a distribution.

1. Cook's Distance

Cook's Distance test was performed on the 317 datasets. Cook's distance estimates the variations in regression coefficients after removing each observation one by one (Cook, 1977). This was done graphically/diagrammatically as represented in a scatter diagram (Figure 20). Case numbers 4, 25, 60 and 183 were deleted, as they were the 4 multivariate outliers whose values differed most when compared visually and relatively (in terms of deviation) with the cook's distance for other cases which were clustered around the same area on the x and y axes. Therefore, a total of 1 univariate outlier and 4 multivariate outlier cases were deleted, leaving 312 usable cases.

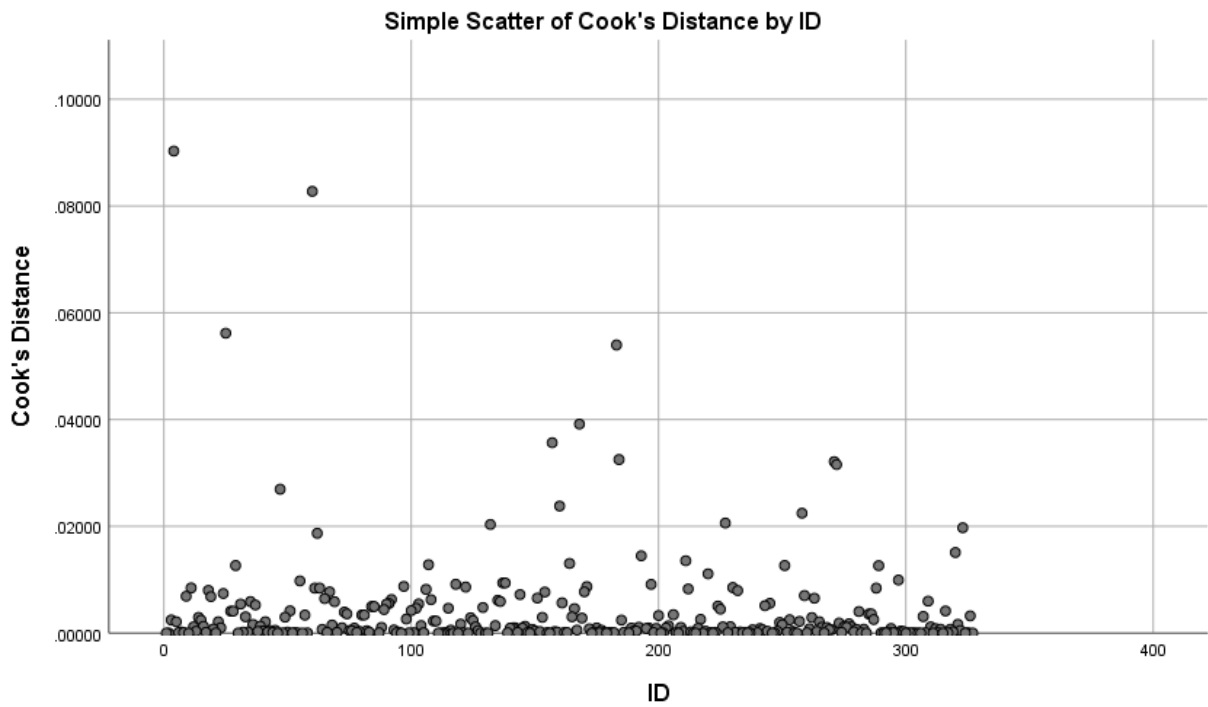


Figure 20: Cook's distance test results (scatter diagram)
 Source: Developed by the author

The Cook's distance test results showing the first four deleted numbers ranging from 0.09030 to 0.04152 of cases 4, 183, 60 and 25, respectively, are depicted in the Cook's graphical diagram (Figure 16). The corresponding cases and their respective values are presented in Table 18.

S/N	ID	COO_1
1	4	.09030
2	183	.05876
3	60	.05663
4	25	.04152
5	157	.03779
6	271	.03459
7	184	.03370
8	272	.03277
9	168	.03098
10	47	.02574
11	160	.02562
12	258	.02434
13	227	.02079
14	62	.01961
15	323	.01923
16	132	.01866
17	320	.01632
18	211	.01513
19	164	.01415
20	251	.01412
21	107	.01381
22	193	.01370
23	29	.01339
24	289	.01333
25	97	.01250
26	220	.01200
27	55	.01060

Table 18: Cook's distance test results
ID (case number), COO_1 (Cook's distance estimates)
Source: Developed by the author

2. Mahalanobis distance

Next, the multivariate normality of the items was assessed, visually by plotting the chi-square versus the Mahalanobis distance plot (Burdenski, 2000). Multivariate outliers were detected by calculating the Mahalanobis distance (D^2), which represents the distance of a case from the multidimensional mean of a distribution. Then, those calculated D^2 were compared with a critical value of 107.258, which was the Chi-squared distribution (χ^2) value that corresponded with a degree of freedom of 66, which

equalled the number of the current study variables, with a probability of $p < 0.001$. The results revealed that there were 23 multivariate outliers within the dataset (7%), with the χ^2 values for those cases ranging from 109.6312 to 166.3135 and their “outliers” column having a numerical value of 1 (Table 19). These thus required further consideration, as they might affect the requirements of multivariate statistical tests such as factor analysis and SEM (0 value represents those that were not outliers). However, the researcher’s decision was to retain those outliers for the following reasons:

The number of these outliers is relatively small compared to the overall sample size (312), and Kline (2010) suggests that a few outliers within large samples should be seen as less problematic and not harmful to the data analysis and interpretations. Moreover, the Cook’s Distance test earlier performed revealed no further outliers and, besides, no evidence of sampling errors was discovered. The researcher therefore decided to retain the outliers.

	ID	MAH_1	pMAH_1	Outliers
1	171	166.31353	.0000	1
2	29	157.08682	.0000	1
3	272	153.90111	.0000	1
4	226	147.58446	.0000	1
5	234	147.50137	.0000	1
6	109	131.21305	.0000	1
7	193	128.07161	.0000	1
8	259	122.87221	.0000	1
9	15	122.51907	.0000	1
10	175	122.09839	.0000	1
11	132	122.08943	.0000	1
12	55	121.66016	.0000	1
13	61	120.52255	.0000	1
14	228	117.98248	.0001	1
15	204	115.96650	.0001	1
16	254	115.29817	.0002	1
17	78	114.33303	.0002	1
18	268	114.02282	.0002	1
19	237	113.33271	.0003	1
20	100	112.58571	.0003	1
21	249	112.40024	.0003	1
22	157	110.92642	.0005	1
23	9	109.63123	.0006	1
24	37	106.24815	.0012	0
25	227	105.44743	.0015	0
26	211	105.09025	.0016	0

Degrees of freedom:	<input type="text" value="66"/>	
Probability level:	<input type="text" value="0.001"/>	
Calculate!		
Chi-square (X^2) value:	107.25787978	

Table 19: Mahalanobis distance test results

Source: Developed by the author

ID (case number), MAH_1 (mahalanobis distance estimate), PMAH_1 (significance value)

5.3.4 Reliability, Normality and Linearity

According to Bryman and Bell (2015), what is crucial is whether or not measures are reliable and whether or not they are valid representations of the concepts they are supposed to be explaining. In other words, reliability refers to the consistency of the measure of a concept. Reliability is concerned with the robustness of a study's survey instrument and the extent to which it will produce consistent findings if replicated under different conditions (Saunders, Lewis and Thornhill, 2015). Cronbach's alpha (C- α) coefficient is considered the most frequently used test of inter-item consistency reliability (Saunders, Lewis and Thornhill, 2009). In this study it was ensured that all constructs had acceptable Cronbach's alpha scores before applying any further statistical techniques (EFA, CFA, SEM, etc.)

To assess the internal consistency of the items in the questionnaire, Cronbach's alpha coefficient (C- α) was generated for the 12 constructs using SPSS version 27 with an adequate internal consistency of the measurement scale. All C- α values were between the range .752 to .940 and thus higher than the recommended value of .70 (Tavakol and Dennick, 2011; Sekaran, 2003; Field, 2009; Hair et al., 2010), except for cultural factor with a value of .651 and 5 items. Consequently, it was excluded as its was lower than the .70 C- α recommended, thus leaving 11 constructs and 61 items. Consequently, it could be said that no further internal consistency problem was revealed up to this stage of data analysis. Detailed results of the SPSS reliability test calculations are shown in Table 20.

S/N	Factor	Labels	No of items	C- α	Comment
1.	Website Quality	EtailQual	8	.841	Accepted
2.	Customers Emotional responses 1	CERPositive	4	.863	Accepted
3.	Customers Emotional responses 2	CERNegative	4	.843	Accepted
4.	Perceived Ease of Use	PEOU	5	.836	Accepted
5.	Perceived Usefulness	PU	6	.847	Accepted
6.	Reputation	REP	7	.881	Accepted
7.	Ecommerce Awareness	ECA	7	.896	Accepted
8.	Compatibility	COMP	6	.940	Accepted
9.	Cultural Factors	CRF	5	.651	Not Accepted
10.	Legal Factors	LGF	5	.752	Accepted
11.	IT Infrastructure	ITF	5	.861	Accepted
12.	Purchase Intention	PIT	4	.863	Accepted
Total number of items tested for reliability			66		

Table 20: Reliability test results
Source: Developed by the author

The normality of a data distribution is considered one of the most important assumptions underlying various multivariate analysis tools such as factor analysis and SEM. The multivariate normality of a particular distribution confirms that the shape of individual variables' distribution or of the distribution of a combination of two or more variables corresponds with the bell-shaped normal distribution (Doornik and Hansen, 2008; Hair et al., 2010). Any violation of the normality assumption could severely affect the process of data analysis as well as goodness-of-fit indices for the proposed SEM model (Kline, 2010).

According to Trowler (2014), it is better to look at the shapes of the data distribution plots instead of using formal inference tests (e.g., skewness and kurtosis), particularly when the sample size is large, i.e., more than 200. This present study assessed normality through visual inspection of the data distribution. Frequency distribution (histogram), scatterplot, and P-P plot are often used for visually checking normality (Field, 2009; Ghasemi and Zahediasl, 2012). The frequency distribution that plots the observed values against their frequencies provides both a visual judgement about whether the distribution is bell-shaped and insights about gaps in the data and outlying values (Peat and Barton, 2008). The P-P plot plots the cumulative probability of a variable against the cumulative probability of a particular distribution (e.g., normal distribution).

In this study, normality assessment was made by looking at the bell-shaped histogram and the normal pattern of scatter plot, which visually indicated that the data was approximately normally distributed, as shown in Figure 21 and Figure 22, respectively. Likewise, the residual analysis using the expected normality P-P (probability-probability) plot for the regression residuals is shown in Figure 23. An acceptable level of normality was revealed, as a plot of the standardised predicted value against the standardised residuals generated a straight line. Nevertheless, it is important to note that normality tests are sensitive to the sample size (Field, 2006). Therefore, with large enough sample sizes (such as $n=312$ in the present study), a slight violation of the normality assumption may not cause major problems (Pallant, 2007; Ghasemi and Zahediasl, 2012).

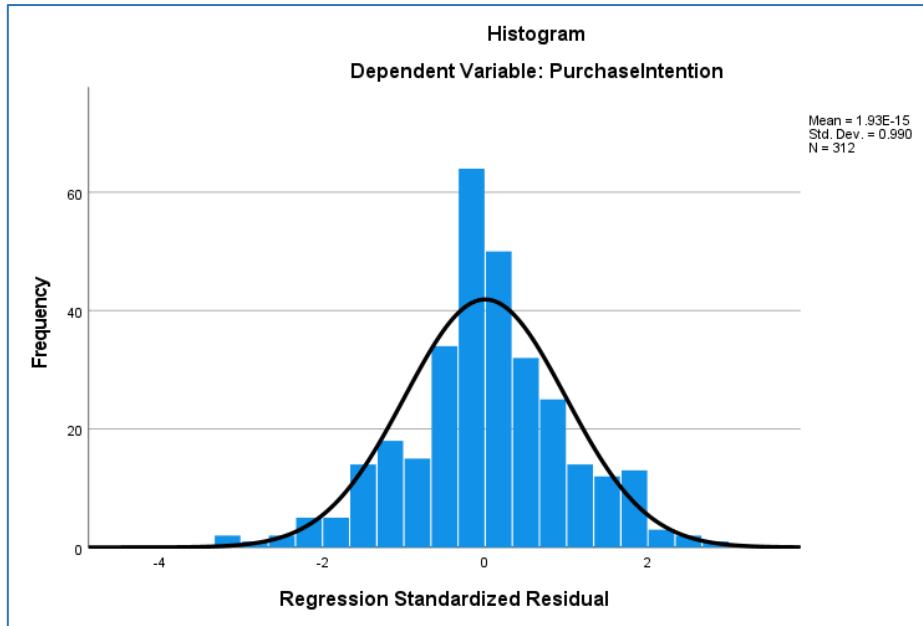


Figure 21: Histogram (frequency/regression standardised residual)

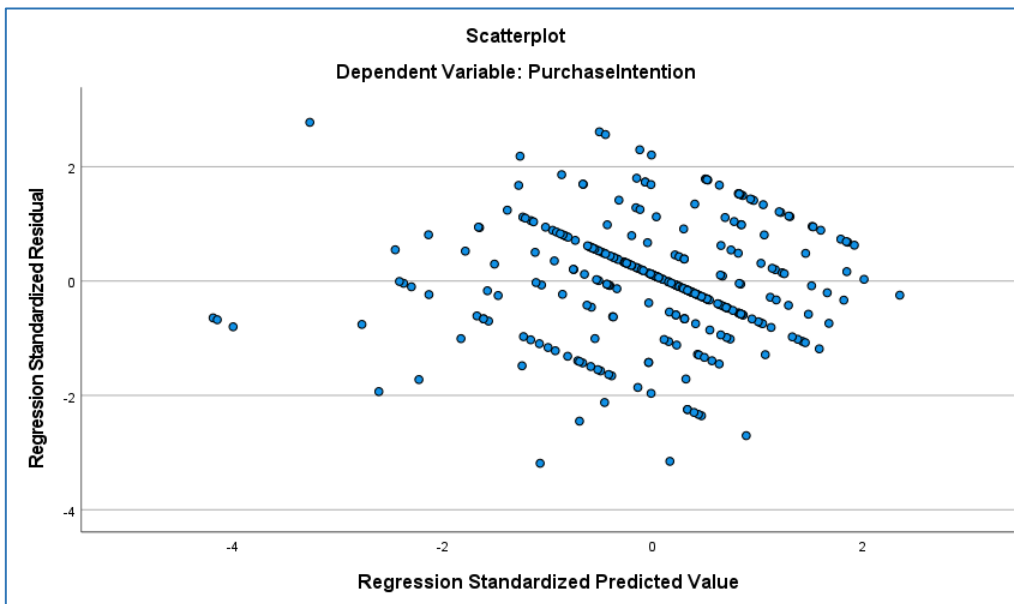


Figure 22: Scatter plot test of normality

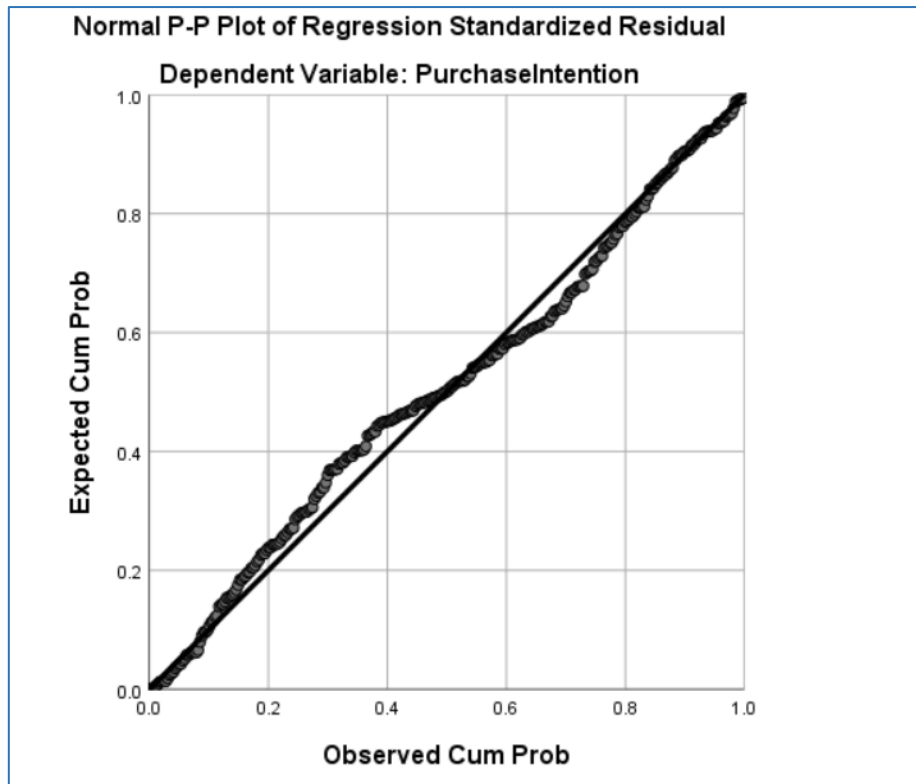


Figure 23: P-P plot (visual representations of normality)

After checking both the normality and reliability of the relationships of variables, the next step is to examine the linearity. According to Hair et al. (2006), an implicit assumption of all multivariate techniques based on co-relational measures of association, including factor analysis, multiple regression and structural equation modelling, is linearity. The formula for calculating r manually is:

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}$$

Where r is the correlation coefficient, the value of which lies between -1 and 1

r = correlation coefficient

x_i = values of the x-variable in a sample

\bar{x} = mean of the values of the x-variable

y_i = values of the y-variable in a sample

\bar{y} = mean of the values of the y-variable

To check the linearity of this study's data set, Pearson's correlations test was conducted using IBM SPSS 27, and as shown in Table 21 the results indicated a moderate positive or negative linear relationship where all the independent variables significantly correlated with the dependent variable.

Factors	DV	EtaiQual	CERP	CERN	PEOU	PU	REP	ECA	COMP	LGF	ITF
Purchase Intention	1										
Website Quality	.301**	1									
Positive Responses	.451**	.547**	1								
Negative Responses	-.159**	-.395**	-.446**	1							
Perceived Ease of Use	.444**	.589**	.561**	-.273**	1						
Perceived Usefulness	.492**	.441**	.525**	-.257**	.533**	1					
Reputation	.444**	.600**	.576**	-.400**	.599**	.500**	1				
EC Awareness	.508**	.270**	.409**	-.150**	.361**	.523**	.394**	1			
Compatibility	.422**	.414**	.636**	-.278**	.443**	.569**	.537**	.560**	1		
Legal	.416**	.291**	.254**	-.146**	.277**	.402**	.268**	.488**	.351**	1	
IT Infrastructure	.307**	.364**	.374**	-.214**	.361**	.239**	.385**	.204**	.302**	.125*	1

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

Table 21: Pearson's correlations
(Between the independent variables & purchase intention (dependent variable) – DV)

Apart from the missing data, outliers and multivariate normality and linearity, which have already been analysed, multicollinearity is another common problem when estimating linear or generalised linear models, including logistic regression. It occurs when there are high correlations among predictor variables, leading to unreliable and unstable estimates of regression coefficients (Hair et al., 2006). Using SPSS software provides two options to estimate the multicollinearity: tolerance and variance inflation factor (VIF). VIFs exceeding 10 and tolerance values less than .10 are a sign of a serious multicollinearity issue (Uyanik and Güler, 2013; Myers, 1997). The findings in Table 22 showed no multicollinearity issues with the study's data set, as all factors had VIFs less than 10 and tolerance values more than 0.1.

Coefficients ^a							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	.466	.297		1.566	.118		
Etail Quality	-.122	.059	-.127	-2.052	.041	.500	1.999
Positive Response	.155	.060	.175	2.579	.010	.417	2.397
Negative Response	.050	.038	.068	1.344	.180	.744	1.345
Ease of Use	.119	.059	.126	2.000	.046	.486	2.059
Perceived Usefulness	.157	.063	.152	2.476	.014	.511	1.955
Reputation	.145	.063	.150	2.308	.022	.455	2.197
EC Awareness	.223	.060	.220	3.715	.000	.548	1.825
Compatibility	-.046	.050	-.061	-.934	.351	.446	2.241
Legal Factor	.174	.050	.182	3.516	.001	.713	1.403
IT Infrastructure	.077	.033	.114	2.315	.021	.794	1.260

a. Dependent Variable: Purchase Intention

Table 22: Multicollinearity test results

The next step was to check the description of the sample and the related demography versus the response rate.

5.4 Response Rate and Description of the Sample

The respondents' demographic data, including age, gender, level of education, level of occupation and city of residence, as requested in the questionnaire, are presented in Table 23.

Demographic Variables	Category	Frequencies	Percentage
E-commerce Usage	No	42	13.5
	Yes	270	86.5
Gender	Male	174	55.8
	Female	138	44.2
Age	18-24 years	72	23.1
	25-34 years	96	30.8
	35-44 years	92	29.5
	45-54 years	46	14.7
	55-64 years	6	1.9
Education	Secondary School	8	2.6
	Diploma	36	11.5
	Bachelor	187	59.9
	Masters	61	19.6
	Doctorate	16	5.1
Occupation	Others	4	1.3
	Student	47	15.1
	Public sector employee	69	22.1
	Private sector employee	118	37.8
	Unemployed	19	6.1
City	Self-employed	52	16.7
	Others	7	2.2
	Abuja	41	13.1
	Ibadan	106	34
City	Lagos	117	37.5
	Port Harcourt	48	15.4

Table 23: Demographic characteristics of participants
Source: Developed by the author

Out of the 312 participants, 86.5% (n=270) indicated 'Yes' and 13.5% (n=42) indicated 'No' to actively using EC. Moreover, 44.2% (n=138) were female and 55.8% (n=174) were male. These statistics mirror the current Nigerian population's gender ratio of 49.3% female and 50.7% male (DataReportal, 2022).

With respect to respondents' cities of residence: 52.3% of Nigeria's population live in urban centres, while 47.7% live in rural areas. Nigeria has Africa's largest population, with approximately 200 million people. Moreover, three of the four cities that the sampling population was drawn from, namely Lagos, Ibadan and Port Harcourt, are among the five largest cities in Nigeria; the Federal Capital Territory, Abuja, was the fourth city. The populations of the cities relative to one another were reflected in the demography data collected such that Lagos=37.5%, n=117; Ibadan=34%, n=106; Port Harcourt=15.4%, n=48; and Abuja=13.1%, n=41. For instance, as of 2021, the largest city in Nigeria is Lagos, which is also its main financial, cultural, and educational centre, as well as the largest city in the whole Sub-Saharan Africa (Sasu, 2022a).

According to the McKinsey (2014), depending on their products and target customer demographics, companies can use such data to target particular cities with marketing and distribution strategies. According to the institute report, Companies that are focused on the luxury segment may gravitate to places such as Port Harcourt, where per capita consumption is highest. Companies looking for fast-growing consumer markets might focus on Ibadan and Abuja and Warri. Lagos, the largest city, has more households within all income brackets and therefore remains the most important market.

Age groups: Different age ranges were represented in the study. Almost equal participations of 1/3rd each were observed for age groups 25-34 years (30.8%) and 35-44 years (29.5%), which were followed by the age group 18-24 years (23.1%) – the three totalling 83.6%, before the age group 45-54 years (14.7%), and then the age group 55-64 years, which had the lowest participation (1.9%). In Nigeria, half of the population is aged under 19 years while, in contrast, people aged 60 years and older represent a small part of the population (Sasu, 2022a).

In terms of educational level, 84.6% (n=264) of participants were degree holders or above, whilst 3.9% (n=8) represented those with secondary school status and 'others'(n=4). This indicates that the majority of the respondents were well educated. This result reflects the current data from Statista's (2021) report of 2017, which stated that Nigerian universities counted 1.7 million undergraduate students and 234 thousand postgraduate students. Women accounted for 36 percent of the Master's students, while the percentage of females among first degree (Bachelor) students was slightly lower.

The occupational distribution of the respondents varied widely. Most respondents (59.9% or 187 respondents) were salaried employees in either the public or private sector. Students and self-employed respondents represented 15.1% and 16.7%, respectively, totalling 99 respondents. Seven respondents (2.2%) reported having 'other' occupational status and 19 respondents (6.1%) were unemployed. All the included demographic factors of participants - age, gender, educational background, occupational distribution and locations were well represented proportionally in the study's sample size of 312.

5.4.1 Descriptive Analysis of Respondents' Responses

This section presents a descriptive analysis of the data obtained from the sample. The following sub-sections report responses from the sample on the major constructs of the present study in the form of central tendency and dispersion.

The questionnaire consisted of 12 major constructs which were measured by 66 different items using a five-point Likert scale ranging from 'strongly disagree' to 'strongly agree'. Respondents were asked for their agreement or disagreement with each item (statement). Responses to each statement were coded as follows: number 5 indicated "strongly agree", number 4 "agree", number 3 "neutral", number 2 "disagree", and number 1 "strongly disagree". Moreover, number 3 was chosen as the midpoint on the scale in order to make a distinction between a respondent's agreement and disagreement. The descriptive statistics including the mean scores of the items used to measure the 12 constructs were highlighted below (see full details in Appendix U).

1) Perceived Usefulness (PU)

Respondents were asked to indicate the extent to which they perceived EC's usefulness in purchasing online. The results showed that the mean scores of the six items used to measure PU were between 3.83 and 4.09, with standard deviations ranging from 0.774 to 0.865. PU had the highest "agree" count from all variables examined. Since most of respondents' mean scores were more than the midpoint of 3, it could be inferred this showed their agreement on the perceived usefulness of EC. In terms of convenience (86.5% indicated convenience as a major indicator of EC's usefulness), variety choices, price comparison, as well as significantly increasing their quality of life.

2) Perceived Ease of Use (PEOU)

The mean scores for PEOU were between 3.47 and 3.82, with standard deviations ranging from 0.762 to 0.940. The mean scores being above 3, the neutral midpoint, indicates that a majority of the respondents had little or no concerns about using technology as a means of shopping online in Nigeria. Instead, they considered it easy to use and quick to understand.

3) E-commerce Awareness (ECA)

The 7 items of ECA were measured using a 5-point Likert scale and the resultant mean scores ranged from 3.58 to 4.01 (standard deviations were between 0.666 and 0.897). This suggests that most respondents agreed to being aware of EC, in terms of understanding and being knowledgeable about the potential EC benefits, searching online, internet shopping skills, and recognising the opportunities and threats enabled by EC. 82.7% agreed they knew how to find what they were looking for when shopping on the Internet.

4) Compatibility (COMP)

Computing respondents' attitudes on how EC is compatible with their various lifestyles and shopping experiences uncovered mean scores slightly greater than the neutral point 3, with a range of between 3.48 and 3.60 and standard deviations between 0.893 and 0.959. This suggests that they relatively agreed to the compatibility of EC with their values, occupations and personal shopping needs.

5) Website Quality (EtailQual)

Website quality construct was measured by eight items on the five-point Likert scale. Respondents slightly agreed that online retailers' website design, fulfilment/reliability, privacy/security and customer service were effective, indicated by mean scores between 3.07 and 3.71. The standard deviation range of 0.783 to 1.073 indicates a little dispersion from the mean scores.

6) Reputation (REP)

The reputation construct was measured by seven items on the five-point Likert scale, where point three represented the midpoint between agreement and disagreement levels. All mean scores were above 3, reflecting a moderate level of agreement among the respondents, with REP2 (response to "the website I use is well-known") having the highest mean score of 3.96, while the lowest mean score 3.28 was for REP6 (response to "In general, I can rely on Internet vendors to keep the promises that they make"). The standard deviations range was 0.801 - 0.898.

7) IT infrastructure (ITF)

Regarding the IT infrastructure factor, respondents were asked to respond to five statements in order to measure the extent to which there was a reliable internet access and availability of other crucial telecommunication components to support EC usage. The mean scores revealed an average of 2.89, indicating a level of disagreement among the respondents. Specifically, they reported the lowest agreement on the second statement which related to having uninterrupted power supply to carry out online purchase (M=2.21). They agreed on the first statement that there was internet access (M=3.21) and the fifth statement that they were able to make payment online (M=3.35). However, they disagreed on the stability of internet connection (only 35% agreed, M=2.79) and only 38.1% agreed the Internet speed was fast enough (M=2.91). ITF had the highest "neutral" count of all factors examined. Indicatively, it appears IT infrastructure is a critical issue in the implementation of EC and its adoption in Nigeria (standard deviations range: 1.086 to 1.186).

8) Legal factor (LGF)

With an average mean score of 4.16, the results for the legal factor construct (LGF) indicate strong agreement among the respondents on their views about legal and

regulatory backing for EC. The mean scores of the five items ranged from the highest, M=4.49 (LGF2: “There is a need for effective laws to combat cybercrime”, with 90.7% in agreement), followed by M=4.39 (LGF1: “There is a need for effective laws to protect customers’ privacy”), to the lowest, M=3.28 (LGF3: “The legal environment is conducive to conduct business on the Internet”), which is further supported by the aforementioned LGF2 statement. The average standard deviation is 0.919. Moreover, it was found that 88.8% of respondents agreed the government needed to demonstrate a strong commitment to promoting EC and most respondents agreed having data protection law in Nigeria would motivate them to purchase online. LGF had the highest “strongly agreed” response count of all the factors.

9) Cultural Factor (CRF)

Cultural Factor indicated an average mean score of 2.73 for the five items for measuring the construct. This suggests a lack of agreement among the respondents on their views that culture influences disclosing their personal information, obtaining search information from websites in their language, and having a preference for a face-to-face transaction over online shopping.

10) Customers’ Positive Emotions Responses (CERP)

Positive emotional responses of customers were measured through the instrumentality of EC-relevant, positive, discrete emotions. Respondents were asked to indicate on a five-point Likert scale how they felt shopping online, based on their recent shopping experiences. Participants reported agreement on all the four items measuring the construct: happy, interested, satisfied and like, with 75% indicating interest in shopping online. The mean scores ranged between 3.66 to 3.84. Generally, positive emotions were elicited in most respondents while they were shopping online (standard deviation: between 0.771 and 0.889).

11) Customers’ Negative Emotions Responses (CERN)

Regarding negative emotional responses of customers, these were measured by asking respondents to indicate on a five-point Likert scale how they felt shopping online, based on their recent shopping experiences. Participants disagreed on all the four items of negative discrete emotions measuring the construct: angry, frustrated, worried and scared. The average mean of 2.52 was below the midpoint of 3, an

indication that respondents' feelings about shopping online were not negative (standard deviation: between 0.901 and 1.131).

12) Purchase intention (PIT)

There was an agreement among respondents on their intention to buy online in the near future. The mean scores 3.85, 3.99, 3.96 and 4.00 for the 4 items used to measure PIT were well above the midpoint of three on the five-point Likert scale. The average mean score was 3.95 and standard deviation ranged between 0.723 and 0.759).

5.4.2. Study Sample's Demographic

The demographic variables including age, gender, occupation, level of education and city of residence were analysed using T-test and ANOVA. One-way ANOVA was used to analyse the relationships between demographic variables (age, education, occupation and city of residence) - Table 26. T-test was performed for variables such as EC usage and gender (Tables 24 and 25), where the dependent variable was purchase intention. Following independent T-test, the effect of gender was not significant (Table 25), while that of EC usage was significant (Table 24). For the latter, there was a significant difference in the non-EC usage group, which were those who used the internet but had not actively used EC (n=42, M=3.73, SD=.706), compared to the EC usage group (n=270, M=3.98, SD=.594); $t(310) = -2.49, p=0.014 < 0.05$.

5.4.3 T-Test Analysis

EC usage

		Group Statistics								
Purchase Intention (Dependent Variable)	EC usage	N	Mean	Std. Deviation	Std. Error mean					
	No	42	3.73	.706	.109					
Yes	270	3.98	.594	.036						

		Independent Sample Test								
		Levene's Test for Equality of Variances					T-test for Equality of Means		95% Confidence Interval of Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Purchase Intention (Dependent Variable)	Equal variances assumed	5.032	.026	-2.463	310	.014	-.249	.101	-.449	-.050
	Equal variances not assumed			-2.173	50.451	.035	-.249	.115	-.480	-.019

Table 24: T-Test analysis (EC usage) $p < 0.05$

Gender

Group Statistics									
Purchase Intention (Dependent Variable)		Gender	N	Mean	Std. Deviation	Std. Error mean			
		Male	174	3.91	.597	.045			
		Female	138	3.99	.637	.054			

Independent Sample Test										
		Levene's Test for Equality of Variances					T-test for Equality of Means		95% Confidence Interval of Difference	
		F	Sig.				Mean Difference	Std. Error Difference	Lower	Upper
Purchase Intention (Dependent Variable)	Equal variances assumed	.329	.567	-1.100	310	.272	-.077	.070	-.215	.061
	Equal variances not assumed			-1.092	284.668	.276	-.077	.071	-.216	.062

Table 25: T-Test analysis (Gender) $p < 0.05$

5.4.4 Analysis of Variance (ANOVA)

Interestingly, for the four categories of the study's demographic samples, the one-way ANOVA tests conducted with respect to the variables age, level of education, occupation and city of residence for the respondents suggested that there were no significant differences between groups. Table 26 presents the results of ANOVA for Age, Level of Education, Occupation and City of Residence.

Age Groups					
ANOVA					
Purchase Intention	Sum of squares	df	Mean Square	F	Sig.
Between Groups	2.264	4	.566	1.505	.201
Within Groups	115.453	307	.376		
Total	117.716	311			

There is no significant difference between the respondents' **age groups** and their intention to purchase online, $F(4,307) = 1.505, p = .201 > 0.05$

Level of Education					
ANOVA					
Purchase Intention	Sum of squares	df	Mean Square	F	Sig.
Between Groups	2.365	5	.473	1.255	.283
Within Groups	115.351	306	.377		
Total	117.716	311			

There is no significant difference between the respondents' **level of education** and their intention to purchase online, $F(5,306) = 1.255, p = .283 > 0.05$

Occupation					
ANOVA					
Purchase Intention	Sum of squares	df	Mean Square	F	Sig.
Between Groups	.941	5	.188	.493	.781
Within Groups	116.775	306	.382		
Total	117.716	311			

There is no significant difference between the respondents' **occupation** and their intention to purchase online, $F(5,306) = .493, p = .781 > 0.05$

City of Residence					
ANOVA					
Purchase Intention	Sum of squares	df	Mean Square	F	Sig.
Between Groups	.514	3	.171	.451	.717
Within Groups	117.202	308	.381		
Total	117.716	311			

There is no significant difference between the respondents' **city of residence** and their intention to purchase online, $F(3,308) = .451, p = .717 > 0.05$

Table 26: One-way ANOVA results

5.5 Exploratory Factor Analysis (EFA)

This section continues the process of quantitative data analysis by presenting the results of the inferential analysis, which include Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and hypothesis testing using Structural Equation Modelling (SEM). The first section considers the data reduction and factor extraction achieved through EFA, the second reports findings from the CFA and discusses the procedures of the measurement model validation, and the last provides a detailed discussion of the structural model and the testing of the hypothesised causal relationships between the proposed model variables.

Exploratory factor analysis (EFA) is an analytical tool in research that can be used as a precursor to Confirmatory Factor Analysis (CFA) (Schumacker and Lomax, 2004). One of its major advantages is reducing a large number of items from a survey questionnaire to a smaller number of manageable components. This purposely uncovers latent dimensions underlying variables that underpin a data set. It is also useful in detecting the variables that are not suitable for the model (Galib, Hammou and Steiger, 2018). Moreover, it helps to examine the items that possess the strongest relationships with a given factor (DiStefano et al., 2009). In other words, factor analysis attempts to bring intercorrelated variables together under a latent factor and also explains the variance in the observed variables (items of questionnaire) in relation to the latent factor (the construct being investigated). This does not only make it possible to gain a clear view of the data, but also creates the possibility of using the output in subsequent analysis (Field, 2000; Rietveld and Van Hout, 1993), such as testing of structural models. Initially, this study applied EFA and then CFA, followed by structural equation modelling (SEM), to confirm correlations and causal relationships between factors. The following process was followed:

5.5.1 The Process of Performing EFA

EFA involved establishing the factor extraction method, the factor rotation method, the factor retention criteria, and the interpretation of resulting factor loadings. The process was as follows: First, the precise factor extraction method was determined and justified, so that the minimum number of factors that could represent the associations between the set of variables in the best way was established (Pallant, 2013).

A) Extraction Methods

There are many types of extraction methods such as principal components (the default setting in SPSS), principal axis factoring, generalised least squares, unweighted least squares, etc. However, according to Robertson et al. (2014), in social sciences there is no universal extraction method; therefore, the best method would be that which reduces a large set of variables or scale items to a smaller number of factors (Pallant, 2011). In this way, the purpose of using factor analysis will be achieved. Principal Component Analysis (PCA), for instance, would be the best method to use when a researcher wants to reduce a large set of items to a more manageable number. Hence,

since one of the reasons for performing EFA in this study was data reduction, PCA was used as the primary method of factor extraction. After the factor extraction comes the rotation.

B) Rotation Methods

According to Brown (2009), there are five rotation methods that have been widely recognised and offered in SPSS: Varimax, Direct Oblimin, Quartimax, Equamax, and Promax. Three of these are classified as orthogonal (Varimax, Quartimax and Equimax), and two are oblique (Direct Oblimin and Promax). Field (2000) suggested testing both types of rotation as a fairly straightforward way to choose which rotation method to use for data analysis. He recommended, “if the oblique rotation demonstrates a negligible correlation between the extracted factors, then it is reasonable to use the orthogonally rotated solution” (p. 439). Gorsuch (1983) made a distinction between the two: orthogonal rotation methods assume that the factors in the analysis are uncorrelated. In contrast, oblique rotation methods assume that the factors are correlated.

In other words, orthogonal rotation methods assume totally independent factors, with their correlation coefficients being zero, whereas oblique methods assume the underlying factors to be related or correlated with each other, showing non-zero correlation coefficients (Field, 2009; Pallant, 2013). In addition, Costello and Osborne (2005) argued that, in social science contexts where some factor correlation is generally expected, orthogonal rotation will not be suitable. Gorsuch (1983) stressed that a simple, clear structure in the result should be obtained. Notwithstanding, he recommended either rotating with Promax (oblique) or Varimax (orthogonal).

In order to decide between orthogonal and oblique rotation, Tabachnick and Fidell (2013) recommended testing the desired data set, for example, through oblique rotation (Direct Oblimin or Promax from SPSS), and checking the factor correlation matrix for correlations of over ± 0.32 . If this condition is met, then there is 10% (or more) overlap in variance among factors, enough to warrant oblique rotation instead of orthogonal rotation. To reduce the number of research variables for easier management, EFA was undertaken using IBM SPSS Statistics 27. The process of removing items and performing the factor extraction was iterative and it was carried

out until a desired factor structure was achieved. This study conducted both the orthogonal and oblique rotation methods and found that most of the factor correlation matrix values from Promax method were over ± 0.32 . The results of the component correlation matrix showing the correlations between the extracted factors are presented in Table 27.

Component Correlation Matrix											
Component	1	2	3	4	5	6	7	8	9	10	11
1	1.000										
2	.527	1.000									
3	.444	.281	1.000								
4	.278	.190	.357	1.000							
5	.259	.368	.034	.022	1.000						
6	.247	.130	.389	.191	.056	1.000					
7	.405	.480	.324	.262	.363	.118	1.000				
8	.441	.407	.357	.195	.318	.163	.418	1.000			
9	.554	.378	.452	.295	.144	.376	.440	.369	1.000		
10	.361	.296	.427	.304	.159	.196	.343	.380	.423	1.000	
11	.301	.195	.359	.244	.165	.230	.202	.291	.326	.396	1.000

Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalisation

Table 27: Component correlation matrix

From a theoretical angle, Vogt (1993) said the method of choice by a researcher should attempt to relate the factors under investigation to theoretical entities. Resultantly, since Promax showed the clearest, simplest interpretable result and also retained the most factors underlying the theoretical justification of this study, Promax, an oblique rotation and principal component extraction method, was found suitable. The findings of the various exploratory factor analyses carried out are presented and justified in the next section.

The EFA employed for the purpose of data reduction involved the elimination of any unrelated items and ensured a hypothesised grouping of the study variables. Since the measurement scales in the study comprised mainly of individual items that were previously used and validated in different studies in technology acceptance context, the role of the EFA was to confirm the grouping, by the researcher, of the 61 measurement items into 11 variables, and to find solutions to cases where such confirmation was not possible.

5.5.2 EFA Results

Test and Result of Sampling Adequacy (KMO) and Data Sphericity

To ensure the appropriateness of the data set for conducting EFA, the two statistical tests were selected during factor analysis. These are Kaiser-Meyer-Olkin (KMO) test, a measure of sampling adequacy, and Bartlett's test of Sphericity. The KMO index usually ranges from zero to one, with a minimum value of 0.6 suggested for a good EFA, and higher values (close to one) indicating better sampling adequacy levels. KMO values ≥ 0.70 are desirable (Zhang et al., 2023). Also, the significance level for Bartlett's test should be 0.05 or less in order to determine the usefulness of EFA for the data (Field, 2009; Pallant, 2013). The KMO for the study was .911, above the recommended value of 0.6, and Bartlett's test of Sphericity was significant ($\chi^2 = 9218.146, p < .05$), an indication of sufficient correlations between the variables to proceed with the analysis. Therefore, the quantitative data collected from the study sample supported the use of EFA (See Table 28).

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.911
Bartlett's Test of Sphericity	Approx. Chi-Square	9218.146
	df	1035
	Sig.	.000

Table 28: Kaiser-Meyer-Olkin (KMO) and Bartlett's Tests results

A) Communalities

Next, the communality of the variables was examined. This is the sum of the loadings of this variable on all extracted factors (Rietveld and Van Hout, 1993). The authors added that if the communality of a variable is high, the extracted factors account for a big proportion of the variable's variance. This means that the particular variable is reflected well via the extracted factors, and hence that the factor analysis is reliable. Communality values usually range from 0 to 1, but higher communalities are more desirable, as variables with high values are well represented in the extracted factors, whereas variables with low values are not. Moreover, in samples of more than 250, communalities greater than or equal to 0.6 are considered good enough.

As seen in Appendix H, the first communality values varied from 0.497 for the ITF2 variable to 0.844 for COMP2. In addition, it is shown that the extraction values of 0.497 for ITF2 and 0.574 for PU4 were both below the recommended cut-off value of 0.6. Hence, they were dropped in order to enhance the efficiency and effectiveness of any further analysis. After re-running EFA, an eleven-factor solution was achieved based on eigenvalues greater than one and the extraction values greater than 0.6. According to Pallant (2013), eigenvalues refer to the amount of total variance explained by a factor (an eigenvalue of one or more denotes a significant amount of variation. The new communality values of factors extracted can be found in Table 29.

Communalities				Initial	Extraction
	Initial	Extraction			
COMP1	1.000	.752	LGF4	1.000	.733
COMP2	1.000	.845	LGF5	1.000	.637
COMP3	1.000	.806	Angry	1.000	.656
COMP4	1.000	.800	Worried	1.000	.771
COMP5	1.000	.767	Frustrated	1.000	.772
COMP6	1.000	.721	Scared	1.000	.695
ECA1	1.000	.664	PIT1	1.000	.695
ECA2	1.000	.749	PIT2	1.000	.730
ECA3	1.000	.718	PIT3	1.000	.713
ECA4	1.000	.638	PIT4	1.000	.700
ECA5	1.000	.603	PU2	1.000	.753
ECA6	1.000	.619	PU3	1.000	.773
REP3	1.000	.692	PU5	1.000	.632
REP4	1.000	.738	Happy	1.000	.779
REP5	1.000	.720	Interested	1.000	.748
REP6	1.000	.730	Satisfied	1.000	.703
REP7	1.000	.783	Like	1.000	.719
ITF1	1.000	.633	EtailQual2	1.000	.629
ITF3	1.000	.854	EtailQual3	1.000	.686
ITF4	1.000	.840	EtailQual4	1.000	.681
ITF5	1.000	.663	PEOU1	1.000	.664
LGF1	1.000	.796	PEOU4	1.000	.721
LGF2	1.000	.763	PEOU5	1.000	.645
			Extraction Method: Principal Component Analysis.		

Table 29: Communality results after re-running EFA

B) Factor Retention

With regard to the factor retention criterion, there are several approaches to the determination of the number of factors which best describe the underlying relationships among the study variables. Some rules of thumb have been suggested

for determining how many factors should be retained (Field, 2000; Rietveld and Van Hout, 1993): 1. Retain only those factors with an eigenvalue larger than 1 (Guttman-Kaiser rule); 2. Keep the factors which, in total, account for about 70-80% of the variance; 3. Make a scree plot; keep all factors before the breaking point or elbow in Cattell's scree test. Using the criterion of eigenvalues greater than 1.0, an eleven-factor solution provided the desired extraction. Therefore, in this study, Kaiser's criterion and Cattell's scree plot test were both employed to establish the number of retained factors for further analysis.

C) Cattell's Scree Test Result

The Cattell's scree test plots the eigenvalues and then checks where the plot curve changes to become horizontal (Pallant, 2013). To fulfil the Kaiser's criterion, all the factors above the elbow of the curve should be retained. The Cattell's scree test result in Figure 24 showed that eleven factors were above the elbow of the plot line resulting from the 'eigenvalue-greater-than-one' rule (vertical axis). Moreover, Bryant and Yarnold (1995) looked at rotation as a procedure in which the eigenvalues of factors are rotated in an attempt to achieve a simple structure. The pattern matrix of the factors in Table 30 also exemplified this criterion. In addition, these eleven factors accounted for 72.02% of the total variance in the dataset. Since the obtained percentage value fell within the range recommended by Field (2000) and Rietveld and Van Hout (1993) i.e., 70-80%, the factors were retained.

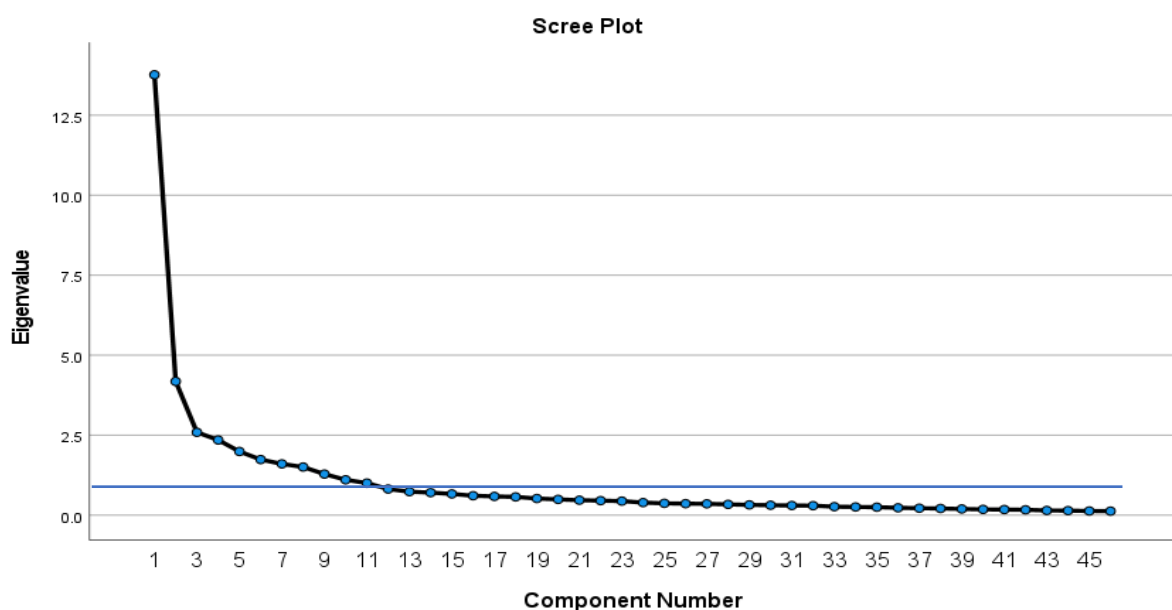


Figure 24: Scree plot of research data

D) Interpretation of Extracted Factors after Rotation

Rotating the eleven-factor solution using Promax from the PCA made it easier to interpret EFA results. Hence, these results confirmed the eleven-factor solution as the best choice for representing the hypothesised measurement items of the study, as well as for explaining the variance of the dataset. For this study, some items had cross-loadings or failed to load; therefore, these problematic variables were identified and excluded, leaving 11 final factors and 46 items (with stronger correlations) that were subjected to further analysis. The results of the total variance are shown in Appendix I (along with Cronbach's alpha and percentage of variance explained for each factor). The 11 factors in Figure 20 accounted for 72.02% of the total variance in the dataset, with factor one alone contributing 29.93% and the remaining ten factors varying in their contributions, from 9.09% for factor two to only 2% for factor eleven.

Hair et al. (2010) suggested that if the factor loadings are +0.50 or greater, they are considered to be very significant, and can be used for further analysis. In this study, 46 items had factor loadings of more than 0.50. Based on the items that had been grouped into 11 final constructs, each of them was named with its respective labels. Brown (2009) stated that, in the process of performing the initial PCA or EFA, the goal of rotation is to make the pattern of loadings/results clearer and more pronounced before proceeding with further analysis. Most of the time, the pattern matrix is used to interpret the factors. Presented below is the pattern matrix result, which complied with the stated recommendations. The rotated solution revealed a clear structure where each of the 46 items loaded exclusively on only one of the 11 factors, and successively, a clear confirmation that these 46 variables measured eleven different constructs. Table 30 shows the pattern matrix and loading scores for each of the 46 variables on each of the eleven factors.

Pattern Matrix											
ITEMS	Component (Factors)										
	1	2	3	4	5	6	7	8	9	10	11
COMP3	.957										
COMP2	.917										
COMP4	.892										
COMP5	.873										
COMP1	.774										
COMP6	.726										
ECA4		.871									
ECA2		.820									
ECA3		.792									
ECA1		.755									
ECA6		.668									
ECA5		.665									
REP4			.881								
REP3			.808								
REP6			.796								
REP7			.778								
REP5			.740								
LGF1				.920							
LGF2				.880							
LGF4				.801							
LGF5				.721							
ITF3					.950						
ITF4					.928						
ITF5					.737						
ITF1					.667						
Worried						.859					
Frustrated						.847					
Scared						.838					
Angry						.668					
PIT1							.862				
PIT3							.845				
PIT2							.818				
PIT4							.775				
Interested								.865			
Happy								.785			
Satisfied								.717			
Like								.589			
PEOU5									.790		
PEOU4									.763		
PEOU1									.749		
EtailQual4										.819	
EtailQual3										.803	
EtailQual2										.679	
PU3											.870
PU2											.859
PU5											.562

Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization.^a
a. Rotation converged in 8 iterations.

Table 30: Pattern Matrix of the study's factors

Reliability and factor analyses are complementary procedures in scale construction and definition (Coakes and Steed, 2007). Therefore, after defining the name and label of each of the components in Table 31 below, Appendix J reported these loaded factors and their items of measurement, respectively. The final step in the factor analysis was to determine Cronbach's alpha for each component for the reliability measurement.

S/N	Names of factors extracted	No of loaded items	Cronbach's Alpha	Comments on reliability
1.	Compatibility (COMP)	6	.938	Very high
2.	E-commerce awareness (ECA)	6	.880	High
3.	Reputation - Online retailers' (REP)	5	.894	High
4.	Legal factor (LGF)	4	.866	High
5.	IT Infrastructure (ITF)	4	.864	High
6.	Negative customers' emotional responses (CERN)	4	.843	High
7.	Purchase intention (PIT)	4	.857	High
8.	Positive customers' emotional responses (CERP)	4	.863	High
9.	Perceived ease of use (PEOU)	3	.760	Acceptable
10.	Website quality (EtailQual)	3	.707	Acceptable
11.	Perceived usefulness (PU)	3	.771	Acceptable

Table 31: Number of factor loadings and Cronbach's Alpha for final components

5.6. Confirmatory Factor Analysis of the Measurement Model

Following exploratory factor analysis (EFA), the next step is confirmatory factor analysis (CFA), which is an extension of the EFA that allows for more powerful tests of the construct validity of a scale and the comparison of the equivalence of the scale across different versions and different populations (Streiner, 2006). In this phase, CFA was performed to determine whether the measured variables reliably derived from the EFA and reflected the hypothesised latent variables. AMOS 27 Graphics was employed to conduct CFA through Maximum Likelihood (ML) method, which is the most widely used method for parameters estimation in SEM (Schermelleh-Engel, Moosbrugger and Müller, 2003). CFA is a type of structural equation modelling (SEM) that is concerned with measurement models (Brown, 2006). Move some line before?

It is advantageous to use CFA to verify the relationships between items and their respective factors because it provides ways to assess the fit of the proposed theoretical model (measurement model) to the collected data (Brown, 2006; Stevens, 2009). CFA is considered an indispensable tool for validation in social and behavioural sciences (Brown, 2006). Therefore, the next steps were to validate the underlying structure of the main constructs in the study, examine the reliability of the measurement scales, and assess the factorial validity of the theoretical constructs. The original measurement model is presented in Figure 25 prior to CFA testing.

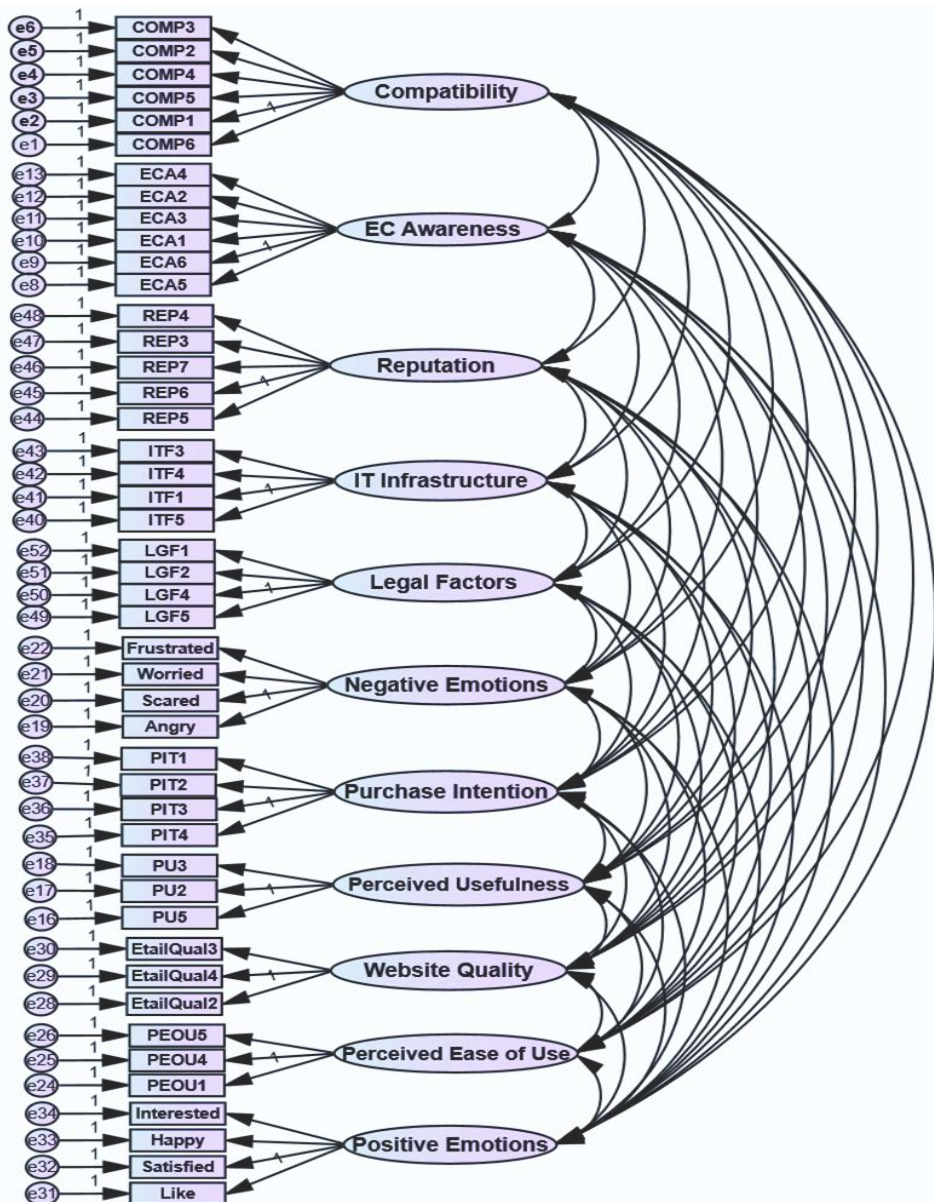


Figure 25: The Original Measurement Model

5.6.1 Goodness-of-Fit Assessment of Model

Each of the measurement and structural models was subjected to the assessment of overall model fit in order to decide whether or not the model adequately represented the set of causal relationships. This is usually achieved through the assessment of the Chi-square goodness-of-fit measures. However, studies with larger samples may not rely on the Chi-square goodness-of-fit index (GFI) as a sole indicator of model fit (Hair et al., 2006). The other popular model fit indices include root mean square residual (RMR), root mean square error of approximation (RMSEA) and comparative fit index (CFI).

Root mean square residual (RMR) measures the average of the residuals between individual observed and estimated covariance and variance terms. Lower RMR and standardised root mean square residual (SRMR) values represent better fit and higher values represent worse fit (Hair et al., 2006). A value less than .05 is widely considered good fit and below .08 adequate fit (Kline, 2010).

Root mean square error of approximation (RMSEA) considers the error of approximation in the population (how well would the model, with unknown but optimally chosen parameter values, fit the population covariance matrix if it were available?). It explicitly tries to correct for both model complexity and sample size by including each in its computation. Values less than 0.05 indicate good fit and values as high as .08 represent reasonable errors of approximation in the population. AMOS also reports the 90% confidence interval around the RMSEA value along with the closeness to fit value. The narrow interval value around the RMSEA value with insignificant p value ($p > .05$) is indicative of how well the model fits the data (Byrne, 2013).

Comparative fit index (CFI) is also a commonly used measurement of model fit index, where ranges between 0-1 with higher values indicate better fit. Values less than .90 are not usually associated with a model that fits well (Hair et al., 2006; Kline, 2010; Byrne, 2013). Hair et al. (2006) recommended reporting Chi-squared statistics in addition to another absolute index such as RMSEA and an incremental index such as CFI. When comparing models of varying complexities, they recommend adding the - Parsimony-Adjusted Fit Index measure (PNFI). Others report GFI or, more recently, SRMR instead. This study used the following 'Rules of Thumb' criteria for a structural equation model fit (recommended values presented in Table 32).

To test the measurement model, CFA was conducted through AMOS 27 using the Maximum Likelihood (ML) method, which is the most widely used method for parameters estimation in SEM (Schermelele-Engel, Moosbrugger and Müller, 2003). Figure 26 shows the output path diagram of the CFA as was first run, followed by the overall goodness-of-fit statistics in Table 32. The full model fit summary for the first run of CFA appears in Appendix K.

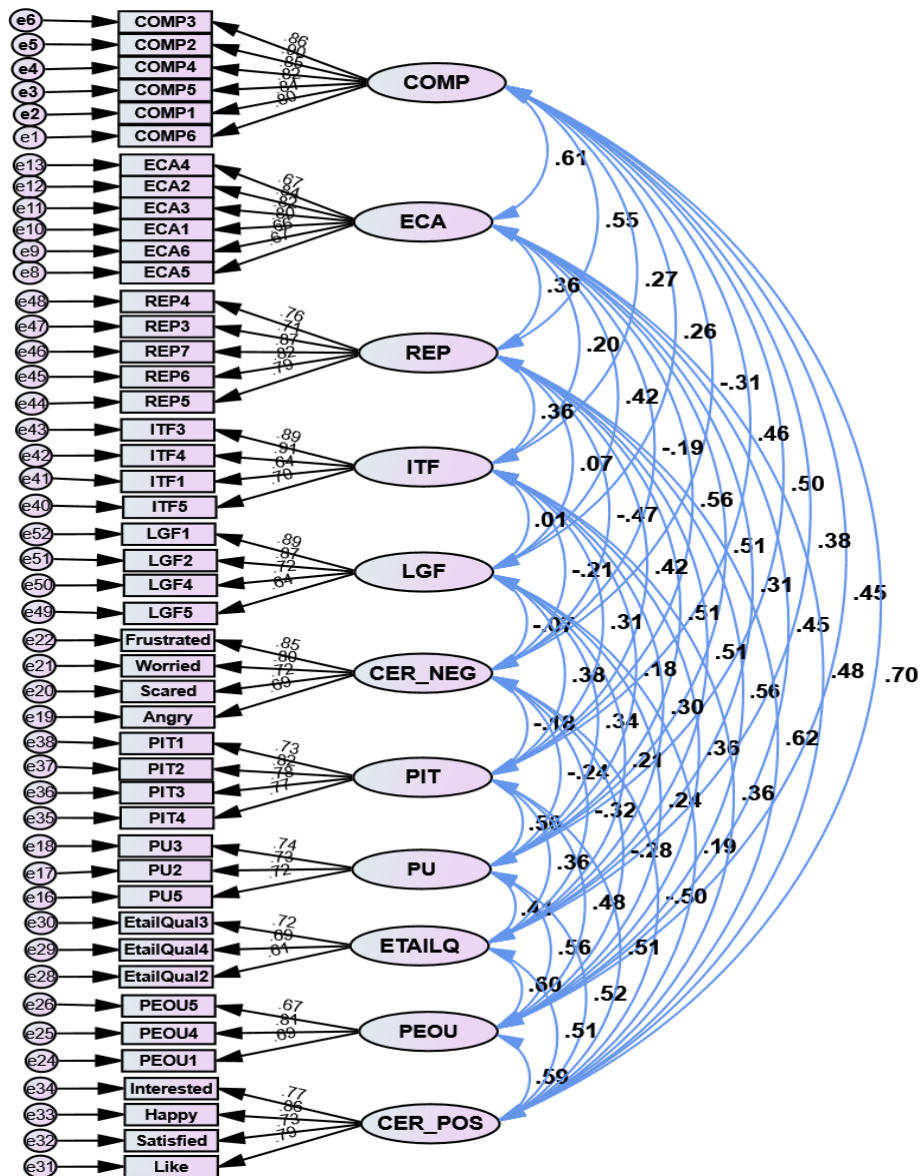


Figure 26: CFA Output path diagram (first run)

It can be seen from Table 32 that while most fit indices indicated a satisfactory level of model adequacy, three showed the opposite, these being the Chi-square (χ^2) test p-value, GFI, and AGFI (Adjusted goodness of fit index). Specifically, the Chi-square statistic ($(\chi^2/df = 805, n = 312) = 1.883$ and $p = 0.00$) was reported as significant, indicating it is not a good model fit. However, this result was expected since the Chi-square (χ^2) test for statistical significance is sensitive to sample size, which means that for a large sample ($n > 200$), the Chi-square (χ^2) statistics usually reports an unsatisfactory model fit and leads to rejection of a null hypothesis.

Therefore, as mentioned earlier in this section, the Chi-square (χ^2) statistical significance level was not applicable to the SEM model validation process in the present study. On the other hand, the unacceptable values of the goodness-of-fit indices (unsatisfactory) suggested that there was a room for further model adjustments in order to achieve a good model.

Goodness of fit index	Cut off values	References
Overall model fit (Absolute)		
$(\chi^2)/df$	≤ 2	Brown, 2006
RMSEA	≤ 0.05	Jöreskog and Sörbom, 1986
Associated p-close	≥ 0.05	Hair et al. 2001; Kline, 2010
SRMR	≤ 0.05	Harvey et al. 1985
RMR	≤ 0.05	Hair et al. 2001; Kline, 2010
GFI	≥ 0.9	Etezadi-Amoli and Farhoomand, 1996
AGFI	> 0.8	Etezadi-Amoli and Farhoomand, 1996
Model comparisons (Incremental)		
NFI	≥ 0.90	Hu and Bentler, 1999
TLI	≥ 0.95	Schumacker and Lomax, 2004
CFI	≥ 0.95	Kline, 2010
Model Parsimony		
ECVI	The smaller the better	Schermelleh-Engel, Moosbrugger and Müller, 2003; Schreiber et al. 2006
AIC	The smaller the better	
CAIC	The smaller the better	
PNFI	The greater the better	
PGFI	The greater the better	

Table 32: Overall Goodness-of-fit statistics

RMSEA: Root Mean Square Error of Approximation, SRMR: Standardised Root Mean Square Residual, RMR: Root Mean Square Residual, GFI: Goodness-of-Fit Index, AGFI: Adjusted Goodness-of-Fit Index, NFI: Normed Fit Index, NNFI: Non-Normed Fit Index, TLI: Tucker-Lewis Index, CFI: Comparative Fit Index.

Model parsimony indices are considered to be an important criterion in determining structural equation model goodness-of-fit as they provide information about which model is the best among a number of alternatives. E.g., Parsimony Normed Fit Index (PNFI), Parsimony Goodness-of-Fit Index (PGFI), Akaike Information Criterion (AIC), Consistent AIC (CAIC), and Expected Cross-Validation Index (ECVI).

5.6.2 Modification of the Measurement Model

To improve the measurement model's goodness-of-fit, several modifications were introduced to the original model shown in Figure 24. The following paragraphs provide more details about the procedures applied for those adjustments, which were based on guidelines from Schermelleh-Engel, Moosbrugger and Müller (2003), Hair et al. (2010), and Byrne (2013).

Standardised Regression Weights (SRW): Known as factor loadings in EFA, these regression weights represent the correlation between the observed and latent variables. These weights are recommended to be above 0.5, but higher values (close

to one) are much better. Any measurement variables less than 0.5 would be considered for elimination due to the weak correlation with their latent variable.

Squared Multiple Correlations (SMC): These values represent the percentage of variance in the latent variable that can be explained by each individual observed variable. While values above 0.5 are considered acceptable, higher values (close to one) are more favourable.

Standardised Residuals (SR) matrix: Since standardised residuals represent the differences between the data covariance matrix and the model-estimated covariance, observed variables with high standardised residuals are considered a poor fit in the model. A good model should generate standardised residuals close to zero. Therefore, standardised residuals of more than +2.56 or less than -2.56 are usually indicators to determine the causes of the model misfit.

Modification Indices (MI): These indices indicate the effect of freeing pre-fixed parameters on Chi-square (χ^2). Therefore, checking these values would help the researcher to determine which path should be added to the model in order to decrease the Chi-square (χ^2) statistic, which in turn improves the model fit. Large modification indices (usually more than 6.63) determine which parameters should be set free in order to achieve better model suitability. A common practice in this regard is to correlate parameter errors that are part of the same factor. Moreover, parameters that show high covariance between their errors and at the same time have high regression weights are candidates for deletion. Accordingly, the SEM output results were examined carefully in order to identify any room for further improvements.

Model revisions were done based on assessment of SRW, SMC, SR and MI Items with SRW < 0.5 were considered for removal (Hair et al., 2009). Items with SR > 2.54 or < -2.54 were considered problematic items, which were further evaluated before removal (Brown, 2006). MI values were used to identify potential cross-loading items (Hair et al., 2009), as the decision for modification was based on a combination of all the recommended guidelines.

Firstly, a close inspection of the SRW revealed that all values were above 0.5, which indicates a very good correlation between the individual observed variables and their latent variables. Consequently, no improvements were suggested by this step. Appendix L presents these SRWs.

Secondly, an inspection of the SMC shown in Appendix M revealed all values to be over the recommended threshold of 0.5, indicating that a considerable percentage of variance explained by the individual observed variables was achieved, with the exception of ITF1, ITF5, LGF5, EtailQual4, EtailQual2, PEOU5, CERNegative1, ECA4, ECA6, ECA5. These were later checked with other modification options before deletion.

Thirdly, a careful review of the SR matrix showed that ITF1, ITF2, ECA6 and LG5 had overestimated residual values more than the recommended residual values with other constructs. Accordingly, due to its misfit with the model, it was decided to drop the four factors from the measurement model.

Finally, an inspection of MIs, as presented in Appendix N, summarised the factors whose MI were considered for deletion in order to enhance the measurement model goodness-of-fit. The SEM output results were examined carefully in order to identify any room for further improvements. The following modifications were made in order to enhance the measurement model goodness-of-fit:

Deletion Note for Modification: Deletion of ECA4, ECA5 and ECA6; ITF1 AND ITF5; REP3 and REP6; LG1 and LG5; EtailQ2, COMP6, PEOU5, CERNegative 1 (angry) and CERPositive 4 (like), based on MI/SMC/SR analyses. Covariance of error terms were in five pairs, as follows: (e2 with e3), (e2 with e4), (e5 with e6), (e10 with e12), and (e44 with e48), based on MI analysis. See Appendix O.

In summary, after introducing the model modifications, a second CFA run was made. Whilst Figure 27 shows the related output path diagram, Table 33 shows the overall goodness-of-fit statistics that resulted from comparing the first and the second runs of the CFA. The full model-fit summary for the second run of the CFA can be found in Appendix P.

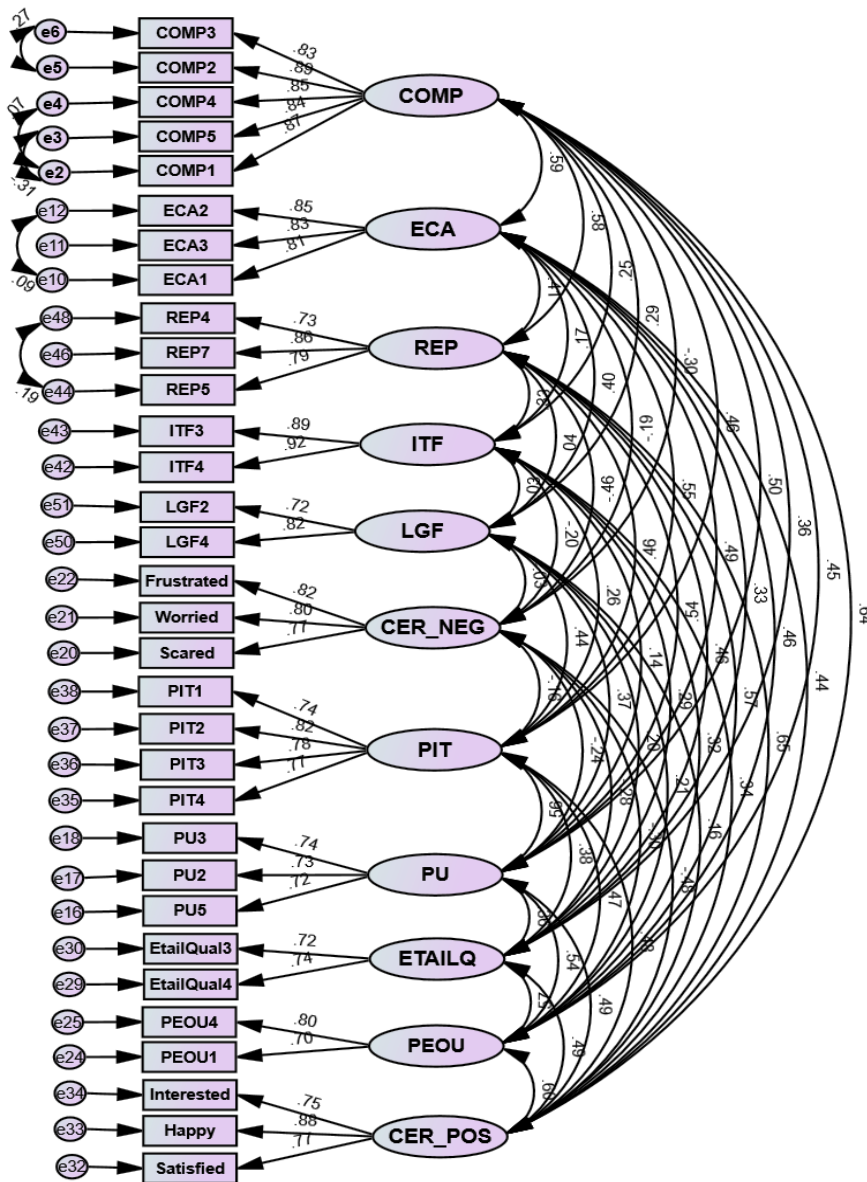


Figure 27: CFA Output Path Diagram (second run)

In this study, based on the above model, the associated fit statistics indicated that this is a reasonably good-fit model. In accordance with Kline's (2010) recommendation, the RMSEA, CFI, AGFI, NFI, TLI, and the SRMR values that were unsatisfactory in the first run had improved to acceptable values. It can be seen from Table 33, a comparison tabulation of the first and second CFA runs results, that introduction of the aforementioned modifications improved the overall goodness-of-fit of the model to an acceptable level. Therefore, since the revised model was confirmed to fit the empirical data adequately, it was decided that no further modification was necessary.

Model fit index	Recommended value	First run	Comments	Second run	Comments
$C_{min} = \chi^2/df$	≤ 2	$\chi^2 = 1758.89$; df=934 Cmin = 1.883	Acceptable	$\chi^2 = 592.57$ df=404 Cmin = 1.467	Acceptable
GFI	≥ 0.8	.801	Acceptable	.893	Acceptable
AGFI	> 0.8	.770	Unsatisfactory	.861	Acceptable
RMR	≤ 0.05	.046	Acceptable	.030	Acceptable
SRMR	≤ 0.05	.0583	Unsatisfactory	.0409	Acceptable
CFI	≥ 0.95	.905	Unsatisfactory	.966	Acceptable
TLI	≥ 0.95	.895	Unsatisfactory	.958	Acceptable
NFI	≥ 0.90	.819	Unsatisfactory	.901	Acceptable
IFI	≥ 0.90	.906	Acceptable	.966	Acceptable
RMSEA	≤ 0.05	.053	Unsatisfactory	.039	Acceptable
PClose	≥ 0.05	.078	Acceptable	.098	Acceptable
PNFI	The greater, the better	.739	Compare with 2 nd run	.734	Acceptable
AIC	The smaller, the better	2052.89	Compare with 2 nd run	840.57	Acceptable
ECVI	The smaller, the better	6.60	Compare with 2 nd run	2.70	Acceptable

Table 33: A comparison tabulation of the first and second CFA run

5.6.3 Construct Validity and Reliability

The next logical step at this point was to determine the construct validity. Validity is the extent/degree to which an instrument measures the constructs it is intended to measure, while reliability refers to an instrument's ability to prove consistency in repeated usage (Hong and Cho, 2011). Construct validity can be assessed through convergent and discriminant validity tests (Hair et al., 2010). Convergent validity is estimated by Standardised Regression Weights (SRW) - item factor loadings, Composite Reliability (CR) and Average Variance Extracted (AVE). The recommended values for each should be as follows: SRW > 0.7 , CR > 0.7 and AVE > 0.5 (Hair et al., 2010).

A. Convergent Validity Assessment

Convergent validity is the extent to which a measure correlates highly with other measures designed to measure the same construct. In this study, first, the Standardised Regression Weights (SRW) was checked, and Table 34 shows that the SRW values of the items ranged between .703 for PEOU1 and .922 for ITF4, which were above the minimum recommended cut-off point of 0.7.

Latent Variable	Observed Variable	SRW Estimates	Latent Variable	Observed Variable	SRW Estimates
COMP	COMP1	.867	EtailQ	EtailQual4	.737
	COMP5	.836		EtailQual3	.717
	COMP4	.855	CER_POS	CERPositive3	.767
	COMP2	.885		CERPositive1	.878
	COMP3	.831		CERPositive2	.755
ECA	ECA1	.810	PIT	PIT3	.777
	ECA3	.834		PIT2	.820
	ECA2	.851		PIT1	.735
PU	PU5	.715		PIT4	.766
	PU2	.732	ITF	ITF4	.922
	PU3	.738		ITF3	.888
CER_NEG	CERNegative4	.769	REP	REP5	.794
	CERNegative2	.804		REP7	.856
	CERNegative3	.817		REP4	.727
PEOU	PEOU1	.703	LG	LGF4	.824
	PEOU4	.800		LGF2	.721

Table 34: Standard regression weights (SRW) for observed variables (CFA, 2nd run)

Although SRW values were provided by AMOS 27 output as presented in Table 34, Average Variance Extracted (AVE) values were not generated for the constructs, and thus were calculated in Microsoft Excel using the formula proposed by Fornell and Larcker (1981):

$$AVE = \frac{\sum_{i=1}^n \lambda_i^2}{n}$$

Where Σ means summation, λ represents the standardised regression weight for item i under a particular construct, and n is the total number of observed variables (Fornell and Larcker, 1981). Presented below are the calculated AVE values for all constructs.

Constructs	Items	AVE	Comments
Compatibility (COMP)	5	0.731	Accepted > 0.5
E-commerce Awareness (ECA)	3	0.692	Accepted > 0.5
Perceived Usefulness (PU)	3	0.531	Accepted > 0.5
IT Infrastructure (ITF)	2	0.819	Accepted > 0.5
Legal Factor (LGF)	2	0.599	Accepted > 0.5
Negative Customers' Affective Responses (CERN)	3	0.635	Accepted > 0.5
Purchase Intention (PIT)	4	0.601	Accepted > 0.5
Reputation (REP)	3	0.631	Accepted > 0.5
Website Quality (EtailQ)	2	0.529	Accepted > 0.5
Perceived Ease of Use (PEOU)	2	0.567	Accepted > 0.5
Positive Customers' Affective Responses (CERP)	3	0.643	Accepted > 0.5

Table 35: Average Variance Extracted (AVE) values

Similarly, an assessment of the Composite Reliability (CR) of the model constructs was carried out. CR resulting from using SEM is considered to provide better reliability estimation than by using Cronbach's alpha coefficient (Peterson and Kim, 2013). Therefore, introducing CR in this study was a means of providing another reliability test to judge the accuracy of the results obtained from Cronbach's alpha coefficient test. CR values for all model constructs were calculated according to the following equation by Fornell and Larcker (1981):

$$CR = \frac{\left(\sum_{i=1}^n \lambda_i \right)^2}{\left(\sum_{i=1}^n \lambda_i \right)^2 + \left(\sum_{i=1}^n e_i \right)}$$

where Σ means summation, λ represents the standardised regression weight for item i under a particular construct, and e_i is the error variance for the item. Table 36 presents the results of CR for all study constructs. The CR values ranged from 0.758 for Website Quality to 0.940 for the COMP construct, demonstrating that all constructs showed high CR coefficients that were all above the cut-off point of 0.7, thereby indicating adequate internal consistency.

Constructs	CR	Comments
Compatibility (COMP)	0.940	Accepted > 0.7
E-commerce Awareness (ECA)	0.908	Accepted > 0.7
Perceived Usefulness (PU)	0.850	Accepted > 0.7
IT Infrastructure (ITF)	0.868	Accepted > 0.7
Legal Factor (LGF)	0.814	Accepted > 0.7
Negative Customers' Affective Responses (CERN)	0.826	Accepted > 0.7
Purchase Intention (PIT)	0.918	Accepted > 0.7
Reputation (REP)	0.877	Accepted > 0.7
Website Quality (EtailQ)	0.758	Accepted > 0.7
Perceived Ease of Use (PEOU)	0.802	Accepted > 0.7
Positive Customers' Affective Responses (CERP)	0.893	Accepted > 0.7

Table 36: Composite Reliability (CR) results

With CRs higher than 0.7 (a range from 0.758 for Website Quality to 0.940 for Compatibility) and AVE values from 0.529 to 0.731, the results suggest a high level of convergent validity for all latent variables in the study's measurement mode.

B. Discriminant Validity

To further confirm the construct validity, a discriminant validity test suggested by Hair et al. (2010) was conducted. Discriminant validity is the extent to which a construct is truly distinct from other constructs (Hair et al., 2006). This is measured by comparing the values of average variance extracted with the squared correlation estimates of each construct's items. The factors are considered discriminant when the AVE values are greater than the squared correlation estimates (Fornell and Larcker, 1981). Discriminant validity was verified for this study: the confidence intervals of all the correlations did not contain the value one, and their squared value did not exceed the AVE. Hence, the CFA results provide evidence of discriminant validity for all the study constructs. (diagonal values in bold, See Table 37).

Constructs	ITF	REP	LGF	PIT	CER_POS	ETAILQ	PEOU	CER_NEG	PU	ECA	COMP
ITF	0.9052										
REP	0.325	0.7941									
LGF	-0.026	0.038	0.7742								
PIT	0.264	0.460	0.437	0.7751							
CER_POS	0.345	0.649	0.159	0.483	0.8019						
ETAILQ	0.288	0.464	0.197	0.381	0.490	0.7271					
PEOU	0.325	0.567	0.213	0.473	0.597	0.568	0.7531				
CER_NEG	-0.205	-0.458	-0.026	-0.157	-0.479	-0.280	-0.302	0.7969			
PU	0.142	0.541	0.372	0.562	0.494	0.363	0.536	-0.239	0.7284		
ECA	0.175	0.407	0.404	0.550	0.445	0.331	0.465	-0.193	0.494	0.8318	
COMP	0.255	0.575	0.287	0.463	0.640	0.362	0.446	-0.297	0.501	0.591	0.8550

Table 37: Discriminant validity results

5.6.4 Common Method Bias (CMB)

According to Podsakoff et al. (2003), CMB can arise mainly from four broad sources: common respondent effects, item characteristic effects, item context effects, and measurement context effects, and it can be assessed as follows:

1. Harman's Single Factor technique uses exploratory factor analysis, where all measured variables are loaded onto a single factor and constrained without rotating the resulting factor solution. Evidence for common method bias exists when this single latent factor explains more than 50% of the variance.

2. Common Latent Factor technique introduces a new common latent variable that all measured variables are related to; those paths are constrained to be equal, and the variance of the common factor is constrained to be 1. The common variance is estimated as the square of the common factor of each path before standardisation. The common heuristic is to set the threshold to 50%.

In this research, the Harman's single factor and common latent factor techniques were performed in order to detect the presence of CMB. Firstly, the Harman's single factor method was employed to test CMB by performing Exploratory Factor Analysis (EFA) in SPSS 27 for all research-measured variables, with the number of factors extracted constrained to one and with no rotation method. Accordingly, only one factor emerged to explain 32.11 percent of the variance, as presented in Appendix Q, which is less than 50%, an indication that this single factor does not explain most of the variance. Therefore, the study could proceed to further analysis.

The Harman's single factor result was supported by the common latent factor result using SEM's Confirmatory Factor Analysis (CFA) in AMOS 27. Figure 28 shows the research measurement model indicating that the maximum common variance between the new latent factor and all measured variables in the model was 12.25% (square of .35), which is less than the recommended threshold for CMB of 50%.

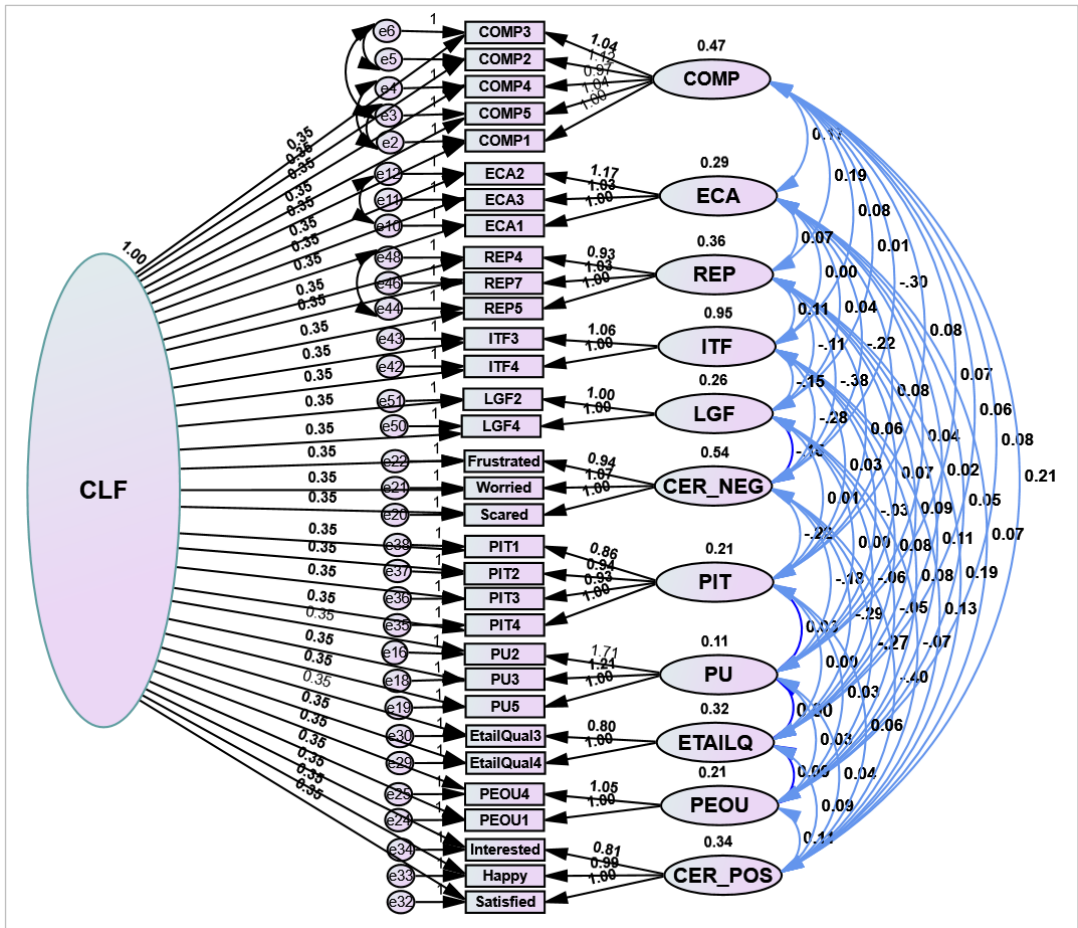


Figure 28: CFA for Common Method Bias

Perceived usefulness (PU), perceived ease of use (PEOU), reputation (REP), website quality (ETAILQ), legal factor (LGF), IT infrastructure (ITF), E-commerce awareness (ECA), compatibility (COMP), customers' emotional responses - positive (CERP), customers' emotional responses - negative (CERN) and purchase intention (PIT)

5.7 Structural Equation Modelling (SEM)

Structural Equation Modelling (SEM) often does specify particular factors and variables to be causal in nature. Moreover, SEM expands on path analysis by allowing paths to be drawn between latent variables which are also known as hypothetical constructs (Streiner, 2006). Having established the measurement model goodness-of-fit and confirmed the validity of all relevant constructs, next on the analysis was investigating and assessing how the model may be used to predict customers' intention to adopt EC in the context of Nigeria.

Structural Model Evaluation and Related Goodness-of-Fit (GoF)

Structural Equation Modelling (SEM) includes structural or causal paths between latent variables (factors under investigation) and is widely used because it provides a quantitative method for testing substantive theories. It also explicitly accounts for the

measurement errors that are found in most disciplines (Raykov and Marcoulides, 2006). Based on the revised measurement model's latent and observed variables, a structural model was constructed, and the hypothesised theoretical relationships between the variables were tested through two adoption-response models using AMOS 27 Graphics. This served three purposes. First, it tested the hypotheses to identify which of the EC internal and external environmental factors had significant impact on purchase intention. Second, it tested the proposition that both positive and negative emotions elicited by customers are important in understanding purchase intention and EC adoption. Third, it validated how applicable the developed models are to EC adoption in the context of Nigeria.

The positive and negative adoption response models were presented separately, based on three major reasons: First, combining them together brought their total reliability values (Cronbach's alpha) to .407, below the recommended standard value of .70. However, when tested independently, reliability values of .863 for positive emotional responses (happy, satisfied, interested and like) and .843 for negative emotional responses (angry, worried, frustrated and scared) were obtained. Second, the pattern matrix presented in Table 34 clearly showed a clean and simple structure as recommended (Gorsuch, 1983, Nunnally and Bernstein, 1994; Gefen, Straub and Boudreau, 2000). The high factor loadings of positive and negative emotion items on their own individual factor provided evidence of factor independence (Wakefield 2015). According to Lazarus (1999) positive and negative feelings are increasingly recognised as independent of each other. Third, assessing the models' fit values revealed that combining the two emotion measures into one model reduced the goodness-of-fit indices of the data (as seen in Table 38).

Models and Goodness-of-Fit	Chi Square (χ^2)	Sig	χ^2/df	GFI	AGFI	RMR	SRMR	CFI	TLI	NFI	IFI	RMSEA
Recommended fit index value	Smaller, the better	$p < .001$	≤ 2	≥ 0.9	> 0.8	≤ 0.05	≤ 0.05	≥ 0.95	≥ 0.95	≥ 0.90	≥ 0.90	≤ 0.05
Positive emotional responses (1)	503.58; df=341	p=.000	1.477	.901	.874	.031	.0425	.968	.962	.907	.968	.039
Negative emotional responses (2)	465.096; df=344	p=.000	1.342	.906	.882	.032	.0414	.975	.970	.911	.975	.034
Models 1 and 2 combined	618.587; df=427	p=.000	1.449	.889	.863	.035	.0469	.965	.959	.897	.966	.038

Table 38: Goodness-of-Fit values for the separated and combined models

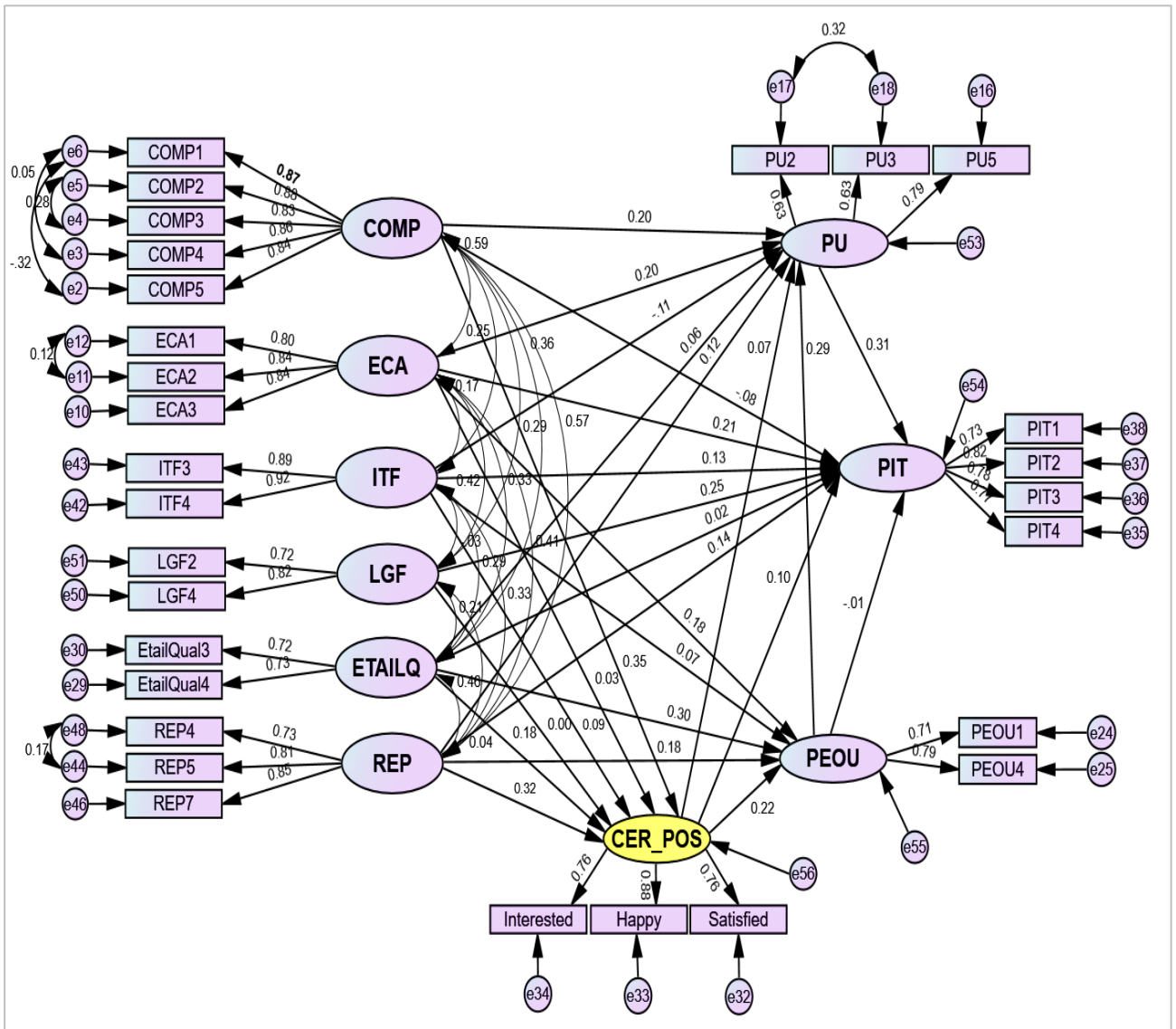
Some scholars such as Edell and Burke (1987), Miyamoto, Uchida and Ellsworth (2010) and Wakefield (2015) posited that positive and negative emotions can co-occur, creating mixed emotions bipolarity. However, other researchers such as Andreu et al.

(2006), using frameworks based on Izard's (1977) work, have proposed that separate discrete positive and negative dimensions (unipolarity) are more appropriate and useful in understanding customers' responses or reactions. It has been shown that discrete positive and negative effects provide their unique influences on behavioural responses (Andreu et al., 2006; Jang and Namkung, 2009; Eroglu, Machleit and Chebat, 2005); Bagozzi, Wong and Yi, 1999; Kim and Lennon, 2013; Beaudry and Pinsonneault, 2010). This study adopts the latter approach to test the role that either emotion plays.

5.7.1 Testing Research Hypotheses

All hypotheses were tested in this phase via SEM using AMOS 27 which also assessed the goodness of-fit between the structural model output and the empirical data. The structural model (the combination of confirmatory factor analysis (CFA) and path analysis) consisted of three endogenous variables (PU, PEOU, and PIT), six exogenous variables (COMP, ECA, REP, ITF, LGF, ETAILQ), and two mediators (CER_POS and CER_NEG). Acceptable model fit was observed with the refined 10 latent variables and one dependent variable. The full, model-fit summary for the first and second runs of SEM can be found in Appendix K and Appendix P, In the research models presented below, customers' emotions were operationalised as two mediators, and their mediating effects were tested separately via two models in relation to the key EC factors. The positive emotions are depicted by a yellow oval shape in Figure 29 (Model 1) and the negative emotions are represented with a blue oval shape in Figure 30 (Model 2).

Adoption-Response Model 1

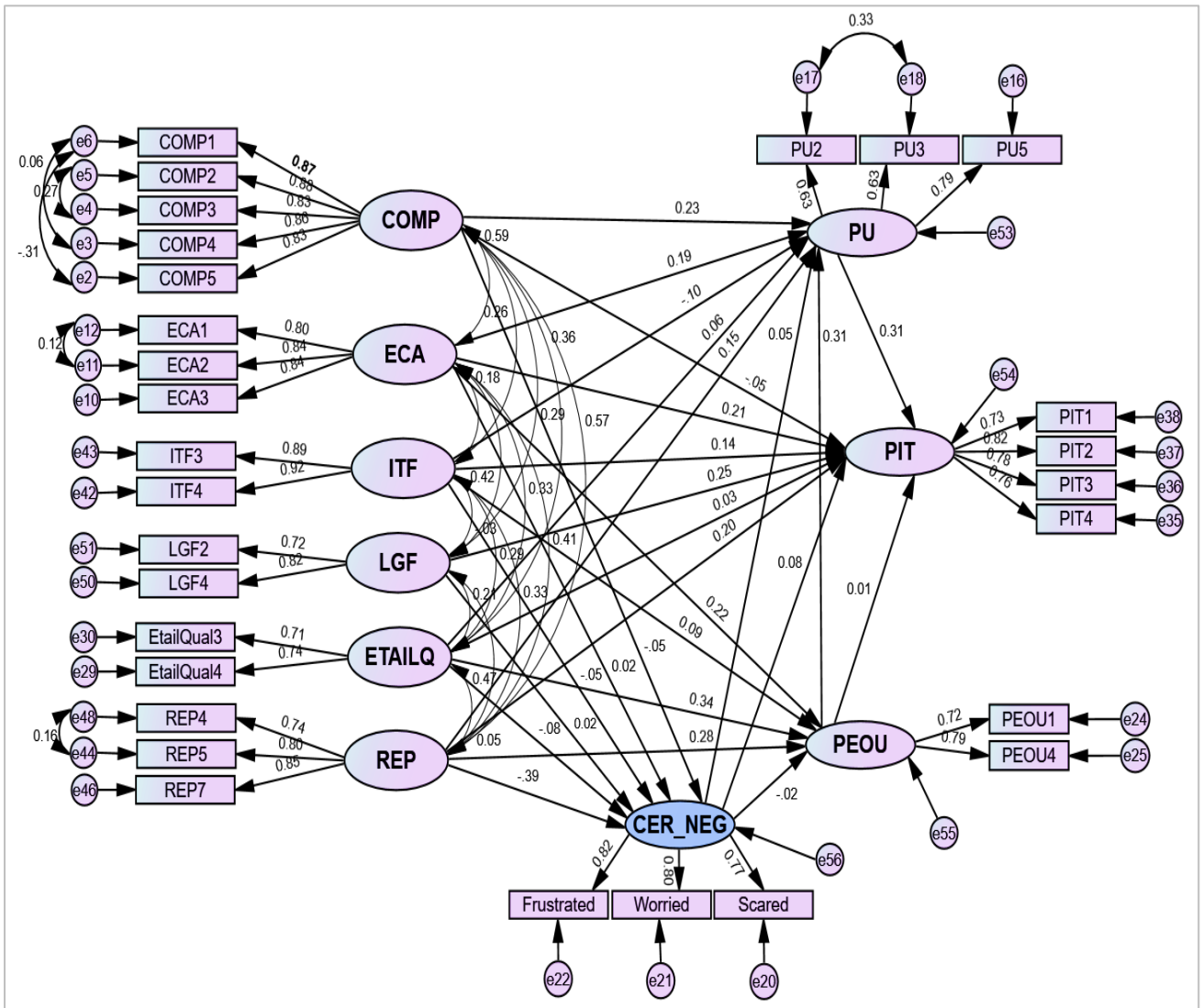


Positive Customers' Emotional Responses (as a mediator)
Cmin/df: 490.236/329=1.490 RMR =.028 NFI =.910 IFI =.968 TLI =.960 CFI =.968
GFI =.903 AGFI =.872 RMSEA =.040 SRMR =.0395

Figure 29: Positive emotional responses (Model 1) to predict purchase intention

*The goodness-of-fit (GoF) values presented in Model 1 show that the data set fitted the model adequately (See GoF values assessment criteria as highlighted in 5.6.1).

Adoption-Response Model 2



Negative Customers' Emotional Responses (as a mediator)
Cmin/df: 454.27/329=1.381 RMR =.030 NFI =.913 IFI =.975 TLI =.968 CFI =.974
GFI =.908 AGFI =.879 RMSEA =.035 SRMR =.0391

Figure 30: Negative emotional responses (Model 2) to predict purchase intention

*The goodness-of-fit (GoF) values presented in Model 2 show that the data set fitted the model adequately (See GoF values assessment criteria as highlighted in 5.6.1).

5.7.2 Research Hypotheses Analysis and Results

The summaries of the results of the proposed hypotheses obtained for the models are presented below.

A. Results of the hypothesis testing with positive responses only (Model 1)

From the SEM analysis, only 14 of the 27 hypothesised causal paths in the structural models were found statistically significant. Four of these paths were statistically significant at $p < 0.001$, two at $p < 0.01$, and eight at $p < 0.05$. In addition, four paths reflected the direct impacts of ITF, ECA, LGF, and PU on the dependent variable PIT. The remaining hypothesis values that achieved statistical significance are highlighted in bold in Table 39. There were thirteen paths that did not achieve statistical significance ($p > 0.05$).

Code	Hypotheses Paths	Estimate	S.E.	C.R.	P Value	Comments
H1a	PIT ← REP	.108	.067	1.628	.103	Not significant
H1b	PEOU ← REP	.156	.077	2.024	.043	Significant
H1c	PU ← REP	.082	.065	1.259	.208	Not significant
H2a	PIT ← ETAILQ	.014	.067	.212	.832	Not significant
H2b	PEOU ← ETAILQ	.267	.079	3.360	***	Significant
H2c	PU ← ETAILQ	.040	.068	.591	.555	Not significant
H3a	PIT ← ITF	.063	.029	2.146	.032	Significant
H3b	PEOU ← ITF	.039	.035	1.108	.268	Not significant
H3c	PU ← ITF	-.050	.029	-1.713	.087	Not significant
H4	PIT ← LGF	.199	.057	3.457	***	Significant
H6a	PIT ← ECA	.169	.065	2.614	.009	Significant
H6b	PEOU ← ECA	.160	.063	2.524	.012	Significant
H6c	PU ← ECA	.143	.060	2.377	.017	Significant
H7a	PIT ← COMP	-.054	.055	-.989	.322	Not significant
H7c	PU ← COMP	.117	.055	2.136	.033	Significant
H8 ₍₁₋₆₎	CER_POS ← REP	.295	.071	4.132	***	Significant
	CER_POS ← ETAILQ	.173	.069	2.519	.012	Significant
	CER_POS ← ITF	.056	.032	1.747	.081	Not significant
	CER_POS ← LGF	.004	.061	.063	.950	Not significant
	CER_POS ← ECA	.026	.068	.385	.700	Not significant
	CER_POS ← COMP	.276	.059	4.662	***	Significant
H9 ₍₁₋₆₎	See (CERN Model 2 Hypothesis Table)					
H10a	PIT ← CER_POS	.081	.075	1.082	.279	Not significant*
H10b	PEOU ← CER_POS	.208	.087	2.383	.017	Significant
H10c	PU ← CER_POS	.054	.077	.699	.485	Not significant
H11a-c	See (CERN Model 2 Hypothesis Table)					
H12a ₍₁₋₆₎	Mediation effects					
H13	PIT ← PU	.344	.108	3.195	.001	Significant
H14a	PIT ← PEOU	-.006	.090	-.068	.946	Not significant
H14b	PU ← PEOU	.234	.092	2.560	.010	Significant

Table 39: The results of the proposed hypotheses with positive emotions

Significance codes and strength: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$; S.E. = Standard Error, C.R. = Critical Ratio
P value = significance estimate, *Cut off (C.R. $\geq \pm 1.96$) (Hair et al., 2010)

Perceived usefulness (PU), Perceived ease of use (PEOU), IT infrastructure (ITF), Reputation (REP), Legal factor (LGF), E-commerce awareness (ECA), Compatibility COMP), Website quality (ETAILQ), Customers' emotional responses - positive (CER_POS), Customers' emotional responses-negative (CER_NEG), and Purchase intention (PIT). In table as CER_NEG to comply with Structural Equation Modelling label rule, referred to as CERN in the text

B) Results of the hypotheses testing with negative responses only (Model 2)

Only 12 of the 27 hypothesised causal paths in the structural models were found statistically significant. Three of these paths were statistically significant at $p < 0.001$, five at $p < 0.01$, and four at $p < 0.05$. Five paths reflected the direct impacts of ITF, ECA, LGF, REP and PU on the dependent or target variable PIT. Overall, there were fifteen paths that were not statistically significant ($p > 0.05$). The remaining hypothesis values that achieved statistical significance are highlighted in bold in Table 40.

Code	Hypotheses Paths	Estimate	S.E.	C.R.	P value	Comments
H1a	PIT ← REP	.152	.069	2.194	.028	Significant
H1b	PEOU ← REP	.243	.076	3.197	.001	Significant
H1c	PU ← REP	.106	.068	1.559	.119	Not significant
H2a	PIT ← ETAILQ	.027	.065	.411	.681	Not significant
H2b	PEOU ← ETAILQ	.297	.079	3.739	***	Significant
H2c	PU ← ETAILQ	.046	.066	.691	.490	Not significant
H3a	PIT ← ITF	.067	.029	2.322	.020	Significant
H3b	PEOU ← ITF	.052	.036	1.442	.149	Not significant
H3c	PU ← ITF	-.045	.029	-1.557	.119	Not significant
H4	PIT ← LGF	.197	.058	3.419	***	Significant
H6a	PIT ← ECA	.169	.066	2.577	.010	Significant
H6b	PEOU ← ECA	.199	.064	3.104	.002	Significant
H6c	PU ← ECA	.139	.061	2.268	.023	Significant
H7a	PIT ← COMP	-.031	.052	-0.599	.549	Not significant
H7c	PU ← COMP	.138	.052	2.650	.008	Significant
H8 ₍₁₋₆₎	See (CERP Model 1 Hypothesis Table)					
H9 ₍₁₋₆₎	CER_NEG ← REP	-.485	.122	-3.979	***	Significant
	CER_NEG ← ETAILQ	-.104	.112	-.929	.353	Not significant
	CER_NEG ← ITF	-.037	.054	-.686	.493	Not significant
	CER_NEG ← LGF	.022	.104	.207	.836	Not significant
	CER_NEG ← ECA	.030	.116	.254	.799	Not significant
	CER_NEG ← COMP	-.057	.097	-.584	.559	Not significant
H10a-c	See (CERP Model 1 Hypothesis Table)					
H11a	PIT ← CER_NEG	.046	.038	1.217	.224	Not significant
H11b	PEOU ← CER_NEG	-.011	.049	-.233	.816	Not significant
H11c	PU ← CER_NEG	.029	.039	.749	.454	Not significant
H12b ₍₁₋₆₎	Mediation effects					
H13	PIT ← PU	.344	.108	3.187	.001	Significant
H14a	PIT ← PEOU	.011	.089	.128	.898	Not significant
H14b	PU ← PEOU	.248	.090	2.752	.006	Significant

Table 40: The results of the proposed hypotheses with negative emotions

Significance codes and strength: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$; S.E. = Standard Error, C.R. = Critical Ratio
P value = significance estimate, *Cut off (C.R. $> \pm 1.96$) (Hair et al., 2010)

Perceived usefulness (PU), Perceived ease of use (PEOU), IT infrastructure (ITF), Reputation (REP), Legal factor (LGF), E-commerce awareness (ECA), Compatibility COMP), Website quality (ETAILQ), Customers' emotional responses - positive (CER_POS), Customers' emotional responses-negative (CER_NEG), and Purchase intention (PIT). In table as CER_NEG to comply with Structural Equation Modelling label rule, referred to as CERN in the text

The following paragraphs present in detail the results of the hypothesis testing for both models:

H1a: This hypothesis tested the impact of REP on PIT towards EC adoption. As shown in Table 39 (model 1, positive emotions), this hypothesis was not supported ($p = 0.103 > 0.05$). This implies that REP has no significant impact on PIT. Conversely, Table 40 (model 2, negative emotions) shows the causal path between the two constructs had a significant impact at a level of $p < 0.05$ ($p = .028$, path coefficient of 0.200). This suggests that REP impacts PIT. The higher the REP, the higher the PIT.

H1b: This hypothesis tested the impact of REP on PEOU for both models. As presented in Tables 39 and 40, the causal path between the two variables revealed a significant positive impact at a level of $p < 0.05$ ($p = .043$) and $p = 0.001$ for models 1 and 2, respectively. That is, any increase in reputation would positively impact customers' perceived ease of use of EC.

H1c: For both models, the p value estimates for the causal paths between REP and PU were $p = 0.208 > 0.05$ and $p = 0.119 > 0.05$, respectively. These results indicate lack of support for hypothesis H1c. Resultantly, there was no significant impact of REP on PU. Thus, REP does not positively and directly impact PU.

H2a: For both models, the p value estimates for the causal paths between ETAILQ and PIT were $p = 0.832 > 0.05$ and $p = 0.681 > 0.05$, respectively. These results indicate lack of support for H2a. Accordingly, there was no significant impact of either construct on the other: ETAILQ does not positively and directly impact PIT.

H2b: The causal path between ETAILQ and PEOU for the two models indicated a significant impact of ETAILQ on PEOU at a level of $p < 0.001$ ($p = 0.000$). Therefore, hypothesis H2b was supported, which suggested that ETAILQ had a strong, positive and direct impact on PEOU. An increase in the quality of a website would positively and strongly impact customers' perceived ease of use of EC.

H2c: Tables 39 and 40 reveal a non-significant impact of ETAILQ on PU ($p = 0.555$ and $p = .490$) for both models, respectively. Thus, H2c was not supported.

H3a: The causal path between ITF and PIT for the two models indicated a significant impact of ITF on PIT at a level of $p < 0.05$ ($p = 0.032$ and $p = 0.020$, respectively). Therefore, hypothesis H3a was supported, which suggested that ITF had a positive and direct impact on PIT. Better ITF would have a positive and significant impact on PIT.

H3b: For both models, the p value estimates for the causal paths between ITF and PEOU were $p = 0.628 > 0.05$ and $p = 0.149 > 0.05$, respectively. These results indicate lack of support for H3b, i.e., no significant impact between the two constructs. This suggests ITF does not directly impact PEOU.

H3c: Tables 39 and 40 reveal a non-significant impact of ITF on PU ($p = 0.087$ and $p = 0.119$ for both models, respectively). Thus, H3c was not supported, as ITF showed no significant impact on PU. This suggests ITF does not directly impact PU.

H4: This hypothesis tested the impact of LGF on PIT. The causal path between the two variables revealed a significant, strong and positive influence at a level of $p < 0.001$ ($p = 0.00$) for the two models. Thus, hypothesis H4 was supported. This indicates a direct, positive and strong impact of LGF on customer's purchase intention. In other words, any improvement in LGF would positively and strongly impact customer's purchase intention towards adopting EC.

*H5a-c was proposed to test the impact of CRF on PIT, PEOU and PU. However, the CRF cross-loaded during the EFA so it was dropped.

H6a: The causal path between ECA and PIT disclosed a significant impact of ECA on PIT at a level of $p < 0.01$ ($p = 0.009$) and $p < 0.05$ ($p = 0.010$) for both models, respectively. Therefore, H6a was supported. This suggests a direct, positive and significant impact of ECA on PIT. The higher the ECA, the higher the PIT.

H6b: The hypothesis tested the impact of ECA on PEOU. The causal path between the two constructs revealed a significant, direct and positive impact on PEOU at a level of $p < 0.05$ ($p = 0.012$) and $p < 0.01$ ($p = 0.002$). Thus, H6b was supported. This indicates that ECA does positively and significantly influence PEOU.

H6c: Tables 39 and 40 reveal a significant impact of ECA on PU at a level of $p < 0.05$ ($p=0.017$ and $p=0.023$ for both models, respectively). Thus, H6c was supported. This suggests that ECA directly and positively impacts PU.

H7a: This hypothesis tested the impact of COMP on PIT. As seen in Tables 39 and 40, the impact of COMP on PIT was not significant, with $p > 0.05$ ($p=0.322$ and $p=0.549$) for both models, respectively. Thus, H7a was not supported. This implies that COMP does not directly impact PIT.

H7c: The causal path between COMP on PU revealed a significant, direct and positive impact at a level of $p < 0.05$ ($p=0.033$) and $p < 0.01$ ($p=0.008$) for both models, respectively. Thus, H7c was supported. This implies COMP directly and positively impacts PU.

C) Customers' affective responses towards the key EC factors

H8₍₁₋₆₎: The hypotheses tested the impact of EC adoption factors on positive customers' emotional responses (CERP). Table 39 reveals the causal paths of both REP and COMP with CERP were statistically significant with direct impact at a level of $p < 0.001$ ($p=0.000$). ETAILQ also had a statistically significant impact on CERP, at the level of $p < 0.05$ ($p=0.012$). These imply strong, positive and direct significant relationships between online retailers' REP, ETAILQ, COMP and CERP. Thus, hypotheses H8_(1,2,6) were supported. In contrast, no significant impacts were found for the causal relationships between ITF, LGF, ECA and CERP. Therefore, H8₍₃₋₅₎ were rejected.

H9₍₁₋₆₎: The hypotheses tested the impact of EC adoption factors on negative customers' emotional responses (CERN). As shown in Table 40, only one factor, reputation (REP), had a strong, direct, significant and negative influence on purchase intention at the level of $p < 0.001$ ($p=0.000$). The path coefficient for REP was -0.39 . Thus, hypothesis H9₍₁₎ was supported. In contrast, no significant impacts were found for the causal relationships between ETAILQ, COMP, ITF, LGF, ECA and CERN. Therefore, H9₍₂₋₆₎ were rejected.

H10a: The causal path between CERP and PIT indicated no significant impact of CERP on PIT at a level of $p > 0.05$ ($p = 0.279$ and critical ratio 1.082) (Table 39). Therefore, hypothesis H10a was not supported.

H10b: The p value estimate for the causal path between CERP and PEOU was $p = 0.017$ (< 0.05) (Table 39). This implies CERP does directly and positively impact PEOU. Thus, H10b was supported.

H10c: Table 39 shows a non-significant impact of CERP on PU ($p = 0.485 > 0.05$). Thus, H10c was not supported. This suggests CERP does not directly impact PU.

H11a: Table 40 reveals a non-significant impact of CERN on PIT. The p value and the critical ratio estimate for the causal path between CERN and PIT were $p = 0.224$ (> 0.05) and 1.217, respectively. Thus, H11a was not supported. This suggests CERN does not directly impact PIT.

H11b: The p value estimate for the causal path between CERN and PEOU was $p = 0.816 > 0.05$ (Table 27). Thus, H11b was not supported. This result indicates CERN does not directly impact PEOU.

H11c: The p value estimate for the causal path between CERN and PU was $p = 0.454 > 0.05$ and 0.749 (Table 27). Thus, H11c was not supported. This result indicates that CERN does not directly impact PU.

5.7.3 Mediating Effects Hypothesis Results from the Two Models

After previously estimating the direct effects of other factors via hypothesis testing, the researcher tested with SEM, using AMOS 27, the indirect effects of the mediating role of customer's emotion in online shopping. Using the bootstrap procedure described by Preacher and Hayes (2004) and Hayes (2013), the recommended 5,000 bootstrapping samples were generated from the original data set for the overall sample ($n = 312$). EC factors represented the independent variables, purchase intention was the dependent variable, and CERP (customers' positive emotional response) and CERN (customers' negative emotional response) were the mediators. All the key EC factors identified in

this study were tested with both positive and negative emotions to see if they have significant indirect effects towards purchase intention. In other words, to confirm if customers' emotions mediated the relationship between EC factors and purchase intention (PIT). Table 41 summarises these mediating effects and the related hypothesis testing results for Hypotheses H12a (1-6) and H12b (1-6).

Mediation Effects (H12a)	Direct Effects	Indirect Effects	Total Effects	95% BCa CI	Mediation Results (Model 1: Positive)
(1) REP → CERP → PIT	.144(ns)	.098(ns)	.242	[-.002, .230]	No significant effects, no mediation
(2) EtailQ → CERP → PIT	.018(ns)	.068 (ns)	.086	[-.025, .191]	No significant effects, no mediation
(3) COMP → CERP → PIT	-.083(ns)	.110*	.027	[.023, .237]	Indirect effects and full mediation
(4) ECA → CERP → PIT	.212**	.080*	.292	[.012, .179]	Partial mediation: complementary
(5) LGF → CERNP → PIT	.250***	.001 (ns)	.251	[-.023, .030]	Direct effects only, no mediation
(6) ITF → CERP → PIT	.126*	-.016 (ns)	.111	[-.086, .038]	Direct effects only, no mediation
Mediation Effects (H12b)	Direct Effects	Indirect Effects	Total Effects	95% BCa CI	Mediation Results (Model 2: Negative)
(1) REP → CERN → PIT	.200*	.044(ns)	.244	[-.068, .177]	Direct effects only, no mediation
(2) EtailQ → CERN → PIT	.035(ns)	.050 (ns)	.084	[-.045, .165]	No significant effects, no mediation
(3) COMP → CERN → PIT	-.047(ns)	.067*	.020	[.001, .174]	Indirect effects and full mediation
(4) ECA → CERN → PIT	.211*	.086*	.297	[.016, .187]	Partial mediation: complementary
(5) LGF → CERN → PIT	.247***	.001 (ns)	.249	[-.015, .029]	Direct effects only, no mediation
(6) ITF → CERN → PIT	.136*	-.025 (ns)	.111	[-.095, .025]	Direct effects only, no mediation

Table 41: Mediation analysis results

Mediating bootstrapping results for both positive and negative emotions to assess their indirect effects at a 95% BCa CI (bias-corrected and accelerated confidence intervals).

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, ns (not significant). Reputation (REP), E-tail Quality (ETAQLQ), Compatibility (COMP), E-commerce Awareness (ECA), Legal Factor (LGF), IT Infrastructure (ITF), Customers' Emotional Responses - Positive (CERP), Customers' Emotional Responses -Negative (CERN), Purchase Intention (PIT)

The results of the bootstrapped BCa confidence intervals indicated that out of the six indirect effects obtained, only two were statistically significant at the 95% confidence interval of their estimates. Thus, H12a (3 and 4) and H12b (3 and 4) were supported. This means that COMP and ECA each had indirect impact on online purchase intention via the emotions of customers. The indirect effects of reputation, website quality, IT infrastructure and legal factor on purchase intention via both positive and negative emotions were not significant. This suggests no mediation was confirmed for their impacts on purchase intention. Thus, H12a(1,2,5 and 6) and H12b(1,2,5 and 6) were not supported.

The rule of thumb is that the indirect effects are considered significantly different from zero at a 95 percent level of confidence to confirm mediation. This method is recommended by MacKinnon, Lockwood and Williams (2004) as the most accurate for computing confidence intervals (CI) for indirect effects. For example, the indirect effect estimate of compatibility on purchase intention was analysed to be 0.110 at a

level of $p < 0.05$. The lower bound confidence interval estimate was 0.023, and the upper bound confidence interval was 0.237. Since there was no overlap with zero between the two estimates at a 95% bias-correlated confidence interval, the indirect effect was confirmed significant at $p < 0.05$.

According to Matthews, Hair and Matthews (2018), if the indirect effect is significant while the direct impact is not significant, it shows a full mediation. On the other hand, if both direct and indirect effects are significant, then there is partial mediation. Based on these criteria, the findings showed that, only compatibility (COMP) and EC awareness (ECA) supported the mediating effects test and analysis.

Specifically, the impact of COMP on PIT was fully mediated by both positive and negative emotions. Full mediation for compatibility occurred because its indirect effect was significant with purchase intention at the level of $p < 0.05$ whilst the indirect effect was not significant (ns) for both mediation tests. On the contrary, the impact of ECA on PIT was partially mediated by both customers' emotions because both its direct and indirect effects estimates were significant with purchase intention (Table 41).

TAM hypotheses results are presented below:

H13: This hypothesis tested the impact of PU on PIT for both models. As presented in Tables 39 and 40, the causal path between the two variables revealed a significant and strong impact ($p = 0.001$ for both models 1 and 2). Therefore, hypothesis H13 was supported. That is, any increase in PU would positively and significantly impact customers' PIT towards adopting EC.

H14a: For both models, the causal path between PEOU and PIT indicated no significant impact of PEOU on PIT at a level of $p > 0.05$ ($p = 0.946$ and $p = 0.898$, respectively) (Tables 39 and 40). Therefore, hypothesis H14a was not supported.

H14b: This hypothesis tested the impact of PEOU on PU for both models. Tables 39 and 40 show the causal path between the two variables as significant at a level of $p < 0.05$ ($p = 0.010$) and $P < 0.01$ ($p = 0.006$) for both models, respectively. That is, PEOU was a strong and direct predictor of PU.

5.7.4 Final Revised Models

After removing the insignificant paths from the original models, more parsimonious revised models were obtained, indicating a better fit with the empirical data. For model 1 (positive emotion), one more path became significant (CERP to PIT), resulting in 15 supported hypotheses. Model 2 (negative emotion) had 12 supported hypotheses in total (Table 42).

Model 1 Final Results	Estimate	S.E.	C.R.	P Label	Model 2 Final Results	Estimate	S.E.	C.R.	P Label
CER_POS ← ETAILQ	.202	.066	3.042	.002	PEOU ← REP	.282	.070	4.046	***
CER_POS ← REP	.316	.068	4.642	***	PEOU ← ETAILQ	.322	.079	4.058	***
CER_POS ← COMP	.288	.052	5.569	***	PEOU ← ECA	.193	.065	2.988	.003
PEOU ← CER_POS	.213	.086	2.465	.014	PU ← COMP	.155	.047	3.292	***
PEOU ← ECA	.151	.063	2.388	.017	PU ← ECA	.135	.060	2.240	.025
PEOU ← REP	.182	.077	2.362	.018	PU ← PEOU	.305	.070	4.373	***
PEOU ← ETAILQ	.288	.080	3.618	***	PIT ← REP	.131	.053	2.489	.013
PU ← PEOU	.318	.072	4.440	***	CER_NEG ← REP	-.584	.086	-6.772	***
PU ← COMP	.149	.048	3.118	.002	PIT ← PU	.353	.092	3.827	***
PU ← ECA	.139	.060	2.310	.021	PIT ← LGF	.195	.056	3.509	***
PIT ← PU	.364	.093	3.920	***	PIT ← ITF	.058	.027	2.183	.029
PIT ← LGF	.168	.053	3.170	.002	PIT ← ECA	.157	.062	2.530	.011
PIT ← CER_POS	.127	.055	2.302	.021					
PIT ← ECA	.168	.061	2.733	.006					
PIT ← ITF	.060	.026	2.302	.021					

Perceived usefulness (PU), Perceived ease of use (PEOU), IT infrastructure (ITF), Reputation (REP), legal factor (LGF), E-commerce awareness (ECA), Compatibility (COMP), E-tail quality (ETAQLQ), Customers' emotional responses - positive (CERP), Customers' emotional responses - negative (CERN) and Purchase intention (PIT) ***P<0.001, **P<0.01, *P<0.05

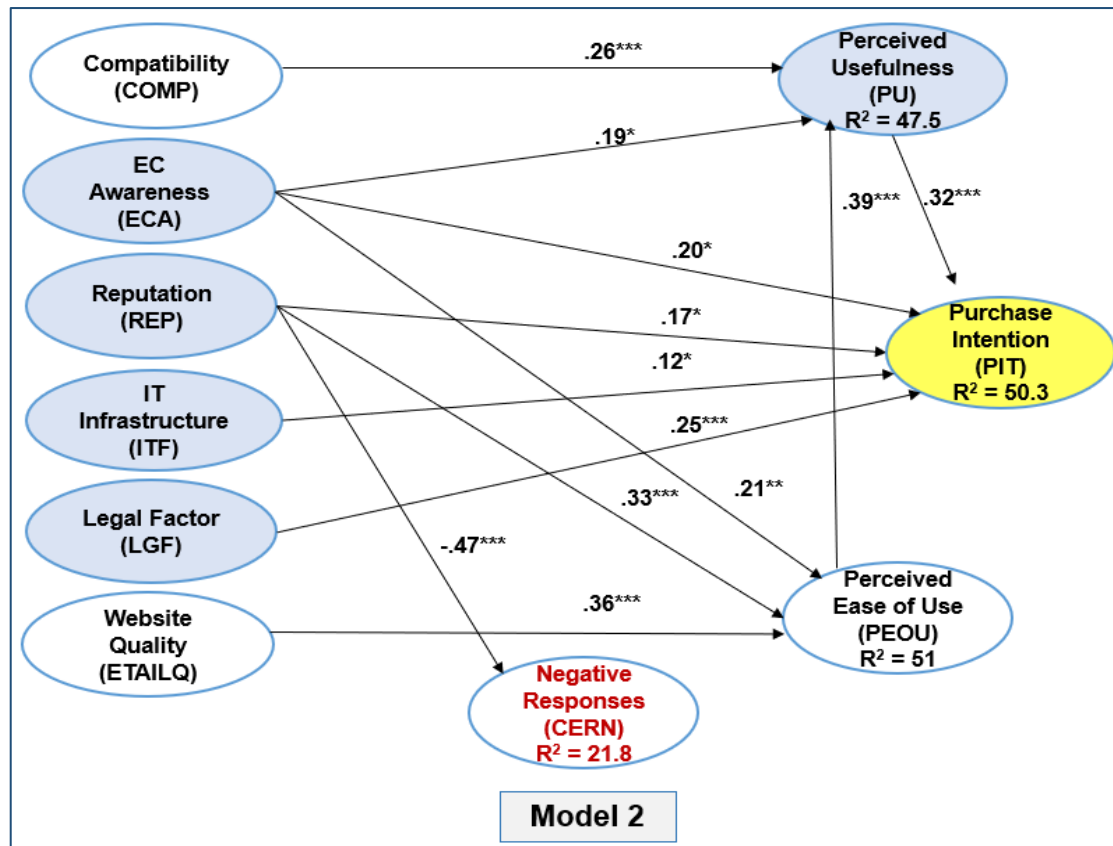
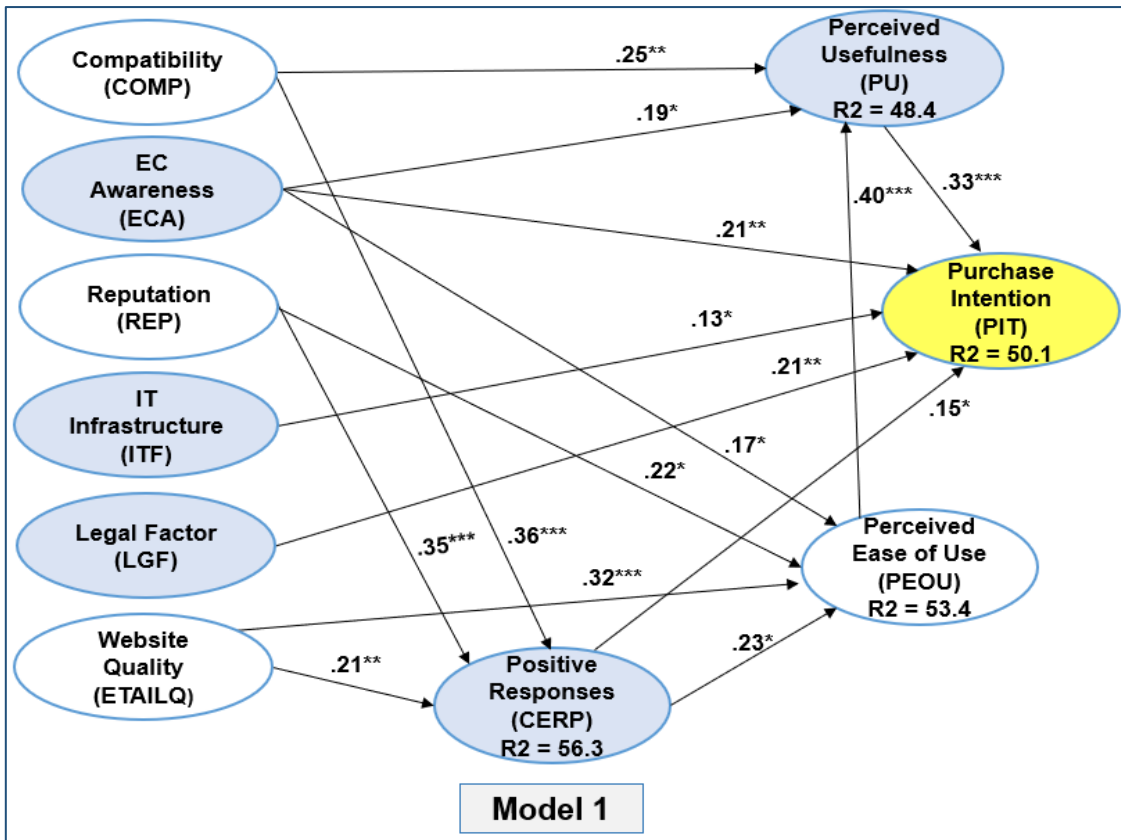
Model 1 Squared Multiple Correlations		Model 2	
Endogenous Factors	Estimates	Endogenous Factors	Estimates
CER_POS	.563	CER_NEG	.218
PEOU	.534	PEOU	.510
PU	.484	PU	.475
PIT	.501	PIT	.503

Table 42: Estimates of the final revised models

Significance codes and strength: ***p<0.001, **p<0.01, *p<0.05; S.E. = Standard Error, C.R. = Critical Ratio
P value = significance estimate, *Cut off (C.R >±1.96) (Hair et al., 2010)

Perceived usefulness (PU), Perceived ease of use (PEOU), IT infrastructure (ITF), Reputation (REP), Legal factor (LGF), E-commerce awareness (ECA), Compatibility (COMP), Website quality (ETAQLQ), Customers' emotional responses - positive (CER_POS), Customers' emotional responses-negative (CER_NEG), and Purchase intention (PIT). In table as CER_NEG to comply with Structural Equation Modelling label rule, referred to as CERN in the text

The factors that had significantly influenced customers' online purchase intention for the two models are shown in blue oval shapes with solid arrows linking them to 'Purchase Intention' in yellow oval shapes (See Figure 31).



Significance codes and strength: ***p<0.001, **p<0.01, *p<0.05

Figure 31: The final revised models

5.7.5 EC Factors Ranking of Importance

Overall, out of the ten factors investigated, six factors were directly significant for customers to have the intention to purchase online in Nigeria. Previous research into online consumer behaviour suggests that customers weigh differently the importance of factors influencing their purchasing decisions in the online market (Nittala, 2015). Statistical results highlighted the ranking of significant impacts, direct effects (DE) estimates and the total effects (TE) of the six significant EC factors relating to purchase intention. TE is the sum of both direct and indirect effects.

From the two models in Table 43, the perceived usefulness of EC had the most significant impact, the strongest positive and direct effects, and the highest total effects. This is followed by legal factor, then EC awareness, with reputation as the fourth, then positive emotional responses, and finally IT infrastructure. See Appendix R for the standardised DE and TE effects values.

Key Predictors of E-commerce Adoption	Significant Value	Impacts (β) Direct Effects	Total Effects	Comments on ranking of significant impacts, direct effects (DE) and total effects (TE) for Model 1
Perceived Usefulness	.000***	.328	.328	Most significant impact, the strongest DE, and highest positive TE
Legal Factor	.002**	.213	.213	Second most significant impact, 2nd strongest DE, 3 rd highest TE
EC Awareness	.006**	.209	.294	Third most significant impact, 3rd strongest DE, 2 nd highest TE
Positive Emotional Responses	.021*	.154	.184	Fifth most significant impact, 4th strongest DE, 4 th highest TE
IT Infrastructure	.021*	.125	.125	Six most significant impact, 5 th strongest DE, 5 th highest TE

Key Predictors of E-commerce Adoption	Significant Value	Impacts (β) Direct Effects	Total Effects	Comments on ranking of significant impacts, direct effects (DE) and total effects (TE) for Model 2
Perceived Usefulness	.000***	.315	.315	Most significant impact, the strongest DE, and highest positive TE
Legal Factor	.000***	.245	.245	Second most significant impact, 2nd strongest DE, 3 rd highest TE
EC Awareness	.011*	.197	.263	Third most significant impact, 3rd strongest DE, 2 nd highest TE
Reputation	.013*	.173	.213	Fourth most significant impact, 4th strongest DE, 4 th highest TE
IT Infrastructure	.029*	.121	.121	Six most significant impact, 5 th strongest DE, 5 th highest TE

Significance codes and strength: ***p<0.001, **p<0.01, *p<0.05; β = path co-efficient
 Table 43: The ranking of the significant EC adoption factors with purchase intention

According to Pappas et al. (2017), customers' emotional state is affected by both negative and positive emotions; however, their levels of impact or intensity could be different. Therefore, the ranking from Table 43 is depicted in Figure 31 with a "butterfly" structure. It shows the presence of positive emotions (CERP) and the associated significant factors on one wing. It also reflects the presence of negative emotions (CERN) and the related significant factors on the other wing.

Interestingly, the similarity of the two models is seen in the same four factors out of the six factors being significant towards purchase intention on both wings, namely: perceived usefulness, legal factor, EC awareness and IT infrastructure, as presented in Figure 31. This semblance is striking, considering the two types of emotions were investigated separately in conjunction with PIT. However, the remaining two factors, positive emotions in model 1, and reputation in model 2 (represented with blue oval shapes), showcase the unique difference. In a descending order of impact values (β) and significance strengths, Figure 32 presents the 6 key direct predictors of purchase intention.

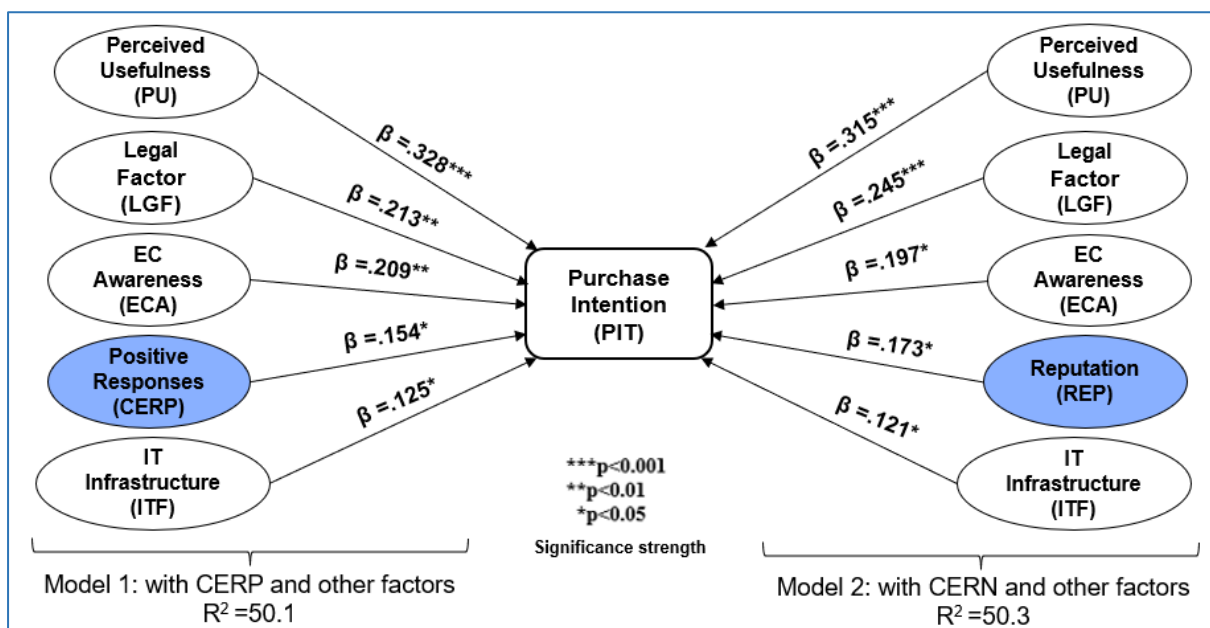


Figure 32: The 6 key direct predictors of purchase intention

β = path coefficient weights, R²=squared multiple correlation (SMC) that measures the percentage of variance of factors in relation to the dependent variable in the model

As seen in Figure 32, the β values were stronger in the positive response model 1 for perceived usefulness, EC awareness and IT infrastructure, compared with the negative response model 2. The exceptions are the legal factor and reputation, where negativity trumps positivity. Model 1 shows that 50.1% of the variance in purchase intention was predicted by six factors. Similarly, Model 2 shows that 50.3% of the variance in purchase intention was also predicted by six factors. R² greater than 0.35 is considered substantial; 0.33 is considered moderate; and lower than 0.19 is considered a weak value (Chin, 2010). The only two factors that significantly distinguished the two models were positive emotional responses and reputation.

5.7.6 Applicability of the TAMSOR in the Nigerian context

The applicability of the developed TAMSOR model is demonstrated in that the proposed model has good explanatory power and is therefore robust in not only predicting, but also explaining customers' purchase intention for EC. As mentioned earlier, from Figure 31 and Table 43, it emerged that online purchase intention (PIT) in Nigeria was significantly predicted by six factors: PU, LGF, ECA, ITF, CERP (Model 1), and REP (Model 2). Together, they explained a total of 50.1% and 50.3% of the variance in PIT. Also, TAM factors explained 1 in 2 people's differences in behaviour towards technology acceptance. Comparatively, positive emotional responses factor was 34.5% more influential than negative emotional responses factor in determining purchase intention (56.3% against 21.8%).

Further, this research identified areas of similarities and differences between the TAMSOR independent variables and the dependent variable (DV) - purchase intention. For both models, the quantitative findings uncovered the factors that prompt either positive or negative customer behaviours. The differences in their impacts are compared in Table 44.

Hypotheses supported for EC factors with TAM factors and purchase intention	Similarities in Impacts	Hypotheses supported for EC factors with SOR and purchase intention	Differences in Impacts	
Relationship (TAM with EC factors)	Both models	Relationship (Customers' emotions, EC factors & PIT)	Positive	Negative
EC awareness → Perceived ease of use	✓	Positive affective responses → Perceived ease of use	✓	X
Reputation → Perceived ease of use	✓	Positive affective responses → Website quality	✓	X
Website quality → Perceived ease of use	✓	Positive affective responses → Reputation	✓	X
Perceived ease of use → Perceived usefulness	✓	Positive affective responses → Compatibility	✓	X
E-commerce awareness → Perceived usefulness	✓	Positive affective responses → Purchase intention	✓	X
Compatibility → Perceived usefulness	✓	Reputation → Purchase intention	X	✓
IT Infrastructure → Purchase intention	✓	Negative affective responses → Reputation	X	✓
Legal factor → Purchase intention	✓	*From the developed extended TAM – fuller version is presented in Appendix 8A		
Perceived usefulness → Purchase intention	✓			
Purchase intention → E-commerce awareness	✓			

Table 44: Comparison of customers' responses towards EC adoption factors

In sum, the applicability of the TAMSOR model provides insights into customers' buying processes and the factors that influence purchase intentions. It further demonstrates positive and negative emotions as important customer responses that explain the EC adoption decision making.

Based on the key results from the quantitative analysis phase, the study proceeded to the next stage of the research, which was the qualitative phase. The purpose was to find explanations for the quantitative results and complementary elaborations from the interviewees to further create a nuanced understanding of the research problems, aim and objectives and, perhaps, discover other emergent themes.

5.8 Statistical Analysis Techniques Used

Despite the fact that many statistical tests and techniques exist to analyse data, the choice of which to use is conditioned primarily by the research questions and the nature of the collected data (Saunders, Lewis and Thornhill, 2015). Consequently, the statistical tests used in the present study were a function of its objectives and research questions. Two statistical software packages, namely the Statistical Package for Social Sciences (SPSS) Version 27 and Analysis of Moment Structures (AMOS) Version 27 Graphics were used to analyse the quantitative data gathered via the questionnaire (as seen in this Chapter). The NVivo enterprise software was used to analyse the qualitative data obtained from the semi-structured interviews and the relevant qualitative data (Chapter 6). The statistical techniques and some detailed description of each can be found in Appendix T.

5.9 Summary

This chapter presented the findings of both the descriptive and inferential quantitative data analyses. To start with, data management was carried out by screening and cleaning the collected data. This helped to detect missing cases and outliers before proceeding with further analysis. Reliability, normality and linearity tests were performed to assess data accuracy. Next, t-test and ANOVA were performed on the demographic data of the respondents, such as gender, age, occupation, education level, and city of residence. Then, an exploratory factor analysis was undertaken to show the relationship between items of questions and the key factors and also reveal their respective factor loading patterns. This helped to identify the set of variables to be considered for subsequent analysis. By applying the Promax oblique-rotation technique of principal component analysis, factors were extracted with the help of eigenvalues and scree plot. The findings showed 11 factors were extracted out of 12 factors (cultural factor was dropped due to cross loadings issue and also because its extracted observable variables were below the recommended factor loading cut-off

value of 0.6). After the exploratory factor analysis, the measurement scale for this research was subjected to confirmatory factor analysis (CFA).

The measurement model and structural model were assessed using AMOS 27 Graphics software to analyse 312 cases. After some model modifications, the CFA results revealed acceptable goodness-of-fit indices for the measurement model. Based on the results of CFA, a structural model was developed and tested to examine the hypothesised causal relationships between the latent constructs in the proposed research model. Goodness-of-fit indices indicated the structural model provided an acceptable level of overall fitness with the empirical data. Two structural models representing two scenarios of interplay of mediation of positive and negative emotions between EC factors and PIT were compared against each other on the basis of overall fitting indices. Moreover, the path coefficients of the tested research hypotheses were examined and analysed.

Finally, the research model was refined by removing the insignificant paths in order to have a parsimonious model. Overall, out of the 27 hypotheses proposed and tested for the two models, 15 and 12 hypotheses for model 1 and model 2, respectively, were found to show statistical significance and direct relationships between the independent variables and the dependent variable. For the mediating effects, i.e., the indirect effects of both positive and negative emotions of customers, were analysed separately, and their mediation roles were confirmed only in the relationships between EC awareness, compatibility and online purchase intention of customers. More detailed discussions of the findings are provided in Chapter 7. The next chapter presents results from the semi-structured interview.

Chapter 6: Qualitative Data Analysis and Results

6.1 Introduction

This chapter presents analysis of the qualitative data collected via the semi-structured interviews with eight Nigerian EC customers. The aim was to confirm the significance of the factors identified in the previous chapters and then explore any new key factors and elements revealed through the interviews that might influence EC adoption in Nigeria. The interviews were held in order to: (1) obtain further details and explanations about the findings from the quantitative analysis about key factors influencing customers' online purchase intentions and thus their adoption of EC; (2) provide further confirmation of the research models and hypotheses; (3) provide explanations for the results of the hypothesis testing; and (4) reveal any further issues to be considered when studying EC in Nigeria in the future. The chapter is divided into five sections. After this introduction, the second section presents the demographic profiling of the interviewees, and the third section reveals further explanations into the findings relating to the main key factors affecting adoption of EC in Nigeria from the quantitative data analysis. The fourth section uncovers further themes as revealed by the interviewees. The chapter ends with the fifth section, which is a brief summary.

6.2 Interviewees' Demography

Section 4.9 details the interview procedures carried out in the study. The demographic profiles for the semi-structured interviews are presented in Table 45. The names and identities of interviewees are not given in accordance with the ethical approval requirement of the LJMU to uphold confidentiality. A coding scheme (T1 up to T8) was therefore used to identify interviewees.

As shown in the table, the sample comprised five males and three females. In terms of occupation, the sample consisted of one self-employed business owner, one student, and six employees in the private and public sectors. Their ages ranged between 20 and 59 years. In terms of education level, participants either held a bachelor's or a master's degree, except for the one student who was studying for a bachelor's degree as at the time of the interview.

Interviewee	Age-group	Gender	Occupation	Education	City
T1	40-49	Male	Banker	Master	Abuja
T2	40-49	Male	ICT Personnel	Bachelor	Lagos
T3	50-59	Male	Facility Manager	Bachelor	Lagos
T4	40-49	Female	Business Owner	Master	Ibadan
T5	40-49	Male	Logistics Officer	Master	Ibadan
T6	40-49	Female	Accountant	Master	Lagos
T7	30-39	Male	IT Security Officer	Bachelor	Port Harcourt
T8	20-29	Female	Student	Bachelor	Ibadan

Table 45: Demographic profiles of interviewees

*(T1-T8 indicate interviewee 1 - interviewee 8)

Documents and Data Sources - In order to increase the reliability of the study, additional data sources, including collections such as documents, reviews, policies, reports and other relevant publications were consulted. Data triangulation was applied in the qualitative data analysis phase to enhance reliability and support accuracy of the results from the collected data (Creswell, 2014). The following sources of secondary data were used, and their respective data types listed alongside were integrated into the analysis of the semi-structured interviews:

- ✚ Federal Ministry of Communications and Digital Economy, FMoCDE (2020). National Digital Economy Policy and Strategy (2020-2030) for a Digital Nigeria
- ✚ Overseas Business Risk: Nigeria, Gov.UK (2022)
- ✚ ICLG Consumer Protection Laws and Regulations Nigeria (2022)
- ✚ Nigeria - Country Commercial Guide. International Trade Administration (ITA, 2021)
- ✚ Nigerian Consumer Sentiment during the Coronavirus Crisis (McKinsey, 2020)
- ✚ Center for Global Development Report (2019). The New Economy of Africa: Opportunities for Nigeria's Emerging Technology Sector
- ✚ Nigeria Now and in the Future - 'IPSOS Naija Lens' (2019)
- ✚ Data for Good in Africa - Towards Increased Access and Enabling Data Policies. International Telecommunication Union (ITU, 2018)

- 🚩 Economic Development in Urban Nigeria. Urbanisation Research Nigeria (URN, 2015)
- 🚩 Federal Republic of Nigeria National Information and Communication Technology Policy: The Ministry of Communication Technology MoCT (2012)

6.3 Qualitative Data Analysis and Results

The transcriptions of the eight interviews together with the notes made at the time of the interviews were carefully explored by the researcher to check for the following initial themes and to extract any related sub-themes based on participants' responses. The final EC adoption model in Chapter 5 with its ten independent variables was used as initial themes in NVivo enterprise for analysis. This software helped the researcher to analyse the qualitative data by providing a powerful tool for organising, classifying, and sorting the data better than traditional manual analysis techniques (Bazeley and Jackson, 2013). The thematic framework coding interface categorised the factors into four major sections: customers' affective responses, EC adoption in Nigeria, internal and external factors, and technology acceptance factors, which represented the main nodes used in NVivo enterprise for qualitative analysis. The application also featured other nodes such as the demographic aspects (age, gender, city), the key findings and possible explanations, and other emerging factors. This is presented in Figure 33.

Name	Files	References	Created on	Created by	Modified on	Modified by
AGE AND GENDER IMPACTS ON E-COMMERCE	6	9	20/06/2021 1	BF	27/07/2021 20:57	BF
CITY BY CITY SPECIFIC FACTORS	7	12	20/06/2021 1	BF	27/06/2021 21:47	BF
CUSTOMERS' AFFECTIVE RESPONSES	8	37	14/06/2021 2	BF	05/07/2021 22:13	BF
E-COMMERCE ADOPTION IN NIGERIA	8	13	20/06/2021 1	BF	27/06/2021 22:54	BF
EXTERNAL AND INTERNAL FACTORS	8	37	14/06/2021 2	BF	27/06/2021 22:58	BF
Key findings and possible explanations	6	13	21/06/2021 1	BF	27/07/2021 21:02	BF
OTHER FACTORS	8	51	20/06/2021 1	BF	27/07/2021 20:07	BF
TECHNOLOGY ACCEPTANCE FACTORS	8	36	14/06/2021 2	BF	03/07/2021 16:24	BF

Figure 33: NVivo results of thematic framework coding process (*BF refers to the researcher's initials)

The following sub-sections provide the detailed results of the qualitative data analysis of the factors identified from the quantitative research model and the causal relationships between them. NVivo maps as well as the direct quotes by interviewees are also provided to delve deeper into the study's findings. This provides further explanations to corroborate and complement the quantitative results.

Having critically investigated and analysed the key factors influencing EC adoption in Nigeria through the quantitative data analysis conducted, this study uncovers the principal significant predictors of online purchase intention for EC adoption (see Table 42). Also, it expounds how and why the affective responses of customers, i.e., both positive and negative emotions, influence their intention to purchase (purchase intention) online.

6.3.1 Customers' Affective Responses

As earlier highlighted, one of the major objectives of this study was to examine how customers' affective responses (emotions) impact their EC adoption and online purchase intention. Therefore, interviewees were asked to express their views on the extent to which they thought customers' responses were important to EC adoption and the impact of those responses on their online purchase intention. Moreover, the initial reaction or response that captured the overall feeling they had about online shopping experience and why they felt that way was also revealed through the explanations provided.

Surprisingly, all the interviewees confirmed the importance of the influence of customers' affective responses in connection with purchase intention and EC adoption through the complementary insights they provided. Although interviewed separately, most participants mentioned that customers' responses connoted a feedback mechanism between the customers and the online retailers in the process of buying. In their narratives, all the eight interviewees mentioned the key word "feedback" in expressing their thoughts on how critical the factor was. One interviewee explicitly expounded on how pivotal it was to study customers' emotional responses. They captured their perceptions of the factor this way:

"I think this is the reason why we are having this interview and the reason you are conducting this research. To be totally sure of what one is giving, sellers should get the feedback from the receiving end. As we normally say that production does not end until when the consumer (end-user) is satisfied; that is, when the production is complete. We cannot put aside people's emotion. People's emotion is very key in whatever business or transaction one is running. We need to have the feedback about

whether a buyer is satisfied or dissatisfied and whether they are happy or sad. If the person is unhappy or dissatisfied, that person may not want to do any transaction with one, but if the person is happy and satisfied, they will be looking forward into having another transaction with one.” (T3)

Correspondingly, one of the major objectives of the National Digital Economy Policy and Strategy (2020-2030) for a Digital Nigeria published by the FMoCDE (2020) was, “promote research in emerging technologies with a view to getting digital technology to improve the livelihood of Nigerians”. This confirmed the motivation for this study and further corroborated the opinions of interviewees.

Moreover, one of the interviewees stated the need to go beyond knowing how customers feel to eventually using the valuable knowledge obtained to enhance the companies’ performance.

“Customers’ responses are very important; as a matter-of-fact customers’ responses should drive the way e-commerce is offered. Otherwise you will just be running in parallel to your customers. So, you’ve got to find out how they feel and then you use that feedback mechanism into your processes to get it better. So it is very important not only in e-commerce but all of commerce; customers’ responses are very important”. (T2)

Essentially, the quantitative findings revealed how online reputation (REP) and website quality and compatibility (COMP) constructs influenced this crucial factor in a strong, direct, positive and significant way. The interviewees went further to also relate customer responses to trust in online retailers, confidence building in customers, customer relationship management and customer satisfaction. For instance, two participants cited improving the aspect of customer service, in particular, which is one of the evaluative dimensions of website quality, and how that can repose confidence in customers. They reiterated how understanding customers’ feelings can enrich customers’ relationship, thus leading to motivating the customers to partake in online shopping. For example:

“It is actually very important because it can make the customer relationship better. If online retailers understand how the customers and those of us that are shopping online feel, it will make us feel like we can trust them more – we will know that they are not just after our money, they want to know how we feel, are we satisfied?” (T8)

“It enables online retailers to make an amendment, e.g., about customer service, which in turn helps people to have confidence in them about online shopping and if they have confidence in them, they will be able to shop online.” (T4)

One of the participants addressed emotional responses through a dual lens of the roles they can play in helping companies achieve better results and also demonstrate care for their customers. He noted:

“It is two ways to me. It is feedback that the retailers might have to make them do better, and for the customers it shows somebody cares about me, somebody wants to know how I feel about a particular product, to me I would say it is very important.” (T5)

Another participant extended its significance to the governmental bodies:

“This type of research will help not only individuals, but the government too. I think feedback is very important to be able to grow and checkmate ways of doing business. Business owners need to have an open heart when accepting feedback and it would go a long way.” (T7)

Another interviewee pointed out that the culture of firms seeking feedback to know how customers feel is not yet the norm in Nigeria; however, they emphasised how important this process is:

“Generally, organisations do not go back to customers to seek for customers’ feedback. I believe it is very important because it is going to help them to work more on what they have been doing or if there is going to be diversion, they will be able to build on the feedback they are having from their customers.” (T6)

In the quantitative data analysis conducted, positive customers’ responses were measured by discrete emotions such as ‘happiness’, ‘like’, ‘interest’ and ‘satisfied,’ and

customers' negative emotional responses were measured by discrete emotions ('frustration', 'anger', 'scared' and 'worried') elicited by customers based on their online shopping experiences. However, during the structural equation modelling (SEM) of quantitative data (analysis stage), both 'like' and 'anger' items were dropped, as their MIs did not fit satisfactorily into the integrated model.

Interestingly, during the interviews in the qualitative phase of the study, "anger" resurfaced as one of the negative emotions customers experienced when shopping online. Some of the interviewees mentioned the following reasons why they became angry: a card payment declined for no reason, dollar spending cap, false product information, unsolicited call, website pop-ups and delivery of a wrong product. Additionally, some main reasons why customers were most likely to be scared or worried were stated (such as uncertainty of delivery, fear of scams, loss of money, lack of data protection regulation, etc.). They also went further to highlight main reasons for customers frustration (incited by no response to e-mails, poor customer service, poor product quality, inadequate product information, unreliable internet connection, government not supporting the EC initiatives, etc.) These are depicted by the NVivo (enterprise) visual map results for negative customers' emotional responses (Figure 34).

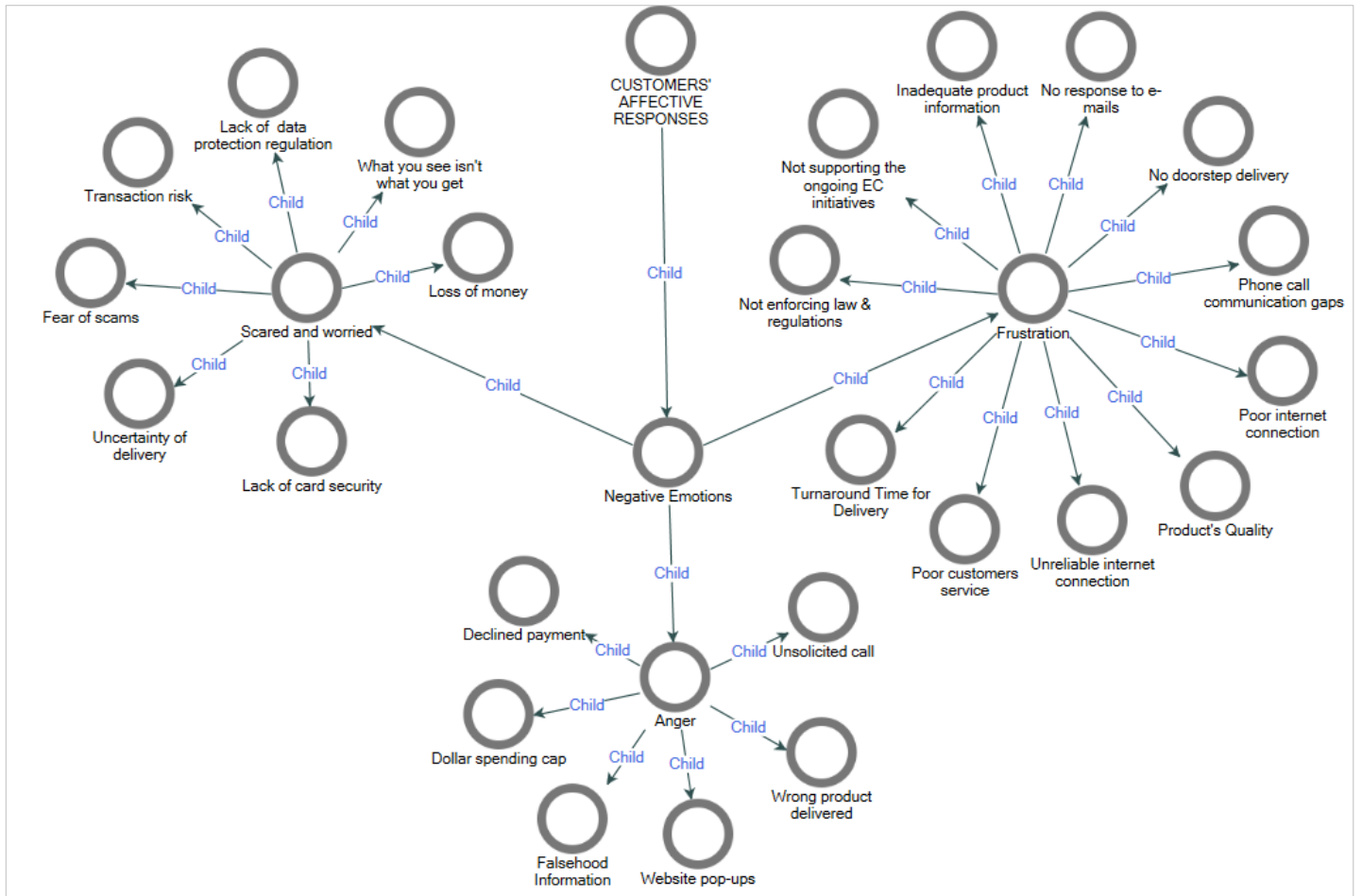


Figure 34: NVivo visual map for Customers' Negative Emotional Responses

Likewise, interviewees offered some insightful explanations for some key reasons why customers were most likely to be happy (such as product of good quality, special-occasion personalised calls, getting refunded, helpful reviews and word of mouth from other users, availability of needed products, etc.); satisfied (e.g., timely delivery, trusted online retailers' reputation, and expectations met), and why they were more likely to be interested in online shopping citing some EC benefits as highlighted in the NVivo results in Figure 35.

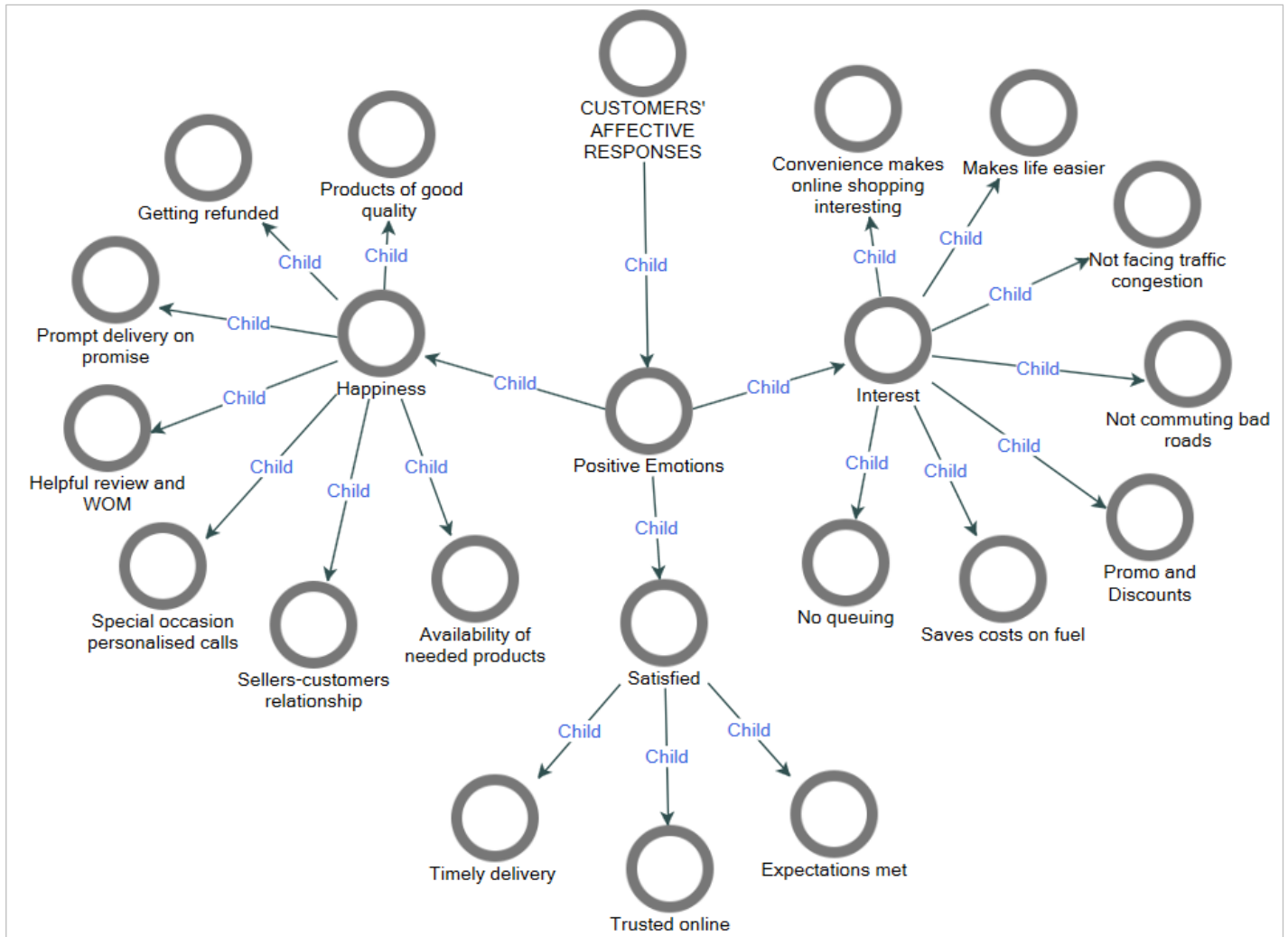


Figure 35: NVivo visual map for Customers' Positive Emotional Response

Further, from the quantitative data analysis findings, positive emotions had a strong, direct effect and positive significance on purchase intention (PIT), whilst negative emotions had no direct effect or significant impact on PIT. Interviewees were prodded to give plausible explanations for why they thought that was so.

Two interviewees in particular elaborated on the findings above. They also confirmed the role of emotions as linked to mental health and well-being when they shopped online, as has been critically reviewed in the literature (Morris and Feldman, 1996; Richins, 1997; Izard, 2010; Racolta-Paina and Luca, 2010; Loketkrawee and Bhatiasevi, 2018). They cogently narrated their responses as follows:

“For anything you are doing, once you are able to derive pleasure and happiness in it, it has made your day! Customers will always want to be part of anything that makes

them happy, that reduces stress. For example, if stress is taken away from me in Lagos, then I am okay, I am fine! Because I know I will live longer, I will not be sick. In the long run, you will be happy, happiness is a serious factor when it comes to something like this, because so many reasons are attached to it: it is a way of life now, it is about my mood, it is about my feelings, and it goes a long way influencing customers' proactiveness to e-commerce – we can't trade anything for it!" (T6)

"When customers are happy, they want to transact, and also do that next time, but when they are not, they are discouraged." (T4)

6.3.2 Compatibility

Regarding the compatibility construct, participants were asked the extent to which they considered EC to be compatible with their lifestyle, values, occupation and shopping needs (Rogers, 1995; Vijayasathy, 2004). Although the quantitative finding showed that compatibility did not have a direct, significant impact on purchase intention, it was one of the two factors that confirmed the mediating effects of customers' emotions on purchase intention. In this sense, it was important to seek clarity and more explanations from the interviewees on whether compatibility could impact their purchase intention towards adopting EC. There were split opinions among participants on whether this factor could influence their online purchase. For example, two EC users gave conditional statements based on other underlying factors such as logistics and delivery issues, education, and personal needs, as follows:

"I can do without it in a way, but if it is working well, I can adopt it." (T4)

"It actually depends on what you want. As a student, personally I prefer to do it the traditional way. Most of the online companies take time and most of them don't actually come to your doorstep, they post it to a particular place that you have to travel down to and get what you ordered from there. So, it ends up being the same thing as going to the local market and they will still collect a shipping fee." (T8)

Although compatibility was not a major determinant of online purchase intention in this present study, it was a strong, direct, and significant predictor of perceived usefulness,

and it influenced purchase intention indirectly through perceived usefulness. The response of one of the participants mirrored these quantitative findings when relating EC compatibility with EC usefulness – citing the comfortability that EC affords by reducing stress and saving time. Moreover, they clearly stated that EC should be considered compatible with customers' lives, since we are in the digital age of technological advancements.

“Yes, it is, EC is compatible because everything is going online, and you just have to dance towards that, especially in Lagos that you can even leave your house to the next location you are going and you might not get there in the next 5 hours. So, anything that will reduce that stress or take that stress off you, you will want to do it. For me, EC is really compatible, and it is even helping very well and making life more comfortable for all.” (T6)

For example, one user linked the compatibility of EC with his occupation, as it provides an easier option to purchase online in comparison to the offline buying.

“As a facility manager, in fact, it is very compatible with my work. It makes my work very easy, and it is very useful because I do a lot of purchase online. It makes my work faster than when there was no opportunity of EC.” (T7)

Generally, the compatibility of EC with profession or occupation was mostly mentioned by participants. Moreover, other aspects of compatibility were also cited in the secondary data. The visual map for compatibility are presented in Figure 36.

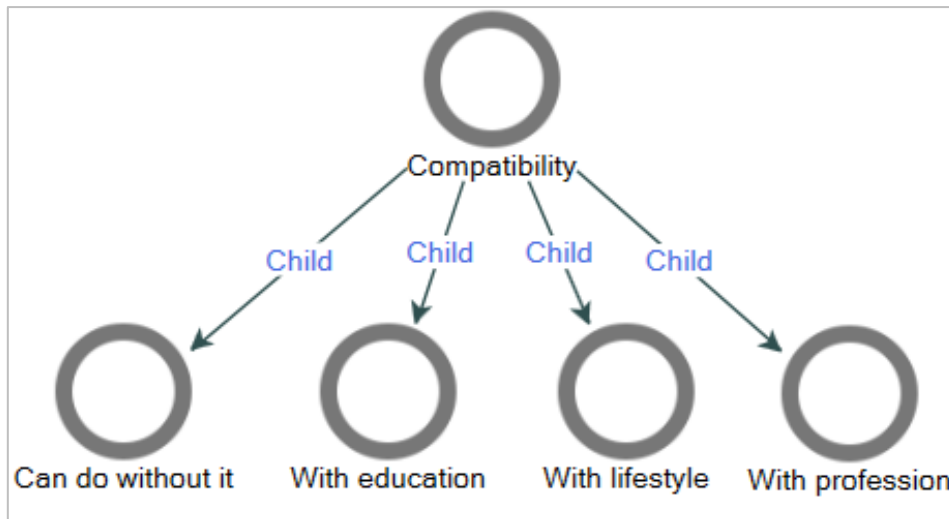


Figure 36: NVivo visual map for Compatibility (COMP)

6.3.3 Website Quality

Participants were asked about the impacts on EC adoption of website quality indices such as the website design, privacy/security, customer service and fulfilment/reliability dimensions of the electronic retail. Although website quality was identified in the quantitative data analysis as an insignificant determinant of EC in Nigeria, it had the highest total effects on how easy to use users perceived EC.

Overall, most participants agreed that the website quality of most Nigerian retailers needed improvements with respect to website design, information display and customer service. One interviewee delved deeper into this by expounding their disappointment about website quality, which was poor, based on the different indices, and also stated that branding promise was not being fulfilled as expected:

“When people build a website, the look and feel is not so appealing. It just doesn’t appeal to you: the user interface is drab; it just doesn’t look interesting. Branding is actually very important, because branding for me is like a promise – a brand is a promise. When you mention a brand, what comes to your mind? When you mention a BMW, when you mention Mercedes Benz, what comes to mind? The brand promise is not given enough attention. They are not driven by quality as it were, and there is no research and development (R & D) behind what people are doing. Thus, the user experience (CX) and the user interfaces (UIs) are just not good; they are very, very,

basic. A few people do get it right, don't get me wrong, but generally speaking the websites are not attractive". (T2)

Moreover, two more participants corroborated the statement about website attractiveness and expressed their frustrations about inadequate products information descriptions, unnecessary add-ons and unsolicited advertisements. They explained further:

"You know some websites will just be displaying some things that are not relevant. As I am clicking, it will now take me back to, are you sure you want to buy? I don't need advertisement, If I need advertisement, Google will bring it out for me (with an angry tone). I don't appreciate that on any EC website. Render the service, and you earn the transaction. Some websites are not detailed; you'll just be navigating from one page to another and data purchased for internet access is being used up. They have to be specific, and the website must be attractive at the same time so also the information fonts". (T6)

"Sometimes websites do not put enough details into their item descriptions and when customers get the product eventually, it does not match their needs. A good description is needed to know what you are expecting, at the end of the day the seller and consumer need to be on the same page" (T7)

Also, another participant in agreement explained by emphasising the importance of website design and its management.

"They just need to improve on their website management and design. Sometimes when you go there, what you see is different from what you get. Number two, you search for a particular thing, and they bring out something else." (T8)

Figure 37 shows the different dimensions of Website/Etail Quality as described by participants and in the secondary data.

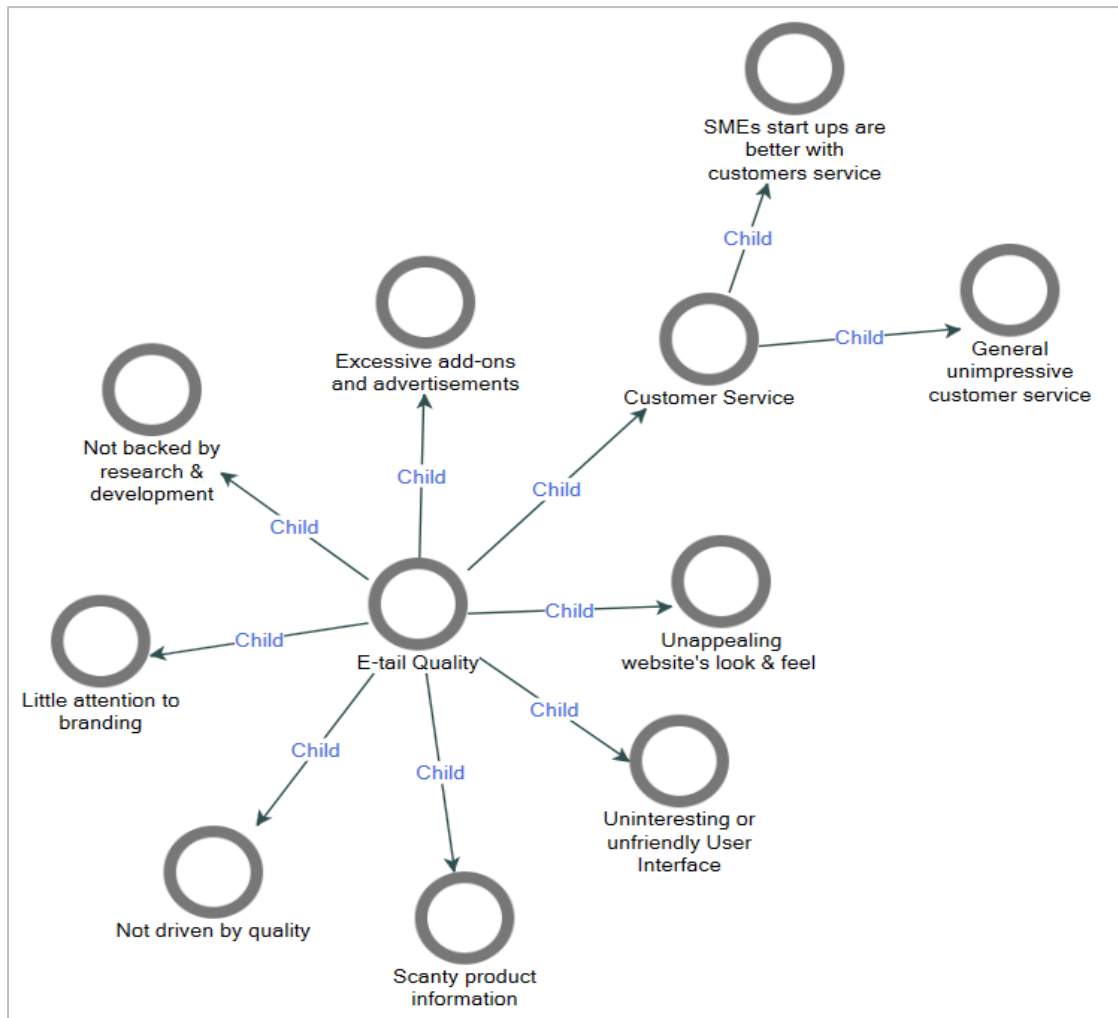


Figure 37: NVivo visual map for Website Quality (EtailQ)

6.3.4 Information Technology Infrastructure

All interviewees made in-depth emphasis on the influence on EC adoption of IT infrastructure such as Internet access, Internet connection, Internet speed and electric power stability and how these constituted major issues. IT Infrastructure was one of the major significant predictors of EC. All interviewees mostly amplified the vital importance of having uninterrupted internet access and a stable network connection to enable them to partake in online transactions. Gov.UK (2022) overseas business report stated that jenergy access remains a challenge to businesses and households, with frequent power outages leading to widespread use of backup generators and significant increase in the cost of business operations in Nigeria.

Despite having the largest number of online users in Africa, internet quality in Nigeria remains poor (International Telecommunication Union, 2018). Nigeria ranks 152nd in the world in broadband speed. Slow internet speeds coupled with high internet access costs constitute a major challenge to technology sector firms operating in Nigeria (International Trade Administration, 2021). Although the majority of the country has access to electricity, especially in the urban areas, the capacity and reliability of the power supply remain insufficient. This greatly impacts growth and productivity. Moreover, poor road conditions are a major constraint for the distribution of goods and thus economic growth (Urbanisation Research Nigeria, 2015).

One participant expressed their thoughts as follows:

“Electric power supply is a major factor because the telecom operators are using private electricity generating plant to power their station, so you can just wake up today and the network is poor. Sometimes when it rains, the quality goes down. You can go online but you can’t even load some graphic web pages effectively. The quality of connectivity affects everything; it affects the quality of life and EC generally.” (T2)

Another participant looked at it from the organisational perspectives in implementing EC: how the organisations prefer urban cities to the rural areas, due to network connectivity. They questioned the feasibility of EC success without availability of “data and voice”. This is reflected in their asserted view below:

“For EC to work in any location, data and voice must be available. Internet access is like you are looking for gold in most African countries. Data means you have access to the Internet - you can do Skype, Internet calls and videos, but for voice, it is just for call. In some places, the network is not strong enough for you to do video, but you can make some calls. In some, voice is not available there, talk less of data (said in a frustrated tone). So how will they do EC? These EC companies that have links with Internet operators prefer to go to the urban cities, e.g., Lagos, Kano, Abuja, where they will have value for their money because it takes them a lot of efforts and money to make sure that data and voice get to these interior places in the developing countries.” (T1)

Another interviewee shed more light on the issue:

“IT infrastructure goes a long way to affect EC, in some areas people find it difficult to do transaction because the infrastructure is not there. In fact, in Nigeria, generally you see people with multiple network lines, and the reason is not far-fetched, it is because the networks are not stable. Talking about electricity is a big deal still in Nigeria today. If you don’t have electricity every other thing becomes paralysed, so to speak, you are not able to charge up your device to do your transaction and it goes a long way to affect EC adoption; in some areas some people believe that a particular network is a no, no, so they cannot do business.” (T5)

Urban Research Nigeria (URN, 2015) emphasised that the positive role of infrastructure in economic development is widely acknowledged in the literature and corroborated the fact that Nigeria suffers from obsolete infrastructure. All interviewees confirmed that IT infrastructure was associated with EC, since it constitutes the telecommunication aspect of EC. Several issues were raised.

“I think before you can engage in an online shopping you have to have the facilities on ground – If people cannot afford laptops and smart phones, how can they shop online? Some have a phone to receive and make calls only but cannot access the Internet. At times there are internet connection issues and power failure, especially in Ibadan, unlike Lagos. So, people depend on solar panels and generators; how can they shop online? So, they are used to shopping physically.” (T4)

“These can prove to be major issues, in terms of IT support, internet, etc., which link businesses and consumers, I would say it’s not really that bad in Nigeria, especially in the major cities where the most internet users are.” (T8)

They further recommended that the government needed to put in place the necessary mechanisms in terms of policy and controls to guide the country’s EC implementation.

“Sometimes I want to shop online but the internet displays “unable to connect” and you continue to refresh, refresh and refresh, and you just get tired of it. So, you’d just say, “let me just go to the market and get the stuff myself” ”. (T8)

“Network reliability has to do with online purchase. Because it is when you have network that you can purchase, if there is no internet you cannot purchase online, e.g., you want to connect to a particular site and you discover that the site is down. They may not even give you any information and that cannot happen maybe in advanced countries.” (T3)

Figure 38 shows the qualitative data analysis regarding the influence of IT infrastructure on adopting EC.

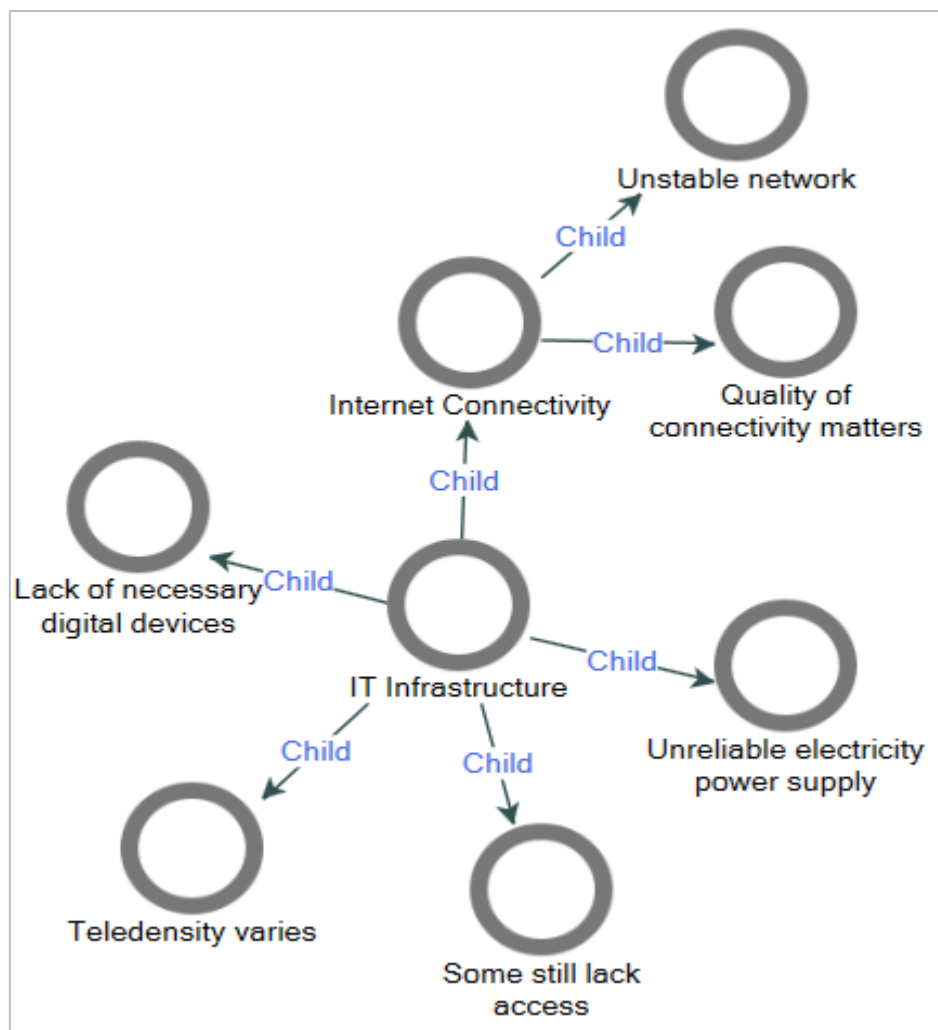


Figure 38: NVivo visual map for IT Infrastructure (ITF)

6.3.5 E-commerce Awareness

In this study EC was one of the most influential factors from the quantitative findings. It had direct, strong, positive and statistically significant relationships with perceived usefulness, perceived ease of use and purchase intention. First, interviewees were

asked to give a number, generally on a scale of 1-10, that reflected their opinions on the current level of EC adoption in Nigeria. The answers ranged from early stage (1) to 7.5. It was clear that customers' usage of EC differed based on the locations (cities of residence) of users. Usage frequencies reported differed, from 'I use it once in a while' to 'I use it extensively'. In addition, internet access, connectivity issues, internet skills, advent of the COVID-19 pandemic and people's level of education were cited as key issues.

The interviewees explained their views as follows:

"Awareness is improving, so people are aware. It is just that a lot of people are still disconnected, but a few people that are educated and are aware are finding a way of reaching out to contacts who have access to e-commerce." (T2, Lagos)

"I want to believe that Nigerians' EC knowledge grew from 0 to 8/10 (during the lockdown). I can do the rating like that, it is really encouraging." (T6, Lagos)

"I believe people will still get there and with the increase in the use of smartphones and internet services, people are really buying into e-commerce." (T7, Port Harcourt)

Those outside Lagos City, which is the economy nerve of the country, explained and emphasised power failure, lack of education and skills in navigating the internet, low awareness, and reluctance to try EC out as barriers. For instance, two participants further explained:

"People are aware, but they don't want to try it out, maybe because they have not seen it working as such. Some are not well-educated about it. I don't think many people use it here in Ibadan, except those who are very learned anyway. People prefer to go and see the item they want to buy physically." (T4, Ibadan)

"People need awareness and education on how to navigate the internet. For example, in Port Harcourt, there is a popular market, and everyone wants to go there to get items for cheap. Even though you may get them cheap, they may be lower in quality" (T7, Port Harcourt)

These comments are in line with the recommendations of the Ministry of Communication Technology (MoCT, 2012) about promoting awareness campaigns that inform consumers about their rights. Research has shown that many retailers in developing countries lack the necessary capabilities, skills and awareness to take full advantage of the digital economy. Moreover, they may not know how to leverage the relevant tools for advancing their business operations. Thus, creating awareness for these retailers about the implications of EC and other digital developments is equally important (UNCTAD, 2019). Figure 39 shows the NVivo visual map of the EC awareness construct.

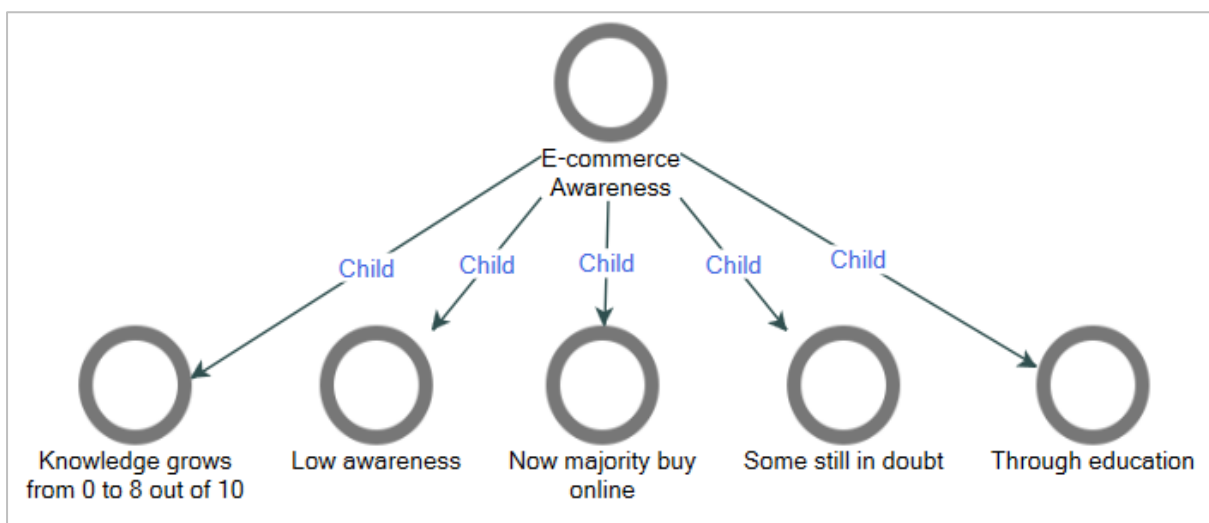


Figure 39: NVivo visual map for E-commerce awareness (ECA)

6.3.6 Legal Factor

Among all the variables identified in this study’s quantitative data analysis, legal factor is recognised as one of the most influential determinants of EC adoption in Nigeria. Stemming from our findings, the interviewees were asked whether they believed governmental support could influence EC adoption, and if they thought data protection regulation was needed to motivate people to adopt EC. Many of them confirmed the lack of legal protection for customers as a major concern in the issue of EC. According to Lawrence and Usman (2010), legal and judicial institutions are underdeveloped in Nigeria; individual consumers and enterprises lack confidence and trust to engage in internet transactions. The Center for Global Development report also corroborated the interviewees’ opinions that Nigeria’s regulations lagged behind in addressing digital challenges (Ramachandran, et al., 2019).

“People (in advanced countries) know that even if anything happens the government will be there to protect them and fight for their rights. But since there is no law guiding/guarding against anything, you are at your own risk and that’s why people don’t trust online transactions. But if there was a law for that, of course, people would trust it more.” (T8)

“Definitely data protection will play a role in building confidence, if customers feel protected their confidence will go higher. So, the regulators have to sit up. The enabling environment has to be created because today it seems sellers are just creating private enabling environment for themselves and for their products but generally speaking at the government level, they could do a lot more. We have the law and order, but it is largely on paper, and implementation is the challenge.” (T2)

T2 further quipped:

“Strategy is what you do, not what you said you will do. So, on paper it is in place, but it is not enforced. It is not practised, it is not implemented, that is where the “rubber meets the road.” (T2)

“I would not say that we don’t have data protection laws or regulations, but I don’t know whether there is a link for now between e-commerce companies and the government. Looking at what we had before, there are a lot of rights, like human rights; however, they are not very active. Nobody, including business owners, respects your rights.” (T7)

Recently, Gov.UK (2022) stated that although Nigeria remains Africa’s largest economy, it is characterised by poor infrastructure, an opaque regulatory environment, corruption and a fast-growing population. This accounts for some degree of hesitancy towards EC among the people of Nigeria, resulting in low adoption rate. It is therefore important for the Government to ensure operation of a well-defined and effective consumer privacy protection framework (MoCT, 2012).

Moreover, the results reported in Chapter 5 also showed that the majority of the survey respondents strongly agreed on the impact of LGF. With the highest strongly agreed count out of the 11 independent variables, 90.7% and 88.8% agreed that Nigeria

needed effective laws to combat cybercrime and governmental support for EC growth, respectively. According to International Trade Administration (2021), the goal of enforcing the Cybercrimes Act of 2015 is to protect EC transactions, domain names, etc. However, internet fraud is still highly prevalent in Nigeria, as the Act lacks enforcement. In like manner, another interviewee gave their opinions about how enforcing an appropriate and effective legal framework by the government could help protect customers.

“Government should come in as a checkmate. They should not leave it in the hands of the private parastatals; otherwise, they will go haywire. But if the government is there to regulate, they will protect the consumers so that the consumers will not be at the mercies of the private owners. So, it should be both private and government working together on this.” (T3)

This view is equally upheld by the Center for Global Development report on the opportunities for Nigeria’s emerging technology sector. It pointed out the need for the Nigerian government to do more to improve the basics of the business environment as a priority for the technology sector (Ramachandran et al., 2019).

One interviewee asserted that the Nigerian government should set an example by being aware of any related knowledge in using the online service themselves, more like “know and use,” stating *“The government needs to do much more than they are doing by putting premium priority on knowledge. The government should “sell what they are eating and eat what they are selling.” (T1)*

These thoughts were also echoed by another interviewee, as follows:

“Yes, capital YES because most of the problems we are having now is because of the policies of the government. So, the government has a lot to do for EC to be adopted. What I find out is that some of our leaders don’t really understand how it works, so it is really a problem. So, government policies have a lot to do for all these things to work out well and I believe they too need exposure because what you don’t have/know you cannot give.” (T6)

Figure 40 shows the NVivo visual map of the legal factor construct.

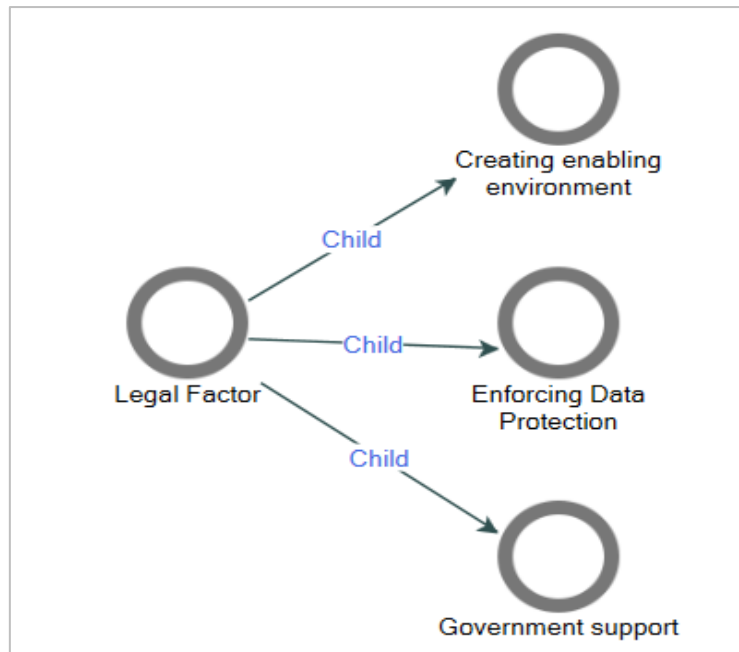


Figure 40: NVivo visual map for legal factor (LGF)

6.3.7 Reputation

From quantitative data findings, reputation was one of the highly significant factors that had a strong direct influence on purchase intention in Model 2. However, in Model 1, reputation did not have a direct and significant impact on purchase intention. Yet, reputation was a strong determinant of both positive and negative customers' emotional responses. To untangle these findings, interviewees were asked why they thought the online reputation of retailers was the only factor that had a strong, significant relationship with both positive and negative customers' emotional responses. One participant (T2) thoroughly explained:

“Reputation is very significant. Remember I did talk about branding and trust and all that, so reputation is a big factor. There are some sites that I would not purchase any serious product that is above certain amount of money from. The lower the impression I have of the channels, then the lower the kind of items I can deal on those channels. Unfortunately, there is always trading-blame. The merchant will say it is the bank, the bank will say it is the merchant, they will just be tossing you around. You need to know who you are dealing with if you are making significant purchases. The reputation does affect the emotional responses.”

The Ministry of Communication Technology (MoCT, 2012) stressed that as a result of uneven quality of service and influx of substandard equipment, among other factors, the customer experience in Nigeria in the context of ICT services and resources continues to be diluted.

Another participant (T5) pinned this on the strategic orientation of the online companies, such as their values, vision, focus, and the standard they uphold by doing things right (efficiency).

“I want to attribute that to probably the core values of the organisation running the online business. If you value reputation you would want to do things right. Of course, this is an emerging economy, and EC is a market that everybody wants to go into because they feel it is lucrative. What you see is some people just do it in a way that is not following a particular standard. We have had people saying, it is the prototype of the thing you want to order when they send a particular product to you, you receive something different. I want to believe the company that does not value their reputation does not have the focus or the vision to expand their horizon, but companies that know their onions want to make sure they do everything right and people have been enjoying services.”

It shows customers will only trust online vendors to the extent that they believe in their transparency, ability, and integrity to keep their promise. Two interviewees highlighted more on the aspect of trust deficit in some online retailers' dealings and transactions of goods and services.

“In fact, more than 50% of consumers do not trust e-commerce because of the lack of government influence, logistic issues, etc. Their reputation is not really that bad, but the major issue some people have is that they are paying for certain items, and they are getting the opposite.” (T7)

T7 compared and contrasted the reputations of new SME start-ups and established brands this way:

“Online retailers’ reputation is just on the average. Companies that already have a name are still better, but these upcoming companies are less trusted because people don’t know what will come out of it – I could order today, and they could say that they closed down tomorrow. Again, companies that have a name are going up like Jumia, Konga and Ali Express. Most people don’t trust online things and most people are also afraid of being scammed. They’ll order something and they’ll say, “pay before it gets delivered to you” and at the end of the day the items won’t get delivered to you and your money won’t be refunded.”

Another participant reiterated how important they thought online retailers’ reputation was:

“Yes, the reputation of the seller is also a significant factor, there is a saying that when you are tested, people can always go back to you if you don’t default. If you are tested and found wanting, the reputation is at stake.” (T3)

Figure 41 shows the NVivo visual map of the reputation construct.

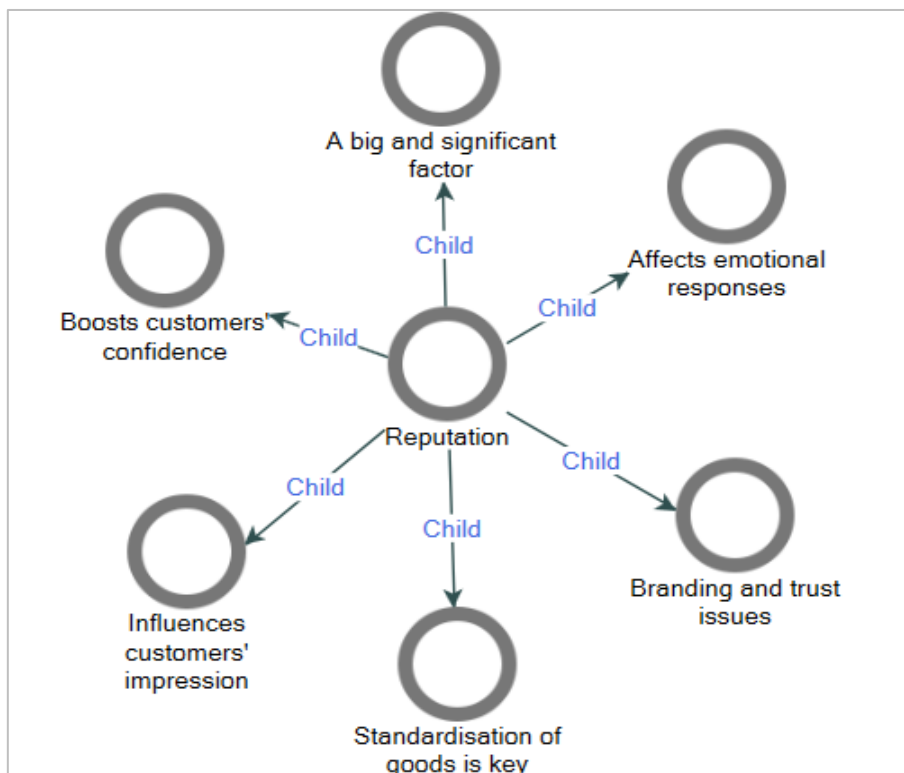


Figure 41: NVivo visual map for Reputation (REP)

6.3.8 Perceived Usefulness

In the study's quantitative data analysis, perceived usefulness was found to be the most significant factor that impacts customers' online purchase intention in Nigeria. It had the highest total effects on PIT. In the interviews, comments about EC usefulness such as convenience, speed, timesaving, varieties of choice, cheaper options and money saving were frequently highlighted by most participants. Similar to the quantitative findings, convenience was mostly cited and described by interviewees in terms of comfort, no need for queuing, personal safety from being robbed and escaping traffic jam or road accidents. Most of these benefits were also mentioned in the secondary data. For instance, UNCTAD (2019) cited some of the benefits of EC in comparison with physical stores as convenience, access to more variety and choice of goods and services at lower costs, and timesaving due to fewer intermediaries.

“One of the advantages is that people can check the different options they have online and compare them to make their choice, instead of having to move around different shops to find what they want. You see so many items and you can compare and make your choice. Instead of the risking of having to go through so much stress to get something when you can just get it online.” (T7)

“It is faster, goods get to you on time. Sometimes they do promo, just input the code and you are able to save some money – so it saves time, it saves money, and it is faster because delivery is at your doorstep. What I noticed is if there is a promo on something related to an item I bought before, it will pop up on my system, so at least you are informed of other products that you can acquire.” (T6)

They continued by linking EC awareness (ECA) with perceived usefulness – an affirmation of the significance of ECA on PU from our quantitative results.

“If people are aware, they will know that if we have less cars on the road, accident rate will not be high, so many things can be avoided and can actually be taken care of even during the COVID period that we say no gathering, no going out and all that.” (T6)

One other participant also corroborated this point and described EC as being a less stressful way of shopping and the safest option of preventing COVID-19 infection

transfer when transacting, especially when social distancing directives were implemented during the COVID-19 lockdown.

“Well, it has many advantages. One, it saves a lot of time. Two, with all this COVID stuff, you can stay at home and have it delivered to you. Three, you can do so many things - now with the internet you can just order something, continue with what you were doing or be at work and continue shopping, which makes it easier.” (T8)

Another participant emphasised how beneficial and effective EC is in helping them to multi-task and its suitability for their occupation. This further confirmed the result we obtained from the quantitative data analysis of the high significance of perceived usefulness with compatibility.

“Alright, it is fast, maybe because of the nature of my job, I am always on the road so I cannot be spending a lot of time shopping the conventional way. This is something I can do online and get the same result, why would I be spending hours considering all the stress? It is very fast, and it is convenient”. They continued: “It makes life easier for me, I can do so many things at a go instead of going through the normal process of going from place to place.” (T3)

Notably, some interviewees linked perceived usefulness and perceived ease of use together in their responses. This was confirmed earlier both in the literature review of related works and the quantitative findings of the present study, with PEOU showing a strong association and significance with PU.

“It is faster, you can do it in the comfort of your home, it is easier, and you don’t have to face the traffic jam/congestion, or a long queue while making payment.” (T4)

“It makes my work very easy, and it is very useful because I do a lot of purchase online; it makes my work faster than when there was no opportunity of EC /online buying.” (T3)

“When you look at some of these online shops that we have in Nigeria today like Konga, Jumia, I can go to their sites and look at things, different prices, different

models, different brands; I can easily make my choice and place an order, so it is very fast and very convenient for me.” (T7)

Interviewee T1 looked at it from a broader perspective and succinctly stated:
 “E-commerce is one of the fastest, most convenient and safest means of getting goods and services delivered all over the world.”

Figure 42 shows the NVivo visual map for PU.

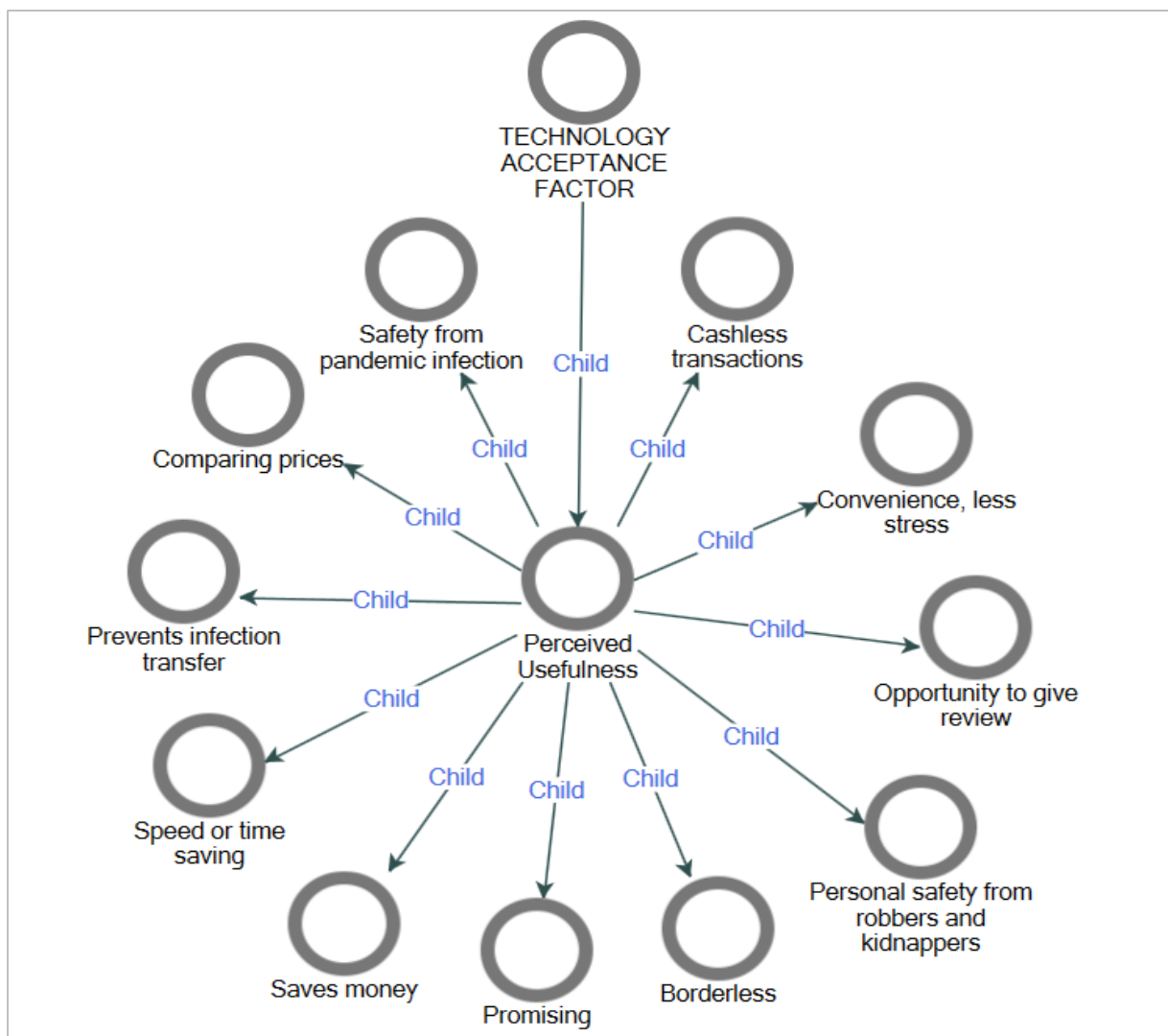


Figure 42: NVivo visual map for perceived usefulness (PU)

6.3.9 Perceived Ease of Use

Drawing from the quantitative data analysis findings, perceived ease of use did not have a direct significance with purchase intention, unlike perceived usefulness.

However, PEOU had a direct significance with e-tail quality, customers' awareness, positive affective responses, and online companies' reputation, all of which could make customers to question whether it is worth the effort. This is because PEOU is associated with easy-to-use websites with less mental effort and internet experience.

According to Institute Public de Sondage d'Opinion Secteur (IPSOS, 2019), a public sector opinion poll institute, in their 'Nigeria now and in the future' report, most Nigerians still prefer to patronise open markets and neighbourhood shops. Therefore, participants were asked to give more insights into whether shopping online was easy to carry out or required a lot of effort compared to open air market/traditional market. One interviewee in support of EC's ease of use gave an insightful explanation of PEOU:

"Well, from my own opinion I think it is easy for people to buy through online. It is easier, because in doing that you are saving yourself a lot of things. Okay, you know there are some inconveniences in going to open market to get goods to purchase but if you have another means that make your purchase to be faster and get delivered at your post so why not? It is convenient to go online as it will take away all efforts, all energy that you would have exerted going to open market." (T3)

In addition, interviewee T3 offered their perception by comparing Nigeria with the Western world:

"You know Nigeria is a developing country and you can't compare it with US, UK and Canada and all the rest; you cannot put away that internet not being strong enough in getting some things done." (T3)

Similarly, T1 said, *"Well, considering the level at which EC has come to the global market, it should be easy, the risk you are going to get involved with or distress you go through can be taken off you by the use of e-commerce. You have it delivered to you at a minimal cost. It's supposed to be easy, but the reverse is the case here."*

Moreover, several issues were raised to shed more light on the construct PEOU in general. They highlighted network fluctuations, poor access to data, expensive data

cost, and the deception of e-sellers. In line with the previous comment, another two participants said online shopping was not fun or easy, basing their perception of EC ease of use in Nigeria on the “all things being equal” conditionality. This was not only about the mental efforts needed but also on the process involved, which seemed to be laborious in Nigeria.

“It is easy to use if everything goes on well, no issues, no deception... all things being equal.” (T4)

“Shopping online could be fun, all things being equal, but it is not fun here. It is not easy... because of the fluctuation on the network. We don’t have access to data as you have over there (in the UK), so that means I am consuming a lot of data just to get something done, sometimes it doesn’t come cheaply.” (T6)

As earlier stated, the mean score range for PEOU was between 3.47 and 3.82, indicating they agreed to some extent that EC was easy to use. However, most participants viewed ease of use not only through the lens of the degree of mental efforts required to buy online as cited in most technology acceptance literature, but they also revealed other areas where more efforts were needed before goods and services could get to customers. Another interviewee amplified more on areas of difficulty relating to using EC in Nigeria such as logistics and delivery and why problems in these areas could constitute a barrier.

“The reason is about the issues that surround getting things online starting from logistics to getting the goods from online retailers to the end-user customers. So, these are the major issues, talking about Nigeria. For example, most places still have bad road networks, so for the delivery company it is still difficult for them to get the items across eventually. It increases the payment/delivery costs so to say, and another thing is inflation. When you look at the cost of items in Nigeria, it is so high and now adding the delivery cost to it.” (T7)

T7 expatiated further:

“A lot of people actually want to go online to shop but looking at all these things like the logistics, the product quality, online retailers’ transparency, inflation and so many

other things. The government's influence is also there - you are not sure that if you are not getting what you are supposed to get, you have somebody whom you can report to. The survey may show that people may actually rate ease of use high but getting those items may be a major challenge because of the aforementioned issues.” (T7)

Explanations were sought from interviewees on ease of use having the strongest positive total effects on usefulness from the quantitative data analysis. T6's answer clearly identified the association between the two constructs:

“The usefulness and ease of use of e-commerce go hand in hand, maybe because of the nature of my work, in my office I may want to get a particular item, of course I don't have all the time, so I just go to my system and order. It is very easy for me to navigate and very easy for me to use and I perceive it as a means of saving me a lot of stress and time.” (T6)

Further clarifications were sought from interviewees on the insignificant relationship between perceived ease of use and purchase intention. In comparing, one participant expounded on this finding by rating the significance of perceived usefulness of EC above that of perceived ease of use (how easy it is to buy online).

“I would rate the significance of usefulness higher above ease of use because I know it is very useful, it is very promising. I will definitely rate it higher because if you know how to weather the challenges and the glitches around there, the more you use it the more the ratings go higher.” (T2)

Figure 43 shows the NVivo visual map for PEOU.

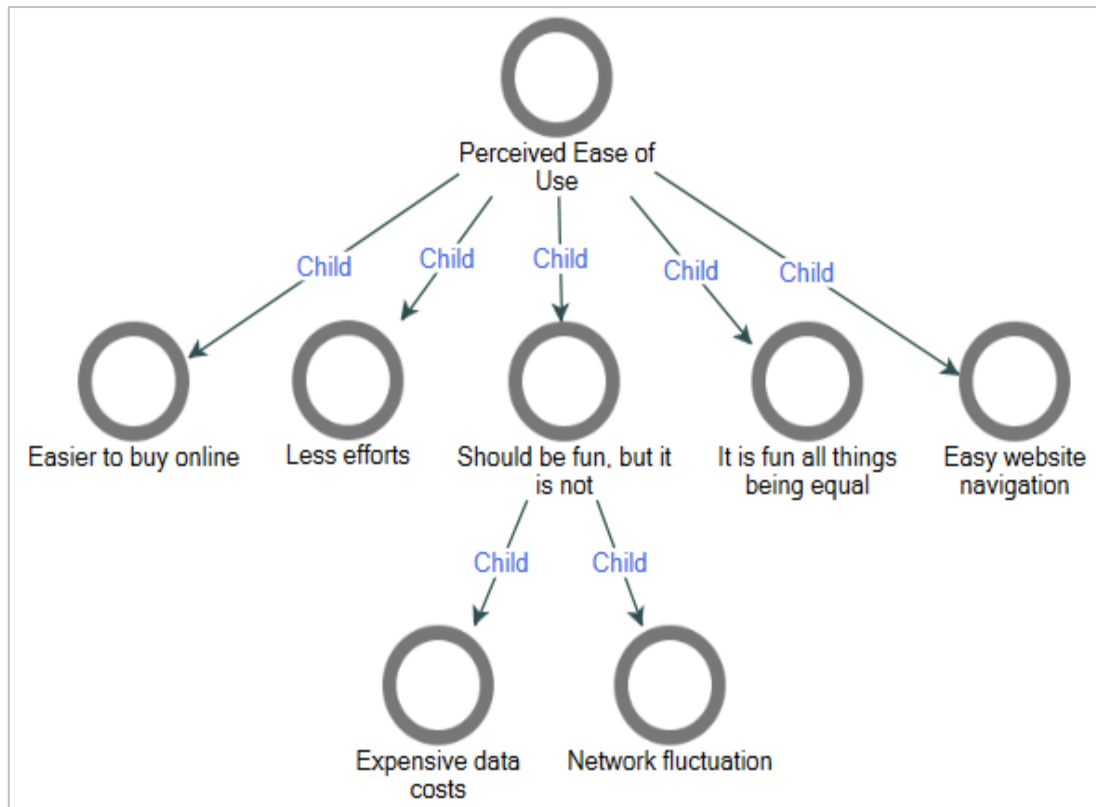


Figure 43: NVivo visual map for perceived ease of use (PEOU)

6.4 Gender, Age and Generational Impacts

The independent T-test quantitative analysis performed for the demographic variable gender showed that gender was not significant with respect to adopting EC (Section 5.4.3). In line with our findings, although Hernández, Jiménez and Martín (2011) focused on experienced online shoppers, their results too show that socioeconomic variables such as age, gender and income do not moderate the perceptions of e-commerce by experienced e-shoppers. Similarly, Higuera-Castillo, Liébana-Cabanillas and Villarejo-Ramos (2023) in their study on the intention to use EC vs. physical shopping found that the influence of most socio-demographic variables, e.g., gender, age, education level and municipality size, was insignificant.

Notwithstanding, the interviewees had the opportunity to share their views on which gender in Nigeria would likely shop online more than the other. In contrast to the quantitative findings, it was surprising they felt gender could make a difference in adopting EC. They unanimously indicated men, based on the reasons depicted in Figure 44.

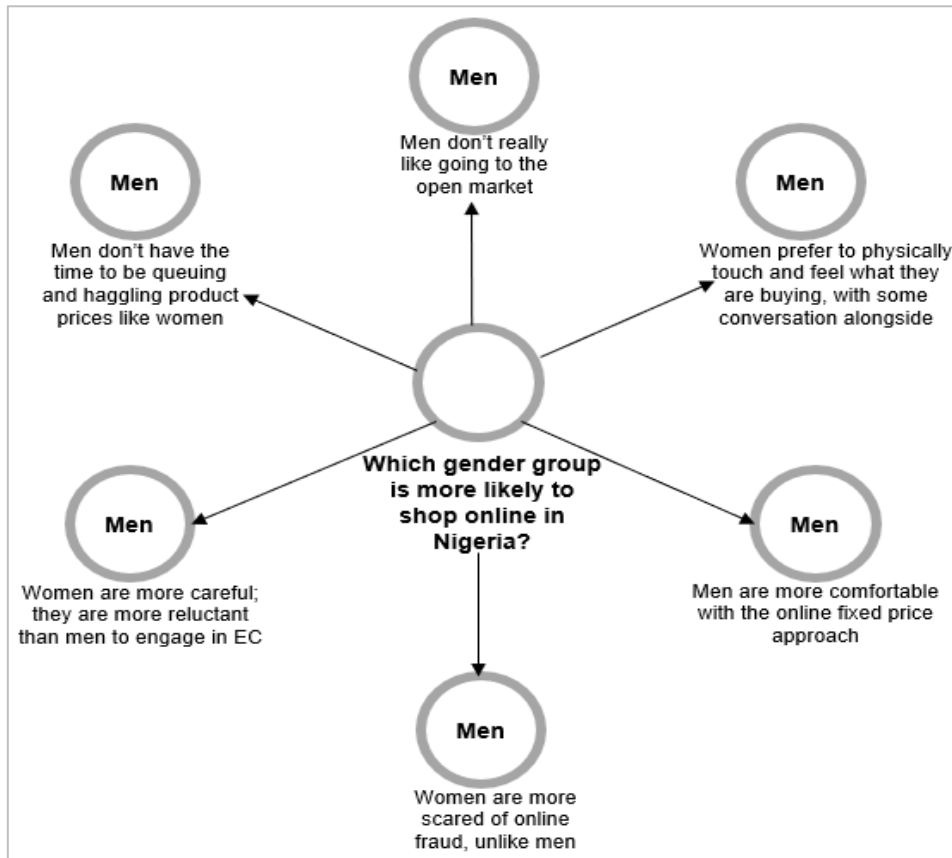


Figure 44: The impact of gender on online shopping in Nigeria

This could have practical implications for the online retailers. They should leverage these valuable insights in encouraging more likely women to shop online in Nigeria.

In addition, concerning the quantitative results analysis conducted for the demographic variable age, the ANOVA showed it was not significant with respect to adopting EC (Section 5.4.4). However, probing through the interviews shed some light on this important aspect: it appeared the generational gap still holds sway when it comes to EC decision making. Two interviewees shared their thoughts this way:

“The younger generation are tech natives – they never knew a word without the internet. The older generation are in doubt. They don’t believe what you are saying until they see it. Do it first, if it works, I might try it – that is what you might hear from an older person.” (T2)

“Most of the older generation do not have android phones and they don’t know the use of android phones. I think the younger generation are more into buying online but the

older generation don't even trust buying from their friend that is next door, let alone from computer that they don't know.” (T8)

Education level and urbanisation, among other factors, have been reported to be significantly associated with EC potential (Waseem et al., 2019). However, contrary to expectation, in our study the ANOVA result from the quantitative analysis did not confirm the significance of education level among the groups. On the other hand, with respect to the impact of users' location, the qualitative result showed that customers' usage of EC differed based on their cities of residence. For example, Lagos, Abuja and Port Harcourt are more industrialised and each has a higher tele-density (the number of telephone connections per hundred individuals living within an area) than Ibadan. This was reflected in the responses of the interviewees when reporting the level of EC awareness of residents of these cities. The data showed that the more urban the cities were, the better were the residents' level of EC awareness and IT connection (See section 6.3.5).

6.5 Key Qualitative Emerging Factors

Other factors that could influence EC emerged during the semi-structured interviews and were highlighted by participants as: inflation, online payment issues, corruption, the effect of word of mouth, cultural impacts, online deception, frauds, scams and hacking issues, credit card threats, perceived risk, late delivery and logistics issues, retailing policies and customer support, and EC and the impacts of COVID-19 in Nigeria. These themes are displayed in Figure 45. The findings provide useful insights for future research.

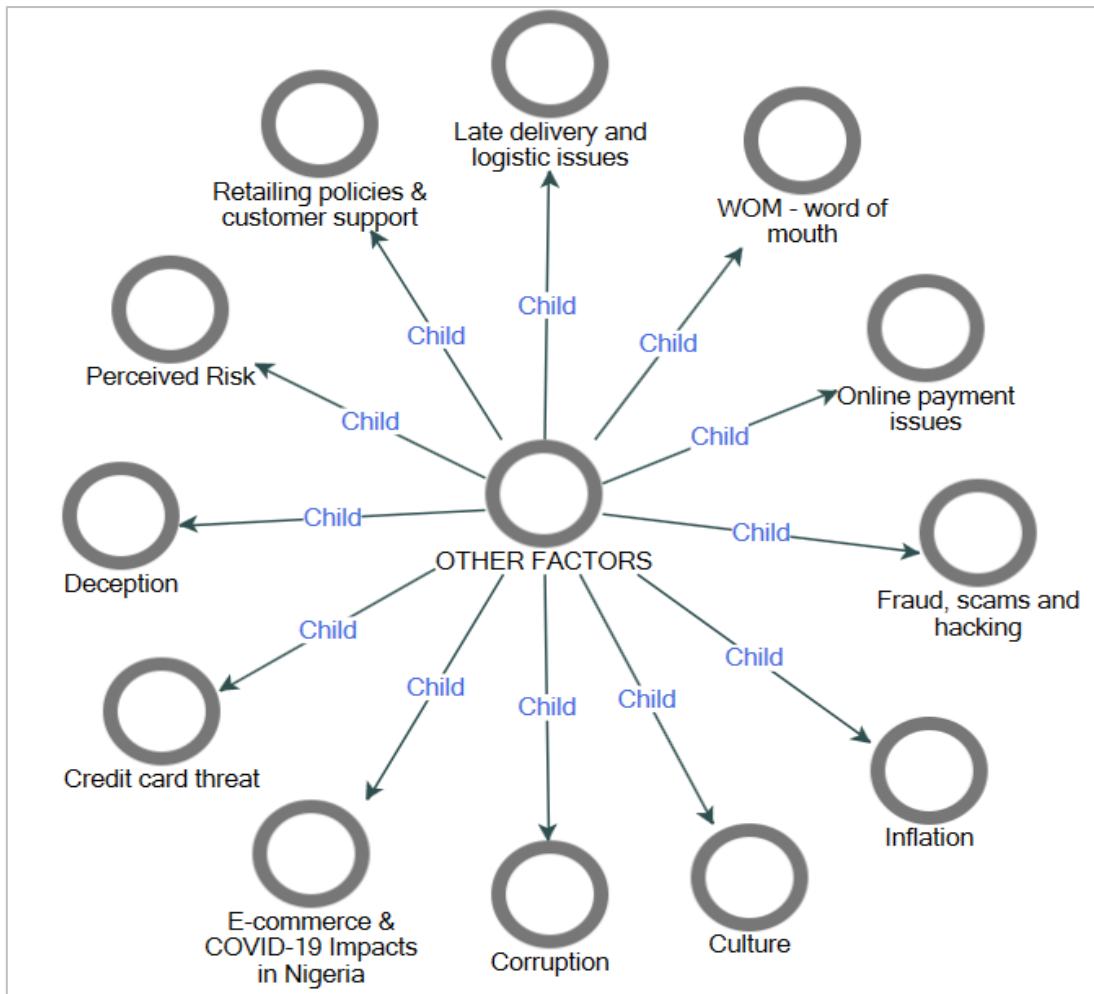


Figure 45: NVivo visual map for key qualitative emerging factors

Figure 46 summarises the word cloud imagery for the semi-structured interviews of the qualitative phase of this study. Bletzer (2015) concluded that combining word clouds with quantified qualitative materials could increase the understanding of a range of stakeholders, e.g., those unfamiliar with numerical tables or statistical analyses. The more the frequency count of interviewees mentioning a word shown in the cloud, the bigger is its font size e.g., online, commerce, people, adoption etc. This suggests the relative importance of each theme to the participants, for whom the emphasis is unlikely to be a mere repetition.

Chapter 7: Discussion

7.1 Introduction

This discussion chapter provides interpretation of the overall research findings as presented in Chapters 5 and 6 as derived from analysis of the quantitative and the qualitative data, respectively. Earlier, the research findings were presented in those two preceding chapters in which the two structural models derived from the initial proposed conceptual model were assessed and compared with each other. The discussion in this chapter further links the findings of this work, including those on all TAMSOR-related factors, with those from prior research work as considered in the literature review (Chapters 2 and 3) and the methodological description of the developed model (Chapter 4). It focuses on how the findings fulfil the research aim, provide answers to the research questions and meet the objectives of the study presented in Chapter 1. The chapter concludes with a short summary.

7.2 Research Objective 1

As outlined in Chapter 1, the first research objective aimed to critically investigate the key factors influencing customers' intention to adopt EC in the context of Nigeria. In order to achieve this objective, a research question was formulated as follows:

7.2.1 Research Question 1 (RQ1)

RQ1. What are the key factors that influence the adoption of EC in the context of Nigeria? While twenty-seven hypotheses were proposed in this study (Chapter 3), in order to answer the RQ1, eleven of the twenty-seven hypotheses aimed to test the direct influence of EC adoption factors on customers' purchase intention (PIT, hereafter). The remaining sixteen hypotheses were developed to test the influence of independent variables on each other.

The hypotheses were formulated after an extensive review of the technology acceptance and emotional response literature. Several factors that were theoretically justified to be important in the EC and technology acceptance context were incorporated into the study's proposed model (Figure 15 on page 125). Based mainly on two influential models in the technology acceptance literature - the TAM, proposed by Davis (1989), and the SOR, introduced by Mehrabian (1974) - the study examined the factors influencing Nigerian residents' intentions to adopt EC.

These multi-dimensional factors were classified into four main categories, based on the nature of their impacts: technology acceptance factors, individual-related factors, external and internal environment-related factors, and customers' affective responses factors. Technology acceptance factors represent constructs that have influenced technology adoption decisions. These factors were obtained from the original TAM framework - PU and PEOU. Individual-related factors represent different aspects of the individual's characteristics, ECA and COMP. External environment factors were represented by CRF, LGF and ITF; and internal environment factors by ETAILQ and REP (external organisational factors). Customers' affective responses factors tap the positive and negative emotional dimensions of customers (CERP and CERN). These major factors have been found to affect the acceptance of new technologies in different countries over the years. Hence, they were theoretically assumed to have such influence on Nigerians, based on contextual similarities.

To analyse the quantitative data, EFA using SPSS 27 and SEM using AMOS 27 were employed, and NVivo Enterprise was used to analyse the qualitative data. EFA was adopted to determine the possible underlying factor structure, based on the observed variables that were included in the study questionnaire. CFA was used in verifying and confirming the factor structure derived from the EFA, and to assess the construct validity and the composite reliability of the researched factors. Furthermore, SEM was also used to test the hypothesised causal relationships between the different research variables. An eleven-factor structure was identified via the EFA. Cultural factor (CRF) was excluded for cross loadings (Table 30 on page 200). Based on their categories of influence, those factors extracted from the EFA are presented in Table 46 below.

S/N	Factors Extracted	Category
1.	Compatibility (COMP)	Individual-related factors
2.	E-Commerce Awareness (ECA)	
3.	Website Quality (ETAILQ)	Internal, external and environmental factors
4.	Reputation - Online Retailer's (REP)	
5.	Legal Factor (LGF)	
6.	IT Infrastructure (ITF)	
7.	Positive Customers' Emotional Response (CERP)	Customers' affective responses factors
8.	Negative Customers' Emotional Response (CERN)	
9.	Perceived Usefulness (PU)	Technology acceptance factors
10.	Perceived Ease of Use (PEOU)	
11.	Purchase Intention (PIT)	Dependent variable

Table 46: Factor Extracted from the EFA

The resulting eleven-factor solution (including the Dependent Variable, DV) was found to explain 72.02% of the variance in the dataset (Appendix I). SEM was subsequently applied in two steps; the first step involved confirmation of the EFA results and a check on the related validity and reliability via CFA.; and the second tested the research hypotheses of the causal relationships between these factors.

In order for the hypothesised structural model to be examined, two models were validated, each consisting of the same latent factors and measured by the same observable items, but with different emotional responses as mediators. The mediating roles of customers' emotions (positive and negative) were assessed separately. Aligned with the study's research aim, objectives, and research questions, the discussion of the findings is organised into **three subsections**: the first addresses the factors influencing online customers' PIT (i.e., the direct paths linking EC adoption factors to customers' behavioural responses). This is aimed at discussing the independent variables (factors) that have direct influence on the dependent variable (PIT). The second expounds the influence of customers' emotional responses on EC adoption and links the impacts of the two technology acceptance factors (PEOU and PU) with the EC adoption factors. It also discusses the mediation relationship between the EC adoption factors and PIT. Finally, the third discusses the model's explanatory power through the 'TAM and SOR' lens. The DV, purchase intention, is first discussed.

Clemes, Gan and Zhang (2014) viewed purchase intention (PIT) as the predisposition of a person to take any initiative to buy before making the actual decision. The importance of intention lies in the fact that it is generally considered the key predictor of actual behaviour (Montano and Kasprzyk, 2015). In marketing studies, intention has been specified as a “surrogate” indicator or the immediate predictor of actual behaviour (Fishbein and Ajzen, 1975; Ajzen, 2011). Therefore, this research presents PIT as the study’s dependent variable - an important indicator of customers’ willingness to buy online. We measured PIT by four observable variables or items (PIT1, PIT2, PIT3, PIT4). In this research, it was found that the four items used to measure PIT loaded highly on factor seven and were highly correlated to each other (See Table 30 on page 200). Moreover, PIT alone explained 3.49% of the total variance in the empirical data. The assumed underlying structure of this factor was confirmed by EFA, and later by the CFA results. The average mean score for PIT measurement items was 3.95 (ranging from 3.86 to 4.0), well above the midpoint (3) on the five-point Likert scale. CFA results also provided statistical evidence of both the construct validity and the composite reliability for the PIT construct. In order to identify the attitudes and assessments that ultimately generate purchase intention, Fishbein and Ajzen (1977) and Pappas et al. (2017) suggested that examining other relevant factors could increase the explanation of the variance in intention when predicting customers’ behaviour. Therefore, these factors are discussed next.

7.2.2 Factors Influencing Customers’ Online Purchase Intention (PIT)

According to the study by He et al. (2008), lack of intention to purchase online is the main obstacle in the development of EC. Abu-Shamaa and Abu-Shanab (2015) mentioned that the intention to buy online is affected by both technology factors and socio-cultural factors, e.g., trust. While eleven factors were originally hypothesised to have a direct influence on the online customers’ purchase intention in Nigeria, only six of them were empirically proved as significant. Cultural factor (CRF) was excluded for cross loadings during the EFA. Moreover, its extracted observable variables recorded less than the recommended factor loading cut-off value of 0.6. Thus, 10 out of 11 factors remained. For both models, PU, ECA, ITF and LGF all had significant impacts on PIT. Additionally, CER_POS (CERP) was empirically proved as having significant impacts on PIT (in the positive emotional response Model 1). REP, COMP, ETAILQ

and PEOU had no significant effects. In contrast, the significant impacts of REP on PIT were confirmed in the negative emotional response Model 2. In this case, four factors, CER_NEG (CERN), COMP, ETAILQ and PEOU had no significant effects on PIT. In total, the six factors, namely PU, ECA, ITF, LGF, REP and CERP, were found to have significant impacts on the online purchase intention of Nigerian customers.

The discussion in the paragraphs following is based on the significant impacts ranking of these factors as highlighted in Table 43 on page 229.

Factor One: Perceived Usefulness (PU)

Regarding the influence of PU on PIT, the preliminary research model anticipated that PU would have a significant impact on PIT. PU was found to be the first and most important factor found to significantly influence the dependent variable purchase intention (PIT) as analysed in Chapter 5. The average mean score for the six observable variables used to measure the PU factor was 4.07 (greater than the scale midpoint of 3), reflecting a high level of agreement. Overall, PU had the highest “agreed” count of all factors examined among respondents (with 85.3% of sample). In particular, a strong agreement was found among respondents towards how they perceived the usefulness of EC in terms of convenience. 86.5% of the surveyed respondents indicated convenience as a major EC usefulness. They also stated timesaving, price comparison, access to product information, as well as access to a variety of choices as EC usefulness. The result showed that EC was perceived more useful for the respondents when compared to traditional shopping methods. Interestingly, perceived usefulness was observed to exert more than twice the direct and positive impact IT infrastructure and positive emotions each had on purchase intention (Model 1). Also, perceived usefulness had almost double the impact that reputation had on purchase intention (Model 2). The path coefficients in the final revised model evidenced these results (Figure 31 on page 228).

Additionally, CFA results revealed that the PU construct had a high composite reliability coefficient and a high level of construct validity (convergent, discriminant). However, three measurement variables were later dropped (PU1, PU4 and PU6) as suggested by the CFA, in order to enhance the measurement model goodness-of-fit.

As seen in Table 39 and Table 40, the causal path between the two variables revealed a significant and strong impact ($p= 0.001$ for both Models 1 and 2), thereby supporting H13. It is notable that PU had the highest positive, direct and significant impact values out of all the six EC adoption factors influencing customers' purchase intention. Moreover, in Figure 31, the beta values for both models were positive ($\beta=.328$ for Model 1 and $\beta=.316$ for Model 2). These results confirmed that perceived usefulness does highly, positively and directly influence customers' purchase intention to adopt EC in Nigeria. That is, any increase in PU would positively and significantly impact customers' PIT towards adopting EC. Hence, PU is a major determinant of customers' purchase intention towards EC adoption and an increase in its perception would most likely increase PIT.

Furthermore, the results of the semi-structured interviews (Chapter 6) mapped well with the quantitative findings of PU and supported it to be an important factor influencing customers' EC adoption. According to interview participants, some of the main reasons identified for shopping online are convenience (stress-free), time-saving, cashless transaction, better choices, discount offers (money saving), faster and easier service (Figure 42 on page 261). These advantages of shopping online are also confirmed by Wen, Prybutok and Xu (2011). According to them, timesaving occurs through the avoidance of the traffic congestion and a long queue while shopping or making payment in the offline stores. Additionally, they stated personal safety especially against COVID-19 infection and security against robbery in a place like Nigeria. Consequently, customers are more likely to transact online when they have more favourable perceptions about the effectiveness, performance, productivity and importance associated with online stores than with offline shopping (Pena-García et al., 2020).

These results are consistent with findings from prior research. For example, a recent finding by Olasanmi (2019) also established that timesaving and convenience are cited as the most important factors influencing customers' decision to engage in online shopping in Nigeria. The author particularly highlighted the four cities of our sampling population, Lagos, Port-Harcourt, Abuja and Ibadan, as well as others, such as Calabar, Kaduna and Kano, where shopping physically can be stressful as a result of their typical high-traffic flows and congestion. Moreover, the PU findings support prior

studies by Tornatzky and Klein (1982), Davis (1989), Taylor and Todd (1995), Venkatesh and Davis (2000), Bagozzi (2007), and Tao (2009), who all confirmed the importance of PU as a key determinant of customer acceptance of EC, in particular. Makame, Kang and Park (2014) using the extended TAM framework found that PU has strong significance with intention to use EC by customers in Tanzania. They implied that people are willing to use technology when they perceive it as useful. Likewise, Chi (2018) discovered that PU leads to a greater likelihood for Chinese consumers to adopt apparel Mobile commerce (m-commerce). Abu-Shamaa and Abu-Shanab (2015) also confirmed that PU is a positive and significant predictor of the buying intention of Jordanian customers.

This study's result is also compatible with the mixed methods research conducted by Hampshire (2017), finding from which also confirmed that PU significantly and positively influences UK consumers' attitude that can lead to adoption. This implies that the greater the PU, the less the EC avoidance and the greater the PU's positive influence on customers' purchase intention. In other words, the more the customers' perceived usefulness of EC, the more likely is the probability of its adoption.

Additional improvements to the user experience could include faster checkout options and improved website navigation capabilities, thus aiding customers' perceptions of convenience (Chi, 2018). This could attract more online customers, as retailers focus on developing more convenient, speedier, and more efficient EC websites that advance seamless and non-frustrating user experience. Our study showed that most customers in the urban settings of Nigeria know the benefits of EC. Potential users could evaluate EC favourably and adopt online shopping especially if there is improvement in the outcome of their shopping experience (Pena-García et al., 2020).

Davis (1989) concluded that PU is a strong correlate of user acceptance. PU indices such as convenience, time and cost savings are an antecedent of individuals' adoption of online shopping capable of influencing customers' preference (Pappas, et al., 2014). As the world is increasingly becoming more digital, companies can emphasise the advantages of preferring online transactions to the traditional ways of shopping, and hence direct their future online strategies towards highlighting the benefits of adopting EC. With the highest total effects on purchase intention, PU is confirmed in this study

as a strong significant factor that leads to an increase in and thus a positive impact on customers' intention to purchase online. Therefore, it is concluded that the more people feel EC is useful in Nigeria, the more likely they are to shop online. It is essential that online retailers pay more attention to managing the promotion of PU to customers to effect successful technology acceptance in Nigeria.

Factor Two: Legal Factor (LGF)

Existing models of EC adoption emphasise not only the relevance of technological and financial constraints to EC implementation but also that of the legal framework needed for its adoption (Molla and Licker, 2005). In affirmation, Shang, Chen and Shen (2005) stated that the shift from regular commerce to EC has warranted the promotion of new regulations to recognise necessary methods of communication and transactions.

In our study, the second most important factor found to influence purchase intention (PIT) is the legal factor. The average mean score for the five items used to measure the LGF was 4.42 (closer to the highest Likert scale point of 5 for agreement). This is compelling evidence of a high level of agreement among the 312 respondents. Overall, LGF also had the highest "strongly agreed" counts from all the factors examined among respondents. Almost all the surveyed participants (91.35% of the sample) showed unanimous agreement on the importance of having effective law and regulations that support EC. This is evident in a very strong agreement of 90.7% found among respondents towards the legal factor in terms of having effective laws to combat cybercrime. LFG1, LFG2, LFG3, LFG4 and LFG5 were observed to measure this construct. Also, 88.8% agreed that there was a need for governmental support for EC growth in the country. Moreover, 8 out of 10 respondents indicated they agreed there was a need for the government to demonstrate strong commitment to promoting EC and for effective laws to protect customers' privacy. Likewise, the same number of respondents agreed that having data protection law in Nigeria would motivate them to purchase online.

EFA results revealed that the measurement items were exclusively loaded on factor four and were highly correlated to each other (Table 30 on page 200). Factor four explained 5.1% of the total variance in the data (Appendix I). CFA confirmed these

results and provided statistical evidence of internal consistency and construct validity (convergent, discriminant) of the LFG construct (Chapter 5). The results of the path measurement coefficients (Table 39 and Table 40) revealed that the causal paths between the LFG construct and PIT were significant at a level of $p < 0.001$ for the two models, thereby supporting H4. Moreover, the beta values for both models were positive ($\beta = .213$ for Model 1 and $\beta = .245$ for Model 2). These results indicate that LFG does have a strong, direct, positive and significant impact on customers' purchase intention to adopt EC in Nigeria.

Furthermore, the results of the semi-structured interviews (Chapter 6) also supported LFG to be a vitally important factor influencing customers' intentions to adopt EC. All interviewees shared the views that legislation is an indispensable factor in the implementation and adoption of EC. They asserted that the Nigerian government should do more by creating an enabling environment for EC to thrive. Given that the online shopping landscape suffers a higher risk level and uncertainties compared to the offline stores, the interviewees amplified their fears of online scams, frauds, and other cyber vices. They reiterated these three major elements: governmental support, creating an enabling environment, and enforcing data protection as the pragmatic lens through which the legal framework could be adequately addressed (Figure 40 on page 256).

Most of the interviewees believed that the appropriate EC laws and regulations are largely on paper and their enforcement remains a challenge. Most significantly, the legal framework does not provide adequate safeguards to create an environment of trust for EC transactions to take place. They concluded that data protection legislation would play a key role in building the confidence of people to buy online. This means that the intervention of the national government in enforcing data protection law and EC-related regulations is likely to increase the rate of EC adoption for the Nigerian populace. This finding is supportive of previous studies on EC and information technology use (Lawrence and Usman, 2010; Abdel Nasser, 2012).

These results resonate well with the finding of Awiagah, Kang and Lim (2015) that governmental support has the greatest direct impact on intentions to use EC in Ghana. Makame, Kang and Park (2014) conducted a similar study in Tanzania, a developing

country like Nigeria. They also concluded that the importance of national policies and initiatives, such as data protection law and related regulations, could not be overemphasised in encouraging trust building in EC. Owing to the low EC status in developing countries, they suggested government should intervene by taking the necessary actions to increase the rate of EC adoption. In such contexts, the EC challenges cannot be addressed without governmental support, including in the form of EC legislation (Yaseen et al., 2015). For instance, Johnson (2018) explained that Nigeria's challenges, such as online crimes, infrastructure, and data policy deficits, portray the country in bad light among the comity of nations. Zhu, Kraemer and Xu (2006) suggested that, as EC has been proven to improve the economy of a country, the government needs to create a conducive environment for its growth.

In practical terms, this study supports the view that effective regulations and relevant policies play an extremely important role in the adoption of new technologies such as EC. The more customers' protection is legally guaranteed, the more the likelihood of them purchasing online. This is because when EC is backed by active legislations, it is likely to enhance customers' confidence and trust in EC, which in turn encourages more customers to accept the idea of shopping online. Therefore, policy makers in government need to rise up to the task of enforcing the related laws that both support firms to implement new electronic business models and motivate people to shop online.

Factor Three: E-commerce Awareness (ECA)

EC awareness is an important initial stage that may affect the decision to adopt or reject the adoption (Rogers, 1983). ECA describes customers' knowledge and information about the capabilities of a system or technology, its features, potential use, benefits and costs (and risks) related to using EC (Rogers, 1995). Consequently, customers' consciousness of these important aspects of EC can create a propensity for a higher technology acceptance.

In the present study, ECA was found to be the third most important predictor of customers' intention to purchase online in Nigeria. This finding is supportive of previous studies on EC awareness, skills and knowledge (e.g., see Koufaris, 2002;

Chen, Gillenson and Sherrell, 2002; AlGhamdi, Drew and Al-Ghaith, 2012). From the quantitative analysis findings in Chapter 5, ECA explained 9.09% of the total variance in the empirical data. The average mean score for these items was 3.85. This suggests that most respondents considered their level of awareness of EC as adequate. This finds expressions in terms of being knowledgeable about EC's potential benefits, searching product and information online, Internet shopping skills, and recognising EC's opportunities and threats. The biggest differences in the means for ECA ranged from 3.58 to 4.02, indicating wide gaps between groups of respondents in the level of agreement on awareness. For example, a higher level of awareness was recorded among people 18 to 44 years old, compared to older users, and likewise for those with a higher level of education. Overall, 73.7% of the sample showed agreement with being aware of EC.

ECA factor recorded a high construct reliability of $\alpha = .896$ confirmed by Cronbach's alpha (

Table 20). Moreover, the EFA results revealed that six measurement items (ECA1, ECA2, ECA3, ECA4, ECA5, ECA6) measured ECA and were highly loaded on factor 2 (ECA). This factor was found to explain 9.09% of the total variance in the data. Four items were highly correlated (above 0.75) with each other; however, two items (ECA5 and ECA6) were comparatively less correlated (below 0.75). Additionally, the CFA results confirmed that the ECA factor recorded a high construct validity (convergent and discriminant) and a high composite reliability. Moreover, the ECA4, ECA5, and

ECA6 measurement items were later dropped as suggested by the first run of the CFA, in order to enhance the measurement model goodness-of-fit.

Regarding the influence of ECA on PIT, the preliminary conceptual research framework (Figure 15) anticipated that ECA would have a positive influence on PIT. The results of path measurement coefficients (Table 39) revealed that the causal paths between the ECA construct and PIT were significant at a level of $p < 0.01$ for Model 1 (when customers experienced positive emotions), and $p < 0.05$ for Model 2 (when customers experienced negative emotions), thereby supporting H6a. Moreover, the beta values for both models were positive ($\beta = .209$ for Model 1 and $\beta = .195$ for Model 2); therefore, the results indicate that ECA does have a direct, positive influence on customers' purchase intention to adopt EC in Nigeria.

Furthermore, the results of the semi-structured interviews (Chapter 6) also supported ECA to be an important factor influencing customers' intentions to adopt EC. All interviewees confirmed this outcome and shared the view that awareness is an influential factor in the implementation and adoption of EC. They further explained that the current EC stage in Nigeria is from early stage to 7.5 out of 10, and that Internet access and connectivity issues, the advent of the COVID-19 pandemic, and lack of internet skills were the key indices of awareness. However, some interviewees believed that awareness is a function of people's education and geographical location. It was clear that customers' usage of EC differed based on their locations (cities of residence) and education.

This finding agrees with that of Waseem et al. (2019) who conducted a study on factors affecting the EC potential of any country. They found that, among other factors, education level, urbanisation and using social media were significantly associated with EC potential. For instance, urbanisation and education gives the needed exposure and the ability to access the Internet. Recent research also shows that there is a significant relationship between awareness and buying behaviour such that the higher the educational level, the more is the tendency to shop online (Bashir et al., 2018; Çebi Karaaslan, 2022). This means lack of awareness and education about EC usefulness could be a deterrent for using online platforms to purchase. Our results are also in line with that of Salisbury et al. (2001) and Chiu, Lin and Tang (2005), who showed that

one of the antecedent factors with direct influences on online purchase intention is personal awareness of security. A possible explanation might be because ECA gives clarity to customers about EC usefulness, privacy and security, and EC opportunities and threats.

Moreover, customers need to be aware of the availability of services they can choose while shopping online. For example, what are the payment and delivery options available to them? What is their right and what are the laws that ensure their protection and how can these be enforced? By acknowledging these fundamental elements, customers become familiar with EC, and it enhances their chances of adopting it. For example, Yaqub et al., (2013) and Agbaeze (2020) cited lack of awareness of the advantages of the system as a reason for slow adoption of e-payment in Nigeria.

Abubakar and Ahmed (2013) and Bashir et al. (2018) also found that awareness has a positive effect on consumers' intention. Although EC awareness is a factor taken for granted in developed countries, governments of developing countries can formulate policies that create a good perception of EC (Molla and Licker, 2005a; Makame, Kang and Park, 2014). Our findings shows that EC awareness had a three-fold significant impacts on the technology acceptance factors through perceived ease of use, perceived usefulness and purchase intention. This signals that being knowledgeable about the usefulness of EC can motivate customers to buy online. Additionally, awareness can instil the confidence of know-how in customers, by reducing the mental efforts needed to shop online and minimising the expected anxiety especially for the first-time online buyers. According to Molla and Licker (2005a), knowledge is regarded as the most important factor influencing the adoption of EC, and it mediates between the perception of customers about the associated risk and their confidence to adopt EC. This implies that if customers feel incompetent about online shopping or have a high and unfavourable perception of the related risks, they may not want to venture into it or try it out. Companies must be prepared to embark on unrelenting awareness creation to revive the lost confidence which risk perception has meted out to online shopping acceptance (Izogo, 2012).

Factor Four: Reputation (REP)

One of the key factors found in the literature to be a significant organisational external frame of reference is reputation. This is because reputation gives a signal to buyers on how a company's products, strategies, prospects and so on compare with those of the rival companies (Fombrun and Shanley, 1990). In essence, a reputable online company is more likely to attract more customers, record competitive advantage and enjoy increased profitability. Parkhe (1998) described reputation as one of the most important intangible assets of a company. This is consistent with the quantitative analysis findings of this study. The preliminary conceptual research framework (Figure 15) anticipated that REP would have a significant impact on PIT. REP had the fourth highest-impact significant values of all EC adoption factors directly influencing customers' purchase intention (Table 43 on page 229). The average mean score for REP items was 3.47. This suggests most respondents considered the level of online retailers' reputation as moderate, based on:

- whether the Nigerian retailers' websites are well designed
- customers' online privacy protection and security
- receiving the expected products ordered for (deception-free transaction)
- showing sincere interest in solving customers' problems, and
- timely delivery of items/services and prompt responses to inquiries

The EFA results revealed that five measurement items (REP3, REP4, REP5, REP6, REP7) measured REP and they were highly loaded on it. REP was found to explain 5.63% of the total variance in the data. CFA subsequently confirmed the EFA results and revealed high composite reliability and an acceptable construct validity for this factor. Moreover, the REP3 and REP6 measurement items were later excluded as suggested by the first run of the CFA, in order to enhance the measurement model goodness-of-fit.

When customers experienced negative emotions as shown in Model 2, the causal paths between REP and PIT were significant at a level of $p < 0.05$, with a beta value (path measurement coefficient) of $\beta = .172$. As the beta values was positive, these results indicate that REP does have a direct and positive impact on customers' purchase intention to adopt EC in Nigeria. In spite of the moderate average mean

score recorded for REP (3.47 out of 5), the findings show that as online retailers' reputation increases, customers' purchase intention increases, and vice versa.

Furthermore, the results of the semi-structured interviews (Chapter 6) also supported REP to be an important factor influencing customers' intentions to adopt EC adoption. All interviewees confirmed this outcome and shared the view that reputation affects their impression of online retailers. This is characterised by branding and trust issues and deception about product quality. This is consistent with previous literature that affirms that good online retailer's reputation can reduce the uncertainty of product quality (Dimoka, Hong and Pavlou, 2012). Some of the interviewees maintained that reputation should be a core value for online companies, an attribute that is tantamount to doing things right. They stated the amount they are willing to spend and the quantity of goods they will buy online are dependent on how reputable the e-retailer is. Yu and Han (2021) empirically ascertained that the online shopping stores with positive reputation stand a better chance of attracting more customers and increasing profits. Interviewees further explained that well-known companies have a better reputation compared to the new starters which are less trusted because of their limited credibility.

This is in agreement with Lee and Shavitt (2006) who stated that a retailer's reputation affects its customers' buying decisions, as the customers are more likely to purchase from established and reputable retailers than from relatively unknown retailers. This also resonates well with Jarvenpaa, Tractinsky, and Vitale (2000) who stated that customers evaluate online stores based on the differences in sizes and reputations of the stores. Invariably, reputation can influence customers' assessment of the store's trustworthiness and customers' risk perception, and thus their willingness to buy from such retailers.

The study by Qalati et al. (2021) on the relationship between antecedents of trust in online shopping and purchase intention in Pakistan found a significant mediating role of trust between perceived reputation and purchase intention. This resonates well with our findings. For example, due to trust issues, interviewees explained most customers are sceptical paying online and reluctant to disclose their personal information. Pay on delivery (POD) option is a common practice due to the fear of monetary loss. This means they would rather see physically what they ordered for before making a

payment. This is confirmed by IPSOS (2019) that just 1 in 4 Nigerian customers makes payment through point-of-sales machine and transaction for goods and services is mostly cash-based. Moreover, there is no effective law that addresses privacy concerns, which invariably leaves buyers in a precarious situation.

According to Yu and Han (2021), reputation is based on customers' direct and indirect experiences with the online retailers. This current study confirms Yu and Han's finding. Apart from the direct effect that reputation (REP) had on intention, it also had indirect effects on perceived usefulness, perceived ease of use and purchase intention. Furthermore, it had the second-highest total effects on perceived ease of use (Table 43 and Appendix R). Therefore, cultivating positive reputation could boost the confidence of prospective customers and foster their initial trust formation, as well as enhance retention of users.

The interviewees corroborated the quantitative findings that reputation is a vitally important factor that is capable of affecting the emotional responses of customers, depending on whether the experiences are favourable or unfavourable. Interestingly, the impact of bad reputation triggered a higher significant negative emotions from customers compared with the level of negative emotional responses from them with respect to IT infrastructure availability. This implies that people may be able to cope with limited information technology infrastructure, but not with online retailers' bad reputation that triggers negative emotions in them. In other words, retailers' reputation weighs more than IT infrastructure when the Nigerian customers evaluate their intention and make their decision to buy online. Since reputation has been found to be a significant antecedent of trust and intention to purchase (Pavlou, 2003), online retailing companies must guard against bad reputation. Both the quantitative and qualitative findings show that for a successful online business, companies should cultivate transparency, doing the right things, and doing things right when dealing with customers.

Factor Five: Customers' Positive Emotional Responses (CERP)

Customers' positive emotional responses factor is the fifth influential factor found to have a direct impact on purchase intention in Nigeria. This suggests the more positive

customers feel about online shopping, the more likely they are to make online purchases. It implies that positive responses from customers are motivators for their online purchase intention. These findings are consistent with prior studies (Cenfetelli, 2004; Koo and Ju, 2010; Wakefield, 2015).

CERP1 ('interested'), CERP2 ('happy'), CERP3 ('satisfied'), and CERP4 ('like') measured Customers' Positive Emotional Responses (CERP). The average mean score for these items was 3.66. This suggests most respondents fairly believe they elicit positive emotions such as interest, happiness, and satisfaction when shopping online. The exploratory factor analysis (EFA) results revealed that CERP's four items loaded exclusively on factor four and were highly correlated with one another. They explained 3.28% of the total variance in the data. Three items were highly correlated (above 0.7) with one another; however, one item (CERP4) was comparatively less correlated (below 0.7).

Earlier, from the descriptive analysis carried out, 75% of the sample indicated they were interested in online shopping and 68.59% showed their agreement with having experienced positive emotions from shopping online. These results show that the online environment can influence how people feel and this, in turn, can drive their responses (Cheng, Wu and Yen, 2008). Ladhari, Souiden and Dufour (2017) stressed that emotional responses play a crucial role in customers' impression formation. The interest of customers is one of important positive emotional indices when forming an initial impression about a channel of transaction. Moreover, positive emotions have been verified to increase the effect of persuasion on purchase intentions, contrary to what negative emotions do (Pappas et al., 2017). For example, if people view technology adoption of EC as a happy activity they are interested in, it is more likely they would adopt it. On the other hand, a successful adoption is less likely to occur, if they perceive it as a frustrating experience or a scary venture.

Moreover, the CFA confirmed the results and provided statistical evidence of internal consistency and construct validity of the CERP construct. The CERP4 measurement item was later dropped as suggested by the CFA's first run, in order to improve the measurement model goodness-of-fit. Hypothesis H10a assumed that CERP would significantly influence purchase intentions of customers towards using EC. The results of the causal paths between the CERP construct and PIT were significant at a level of

$p < 0.05$, $\beta = .154$, thus supporting H10a. This indicates that CERP does have a direct, positive and significant impact on customers' purchase intention to adopt EC in Nigeria.

Furthermore, the results of the semi-structured interviews (Chapter 6) also supported CERP to be an important factor influencing the Nigerian customers' intentions towards EC adoption. A recurrent theme amongst interviewees was a sense that positive emotional responses from them would be a significant influence to adopt EC. They confirmed the quantitative findings by explaining further that positive emotions motivate them to make a repeat purchase, foster pleasant shopping experiences and mean less stress. They advocated that adopting a technology for purchase should positively impact their well-being and boost their mental health, rather than affect them adversely (for details, see Figure 35 on page 243). Notably, they seemed to associate their happiness and well-being with any channel that prompts positivity and less stress in them.

These findings corroborate those from a study by Cheng, Wu and Yen (2008) of how to measure the effects of ambient conditions of the environment (lighting, colour, sound, etc.) on consumers' feelings in a virtual store front. The authors emphasised these factors affect people's emotional well-being, perceptions, attitudes, and behaviours. Given that the website is more like the companies' street front, its features could be a decider in choosing between shopping offline or online. It could potentially influence whether customers ultimately adopt EC or not. For example, the happier and more satisfied people are with their online experiences, the more likely it is for them to consider using the digital platform to purchase, and the stronger will be their purchase intention. This aligns well with the findings of Koo and Ju's (2010) study in South Korea. They found that environmental cues such as colours, graphics and website links influenced customers' emotions and subsequently their purchase intention. Likewise, Rose et al. (2012) found that positive emotions have a positive effect on online shopping intention. Kim and Lennon (2013) found a similar outcome in the USA, where emotion had a significant impact on PIT.

Consistent with the results from the current study, the findings of Moon et al. (2017) who likewise investigated four cities in Pakistan revealed that not only cognitive

attitudes, but also affective responses are significant and positive predictors of consumers' purchase intentions. Perhaps one of the most striking findings of our study is that, unlike positive emotions, negative customers' emotional responses did not have a direct and significant impact on purchase intention Table 40 on page 220. However, it was a significant mediator between compatibility, awareness and purchase intention (Table 41). Comparatively, Perluzs (2004) mentioned that negative affects (emotions) could hinder adopting new technologies, whilst positive affects (emotions) may proffer solutions to the undesirable effects of negative emotions.

Furthermore, a mixed method study of Indian customers by Agrawal and Mittal (2022) empirically ascertained positive emotions as important determinants of online customers' engagement with YouTube videos. They found that positive emotions strongly influence purchase intentions compared to negative sentiment and related emotions. Similar to the present study, Kim and Peng (2014) examined online shopping behaviour in four metropolitan cities in China. They recommended that online retailers should value customers' subjective feelings, which few retailers take cognisance of. According to Edell and Burke (1987), understanding customers' feelings is as important as understanding their thoughts/perceptions.

Key examples of positive emotions stimulators cited by the interviewees are getting refunded, delivery on promise, availability of desired products, effective customer relationship management (CRM), quality products and personalised call/message. The better customers feel about their online shopping and the personalised services they receive, the more likely they are to make purchases (Pappas et al., 2017). Moreover, EC transactions enable meeting customers' needs in a more personalised and diversified ways, but could, however, have a pronounced impact on aspects such as online retailers' production, sales, and services (Wang et al., 2023). Besides, purchasing electronic goods and automobile online has resulted in satisfying experiences for some of the interviewees. Also confirmed by the present study, affective responses (emotions) have been identified as one of the most valuable predictors of consumer behaviour (Gaur, Herjanto and Makkar, 2014). In this study, 75% of the respondents showed they were interested in adopting EC. Thus, getting them going 'green' (positive) and not 'red' (negative) in their emotions towards purchasing online could be a major consideration for online businesses' sustainability.

Factor Six: IT Infrastructure (ITF)

The six factor that directly and significantly impacted customers' purchase intention (PIT) in Nigeria is IT Infrastructure (ITF). In this study, the ITF measurement indices were internet access, internet connection, internet speed, and electricity power stability. ITF had the highest number of 'disagreed' and 'neutral' counts and recorded an average mean score of 2.89. The biggest difference in means ranged from 2.21 to 3.35, indicating a level of disagreement and neutral positions among the respondents. Half (50.4%) of the surveyed respondents reported having a reliable internet access for them to purchase online. However, 66.6% and 46.2% of surveyed respondents disagreed they had an uninterrupted power supply and a stable internet connection, respectively. Whilst only 38.1% agreed that their Internet speed was fast enough, 22.1% remained neutral on online payment being easy. Based on these results, it is not enough to have access to the Internet, but there should also be uninterrupted power supply and stable internet connection with speed fast enough to afford making online purchase and easy online payment.

Five items (ITF1, ITF2, ITF3, ITF4, ITF5) were identified by the EFA as ITF measurement items. ITF2 was dropped due to cross loadings concerns in the early stage of the EFA, leaving four measurement items which explained 3.28% of the total variance in the data. The CFA results confirmed the EFA results and revealed that the ITF measurement items showed high construct validity (convergent and discriminant). Based on the modification indices analysis in the CFA's first-run, two measurement items (ITF1 and ITF3) were later dropped to enhance the measurement model goodness-of-fit.

In comparison with the other factors, the SEM results showed ITF had the least significant direct impact on intention. Notwithstanding, together with the results obtained from the semi-structured interviews, ITF was confirmed as one of the indispensable factors to kick-start EC adoption. The more readily available ITF is, the more feasible it is to adopt EC, and the more customers are motivated to shop online. The preliminary conceptual research framework (Figure 15) anticipated that ITF would have a significant impact on PIT. The results of path measurement coefficients revealed that the causal paths between ITF construct and PIT were significant at a level of $p < 0.05$ for both models supporting H3a. The beta values were positive .125

and .122 for models 1 and 2, respectively. These results imply that ITF directly, positively and significantly impacts customers' online purchase intentions to adopt EC in Nigeria. This finding suggests that it is imperative to have the relevant and adequate infrastructure to implement, maintain and sustain EC. The significance of the factor has been amplified in EC literature. For example, Billon, Lera-Lopez and Marco (2010) concluded that infrastructure is important for initial digital development. It is the foundation of online business and comprises computers, Internet connections, software, web applications, and telecommunications (Makame, Kang and Park, 2014). Therefore, the more these resources are readily available, the more likely people are motivated to adopt EC.

The interviewees also supported the quantitative findings. Holding a common view, they amplified the vital importance of having uninterrupted internet access and a stable network connection. Nigerian customers believe this will enable them to participate in online transactions. Otherwise, they might opt for the physical shopping stores or markets as an alternative purchase channel. One interviewee argued that, for the commerce to be digital, the electronic component must be present. This raises a pragmatic question: in the absence of reliable electricity supply and digital devices to enable internet services to be activated, how can customers adopt electronic commerce? Some of the interviewees stressed that network stability depends on the location, and also raised concerns on the quality of connectivity.

The result is consistent with those of previous EC studies. Okundare, Fan and Dwyer (2019) examined the impact of Information and Communication Technology in Nigeria's small-to-medium-sized enterprises. Similar to the findings of the current study, some of the examples cited as influencing their decision to adopt technology in Nigeria were unreliable power supply, limited Internet service, expensive telecommunications, bad roads, and other infrastructural services not being readily available. Makame, Kang and Park's (2014) findings from examining the factors influencing EC adoption in Tanzania also corroborated the present study's results. They reported technology infrastructure as an important factor in EC adoption. Consistent with Lawrence and Usman (2010) and Abdel Nasser's (2012) findings on Nigeria and Egypt, respectively, the present study reveals that EC adoption success is highly dependent on the level of ICT acquisition and related infrastructure in a

country. Moreover, ICT exerts a stronger effect on EC in less wealthy countries than in wealthy countries (Deng and Zhang, 2014).

In terms of location, there is a world of difference between urban and rural settings with respect to the availability of, and connectivity to, the internet. This is one of the major reasons for having our research samples from populations in urban cities. According to the Guardian (2022), as reflected in a piece of in-depth research by the Alliance for Affordable Internet, 16.4% of the Nigerian population enjoys meaningful Internet connectivity in urban regions, but only 0.6% is internet-connected in the rural regions. The report claims 81% of meaningful connectivity gap exists in Nigeria. According to the Economist (2014), Nigeria is ranked an abysmal 185th out of 189 countries for ease of getting electricity. Without IT connectivity, sustaining strategic alignment in today's digital environments could prove impossible, because infrastructure is the foundation of EC in any country (Aaron, Decina and Skillen, 1999; Jorfi, 2011). Therefore, the Nigerian government needs to make available effective and far-reaching technology infrastructure for EC success.

7.3 Research Objective 2

This subsection discusses the influence of customers' emotional responses on the key factors influencing EC adoption. The discussion is based on the second objective of the study aimed at examining how customers' affective responses (emotions) impact their online purchase intention and EC adoption. In order to achieve Research Objective 2, two research questions were formulated as follows (see Chapter 1):

- 🚩 How do customers' affective responses (emotions) impact their online purchase intention? (Second RQ)
- 🚩 Why do customers respond positively or negatively to EC adoption factors? (Third RQ)

7.3.1 Research Questions 2

Customers' emotional responses impact on online purchase intention

Prior studies provided evidence that users' emotions critically affect intentions and behaviours in technology acceptance contexts (Beaudry and Pinsonneault, 2010; Kim

and Lennon, 2013). In order to answer the second research question, the impacts of the key adoption factors COMP, ECA, REP, ITF, LGF, and ETAILQ on customers' emotions were examined. Emotions are divided into two distinguished and independent dimensions, namely positive and negative (Kuo and Wu, 2012). Therefore, two hypotheses were proposed: H8₍₁₋₆₎: EC adoption factors have significant impact on positive customers' emotional responses (**CERP**); and H9₍₁₋₆₎: EC adoption factors have significant impact on negative customers' emotional responses (**CERN**). Moreover, H10a-c and H11a-c examined the impact of customers' emotions on the two distinct technology acceptance factors: perceived usefulness and perceived ease of use, and also on purchase intention. The following paragraphs provide answers to Research Question 2 by discussing in detail the results of testing these hypotheses. This seeks to advance our understanding of online consumer behaviour.

1. Compatibility impacts on customers' emotional responses (CER)

The result of the quantitative analysis in Chapter 5 confirmed the impact of compatibility (COMP) as one of the factors hypothesised to prompt positive emotional responses from customers for EC adoption. An examination of the findings showed that COMP had a significant impact on positive emotional responses (CERP) at $p < 0.001$, $\beta = (.364)$, supporting H8₍₁₎. This finding indicates a strong and positive relationship between compatibility and positive emotions. Contrarily, there was no direct significant impact of COMP on negative emotional responses (CERN). Thus, H9₍₁₎ was not supported. This inference can be justified by considering that compatibility connotes the degree to which an innovation or a new technology fits with people's existing values, previous experiences, lifestyles, and current needs (Rogers, 1983; 1995). These elements of compatibility align with what an individual is interested in or happy with and not the opposite.

This study defines positive emotions as the extent to which a person feels interested, happy, or satisfied using online shopping, whilst negative emotions refer to the extent to which a person feels afraid, frustrated, or worried. Therefore, the greater the compatibility (in terms of values, lifestyle, needs and experiences) of an individual with EC, the more positive (interested, happy and satisfied) they are likely to be using online shopping, and vice versa. Consequently, it is unlikely that individuals would view an

innovation as useful if it is not compatible with their lifestyle and if it causes frustration, worry, fear, etc.

Moreover, Baker, Grewal and Levy (1992) found that a consumer's emotional state was positively related to their willingness to buy. Likewise, Chen, Gillenson and Sherrell (2002) found that American customers' attitudes towards using a virtual store were positively influenced by compatibility with their lifestyles, beliefs, personal values, and needs. This agrees with Beaudry and Pinsonneault's (2010) findings that happiness is positively related to information technology use. Furthermore, the estimates of the final revised models (Table 42) revealed that when people's compatibility with EC (COMP) increased by 100%, there was an increase of 28.8% in their positive emotions (interest, happiness, and satisfaction) towards using online shopping. This means that compatibility can create positive emotions in customers, such as being interested in EC, and this can be potentially converted to purchase intention. Davis (1989) stated that the features of a new technology adoption may be explained by how a person perceives usefulness and their perceived ease of innovation use. However, in this study, perceived ease of use had no significant influence on online purchase intention.

Links between CER, COMP, PU and PEOU

COMP had strong, direct, positive and significant impacts on customers' perception of EC usefulness at $p < 0.01$, $\beta = (.25)$, supporting H7c. This result aligns with the work of Chen, Gillenson and Sherrell (2002) who affirmed similarly that compatibility and perceived ease of use influence perceived usefulness of virtual stores in the USA. In other words, the higher the EC compatibility, the higher the tendency for customers to perceive its usefulness and its ease of use, and, consequently, the more positive emotions such as interest, happiness and satisfaction these elicit from customers. This is consistent with the work of Hoong, Thi and Lin (2017) who found that positive emotion has significant influence on the usefulness and ease of use of knowledge-sharing tools and subsequently influences individuals' behavioural intention to use. It is safe to infer that a new technology that induces positive emotion in users has a greater tendency to increase its adoption.

Counter to expectation, in the present study, COMP is one of the factors that did not significantly impact online purchase intention as proposed. COMP alone explains 29.9% of the total variance in the empirical data. Thus, hypothesis 7a was not supported. This contradicts some prior findings such as that of Amaro and Duarte (2015) who found COMP to be one of the crucial factors determining intentions to purchase travel tickets online. They argued that customers who feel that online travel shopping is compatible with their lifestyle will have a more favourable attitude towards online travel shopping and are most likely to purchase online more readily. Likewise, Vijayasathy (2004) discovered that COMP was a significant predictor of customers' attitudes towards online shopping in the USA, and Andrews and Bianchi (2013) found the same in Chile. However, Laukkanen (2016) explained that people may choose not to adopt because adopting would be in conflict with their values or existing practices.

Similar to the present study, Lee and Chow (2020) recently found that COMP did not have a significant effect on customers' behavioural intention towards online fashion renting. They argued that this could be as a result of the inaccessibility of a number of products and the unavailability of products for physical trials to afford customers the touch-and-feel experience. Providing a brick-and-mortar stores experience alongside an online shopping option for the customers (i.e., omnichannel model) and/or incorporating virtual reality could increase COMP. This resonates well with Shi et al. (2020) that perceived COMP was positively associated with omnichannel shopping intention. The omnichannel design could factor in customers' offline shopping preferences and experiences that increase the likelihood of meeting their needs and delivering their desired values. According to Vijayasathy (2004), COMP with online shopping will depend on existing values.

In terms the national cultural standpoint, Pena-García et al. (2020) revealed that the impact of compatibility on online purchase intention was significant, although the impact was greater in Colombia compared to Spain. In contrast, Inegbedion, Obadiaru and Bello (2016) observed that it seems Internet buying has not found compatibility with the Nigerian culture. Moreover, this is reflected in the qualitative analysis findings designed to seek explanation to the insignificance of compatibility on purchase intention in Nigeria (Chapter 6). There were split opinions among the interviewees. Some felt they could do without adopting online shopping by sticking to offline

shopping. They based their views on the lack of effective logistics, delivery issues, and incompatibility with personal needs, lifestyles, work values and shopping preferences. Some other interviewees stated they could adopt EC, but subject to its efficiency and effectiveness. Although the impact of COMP was not significant on PIT, COMP had the second-highest direct and total effects on perceived usefulness – the most influential factor with the strongest impact on customers' online purchase intention in Nigeria (see Appendix R). Moreover, COMP exerted the strongest direct effects on CERP but had no direct effect on CERN. This has a managerial connotation: a nuanced understanding of the Nigerian customers' compatibility basis for EC allows for better marketing strategies to be designed around what prompts their positive responses.

In sum, offering products and services that fit customers' personal values, shopping preferences, experiences and beliefs (personalised product and service strategy) could elicit more positive customers' emotional responses, thereby resulting in higher number of purchase intentions.

2. EC awareness: impact on customers' emotions

Novak, Hoffman and Yung (2000) and Koufaris (2002) found that when online customers perceive their online skills to be higher, this does not only verify their cognitive ability, but they are also more likely to have positive emotional responses to the online store they visit. In our study, there was no support for the hypothesis that ECA has a significant impact on both positive and negative emotions (H8₍₂₎ and H9₍₂₎). A possible explanation is that what users are not aware of is unable to trigger either positive or negative responses in them. From the qualitative analysis findings, most of the interviewees felt some people are not well-educated about EC, given they lack the necessary skills for OS. They recommended people are provided the awareness and related education on how to navigate the internet. According to Chen, Gillenson and Sherrell (2002), being knowledgeable creates increased awareness of liabilities and risks associated with EC, which ultimately builds the confidence of users instead of their skepticism. This could help them adapt to online shopping. However, a decade later, in their study conducted in the USA, Rose et al. (2012) argued that the skill level of online shoppers had increased, and the interactive speed of websites was

consistently better than it used to be. They suggested the world had moved on from where skill and technical capability of the user determined their experience of the website. However, this may not be so in the developing countries or with a first-time EC user.

Links between CER, ECA, PU and PEOU

ECA had significant impacts on both PU and PEOU in Model 1 (CERP but only with PU in Model 2 (CERN), supporting H6b and H6c. According to Perea y Monsuwé (2004), customers weigh the costs and benefits before deciding whether to invest in learning the required online shopping skills. Aside from the basic knowledge on the use of the digital device, customers may have to learn the skills needed for obtaining their desired information online (Novak, Hoffman and Yung, 2000). Users' background knowledge has been found to positively correlate with their perceived usefulness, whereas insufficient subjective knowledge could be a barrier (Kardooni, Yusoff and Kari, 2016). Amongst other recommendations, Chen, Gillenson and Sherrell (2002) advocated for proper education, and availability of infrastructure was highlighted as essential for reaching the potential online users. In order to encourage EC adoption, Izogo (2012) suggests firms must prepare to embark on a persistent awareness campaign to regain customers' confidence lost as a result of their risk perception of virtual shopping acceptance.

3. Website Quality impacts on customers' emotions

The results of the quantitative analysis in Chapter 5 confirmed the impact, on EC adoption, of website quality (ETAILQ), one of the factors proposed to elicit emotional responses from customers. The different aspects of website quality used in this study are the four EtailQ dimensions by Wolfinbarger and Gilly (2003): website design, customer service, fulfilment/reliability, and security/privacy. Taking into account that this study aimed at examining how customers respond to EC adoption, respondents were asked to indicate how they felt using the retailers' websites to buy (interested, happy, satisfied; or scared, frustrated, worried).

According to Beaudry and Pinsonneault (2010) and Lu, Papagiannidis, and Alamanos (2019), users could experience both positive and negative emotions triggered by the same technology. Our findings showed that, whilst website quality prompted positive

emotions from online buyers, supporting H8₍₃₎, the same factor did not prompt negative emotions from them, so H9₍₃₎ was not supported. An examination of the path analysis showed that website quality (ETAILQ) had a significant impact on positive emotional responses (CERP) at $p < 0.01$, $\beta = .209$. Our findings suggest that there was a strong, direct, and significant correlation between positive emotional responses from customers and the quality of the website they visited. Further estimates showed that when there was a 100% increase in a companies' website quality, this elicited a 20% increase in positive responses from customers (see Table 42 on page 227). This is similar to Kumar, Purani and Sahadev (2017) who investigated visual servicescape aesthetics and empirically tested their influence on the consumers' affective responses and preference. Their findings indicated that the aesthetics dimensions of a physical store significantly and positively impact consumers' affective states. In comparison with the traditional store environment, website quality will have a great influence on online users' psychological perception, and further affect their attitude or behaviour (Luo, Han and Yu, 2016).

As mentioned earlier, there was no significant impact of ETAILQ on negative emotional responses (CERN). It appeared users did not show negative emotions towards these features. Moreover, the quantitative analysis result also showed that website quality had no significant impact on purchase intention. This is an interesting finding, considering the literature indicates that not only do perceptions of website quality and the brand name of the online store influence customers' trust but they also influence their purchase intention (Brown, Crosno and Tong, 2019). On a closer examination, more than a half of the surveyed respondents felt the applicable Nigerian websites were well designed, while nearly a third failed to confirm this. Also, 7 in 10 people felt companies were willing to respond to their needs. However, 30.4% indicated 'not sure' about the adequacy of their online privacy protection.

These findings reveal a degree of uncertainty about the particular factor in question. They imply website design features may appeal to some customers but not translate to their intention to purchase online, if users evaluate the website's other attributes as ineffective. As highlighted in the qualitative findings in Chapter 6, the interviewees shed some light on this surprising result. Although they all recognised that website quality is a critical factor that can influence PIT, in the Nigerian context many customers are wary of purchasing online because of the prevalent internet

scams/fraud activities (Esho and Verhoef, 2021). The interviewees clearly highlighted their deep concerns about the multidimensional facets of website quality mentioned earlier, e.g., online businesses' lack of good relationship with online customers, lack of data security and privacy, lack of information quality (item descriptions), slow turnaround time (TAT) from ordering to delivery, and the authenticity of the products delivered. This agrees with Brunner-Sperdin, Scholl-Grissemann and Stokburger-Sauer (2014) who amplified the need for a holistic perception of online settings that enhances emotional responses, which can possibly lead to desired behavioural outcomes. Consequently, the interviewees recommended effective training of customer service representatives in Nigeria, emphasising that people are as important as the products they are buying. This is an important culture that should be built into every aspect of online services and business. When people are treated contrarily, while they may not always show their negative emotions based on their unpleasant online experiences, they may react by avoiding the online shopping fronts and opting for the physical stores or other familiar alternatives. In addition, there should be an overall improvement in website management and design, and customer engagement. This is consistent with Zajonc and Markus (1982) that emotional reactions are first developed upon exposure to a website. Thus, it is vital to ensure the quality of a website and its key features such as the quality of the information displayed, services offered, and the overall system quality. These have been found to define how customers perceive a company's website quality and how easy it is to use it (Kim and Lennon, 2013).

Another possible explanation is that perhaps most users aborted their intention to purchase, having not been convinced of risking their money, time and efforts on websites whose quality and offerings they could not trust. Lim et al. (2016) concluded that the quality of a website can also signal the perception of product quality and affect customers perception of the risk of purchasing goods online. Hwang and Kim (2007) demonstrated that customers who evoke positive emotions through their interactions with a website might consider the online service safe and trustworthy.

Links between CER, ETAILQ, PU and PEOU

A website has been recognised as an effective tool to enhance customer's trust, generate perceived value, and influence customers' responses and purchasing intention (Eroglu, Machleit and Davis, 2001; 2003). Evidently, websites are key to

online retailers' success (Chen et al., 2017), as a retailer's website is an important digital environment for contacting the customers. It is more like a company's "street front"; thus, ensuring its quality is optimised to the best practice standard is vital. Although website quality did not significantly impact PIT in this study, its relevance to EC adoption should not be overlooked. From the quantitative analysis findings (see Table 39Table 40), website quality had the strongest direct effect (DE), indirect effect (IE) and total effects (TE) on PEOU and the greatest indirect effects on PU of EC.

In addition, website quality accounted for the third highest total effect on CERP. This indicates that a retailer's website could communicate EC's usefulness, signal ease or difficulty of purchase, and define the company's image. It is also capable of casting a total effect (both direct and indirect effects combined) on how easy people perceive a website to be. Further, it can prompt pleasant/positive emotions from customers. This assertion resonated well with Di Fatta, Musotto and Vesperi (2016), who conducted a meta-analysis on user-perceived web quality, and concluded that it has a significant influence on ease of use, usefulness, and also playfulness, all of which could encourage website use in the online shopping context. Evidently, websites are key to online retailers' success (Chen et al., 2017). The two rational cognitive factors (PU and PEOU) from TAM may largely account for customers' belief in the functionality of EC (its usefulness) and how easy it is using a retailer's website to buy (Davis, 1989; Davis, Bagozzi and Warshaw, 1989; Davis, 1993; Tong, 2010; Wakefield, 2015). From the motivation viewpoint, people avoid expending effort on tasks or activities that are not enjoyable, in order to maintain their current positive states (Isen, 1987 in Jeon, 2017).

Moreover, research has shown that shopping environments can evoke emotional responses in customers, which in turn influence shopping behaviours and outcomes (Bagozzi and Machleit, 2000). Therefore, a website that is easy to read, understandable with sufficient text, appropriate colour, suitable fonts and graphic elements, motivates customers who will be well pleased and vice versa (Brunner-Sperdin, Scholl-Grissemann and Stokburger-Sauer, 2014). In sum, a website's easy navigation, user-friendly interfaces, quality service and pleasant online shopping experiences can increase customers' likelihood of purchasing, returning and also recommending it. Therefore, in the online shopping context, it is strategically important

to understand what can foster or sustain pleasant emotional reactions (Chen, Wu and Yen, 2009).

4. Reputation impacts on customers' emotions

Reputation, honesty, and reliability and promises fulfilment are dimensions of trust that can act as both barriers and enhancers of online shopping. Arguably, trust is the foundation of EC (Keen, 1997; Klaus and Maklan, 2013). However, there is little research that examines the effect of reputation on generating positive or negative emotions (Kim and Lennon, 2013). The findings of this present study show that reputation triggered both positive emotions and negative emotions from online buyers, but with varying degrees of impact. The impact of reputation is statistically significant and very strong at $p < 0.001$ level for positive emotions ($\beta = 0.35$) and negative emotions ($\beta = -0.47$), supporting H8₍₃₎ and H9₍₃₎, respectively. Comparatively, these path analysis coefficients (β) show a higher impact of (bad) reputation, prompting a higher level of negative emotions. This means that negative emotions go up with bad reputation. Reputation (good) also prompts positive emotions from customers. This depends on whether customers' experiences with the online retailers are pleasant or unpleasant.

Moreover, REP is directly and positively correlated with positive emotion, whilst it is inversely correlated with user's negative emotions (since beta value is negative). For example, when (good) reputation increases, negative emotions (fear, worry, frustration) decrease. The estimates further show that when online retailers' reputation increases by 100%, customers' positive emotions (interest, happiness and satisfaction) increase by 32%, and their negative emotions (fear, worry, frustration) decrease by 58%. This suggests that, with good reputation, online retailers can increase positive responses from customers by a third and reduce negative emotions by more than a half, thus resulting in a higher purchase intention.

Links between CER, REP, PU and PEOU

REP was found significant with PEOU for both customers' emotional responses at $p < 0.001$ for positive emotions ($\beta = .215$) and negative emotions ($\beta = .401$), supporting H8₍₄₎ and H9₍₄₎, respectively. Again, for REP, the impact of the negative emotional responses on it was greater than that of the positive emotional responses from the customers. If REP drives CER, PEOU, PU and PIT, it is a critical, influential construct

to be reckoned with by all stakeholders. It accounted for the second strongest total effect on PEOU, the second strongest indirect effect on PU, and the second highest direct effect on CERP. Chircu, Davis, and Kaufmann (2000) also argued that trust in an EC intermediary increases perceived ease of use. Their underlying logic is that trust reduces the need for customers to monitor and control the situation, facilitating the transaction and making it effortless. Consequently, the outlook for business-to-consumer (B2C) EC depends not only on customer acceptance of internet technologies as viable transaction means, but also on the recognition of online retailers as reliable sellers (Pavlou, 2003).

In summary, the statistical analysis supports the significance of three out of the six proposed emotional responses relationships with EC adoption factors. Compatibility, good reputation and website quality are the creators of positive emotions, while bad reputation is a stimulator of negative emotions.

5. Legal factor impacts on customers' emotions

Guo and Jun (2014) stated that the encouragement and support of the government is a major guarantee for business model innovation policy and a thriving EC. In this study, LGF had a strong, direct and positive significance with purchase intention. Notwithstanding, as seen in the quantitative finding in Chapter 5, there was no support for hypotheses H8₍₅₎ and H9₍₅₎ that tested the significance of the impact of LGF on both emotions (Table 39 and Table 40). The semi-structured interview analysis revealed that some interviewees highlighted having a return policy in place would make them happy. Further, having a full and functioning data protection regulation will build people's confidence to buy online. They felt that business owners do not respect customers' rights; thus, the assurance of the security of their information will reduce their fear, worry, and frustration, which are cues of negative emotional responses. They believed the government has a big role to play in creating an enabling environment. Moreover, they recommended creating a workable link between EC companies and buyers, with the government liaison between the two parties, so that both buyers and sellers are happy.

6. IT infrastructure impacts on customers' emotions

There was no statistical support for the hypothesis H8₍₆₎ and H9₍₆₎ that ITF has a significant impact on both emotions (Table 39 and Table 40). The result of the qualitative analysis, however, showed that the interviewees expressed their frustration about power failure, lack of digital devices, and the fact that those who have a mobile phone can easily make and receive calls but cannot easily access the internet, as data affordability is a big issue. They stressed that the inadequate quality of Nigeria's unreliable Internet connectivity, especially when it rains, affects the quality of life and EC generally. They complained that those who were interested in EC were met with "unable to connect" messages after logging in to purchase online; they were so frustrated and annoyed they abandoned their e-shopping carts. Erratic network connections and perennial power failure have made many people to depend on solar panels and power generators for their electricity supply. This makes it difficult to do online transactions, as many customers cannot afford the associated IT infrastructure cost. As a result, many decided to continue to shop the traditional way. In sum, statistically, the three remaining EC factors ITF, LGF and ECA are not direct predictors of emotional responses for customers in Nigeria.

7.3.2 Research Question 3

Why do customers respond positively or negatively to EC adoption factors?

Our analyses suggest that there are different reasons responsible for customers' responses in Nigeria. Of the three items of positive emotions retained from the SEM results, i.e., 'interested', 'happy', and 'satisfied', the highest positive emotional responses indicator is "happy" (Figure 29 on page 217). "Frustrated" is the highest negative emotional responses indicator out of the three items used for measuring the factor, i.e., 'worried', 'scared', and 'frustrated' (Figure 30 on page 218). These could be attributed to different kinds of online shopping experiences. Brockner and Higgins (2001) observed that, to understand the nature of emotions, it is essential to identify the motivational forces that trigger those emotions. For instance, Jordan (1998) stated a website's poor usability may cause online buyers to experience displeasure, whereas they can experience pleasure with good features. When considering human factors and human-computer interactions (affect research), this should be theory-driven, with a balanced view of "what" (which emotion is important in a specific context)

and “why,” i.e., mechanisms (Jeon, 2017). For example, positive emotions such as happiness and excitement were found to positively correlate with information technology use, either directly or indirectly (Beaudry and Pinsonneault, 2010). However, negative emotions, e.g., anger and anxiety, may also have a direct or an indirect negative influence on technology use. These could be prompted by other factors influencing EC adoption (see Appendix S).

Baker, Grewal and Levy (1992) cited the influence of store environment to produce such response which could influence customers’ willingness to buy. Either positive or negative responses might serve as a benchmark for a future purchase decision and brand loyalty (Jordan,1998). Individuals could report significantly different levels of positive and negative emotions in successful and unsuccessful cases of technology adoption (Partala and Saari, 2015). Ogbuji and Udom (2018) reported some people are still nervous and fearful shopping online in Nigeria. To illustrate, Lerner and Keltner (2000) showed that fear is associated with uncertainty and situational control. Since EC adoption involves moving from the familiar to the new, it is imperative to understand the human variables in retail environments, as they are pertinent factors affecting customers’ perceptions and subsequent behaviours (Kim and Kim, 2012).

The qualitative findings of the present study uncover and showcase what makes a happy, satisfied customer and point out why users will be interested or uninterested in adopting EC (see Table 47).

Emotional responses	Key e-commerce factors responded to by customers	What emotions were triggered?	Why were these human emotions triggered in online customers?
Positive emotions	Website quality exemplified by customer service, fulfilment / reliability	Happiness	Prompt delivery of goods and services as promised, helpful online reviews and e-word of mouth, getting refunded, personalised thank you/call, good customers relationship management, good quality products, product availability
	Perceived usefulness Ease of use Website quality	Interest	Convenience, cost saving, no physical queuing, reduces traffic congestion, ease of navigation, promotions and discounts, makes life easier, website design, user friendly interfaces, not having to commute
	Reputation	Satisfaction	Expectations met, no deception, trustworthy online retailers, timely delivery
Negative emotions	Legal factor, reputation, website quality (privacy and security)	Fear (scared) and worry	Lack of data protection regulation, lack of card security, online scams and frauds, lack of data or personal information security, privacy concerns, uncertainty of delivery, loss of money, transaction risk, what you see is not what you get
	IT infrastructure, legal factor, reputation, website quality -website design/ information quality, fulfilment, customer service	Frustration	Poor internet connection, not enforcing laws and regulations, lack of government support for e-commerce inadequate product information, no response to emails, poor customer service, prolonged turnaround time, no doorstep delivery, phone call communication gaps, bad product quality
	Website quality, legal factor (governmental support for EC), reputation	Anger	Website pop-ups, unreadable fonts, incorrect and inadequate product information, declined card payment, wrong product delivered, unsolicited calls, dollar spending cap by the government, false product information

Table 47: Customers' emotional responses to key EC adoption factors
(The summary of qualitative findings)

Our study reaffirms retailers should pay attention to customers' emotional states as important factors that dictate buyer behaviour (Anger was re-addressed by the interviewees after being excluded from the EFA because of cross loading and modification indices issues).

Mediating Effects: In Chapter 5, this study found that customers' emotions: positive (CERP) and negative (CERN) emotions play an amplifying role in mediating the effects of compatibility (COMP) and EC awareness (ECA) on purchase intention. Interestingly, the role of positive and negative emotions as mediators between IT

infrastructure, legal factor, reputation, website quality and purchase intention are considered not significant by the online shoppers.

Perhaps one of the most striking results of this present study is the prominent impact of customers' emotional responses in influencing the purchase process both directly and indirectly. Whilst some key EC adoption factors may not directly influence customers' intention to purchase online, they may do so indirectly through customers' emotions being prompted by various online shopping experiences. Therefore, it is possible for emotional responses as mediators to explain the connection between customers' purchase intention and how they adopt EC. The mediating effect results further indicated that COMP and ECA affect customers' purchase intentions indirectly, though differently. Whilst customers' emotions partially mediated the relationship between EC awareness and purchase intention, the same fully mediated the relationship between compatibility and purchase intention.

One way of explaining this result is that it appears customers' emotions fully influenced how they felt EC was compatible with their lifestyles, values, needs and preferences, and intention to purchase online, thus leaving no direct effects of COMP on PIT, but indirect effects only. This probably explains why COMP was not significant with PIT. This implies that if online buyers feel happy with their online purchase experience, they may fully interpret this as a form of compatibility with their shopping needs. Indirectly, this might positively influence their intention to purchase. On the other hand, if they feel frustrated, they may translate this as incompatibility, which eventually might negatively affect their intention to purchase. Taylor and Todd (1995) concluded there is less chance that intention may develop if compatibility decreases. Furthermore, compatibility did not have a direct and significant impact on purchase intention, but it recorded the highest total effects on positive emotional response, and the strongest indirect effect on purchase intention. Therefore, online retailers should not undermine the influence of EC compatibility among customers in Nigeria (both potential and existing users).

Moreover, emotions partially mediated the influence of EC awareness on purchase intention. This suggests that customers who are aware of EC threats and opportunities, skills and knowledge, benefits and detriments may still have the

intention to purchase online, regardless. ECA is one of the major determinants of purchase intention in this study. However, in spite of their EC awareness, some customers may have their intention partly dampened as a result of negative emotions such as worry, fear or frustration. This could be based on their online shopping experiences or other related factors that evoked these emotions, thus mitigating the influence of their awareness of EC on their intention to shopping online. In addition to being knowledgeable about EC, they may also have their purchase intention partially supported or hindered by positive or negative emotions. For example, awareness could motivate a person to buy online, but in some cases it may not be enough to convince them to have the intention to purchase online, e.g., if they are not interested in buying from a digital platform.

This is in alignment with the findings of Sherman, Mathur and Smith (1997), Bagozzi, Gopinath and Nyer (1999), Koo and Ju (2010), and Pappas et al. (2017) that emotion is capable of driving and mediating customers' responses by motivating them to act or by inhibiting an act. Summarily, the model provides a useful insight into how EC awareness and compatibility exert their indirect influence on customers' purchase intention, through CERP and CERN. The SEM mediating effects analysis and bootstrap test findings uncovered the following:

- ✚ Both positive and negative emotions of customers are significant mediators of the influence of compatibility and EC awareness on purchase intention.
- ✚ Compatibility can affect purchase intention by enhancing mediators like customers' emotions, as it has full mediating effect on purchase intention.
- ✚ In comparing the indirect effects values for determining mediation in Table 41:
 - Both positive and negative emotions of customers are partial mediators of EC awareness. However, the partial mediating effect appears to be weaker in the positive responses.
 - Both positive and negative emotions of customers are full mediators of compatibility. However, the full mediating effect appears to be weaker in the negative responses.
- ✚ Customers' emotional responses mediations between IT infrastructure, legal factor, reputation, and website quality and intention were not supported.

- ✚ Only positive emotional responses factor is both a significant direct predictor of intention and a key mediator of intention and individual-related factors (ECA and COMP).
- ✚ Negative emotional responses factor is not a direct predictor of intention but a significant mediator.

The two distinct types of emotional responses explored in this study were found to exhibit a crucial degree of influence on the EC adoption decision-making of customers. In particular, both the positive and negative emotions of customers proved to be influential (directly and/or indirectly) in determining customers' intentions to adopt EC in Nigeria.

7.4 Research Objective 3

The third objective aimed to confirm the empirical validity of the research model, which was developed based on TAM and SOR. This was extended with internal and external factors to predict and explain customers' purchase intention towards EC adoption in Nigeria. In order to achieve research objective 3, research question 4 was formulated as follows:

Research Question 4

“How effective is the applicability of the proposed model in explaining and predicting customers' EC adoption behaviour in Nigeria?”

The following section discusses how the study's findings answered this question.

7.4.1 Research Question 4

The results of the study provide support for the final research model and for the causal relationships among the model variables. The SEM fit statistics presented in Chapter 5, Table 33) show the final TAMSOR model yielded a set of acceptable fit indices with the empirical data. The Squared Multiple Correlations (SMC) in Table 42, the direct effects, the indirect effects, and the total effects (Appendix P) suggested that the research model explained a suitable amount of variance. The aim of the third objective was to validate the developed research model to predict and explain customers' purchase intention towards EC adoption. The results from this study reveal additional useful insights about the applicability of the TAMSOR framework in a developing

context of Nigeria in West Africa. They also provide a better understanding of customer behaviour related to EC adoption.

The average explanatory power of models in traditional TAM and SOR studies that focused on predicting users' intentions towards the adoption of information technologies and EC is about 30-60% (Todd and Taylor, 1995; Venkatesh and Davis, 2000; Venkatesh et al., 2003). Using an extended TAM, Moon and Kim (2001) included, with PU and PEOU, perceived playfulness to study the intention to use the world wide web in South Korea. Their proposed model explained 39% of variance of behavioural intention, while basic TAM explained 35% of variance. Choi (2019) proposed a TAMSOR model by including PU, PEOU, fear, joy, and pride, which accounted for 39.1% of the difference in social commerce intention. Yang, Kim and Yoo (2013) found that the 11% variance in acceptance of mobile technology is explained by the response to the mobile ads. Kimiagari and Asadi Malafe (2021) investigated online impulsive buying behaviour of Iranian customers in social commerce (Instagram) and the role of cognitive and affective responses in the relationship between internal and external stimuli. External stimuli explained 58% of utilitarian browsing behaviour and 50% of hedonic browsing behaviour.

The models developed for this study evidenced good explanatory power and are therefore robust in predicting customers' intentions to adopt EC in Nigeria. The predictive explanatory power (SMC also known as R^2) for the current study's models is discussed as follows: The two models were shown on page 228 to explain 50.1% (Model 1: positive emotions), and 50.3% (Model 2: negative emotions) of the variance in purchase intention. As mentioned earlier, the combined results of Models 1 and 2 show that PU, LGF, ECA, REP, CERP, ITF are the direct key determinants of customers' online purchase intention in Nigeria. This suggests that half of the differences in the online purchase intention (50.1% and 50.3%) could be explained by these six influential factors. This translates to one in two people having the intention to shop online as a result of these important factors.

Examining the final revised models (see Figure 31), 56.3% of the observed variance in positive emotional responses (CERP) is explained jointly by compatibility, reputation and website quality. Compatibility (COMP) is the strongest predictor of CERP. In other

words, interest, satisfaction and happiness are the emotional responses to compatibility, good online reputation and a quality website. COMP prompts the highest positive emotional responses (CERP), i.e., the highest predictor of CERP. 21.8% of negative emotional responses (CERN) is accounted for solely by reputation. REP is the only factor with the greatest weight of impact on CERN. Comparatively, positive emotional responses factor was 34.5% more influential than negative emotional responses factor in determining purchase intention (56.3% against 21.8%). Notably, this indicates that the explanatory power of CERP is 2.5 times more than the negative emotional responses' (CERN's) explanatory power. This is reflected in the findings of Trampe, Quoidbach and Taquet (2015) who also found that people experienced positive emotions 2.5 times more often than negative emotions. Thus, this study confirms that the positive affective responses had more significant impact towards the key EC adoption factors compared to the negative affective responses. In essence, in Nigeria, positive emotional responses can enhance the tendency for customers' online purchase intention to increase more than negative emotions. The positive impact on intention could increase online sales for retailers and influence customers to adopt EC. This further underscores the importance of considering the impact and management of emotions (maximising positive emotions and minimising negative emotions). The greater the positive impact on intention, the more likely the online sales for retailers and the higher the chances of EC adoption.

Moreover, 53.4% of the variance in perceived ease of use (PEOU) is explained by EC awareness, reputation, website quality, and positive emotional responses (Model 1), whereas 51% of PEOU is explained by reputation, website quality, and EC awareness (Model 2). For both models, the findings established website quality (ETAILQ) as an important antecedent of PEOU. Additionally, Compatibility, EC awareness and perceived ease of use predicted 48.4% of the variance in perceived usefulness (PU) for Model 1 and 47.5% for Model 2. Comparing both models, the explanatory power for the TAM constructs (perceived usefulness and perceived ease of use) was higher when customers experienced positive emotion (Model 1).

Similar to most extended TAM studies, PEOU is a strong and directly significant factor for perceived usefulness (PU). However, the direct impact of PEOU on purchase intention was not significant. This is compatible with the original TAM assumptions that

PU has a stronger impact on intention than PEOU does (Davis, 1989). This finding is in line with those of Koufaris (2002), Gefen, Karahanna and Straub (2003), Cenfetelli (2004), Shang, Chen and Shen (2005), Ashraf, Thongpapanl and Auh (2014), and Abu-Shamaa and Abu-Shanab (2015) who also found PEOU not to be a significant factor with intention. A possible explanation may be that when online buyers find a website useful in accessing their important needs, they may be willing to tolerate such interface, even if they perceive it difficult to use. However, no amount of ease of use may compensate for a website that buyers do not find useful. It is beneficial for online retailers and EC website designers to understand the explanatory power and ranking of these influential factors. This can enable them to pay special attention to these specific factors accordingly in their business models and strategy planning.

Furthermore, the results of the semi-structured interviews at the qualitative phase expounded on the important EC factors in the technology acceptance model and the online customers' behaviour. In this regard, the interviewees' perceptions further broadened the understanding of the reasons why customers respond positively or negatively to some key EC factors are summarised in Appendix V. The nature and characteristics of these factors are detailed in Chapter Six). Based on these perceptions, meaningful implications can be drawn about the way EC adoption should be conceptualised and assessed by online retailing managements and other stakeholders.

Overall, the results of the current study show that the proposed TAMSOR model has good explanatory power and is therefore robust in predicting customers' intention to adopt EC in Nigeria. The model also provides support for many of the hypothesised relationships outlined in the study. This implies that the study achieved the essentiality of capturing the important factors influencing customers' intentions to purchase online and their emotional responses to them.

The final validated framework that combines both the study's qualitative and quantitative findings is seen in Figure 47 which presents six variables (Perceived Usefulness, Legal Factor, E-commerce Awareness, Reputation, Positive Emotional Response and IT Infrastructure) found to have direct and significant influences on the intention to purchase online. Also featured are the four factors (Compatibility, Website

Quality, Negative Emotional Response and Perceived Ease of Use) that did not have direct significant influence on the dependent variable. The emergent themes (right hand side) highlighted by the interviewees as influential in determining EC adoption in Nigeria are shown as a cluster linked to online purchase intention by a bolder dashed arrow. Thus, the final adoption-response model proposed in the study was validated, confirmed, and proved to be effective in explaining customers' intention to purchase online.

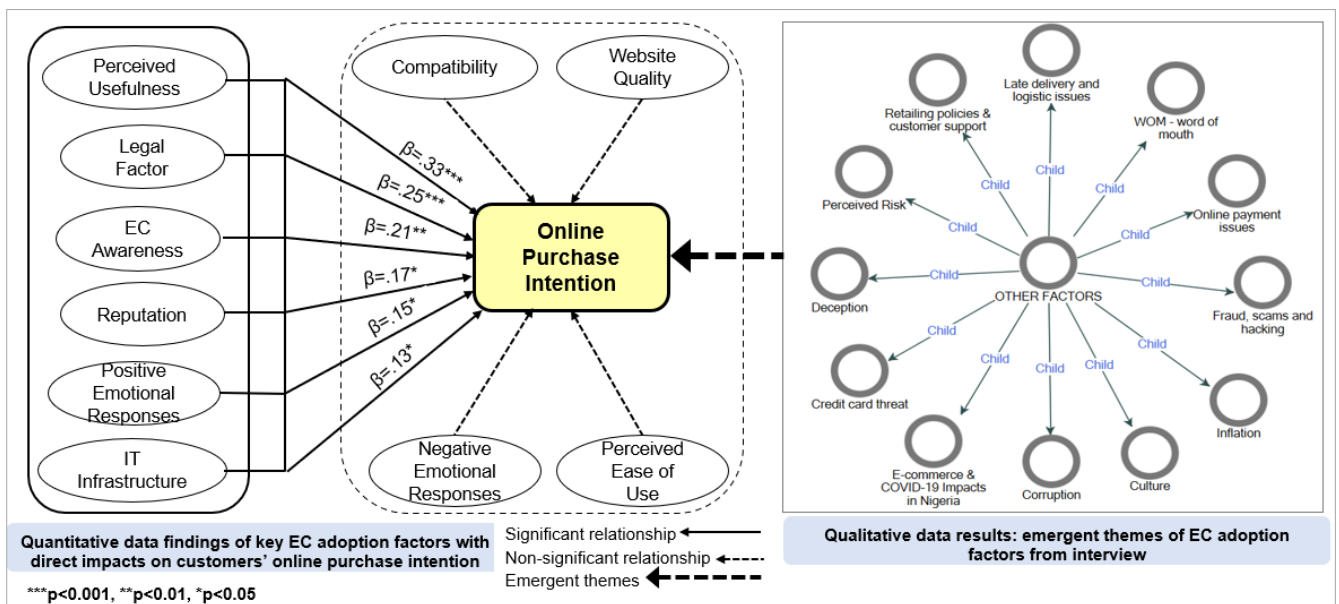


Figure 47: Final validated factors influencing EC adoption in Nigeria

7.5 Summary

This chapter has presented a discussion of the combined results gathered via the online questionnaire and interviews. It has considered the key findings related to each research question in the light of the literature, in an attempt to show how the research objectives have been met. It also presented the validated factors from both the study's quantitative and qualitative findings.

In the following chapter, the thesis is drawn to a final conclusion. The contributions made by the study are highlighted, implications based on the findings are discussed, and the limitations of the study are presented. Some directions for future research are also outlined.

Chapter 8: Conclusion

8.1 Introduction

This chapter consolidates previous discussions, presenting the theoretical and practical contributions made by this study to develop an understanding of the factors that influence customers' intention to purchase online in Nigeria. Additionally, implication, the study's limitations, and the potential directions for future research are presented.

The chapter is the final section of the thesis. It is divided into six sections, including this introduction. Section 8.2 presents the key findings of the entire research, and links them to the research objectives described in Chapter 1. The theoretical and practical contributions are detailed in Section 8.3, and Section 8.4 offers the study's implications for EC adoption in developing countries. The limitations of the study are presented in Section 8.5 and, finally, in Section 8.6, directions for future research are presented.

8.2 Summary of the Major Findings (both quantitative and qualitative)

Based on the results reported in Chapters 5 and 6 and discussed in Chapter 7, this section presents the summary of the present study on how the research results support and fulfil the research objectives specified in Section 1.5 of Chapter 1.

First, the research presents a detailed investigation of EC adoption and customers' responses to technology acceptance in a developing economy such as Nigeria. The purpose of the study was to investigate the key factors that determine customers' EC adoption and their emotional responses to it, and to answer and examine the following: (1) What are the key factors that influence the adoption of EC in the context of Nigeria? (2) How do customers' affective responses (emotions) impact their EC adoption and online purchase intention? (3) Why do customers respond positively or negatively to EC adoption factors? (4) How effective is the applicability of the proposed model in explaining and predicting EC adoption behaviour in Nigeria?

In order to answer the research questions above, a research design and a research methodology were implemented and discussed in Chapter 4, following a critical review of prior literature in Chapter 2. The literature review confirmed that, despite significant research in EC adoption, how and why customers' emotional responses matter to an

innovation adoption such as EC has been under-researched, especially in the context of developing countries. Additionally, little is known about the behaviour of customers in Nigeria, and the ranking of important factors influencing adoption or rejection of EC is not clear. This study addresses the gaps by drawing from relevant literature, from which four outcomes emerged: First, the uncovering of the key recent gaps in EC adoption studies (Table 1). Two, the presentation of studies on selected affective responses and the relevant debates of various theorists in emotion and cognition literature (Table 2 and Table 3). Three, the various technology acceptance studies, stimulus organism theory studies and TAMSOR studies, with their respective findings (Table 4, Table 5 and Table 6). Fourth, the identification of four core categories of factors influencing EC adoption: internal and external environmental factors (Table 7).

In Chapter 3, a research framework was developed to examine the factors influencing EC adoption in Nigeria. Based on further review of the extant literature, a robust theoretical framework (TAMSOR) that integrates stimulus organism response theory and technology acceptance model was developed. TAM is found to be complementary with the SOR. Moreover, this study is underpinned not only by the concept of technology acceptance but also by customers' responses. Thus, based on research context, the study's framework incorporated eleven relevant factors under four major categories in the TAMSOR model (Figure 14 on page 124).

Chapter 4 comprised four main parts: First, it presented the research philosophy within the social sciences and discussed the various research approaches and the different methods of data collection. It adduced reasons for the choice of a post-positivist paradigm instead of positivist and interpretivist paradigms. Second, it looked at research methodology and provided the justification for combining qualitative and quantitative methods (mixed methods) in this study. Additionally, it explained the rationale behind the selection of the survey and the semi-structured interview. Finally, Chapter 4 described in detail the procedures underpinning the phases of data collection and analysis.

In Chapter 5, the data was screened after collection. Also, descriptive statistics were employed to highlight missing data and describe the demographic characteristics of the sample. In addition, normality, linearity and Cronbach's Alpha assessments were

carried out before inferring results from the data, so as to ensure data validation. In order to identify the key factors that influence EC adoption in Nigeria, the study's framework was carefully assessed. This consisted of the assessment of the measurement model and the structural model. While the measurement model involved reliability and validity evaluations, our study tested the research models and hypotheses on EC adoption and customers' affective responses using structural equation modelling. The process started with an initial reliability test and an exploratory and confirmatory factor analysis. Construct validity and reliability were evaluated, which satisfied the minimum criteria. This was followed by inferential analyses to test the models and the proposed hypotheses related to EC adoption and customers' affective responses.

Chapter 6 featured the collection and analysis of the qualitative data. Whilst interviews were the main source of data, ministry reports, national policies, documents, government websites, commercial guides and other relevant publications were also consulted. EC customers who participated in the online survey and also showed interest to be interviewed were contacted by e-mail to seek their consent. The profiles of interview participants showed a balanced demography in terms of their age groups and occupational levels. Further, statistical testing of the theoretical framework yielded key quantitative findings, and qualitative analysis of the semi-structured interviews triangulated these quantitative findings of EC adoption and customers' responses in Nigeria. The interviewees provided in-depth insights into the quantitative findings concerning EC adoption factors and current, related issues.

In Chapter 7, the interpretations from the findings of the study were discussed. This helped pinpoint the managerial and practical implications of EC adoption in Nigeria. Research findings were also mapped onto prior studies in the research field. Other key factors had direct, significant influences on one another, as discussed in Section 7.3.1.

The key findings of this research have been discussed in the relevant chapters (Chapters 5-7) of the thesis. However, since this study combined both quantitative and qualitative methods, it is useful to provide a combined summary of the results from both research strategies (see Table 48).

Key Quantitative Findings	Key Qualitative Findings
Perceived usefulness, e-commerce (EC) awareness, IT infrastructure, legal factor, customers' positive emotional responses and reputation had a direct, positive and significant impact on purchase intention of Nigerian customers. Together, the six factors explained 50% of customers' online purchase intention.	Perceived usefulness, e-commerce (EC) awareness, availability of IT infrastructure and legal framework, customers' positive emotional responses, online retailers' reputation (good) would strengthen and enhance customers' purchase intention in Nigeria.
Perceived ease of use did not have a direct and significant impact on the intention to purchase online. The mean score for PEOU was between 3.47 and 3.82, indicating that to some extent respondents agreed that EC was easy to use.	The survey showed that people rated perceived ease of use moderately high, but getting online items might be a major challenge because of logistics issues, product quality, inflation and online retailers' transparency, etc. "EC is supposed to be easy, but the reverse is the case here".
Website quality had no direct and significant impact on the intention to purchase online. Respondents slightly agreed that online retailers' websites were effective (mean scores between 3.07 and 3.71 and a standard deviation range of 0.783 to 1.073).	Customers considered user experience (UX) and user interface (UI) as basic and most websites as unattractive, thus creating unpleasant impressions that may weaken customers' intention to purchase online. Low website quality could result in reduced intention to purchase online.
Comparatively, negative emotional responses factor was not a direct and significant predictor of intention; only positive emotions had a direct and significant impact on purchase intention.	Triggered negative emotions could weaken customers' intention to purchase online and eventually discourage them from buying online.
Compatibility had no direct and significant impact on the intention to purchase online.	Compatibility was based on key underlying factors such as educational status, personal needs, logistics and delivery issues, e.g., "I can do without it in a way, but if it is working well, I can adopt it"
Interesting Findings	
Positive emotions were 2.5 times more influential on purchase intention than negative emotions.	Positive emotions could motivate repeat purchases , because customers' pleasant online experiences have been positively associated with well-being, positive mental health, and less stress.
Bad reputation of online retailers caused customers to experience the highest level of negative emotions. Reputation had strong significance on purchase intention.	The kind of trust or impressions customers have about online retailers could determine the kind of products and services ordered on their websites. Reputation was also confirmed as a big and significant factor.
Online reputation of retailers was the only factor that had a strong, significant relationship with both positive and negative customers' emotional responses.	Online retailers' "reputation does influence the emotional responses of customers".
"Happy" is the strongest indicator of positive emotional responses (Figure 28). "Frustrated" is the highest indicator of negative emotional responses (Figure 29).	"Feeling happy about shopping experience is key". "Happiness goes a long way to influence customers' proactiveness to EC; we can't trade anything for it!".
During the confirmatory factor analysis (quantitative phase), anger was dropped as a negative emotion item whose modification indices did not satisfactorily fit into the study's integrated model.	Anger, however, resurfaced during the interview phase as one of the negative emotions customers experienced when shopping online, prompted by: delivery of a wrong product, false product information, unsolicited call, website pop-ups, card payment declined, and dollar spending cap.
Both positive and negative emotions of customers were confirmed as significant mediators between compatibility, EC awareness and purchase intention.	

Table 48: Key quantitative and qualitative findings
(Quotations are comments from study interviewees)

After the presentation of the key findings from the mixed methods used, the following section presents the major contributions of this research.

8.3 Contributions to Knowledge

The findings presented in the preceding chapters made a novel contribution to the existing body of knowledge in the areas of technology adoption and consumer behaviour, with a particular reference to EC adoption in a developing country. The insights provided through the adoption-response model results constitute theoretical and practical contributions that will be of benefit to both academic research and managerial practice. These contributions are discussed in the following sections.

8.3.1 Theoretical Contributions

Following on from the review of extant literature in the fields of affective responses, technology acceptance, EC adoption, consumer behaviour, customer experience and online shopping, a holistic conceptual framework for the research was developed. This framework encapsulated the emotional responses of customers as well as other key factors that can influence their behaviour to adopt EC. In comparison with developed countries, research currently amplifies the paucity of empirical studies on the acceptance of technology for shopping in developing countries. More importantly, the inclusion of the other relevant factors yet to be explored has been suggested. Therefore, taking a theory-based empirical perspective to investigate these important gaps, the findings of this present research contribute to the existing body of knowledge.

The study is one of the first few to attempt measuring simultaneously the impacts of both customers' beliefs (cognitive) and their emotional (affective) processes on EC adoption in the context of Nigeria. The study validates the research model with the empirical data collected from the Internet users in Nigeria, a West African developing country. This aimed to determine the critical factors influencing customers' intentions to purchase online, with a view to adopting EC in Nigeria.

Given the limited empirical research on the integration of two or more models to investigate technology acceptance studies in general, this study has tested a new,

holistic model of TAMSOR for the first time in the context of a developing West African country, namely Nigeria. The research demonstrates the usefulness of combining the TAM framework with the SOR theory in order to understand EC adoption. Extending the TAM to develop a robust initial conceptual model (Figure 15, page 125) enriched with SOR, as done in this research, is one of the first attempts to investigate EC by connecting the role of human emotions among Nigerian customers with other key EC factors. In the extant literature, most of the research focuses on either the TAM framework or the SOR theory, and usually not on both. An integrated framework was conceptualised based on a combination of the technology acceptance model, TAM (PU, PEOU), and the stimulus organism response (SOR) factors (CERP and CERN). Six additional variables (internal and external environmental factors) were included (COMP, ECA, REP, ITF, LGF, CRF). In all, eleven factors were incorporated into the proposed holistic model, which was later tested for its predictive ability and explanatory power. The findings of the current study show that the refined, final TAMSOR models are valid and exhibit acceptable explanatory power for predicting the purchase intention of customers to adopt EC, thus providing a strong theoretically supported frame of reference for studying EC adoption and implementation in a similar context.

To this end, there is paucity of research that explores the influence of customers' affective responses on EC adoption (Valor, Antonetti, and Crisafulli, 2022). Khan et al. (2020) and Alola et al. (2019) examined the role of emotions in the hospitality and education sectors in Nigeria, but not in the EC sector. More importantly, the interconnection of human emotions and technology adoption is still a relatively new research area in the online retail sector of developing countries. Therefore, this study contributes to the existing body of knowledge by filling such an important research gap, considering the work is one of the earliest studies to explore the important domain in the indicated context. By so doing, the work identifies the mediating roles of human emotions in connection with online purchase intention of customers, with evidence from Nigeria. The findings confirm the importance of integrating customers' emotions into the study's model to expand the explanatory variables (which is lacking in traditional TAM analyses). The novelty of this framework is a discovery of the dual roles of positive customers' emotional responses as a mediator and a predictor of intention to purchase online (Chapter 5). This result is noteworthy in the online retail sector of the Nigerian economy, since it provides enriched explanations for

understanding the concept of EC adoption. This study could also facilitate domestic and multinational organisations on how to streamline online retailing strategies in order to gain business opportunities in developing economies.

This study contributes to theory by providing new insights into the much-needed, crucial, step-wise process involved in customers' decision-making of predicting purchase intention. It provides a two-step systematic approach to explaining customers' purchase intentions: first, by examining how internal and external environmental EC adoption factors influence organisms (customers), and, second, by incorporating emotions as a mediating factor between the EC adoption factors and intention to purchase. The study incorporates positive and negative emotions of customers as distinct and highly-important factors in the purchase process. By operationalising them separately, this approach showcases their unique characteristics, which advances the works of other scholars such as Andreu et al. (2006), Jang and Namkung (2009), and Koo and Ju (2010).

The results support the unipolarity school of thought that indicates that positive and negative emotions can occur separately in the decision-making process of a technology acceptance outcome (PIT). It provides pieces of evidence to further strengthen the theoretical underpinnings that testing positive and negative factors separately with respect to purchase intentions allows for greater depth and predictive capability in modelling emotional effects on EC adoption. The finding shows CERP as a direct and significant determinant of PIT, whereas CERN's impact on PIT was not confirmed as significant. Furthermore, the study broadens existing research knowledge by validating the robust outcome of the research's model in a new cultural context of Africa. Since TAMSOR variables in the model could have unique effects when applied in a different context, the validated model provides a better understanding of EC adoption in the Nigerian context. Some studies similar to the present research have been conducted, but mostly in developed countries (UK, USA), with few in developing countries (Kimiagari and Asadi Malafe, 2021; Choi, 2019; Aggarwal and Rahul, 2017).

Another major contribution of this study is the development of the research instrument designed to measure respondents' perceptions towards the factors influencing their

intention to adopt EC. A 66-item instrument (consisting of one independent variable and eleven dependent variables) and a total of twelve scales resulted (see

Appendix A). The instrument development process included reviewing related literature for empirically selected items, choosing relevant items, pilot testing, and finally full-scale testing of the instrument empirically. Moreover, some important steps were taken to validate the developed instrument scales, such as EFA, to identify the major EC adoption dimensions, and CFA was then used to validate the underlying structure of the main constructs of the instrument, as well as to assess the composite reliability and construct validity. High internal consistency degrees were reported among all constructs using two reliability indicators: Cronbach's Alpha and composite reliability. The constructs of the final proposed instrument also demonstrated highly convergent, discriminant, and nomological validities. Therefore, this validated instrument can be used by technology acceptance/customer response researchers in West African (developing) countries and those with a similar culture. This can serve as a tool to investigate how peoples' differing behaviours and perceptions influence their intentions to adopt EC. The final models can be used by academics and researchers to understand and analyse EC adoption factors (inhibitors and motivators).

Finally, the study applied a rich research design based on a mixed-methods approach. It also responds to calls to address the paucity of mixed-methods research in the social sciences. Thus, it builds on the previous technology adoption-based research by employing a mixed-methods research approach (of integrating both quantitative and qualitative perspectives). As a result, it offers deeper understanding and richer insights into human-technology interaction empirical studies. Two data collection phases were applied; quantitative data was collected in the first phase using a survey questionnaire, followed by qualitative data collection via a semi-structured interview. The two research phases were linked in order to obtain a complementary picture of the findings on EC adoption, which previous studies have investigated mostly through a quantitative design. Moreover, this study is probably the first in the Nigerian context to use a unique adoption-response model (Figure 15). The model could be used as a technique to provide a full picture of how the human dimension (an individual's feeling

about using technology innovation) relates to the key EC adoption factors, and its significance and implications.

8.3.2 Practical Contributions

The study's findings have practical implications for EC stakeholders (online retailers, managers and website designers). The results provide a comprehensive framework that identifies potentially important factors for the acceptance of technology for online purchase in Nigeria. They also pinpoint why users might reject EC. The understanding of both the direct and the indirect impacts of these key factors on purchase intention and their interrelationships could also create more in-depth knowledge for policy makers in developing countries. This framework can guide them to develop appropriate policies geared towards motivating users to buy online by addressing users' concerns and EC barriers. Further, the study has identified six important factors that influence customers' purchase intention to adopt EC. Customers' responses to EC are also uncovered. These valuable insights could be pivotal to increasing EC adoption rate for customers, facilitating better profitability for the upcoming online retailers in their EC uptake and the investment growth of online retailers in Nigeria.

The practicality of the adoption models developed in this study transcends merely identifying EC's influential factors and encompasses explaining and ranking their degrees of importance accordingly (Table 43 on page 229). For example, the study identified six factors as the important predictive factors for customers' intention to purchase. Based on the SEM results obtained, these factors were ranked in a descending order of importance: Perceived usefulness, legal factor, EC awareness, reputation, customers' positive emotional responses and IT infrastructure. Therefore, decision-makers could consider the hierarchical differences in the relative importance of these factors to customers' purchase intention when formulating their marketing strategies and business operations. The semi-structured interview results also helped to make sense of how customers perceive these factors. It elaborated on why they respond positively or negatively to EC and how these responses could give important cues to either avoid or accept EC (for more details, see Table 47). This vital knowledge and rich understanding could help to address customers' values and needs in Nigeria, therefore proffering practical solutions to ensure an effective and successful EC.

The study modelled a less-researched aspect of EC by projecting the emotional yet fundamental components of individuals, not only as online shoppers but first as human beings. The models draw a very meaningful picture of an aspect barely studied in the literature to create an appreciation of individuals' mental health and well-being as they shop online. The study has shed light on the implications of this significant blind spot. Besides, happy and not angry shoppers translate to a sane society. It is believed that one of the ways of attracting customers is by fostering green and sustainable online businesses that care for the environment. Another way is by cultivating a long-term 'green' positive influence. Although low prices may attract some customers to shop online in the short-term, any technology that appeals to people's positive emotions is likely to flourish better. In this regard, online retailers need peoples' emotions to go 'green' and not 'red' for the societal good. This could be done by encouraging the feel-good factors (positive responses) from customer-retailer interactions and including feedback mechanisms to identify possible areas for improvement (Pappas et al., 2017).

What do these results imply for managerial practice? This study presents great interest to online retailers, who want to know how their customers feel in order to maximise the happiness, interest and satisfaction of their buyers. According to George and Dane (2016), investigating affective responses would not only enhance our understanding of choice processes (in this case, technology acceptance of EC) but also contribute to our appreciation of the functioning of the human mind. Happy, interested and satisfied customers are most likely to adopt EC, while scared, worried and frustrated customers are most likely to reject EC. Retailers can leverage this nuanced understanding about their customers to become more responsible sellers.

This study also adds one more facet, as the findings may help online retailers and scholars to understand the role of emotions in a new context. Our findings that human emotions are very reliable predictors of customers' behaviour could find practical application in the online retailing sector in developing and even developed markets. In terms of boosting online sales, typically people prefer to shop with retailers with whom they have relationship. Thus, managers should not ignore this valuable insight but value users' emotions as an important resource in strategic management for improving

EC adoption. Companies manage and compete best when they combine both the functional and emotional benefits in their transactional offerings.

Moreover, the emotional bonds between companies and customers are difficult for competitors to imitate or break off. This could in effect enhance the advantage of a competitive edge over other market rivals. Customers that are happy, satisfied and interested in purchasing online are crucial for retailers' profitability, market growth and sustainability. Purchase outcomes might hinge, in part, on the emotional impact online stores have on customers (Machleit and Eroglu, 2000). One of the ways by which online retailers can positively influence customers' attitude is by inducing customers' positive feelings towards their companies (Holzwarth, Janiszewski and Neumann, 2006).

Central to any online strategy is the ability to build traffic, awareness, and brand reputation. Practical implications are made for retailers to adopt online channels and expand internationally. In doing this, online retailers with a good reputation are best positioned to drive patronage. Our findings revealed that bad reputation is associated with negative emotions, while compatibility, good reputation, and website quality are associated with positive emotions. Good reputation prompts pleasant purchase intention from customers and an increase in negative emotions would have an adverse effect on customers' purchase intentions. One of the hallmarks of a successful retailer is the ability to induce behavioural responses that make customers return to purchase and not only search the website (Penz and Hogg, 2011).

Finally, apart from the empirically developed adoption-response model for developing countries such as Nigeria, another major contribution of this study is providing evidence-based recommendations for practice. These are directed towards overcoming the main research problem, which is the low adoption rate of EC in Nigeria. The practical recommendations are presented in the following section.

8.4 Implications

The literature review and the empirical findings pinpoint the importance of EC adoption in developing countries, and more so considering that the offline and online shopping channels are rapidly converging. To remain competitive, online retailers need to

manage customers' responses to EC adoption strategically and practically by redefining their business practices away from a one-size-fits-all approach. Also, the SMEs should not undermine the influence of technology on business transactions. In this study, the significant factors of EC technology adoption and the responses of customers to them were examined and explained. On that basis, a number of recommendations for online retailers, EC managers, website designers and the government of Nigeria are hereby suggested.

Online retailers should build EC websites that drive customers with interactive design, layout and a more user-friendly interface with easy navigation and offerings compatible with their customers' needs, values and lifestyles. These website features have been found to significantly appeal to customers (Modi and Singh, 2023). When launching a new website, incorporating both the functional and fun elements by web designers could motivate customers to buy online (Poushneh and Vasquez-Parr, 2019). Creating this balanced business model is capable of attracting customers of different shopping orientations and motivations. In addition, the online retailers need to improve their website quality in terms of effective customer service communication, ensuring detailed and adequate product information, privacy/security of personal information, and optimised, reliable, and fast delivery. Trustworthy dealings could lead to favourable outcomes.

Further, to increase EC adoption rate among potential customers and Internet users, there should be an emphasis on online retailing strategies that actively promote EC usefulness. The results of this study showed that the convenience of EC contributes to customers' purchase intention to adopt EC services. The indices of usefulness as underlined by the interviewees are time saving (speed), convenience and ease of buying, personal safety, not having to get into traffic congestion or wait in queues, more varieties, better choices and cheaper prices. Therefore, online retailers need to focus attention on and effectively align their online business strategies with these usefulness parameters for continuous improvements. Based on the key areas mentioned, online retailers should make sure that order processing and delivery services are quick enough to save time for customers. Product differentiation and discounts offerings could attract more online customers. The government should also

look into addressing the transportation infrastructure barrier to enable the logistics aspect of order fulfilment to run easily and efficiently.

In this study, EC awareness was found to associate strongly with purchase intention, ease of use and usefulness. If awareness drives all these three major aspects of technology acceptance, it should be given a more profound attention by the government and online retailers. The Nigerian Government can collaborate with the private sector, website designers and retailers on how to leverage digital channels for EC success through informative trainings. These could be tailored towards business and customer relationship management and orientations for using relevant and appropriate applications to improve operational management. Further, educating customers on EC usefulness and creating awareness of online security features could allay their fears and worries. This approach could reassure customers to buy online.

Moreover, interview results indicated that people need to be educated to accept that using EC is more convenient and not difficult to perform. In order to create better first-use experience, websites should provide the necessary information in a form of simple and clear instructions needed to fulfil an online transaction. Also, providing promotional efforts through relevant adverts and enlightening demonstrations about the usefulness of EC could impact the economy positively. In addition, highlighting the potential threats to privacy and security could reduce the associated or perceived EC risks and increase favourable outcomes.

According to the interview results, the government has a big role to play in creating an enabling environment. The regulator (the government) should prioritise implementing the laws that support EC. Those saddled with the responsibility of forging an active and effective EC legal framework in government parastatals should shun corruption and prioritise bringing this to fruition. The lack of effective complaint and return policies has been amplified as a major EC deterrent. Having these necessary regulations and policies in place will offer customers the needed protection. It will also protect the sellers and keep them in business, thus ensuring both parties are happy end-to-end.

In order to increase EC adoption in Nigeria, the issue of an inefficient online payment system has to be resolved. Many interviewees were wary of getting their debit or credit

card payments declined mainly because of retailers' ineffective systems or technical hitches. Further, the online retailers should synergise with the FinTech companies (i.e., the financial technology providers) before they launch out, in order to avoid online payment failure. The interview results showed these avoidable technical glitches and transaction errors have discouraged many people from shopping online. Instances of retailers claiming no receipt of payment from customers were mentioned, whereby the money paid remained unprocessed in the bank for several days. As a result of such problems, many people are sceptical of making online purchases, fearing payment issues and the fact that items paid for may not be received. Tackling these challenges and ensuring effortless online payments will increase EC adoption.

Another major issue highlighted is online retailers' reputation. Our findings revealed that bad reputation is associated with negative responses whilst compatibility, good reputation, and website quality are associated with positive responses and purchase intention. Customers that are happy, satisfied and interested in purchasing online are critical for retailers' profitability and market sustainability. Further, people are concerned that they pay for a certain item but get a different item, and their money is not refunded. This has been worrisome for some customers, leading them to opt for a payment-on-delivery (POD) alternative. Additionally, implementing money back guarantee policy can support increased EC adoption.

In order to foster increased EC adoption in Nigeria and similar developing countries, EC should be considered not only as a business issue, but also as a governmental strategy as well as an opportunity to ensure that an enabling digital environment is created. For example, most places still have poor transportation network, which remains a big hassle for delivery companies and could increase the associated delivery costs for customers. Whilst many people are interested to shop online, as seen from the findings, the issues of inadequate infrastructure and logistics, poor product quality, lack of transparency in dealing with customers, and economic inflation are barriers to EC adoption. The following measures could serve as EC adoption motivators: government's intervention to protect people's privacy; implementation of market quality control with checks and balances; ensuring excellence in the standards of products and services; and meting out penalties, if defaulted.

There is also a vital need to improve internet penetration from the urban areas to the rural settings to reduce the digital divide. For EC to come to fruition, government should reduce/subsidise the Internet connections and communications costs in order to facilitate Internet access for people. The success of EC in any country is a function of the availability and reliability of its telecommunications infrastructure such as stable power supply and improved network speed. As recommended by the interviewees, the technology of WhatsApp could be explored as a starting point and an online medium of transaction for the older generation in Nigeria. As observed, this age group uses WhatsApp more than they use the other social media platforms such as Facebook, Twitter, and Instagram.

This study helps online retailers to understand the main role that customers' emotions play in prompting pleasant purchase intention. When online retailers fail to appreciate the importance of customers' emotions, they invariably fail to appreciate a critical force in customers' shopping behaviour. When companies adopt "people-powered participation" and provide experiences that are meaningful and emotional connection with their customers, they outperform competitors (WARC, 2021). Thus, evaluating potential users' affective responses during market testing and then adjusting technology features to promote greater positive emotions and inhibit negative emotions should encourage adoption and use (Wakefield, 2015). The interview findings showed that ensuring adequate customers' engagement and relationship management is key to having happy customers, e.g., calling them on their special occasions such as birthdays is indicative of a retailer's care. In addition, to have saner societies with a healthier EC in the future, managing the emotional dimensions of online transactions is of vital importance. Retailers need to minimise situations where prompting negative emotions leads to customers leaving the store without making a purchase. Inadequate information on the website, inability to find product easily, and privacy concerns are triggers of worry, fear and frustration. In other words, to ensure people's well-being and mental health are not impaired, businesses should adopt strategies that appeal to customers' positive emotions. Also, requesting feedback from buyers from time to time could prove useful.

8.5 Research Limitations

As with any empirical study, there are some limitations that need to be taken into consideration when attempting to generalise findings to the whole population or trying to apply its proposed model to other research contexts.

The restrictions on resources, i.e., time and funds, meant that only four urban cities in Nigeria's geopolitical regions were included in the process of sampling for the questionnaire survey. Although the findings can be generalised to the overall research population with an adequate level of confidence, the researcher is aware that the inclusion of more geographical areas could have enhanced the generalisability. However, a researcher will hardly ever be in a situation where the whole population can be scrutinised (Milanzi et al., 2015).

The generalisability of the current study findings is limited to Nigeria's specific context. Other countries may have different internal and external environmental factors and circumstances which can influence their approach to EC. Therefore, the contextual differences should be factored in when trying to generalise the findings of this study or when applying its proposed model to the contexts of other countries.

The survey respondents were invited to participate in the follow-up, semi-structured interview. This was subject to the availability and convenience of the interviewees. Although all the four cities sampled were represented, they were not evenly distributed.

Since the current study model was developed and validated to predict and explain the variance in customers' intentions towards using a technology in a voluntary setting (transactional) of online shopping, care should be taken when applying it to investigate people's acceptance of new technologies in mandatory settings where using the technology is part of an individual's job or organisational policy.

8.6 Future Research

Our research shows that the younger generation are tech natives, while most older people either don't have an Android or iPhone or don't know how to use them. Further, the older generation are more in doubt of EC. They prefer to see what they are buying because of trust issues. It would be interesting to undertake a more in-depth

investigation of the impact of generational gap on EC. How does the older generation perceive technology acceptance? And what would motivate them to shop online? Perceived risk could serve as a mediator, self-efficacy as a moderator, and trust in the company as an outcome.

Whilst the research's model has provided valuable insights with respect to technology acceptance of EC, additional theoretical constructs such as self-efficacy, social influence, and perceived risk may be profitably brought into the analysis. Also, word of mouth (WoM) factor could be included into the study's model, since customers' emotional experiences may be conveyed to others through positive or negative word of mouth (Pappas et al., 2014). These potentially important factors could further improve the model's predictive power.

Future research could utilise a combination of multiple sensory data to determine customers' emotions more accurately instead of a self-reported questionnaire completed by respondents. This research has set the stage for a more advanced approach. Recently, neuroscience research techniques such as facial coding, eye tracking, electroencephalography (EEG) etc of how the brain processes the knowledge behind customers' purchasing choice have been suggested in the literature (Kansra et al., 2022; Modi and Singh, 2023). This scientific approach could then be compared with the conventional way of investigating emotion in EC in order to provide even deeper insights.

In addition, while the affective responses to EC adoption have been examined from the customers' perspective, future research could consider the role of emotions in influencing online retailers' behaviour in customer relationship management (CRM). The online retailers' emotions and marketing relationships can be investigated. Also, whether it is possible for online retailing managers to improve their performance by enhancing emotional experience could be explored.

Since the data in this study was collected through a cross-sectional survey, an in-depth longitudinal research would be useful in order to determine whether emotions will influence continued EC usage. This could be achieved by applying the research model to examine customers' continuing intentions to use EC in Nigeria. Given the

time advantage of a longitudinal research, additional Nigerian cities could be included in the sampling population to broaden understanding beyond the major urban cities.

While this study has developed and validated a measurement instrument to predict customers' adoption of EC, further validation studies in different technology settings and different contexts would be useful to improve its external validity, for instance, exploring EC customers' experiences in the omnichannel setting of developing countries.

In sum, this study has shown that the underpinnings of online environmental cues, emotions, technology adoption factors, internal and external factors and purchase intentions are of critical importance to EC. Evidently, customers have needs, values and expectations; however, the affective responses they elicit in the digital environment vary, partly based on their online experiences and other key factors. Thus, it becomes vital to understand how these crucial factors are capable of impacting their decision-making on innovation choices such as EC adoption (whether directly or indirectly), especially in a developing context like Nigeria. In line with the research aim and objectives highlighted from the outset, we believe this multi-faceted research has delved into the important concepts, addressed the research problem, and advanced and enriched existing research on why people accept or reject EC. It has also contributed to knowledge, enhanced our understanding by providing meaningful answers to the set research questions, and offered useful recommendations for management and practice.

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Appendices

Appendix A: Validated Survey Questionnaire

Survey questionnaire for potential E-commerce users from Nigeria

Please confirm the following by ticking the box below.

I have read the information sheet provided and I am happy to participate. I understand that by completing and returning this questionnaire I am consenting to be part of the research study and for my data to be used as described.

Please tick (✓) the circle that best describes your status.						
Part One: E-Commerce Usage						
1. I am currently using e-commerce (e.g., Online shopping)	Yes <input type="radio"/>	No <input type="radio"/>				
Part Two: Please tell us about yourself (Demographics)						
2. What is your gender?	Female <input type="radio"/>	Male <input type="radio"/>				
3. What is your age range?	18-24 Years <input type="radio"/>	25-34 years <input type="radio"/>	35-44 years <input type="radio"/>	45-54 years <input type="radio"/>	55-64 years <input type="radio"/>	Others <input type="radio"/>
4. What is your highest level of education?	Secondary school <input type="radio"/>	Diploma <input type="radio"/>	Bachelor <input type="radio"/>	Masters <input type="radio"/>	Doctorate <input type="radio"/>	Others <input type="radio"/>
5. Your current occupation	Student <input type="radio"/>	Public sector employee <input type="radio"/>	Private sector employee <input type="radio"/>	Unemployed <input type="radio"/>	Self-employed <input type="radio"/>	Others <input type="radio"/>
6. Your current city of residence	Abuja <input type="radio"/>	Ibadan <input type="radio"/>	Lagos <input type="radio"/>	Port Harcourt <input type="radio"/>		
Part Three: Attitudes towards E-Commerce (EC) : Please tick (✓) as appropriate using the rating scale provided to indicate your agreement or disagreement with the statements below. (Even if you are not a current E-commerce user)						
Section 1: Internal Environmental Factors (Website quality – Website design, customer service, fulfilment/reliability Privacy/security)						
A. Website Quality	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Nigerian websites are well designed						
When you have a problem, the websites show a sincere interest in solving it						
Online companies are willing to respond to customers' needs						
Inquiries are answered promptly						
When product was ordered, it got delivered on time as						

promised by online companies					
What customers received after purchase was what they expected					
I feel my privacy is protected on Nigerian websites					
I feel safe in my transactions with Nigerian shopping websites					
Section 2: Your Views on External Environmental Factors – Please tick (✓) as appropriate					
A. Reputation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The website I use is a large company that everyone recognises					
The website I use is well-known					
Nigerian websites have a good reputation					
I can trust an e-retailer's website for shopping					
Internet shopping is reliable					
In general, I can rely on Internet vendors to keep the promises that they make					
Internet shopping is a trustworthy experience					
B. Cultural Factors	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Obtaining information online in my language is more important than price					
If given a choice, I prefer to visit a website in my own language					
I value shopping at the local markets than online					
My culture does not allow me to disclose/share my sensitive personal data online					
I prefer a face-to-face transaction to online shopping					
C. Legal Factors	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
There is a need for effective laws to protect customers' privacy					
There is a need for effective laws to combat cyber crime					
The legal environment is conducive to conduct business on the Internet					
The government needs to demonstrate strong					

commitment to promote e-commerce					
Having a data protection law in Nigeria will motivate me to purchase online					
D. IT Infrastructure	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
There is a reliable internet access for me to purchase online					
There is an uninterrupted power supply to carry out online purchase					
Internet connection is stable enough to support e-commerce adoption					
Internet speed is fast enough to support e-commerce adoption					
I am able to make online payment on the web easily					
Section 3: Affective responses – (Emotions) Using the rating scale below, please indicate the feelings you had following your most recent online shopping experience					
A. Consumers' emotional responses - I felt:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Happy shopping online					
Interested shopping online					
Satisfied shopping online					
I like shopping online					
Angry shopping online					
Worried shopping online					
Frustrated shopping online					
Scared shopping online					
Section 4 - Your Views on Technology Acceptance Factors – Please tick (✓)as appropriate					
A. Perceived Ease of Use	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Navigation is quick when I shop on the Internet					
Internet shopping allows me to easily shop for what I want					
It is easy to become confident at Internet shopping					
Internet shopping websites are easy to use					
Learning how to shop online does not require much effort					
B. Perceived Usefulness	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The use of Ecommerce can significantly increase the quality of my life					
I can learn which products are suitable for my needs in comparison to other competitor products by browsing Internet shopping websites					

With Internet shopping websites, I can find out what I want to know before I purchase online					
Online reviews are helpful in making the right decisions					
The convenience of Internet shopping is a key benefit					
Overall, I find purchasing online useful in my daily life					
Section 5 - Your Views on Individual Related Factors – Please tick (✓) as appropriate					
A. E-commerce Awareness	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I consider myself knowledgeable about good search techniques for Internet shopping					
I am extremely skilled at Internet shopping					
I know how to find what I am looking for when Internet shopping					
I know somewhat more than most users about Internet shopping					
I recognise the opportunities and threats enabled by E-commerce					
I understand the potential benefits of E-commerce					
I have thought about whether or not E-commerce has impacts on the way shopping is to be done in Nigeria					
B. Compatibility	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
E-commerce is compatible with my lifestyle					
E-commerce suits my personal shopping needs					
E-commerce is consistent with my personal values					
E-commerce fits into my working patterns					
E-commerce suits my past and present shopping experience					
E-commerce fits well with the way I like to shop and search for product information					
Section 6 - Your Views on Purchase Intention – Please tick (✓) as appropriate					
Purchase Intention	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I will consider purchasing the items I viewed online in the near future					
I will probably buy online in the near future					
I will visit online when I want to buy certain items in the near future					
I intend to buy an item online					

Appendix B: Participant Information Sheet



LIVERPOOL JOHN MOORES UNIVERSITY

Participant Information Sheet for E-commerce users and potential online shoppers

LJMU's Research Ethics Committee Approval Reference: 20LBS008

Title of Study: Customers' affective responses towards the key factors influencing E-commerce adoption: An Extended Technology Acceptance Model (TAM) Approach

You are being invited to take part in a study. Before you decide it is important for you to understand why the study is being done and what participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for taking the time to read this.

1. Who will conduct the study?

Study Team

Principal Investigator: Bukola Fatokun

Main Supervisor: Dr. Muhammad Nawaz

Co-supervisors: Dr. Philip Kelly and Dr. Scott Foster

School/Faculty within LJMU: Faculty of Business and Law/ Liverpool Business School

2. What is the purpose of the study?

The findings of this research hope to help the ecommerce industries in Nigeria by providing recommendations in terms of enhancing the potential success of E-commerce adoption in the country and improving the future marketing and information technology strategies of online retailers. This research is conducted for the purpose of completing a PhD programme.

This study hopes to answer the following questions:

- What are the important factors that influence customers' intentions to adopt e-commerce in Nigeria?
- How has the impact of these factors influenced customers' emotional responses to online transactions?
- How effective is the use of the proposed model in attempting to explain and predict customers' adoption behaviour in Business to Consumer (B2C) E-commerce?

3. Why have I been invited to participate?

You have been invited as a potential participant because you fall within the inclusion criteria of age 18 years and above, a resident of Nigeria (particularly Abuja, Lagos, Ibadan and Port Harcourt) who have used and could be interested in adopting Ecommerce e.g. online shopping, your view on Ecommerce adoption would be useful to this research. This study hopes to recruit about 400 other participants.

4. Do I have to take part?

No. It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep. You can withdraw at any time by informing

the investigators without giving a reason and without it affecting your rights/any future treatment/service you receive.

5. What will happen to me if I take part?

Answering the questionnaire will take approximately 10-15 minutes - The previously validated questionnaire consists of three main sections which are demographic, internal factors and external factors. The research tool (questionnaire) is designed to measure the key factors that may influence e-commerce adoption in the context of Nigeria using a five-point Likert scale's degree of agreement. It is up to you to decide whether or not to take part. You are free to withdraw at any time and without giving a reason. A decision to withdraw will not affect your rights. The participation is anonymous, and no names will be used in the study itself or in any further publications. Once the anonymous online questionnaire has been submitted, you will be automatically directed to a page that provides information about participating in an interview with the investigator - if you would like to be interviewed, you should then submit your contact details.

6. Are there any possible disadvantages or risks from taking part?

No, there are no risks for you due to your participation. The gained data will be used strictly for academic purposes.

7. What are the possible benefits of taking part?

Participants have the opportunity to receive a summary of the results once study is completed. However, whilst will be no direct benefits to you for taking part in the study, but it is hoped that this work will make a practical contribution by providing academics, researchers, policy makers, online retailers and companies, with information and guidance on factors that influence Ecommerce adoption and how customers respond to them.

8. What will happen to the data provided and how will my taking part in this project be kept confidential?

The information you provide as part of the study is the study data. Any study data from which you can be identified (e.g., from identifiers such as your name, date of birth, audio recording etc.), is known as personal data. This includes more sensitive categories of personal data (sensitive data) such as your race; ethnic origin; politics; religion; trade union membership; genetics; biometrics (where used for ID purposes); health; sex life; or sexual orientation.

9. What will happen to the results of the study?

The investigator intends to publish the results in a PhD thesis / journal article

10. Who is organising and funding/commissioning the study?

This study is organised by Liverpool John Moores University

11. Who has reviewed this study?

This study has been reviewed by, and received ethics clearance through, the Liverpool John Moores University Research Ethics Committee (Reference number: **20LBS008**)

12. What if something goes wrong?

If you have a concern about any aspect of this study, please contact the relevant investigator who will do their best to answer your query. The investigator should acknowledge your concern within 10 working days and give you an indication of how they intend to deal with it. If you wish to make a complaint, please contact the chair of the Liverpool John Moores University Research Ethics Committee

(researchethics@ljmu.ac.uk) and your communication will be re-directed to an independent person as appropriate.

13. Data Protection Notice

Liverpool John Moores University is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study *[If LJMU is not the sole Data Controller this will need to be revised and the other data controller added. An explanation provided in the ethics application]*. This means that we are responsible for looking after your information and using it properly. Liverpool John Moores University will process your personal data for the purpose of research. Research is a task that we perform in the public interest. Liverpool John Moores University will keep identifiable information about you for 5 years after the study has finished.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the study to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.

You can find out more about how we use your information at URL and/or by contacting secretariat@ljmu.ac.uk.

If you are concerned about how your personal data is being processed, please contact LJMU in the first instance at secretariat@ljmu.ac.uk. If you remain unsatisfied, you may wish to contact the Information Commissioner's Office (ICO). Contact details, and details of data subject rights, are available on the ICO website at: <https://ico.org.uk/for-organisations/data-protection-reform/overview-of-the-gdpr/individuals-rights/>

14. Contact for further information

Bukola Fatokun
Doctoral Researcher
Liverpool Business School
Redmond's Building,
Brownlow Hill,
Liverpool,
L3 5UG
Email: B.O.Fatokun@2017.ljmu.ac.uk

Contact Details of Academic Supervisor: Dr. Muhammad Nawaz
Liverpool Business School
Email: M.K.Nawaz@ljmu.ac.uk

Thank you for reading this information sheet and for considering to take part in this study.

Note: A copy of the participant information sheet should be retained by the participant with a copy of the signed consent form.

Appendix C: Source of Adopted Instrument (Questionnaire)

Sections	Factors	Scale Reference	Scale Type
Part One E-commerce usage	Usage	The researcher	2-point multiple choice
Part Two Demography of respondents	Gender	The researcher	2-point multiple choice
	Age	The researcher	6-point multiple choice
	Education	The researcher	6-point multiple choice
	Occupation	The researcher	6-point multiple choice
	City	The researcher	4-point multiple choice
Part Three Sections 1: Internal factor Section 2: External environmental factors	Website quality	Wolfenbarger and Gilly (2003); Kim, Yang and Kim (2013); Kim and Lennon (2013)	5-point Likert Scale (8 items)
	Reputation	Kim and Lennon (2013); Lee and Turban, (2001), Rose et al. (2012)	5-point Likert scale (7 items)
	Cultural factor	Ansari (2018)	5-point Likert scale (5 items)
	Legal factor	Molla and Licker (2005)	5-point Likert scale (5 items)
	Technology infrastructure	Zhu, Kraemer and Xu (2003); Li, Chung and Fiore (2017)	5-point Likert scale (5 items)
Section 3 Affective responses	Positive and negative emotions	Izard (1977); Andreu et al. (2006); Eithar (2006); Kim and Lennon (2013); Jang and Namkung (2009)	8 basic emotion descriptors (Multiple choice)
Section 4 Technology acceptance factors	Perceived usefulness	Davis (1989); Teo (2002); Lai (2016)	5-point Likert scale (6 items)
	Perceived ease of use	Davis (1989); Gefen (2003); Lai (2016)	5-point Likert scale (5 items)
Section 5 Individual related factors	E-commerce awareness	Molla and Licker (2005); Novak, Hoffman, and Yung (2000); Rose et al. (2012)	5-point Likert scale (7 items)
	Compatibility	Chen, Gillenson and Sherrell (2002)	5-point Likert scale (6 items)
Section 6 Dependent Variable	Purchase intention	Kim and Lennon (2013)	5-point Likert scale (4 items)

Appendix D: Definitions of Constructs

Key Terms	Descriptions or definitions adapted for the present research
TAM Constructs	
Perceived usefulness	Belief that using the system enhances performance or productivity.
Perceived ease of use	Belief that using the system is free of effort.
SOR Constructs	
Stimulus	Factors or attributes that are external to human such as the website design, online firm's reputation.
Organism	The internal states elicited by an individual as a result of external stimuli.
Response	The final outcome in form of the approach/avoidance behaviours.
Affective Variable	
Emotion	It refers to a feeling state with an identified cause or target, can be expressed verbally or nonverbally (Fineman, 2003) and can influence behavior (Russell, 2003)
Internal Factors (IF)	
Website quality /e-tailQ	Internal evaluative criteria of an online company relating to their websites and its dimensions.
External Factors (EF)	
Reputation (<i>EF of online retailers</i>)	An external frame of reference of an online retailer which is an important antecedent of trust, and trust involves assuming risks and becoming vulnerable to trusted parties
<i>EF of Individual customers</i>	It is the degree to which the innovation fits with the customers' existing values, beliefs, past experiences and current needs.
a. Compatibility	
b. Awareness/skills	It refers to raising and promoting the EC benefits and advantage and the competence to obtain more value from shopping (Forsythe et al., 2006)
EF (environmental)	It involves the judicial institutions (Lawrence and Usman, 2011) e.g. regulatory interventions on data protection, e-commerce transactions and customers' rights.
a. Legal	
b. Culture	National culture is defined as shared values, beliefs and assumptions learned in early childhood; the collective programming of the mind that distinguishes one group of people from another (Newman and Nollen, 1996 ; Hofstede, 2001)
c. IT Infrastructure	IT infrastructure relates to communication networks and the extent to which applications and data are accessible, shareable and retrievable by an organization (Jorfi, Nor, Najjar 2011), or customers
Perceived risk	The consumer's subjective belief of suffering a loss in pursuit of a desired outcome (Bauer,1960 in Pavlou, 2003)
Purchase intention (Dependent variable)	Predisposition of a person to take any initiative to buy before making the actual decision of purchasing online (Koo and Ju, 2010)

Appendix E: The Interview Information Sheet



INTERVIEW PARTICIPANT INFORMATION SHEET

Title of Research: Customers' affective responses towards the key factors influencing E-commerce adoption: An Extended Technology Acceptance Model (TAM) Approach

Name of Researcher: Bukola Fatokun

Dear Sir

You are invited to take part in the above research study. Before you decide to participate, it is important that you understand why the research is being done and what it involves. Please take time to read the following information. Should you need more information, please do not hesitate to contact me.

What is the purpose of the research?

It is hoped that the findings of this research will help the ecommerce industries in Nigeria by providing recommendations in terms of improving the future marketing and information technology strategies, which will enhance the potential success of E-commerce adoption in the country.

Do I have to take part?

Your participation in this study is **entirely voluntary** so it is up to you to decide whether to take part or not. If you do wish to participate you will be given this information sheet. You are still free to withdraw at any time and without giving a reason. You may withdraw your participation at any time during the study that will not affect your rights.

What will happen to me if I take part?

Your participation in the study would involve taking part in a face-to-face interview conducted by the researcher, which will include questions relating to the internal and external environmental factors that impact on the students' Entrepreneurial Intentions. The interview will be audio recorded (with your consent) and will take place at a time and place convenient

to yourself. The data you provided would serve as the primary source of data. The interview would last approximately an hour.

Use and publication of the results

The data collected will be solely for the research/academic purposes. The main outcome of this research is a PhD Thesis. It is also expected that part of the thesis will be published in academic management journals. It is also part of the creation of academic knowledge, to present and discuss the outcome of the research in academic seminars and conferences. You will be advised where to access the full thesis and published or conference papers. You will also be offered the opportunity to receive a summary of the results.

Are there any risks/benefits involved?

There are no known or expected risks associated with the participation of the research study. The information obtained by the interview or the questionnaire will only be used in connection with the academic research. There is no organisational or individual payment for participation in the research study.

Will my taking part in the study be kept confidential?

Yes, all information will be handled in confidence and treated anonymously. All published and unpublished reports will disguise the identities of the respondents. Data collected will be held securely and confidentially and will not be passed to any third-party.

The interview data will be transferred from the recording device onto secure LJMU servers at the earliest convenience, after which the data will be deleted from the recording device. The data collected will only be used for the academic research purpose and will be stored on the university's password-protected computers and the hard copies received will be kept in locked cabinets at Liverpool John Moore University, UK. The access to these computers is only given to the researcher. The data will be stored for the purpose of this study for 5 years only and thereafter the data will be destroyed.

Contact details:

Name: Bukola Fatokun

Postgraduate Researcher at Liverpool John Moores University

Email: B.O.Fatokun@2017.ljmu.ac.uk

Contact Details of Academic Supervisor: Dr Muhammad Nawaz

Liverpool Business School

Email: M.K.Nawaz@ljmu.ac.uk

Thank you for reading this information sheet and for considering to take part in this study

Appendix F: Interview Participant's Consent Form



LIVERPOOL JOHN MOORES UNIVERSITY CONSENT FORM

Title of the Research: Customers' affective responses towards the key factors influencing E-commerce adoption: An Extended Technology Acceptance Model (TAM) Approach

Name of Researcher: Bukola Fatokun

Nam of school/Faculty: Liverpool Business School

1. I confirm that I have read and understand the information provided for the above study and I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and that this will not affect my legal rights.
3. I understand that any personal information collected during the study will be anonymised and remain confidential.
4. I agree to take part in the above study (*interview*).
5. I understand that the interview will be audio recorded and I am happy to proceed.
6. I understand that parts of our conversation may be used verbatim in future publications or presentations but that such quotes will be anonymised.

Name of Participant: _____ Date _____ Signature _____

Name of Researcher: Bukola Fatokun _____ Date _____ Signature _____

Name of Person taking consent _____ Date _____ Signature _____
(if different from researcher)

Appendix G: The Interview Guide (Themes and Questions)

Demographic Information

Gender _____

Age _____

Education _____

Occupation _____

City _____

Day/date _____

Start time _____ End time _____

Email (optional) _____ Contact number (optional) _____

To record: Yes No

Interview will be open-ended and interesting ideas will be pursued as they emerge.

A. Interviewees' perceptions on Ecommerce Usage and Background

1. Do you use ecommerce (EC), for example to shop online? if yes, why? If no, why not?
2. How do you see e-commerce in developing country like Nigeria? In your opinion, what Ecommerce adoption stage do you think Nigeria is presently?
3. To what extent do you think the small and medium enterprises are incorporating online retailing into their organisational strategies?

*Do you think Nigerian populace are well aware of Ecommerce and its perceived usefulness

*In your views, what are the impact (s) of COVID 19 on EC adoption in Nigeria

B. Interviewees' perceptions about the critical technological acceptance factors, internal and external environmental factors influencing ecommerce adoption in Nigeria

4. In your opinion, what are the critical factors affecting e-commerce adoption in Nigeria?
5. Do you think shopping online is fun or a lot of effort?
6. Can you explain what other specific key factors may help influence EC adoption in your city?
7. Can you describe the specific major factors that you think may hinder EC adoption in your city?
8. How does IT infrastructure like telecommunication (e.g., internet access, internet connection, internet speed, electricity power stability) influence EC adoption?
9. Apart from price, how does cultural differences influence e-commerce adoption or its avoidance?
10. To what extent is EC compatible with your lifestyle, values, occupation and needs?
11. Do you believe the government support can influence EC adoption? Do you think data protection regulation is needed to motivate people to adopt EC?

C. Interviewees' perceptions about Customers affective responses

12. To what extent are customers' responses important to ecommerce adoption?
13. What are the **initial reaction/response** that captures the **overall feeling** you have about online shopping experience and why you felt that way?
 - a. Which products/services offering would make you **happy** to shop online?
 - b. Are there any specific services that make it **frustrating** for you to shopping online?

- c. Can you describe an online experience you recently had that was **satisfying**?
- d. What do you think can make you **annoyed** when shopping online?
- e. To what extent are you **interested** shopping online? What make it interesting to shop online?
- f. What makes it **scary** to shop online?
- g. What makes it **worrisome** to shop online?
- h. Why do you **like/dislike** shopping online?

D. Interviewees' perceptions about website quality and customer service

- 14. Of the websites you have visited so far, which one (s) do you like the most? What was it you like about this site and why?
- 15. Of the websites you have visited so far, which one (s) do you like the least? What was it you dislike about this website and why?
- 16. a. Are there specific types of website features that will motivate you to shop online?
b. Are there specific types of website features that will discourage you to shop online?
- 17. What do you think about the quality and overall value of the products of online shopping?
- 18. Do you have any concerns about online customer service? Does it depend on the online retailer? How do you think these services can be improved?
- 19. What kind of customer service do you think you might experience from online companies?

E. Interviewees' perceptions about both their current and future purchase intention

- 22. Do you have the intention to shopping online in the near future if you have not been currently doing so?
- 23. Do you think you will continue to use online shopping and why?
- 24. In general, what are the reasons why you might purchase goods and services online?
- 25. In general, what are the reasons why you might not purchase goods and services online?

F. Interviewees' explanations on key quantitative findings

- 26 a. Compared to ease of use, e-commerce usefulness is a factor that influences customers' intention to purchase. In your opinion, why?
- b. Reputation of online retailers is the only factor that has a strong significant relationship with both positive and negative customers' emotional response, why do you think this is the case?
- c. Why do you think customers intention to purchase online is influenced by their positive emotions such as how happy, interested and satisfied they are? Why do you think positive emotions are significant to purchase intention and negative emotions are not?
- d. Do you think men's and women's emotional responses to e-commerce are somewhat different?
- f. What do you think about younger generation against older generation with respect to EC adoption?

G. Additional comments and recommendations

- 27. Are there other additional comments, other major factors (drivers/barriers) you would like to bring forward?
- 28. Do you have any suggestions or recommendations for E-commerce adoption and customers' affective responses to them?

Appendix H: First Communalities Results Before Rerunning EFA

Communalities		
Factors	Initial	Extraction
COMP1	1.000	.752
COMP2	1.000	.844
COMP3	1.000	.808
COMP4	1.000	.799
COMP5	1.000	.755
COMP6	1.000	.720
ECA1	1.000	.665
ECA2	1.000	.750
ECA3	1.000	.712
ECA4	1.000	.639
ECA5	1.000	.610
ECA6	1.000	.615
REP3	1.000	.694
REP4	1.000	.739
REP5	1.000	.710
REP6	1.000	.729
REP7	1.000	.783
ITF1	1.000	.629
ITF2	1.000	.497
ITF3	1.000	.831
ITF4	1.000	.819
ITF5	1.000	.616
LGF1	1.000	.805
LGF2	1.000	.763
LGF4	1.000	.732
LGF5	1.000	.635
Angry	1.000	.653
Worried	1.000	.771
Frustrated	1.000	.772
Scared	1.000	.693
PIT1	1.000	.696
PIT2	1.000	.731
PIT3	1.000	.706
PIT4	1.000	.699
PU2	1.000	.650
PU3	1.000	.742
PU4	1.000	.574
PU5	1.000	.659
Happy	1.000	.779
Interested	1.000	.747
Satisfied	1.000	.700
Like	1.000	.718
EtailQual2	1.000	.643
EtailQual3	1.000	.688
EtailQual4	1.000	.666
PEOU1	1.000	.657
PEOU4	1.000	.724
PEOU5	1.000	.649
Extraction Method: Principal Component analysis.		

Appendix I: The Total Variance Explained

Component	Total Variance Explained						Rotation Sums of Squared Loadings ^a
	Initial Eigenvalues			Extraction Sums of Squared Loadings			
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	
1	13.765	29.925	29.925	13.765	29.925	29.925	9.859
2	4.182	9.092	39.017	4.182	9.092	39.017	7.919
3	2.591	5.633	44.649	2.591	5.633	44.649	7.783
4	2.351	5.111	49.760	2.351	5.111	49.760	4.773
5	1.992	4.330	54.091	1.992	4.330	54.091	4.831
6	1.740	3.782	57.873	1.740	3.782	57.873	4.567
7	1.604	3.486	61.359	1.604	3.486	61.359	7.243
8	1.507	3.276	64.635	1.507	3.276	64.635	8.207
9	1.286	2.796	67.430	1.286	2.796	67.430	6.138
10	1.107	2.407	69.838	1.107	2.407	69.838	4.573
11	1.005	2.185	72.023	1.005	2.185	72.023	5.704
12	.819	1.780	73.803				
13	.736	1.600	75.403				
14	.707	1.537	76.940				
15	.665	1.447	78.386				
16	.609	1.325	79.711				
17	.589	1.280	80.991				
18	.573	1.245	82.236				
19	.523	1.136	83.373				
20	.495	1.077	84.449				
21	.471	1.023	85.473				
22	.456	.991	86.464				
23	.441	.960	87.423				
24	.395	.859	88.282				
25	.372	.808	89.090				
26	.362	.787	89.877				
27	.357	.775	90.653				
28	.339	.738	91.390				
29	.324	.703	92.094				
30	.313	.680	92.773				
31	.304	.661	93.434				
32	.299	.650	94.084				
33	.267	.581	94.665				
34	.258	.561	95.227				
35	.251	.547	95.774				
36	.232	.505	96.279				
37	.219	.477	96.756				
38	.211	.459	97.214				
39	.196	.427	97.642				
40	.183	.397	98.039				
41	.178	.386	98.425				
42	.170	.370	98.795				
43	.149	.324	99.119				
44	.144	.314	99.432				
45	.133	.288	99.720				
46	.129	.280	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Appendix J: The Factors Loaded and their Items of Measurement

Factors/ Labels	Measurement Variables (items)	Factors	Measurement Variables
Compatibility (COMP)	COMP3 - EC compatibility with personal values COMP2 - EC compatibility with shopping needs COMP4 - EC compatibility with working patterns COMP5 - EC compatibility with shopping experiences COMP1 - EC compatibility with lifestyle COMP6 - EC compatibility with the way I like to shop	Purchase Intention (PIT)	PIT1 - will consider buying online PIT2 - will probably buy online PIT3 - will visit online to buy certain items in the future PIT4 - I intend to buy an item online
E-commerce Awareness (ECA)	ECA4 - EC Knowledgeability than most users ECA2 - Extremely skilled at internet shopping ECA3 - Aware of how to find when internet shopping ECA1 - Knowledgeable about good search techniques ECA6 - Understands the potential benefits of EC ECA5 - Recognition of EC opportunities and threats	Positive customers' emotional responses (CERP)	I felt... CERP1 - Interested shopping online CERP2 - Happy shopping online CERP3 - Satisfied shopping online CERP4 - I like shopping
Reputation (REP)	REP4 - Trust e-tailer's website for shopping REP3 - Nigerian websites have a good reputation REP6 - Rely on internet vendors to keep their promise REP7 - Internet shopping is a trustworthy experience REP5 - Internet shopping is reliable	Perceived Ease of Use (PEOU)	PEOU5 - Shopping online does not require much effort PEOU4 - Shopping websites are easy to use PEOU1 - Navigation is quick shopping online
Legal Factors (LGF)	LGF1 - Need for effective law to protect privacy LGF2 - Need for effective law to combat cyber crime LGF4 - Need for strong governmental commitment on EC LGF5 - Data protection law will motivate me to shop online	Website Quality (EtailQual)	EtailQual 3 - Willingness to respond to customer's needs EtailQual 4 - Inquiries are answered promptly EtailQual 2 - Sincere interest in solving customers' problem
IT Infrastructure (ITF)	ITF3 - Internet connection is stable enough ITF4 - Internet speed is fast enough ITF5 - Able to make online payment ITF1 - There is a reliable internet access	Perceived Usefulness (PU)	PU3 - Finding out what I want to know before purchase PU2 - Learning which products are suitable in comparison with other competitors' products PU5 - The convenience of EC
Negative customers' emotional responses (CERN)	I felt... CERN1 - Angry shopping online CERN2 - Worried shopping online CERN3 - Frustrated shopping online CERN4 - Scared shopping online	Cultural factors (CRF)	CLF1 - Information in my language is more important than price CLF2 - I prefer to visit a website in my own language CLF3 - I value shopping at the local markets than online CLF4 - My culture does not allow me to disclose my sensitive personal data online CLF5 - I prefer a face-to-face transaction to online shopping

Appendix K: Summary of the First Run of CFA

CMIN

Model	NPAR	CMIN	DF	PCMIN/DF
Default model	147	1758.888	934	.000
Saturated model	1081	.000	0	
Independence model	46	9723.606	1035	.000

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.046	.801	.770	.692
Saturated model	.000	1.000		
Independence model	.230	.191	.155	.183

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.819	.800	.906	.895	.905
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.902	.739	.817
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.053	.049	.057	.078
Independence model	.164	.161	.167	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	2052.888	2105.229	2603.109	2750.109
Saturated model	2162.000	2546.902	6208.186	7289.186
Independence model	9815.606	9831.985	9987.785	10033.785

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	6.601	6.233	6.994	6.769
Saturated model	6.952	6.952	6.952	8.189
Independence model	31.561	30.557	32.587	31.614

HOELTER

Model	HOELTER	HOELTER
	.05	.01
Default model	178	184
Independence model	36	37

Appendix L: Standardised Regression Weights

Factors			Estimate
COMP1	<---	COMP	.867
COMP5	<---	COMP	.836
COMP4	<---	COMP	.855
COMP2	<---	COMP	.885
COMP3	<---	COMP	.831
ECA1	<---	ECA	.810
ECA3	<---	ECA	.834
ECA2	<---	ECA	.851
PU5	<---	PU	.715
PU2	<---	PU	.732
PU3	<---	PU	.738
CERNegative4	<---	CER_NEG	.769
CERNegative2	<---	CER_NEG	.804
CERNegative3	<---	CER_NEG	.817
PEOU1	<---	PEOU	.703
PEOU4	<---	PEOU	.800
EtailQual4	<---	ETAILQ	.737
EtailQual3	<---	ETAILQ	.717
CERPositive3	<---	CER_POS	.767
CERPositive1	<---	CER_POS	.878
CERPositive2	<---	CER_POS	.755
PIT3	<---	PIT	.777
PIT2	<---	PIT	.820
PIT1	<---	PIT	.735
ITF4	<---	ITF	.922
ITF3	<---	ITF	.888
REP5	<---	REP	.794
REP7	<---	REP	.856
REP4	<---	REP	.727
LGF4	<---	LGF	.824
LGF2	<---	LGF	.721
PIT4	<---	PIT	.766

Appendix M: SMC (Squared Multiple Correlations)

Factors	Estimate
LGF2	.520
LGF4	.680
REP4	.529
REP7	.733
REP5	.631
ITF3	.789
ITF4	.850
PIT1	.540
PIT2	.673
PIT3	.604
PIT4	.587
CERPositive2	.570
CERPositive1	.771
CERPositive3	.589
EtailQual3	.514
EtailQual4	.544
PEOU4	.639
PEOU1	.495
CERNegative3	.668
CERNegative2	.647
CERNegative4	.591
PU3	.544
PU2	.535
PU5	.511
ECA2	.725
ECA3	.695
ECA1	.655
COMP3	.690
COMP2	.784
COMP4	.730
COMP5	.698
COMP1	.752

Appendix N: Modification Indices Values

Error Covariances	M.I.	Par Change	Error Covariances	M.I.	Par Change
e51 <--> e52	17.634	.054	e19 <--> e20	17.619	-.137
e50 <--> e52	12.654	-.060	e17 <--> e24	7.154	-.063
e49 <--> e51	25.282	-.098	e17 <--> e18	6.968	.053
e49 <--> e50	85.383	.216	e13 <--> e48	8.095	.064
e47 <--> e48	19.509	.088	e12 <--> e48	6.684	-.047
e45 <--> e46	9.831	.046	e12 <--> e30	7.393	-.054
e44 <--> e48	6.957	.048	e11 <--> e44	8.272	.045
e43 <--> e49	4.684	-.057	e10 <--> e45	7.123	.045
e38 <--> e49	9.034	.063	e10 <--> e32	8.057	.053
e34 <--> e45	8.066	-.047	e10 <--> e12	10.425	.054
e34 <--> e44	8.616	.051	e9 <--> e50	7.522	.048
e32 <--> e45	15.781	.075	e9 <--> e12	16.756	-.066
e31 <--> e32	15.001	-.078	e9 <--> e10	11.463	-.054
e29 <--> e43	7.528	.076	e8 <--> e49	9.407	.070
e28 <--> e47	9.896	.087	e8 <--> e12	11.274	-.060
e28 <--> e33	10.296	.069	e8 <--> e9	45.498	.113
e28 <--> e31	7.057	-.071	e5 <--> e6	8.385	.038
e21 <--> e41	10.462	-.118	e4 <--> e24	9.060	.056
e21 <--> e35	6.773	-.057	e3 <--> e41	8.679	-.085
e21 <--> e28	7.145	-.088	e3 <--> e31	8.176	-.056
e21 <--> e26	12.687	.102	e2 <--> e34	7.048	.043
e19 <--> e47	9.841	.076	e2 <--> e4	10.014	.048
e19 <--> e30	7.839	-.069	e2 <--> e3	10.189	-.056
e19 <--> e28	10.857	.103	e1 <--> e43	6.604	-.057
			e1 <--> e13	10.693	.075
			e1 <--> e3	14.554	.074
			e1 <--> e2	7.202	-.049

Appendix O: Table of Full Deletion For Model Modification

Items	Regression weights of MI > 6.63 with others	SMC < 0.5	Standard residual value (failed not more than ± 2.56)
COMP6	✓		
ECA4	✓	✓.451	
ECA5	✓	✓.443	
ECA6	✓	✓.431	✓
REP3	✓		
REP6	✓		
ITF1	✓	✓.411	✓
ITF5	✓	✓.495	✓
LG5	✓	✓.407	✓
LGF1	✓		
Angry CN1	✓	✓.480	
Like	✓		
EtailQual2	✓	✓.378	
PEOU5		✓.448	

Appendix P: Summary of the Second Run of CFA

CMIN

Model	NPAR	CMIN	DF	PCMIN/DF
Default model	124	592.574	404	.000
Saturated model	528	.000	0	
Independence model	32	5988.534	496	.000

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.030	.893	.861	.684
Saturated model	.000	1.000		
Independence model	.233	.240	.191	.225

Baseline Comparisons

Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Default model	.901	.879	.966	.958	.966
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.815	.734	.787
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

Standardized RMR = .0409

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.039	.032	.045	.998
Independence model	.189	.184	.193	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	840.574	870.013	1304.706	1428.706
Saturated model	1056.000	1181.353	3032.306	3560.306
Independence model	6052.534	6060.131	6172.310	6204.310

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	2.703	2.507	2.925	2.797
Saturated model	3.395	3.395	3.395	3.799
Independence model	19.462	18.671	20.273	19.486

HOELTER

Model	HOELTER	HOELTER
	.05	.01
Default model	238	249
Independence model	29	30

Appendix Q: Harman's Single Factor Result

Component	Total	Initial Eigenvalues		Total Variance Explained		
		% of Variance	Cumulative %	Extraction Total	Sums of Squared Loadings % of Variance	Cumulative %
1	10.276	32.113	32.113	10.276	32.113	32.113
2	2.872	8.975	41.088			
3	2.078	6.495	47.584			
4	1.754	5.481	53.065			
5	1.463	4.572	57.637			
6	1.370	4.282	61.919			
7	1.250	3.907	65.826			
8	1.198	3.743	69.569			
9	1.040	3.251	72.820			
10	.930	2.905	75.725			
11	.854	2.667	78.392			
12	.558	1.744	80.136			
13	.523	1.633	81.770			
14	.496	1.549	83.319			
15	.454	1.419	84.737			
16	.444	1.388	86.125			
17	.435	1.359	87.484			
18	.398	1.242	88.727			
19	.371	1.160	89.887			
20	.352	1.099	90.985			
21	.338	1.055	92.041			
22	.322	1.006	93.047			
23	.304	.949	93.997			
24	.288	.900	94.897			
25	.264	.824	95.721			
26	.241	.753	96.474			
27	.228	.714	97.188			
28	.212	.661	97.849			
29	.206	.644	98.493			
30	.177	.554	99.047			
31	.162	.506	99.553			
32	.143	.447	100.000			

Extraction Method: Principal Component Analysis.

Appendix R: Final standardised effects (direct, indirect, and total effects)

Model 1 with Customers' Positive Emotional Responses

Factor	Effect	ETAILQ	LGF	ITF	REP	ECA	COMP	PEOU	PU	PIT	CER_POS
PEOU	Direct	.323	.000	.000	.215	.168	.000	.000	.000	.000	.230
	Indirect	.048	.000	.000	.080	.000	.084	.000	.000	.000	.000
	Total	.371	.000	.000	.295	.168	.084	.000	.000	.000	.230
PU	Direct	.000	.000	.000	.000	.192	.253	.397	.000	.000	.000
	Indirect	.147	.000	.000	.117	.067	.033	.000	.000	.000	.091
	Total	.147	.000	.000	.117	.259	.286	.397	.000	.000	.091
PIT	Direct	.000	.213	.125	.000	.209	.000	.000	.328	.000	.154
	Indirect	.081	.000	.000	.092	.085	.150	.130	.000	.000	.030
	Total	.081	.213	.125	.092	.294	.150	.130	.328	.000	.184
CER_POS	Direct	.209	.000	.000	.347	.000	.364	.000	.000	.000	.000
	Indirect	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	Total	.209	.000	.000	.347	.000	.364	.000	.000	.000	.000

Factor	Effect	ETAILQ	LGF	ITF	REP	ECA	COMP	PEOU	PU	PIT	CER_NEG
PEOU	Direct	.365	.000	.000	.329	.212	.000	.000	.000	.000	.000
	Indirect	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	Total	.365	.000	.000	.329	.212	.000	.000	.000	.000	.000
PU	Direct	.000	.000	.000	.000	.189	.264	.387	.000	.000	.000
	Indirect	.141	.000	.000	.127	.082	.000	.000	.000	.000	.000
	Total	.141	.000	.000	.127	.275	.264	.387	.000	.000	.000
PIT	Direct	.000	.245	.121	.173	.197	.000	.000	.315	.000	.000
	Indirect	.045	.000	.000	.040	.086	.083	.122	.000	.000	.000
	Total	.045	.245	.121	.213	.263	.083	.122	.315	.000	.000
CER_NEG	Direct	.000	.000	.000	-.467	.000	.000	.000	.000	.000	.000
	Indirect	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	Total	.000	.000	.000	-.467	.000	.000	.000	.000	.000	.000

Model 2 with Customers' Negative Emotional Responses

Appendix S: Comparison of customers' positive and negative responses towards EC adoption factors (Fuller Version)

*Sm – similarities; df – differences; n/a – not applicable

Factors	Model 1 (with only Positive Emotions)	Model 2 (with only Negative Emotions)	Comments
Mediating effects between EC factors, customers emotions and purchase intention (PIT)			
Compatibility (COMP)	Supported mediation	Supported mediation	Mediating effects confirmed for both models : compatibility and EC awareness in a relationship with purchase intention (PIT) and customers' emotional responses (sm)
Ecommerce awareness (ECA)	Supported mediation	Supported mediation	
Significance of EC Factors with Purchase intention PIT - dependent variable (DV)			
Ecommerce awareness (ECA)	Significant with PIT	Significant with PIT	Both models supported the significance of ECA with PIT (sm)
Reputation (REP)	Not significant with PIT	Significant with PIT	Significant with model 2 only (df)
IT Infrastructure (ITF)	Significant with PIT	Significant with PIT	Both models supported the significance of ITF with PIT (sm)
Legal Factor (LGF)	Significant with PIT	Significant with PIT	Both models supported the significance of LGF with PIT (sm)
Positive responses (CERP)	Significant with PIT	N/a	Significant with model 1 only (df)
CERP with EtailQ, REP & COMP	Significance confirmed for the three factors	N/a	Significant with model 1 only (df)
Negative responses (CERN)	N/a	Not Significant with PIT	No significance (df)
CERN with REP	N/a	Significance confirmed for only 1 factors: REP	Significant with model 2 only (df)
Website Quality (EtailQual)	Not significant with PIT	Not significant with PIT	Neither supported significance of EtailQual with PIT (sm)
Significance of TAM (Technology Acceptance Variables - PU and PEOU) with PIT and other factors			
Perceived usefulness (PU)	Significant with PIT	Significant with PIT	Both models supported significance of ITF with PIT (sm)
PU with COMP, ECA & PEOU	Significance confirmed for the three factors	Significance confirmed for the three factors	Both models show significance of the three factors with PU (sm)
Perceived ease of use (PEOU)	Not Significant with PIT	Not Significant with PIT	Neither supported significance of ITF with PIT (sm)
PEOU with CERP, ECA, REP & EtailQual	Significance confirmed for the four factors	Significance confirmed for REP & EtailQual only	Model 2 did not support significance between PEOU and CERP and ECA (df)

Appendix T: Techniques and software package used

Techniques and software package used	Purposes of the Analysis Conducted
Cronbach's Alpha Test (SPSS 27)	To assess the reliability of individual scales and sub-scales (inter-item consistency reliability of the study's survey questionnaire)
Descriptive Statistics (SPSS 27)	To provide the summaries of the data set features in a simple form such as table, charts
Data Management (SPSS 27)	To assess the normality of the study's quantitative data set the extent to which the study's data reflect normal distribution To check skewed data, missing data and potential outliers in the study
Independent t-test (SPSS 27)	To compare the mean differences between groups for EC usage (yes, no) and gender group (male, female)
ANOVA (SPSS 27)	To compare the mean differences between more than two groups (age, occupation, education and location)
Exploratory Factor Analysis - EFA (SPSS 27)	To identify the underlying structure of the study's factors and their related observable variables To reduce the number of variables to a more manageable set To explain the variance in the observed variables and the underlying latent factors
Kaiser-Meyer-Olkin (KMO) and Bartlett's test of Sphericity (SPSS 27)	To test whether the sample size is adequate to correlate To ensure data set suitability for EFA To check the pattern of the relationships among the variables
Confirmatory Factor Analysis - CFA (AMOS 27)	To confirm the validity and reliability of the measures derived from EFA To validate the hypothesised theoretical constructs (or factors) To assess the goodness-of-fit of the measurement model
Structural Equation Modelling SEM (AMOS 27)	To evaluate the validity of the theories used with empirical data To test the causal structure of the different constructs in the research model To determine whether the hypothesised theoretical model is consistent with the study's data set
Thematic Analysis (NVivo Enterprise)	To analyse interview data (qualitative phase) e.g. sorting & filtering raw data To discover and build relationships among data, to assign & define themes To categorise & visualise data analysis results, clarify their meanings & create reports

Appendix U: Mean scores & other descriptive statistics of key EC factors

Descriptive Statistics					
1. Perceived Usefulness (PU)					
Items	N	Minimum	Maximum	Mean	Std. Deviation
PU1	312	1	5	3.83	.861
PU2	312	1	5	3.93	.816
PU3	312	1	5	4.05	.761
PU4	312	1	5	3.98	.865
PU5	312	1	5	4.09	.744
PU6	312	1	5	3.85	.803
2. Perceived Ease Of Use (PEOU)					
Items	N	Minimum	Maximum	Mean	Std. Deviation
PEOU1	312	1	5	3.47	.833
PEOU2	312	1	5	3.78	.825
PEOU3	312	1	5	3.40	.940
PEOU4	312	1	5	3.75	.762
PEOU5	312	1	5	3.82	.871
3. E-commerce Awareness (ECA)					
Items	N	Minimum	Maximum	Mean	Std. Deviation
ECA1	312	1	5	3.92	.820
ECA2	312	1	5	3.71	.897
ECA3	312	1	5	4.01	.763
ECA4	312	1	5	3.58	.890
ECA5	312	1	5	3.84	.735
ECA6	312	1	5	4.02	.666
ECA7	312	1	5	3.88	.747
4. Compatibility (COMP)					
Items	N	Minimum	Maximum	Mean	Std. Deviation
COMP1	312	1	5	3.60	.926
COMP2	312	1	5	3.57	.943
COMP3	312	1	5	3.49	.925
COMP4	312	1	5	3.66	.893
COMP5	312	1	5	3.48	.959
COMP6	312	1	5	3.67	.941
5. Website Quality (EtailQual)					
Items	N	Minimum	Maximum	Mean	Std. Deviation
EtailQual1	312	1	5	3.49	.856
EtailQual2	312	1	5	3.25	.935
EtailQual3	312	1	5	3.71	.783
EtailQual4	312	1	5	3.30	.914
EtailQual5	312	1	5	3.59	.968
EtailQual6	312	1	5	3.31	.984
EtailQual7	312	1	5	3.07	1.057
EtailQual8	312	1	5	3.21	1.012
6. Reputation					
Items	N	Minimum	Maximum	Mean	Std. Deviation
REP2	312	1	5	3.96	.801
REP3	312	1	5	3.25	.835
REP4	312	1	5	3.29	.833
REP5	312	1	5	3.40	.865
REP6	312	1	5	3.23	.863
REP7	312	1	5	3.32	.856

Descriptive Statistics					
7. IT Infrastructure (ITF)					
Items	N	Minimum	Maximum	Mean	Std. Deviation
ITF1	312	1	5	3.21	1.118
ITF2	312	1	5	2.21	1.147
ITF3	312	1	5	2.79	1.186
ITF4	312	1	5	2.91	1.160
ITF5	312	1	5	3.35	1.086
8. Legal Factor (LGF)					
Items	N	Minimum	Maximum	Mean	Std. Deviation
LGF1	312	1	5	4.39	.894
LGF2	312	1	5	4.49	.837
LGF3	312	1	5	3.28	1.175
LGF4	312	1	5	4.38	.809
LGF5	312	1	5	4.26	.881
9. Cultural Factor (CRF)					
Items	N	Minimum	Maximum	Mean	Std. Deviation
CRF1	312	1	5	2.70	1.040
CRF2	312	1	5	2.75	1.071
CRF3	312	1	5	2.88	1.018
CRF4	312	1	5	2.33	1.012
CRF5	312	1	5	2.98	1.053
10. Customers' Positive Emotions Responses (CERP)					
Items	N	Minimum	Maximum	Mean	Std. Deviation
Happy	312	1	5	3.66	.793
Interested	312	1	5	3.84	.771
Satisfied	312	1	5	3.45	.839
Like	312	1	5	3.70	.889
11. Customers' Negative Emotions Responses (CERN)					
Items	N	Minimum	Maximum	Mean	Std. Deviation
Angry	312	1	5	2.22	.901
Worried	312	1	5	2.72	1.061
Frustrated	312	1	5	2.40	.923
Scared	312	1	5	2.74	1.131
12. Purchase Intention					
Items	N	Minimum	Maximum	Mean	Std. Deviation
PIT1	312	1	5	3.85	.723
PIT2	312	1	5	3.99	.730
PIT3	312	1	5	3.96	.730
PIT4	312	1	5	4.00	.759
Valid N (listwise)	312				

The descriptive statistics of the 12 factors of EC adoption and customers' emotional responses with their respective measurement items.

Appendix V: Summary of interviewees' perceptions about the EC Factors

Factors	Summary of Interviewees' Perceptions
Perceived Usefulness (PU)	<ul style="list-style-type: none"> - Convenience, comfort, less stress, escaping the traffic congestion, no need to queue for making payment, no risk of being robbed, cashless transaction - Quick and easier, borderless service, saves time and money - Price comparison and variety of choices, opportunity to give review - Safety from the pandemic infection (no physical contact)
Legal Factor (LGF)	<ul style="list-style-type: none"> - Government needs to do more to support EC and protect people's privacy - Enforcement of data protection laws will motivate more people to shop online - Enabling environment for EC should be created - Return policies, complaint policies and related legal framework need to be implemented to boost customers' trust - More than 50% of consumers do not trust EC because of lack of government influence. The government stands as the intermediary between the sellers and the buyers
EC awareness (ECA)	<ul style="list-style-type: none"> - Low awareness is one of the critical factors affecting EC adoption in Nigeria - People need awareness and education on how to navigate the internet - Knowledge of EC grows from 0 to 8 out of 10 as a result of Covid 19 - Some are still in doubt
Reputation (REP)	<ul style="list-style-type: none"> - Reputation is a big and significant factor characterised by branding and trust issues, deception and product quality - Online retailers' reputation is on the average - Good reputation can boost customer's confidence - It affects emotional responses from customers and their impression of retailer - It is linked to doing things right
Positive Customer Emotional Responses (CERP)	<ul style="list-style-type: none"> - Products of good quality, getting refunded, helpful reviews and word of mouth, availability of needed products, timely delivery, and met expectations - Trusted online retailers' reputation - Customers' engagement - special occasion personalised calls to show that online vendors care about them not only about their money - EC usefulness. promo. discount and sales
Information Technology Infrastructure (ITF)	<ul style="list-style-type: none"> - Internet access is not readily available everywhere - Quality of internet connectivity matters - Unstable network connection and slow speed - Tele density varies based on location - Unreliable electricity power supply still prevalent - Lack of necessary digital devices
Negative Customer Emotional Responses (CERN)	<ul style="list-style-type: none"> - Uncertainty of delivery, fear of scams, loss of money, poor product quality - False product information and wrong product delivery - Lack of data protection regulation, government not supporting the ongoing EC initiatives, dollar spending cap - No response to e-mails, poor customer service, unsolicited call - Unreliable internet connection, declined card payment for no reason
Website quality (ETAILQ)	<ul style="list-style-type: none"> - Poor look and feel of website, unfriendly user interface, excessive website pop-ups, scanty and/or incorrect product information, bad font and graphics - Not backed by research and development (R&D), little attention to branding
Compatibility (COMP)	<ul style="list-style-type: none"> - Compatibility with work, lifestyle, needs and education - Helpful for profession, as it is easy and quicker to use - Can do without it
Perceived Ease of Use (PEOU)	<ul style="list-style-type: none"> - Easy website navigation, easier to buy online - Could be fun, all things being equal. Should be fun, but in some places it is not, owing to network fluctuation and expensive data costs