



STATISTICAL ANALYSIS ON THE IMPACT OF COVID-19 ON E- COMMERCE IN NIGERIA

O.A.P. Otaru¹ and D. Enegesele²

¹Department of Mathematical Sciences, Federal University Lokoja, Nigeria.

Email: paultex2005@yahoo.com

²Department of Mathematical and Computing Sciences, KolaDaisi University, Ibadan, Nigeria. Email: dennis.enegesele@koladaisiuniversity.edu.ng

*Corresponding Author: den4_js@yahoo.com, Tel.: +23408068285977

ABSTRACT: Most human activities around the world are technological using the internet due to the COVID-19 pandemic. The pandemic had a devastating effect on the economy and human activities of many counties of the world, Nigeria inclusive. The adoption of the internet around the world is encouraging but with its challenges such as fraud, lack of privacy, and other negative verses. This problem has a strong influence on customer's behavior, which has a significant effect on e-commerce. Thus, it is pertinent to assess the impact of the COVID-19 pandemic on e-commerce in Nigeria. This research used a cross-sectional survey design with a population, which comprised of internet users in Nigeria. A sample size of 411 was drawn using the Taro-Yamane formula for sample size determination; stratified random sampling was applied. Primary data was collected using a self-administered questionnaire, and these data were analyzed using descriptive statistics and factor analysis. Results revealed that COVID-19 significantly ($p < 0.05$) increased the adoption, satisfaction, and sustainability of e-commerce in Nigeria. In conclusion, the factors that influenced customer's behaviour in the adoption of e-commerce during COVID-19 lockdown are convenience, service satisfaction, and trusts such as privacy and transaction security.

KEYWORDS: COVID-19, Purchase, E-Commerce, Customer, Lockdown, Behaviour

INTRODUCTION

The use of information technology (IT) to provide services to e-customers base on their respective needs, preferences, and purchase history is very important in the business world. Customers' data are obtained at the individual level by interacting with customers through multiple channels such as web and wireless devices. Despite the excitement about the value of online personalization, consumers' reactions seem discouraging, only 5.6% of the consumers wanted to receive any personalized web services (Nunes and kambil, 2001). As the internet infrastructure develops the volume of e-commerce increases (Ueasangkomsate, 2015). Nigeria is among the developing countries with a steady increase in e-commerce adoption (Chiejina, 2014; ITU, 2013; ITU, 2012; Anne *et al*, 2019). The increasing adoption of e-commerce in Nigeria is due to sustainable increases in the adoption of information technology (Zhang *et al*, 2016). In 2020, Nigeria had 99.05 million internet users and it is projected to grow to 131.7 million internet users in 2023. The internet penetration amounted to 46.6% and is set to reach 65.2% in 2025. An increase in e-commerce has a great effect on



the traditional stores that do not invest in e-commerce (Bidgoli, 2002). The effect of e-commerce in the business world has been on increased since the adoption of computers and communication technology. Some of the benefits of e-commerce include; improvement of inventory control, efficient use of human resources, communication development, the establishment of an efficient supply chain, and realizing a better value chain (Zhang and Jiao, 2007). However, unprecedented events such as the recent coronal virus (COVID-19) pandemic could affect any of these benefits resulting in a great effect on the business world.

Despite the challenges facing e-commerce in Nigeria, such as customer's awareness of security implications associated with online transactions, the number of web retailers, and the rate of adoption continues to increase. The lockdown arising from the COVID-19 pandemic could have led to interesting visitors spending considerable time on these sites. Thus, the rationale for this study is to evaluate the impact of the COVID-19 pandemic on e-commerce and consumer purchasing behavior during lockdown due to the COVID-19 pandemic in Nigeria. Therefore, this study is significant because it reveals the success of e-commerce in Nigeria and the impact of e-commerce on Nigeria's economy in the lockdown due to the COVID-19 pandemic.

The study is divided into five sections. Section 1 contains the introduction to information technology as well as the use of e-commerce, Section II contains the related work on e-commerce, corona virus, and consumer behaviour, Section III contains the methodology, Section IV described results and discussion and Section V conclude the research work with future direction.

LITERATURE REVIEW

E-Commerce

Most studies on e-commerce in the literature are mostly concentrated on large-scale companies and their customers (Godes *et al.*, 2005). The examination of e-commerce for local development is quite limited. However, e-commerce is viewed from the business online perspective as the application of technology to achieve business transactions by purchasing and marketing goods and information in a computerized way. This study focuses on business-to-consumer e-commerce, which entails buying and selling by utilizing an online platform. The main advantage of e-commerce over physical marketplace transactions is the convenience of shopping from anywhere and anytime (Chiemeké and Ewiewkpaefe, 2011). E-commerce contributes to the economic growth of any nation, with the potency to boost small and medium-sized enterprises (SMEs) (Kurnia *et al.*, 2015; Ramanathan, *et al.*, 2012; Wyner and Regan, 2005; Kshetri, 2007). SMEs are improved by the development of new markets, increased customer base, improved communication with customers, increased revenue growth, and reduced cost (Ann *et al.*, 2019). Consumers and businesses in developing countries can derive higher values from e-commerce, compared to those in developed countries (Bidgoli, 2002). E-commerce platforms in Nigeria offer a very wide range of products and services to meet multiple customers' needs. Despite the increased adoption of e-commerce, there are some important challenges; these include transaction insecurity, poor electricity, poor delivery system, and inadequate infrastructures (Chiemeké, *et al.*, 2006; Zhang and Jiao, 2007; Ayo *et al.*, 2007; Ayo, *et al.*, 2008; Ramanathan *et al.*, 2012). E-



commerce increases accessibility; removes geographical bottlenecks, and provides opportunities for shopping without time limits, and as such, it is preferred by users (Gibbs and Kraemer, 2004). Moreso, e-commerce due to development in technology is a unidirectional interaction that has increased productivity (Huang and Benyoucef, 2013).

Coronal Virus (COVID-19)

The outbreak of coronal virus (COVID-19) has increasingly impacted various regions of the world and the operational capacity of the business world, with a globally high prevalence rate (WHO, 2020). Between January-June 2020, about over ten million cases of COVID-19 were reported, out of which over two million were recorded in Europe, while Western Europe in particular, France, Germany, Italy, Spain, and the UK have been badly affected. The high prevalence continues to increase in the African Region since it was first detected in Algeria in February 2020. Nigeria recorded over 50,000 confirmed cases with over 1,000 deaths (NCDC, 2020). COVID-19 have no known cure or vaccine, hence alternative measures have been put forward by the Nigeria Centre for Disease Control (NCDC) to limit the spread of COVID-19 (WHO, 2020). These measures are case isolation, contact tracing and quarantine, social distancing, foreign travel measures, and total lockdown of human activities. Despite these measures, COVID-19 has continued to soar in most countries of the world. This can be attributed to a wide range of factors such as contact with infected droplets released through cough, sneeze, or mouth, also the touching of mouth, nose, or eyes with hands after contact with contaminated surfaces. However, the lockdown measure was significantly applied by many countries around the world to stop the spread of COVID-19. The lockdown directives by the Federal Government of Nigeria and the States Government have resulted in the discontinuation of human activities. The restrictions placed on the movement of humans and goods within the nation and across international borders have significantly affected the Nigerian economy (CBN, 2020). Human activities are the life wire of the country's economy, thus disruption, even for a short period has a rapid and severe impact on large businesses and SMEs. The Nigerian market is largely dependable on foreign products, import and export activities were greatly affected by the lockdown. Many local shops and malls were inaccessible and shortages of the products were inevitable resulting in to increase in online businesses to meet the demand of customers.

Customer Behaviour

The behaviour of customers plays an important role in e-commerce, which informs online retailers to change their sales and marketing strategy to meet demand (Selvakumar, 2014). Therefore, the demand for e-commerce business activities to a great extent is influenced by customer's behaviour. The purchasing power of customers could be influenced by factors such as the lockdown of business activities occasion by the COVID-19 pandemic. Thus, trust is a key factor that influences customer behavior in online transactions in the view of convenience, satisfaction, and responsibility (Chaing and Ruby, 2003; Hemanth and Umakanth, 2018).



METHODOLOGY

Study Design and Population: The study applied a cross-sectional study among online customers in Nigeria with a population of 99.05 million internet users (Taro-Yamene, 1967).

Sample Size: The sample size (n) is 411, which includes 10% non-response rate, was used by applying the Taro-Yamane formula (Taro-Yamene, 1967):

$$n = \frac{N}{1 + N(e)^2} \quad (1)$$

where n is the sample size, e is tolerance error (0.05) and N is the study population.

Sampling Method: Stratified random sampling was adopted. The country was stratified into six geo-political zones and then state selections were made from each zone by simple random sampling. Online customers who gave consent for the study were administered the preformed structured questionnaire using survey monkey application.

Instrument: The questionnaire contained three sections. The first consisted of questions involving socio-demography. In the second section, respondents were requested to provide information on their usage of e-commerce platforms, while section three sought information on trust factors. The second and third section was designed using a 4-point Likert scale. The internal consistency of the instrument was measured using Cronbach's alpha coefficient. The overall internal consistency of the items was 0.845.

Method of Data Analysis: The data obtained were subjected to statistical analyses such as descriptive (mean, standard deviation, frequency, and percentages) and factor analysis.

Ethical Consideration: Informed consent was obtained from the prospective respondents. Each respondent has the right to decline or fail to participate voluntarily, without any harassment or harm. Respondents were given sufficient information, including the risks and benefits to make an informed decision of participating in the research.

RESULTS AND DISCUSSION

Socio-Demographic Distribution

Table 1 reveals the socio-demographic distribution of respondents. There were 304 (74.0%) male and 107 (26.0%) female respondents. Also, 15(3.6%) out of 411 respondents were aged less or equal 20 years, while 75 (18.2%) were aged between 21 and 25 years and 141 (34.3%), 135 (32.8%), 40 (9.7%) and 5 (1.2%) respondents were aged between 26 and 30 years, 31 and 35 years, 36 and 40 years, 41 years and above respectively.

One hundred and seventeen (28.5%) were students, 186 (45.3%) were employed, and 108 (26.3%) were unemployed. Eighteen (4.4%) respondents earned primary/first school leaving certificate and 149 (36.3%) earned a diploma, while 201 (48.9%) and 43(10.5%) respondents earned a first degree and postgraduate respectively.

**Table 1: Distribution of Respondents (n=411)**

Gender	Frequency	Percentages (%)	Employment Status	Frequency	Percentages (%)
Male	304	74.0	Student	117	28.5
Female	107	26.0	Employed	186	45.3
Age (years)			Unemployed	108	26.3
<20	15	3.6	Educational Status		
21-25	75	18.2	Primary/SSCE	18	4.4
26-30	141	34.3	OND/HND	149	36.3
31-35	135	32.8	First Degree	201	48.9
36-40	40	9.7	Post Graduate	43	10.5
>40	5	1.2			

Assessment of E-Commerce before Pandemic (Covid-19)

Table 2 reveals 0.925 as the determinant of the correlation matrix, indicating that the variables are related but there is no multicollinearity. Also, the Kaiser-Meyer-Olkin statistic value of 0.502 indicates that the patterns of correlations are relatively compact and yield distinct and reliable factors. Barlett's statistic of 31.585 (0.007) reveals that the correlation matrix is not an identity matrix; therefore the variables are related. The mean result shows adoption and satisfaction of the e-commerce platform before the pandemic (covid-19); this is also revealed in the total variance of 39.25% of the 6 items by the two-factor components (see Table 3 &4, Figure 1).

Table 2: Assessment of E-Commerce before Covid-19

Statements	Mean	Std. Deviation	Determinant of the Correlation Matrix	Kaiser-Meyer-Olkin Statistic	Bartlett's Statistic (p-value)
Used to e-commerce platforms	2.8637	.80603	0.925	0.502	31.585 (0.007)
Often do shop online	2.6740	.76877			
Items purchase in one transaction	2.1241	.92746			
Average amount (\$) spent in each transaction.	2.3504	.89108			
Satisfaction with product selection, brand selection, and product quality.	3.1582	.83916			
Contracted terms, conditions, and related practices of the platform are clear	3.1898	.76061			

**Table 3: Factor Component of E-Commerce before Covid-19 Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.262	21.030	21.030	1.262	21.030	21.030	1.228	20.470	20.470
2	1.094	18.226	39.256	1.094	18.226	39.256	1.127	18.786	39.256
3	1.057	17.622	56.878						
4	.954	15.894	72.772						
5	.863	14.383	87.155						
6	.771	12.845	100.000						

Extraction Method: Principal Component Analysis.

Table 4: E-Commerce before Covid-19 Rotated Component Matrix^a

Statement	Component	
	1	2
BF1	.431	-.143
BF2	.091	.588
BF3	.596	.401
BF4	.730	-.070
BF5	.343	.053
BF6	-.170	.770

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Assessment of E-Commerce during Pandemic (Covid-19)

The assessment of e-commerce during the pandemic (Covid-19) results reveals that factor analysis adequately models the distribution. Table 5 reveals 0.897 as the determinant of the correlation matrix. Also, the Kaiser-Meyer-Olkin statistic of 0.506 and Barlett's statistic of 31.585 (0.007) reveals that the correlation matrix is not an identity matrix; therefore the variables are related and reliable. The mean result provides the level of agreement by respondents on the impact of the pandemic (Covid-19) on e-commerce; as well as the adoption, satisfaction, and sustainability of the e-commerce platform. Also, this is revealed in the total variance of 57.47% of the 8 items by the 4-factor components (see Table 6 & 7, Figure 2).

**Table 5: Assessment of E-Commerce during Covid-19**

Statements	Mean	Std. Deviation	Determinant of the Correlation Matrix	Kaiser-Meyer-Olkin Statistic	Bartlett's Statistic (p-value)
COVID-19 has greatly affected the supply chain of businesses including online shops.	2.7445	0.94762	0.897	0.506	44.148 (0.027)
Due to COVID-19 shopping online is preferable rather than visiting shops/malls?	3.2238	0.76733			
Amount (#) spent on purchases due to the COVID-19 pandemic.	2.4112	0.69407			
Satisfaction with the level of services	3.0973	0.89457			
It is easy to get help and guidance regarding issues encountered in using the platforms	2.9173	0.85138			
COVID-19 has greatly affected parcel delivery	2.4307	1.04154			
Likelihood of purchasing online in the future	3.1995	0.68010			
E-commerce is the future for buying and selling of goods and services	3.1776	0.76833			

Table 6: Factor Component of E-Commerce during Covid-19 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.237	15.466	15.466	1.237	15.466	15.466	1.211	15.143	15.143
2	1.213	15.165	30.632	1.213	15.165	30.632	1.176	14.697	29.840
3	1.114	13.923	44.555	1.114	13.923	44.555	1.107	13.838	43.678
4	1.034	12.924	57.479	1.034	12.924	57.479	1.104	13.801	57.479
5	.924	11.550	69.029						
6	.865	10.816	79.845						
7	.837	10.460	90.304						
8	.776	9.696	100.000						

Extraction Method: Principal Component Analysis.

Table 7: E-Commerce during Covid-19 Rotated Component Matrix^a

	Component			
	1	2	3	4
DL1	-.019	.736	.067	.177
DL2	.180	.024	.082	.716
DL3	.076	.778	-.078	-.105
DL4	.688	.066	.128	.158
DL5	.701	.001	-.140	-.217
DL6	-.223	.042	-.106	.676
DL7	-.287	.102	.757	-.114
DL8	.278	-.109	.685	.088

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

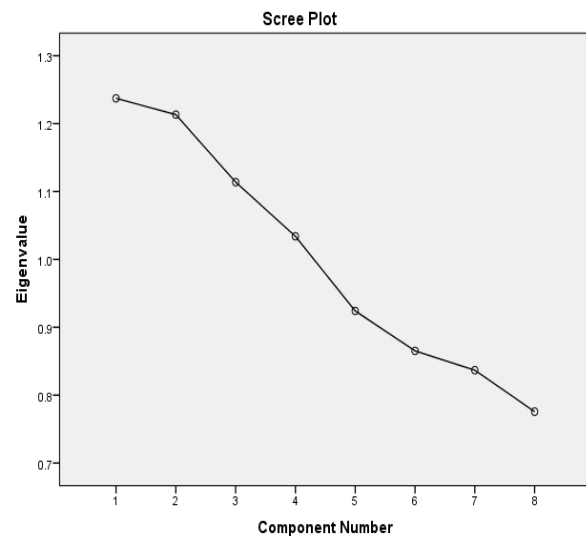
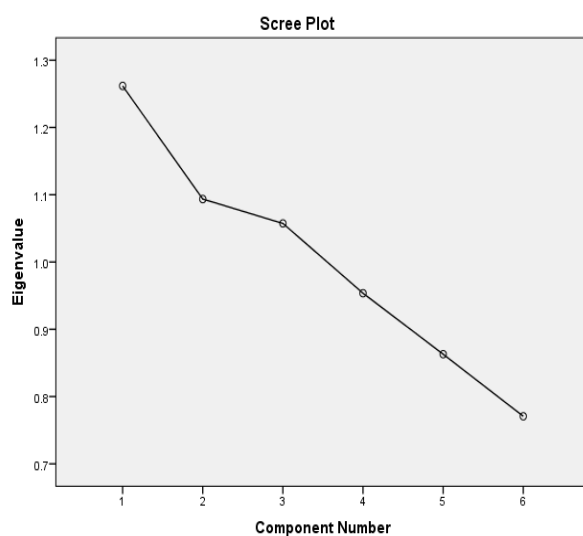


Figure 1: Factor Analysis Scree Plot before Covid-19. Figure 2: Factor Analysis Scree Plot during Covid-19.

Evaluation of Factors Influencing Customer's Behaviour

The evaluation of factors influencing customer's behavior to the e-commerce platform, results reveals 0.315 as the determinant of the correlation matrix. Also, the Kaiser-Meyer-Olkin Statistic of 0.689 and Barlett's statistic of 466.94 (0.027) reveals that the correlation matrix is not an identity matrix; therefore the variables are related and adequate (see Table 8). The mean results provide the level of agreement (significant) by respondents on factors influencing customer's behavior to e-commerce platform; which is factored as a convenience, service satisfaction, and trust (see Table 8). The result is also revealed in the total variance of



37.34% of the 14 statements by the 3-factor components (see Table 9 & 10, Figure 3). However, respondents opined that pricing was not a factor because goods are not offered at low prices on e-commerce platforms.

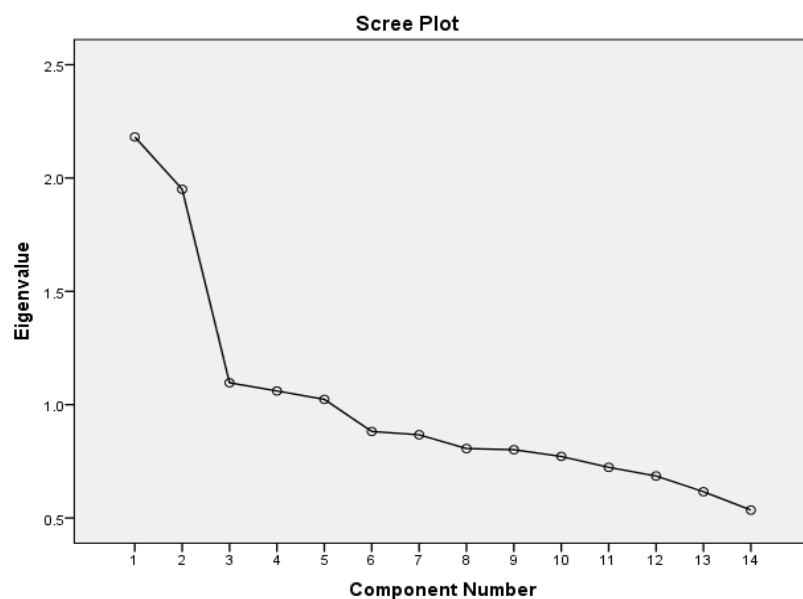
Table 8: Factors Influencing Customer's Behaviour

Statements	Mean	Std. Deviation	Determinant of the Correlation Matrix	Kaiser-Meyer-Olkin Statistic	Bartlett's Statistic (p-value)
Convenient/ easy	3.1022	0.68736	0.315	0.689	466.936 (0.027)
Free and timely delivery	3.1484	0.62848			
Cash on delivery	3.1800	0.60218			
low prices/better offer	2.0487	0.90665			
Easier to compare products and offers	3.1338	0.72858			
Easy, fast and reliable home delivery	3.1314	0.66791			
Purchase return/cash refund policy	3.1655	0.67850			
Confident in the secure electronic transaction of the platform	3.1509	0.72692			
Privacy and security policy	3.1946	0.75938			
Navigation (layout and ease of use)	3.1776	0.68438			
Guarantee/insurance	3.1387	0.72767			
Product information such as logos, pictures, prices	3.1825	0.74460			
Customer services	3.1144	0.73190			
Offers branded products	3.1290	0.73612			

Table 9: Factors Influencing Customer's Behaviour Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.181	15.581	15.581	2.181	15.581	15.581	2.175	15.539	15.539
2	1.951	13.933	29.513	1.951	13.933	29.513	1.804	12.883	28.422
3	1.097	7.833	37.346	1.097	7.833	37.346	1.249	8.924	37.346
4	1.060	7.574	44.920						
5	1.023	7.310	52.230						
6	.882	6.299	58.529						
7	.867	6.194	64.724						
8	.806	5.759	70.483						
9	.801	5.723	76.206						
10	.772	5.511	81.717						
11	.724	5.169	86.886						
12	.685	4.895	91.780						
13	.616	4.399	96.179						
14	.535	3.821	100.000						

Extraction Method: Principal Component Analysis.

**Figure 3: Factor Analysis Scree Plot of Factors Influencing Customer's Behaviour**

**Table 10: Factors Influencing Customer's Behaviour Rotated Component Matrix^a**

	Component		
	1	2	3
DL9I	.572	.059	-.005
DL9II	.616	.052	-.174
DL9III	.603	-.104	.156
DL9IV	-.100	-.203	.461
DL9V	.584	.091	-.096
DL9VI	.631	-.120	.075
DL9VII	.571	-.001	.088
DL10I	.010	.590	-.147
DL10II	.035	.365	.573
DL10III	.076	.017	.596
DL10IV	.056	.631	-.003
DL10V	-.126	.576	.169
DL10VI	.059	.359	.461
DL10VII	.011	.619	.113

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

CONCLUSION

This study reveals that before the pandemic, customers adopted an e-commerce platform satisfactorily although few items were purchase in a single transaction resulting in a relatively low amount spent in each transaction. Also, results during the pandemic reveal customer's adoption of e-commerce platforms is satisfactorily and the sustainability of e-commerce is highly recommendable. Consequently, COVID-19 greatly affected the supply chain of businesses including online shops but did not affect parcel delivery even with Government lockdown directives; hence e-commerce is preferable rather than visiting shops/malls. Thus, the impact of the COVID-19 pandemic on e-commerce was significant. Furthermore, there was an increase in customer's purchasing behaviour using e-commerce platforms during lockdown due to the COVID-19 pandemic in Nigeria. This study has revealed that convenience, service satisfaction, and trusts such as privacy and transaction security are factors influencing customer's behavior in the adoption of e-commerce platforms. Therefore, the outbreak of COVID-19 has indeed impacted positively e-commerce in Nigeria and at large the economy of Nigeria.

Acknowledgment

Authors acknowledged the editor and anonymous reviewer for their valuable suggestions and comments towards the improvement of the earlier version of this paper.



REFERENCES

- Ann O., Chinelo C.U., Joy E. and Wilfred I. U. (2019). E-commerce as a strategy for sustainable value creation among selected traditional open market retailers in Enugu State, Nigeria. *Sustainability* 11 (4360) 1-18. doi:10.3390/su11164360.
- Ayo, C. K., Adebisi, A. A., Fatudimu, I. T., and Uyinomen, O. E. (2008). A Framework for e-commerce implementation: Nigeria a case study. *Journal of Internet Banking and Commerce*, 13, 2, 1-12.
- Ayo, C. K., Ekong, U. O., Fatudimu, I. T., and Adebisi, A. A. (2007). M-commerce implementation in Nigeria: trends and issues. *Journal of Internet Banking and Commerce*, 12, 2, 1-15.
- Bidgoli, H. (2002). Electronic commerce: principles and practice, (USA: Academic Press.
- Central Bank of Nigeria (CBN) (2020). CBN policy measures in response to COVID 19 outbreak and spillovers: circular to deposit money banks and the general public on: FPR/DIR/GEN/CIR/07/049, 1-3. www.cbn.gov.ng.
- Chaing, K and Ruby Roy Dholakia, R.R. (2003). Factor driving consumer intention to shop online: an empirical investigation. *Journal of Consumer Psychology*, 13 (1&2), 177-183.
- Chiejina, C. (2014). Investigating the significance of the 'pay on delivery' option in the emerging prosperity of the Nigerian e-commerce sector. *Journal of Marketing and Management*, 5, 1, 120-135.
- Chiemeke, S. C., and Evwiekpaefe, A. E. (2011). A conceptual framework of a modified unified theory of acceptance and use of technology (UTAUT) model with Nigerian factors in e-commerce adoption. *Educational Research* 2, 12, 1719-1726.
- Chiemeke, S. C., Evwiekpaefe, A. E., and Chete, F. O. (2006). The adoption of internet banking in Nigeria: An empirical investigation. *Journal of Internet Banking and Commerce*, 11, 3, 1-9.
- Gibbs, L.J., and Kraemer, K.L. (2004). A cross-country investigation of the determinants of scope of ecommerce use: an institutional approach, *Electronic Markets*, 14 (2) 124-137.
- Godes, D., Mayzlin, D., Chen, Y., Das, S., Dellarocas, C., Pfeiffer, B., Libai, B, Sen, S., Shi, M., and Verlegh, P. (2005). The firm's management of social interactions. *Marketing Letters*, 16 (3/4) 415-428.
- Hemant K. S. and Umakanth.S (2018). Influence of e-commerce on buying behaviour of customers. *EPRA International Journal of Economic and Business Review*, 6 (9) A5-A12. e-ISSN: 2347 - 9671| p- ISSN : 2349 – 0187.
- Huang, Z. and Benyoucef, M. (2013). From e-commerce to social commerce: a close look at design features. *Electronic Commerce Research and Applications* 12 (4), 246-257.
- ITU. Individuals Internet: 2000-2013. Retrieved from http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2014/Individuals_Internet_2000-2013.xls
- ITU. Mobile_cellular_2000-2012. Retrieved from http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2013/Mobile_cellular_2000-2012.xls
- Kshetri, N. (2007). Barriers to e-commerce and competitive business models in developing countries: A case study. *Electronic Commerce Research and Applications*, 6, 443-452.



- Kurnia, S., Choudrie, J., Mahbubur, R. M.D., and Alzougool, B. (2015). E-commerce technology adoption: A Malaysian grocery SME retail sector study. *Journal of Business Research*, 68, 1906-1918.
- NCDC (2020). COVID-19 Nigeria. <https://COVID19.ncdc.gov.ng>
- Nunes, P.F. and Kambil, A. (2001). Personalization? No thanks. *Harvard Business Review* 79 (4), 32–33.
- Ramanathan, R. Ramanathan, U., and Hsiao, H. (2012). The impact of e-commerce on Taiwanese SMEs: *Marketing and operations effects*, *Int. J. Production Economics*, 140, 934–943.
- Selvakumar D.J (2014). A study on online shopping behaviour in Coimbatore. *Asian Research Journal of Business Management*, 1 (2).
- Taro-Yamane (1967). Elementary sampling theory, Englewood Cliffs, New Jersey. Prentice-Hall, Inc., x 405.
- Ueasangkomsate, P. (2015). Adoption e-commerce for export market of small and medium enterprises in Thailand. *Procedia-Social and Behavioral Sciences*, 207, 111-120.
- WHO (2020). Coronavirus disease 2019 (COVID-19). *Situation Report-94*. <https://www.who.int/docs>.
- Wymer, S. A., and Regan, E. A. (2005). Factors influencing e-commerce adoption and use by small and medium businesses. *Electronic Markets*, i1, 4, 438-453.
- Zhang, D. Zhu, P. and Ye, Y. (2016). The effects of e-commerce on the demand for commercial real estate. *Cities*.52, 1-10.
- Zhang, Y. and Jiao, R.J (2007). An associative classification-based recommendation system for personalization in B2C e-commerce applications. *Expert Systems with Applications*, 33 (2), 357-367.



APPENDIX

QUESTIONNAIRE

TITLE: ON IMPACT OF COVID-19 ON E-COMMERCE PLATFORMS

Section A: Socio-Demography

1. Sex: (a) male (b) female
2. Age: (a) <20 (b) 21-25 (c) 26-30 (d) 31-35 (e) 36-40 (f) >40
3. Occupation: (a) student (b) employed (c) unemployed
4. Education: (a) primary/SSCE (b) OND/HND (c) first degree (d) post graduate

Section B: Before Lockdown

1. You are used to e-commerce platforms (a) strongly agree (b) agree (c) disagree (d) strongly disagree
2. How often do you shop online? (a) Frequently (b) occasionally (c) rarely (d) never
3. What is the number of items purchase in one transaction? (a) 1 item (b) 2-3 items (c) 4-5 items (d) > 5 items.
4. What is the average amount (\$) spent in each transaction? (a) <50,000 (b) 50,000-100,000 (c) 100,000-500,000 (d) >500,000
5. What is your satisfaction with the product selection, brand selection, and product quality of e-commerce platforms? (a) very satisfy (b) satisfy (c) unsatisfied (d) very unsatisfied
6. The contracted terms, conditions and related practices of the platform are clear (a) strongly agree (b) agree (c) disagree (d) strongly disagree

Section C: During Lockdown/Movement Restrictions

1. COVID-19 have greatly affected the supply chain of businesses including online shops (a) strongly agree (b) agree (c) disagree (d) strongly disagree
2. Due to COVID-19 shopping online is preferable rather than visiting shops/malls? (a) strongly agree (b) agree (c) disagree (d) strongly disagree
3. How much have you spent or generated from e-commerce platforms due to the COVID-19 pandemic? (a) <100,000 (b) 100,000-500,000 (c) 500,000-1million (d) >1 million
4. What is satisfaction with the level of services provided by e-commerce platforms? (a) very satisfied (b) satisfied (c) unsatisfied (d) very unsatisfied
5. It is easy to get help and guidance regarding issues encountered in using the platforms (a) strongly agree (b) agree (c) disagree (d) strongly disagree
6. COVID-19 has greatly affected parcel delivery (a) strongly agree (b) agree (c) disagree (d) strongly disagree



7. What is your likelihood of purchasing online in the future (a) very likely (b) likely (c) slightly unlikely (d) strongly unlikely
8. E-commerce is the future for buying and selling of goods and services (a) strongly agree (b) agree (c) disagree (d) strongly disagree
9. Reasons behind purchase
 - i Convenient/ easy (a) strongly agree (b) agree (c) disagree (d) strongly disagree
 - ii Free and timely delivery (a) strongly agree (b) agree (c) disagree (d) strongly disagree.
 - iii Cash on delivery (a) strongly agree (b) agree (c) disagree (d) strongly disagree
 - iv low prices/better offer (a) strongly agree (b) agree (c) disagree (d) strongly disagree
 - v Easier to compare products and offers (a) strongly agree (b) agree (c) disagree (d) strongly disagree
 - vi Easy, fast and reliable home delivery (a) strongly agree (b) agree (c) disagree (d) strongly disagree
 - vii Purchase return/cash refund policy (a) strongly agree (b) agree (c) disagree (d) strongly disagree
10. Trust factors capable of influencing a customer to use e-commerce platforms
 - i Confident in the secure electronic transaction of the platform (a) very satisfy (b) satisfy (c) unsatisfied (d) strongly unsatisfied
 - ii Privacy and security policy (a) very satisfy (b) satisfy (c) unsatisfied (d) strongly unsatisfied
 - iii Navigation (layout and ease of use) (a) very satisfy (b) satisfy (c) unsatisfied (d) strongly unsatisfied
 - iv Guarantee/insurance (a) very satisfy (b) satisfy (c) unsatisfied (d) strongly unsatisfied
 - v Product information such as logos, pictures, prices (a) very satisfy (b) satisfy (c) unsatisfied (d) strongly unsatisfied
 - vi Customer services (a) very satisfy (b) satisfy (c) unsatisfied (d) strongly unsatisfied
 - vii Offers branded products (a) very satisfy (b) satisfy (c) unsatisfied (d) strongly unsatisfied