CONSUMERS' PREFERENCE FOR ONLINE PURCHASING MEDIUM IN THE COVID-19 PANDEMIC ERA: EMPIRICAL EVIDENCE FROM ONDO STATE, NIGERIA

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Abstract

COVID-19 pandemic was a global disaster during which normal life, movement and business have been disturbed due to lockdown and closing of shopping malls and business centers in the city. In addressing the difficulty experienced by consumers while observing Covid-19 pandemic protocols for the purpose of protecting themselves from contracting the virus, consumers adopted the use of online purchasing medium. The study was thus conducted using data collected from randomly 250 school teachers to estimate consumers' preference for online purchasing mediums in the Covid-19 pandemic era. Findings showed that health concern ($p \leq 0.01$), product concern ($p \leq 0.05$), trust concern ($p \leq 0.01$) and place concern ($p \leq 0.05$) enhanced consumers' preference for online purchasing medium in the Covid-19 pandemic era. Consumers will be willing to buy online in the virus era to protect themselves from the virus, when they are sure of a good quality product, when information supplied online is secured and when goods bought online are timely delivered. Based on the findings, online retail outlets should ensure the website is secured and good quality products are delivered timely as a means of reducing open market and mall population.

Keywords: Covid-19 pandemic, consumers, preference, online purchasing, medium.

INTRODUCTION

Covid-19 pandemic created what is seen as the greatest damage to the world economy ever. It caused havoc in the business market and made the whole business community unstable. (Queiroz et al., 2020). The pandemic, having spread through East Asia, Europe, and North America in the early 2020, the COVID-19 global pandemic took its dramatic spread to the countries of Africa and Latin America. It was a known fact that the pandemic would spread to Nigeria being the country with the largest population in Africa, and evidence of long-standing travel and trade links with the rest of the world.

On 27th February, 2020, Nigeria recorded the subcontinent's first confirmed index case. Thereafter, the pandemic spread across cities, towns and villages in Nigeria (NCDC, 2020).

The arrival of the pandemic resulted in chain of policy actions, which is not limited to commerce and trade only but also include other areas of the economy such as public health sensitization and campaigns, fiscal and monetary measures, restrictions on large sections of the

economy, etc (Onyekwena and Amara-Mma, 2020). The continued spread of the pandemic like wildfire imposed a lot of restrictions on commerce and Trade in Nigeria, which actually affected buying and selling but, the influence on the decision of the buyers of consumer goods remains unclear.

The restrictions were created through the policy of the government to curtail the spread of the deadly virus NCDC, 2020). Importantly, some of the interventions of the government which directly affected commerce, especially, where buying from bricks-and-mortar shops, like Nigeria, is the popular, were closing of all schools in the country in mid-March, social distancing, bans on public and social gatherings, among other (Ogundele, 2020; Alam, 2020). These greatly affected buying from bricks-and-mortar stores but the influence on the consumers' preference for online purchasing medium is very unclear.

In Ondo State, the study area, the government imposed various restrictions that prevented buying and selling in the bricks and mortar stores. The government imposed social distancing, closed schools at all levels, closed worship centres, banned open markets, banned public gatherings as well as restricted movements to specific periods of time of the day. However, bricks-and mortar stall are mostly located in the open markets, malls and location of public gatherings where population is high but the restriction policies have prevented consumers from buying the way they were used to do, hence faced difficulty in buying but the influence of this restriction policies on consumers' preference for online purchasing medium is very unclear.

However, due to the difficulty experienced by the Covid-19 pandemic guidelines, consumers' migration to online purchasing mediums increased. Alam (2020) posited that e-commerce is a vigorous tool for reducing the adverse business processes caused by stay at home order, maintenance of social distancing, protection from virus etc.
Evidence (Igenegbedion *et al*., 2016; Evwiekpefe and Chiemeke, 2017; Omotayo and Adeyemi, 208) reported that online purchasing is gaining strong popularity in Nigeria. This popularity is not unconnected to the high rate of internet use in Nigeria. According to the internet statistics usage in Nigeria, Statista (2018) reported that over 72.3 million Nigerians used the internet in 2018, while the number rose to 96.05 million in 2020. This has made Nigeria the occupier of the leading position in internet consumption in Africa. Evwiekpaefe and Chiemeke (2017) reported that, though Nigeria maintains its leading position in Africa in the use of the internet, the rate of use does not directly translate to e-commerce in Nigeria.
The Covid-19 pandemic restriction renewed peoples' interest in the online buying behaviour, positively. Tyagi and Pabalkar (2020) posited that the pandemic changed consumers' buying behaviour in India and recommended ICT tools for optimum performance in the retailing industries. Alam (2020) reported that e-commerce played positive roles during the covid-19 pandemic Bangladesh and consumers demonstrated positive behaviour towards it. However, no known studies have investigated the influence of the pandemic on the purchasing behaviours of consumers in Nigeria and thus the influence of the pandemic on consumers preference for online purchasing medium is not only not clear but statistically unknown, hence the study.

Theoretical context

Long before the outbreak of Covid-19 pandemic, determinants of adoption of online purchasing medium among consumers have been the subject of concern. The concern was more in Nigeria as a country because the rate of adoption of the medium is far less than the rate of rise in the use of the internet. Study on factors influencing adoption of online shopping medium or consumers' online purchasing behaviour is gaining increasing recognition as the availability of the right technologies has little or no value to individual or society unless it is appropriately applied. For example, Akm (2019) posited that it is a challenge translating internet users to online shoppers by marketers. Experiences have shown that useful technologies are not always adopted, even when such technologies are full of benefits (Akm, 2019).

The Covid-19 pandemic and post-Covid-19 pandemic might change the narratives. This is because the pandemic encouraged several consumers to adopt online purchasing medium (Alam, 2020) because there were restrictions caused by the lock down, non-room for social gatherings and total lock of open markets for buying and selling. Consumers may prefer the use of online purchasing medium since open markets and malls are not always open or otherwise or otherwise owing to a variety of factors, which are considered as the determinants of preference for online purchasing medium. It is worthy to note that, that a consumer purchases online does not make him or her prefer online purchasing medium. This emphasises the need for clear understanding of the condition that encourages or motivates preference for online shopping medium among consumers (Lee *et al.*, 2015).

Tyagi and Pabalkar (2020) and Alam (2020) posited that the pandemic changed consumers' buying behaviour in India and recommended ICT tools for optimum performance in the retailing industries. Their studies emphasised just consumers' behaviour during coronavirus disease in India and Bangladesh, respectively.

However, studies on Covid-19 induced purchasing behaviour are scarcely documented. In addition, studies on preference of online purchasing medium in the era of Covid-19 pandemic have not been documented in literature, hence, the study.

METHODOLOGY

The study used survey research design. The study was conducted in Ondo State, Nigeria. The population for this study consists of internet users, teaching in public secondary schools in Ondo State, Nigeria. Data were collected from randomly selected 250 school teachers using a structured questionnaire. Data were collected on socio-demographic information, utilisation of online purchasing medium, attributes of online purchasing medium, preference for the purchasing medium, drivers of preference for the medium in the Covid-era, among other. Data collected were estimated using mean, standard deviation and binary choice models.

Specification of model

Binary choice model was used in the study because the preference was a decision measured as binary (dichotomous variable). Logistic regression model (Logit model) was the binary choice model used in the study. The logit model is seen as appropriate over the conventional regression model because conventional regression models would give biased explanations of the independent variables due to the binary nature of the dependent variable. The logit regression

was used to determine the drivers of preference for online purchasing medium in the Covid-19 pandemic era. Gujarati (2004) explicitly provided a clear theoretical exposition of logit model, that it can be estimated as a probability. Logistic regression is categorised as Limited Dependent Variable Model (LDVM) that is extensively used in social research when the dependent variable is dichotomous (Padaria *et al*., 2009). The dependent variable takes the value 1 with a probability of preference (p), or the value 0 with probability of non-preference (1 - p). This type of variable is called a Bernoulli (or binary) variable (Padaria *et al*., 2009). In this study, online purchasing medium users were grouped as those who prefer and those who do not prefer online purchasing medium based upon whether or not they will continue to buy consumers goods online during and after the Covid-19 pandemic era. Those who prefer online purchasing medium were given the value of 1 while those otherwise were given the value 0.

In logit model, the independent (predictor) variables take any form of variables. This implies that logit model makes no assumption about the distribution of the independent variables. This is suffice to say that they take variables whether or not they are normally distributed, linearly related or of equal variance within each group (Padaria *et al*., 2009). In logit model, the predictor and response variables is not a linear function, hence, the logistic regression function is used, which is the logit transformation of p.

The structure of logit model is presented below (Eq 1):

$$P_i = \frac{e^{(b_0 + b_1 x_1 + \ldots + b_n x_n + m_i)}}{1 + e^{((b_0 + b_1 x_1 + \ldots + b_n x_n + m_i))}} \qquad \text{Eq 1.}$$

Where

P_i = (1=preference decision and 0 = non-preference decision)

$b_1 \ldots \ldots bn$ = parameters to be estimated or the coefficient of the predictor variables

n = number of independent or predictor variables used in the model.

i = is the ith observation (or) respondent

m_i = is the random error

b_0 = constant or intercept

The empirical form of the model or the explicit form of the model is specified as follows (Eq 2):

$$P = b_0 + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 b_4 + b_5 x_5 +$$

The fitness of the logit model is adjudged based on the diagnostic statistics which are likelihood ratio (denoted as -2 log likelihood), Chi-square test of significance and Nagelkerke R^2 value).

In logit model (and other binary choice models), reporting just the estimated parameters is not sufficient for understanding the effect of predictor variables (independent) on the response variables (dependent). In this study, the marginal effects approach suggested by Long (1997) was used for the effective understanding of the effects of the independent variables on dependent variables. The marginal effects are computed as changes or marginal probability (MP) by taking the first partial derivative of the dependent variables with respect to the corresponding independent variables as shown in the equation below (Eq. 3):

$$MP_i = \frac{\partial P}{\partial X_i} = \{(e^{xb}|1 + e^{xb})^2\}b_i$$

Eq. 3.

The marginal change is interpreted as: for one unit change (increase or decrease) in X_i from the baseline, the probability of an event is expected to increase/ decrease by the magnitude of marginal change, vice-versa.

RESULTS AND DISCUSSION

The summary statistics are subdivided into two (Table 1) as socio-demographic factors and drivers of preference factors for online purchasing medium. There are more male (61%) users of online purchasing in the study area and the mean age of the users was 47±13.2 years (Table 1). The mean year of formal education among them was 16.3±4.47 years while the mean paid monthly income was ₦77,311±46,919. Analysis further showed that 58 percent of the respondents engaged in livelihoods other than teaching. This implies they have other means of earnings aside the teaching income. The mean year of teaching experience was 14.3±6.22 years. This implies that the respondents are well experienced.

The preference factors identified to enhance online purchasing medium due to Covid-19 pandemic in the study area were health concern, price concern, product concern, trust concern and place concern, respectively (also table 1). Health concerns favoured preference for online purchasing medium during Covid-19 pandemic because respondents thought that purchasing via the online medium protected them from virus. The health concern result showed that 92 percent of the respondents prefer online purchasing medium because of the greater assurance that their health is protected. The implication is that the respondents might be ready to pay more once their health is protected. This might be due to adherence to Covid-19 preventive protocols that campaigned against large gatherings. Result on price concern preference factor showed that the respondents preferred online purchasing medium during the pandemic because delivery price were reasonable. The result on price concern showed that 79 percent of the respondents prefer online purchasing medium during the global deadly pandemic because cost of delivery is reasonable. This implied that despite the fact that prices were attached to the delivery of consumer goods, respondents preferred online purchasing medium in the era of the deadly pandemic. The respondents might be ready to pay more for the purpose of protecting their health. Results on product concern showed that the good quality products delivered by retail outlets during the pandemic attracted and held their preference for online purchasing medium during the pandemic. Product results showed that 88 percent of the users of online purchasing medium prefer the medium during the deadly global pandemic owing to good product quality. This implied that since the consumers were getting the needed quality of consumer goods as they could in bricks and mortar stores, they preferred the less stressful online purchasing medium of buying consumer goods. Result on trust factor showed that the trust the consumers had in the website of the retail outlets delivering consumer goods had made them prefer online purchasing medium of purchasing. Trust results showed that 70 percent of the users of online purchasing medium prefer the medium in the era of the global pandemic. Place concern factor results showed that 68 percent of the users prefer the medium because goods are delivered to

time. This implied that getting the goods needed at the right time while health is protected made them prefer online purchasing medium in the era of the global pandemic.

Table 1: Summary statistics of variables used in the estimation of preference for online purchasing medium during Covid-19 pandemic

Variables	Description	Mean	SD
Socio-demographic			
Sex	Sex of Respondents (1 = Male, 0 otherwise)	0.61	0.55
Age	Age of respondents in years	47	13.2
Education	Number of years of formal education	16.3	4.47
Income per month	Monthly income (₦)	77,311	46,919.4
Other income	Other income (yes =have other income, 0=otherwise)	0.58	0.38
Experience	Teaching experience (years)	14.3	6.22
Preference factors			
Health concern	Protect from virus	0.92	0.71
Price concern	Delivery charges are reasonable	0.79	0.46
Product concern	Good quality product supplied	0.88	0.66
Trust concern	Trustworthy website	0.70	0.33
Place concern	Get on time delivery	0.68	0.41
Dependent variable			
Preference	1 = preferred online medium, 0 = not preferred		

₦ is Nigerian currency

₦ 1 = 0.0021

Logit estimates for determinants of preference for online purchasing medium during Covid-19 pandemic

Socio-demographic variables and preference factors that are assumed to have influence on preference for online purchasing medium in the Covid-19 pandemic era are presented in (Table 2). The Log Likelihood value was -74.132 while the chi-square vale was 108.343. The Negelkerke R^2 value was 0.512 and the entire model was significant at 1 percent alpha level. The above mentioned diagnostic parameters (Loglikelihood value, Chi-square value, Negelkerke and the model significance level) implied that the model estimated was fit to explain the influence of socio-demographic variables and preferences enhancing factors on preference for online purchasing medium in the Covid-19 pandemic period. Education of respondents and monthly paid income of respondents were positive enhancers of preference for online purchasing medium in the Covid-19 pandemic era in the study area (Table 2). Education was positive and significant at 1 percent alpha level. The marginal effect showed that an increase in the level of education by a unit would raise preference probability for online purchasing medium by 4 percent. This implied that the higher the level of education the greater the likelihood that respondents would prefer online purchasing medium to open markets or malls for the purpose of preserving their health. Paid income per month was significant at 5

percent alpha level. The marginal effect showed that an increase in the paid income by a unit would raise preference probability by 11.1 percent. This implied that the higher the monthly income earned by respondents the greater the likelihood that respondents would prefer online purchasing medium. The implication of this is the the higher the monthly income earned, the greater the probability that respondents would be capable of paying extra charges for delivery of goods and funding for accessing the internet.

Health concern, product concern, trust concern and place concern were the significant assumed preference enhancing factors that positively determined respondents preference for online purchasing medium in the Covid-19 pandemic era in the study area. Health concern factors that ensure that purchasing online protects respondents from Covid-19 virus was positive and significant at 1 percent alpha level. This implied that the fear of contacting the pandemic virus enhances their purchasing online. The implication of this is that respondents would prefer purchasing consumer goods online in the era of Covid-19 as a means of protecting themselves from Covid-19 pandemic virus. The Product concern factor that ensure that purchasing online ensure good quality product delivery was positive and significant at 5 percent alpha level. This implied that the assurance of getting good quality product for products purchased enhances their purchasing of consumer goods online in the Covid-19 pandemic era. The implication of this is that respondents would prefer purchasing consumer goods online in the era of Covid-19 since quality needed are delivered even when bought online. The trust concern factor that ensure that the website from retail outlets where consumers goods are shopped online are secure in terms of data supplied was positive and significant at 5 percent alpha level. This implied that the assurance of having data or information supplied online secured purchasing enhances purchasing consumer goods online in the Covid-19 pandemic era. The implication of this is that respondents would prefer purchasing consumer goods online in the era of Covid-19 pandemic when there is assurance that the information supplied online during purchases are secured and safe in the retail outlets website. The place concern factor that ensure that good bought online from online retail outlets are delivered on time to the consumers was positive and significant at 5 percent alpha level. This implied that the assurance of having goods bought online delivered on time enhances purchasing of consumer goods online in the Covid-19 pandemic era. The implication of this is that respondents would prefer purchasing consumer goods online in the era of Covid-19 pandemic when there is assurance that the goods bought online would be timey delivered.

Table 3. Results of logit estimates for determinants of preference for online purchasing medium during Covid-19 pandemic.

Variables	Coefficient	P-value	MP
Socio-demographic			
Sex	0.745(0.598)	1.331	0.004
Age	-0.003(0.014)	0.812	0.002
Education	0.774***(0.211)	0.000	0.040
Paid income per month	4.909**(2.143)	0.024	0.111
Other income	0.001(0.001)	0.0640	0.255

Experience	0.003(0.041)	0.974	0.001
Preference factors			
Health concern	0.238***(0.082)	0.004	0.014
Price concern	0.029(0.038)	0.760	0.001
Product concern	0.002**(0.001)	0.041	0.007
Trust concern	0.052***(0.014)	0.000	0.010
Place concern	0.331**(0.131)	0.031	0.022
Log-likelihood	-74.132		
Chi-square	108.343		
Nagelkerke R^2	0.512		
Significance level	0.001		
Number of observation	250		

CONCLUSION

COVID-19 pandemic was a global disaster during which normal life, movement and business have been disturbed due to lockdown and closing of shopping malls and business centers in towns and cities. The study was conducted to investigate consumers' preference for online purchasing mediums in the era of Covid-19 pandemic. Data for the study were from primary sources and collected with the aid of structured questionnaires. The data collected were analysed with the aid of mean, standard deviation and binary logistic regression model. The study concluded that consumers in the area prefer online purchasing mediums in the Covid-19 pandemic era and their preferences were enhanced by the need to protect themselves from the virus, the quality product they got from online buying, the trust they have in the retail outlets websites and timely delivery of products bought online.

REFERENCES

Andam, K., Edeh, H., Oboh, V., Pauw, K. and Thurlow, J. (2020). Impacts of COVID-19 on food systems and poverty in Nigeria. Advances in Food Security and Sustainability, 5:145-173.

Alam, J. (2020). Buying Behavior Under Coronavirus Disease (COVID-19) Pandemic Situation:

A Online Perspective Case in Bangladeshi Shoppers. Chinese Business Review, Mar. 2020, Vol. 19, No. 3, 82-90 doi: 10.17265/1537-1506/2020.03.002.

Evwiekpaefe, E. A. and Chiemeke, C. S. (2017). Factors Influencing Online Shopping Acceptance in a Developing Economy: An Expanse Review, Taxonomy and Framework. *World Applied Sciences Journal*, 35 (7): 1162-116.

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.

Koch, J., Frommeyer, B. and Schewe, G. (2020). Online Shopping Motives during the COVID-
19 Pandemic-Lessons from the Crisis. *Sustainability*, 12:1-20.

NCDC (Nigeria Centre for Disease Control), 2020. First Case of Corona Virus Disease Confirmed in Nigeria. NCDC, Abuja, Nigeria. https://ncdc.gov.ng/news/227/first-case-of-corona-virus-disease-confirmed-innigeria.

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.

Onyekwena, C., Amara-Mma, E., 2020. Understanding the Impact of the COVID-19 Outbreak on the Nigerian Economy. Brookings Institution, Washington, DC. https://www.brookings.edu/blog/africa-infocus/2020/04/08/understanding-the-impact-of-the-covid-19-outbreak-on-the-nigerianeconomy/.

Padaria, R. N., B. Singh, N. Sivaramane, Y. K.Naik, R. Modi and S.Surya (2009). A Logit Analysis of Bt Cotton Adoption and Assessment of Farmers' Training Need. *Indian Research Journal of Extension Education*. 9 (2): 39-45.

Park, H.M. (2004). Presenting binary logit/probit models using the AS/IML.http://mypage.iu.edu/kucc625.

Queiroz, M. M., Ivanov, D., Dolgui, A., & Fosso Wamba, S. (2020). Impacts of epidemic outbreaks on supply chains: mapping a research agenda amid the COVID-19 pandemic through a structured literature review. In Annals of Operations Research (Issue 0123456789). Springer US. https://doi.org/10.1007/s10479-020-03685-7

Tyagi, P. and Pabalkar, V. (2020). Impact Of Covid-19 Over Purchasing Behaviour Of The Consumers. European Journal of Molecular & Clinical Medicine, 8(2): 561-571.

Long, Scott.J. (1997). Regression models for categorical and limited dependent variables. Advanced quantitative techniques in the social sciences. Sage Publications.