

**Factors Affecting Consumer Online Shopping Behaviour and
Purchase Frequency Among University Students in Southwest,
Nigeria**

Timothy T. Oke

SRM Institute of Science and Technology

Professor's Name: Dr T Ramachandran

Institution: SRM Institute of Science and Technology

Location of Institution: Kattankulathur, Chennai

Factors affecting Consumer Online Shopping Behaviour and Purchase frequency among University students in Southwest, Nigeria

Abstract

Online shopping has continued to grow in Nigeria in the last decade due to a sleuth of factors chief among which is the access to internet. This study was therefore carried out to investigate the factors that influence online consumer shopping platform in Nigeria. Data for the study were collected using self-constructed structured questionnaire administered to 260 University students. Simple percentages, mean, standard deviation, and double hurdle regression model. Data collected were analyzed using SPSS version 20 and STATA version 12.0. Results of analysis showed that about 45 percent of respondents adopted online purchasing medium using the local platform of Jumia and Kongawhile the mean number of time purchased per month was 3 ± 2.45 . Consumers' adoption of online purchasing medium was negatively influenced by age and perceived misuse of information provided online, perceived financial risk and perceived production risk while adoption decision is enhanced by year of education and online literacy. Intensity of adoption was positively influenced by year of education, perceived convenience, online literacy and amount spent on subscription and negatively by financial risk and perceived misuse of information provided online. The study concludes that socio-demographic factors, risk factors, web-based factors and privacy concern factors significantly influenced adoption and intensity of online purchasing medium.

Keywords: Determinants, platforms, intensity, online purchasing, double hurdle.

Introduction

The continuous evolution of human shopping experience from the brick and mortar stores and stalls to the virtual stores has shown the increased variation in shopping experience of individual shoppers. The experience of online shopping is being recorded to be a method or alternative that consumers have described to be time-saving, easy to conduct, convenient among other uses. Among these aforementioned benefits of online shopping, convenience appears to be the main attraction. In effect, e-commerce has literally brought ease, and innovation to all and sundry.

There seems not to be any products that is being accessed by consumers from a typical online store that ranges from electronic products, toys, books to insurance policy among a plethora of others. Furthermore, Lee et al., (2022) stated that the geometric increase in online sale can be ascribed to the edge that internet has in providing huge volume instantaneous information cheaply. Electronic commerce possesses the potential of increasing the size and speed of any economy if properly wielded (Wieye, 2017)

The quick progress of human life especially as it concerns internet shopping has made most businesses make their products and services available online, leading them to achieve competitiveness advantage in the physical market. This has led to the various companies attempting to out-perform each other in trying to meet their customers needs with various promotional incentives. However, it is imperative to note that some customers remain wary due to concerns that borders on privacy and security of their online identity and online transactions.

A number of factors have weighed on e-commerce in Nigeria; poor internet services are key; crisis of confidence in online transactions; poor infrastructure, especially road networks and electricity. This has made transaction costs extremely high (Hahn, 2017). It is due to the foregoing that we do not understand the factors that influence students shopping behaviour in Southwest, Nigeria. Therefore; this study aims to determine the factors that influence the choice of the online platforms of online shopping experience of University students in Southwest, Nigeria.

Literature Review

Consumer shopping behaviour involves the study of individuals and the method they employ to choose; utilize; and set out products and services to fulfil their wants and the effect that these methods have on the consumer and the society as a whole. Consumer shopping behaviour refers to all the thought; feelings and actions that an individual has or takes before or while buying any product; service or idea (Khaniwale, 2015). Shopping behaviour is the concept which answers what; why; how; when; and where an individual makes purchases. As a result; the outcome of shopping behaviour is the shopper's decision. The entire purchasing process involves giving a thought on what should be bought; which brand is good or suitable; from where or whom should the purchase be made; when to purchase; how much to spend; and how many time to buy and in what intervals. Consequently; the end result of the shopping behaviour is the customer's final decision regarding the product choice; brand choice; dealer choice; purchase timing; purchase amount and purchase frequency. Consumer shopping behaviour is a confluence of at least three streams of social science; i.e.; individual psychology; social psychology and cultural anthropology (Ramachander, 2013).

Consumer patronage is the approval or support provided by customers with respect to a particular brand. Patronage delivers the foundation for an established and growing market share. According to Balabanis, Diamantopoulos, Mueller and Melewar (2013), patronage is a strong feeling of attachment and loyalty to one's own country without corresponding hostility towards other nations. Consumer patriotism affects attitudes about products and purchase intentions (Kaynak and Kara, 2012, Luque-Martinez, 2015). According to Paswan (2016); patronage behaviour can be described in several ways; loyalty intention; amount of money spent; repeat purchase; number of visits; satisfaction level; duration taken; time and quantity of goods bought. Retailers benefit by understanding the various factors that influence consumer patronage behaviour by getting more sales; repeat purchase and customer loyalty. Sirgy and Grewal (2014) suggested that consumer patronage behaviour can be influenced by location; atmosphere; merchandise; price; and promotional factors.

Ainslie and Rossi (2017) define purchase frequency as the average number of purchases per week and show that a store's more frequent customers show the greatest awareness of its marketing practices. As a result; these customers are more price-sensitive and also show more preference for domestic brands than less frequent shoppers. Purchase Frequency is a metric which computes how many times a consumer makes a purchase within a given time and calculates the average number of purchases (McEachern, 2015). The purchase frequency is defined by Kim and Rossi (2014) as the level of repetition of the purchase situation at a specified time. Purchase frequency is the average number of times a customer buys from a store during a given period and a good indicator of the sustainability of a business and the effectiveness of its retention marketing. Purchase frequency is the number of times a customer buys from an e-shop in a given period (Chen and Su, 2013). Frequency of purchase is defined as the behaviour that consumers project in searching for; using; purchasing; evaluating; and disposing of products and services that they assume will satisfy their needs (Pelau, 2011). Frequency of purchase is the preference of consumer to buy the product or service (Sohail, Faizza and Anas, 2015). Shafiq, Raza and Zia (2011), defines frequency of purchase as a consumer purchase of a product after evaluation. Consumers' purchase decision is very complex as purchasing intention is related to consumers' behaviour; perception and attitude (Peter and Olson, 2008).

Methodology

Data and Estimation Method

The population for this study consists of internet users in public secondary schools in Ondo State, Nigeria. Data were collected from randomly selected 260 students using structured questionnaire. Data were collected on socio-demographic information, risk related factors, privacy concern, web-based information, etc. Data collected were estimated using double hurdle regression model called the Cragg model, proposed by Cragg (1971) and descriptive statistics.

Specification of model

The Double Hurdle Regression model (DHRM) was employed to analyse consumers' decision to adopt online purchasing medium and intensity of use, with the assumption that adoption decision and intensity of use may not necessarily be made jointly. In DHRM, a probit regression on adoption (using all observations) is followed by a truncated regression on the non-zero observation (Cragg, 1971). It is a 2-stage regression model that combined probit model and truncated regression model.

DHRM is a parametric generalisation of the Tobit model, which introduced an additional hurdle, which must be passed for positive observations to be observed. DHRM implies that consumers must scale two hurdles in order to adopt online purchasing medium. There is possibility that we have consumers who do not adopt online purchasing medium, and hence fall at the first hurdle, and others who pass the first hurdle (Bekele and Mekonnen, 2010). The model's underlying assumption is that consumers make two decisions with regard to their online purchasing (Bekele and Mekonnen, 2010). Their first decision is whether or not they adopt online purchasing medium, while their second decision is the intensity of adoption, subject to the first decision.

The double- hurdle model contains two equations (adoption equation and equation on intensity (level) (Moffatt, 2003, Bekele and Mekonnen, 2010).

$$\begin{aligned}
 d_i^* &= z_i \alpha + \epsilon_i \\
 y_i^{**} &= x_i \beta + \mu_i \quad ; i = 1, 2, \dots, n
 \end{aligned}
 \tag{1}$$

The general model can be shown algebraically as

$$I = \beta_0 + (\text{Socio-demographic}) \beta_1 + (\text{Risk factors}) \beta_2 + (\text{Web-based factors}) \beta_3 + (\text{Privacy concern factors}) \beta_4 + \epsilon_i$$

Where

d^* = latent adoption variable that takes the value 1 if consumer adopted online purchasing medium, and 0 otherwise.

z_i = vector of explanatory variables.

y^{**} = intensity of adoption

x_i = vector of explanatory variables and

β = vector of parameters.

The two error terms (ϵ_i and μ_i) in equation (1) are assumed to be normally and independently distributed. The first hurdle is thus represented by:

$$\begin{aligned} d_i &= 1 \text{ if } d_i^* > 0 \\ d_i &= 0 \text{ if } d_i^* \leq 0 \end{aligned} \tag{2}$$

The second hurdle is given by:

$$y_i^* = \max(y_i^{**}, 0):$$

and the observed variable y_i is finally determined by equation below

$$y_i = d_i y_i^* \tag{3}$$

The log-likelihood function for the double hurdle model is:

$$\text{Log L} = \sum_u \ln \left[1 - \Phi(z_i^1 \alpha) \Phi\left(\frac{x_i \beta}{\sigma}\right) \right] + \sum_+ \ln \left[\Phi(z_i^1 \alpha) \frac{1}{\sigma} \phi\left(\frac{y_i - x_i \beta}{\sigma}\right) \right] \tag{4}$$

According to Cragg (1971), the decision on adoption can be modelled as a probit regression;

$$f(y = 1/X_1 X_2) = C(X_1 \beta) \tag{5}$$

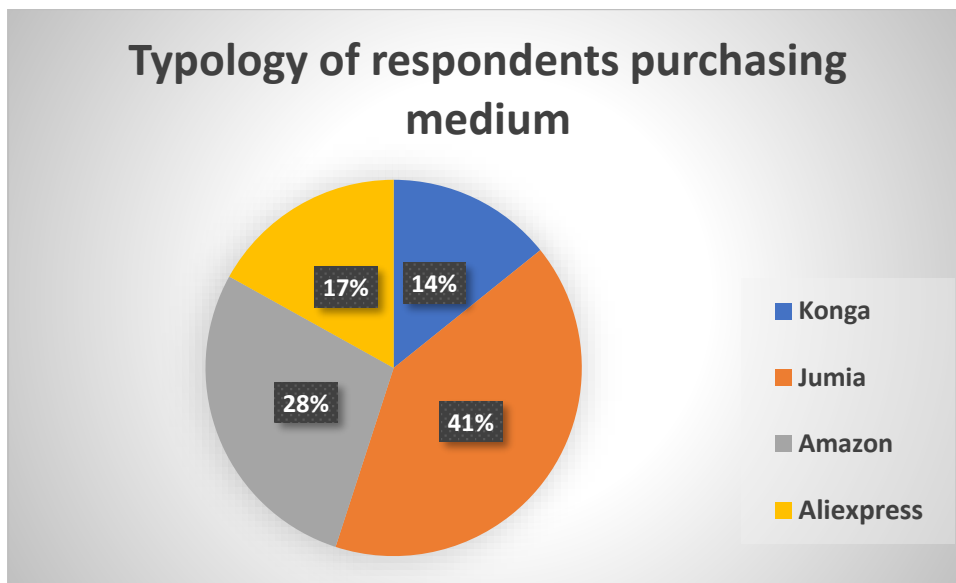
Where $C(\cdot)$ is the normal cumulative distribution function, and X_1 and X_2 are vectors of independent variables, not necessarily distinct.

The decision on the intensity can be modelled as a regression truncated at zero:

$$f(y / X_1 X_2) = (2\pi)^{-1/2} \sigma^{-1} \exp\left\{-\frac{(y - X_2^1 Y)^2}{2\sigma^2}\right\} \times \frac{C(X_1 \beta)}{C(X_2^1 Y / \sigma)} \tag{6}$$

RESULTS AND DISCUSSION

Results on the choice of the use of specific online purchasing medium shows that 14 percent of the respondents preferred konga, while 41 percent chose Jumia, and 28 and 17 percent preferred Amazon and Aliexpress respectively. (Fig. 1). This implies that the adoption of online purchasing medium among university students in the study area preferred the local platforms (55 percent) as against 45 percent for the foreign platforms.



Summary Statistics of Variables Used

Table 1 shows the summary statistics for the data. There are more females (51%) respondents in the study area and the mean age of respondents was recorded at 25 ± 13.3 years (Table 1). The mean year of formal education was 7.3 ± 5.61 years while the mean monthly income was $\text{N}60,020 \pm 40,470$. Moreover, the analysis further showed that about 51 percent of respondents engaged in other means of livelihood. The mean year of online shopping experience was 7.8 ± 5.62 years. This implies that the respondents are relatively well experienced.

Web-based factors constitute another factor of importance in the adoption of online purchasing medium. Summary statistics table (also Table 1) showed that 33 percent of the respondents had online literacy. The low proportion of respondents who had online literacy could be responsible for non-adoption of online purchasing medium in the study area.

The mean year of use of internet among respondents was 10.5 ± 6.12 years. The implication of this is that the respondents had spent a decade using the internet. Almost all respondents (95%) owned browsing device. The mean amount spent on data subscription monthly among respondents was $1,400 \pm 460$ (also Table 1). The length of use of internet, ownership of browsing device and amount spent on data subscription monthly does not translate to adoption of online purchasing medium in the area.

Privacy concern factors are another set of variables of importance in the adoption of online purchasing medium. The summary statistics (also table 1) showed that just 45 percent of respondents perceived that information supplied online is secret while majority (52%) perceived that information supplied is misuse online. The low proportion of respondents who perceived secrecy of information supplied online and the high proportion of them who perceived that the information supplied is misuse might be the reason for the low adoption of online purchasing medium in the study area.

Table 1: Summary statistics of variables used in the estimation of the decisions to adopt and intensity of adoption of online purchasing medium

Variables	Description	Mean	SD
Socio-demographic			
SEX	Sex of Respondents (1 = Male, 0 otherwise)	0.49	0.41
AGE	Age of respondents in years	25	13.3
YEAREDU	Number of years of formal education	7.3	5.61
MONTHINCOME	Monthly income (₦)	60,020	40,470.1
OFFINCOME	Off-schooling work (1 if participate in off-schooling work, 0 otherwise)	0.51	0.35
EXPERIENCE	Online shopping experience	7.8	5.62
TIMEPRCHSE	Number of times of monthly online shopping is done	3	2.45
Risk factors			
PERCFINRISK	Perception on financial risk (1 if financial risk is perceived, 0 otherwise)	0.71	0.61
PERCPRODRISK	Perception on product risk (1 if product risk is	0.69	0.51

	perceived, 0 otherwise)		
PERCCONV	Perception on convenience (1 if convenience is perceived, 0 otherwise)	0.81	0.42
Web-based factors			
ONLINELIT	Online literacy (1 if had online literacy, 0 otherwise)	0.33	0.18
YRINTERNET	Year on internet	10.5	6.12
DEVICOWNSHIP	Ownership of browsing device (1 if owned, 0 otherwise)	0.95	0.55
DATAAMT	Amount spent on data monthly (₦)	1,400	460
Privacy factors			
MYINFOSEC	My information online (1 if secrecy is perceived, 0 otherwise)	0.45	0.33
MYINFOMIS	My information online (1 if misuse is perceived, 0 otherwise)	0.52	0.44
Dependent variable variables			
Adoption of online shopping medium	1 = adoption, 0 = no adoption		
Intensity of adoption (frequency of use)	Number of online purchases per month on choice platform	3	2.37

Empirical results

The empirical results of the double hurdle regression model (probit and truncated regression models) showed the influence of socio-demographic variables, risk factors, web-based factors and privacy concern variables on respondents' decision to adopt online purchasing medium and intensity of adoption in Nigeria (Table 3).

Determinants of online purchasing medium

The log-likelihood function was -125.30 while the Chi-square and Sigma values were 176.42 and 0.153, respectively (Table 2). The parameters depict that the model was fit for the

explanation of the determinants of online purchasing medium. Age, Year of education and other source of income were some of the socio-demographic determinants of online purchasing medium adoption among students in the study area. Age of respondents was recorded in the negative sign but still significant as an effect in adoption of online purchasing medium in the study area (Table 2). The age was significant at 5 percent alpha level. This implies that the older the students are the lower the likelihood of adopting online purchasing medium in the study area. An increase in age of respondents by a year would reduce probability of adoption by 1.5 percent. This is in agreement with previous study (Pilik, 2013) that age and online purchasing behaviour are negatively related. The year of education of respondents had positive and significant influence on the adoption of online purchasing medium. Year of education was significant at 5 percent alpha level. This implies that an increase in the year of education would raise probability of adopting online purchasing medium by 1.8 percent.

Perceived financial and products risks were negative determinants of online purchasing medium adoption while perceived convenience was positive and significantly influenced adoption of online purchasing medium. Perceived financial and production risks were both significant at 5 percent. This implies that the higher the financial and production risks perceived by respondents, the lower the likelihood that they will adopt online purchasing medium. However, perceived convenience was significant at 1 percent alpha level. This implies that the higher the convenience perceived by respondents, the higher the likelihood that online purchasing medium would be adopted. An increase in the level of risks perceived by a unit each would raise probability of adopting online purchasing medium by 31.1 percent and 21.8 percent, respectively.

Online literacy was the only significant determinant of online purchasing medium adoption. Online literacy was positive and significant at 5 percent alpha level. An increase in the level of literacy by a unit would raise probability of adopting online purchasing medium by 13 percent.

This is in agreement with Koyuncu and Lien (2003) that online experience and online purchasing decision are directly related.

Perceived misuse of information provided online was negative and significant determinant of online purchasing medium adoption among respondents. Perceived misuse of information was negative at 5 percent alpha level. An increase in perceived misuse of information

provided would decrease probability of adoption by 1.4 percent. This is in agreement with Nuno and Paulo (2016) that online purchasing behaviour and privacy concern are related.

Table 2: Probit estimate for determinants of decision to adopt online purchasing medium in Nigeria

Explanatory variables	Coefficient	P-value	Marginal effect
Socio-demographic			
AGE	-0.002**(0.001)	0.023	0.015
YEAREDU	0.005**(0.002)	0.021	0.018
EXPERIENCE	0.002(0.014)	0.865	0.002
OFFINCOME	0.182**(0.131)	0.027	0.021
Risk factors			
PERCFINRISK	-0.046**(0.012)	0.001	0.311
PERCRODRISK	-0.255*** (0.054)	0.000	0.218
PERCCONV	0.008**(0.004)	0.032	0.112
Web-based factors			
ONLINELIT	0.034**(0.011)	0.002	0.133
YRINTERNET	0.613(0.714)	0.213	0.222
DEVICOWNSHIP	0.333(0.314)	0.181	0.111
DATAAMT	0.413(0.231)	0.116	0.313
Privacy concern factors			
MYINFOSEC	0.013(0.030)	0.671	0.001
MYINFOMIS	-0.112**(0.054)	0.036	0.014
CONSTANT	1.608*** (0.200)	0.000	-
LOG LIKELIHOD FUNCTION	-125.30		
CHI-SQUARE	176.42		
SIGMA	0.153 (0.016)		
NUMBER OF OBSERVATIONS	260		

Significant at 5%, *Significant at 1%

Truncated regression estimate for intensity (level) of online purchasing medium adoption

The log-likelihood function for the model was -121.49 (Table 3). Year of education and other source of income were variables that constitute significant factors of adoption of online purchasing medium in the study area (Table 3). These variables were positive and significant at 5 percent alpha level. This implies that the higher the level of education the greater the intensity of adopting online purchasing medium. An increase in the year of education by a year would raise the intensity of adoption by 3.1 percent while an increase in other source of income will also increase the intensity of adoption by 0.3 percent. Perceived financial risk reduced intensity of adoption while perceived convenience increased intensity of adoption significantly. Perceived production risk and perceived convenience were both significant at 1 percent alpha level. An increase in the perceived financial risk and perceived convenience by unit each would raise intensity of adoption by 1 percent, each.

Online literacy and amount spent on data subscription were positive and significant determinants of intensity of adoption. They were both significant at 5 percent alpha level. An increase in the level of each by a unit would increase the intensity by 1.2 percent and 9.1 percent, respectively.

Perceived misuse of information provided online was negative determinants of intensity of online purchasing medium. Perceived misuse of online information was significant at 1 percent alpha level. An increase in the perceived misuse of online information by a unit would reduce intensity by 41 percent.

Table 3: Truncated regression estimate for intensity (level) of online purchasing medium adoption

Explanatory variables	Coefficient	P-value	Marginal effect
Socio-demographic			
AGE	-0.055(0.042)	0.030	0.044
YEAREDU	0.364**(0.112)	0.003	0.031
EXPERIENCE	0.453(0.560)	0.060	0.001
OFFINCOME	0.260**(0.295)	0.004	0.003
Risk factors			
PERCFINRISK	-0.261*** (0.030)	0.000	0.009
PERCRODRISK	0.171(0.178)	0.560	0.022

PERCCONV	0.172***(0.030)	0.000	0.010
Web-based factors			
ONLINELIT	0.308**(0.125)	0.016	0.012
YRINTERNET	0.147(0.262)	0.577	0.002
DEVICOWNSHIP	0.052(0.107)	0.631	0.001
DATAAMT	0.177**(0.077)	0.032	0.091
Privacy concern factors			
MYINFOSEC	-0.126(0.107)	0.631	0.001
MYINFOMIS	-0.225*** (0.062)	0.000	0.410
CONSTANT	-0.795(3.253)	0.808	-
LOG LIKELIHOD FUNCTION	-121.49		
NUMBER OF OBSERVATIONS	96		

Significant at 5%, *Significant at 1%

CONCLUSION

The rise in the use of internet is enhancing the growth of e-commerce in Nigeria. However, the rate of increase in e-commerce, especially the online purchasing is far lower than the rate of access to internet. Numerous variables have been found influencing the adoption of online purchasing medium and intensity. The study concluded that variation exists in the factors influencing adoption decision and intensity of adoption in the study area. The decision to adopt online purchasing medium was reduced by age, perceived financial risk, perceived product risk, and perceived misuse of information while adoption decision is raised by year of education, perceived convenience and online literacy. The intensity of online purchasing medium was lowered by perceived misuse of information and raised by year of education, perceived convenience, online literacy, and amount spent on data monthly. Retailers should therefore, build on goodwill as a means of attracting and holding consumers through online purchasing.

REFERENCES

- Akm, S. I. (2019). Factors Influencing Customer's Intention to Adopt Online Shopping: A Holistic Approach. *International Journal of Business and Technopreneurship*, 9(1): 57-66.
- Bekele, G. and Mekonnen A. (2010). Investment in land conservation in Ethiopia highlands: A household plot-Level analysis of the roles of poverty, tenure security, and market incentives. *Environment for development*, 10(9), 1-41
- Bianchi, C. and Andrews, L. (2012). Risk, Trust and Consumer Online Behaviour: a Chilean Perspective. *InternationalMarketingReview*, 29(3): 253-275.
- Cragg, J.C. (1971). Some statistical models for limited department variables with application to the demand for durable goods. *Econometrica*, 39, 829-44. 57(2), 347-359.
- Evwiekpaefe, E. A. and Chiemekwe, C. S. (2017). Factors Influencing Online Shopping Acceptance in a Developing Economy: An Expanse Review, Taxonomy and Framework. *World Applied Sciences Journal*, 35 (7): 1162-1116.
- Igenegbedion, H. E., Obadiaru, D. E. and Bello, V. D. (2016). Factors influence consumers' attitude towards internet Buying in Nigeria. *Journal of Internet Commerce*, 15(4): 353-375.
- Kartiwi, M., Hussin, H., Suhaimi, M. A., Jalaldeen, M. R. M., & Amin, M. R. (2018). Impact of

external factors on determining E-commerce benefits among SMEs in Malaysia.

Journal of Global Entrepreneurship Research, 8. doi:10.1186/s40497-018-0105-7.

Koyuncu, C. and Lien, D. (2003). E-commerce and consumer's purchasing behaviour.

Applied

Economics, 35, 721– 726.

Koyuncu, C. and Lien, D. (2003). E-commerce and consumer's purchasing behaviour.

Applied

Economics, 35, 721– 726.

Lee, D., Jeong, H., Choc, J., Jeong, J. and J. Moon (2021). Grocery Shopping via T-Commerce

in Korea: New Shopping Channel Adoption Behavior Based on Prior E-Commerce Experience. *International Food and Agribusiness Management Review*, 18(2): 1-16.

Lim, Y.J., Osman, A., Salahuddin, S. N., Romle, A. R., and Abdullah, S. (2016). Factors

Influencing Online Shopping Behavior: The Mediating Role of Purchase Intention.

Procedia Economics and Finance 35: 401 – 410.

Muda, M., Mohd, R. and Hassan (2016). Online Purchase Behavior of Generation Y in Malaysia.

Procedia Economics and Finance, Fifth International Conference on Marketing and Retailing (5th incommar) 2015, 37 (2016) 292 – 298.

Moffatt, P.G. A. (2003). Hurdle Models of Loan Default. School of Economics and Social Studies. University of East Anglia. Pp. 63-69.

Naz, T. (2019). Online Shopping Behaviour Technology Advancement: A Great Change in Consumer Behaviour. *SSRN Electronic Journal*. Doi:10.2139/ssrn.3333079.

Nuno, F. and Paulo, R. (2016). Privacy concerns and online purchasing behaviour: Towards an

integrated model. *European Research on Management and Business Economics* 22: 167–176.

Omotayo, F. O. and R. O. Adeyemi (2018). Determinants of Continuance Intention to Use Online Shops in Nigeria. *Journal of Internet Banking and Commerce*, 23(2): 1-44.

Osman, S., B. C. Yin-Fah and B, Hooi-Choo (2010). Undergraduates and Online Purchasing Behavior. *Asian Social Science*, 6(10): 133-146.

Pilík, M. (2013). Selected factors influencing customers' behaviour in e-commerce on B2C

markets in the Czech Republic. In Proceedings of the European Conference on IS Management & Evaluation (pp. 121– 128). Sopot Poland: University of Gdańsk.

Statista (2018, 2020). Nigerian Number of Internet Users. www.statista.com

Weiyue,L. (2017). Promoting role of Electronic Commerce on Economic Growth. Archives ofBusiness Research, 5(4),146- 155.