

Estimating the Impact of COVID-19 on Small and Medium Scale Enterprise: Evidence from Nigeria

Abioye Oyewale^{1,3}, Ogunniyi Adebayo², Olagunju Kehinde³

¹International Institute of Tropical Agriculture (IITA), Nigeria

²International Food Policy Research Institute (IFPRI), Nigeria

³Economics Research Branch, Agri-Food and Biosciences Institute (AFBI), 18a Newforge Lane, Belfast BT9 5PX, UK.

Abstract

This paper examines the effect of COVID-19 related cases and lockdown measures on the issues related to Small and Medium Scale Enterprise in Nigeria. Using an electronic data collection approach, this study analyzes the data using the linear probability model to estimate the effect of the pandemic on the entrepreneurs and model the factors influencing coping strategies using a multivariate probit model. We found that majority of the entrepreneurs have been affected (both severely and slightly) by the COVID-19 pandemics through the partial and total lockdown and movement restrictions. We found that the COVID-19 pandemic's effect differs by sector of the economy (agriculture versus non-agriculture). For instance, partial lockdown measures had an increasing likelihood effect on low sales among the enterprises especially for the non-agricultural sector but there is a contrary result in the context of the food and agriculture sector. In addition, partial lockdown increases the likelihood of switching approaches of business (coping strategies) whereas total lockdown has a negative influence on the coping strategies. One of the policy implications of our study is the need to address social protection approaches (such as palliative measures) which can help to cushion the effect on the pandemic on the Small and Medium Scale Enterprise in Nigeria.

1.0 Introduction

The coronavirus outbreak is ravaging human health, disrupting the livelihood of thousands of people, and impact negatively on the global economy (Craven et al. 2020; Amare et al., 2020). Confirmed cases of the novel coronavirus named Covid-19, which was first reported in December 2019 in the Chinese province of Hubei and declared a pandemic by the World Health Organization in March 2020 is now over 28 million worldwide, 1, 344, 403 in Africa, and 55,829 in Nigeria as at September 2020. The presence of the virus in Nigeria was first reported on February 27, 2020, when an Italian citizen visiting Nigeria tested positive for the virus, caused by SARS-CoV-2. On 9 March 2020, a second case of the virus was reported at Ewekoro, Ogun State, a Nigerian citizen who had contact with the Italian index case. The rapid spread of the COVID-19 virus led countries around the world into a health crisis. In addition to the human impact, there are also substantial economic, business, and commercial impacts being felt globally. As viruses know no borders, the impacts will continue to spread (KPMG, 2020). The study conducted by KPMG, (2020) has revealed that 94 percent of global and local businesses in Nigeria have been impacted and are already seeing COVID-19 disruptions.

Segal and Gerstel, (2020) forecasted in their study and suggested that there will be a deceleration of economic growth starting from March 2020 onwards without a precise ending date and some countries entering a recession. Seth et al., (2020) opined that impact of the COVID-19 pandemic will have a likely severe impact on small and medium scale enterprise. However, the channels and to what extent it will be is not clear and not evidence in the literature. It is on this premise we intend to examine the impact of the COVID-19 pandemic on micro-enterprises in Nigeria, and to identify the coping strategies used by the entrepreneurs and also identify factors influencing coping strategies. We used a structured questionnaire using an electronic medium (Survey Monkey) and targeted Corporate Affairs Commission's (CAC) registered and non-registered micro-businesses across Nigeria. The online survey was shared via Email, WhatsApp, Twitter, LinkedIn, and other social networking and business platforms for micro-enterprises. To the best of our knowledge, there is no data on Covid-19 impact on registered and non-registered micro-enterprises in Nigeria. therefore, there is no empirical evidence in this area of importance in Nigeria economy.

Therefore, the research questions guiding our thoughts are (i) what are the effect of the COVID-19 pandemic on micro-enterprises in Nigeria? (ii) what are the factors influencing the coping

strategies of the entrepreneurs in Nigeria? Hence, this study is timely and will provide insight on the impact of Covid-19 on registered and non-registered micro-enterprises, identify their coping strategy, highlight the expected or available support from the government, and will assist the policymakers to know how best to support micro-enterprises post-COVID-19.

The study is organized as follows: The next section reviews relevant literature on SME's business hurdles during pandemic outbreaks and survival strategies. Section 3 describes the research method. Section 4 presents the context, data collection, and descriptive statistics. Section 5 presents the findings of the study, and the final section concludes with suggestions for policymakers, industry, and future research.

2.0 Context and literature review

2.1 An Overview of Nigeria Economy in the context of Micro, Small and Medium Enterprises

In Nigeria, there are 41, 543, 028 enterprises designated as Micro, Small and Medium Enterprises (MSMEs) accounting for 99.8%, 0.17%, and 0.004% respectively with Lagos, Osun, and Oyo as the top states with the highest number of SMEs (NBS, 2017). SMEs contribute 48% of national GDP, account for 96% of businesses, and 84% of employment. Micro-enterprises are small businesses with less than 10 employees and have less than 5 million Naira in assets excluding lands and buildings. Unsurprisingly, a large majority of micro-businesses are sole proprietorships. SMEs, however, have more distributed ownerships with 65% as sole proprietorships, 21% as private limited liability companies, 6% as faith-based ownerships, and 5% as partnerships (NBS, 2017). With the larger number of enterprises in Nigeria being a micro-enterprises, any business and economic shocks will unavoidably affect various sectors and livelihoods of many citizens.

As the world is currently being ravaged by the COVID-19 pandemic, nations are grappling with how to contain the spread and limit its effect within their borders (Obiakor, 2020). The government has used different measures to control the spread of the virus and these include the closure of airports, schools, market places, and worship centers among others. The closure by the Federal Government of Nigeria started on 30 March 2020 with Federal Capital Territory, Lagos, and Ogun States having the first share being the first states with the COVID-19 cases in the country (Presidential Task Force on COVID-19, 2020).

These closures, while essential, are having negative ripple effects across all sectors and segments of the country (Obiakor, 2020). Micro and small businesses experienced a larger decline in business activity compared to medium and large firms (Lakuma et al., 2020). This may be because a number of the micro and small businesses in the country stopped operations for a while due to their helplessness to undertake preventive health measures like ensuring physical distancing, providing sanitizers, water, and soap for customers' use. (Lakuma et al., 2020). The economic deceleration in Nigeria was caused by a mixture of falling oil prices in the world market and the ripple economic effect from the COVID-19 pandemic, which not only led to a fall in the demand for oil products but also stopped economic activities from taking place when social distancing policies were enforced (Ozili, 2020).

According to Adenomon et al. 2020, who studied the effects of the COVID-19 outbreak on the Nigerian Stock Exchange's performance using Evidence from GARCH Models covering the period of 2nd January 2020 to 16th April 2020, the results revealed that profits nosedived during the COVID-19 period under study in Nigeria as against the normal pre-COVID-19 results. The work of Chukwuka and Ekeruche (2020) on the impact of the COVID-19 outbreak on the Nigerian economy, shows that Nigeria economy that was projected to experience 2.5% GDP growth, has been truncated by the pandemic leading to a higher increase of the nation's debt servicing to revenue ratio at 60% amid the falling prices of oil.

In the same vein, FATE Foundation and BudgIT (2020) studied the impact of COVID-19 on 1,943 Micro, Small, and Medium Enterprises (MSMEs) across the 36 states in Nigeria including the FCT. The result revealed that 94.3% of respondent businesses recorded negative results during the pandemic principally in the areas of Cashflow, Sales, and Revenue. AfDB's African Economic Outlook 2020 report revealed that real GDP in Africa will contract by 1.7 percent in 2020, plummeting by 5.6 percentage points from January 2020 pre-COVID-19 projection, if the virus has a significant impact but lasts for a brief period. If the spread of the virus continues till after the second quarter of 2020, a deeper GDP contraction of 3.4 percent is projected, down by 7.3 percentage points from the growth projected before the outbreak of COVID-19 (AfDB, 2020).

Nigeria has been severely hit by the spread of COVID-19 and the associated sharp decline in oil prices (IMF, 2020). According to World Bank, (2020), the swift and massive shock of the coronavirus pandemic and shutdown measures to contain it have plunged the global economy into

a severe economic contraction and the global economy is expected to shrink by 5.2% in 2020. While economic activity among advanced economies is anticipated to shrink 7% in 2020 as domestic demand and supply, trade, and finance have been severely disrupted, emerging market and developing economies (EMDEs) are expected to shrink by 2.5% in the same year (Worldbank 2020). For Nigeria, it is forecasted that the economy will shrink by 3.2% but is expected to recover in 2021 to 1.7% (Worldbank 2020).

2.2 Nigeria's government stimulus plan for micro-businesses

Aside from the 100 billion Naira credit support for the Health sector as the frontline soldiers in the fight against COVID-19, in March 2020, the Federal Government of Nigeria through the Central Bank (CBN) introduced an N50 billion Targeted Credit Facility (TCF) as a stimulus package to support households and micro, small and medium enterprises (MSMEs) affected by the COVID-19 pandemic (CBN, 2020). The broad objectives of the stimulus package comprise the following: i. to cushion the adverse effects of COVID-19 on households and MSMEs; ii. Support households and MSMEs whose economic activities have been significantly impacted by the COVID-19 pandemic. iii. Stimulate credit to MSMEs to expand their productive capacity through equipment upgrade, and research and development. The loan covers sectors like Agricultural value chain activities ii. Hospitality (accommodation and food services) iii. Health (pharmaceuticals and medical supplies) iv. Airline service providers v. Manufacturing/value addition vi. Trading and other income-generating activities. The Scheme which is being financed from the Micro, Small and Medium Enterprises Development Fund (MSMEDF), has a N25 million ceiling for MSMEs based on the activity, cashflow, and industry/segment size of a beneficiary, and a 3million credit limit for households. The interest rate under the intervention is set to be 5% per annum from March 2020 to 28th February 2021 and thereafter, the interest on the facility will change to 9% per annum. (all-inclusive) as from 1st March 2021. The Intervention, which is proposed to end on 31st December 2024, has the following collateral requirement in addition to other documentation that may be required by NIRSAL MFB i. Moveable asset(s) duly registered on the National Collateral Registry (NCR). ii. Simple deposit of title documents, in perfectible state iii. Deed of Debenture (for stocks), in perfectible state iv. Irrevocable domiciliation of proceeds v. Two (2) acceptable Guarantor vi. Personal Guarantee of the promoter of the business, and vii. Life Insurance of the Key-Man, with NMFBS, noted as the First Loss Payee viii. Comprehensive Insurance over the asset. The government also launched a reduction in Registration fees, and assisted E-registration through the National Agency for Food and Drug Administration and Control (NAFDAC) Automated Product Administration and Monitoring System (NAPAMS) for MSMEs (NAFDAC, 2020). On a state-level, for instance, in Oyo state, the state Governor inaugurated a N1billion Micro, Small and

Medium Enterprises (MSMEs) Development Scheme in June 2020. The intervention fund is aimed at stimulating the local economy of the state and create jobs for its teeming youths in a way to kick off the post-COVID-19 economic recovery plans.

3.0. Econometric Framework

To provide an answer to our first research question related to the effect of COVID-19 on Small and Medium Scale Enterprise (SMEs), we use bivariate statistical methods to understand the role of Covid-19 related variables on the different experiences by the entrepreneurs in Nigeria. The analyses adopt a one-level linear probability model specification to consider the relationship. The linear probability model assumes the probability of an entrepreneur is affected by COVID-19 is given by

$$Y_i = SHC_i + PL_i + TL_i + \varepsilon_i \quad (1)$$

where i is the represent an individual entrepreneur, Y_i represents the type of effect of COVID-19 experienced by the entrepreneur, SHC_i represents if an entrepreneur operates the SMEs in a state which high cases of COVID in Nigeria (which are Lagos, Abuja, Oyo, Kano and Ogun), PL_i represents COVID-19 measures which are the government introducing a partial lockdown of the economy, TL_i represents COVID-19 measures which are the government introducing a total lockdown of the economy and ε_i is an error term assumed to be independent and identically distributed.

To provide an answer to our second research question, which is to determine factors influencing coping strategies adopted by the entrepreneur towards the COVID-19 pandemic, we rely on the assumption that there is interdependence in the adoption of different coping strategies, suggesting that there could be a diverse effect of various factors influencing entrepreneur's decision to adopt multiple coping strategies. Consequently, we assume that there is a possibility of substitutability or complementarity of identified coping strategies against the popular assumption of mutual exclusiveness and independence of coping strategies adopted. Following the study conducted by Teklewold et al. (2013), we employed a Multivariate Probit Model (MVP) approach to assess the factors influencing coping strategies adopted by the entrepreneur

towards COVID-19 pandemic in Nigeria. Unlike other dichotomous models, the MVP model can account for unobservable factors that affect an entrepreneur's adoption decisions by allowing for correlation across error terms of latent equations (Belderbos et al. 2004). Such correlations allow error term for positive correlation (complementarity) and negative correlation (substitutability) between the multiple coping strategies (Ndiritu et. al. 2014; Bedeke et al. 2019).

In modeling this, we considered a random utility framework of a j th entrepreneur ($j = 1 \dots, K$) facing a decision to adopt or not adopt a set of interdependent coping strategies q ($q = 1 \dots Q$). The utility U_a represents benefits derived by an individual entrepreneur from not adopting any method and U_b represents the benefits of adopting coping strategies which in the context of this study include switching to online sales (OS), customized new products (CNP) and increased marketing efficiency (IME). We further hypothesize that a j th entrepreneur only chooses to adopt coping strategies b on enterprise q , if the net benefit Y^*_{jqb} , a latent variable is greater than zero. This is illustrated thus:

$$Y^*_{jqb} = U^*_b - U_a > 0 \quad (2)$$

As such, the net benefit Y^*_{jqb} is determined by the entrepreneur observed socioeconomic, the severity of COVID-19 impact, and government measures (X_{jq}) and the error term (ε_{jq}):

$$Y^*_{jqb} = X_{jq}\beta_b + \varepsilon_{jq}, \quad (3)$$

where $b = OS, CNP, IME$

The observed dichotomous outcome equation for each choice of coping strategies adopted by the entrepreneur is given as:

$$Y_{jqb} = \begin{cases} 1 & \text{if } Y^*_{jqb} > 0 \\ 0 & \text{otherwise} \end{cases} \quad \text{Where } b = OS, CNP, IME \quad (4)$$

If the adoption of b types of coping strategies are assumed to be interdependent or occur at the same time, the error term is assumed to jointly follow a multivariate normal distribution pattern with zero conditional mean and a unitary variance. The symmetric covariance matrix π is illustrated as follows:

$$\pi = \begin{pmatrix} 1 & \delta OSCNP & \delta OSIME \\ \delta CNPOS & 1 & \delta CNPIME \\ \delta IMEOS & \delta IMECNP & 1 \end{pmatrix} \quad (5)$$

The off-diagonal elements in the covariance matrix represent the unobserved correlation between the error components of the different types of coping strategies.

4.0 Context, data and descriptive statistics

The data used in this study was obtained from a rapid survey of micro-enterprises as defined by the National Bureau of Statistics (NBS). A structured questionnaire was sent electronically (via Email, WhatsApp, Twitter, LinkedIn, and other social networking and business platforms) to 301 Cooperate Affairs Commission (CAC) registered and non-registered micro-enterprises between May 25, and June 30, 2020. These micro-enterprises were asked questions concerning the business risk associated with COVID-19 and subsequent containment measures (such as lockdown). Specifically, the questions focused on measures put in place to prevent the spread of COVID-19, delivery logistics, access to inputs/raw material, payment of salary, domestic and international demand for products/services, and revenue performance of the business, employment levels, and awareness of government policy to support their business.

The result shows that the average age of the entrepreneurs is 37 years with mean education years of 16 years, which implies most of the respondents are highly educated. More than half (57 percent) of the population admitted that they were severely affected by COVID-19 incidence while approximately 4 percent admitted that COVID-19 did not affect their business engagement. More than two-thirds of the respondents are operating in the non-agricultural sector, which includes sales and services. Almost 70 percent of the respondents' admitted that they experienced low sales as a result of the COVID-19 pandemic while over 40 percent of the respondents switched to online sales as a coping strategy.

Table 1: Summary statistics of selected variables

Variable	Data description	Mean	Std. Dev.
age_num	Average age of the entrepreneurs in years	37.209	10.007
edu_yrs	Average years of education of the entrepreneurs	16.073	2.494
dummy_ffe~1	1 if the household did not experience negative effect of COVID-19, 0 otherwise	0.037	0.188
dummy_ffe~2	1 if the household did not experience severe effect of COVID-19, 0 otherwise	0.571	0.496
dummy_ffe~3	1 if the household experience slight effect of COVID-19, 0 otherwise	0.392	0.489
high_case	1 if entrepreneur operate in states with high cases of COVID-19, 0 otherwise	0.787	0.410
non_agric	1 if entrepreneur operate in non-agricultural sector, 0 agriculture	0.748	0.435
patiallock~n	1 if entrepreneur experience government measure in the context of partial lockdown, 0 otherwise	0.542	0.499
total_lock~n	1 if entrepreneur experience government measure in the context of partial lockdown, 0 otherwise	0.422	0.495
stimulus	1 if entrepreneur receive government stimulus, 0 otherwise	0.289	0.454
Online_sales	1 if the coping strategies choose is switching to online sales, 0 otherwise	0.412	0.493
customized~s	1 if the coping strategies choose is customizing new products, 0 otherwise	0.183	0.387
increased_~f	1 if the coping strategies choose is increasing marketing sales, 0 otherwise	0.279	0.449
diffculty_~s	1 if the entrepreneur experienced difficulty in accessing inputs as a result of COVID-19 pandemic, 0 otherwise	0.598	0.491
Lower_sales	1 if the entrepreneur experienced low sales as a result of COVID-19 pandemic, 0 otherwise	0.691	0.463
diffculty~g	1 if the entrepreneur experienced difficulty in exporting as a result of COVID-19 pandemic, 0 otherwise	0.113	0.317
diffculty_~g	1 if the entrepreneur experienced difficulty in importing as a result of COVID-19 pandemic, 0 otherwise	0.269	0.444
reduced_in~t	1 if the entrepreneur experienced a reduced in investment as a result of COVID-19 pandemic, 0 otherwise	0.322	0.468

5.0 Result and discussion

5.1 Effect of COVID-19 on Small and Medium Scale Enterprise in Nigeria

In this section, we present estimation results on the effect of the pandemic and related measures (lockdowns) on Small and Medium Scale Enterprise in Nigeria. Table 2, 3, 4 shows the effect of COVID-19 on Small and Medium Scale Enterprise on pooled data, food and agriculture sector and non-food and no-agriculture sector of the economy respectively. A positive and significant effect shows that entrepreneurs from states in Nigeria registering higher numbers of COVID-19 cases are likely to experience a greater increase in the negative effect poses by COVID-19 on the enterprises. We found that the likelihood of having difficulty accessing inputs in the local market is high relative to the state with low cases of COVID-19. The result shows that states in Nigeria registering higher numbers of COVID-19 cases will likely increase the probability of experiencing

low sales by 64 percent and 51 percent for the pooled sample and non-food and non-agriculture sector respectively. This implies that the economic effect of COVID-19 in the context of low sales is significantly evident and higher among enterprises that are into sales and service than the agricultural sector. Our finding is similar to the study of Seth et al., (2020) who reported over 90 percent of the Small- and Medium-Sized Enterprises experience a negative impact of COVID-19 in Pakistan. We also found that states in Nigeria registering higher numbers of COVID-19 cases would likely increase the probability of having difficulties in exporting goods, difficulties in the importation of raw materials in the enterprise and will have a reduced investment because of the COVID-19 pandemic in Nigeria. For countries like Nigeria that heavily rely on imports of major inputs used in most of the sectors (agriculture and non-agriculture), the effect of the pandemic will have a strong and massive negative impact on the survival of the Small and Medium Scale Enterprise (World Bank, 2020). The result is similar for both the pooled sampled and sales and services sector except for difficulties in exporting in the agricultural sector.

Table 2: Effect of COVID-19 on Small and Medium Scale Enterprise: Pooled sample

VARIABLES	(1) Difficulty accessing inputs	(2) Low sales	(3) Difficulty in exporting	(4) Difficulty in importing	(5) Reduce investment
State with high case	0.849*** (0.0693)	0.640*** (0.0683)	0.775*** (0.0447)	0.541*** (0.0605)	0.00702 (0.0668)
Partial lockdown	0.361*** (0.0632)	0.064*** (0.0063)	0.329*** (0.0417)	0.839*** (0.0566)	0.183*** (0.0575)
Total lockdown	0.577*** (0.0627)	0.425*** (0.0548)	0.912*** (0.0412)	0.0175*** (0.0577)	0.0317*** (0.0602)
Observations	301	301	301	301	301

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

In Nigeria, the government (at the state and national level) put in place containment measures against COVID-19, which include lockdowns¹ measures. We estimated the effect on partial lockdowns on Small and Medium Scale Enterprises; we found that partial lockdowns increase the probability of having difficulty accessing inputs in the local markets. A similar result was obtained

¹ In addition to lockdown measures, federal and state government implemented different measures includes: i) Travel bans which includes restricted entry into the country for travelers from high risk countries; closure of two main international airports; suspension of all railway passenger services in the country; closure of all air and land borders. ii) Closure of schools and religious institutions. iii) Bans on public and social gatherings across all states in Nigeria. iv) Curfew hours which restrict movement of people

for all three categories considered. Meanwhile, we observed that the non-agriculture sectors experience higher impacts compare to the food and agriculture sector. This conforms to the study carried out by the International Organization for Migration in Iraq, which reported effects on sales and production, as being the most acute. The study also showed lockdown increases the likelihood of having difficulties accessing input locally. Expectedly, partial lockdowns had an increasing likelihood effect on low sales among the enterprises, especially for the sales, production and services sector. The result suggests that because of restriction to a movement partially, there is low patronage of customers which negatively affects income generation and this may subsequently affect food security as shown in the study of Amare et al., (2020). However, there is contrary results in the context of food and agriculture sector. The results show that partial lockdown is insignificant in the food and agriculture sector. The probable reason for this result may be that the lockdown measures in Nigeria exempted some essential sectors² in which food and agriculture are inclusive. The result also shows that partial lockdowns have a negative effect on importing goods into Nigeria and exporting goods out of Nigeria. Similarly, the likelihood of having a reduced investment because of partial lockdown increases by 3.17 percentage points and 13.9 percentage points for the pooled sample and the non-agricultural sector.

Table 3: Effect of COVID-19 on Small and Medium Scale Enterprise: Food and Agriculture related

VARIABLES	(1) Difficulty accessing inputs	(2) Low sales	(3) Difficulty in exporting	(4) Difficulty in importing	(5) reduce investment
State with high case	0.152 (0.142)	-0.0545 (0.122)	0.777*** (0.0927)	0.133 (0.105)	0.165 (0.110)
Partial lockdown	0.109*** (0.008)	0.056 (0.104)	-0.123 (0.0920)	0.119*** (0.101)	0.119 (0.109)
Total lockdown	0.132*** (0.008)	0.120 (0.105)	-0.0953 (0.0872)	0.131*** (0.001)	-0.0649 (0.119)
Observations	76	76	76	76	76

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

² Others include health workers, the fire service and security personnel

We also test the relationship between total lockdown as a response to the COVID-19 pandemic and Small and Medium Scale Enterprises in Nigeria. The result shows that total lockdowns have a higher negative impact on SMEs in Nigeria than the partial lockdowns. The result shows that total lockdown which includes movement restrictions, has the probability of increasing difficulty of accessing inputs at the local markets by 57.7 percentage points, 13.2 percentage points and 64.4 percentage points for the pooled sample, agriculture sector, and non-agriculture sector respectively. The lower effect on the agriculture sector might be connected to the exemption given to food and agricultural sector. As shown in column three of Table 2 and 4, we found that total lockdown increases the likelihood of having low sales especially among the non-agriculture enterprises but not for the agricultural sector. The result shows that total lockdown will increase the likelihood of low sales by 70.8 percentage points. Our result also suggested that investments are likely to reduce because of the COVID-19 pandemic and there will be a huge difficulty in importation and exportation of goods and services because of total lockdown, which involves movement restrictions in all the channels (road, water, rail, and air).

Table 4: Effect of COVID-19 on Small and Medium Scale Enterprise: Non-Agriculture related

VARIABLES	(1) Difficulty accessing inputs	(2) Low sales	(3) Difficulty in exporting	(4) Difficulty in importing	(5) reduce investment
State with high case	0.138* (0.0816)	0.516*** (0.008)	0.288*** (0.0481)	0.326*** (0.045)	0.684*** (0.0813)
Partial lockdown	0.615*** (0.0765)	0.722*** (0.0723)	0.160*** (0.044)	0.119*** (0.059)	0.202*** (0.0684)
Total lockdown	0.644*** (0.0750)	0.708*** (0.007)	0.623*** (0.026)	0.772*** (0.094)	0.139*** (0.0713)
Observations	225	225	225	225	225

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.2 Drivers of Coping Strategies Adopted by the Entrepreneurs

Using a multivariate probit (MVP), we present in Table 5, 6, and 7 the result of the factor influencing that the coping strategies adopted by the entrepreneurs in Nigeria to cushion the effect of COVID-19 in Nigeria. We found that increase in the age of the entrepreneurs would likely

reduce the probability of using online sales. Several studies (Ogunniyi et al., 2018; Olagunju et al., 2019) have suggested that old age affects technology adoption, especially in developing countries. In all the three categories we considered, similar results were obtained with a higher magnitude observed in the agricultural sector. The result shows that education plays important role in the choice of all the coping strategies in both agriculture and non-agricultural sector. For instance, education increase the likelihood of choosing online business among the agriculture and non-agriculture by 7.64 percentage points and 71.0 percentage points while it increases the probability of choosing customizing a new product perhaps suitable for the “new normal” by 22.9 percentage points for the no-agriculture sector but not significant for the agriculture sector. The study shows that the probability of not engaging in online business as coping strategies will 86.3 percentage points and 78.4 percentage points if the entrepreneur that had been affected slightly and severely by the COVID-19 pandemic respectively.

Table 5: Factors Influencing Coping Strategies to Covid-19 Impacts: Pooled

VARIABLES	(1) Online sales	(2) Customized new products	(3) Increased marketing efficiency
age_num	-0.00892*** (0.00321)	0.000386 (0.00228)	0.000394 (0.00271)
edu_yrs	0.198*** (0.0128)	0.358*** (0.00922)	0.119*** (0.0107)
Severe impact	-0.863*** (0.064)	-0.0488 (0.125)	0.00981 (0.163)
Slight impact	0.784*** (0.167)	-0.0163 (0.120)	0.127 (0.170)
State with high case	0.148** (0.0684)	-0.0117 (0.0572)	0.139** (0.0561)
Partial lockdown	0.127** (0.0632)	0.0220 (0.0497)	0.184*** (0.0568)
Total lockdown	0.047*** (0.0653)	0.426*** (0.0509)	0.185*** (0.0607)
stimulus	0.448*** (0.0654)	0.880*** (0.0542)	0.132** (0.0626)
Observations	301	301	301

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

The severe effect of COVID-19 also shows a reducing effect on the likelihood of picking a new product line, especially among the non-agriculture enterprises. We found that the probability to engage in a new product line would be reduced by 44.5 percentage points if the entrepreneur is severely affected by the COVID-19 pandemic. In all the cases, we found an interesting result on the influence of partial and total lockdown among the choices of coping strategies. Partial lockdown shows a positive response while total lockdown presented a negative influence. We found that partial lockdown positively and significantly influences the decision of the entrepreneurs to choose switching to online sales, picking a new product line and increase in marketing efficiency in most of the context. For instance, the partial lockdown has the likelihood of increasing the choice of switching to online sales by 17.4 percentage points while total lockdown has the probability of reducing the choice of online by 53.0 percentage points. Also, partial lockdown increases the probability of choosing new product line by 68.0 percentage points while total lockdown has the probability of reducing the choice of online by 73.3 percentage points in the non-agriculture sector.

Table 6: Factors Influencing Coping Strategies to Covid-19 Impacts: Food and Agriculture

VARIABLES	(1) Online sales	(2) Customized new products	(3) Increased marketing efficiency
age_num	-0.2112* (0.00599)	0.00146 (0.00362)	-0.000179 (0.00558)
edu_yrs	0.0764** (0.0313)	0.0030 (0.0207)	-0.0115 (0.0197)
Severe impact	-0.607** (0.287)	-0.214 (0.227)	0.0482 (0.331)
Slight impact	-0.429*** (0.0282)	-0.186 (0.178)	-0.0262 (0.329)
State with high case	0.0450 (0.129)	-0.0666 (0.103)	0.257** (0.105)
Partial lockdown	0.174*** (0.015)	0.600*** (0.0837)	0.302*** (0.115)
Total lockdown	-0.530*** (0.037)	-0.320*** (0.0812)	-0.270* (0.141)
stimulus	0.672*** (0.109)	0.112*** (0.0083)	0.0752 (0.123)
Observations	76	76	76

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Finally, we test the role of government stimulus as a form of palliative to the entrepreneurs on the choice of coping strategies. We found that government stimulus has a positive and significant influence on the choice of coping strategies. This implies that entrepreneur that benefitted from government stimulus will likely decide to choose online sales and put up a new product line by 44.8 percentage points, 88.0 percentage points, and 13.2 percentage points from online sales, customize new products, and increase of marketing efficiency. This result suggests that access to social protection will enhance the coping strategies among entrepreneurs in Nigeria.

Table 7: Factors Influencing Coping Strategies to Covid-19 Impacts: Non-Agriculture

VARIABLES	(1) Online sales	(2) Customized new products	(3) Increased marketing efficiency
age_num	-0.00677* (0.00386)	0.00658** (0.00291)	-0.00122 (0.00330)
edu_yrs	0.710*** (0.0158)	0.229*** (0.001)	0.827*** (0.0136)
Severe impact	0.197*** (0.002)	-0.445*** (0.072)	0.0131 (0.200)
Slight impact	0.221 (0.209)	-0.00751 (0.168)	0.189 (0.213)
State with high case	0.175** (0.0808)	-0.00663 (0.0687)	0.102 (0.0675)
Partial lockdown	0.190** (0.0756)	0.680*** (0.0596)	0.136** (0.0675)
Total lockdown	-0.329*** (0.0773)	-0.733*** (0.0611)	-0.154** (0.0690)
stimulus	0.177*** (0.008)	0.0577 (0.0650)	0.151** (0.0758)
Observations	225	225	225

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

6.0 Concluding remarks

This study employed recent collected representative data from Nigeria to document the ways in which the COVID-19 pandemic has been affecting Small and Medium Scale Enterprise in Nigeria

in both the agriculture and non-agricultural sector. Our investigation responds to the research questions on how the pandemic has affected the entrepreneurs and what are the factors that influence the coping strategies of the entrepreneurs. Our results suggest that the pandemic, as well as governmental mobility restrictions (i.e. partial and total "lockdowns"), have both had significant effects on Small and Medium Scale Enterprise in Nigeria reported by entrepreneurs in our sample. Specifically, our study shows clear effects of high cases incidence rates and lockdowns on restricted entrepreneurial economic activity. Our finding that suggests that government-imposed partial and total lockdowns are increasingly hindering access to inputs at the local markets, difficulty in exporting and importing goods, and affecting investment is consistent with a recent study in other developing economy indicating that the main impacts of the pandemic on Small and Medium Scale Enterprise in Nigeria have been through lockdown and mobility restrictions. It is evident in the study that the direct effects of the pandemic come through low coping strategies, income losses, and reduced investment (Seth et al., 2020).

This article contributes important new empirical analysis of the impacts of the pandemic on Small and Medium Scale Enterprise in Nigeria at a point where there is an abundance of conceptual papers and opinion pieces on other aspects of the impact of COVID-19 but still scarce evidence on the impacts of the pandemic Small and Medium Scale Enterprise, particularly in developing countries like Nigeria. One of the policy implications of our study is the need to address social protection approaches (such as palliative measures) which can help to cushion the effect on the pandemic on the Small and Medium Scale Enterprise in Nigeria.

References

- Obiakor, 2020 COVID-19 and the Informal Sector in Nigeria: The Socio-Economic Cost Implications. retrieved on July 6, 2020 <https://businessday.ng/opinion/article/covid-19-and-the-informal-sector-in-nigeria-the-socio-economic-cost-implications/>
- Adenomom, M.O.; Maijamaa, B.; John, D.O. (2020). On the Effects of COVID-19 outbreak on the Nigerian Stock Exchange performance: Evidence from GARCH Models . Preprints 2020, 2020040444 (doi: 10.20944/preprints202004.0444.v1
- Ahmad R., Suraiya I., and Mohd J (2020) The impact of Covid-19 Movement Control Order on SMEs' businesses and survival strategies. *Malaysian Journal of Society and Space*. DOI: 10.17576/geo-2020-1602-11.
- Bartik A. W., Bertrand M., Cullen Z. B, Glaeser E. L., Luca M., and Stanton C. T. (2020) How Are Small Businesses Adjusting to COVID-19? Early Evidence from a Survey NBER Working Paper No. 26989
- Bartik A.W., Bertrand M., Cullen Z.B., Glaeser E.L., Luca M., and Stanton C.T. (2020). How Are Small Businesses Adjusting to COVID-19? Early Evidence from a Survey. NBER Working Paper No. 26989 Issued in April 2020. (DOI): 10.3386/w26989
- Chukwuka O, Mma AE (2020) Understanding the impact of the COVID-19 outbreak on the Nigerian Economy. 8 April 2020. www.brookings.edu.
- COVID-19 to Plunge Global Economy into Worst Recession since World War II. PRESS RELEASE JUNE 8, 2020. <https://www.worldbank.org/en/news/press-release/2020/06/08/covid-19-to-plunge-global-economy-into-worst-recession-since-world-war-ii>
- Craven M., Liu L., Mysore M., and Wilson M. (2020). Risk Practice COVID-19: Implications for business. McKinsey & Company.
- Fairlie R.W. (2020) The Impact of COVID-19 on Small Business Owners: The First Three Months after Social-Distancing Restrictions. NBER Working Paper No. 27462. (DOI): 10.3386/w27462
- FATE Foundation and BudGIT (2020). Impact of COVID-19 on Nigerian MSMEs
- GAIN. (2020). Impacts of COVID-19 on Small- and Medium-Sized Enterprises in the Food System: Results of an Online Survey. Geneva: Global Alliance for Improved Nutrition (GAIN).
- Guidelines for the Implementation of the N50 Billion Targeted Credit Facility <https://www.cbn.gov.ng/Out/2020/FPRD/N50%20Billion%20Combined.pdf>. accessed on July 14, 2020

- Guidelines for the Operations of the N100 Billion Credit Support for the Healthcare Sector. <https://www.cbn.gov.ng/Out/2020/FPRD/healthcareintervention.pdf> accessed on July 14, 2020
- IMF (2020). POLICY RESPONSES TO COVID-19. Retrived on July 7, 2020. <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>
- IOM (2020) Impact of COVID-19 on small and medium-sized enterprises in Iraq. <https://reliefweb.int/sites/reliefweb.int/files/resources/IOM%20Iraq%20Impact%20of%20COVID-19%20on%20Small%20and%20Medium-Sized%20Enterprises%20in%20Iraq.pdf>. retrieved on August, 20, 2020.
- KPMG, (2020). Covid-19: A Business Impact Series. Financial, Tax and Regulatory Considerations to Manage COVID-19 Disruptions. Issue 2.
- Lakuma C.P., Sunday N., Sserunjogi B., Kahunde R., and Munyambonera E. (2020). Impact of COVID-19 on micro, small, and medium businesses in Uganda. Special Issue No. 01 May, 2020
- NAFDAC (2020). Launch Of Palliatives For MSMEs: Job Creation By Professor Mojisola Christianah Adeyeye Director General NAFDAC, At NAFDAC Head Office Lagos. <https://www.nafdac.gov.ng/launch-of-palliatives-for-msmes-job-creation-by-professor-mojisola-christianah-adeyeye-director-general-nafdac-at-nafdac-head-office-lagos/> accessed on July 16, 2020
- NCDC (2020) First Case of Corona Virus Disease Confirmed In Nigeria <https://ncdc.gov.ng/news/227/first-case-of-corona-virus-disease-confirmed-in-nigeria> retrieved on May 11, 2020
- Nigeria SME survey (2019). Assessing current market conditions and business growth prospects. <https://www.pwc.com/ng/en/events/nigeria-sme-survey.html#:~:text=In%20Nigeria%2C%20SMEs%20contribute%2048,businesses%20and%2084%25%20of%20employment.&text=With%20a%20total%20number%20of,terms%20of%20number%20of%20enterprises.>
- Ogunniyi, A., Oluseyi, O. K., Adeyemi, O., Kabir, S. K., & Philips, F. (2017). Scaling up agricultural innovation for inclusive livelihood and productivity outcomes in sub-Saharan Africa: The case of Nigeria. *African Development Review*, 29(S2), 121-134.
- Olagunju, K. O., Ogunniyi, A. I., Awotide, B. A., Adenuga, A. H., & Ashagidigbi, W. M. (2019). Evaluating the distributional impacts of drought-tolerant maize varieties on productivity and welfare outcomes: an instrumental variable quantile treatment effects approach. *Climate and Development*, 1-11.
- Otache I. (2020). The Effects of the Covid-19 Pandemic on the Nigeria's Economy and Possible Coping Strategies. *Asian Journal of Social Sciences and Management Studies*, 7(3): 173-179

- Ozili, Peterson K, COVID-19 Pandemic and Economic Crisis: The Nigerian Experience and Structural Causes (April 2, 2020). Available at SSRN: <https://ssrn.com/abstract=3567419> or <http://dx.doi.org/10.2139/ssrn.3567419>
- PTF COVID-19(2020). PTF COVID-19 Guidance on implementation of lockdown policy. Retrieved on July, 6, 2020. <https://statehouse.gov.ng/wp-content/uploads/2020/04/PTF-COVID-19-Guidance-on-implementation-of-lockdown-policy-FINAL.docx-2.pdf>
- Researchandmarkets.com (2020). COVID-19 Impact on ICT Industry (2Q 2020 Edition) [https://www.researchandmarkets.com/reports/5011293/covid-19-impact-on-ict-industry-2q-2020-edition?utm_source=dynamic&utm_medium=BW&utm_code=q95ss7&utm_campaign=1377379+++COVID-19+Impact+on+ICT+Industry+\(2Q+2020+Edition\)&utm_exec=jamu273bwd](https://www.researchandmarkets.com/reports/5011293/covid-19-impact-on-ict-industry-2q-2020-edition?utm_source=dynamic&utm_medium=BW&utm_code=q95ss7&utm_campaign=1377379+++COVID-19+Impact+on+ICT+Industry+(2Q+2020+Edition)&utm_exec=jamu273bwd) retrieved on August, 20, 2020.
- Segal, S., & Gerstel, D. (2020). The Global Economic Impacts of COVID-19, Critical Questions, Center for Strategic and International Studies (CSIS). Retrieved from <https://www.csis.org/analysis>.
- Seth N. J., Ganaie M. A., Zafar F. (2020) Impact of COVID-19 (Coronavirus) on Small and Medium Enterprises (SMEs) in Pakistan. DOI: 10.13140/RG.2.2.21236.09607
- WHO (2019). Archived: WHO Timeline - COVID-19. <https://www.who.int/news-room/detail/29-06-2020-covidtimeline>