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Coronavirus outbreaks and its effects on the demand for electronic business in New Bussa, Niger state

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ABSTRACT

The outbreak of coronavirus which started from Wuhan in China and eventually cut across the borders of the countries into the world brought significant change to most aspects of human life. Drastic preventive measures that were put in place, such as social distances and lockdown, immediately brought effects and paved more way to the use of information technology especially in the area of business since man cannot do without his basic needs. This research aimed to study the use of e-business and social media platforms before and during the COVID-19 lockdown in the study area. Google Form was used for the self-constructed electronic business demand and adoption questionnaire and distributed online to WhatsApp contacts of the researchers involved in the study. The data were analyzed using charts, Pearson's correlation statistics, paired sample, and independent sample *t*-test statistics. Considering the adoption of e-business platforms before and during coronavirus in the study area using different measuring factors, the result showed that even though there was higher demand for electronic business during the coronavirus outbreak in the study area, the higher demand was found to be insignificant and the respective factors were fully presented and discussed in the results.

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1. Introduction

At the end of year 2019, Wuhan, an emergency business hub of China, experienced an outbreak of a novel coronavirus that killed more than 800 and infected over 70,000 individuals within the first 50 days of the pandemic (Shereen et al., 2020). Little was actually known until it became an outbreak and pandemic as it cut across every border of each country of the world and began to reduce the human population as the death toll began to increase. It spread like wildfire since it is easily contagious just by mere human contacts. According to Bouey (2020), the reason behind the rate of spread of the virus was that the timing and the global environment in which this novel coronavirus emerged also helped it spread globally. Just before the outbreak of the virus, there were 739 international air travel routes originating from China, and, on average, 51 million people traveled between China and other countries per year. From Wuhan, which is a major transportation hub and center of commerce in central China, on an average day, 30,000 people fly out of the city, and many more use the bullet trains from three railway stations in the city. The outbreak intensified right before the peak travel time for the Chinese Lunar New Year

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(dated January 25, 2020)—2 weeks before to 2 weeks after the New Year day, a time during which more than 3 billion trips typically occur in a normal year. This actually aided the rapid spread of the virus. This led scientist to emergency research on how to save the world from the infection and its potency and preventive measures were realized which led to quarantine suspected people especially from zones that are identified with the deadly virus, to the use of face mask, hand sanitizers, social distancing measures, and the eventual partial and total lockdowns. For the community and nations of the world, staying indoor became more than an option and was mandatory, and the only people who were allowed to move around were people with essential services. Nigeria as a nation having over 120 million populations was not excluded. The first case of COVID-19 was identified in Nigeria on February 27, 2020 (Aladejebi, 2020). The coronavirus entered Nigeria through an infected Italian citizen who came in contact with a Nigerian citizen who was subsequently infected with the coronavirus. The coronavirus then spread to other citizens in Lagos and to other parts of the country (Ozili, 2020). The northern part of the country was not spared, including Niger state. Different travelling bans were placed; especially international airports were grounded to curb the spread of the deadly virus. This affected many sector of humanity, be it transportation, education, businesses, agriculture, economy, and many more. The COVID-19 pandemic affected the global economy in two ways (Ozili, 2020): the spread of the virus encouraged social distancing which led to the shutdown of financial markets, corporate offices, businesses, and events, and secondly the rate at which the virus was spreading, and the heightened uncertainty about how bad the situation could get, led to flight safety in consumption and investment among consumers and investors (Ozili and Arun, 2020). The short-term impact of COVID-19 was immediately and effortlessly felt, due to the widespread lockdown and social distancing measures globally (He and Harris, 2020). But despite the lockdown measure across the country, man by nature cannot do without his basic needs, which are food, clothing, and shelter. At the point of the lockdowns, man continued to be in demand for his basic needs since he must be fed to survive and must continue to carry out some activities even within the lockdown. How would the society continue to get access to these basic needs since the lockdown also affected both small and great markets; they were shut down (partially). The need for business continued to be on demand, but solemnly the means of meetings this demand sprout out through electronic business.

Electronic business is basically buying and selling of goods and services online and it involves the use of Internet connectivity; a platform that incorporates telecommunication. This avenue of business has been available and had been adopted as a market system even before the spread of coronavirus. Electronic business has a great advantage as it is basically a virtual transaction. The party involved does not really need a physical contact before any transaction is carried out. The impact of Information Communication Technology (ICT) across all boards remains a pinnacle to reference with as the world continues to strive and maintain survival. The vital role of ICT on electronic business became a prominent source of buying and selling and still providing other services during the coronavirus and the eventual lockdown. A characteristic of the pandemic has been the switch from face-to-face to digital connection for schooling, higher education, business meetings, health consultations, shopping, and cultural events (Phillipson et al., 2020). The services of the e-commerce companies like Jumia, eazebuy, konga, and Jiji became more relevant. The crisis makes e-commerce a particularly useful asset in the fight against the virus as Ungerer et al. (2020) listed three major impacts of this during the outbreak; it helps to further reduce the risk of new infections by offering online grocery delivery, also helps to preserve jobs during the crisis and lastly helps increase the acceptance of prolonged physical distancing measures among the population. Since online shopping and online services are available to people during the lockdown, including video chats, movie streaming, and online classes, it makes it much more bearable to live and work while limiting physical interaction with others. Although coronavirus was later known to become contagious against contacts be it human and materials surface, a 40-day quarantine plan was placed on goods outside the shore of the country to ascertain if it is virus free but within the shores of the country electronic business companies continue to deliver goods to door steps of various citizens. So, the outbreak of coronavirus has greatly increased the rise, popularity, and the use of electronic business across the world and its impact cannot be overlooked as it continues to dominate over traditional way of business. Otache (2020) discussed the effects of the COVID-19 pandemic on the Nigeria's economy and possible coping strategies; the author also identified the effects of the virus across different sectors of the country including education, agriculture, economics, and businesses, but later recommended an adoption of e-business model for business organization to digitalize their respective operations. Earlier, Kabugumila et al. (2020) had an over view of the adoption and effective implementation of e-commerce which is a subdimension of e-business and ascertain the need to utilize the opportunities and advantages provided through electronic business.

1.1. Purpose of the study

This study is carried out purposefully to find out the effects of coronavirus outbreak on the demands for electronic business. The objectives of the study are as follows:

- To determine the rate of adoption of social media channels to support or facilitate business transaction and interaction;
- To determine the level of awareness about e-business applications in the study area;
- To examine the rate of usage of the itemized popular e-business applications before the coronavirus pandemic;
- To examine the rate of usage of the itemized popular e-business applications during the coronavirus pandemic;
- To carry out comparative analyses of the difference in the rate of usage of the itemized e-business applications before and during the coronavirus pandemic;
- To determine the influence of some factors on the rate of adoption of the itemized e-education software in the study area.

1.2. Research hypotheses

The study is guided by the following research hypotheses:

- $H_0$1: There is no significant difference between rate of adoption of e-business software resources before and after the coronavirus outbreak in Nigeria.
- $H_0$2: There is no significant relationship between income and adoption of e-business in Nigeria.
- $H_0$3: There is no significant relationship between educational qualification and adoption of e-business in Nigeria.
- $H_0$4: There is no significant relationship between Internet access and adoption of e-business in Nigeria.

2. Material and Methods

This study adopted a survey design giving no special treatment to the subjects and there is no control group. At the inception of the study, a checklist of popular proprietary e-business software available in Nigeria was obtained. Also, a checklist of some popular social media software applications in Nigeria that can support electronic business was obtained and the survey was based on the checklist obtained.

The study was conducted during the coronavirus outbreak, at the time when many organizations were just allowed to resume work and when many schools were still to resume physical classes. The study, therefore, includes all social media contacts of the researchers who carried out this study without any exclusion criteria. However, only contacts that desire to be part of the study were followed-up. The research instrument was a self-constructed electronic business demand and adoption questionnaire (EBDA). The questionnaire consists of sections A–E: section 'A' collects information about the demographic characteristics of the respondents; section 'B' consists of awareness about the existence of relevant software; sections 'C' and 'D' collect information about level of usage of itemized software before and during the coronavirus outbreak; and section E collects information about purpose of usage of the various software resources.

The EBDA was input into a Google Form and the website link to access the Google Form was sent via social media to contacts of all the researchers who carried out the study. Follow-up messages were sent to the prospective respondents within 2 weeks. The EBDA Google Form was made accessible to participants between the 18th of October and the 30th of October, 2020 when a total number of 150 responses were retrieved. Some of the questions are open-ended, while some are in various point Likert scales and others are in grading scales questions.

The study was location based within New Bussa in Borgu local government of Niger state in Nigeria. The data collected from the participants were analyzed using charts, Pearson's correlation statistics, paired sample, and independent sample *t*-Test statistics with the aid of Microsoft Excel and Statistical Package for Social Sciences (SPSS).

3. Results and Discussion

3.1. Personal data of respondents

The personal characteristics of the respondents who are of importance to this study are described in Table 1 and Figures 1–4. Table 1 shows the age and income

Table 1. Mean distribution of the respondents by age and monthly income.

	N	Minimum	Maximum	Mean	Std. deviation
Age	150	17	55	30.50	8.253
Income	150	0	300,000	50,882.87	67,888.031

mean distribution. The age of the respondents ranged between 17 and 55 with an average of 30 years, while the income of the respondents ranged between 0 and N600,000.00 with an average income of N50,882.43. The male respondents (70.5%) were significantly higher than the female respondents (29.5%). Various educational qualifications were possessed by the respondents with the highest being bachelors' degree (39.6%), followed by national diploma (18.8%). 16.1% possessed a Master's degree, 9.4% had a higher national diploma certificate, 6% had a national certificate in education, 4.0% had a senior secondary certificate, and 3.3% had a primary education certificate. There was no respondent without at least primary education.

3.2. Data analysis

Table 2 shows the rate of adoption of social media channels and/or generalized applications for electronic business, while Figure 3 shows the levels of awareness about e-business applications. WhatsApp was shown as the software application mostly adopted to support business transaction, while twitter was the least adopted. Figure 3 also shows that only 42.3% of the respondents were aware of the electronic business proprietary software (website and mobile application) and 43.6% were not aware of any electronic business software.

To test the hypotheses stated, Table 3 shows the rate of adoption of e-business software resources before and after the coronavirus outbreak in Nigeria.

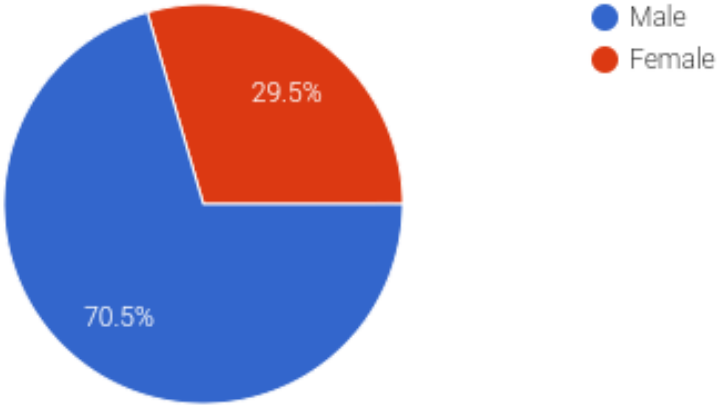

Figure 1. Distribution of the respondents by gender.

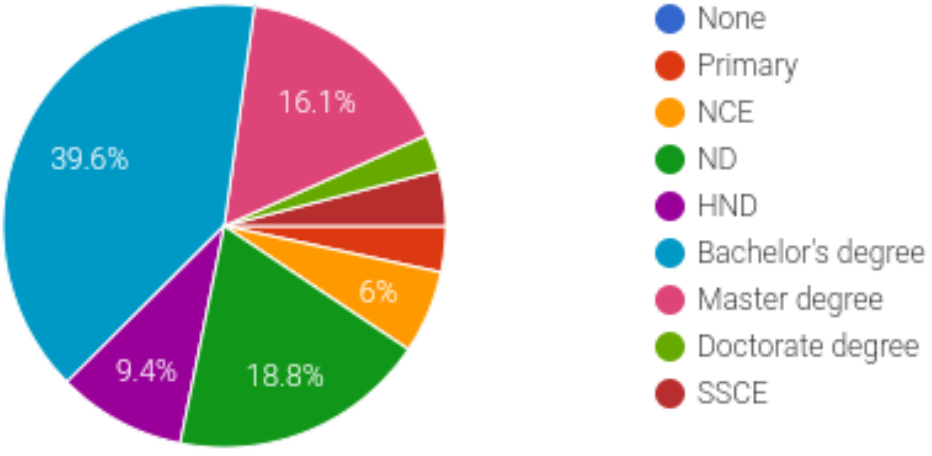

Figure 2. Distribution of the respondents by educational qualifications.

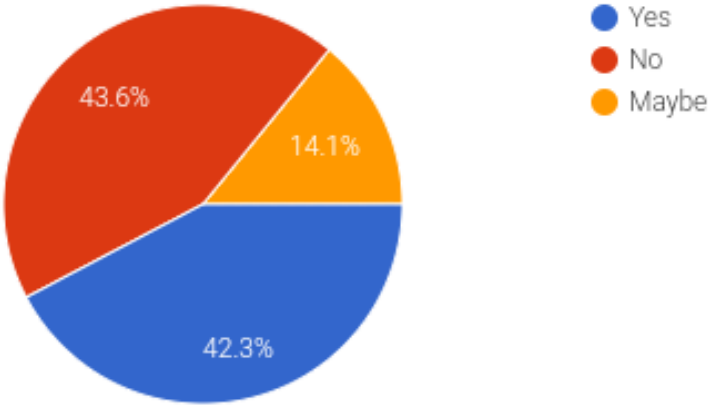

Figure 3. Level of awareness about the existence of e-business website and mobile application.

Table 4 shows the effects of the educational level on adoption of e-business software resources before and after the coronavirus outbreak in Nigeria, while Table 5 show the effects of Internet access on adoption of e-business software resources before and after the coronavirus outbreak in Nigeria. Table 6 shows the effects of Internet access on adoption of e-business software resources before and after the coronavirus outbreak, while Table 7 shows the effects of income on adoption of e-business software resources before and after the coronavirus outbreak.

It is to be noted that the mean rating scale of Tables 2–6 is from 1 to 7. More so, in the analysis presented in Table 6, 1 GB monthly Internet access was used as Internet access divide and N50,000 was used as the monthly income divide in Table 7.

4. Discussion of the Findings

The result of the analysis presented in Table 3 shows that the adoption of e-business before (μ = 3.25) and during (μ = 3.29) the coronavirus outbreak is relatively low in the study area on a rating scale of 1–7. Furthermore, there was no significant difference ($\Delta\mu > 0$, $p > 0.05$) between of adoption of e-business before and during the coronavirus outbreak in the study area. This result is further substantiated by Table 2 which shows that adoption of social media channels to support business transaction is low in the study area (WhatsApp being the highest adopted channel was only adopted for e-business by only 23.33% of the respondents). It was also supported by Figure 3 which shows the level of awareness about e-business in the study area was only 42.3%. This is contrary to the findings of Ungerer et al. (2020) that listed three major impacts of this during the coronavirus outbreak to include surge in the adoption of electronic adoption. The presentation of Tables 4–7 is necessitated in order to find out the possible reasons behind the contrary findings in this study.

Table 4 shows that educational level had no significant effects on the adoption of e-business software resources before and after the coronavirus outbreak in the study area as current involvement in higher education or possession of higher education certificate has little but no significant influence (before outbreak: μ = 3.26, $\Delta\mu > 0$, $p > 0.05$; after outbreak: μ = 3.38, $\Delta\mu > 0$, $p > 0.05$ on a rating scale of 1–7).

Table 5 shows that gender had no significant effects on adoption of e-business before and after the coronavirus outbreak in the study area as involvement of both male and female in e-business were significantly low during both phases; moreover, there was no significant difference in both genders' adoption of e-business even though the male population adopted e-business more during both phases, it was not significantly different from that of the female population ($p > 0.05$).

It is shown in Table 6 that those who had access to at least 1 GB Internet access were more involved in e-business compared with those who did not before ($\Delta\mu$ = 0.114) and after the coronavirus outbreak ($\Delta\mu$ = 0.348). However, in both instances, the difference in adoption of e-business by those with access to at least 1 GB Internet access was not significantly from those who did not ($p > 0.05$).

Pertaining to income divide presented in Table 7, it is shown that during the coronavirus outbreak, those

Table 2. Rate of adoption of social media channels and/or generalized applications for electronic business.

Social media channels	Number of responses	As percentage of total respondents
Facebook	24	16.00
WhatsApp	35	23.33
Google Search	28	18.67
Zoom	19	12.67
Skype	12	8.00
Twitter	6	4.00
Telegram	21	14.00
Instagram	31	20.67
YouTube	13	8.67
	189	100.0

Table 3. Rate of adoption of e-business software resources before and after the coronavirus outbreak.

Variables	Mean	Mean difference	*p*-value
e-business_use_b4	3.25	0.04	0.785
e-business_use_during	3.29		

who had income above N50,000 were more involved in e-business compared with those who did not ($\Delta\mu > 0$; $p < 0.05$). However, before the coronavirus outbreak, the difference in adoption of e-business by those with income above N50,000 (even though higher) was not significantly different from those with income less than N50,000 ($\Delta\mu > 0$; $p > 0.05$).

The results presented in Tables 3–9 show that the residents of New Bussa did not adopt e-business adequately during the coronavirus outbreak as proposed by Kabugumila et al. (2020) and against the findings of Ungerer et al. (2020). Further analysis found that the low or high educational level was not the rationale behind the low adoption of e-business neither was it gender based, nor was it for reason of Internet access but only for reason of low income of residents. This is supported by Table 1 which shows that the average monthly income in the study area is N50,882.87. Moreover, Table 7 also shows that only 47 respondents earn above N50,000, while the remaining 103 respondents earn below N50,000. Thus, current income is shown to be the reason why residents of the study area have indifferent attitudes toward adopting e-business during COVID-19.

Table 4. Effects of educational level on the adoption of e-business software resources before and after the coronavirus outbreak.

	Higher education	Mean	Mean difference	*p*-value
ebiz_use_b4	Possession/involvement	3.26	0.08	0.911
	Non-Possession/involvement	3.18		
ebiz_use_after	Possession/involvement	3.38	1.20	0.09
	Non-Possession/involvement	2.18		

Table 5. Effects of gender on adoption of e-business software resources before and after the coronavirus outbreak.

	Gender	Mean	Mean difference	*p*-value
ebiz_use_b4	Male	3.29	0.457	0.242
	Female	2.93		
ebiz_use_after	Male	3.48	0.610	0.138
	Female	2.87		

Table 6. Effects of Internet access on adoption of e-business software resources before and after the coronavirus outbreak in Nigeria.

	Internet access	Mean	Mean difference	*p*-value
ebiz_use_b4	Above 1 GB Internet access	3.30	0.114	0.242
	Below 1 GB Internet access	3.19		
ebiz_use_after	Above 1 GB Internet access	3.45	0.348	0.138
	Below 1 GB Internet access	3.10		

Table 7. Effects of income on adoption of e-business software resources before and after the coronavirus outbreak in Nigeria.

	Income	*N*	Mean	Mean difference	*p*-value
ebiz_use_b4	Income above N50,000	47	3.57	0.47	0.226
	Income below N50,000	103	3.11		
ebiz_use_after	Income above N50,000	47	3.98	1.0	0.013
	Income below N50,000	103	2.98		

5. Conclusion and Recommendation

The study evaluated the possible effects of the coronavirus outbreak on attitude change of residents of New Bussa toward the demand for electronic business in New Bussa, Niger state. It is the contention of the study that the lockdown enforced by the Nigerian government due to the continuous spread of coronavirus would affect the demand for electronic business in the study area and the curfew imposed would affect the conduction of face-to-face business to a certain extent in the study area. Data were collected from residents of New Bussa to test the reliability or fallibility of this claim and the data collected were analyzed using SPSS using charts, descriptive statistics, and *t*-test to test the hypotheses stated. The result showed that even though there was higher demand for electronic business during the coronavirus outbreak in the study area, the higher demand was found to be insignificant. Furthermore, it was found that educational level, gender, and Internet access rate were not responsible for the demand for electronic business, rather low income of respondents in the study area was found to be the rationale.

The result of the study is limited to New Bussa, Niger state, Nigeria; it is therefore recommended that any software solution provider trying to provide electronic business that will focus on New Bussa and similar environment should consider controlling the effects of income on adoption of such solution. Furthermore, a similar study can be conducted in similar towns to New Bussa and more urbanized area.

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