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Implications of corona virus pandemic on agricultural activities and food availability in Nigeria

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Abstract: The study examined the effect of corona virus pandemic on agricultural activities and food availability in Nigeria. In order to carry out this study, one specified research objective was set which null hypothesis was formulated and used for the study. The research design for this study is an Expost Facto design. Data for the study was extracted from government official documents and they were subjected to regression analysis to determine their correlations. The study concluded that in the long-run, impact of covid-19 on agricultural activities and food availability is positive as expected, indicating that a unit increase in consumer price index as a result of the covid-19 increases Nigeria stress by .67 Sig. The result is also statistically significant. And also, recommended that, government should intensify efforts to curb the spread and effect of the virus in order to promote healthy environment where agricultural activities can continue. Monotorium should be given to some farmers, SMEs, agro allied industries, businesses to help their business sprout again. Because of them has used the business working capital/operational cost for family feeding during the lock-down. Government can give interest free loans to help some stressed business swing into operation.

Keywords: Corona virus, agricultural activities, food availability, Nigeria.

Introduction

The role of agriculture in the lives of individuals and in the advancement of science and technology for the development of food, raw materials, and sources of income for mankind and the society in general is very crucial. Agriculture which is the gateway to achieve food, natural raw material (of plant and animal origin and sources of income for advancement and as well as economic survival of countries. The influence of agricultural activities on a nation and its citizens could be seen from the production of basic human needs to educational, technological and economic advancement.

From a global perspective civilization began with agriculture, when our nomadic ancestors began to settle and grow their own food, human society was forever changed (Nova, 2006). Not only did villages, towns and cities begin to flourish, but so did knowledge, the arts and the technological sciences. Agriculture has an immense impact to humanity in terms of global food supplies, hunger alleviation, economic development and provision of employment (Nova, 2006).

The outbreak of the world endemic of corona virus covid-19 has unarguably taken the world unaware, unprepared thus, leaving the affected countries to suffer the devastating dead crises, disruption of social activities including agricultural activities which has a proportional effect on food security, food availability, accessibility, quality and prices of commodities in the market to mention but few. It is an established fact that coronaviruses belong to the Coronaviridae family in the Nidovirales order https://www.cdc.gov/coronavirus/types.html. Probably for the first time in many decades, the world is experiencing a form of disease that does not discriminate on the basis of age, gender or even ethnicity. The virus originated in the Wuhan province of China and has since spread to all parts of the world (WHO, 2020). The disease has been described by health authorities as infectious and contagious. As a result, both the World Health Organization (WHO) and governments have urged their people to practice good hygiene by washing their hands with soap and running water or even alcohol-based hand sanitizers, keep a safe distance between persons and by keeping their nose and mouth covered with a mask. The covid-19 virus, commonly referred to as corona virus, is spurring dramatic changes to economic, healthcare, transportation, and agriculture around the world. No less important is the potential for covid-19 to impact local and global food systems and their ability to provide safe, affordable, and nutritious food as well as

sufficient incomes for people working in food and agriculture sectors. Despite the global economic downturn, agricultural production has been less affected. Global supplies are ample and international market prices generally soft (FAO, 2020b). The issue is how to keep supplies flowing from producers to consumers. Indeed, there are many reports of malfunctioning food supply chains where food is left to rot or is burned due to movement restrictions. Supply chains are being disrupted not only by movement restrictions due to interstate locked down, but also by shifts in the source of consumer demand, e.g. away from restaurants and schools because of closures, social events towards markets and supermarkets because more people are preparing food at home.

The availability of food depends on local production, including your own production, and trade. Corona may affect both. If people are ill they may not be able to put in the necessary labor inputs at the critical junctures of production, such as land preparation and planting. Lessons from the study of De-La-Fuente, Jacoby, & Lawin, (2019) of Household Income and Expenditure Survey (HIES) during Ebola epidemic in Liberia, and found that Ebola disrupted group labor mobilization and thus reduced the area planted with rice, the main staple crop in Liberia.

Thus, if we go beyond these studies of the Ebola outbreak, and apply our own knowledge of farm production and labor markets in poor regions of Nigeria, it likely that an epidemic may affect people's willingness to work on other people's land, in particular if it requires travel, or large groups of labor as is needed during transplanting of paddy and during harvest of many staple crops. Farms that rely only on family labor are less likely to be affected. Thus the timing of the pandemic in relation to the agricultural seasons is essential. In Sub-Saharan Africa, the maize harvest may in principle suffer now in regions with an early rainy season.

Objective of the study

To examine the effect of corona virus pandemic on agricultural activities and food availability in Nigeria

Hypothesis

There is no significant effect of corona virus pandemic on agricultural activities and food availability in Nigeria

Effect of Covid-19 on Food Accessibility

Food access relates to how people acquire the food they consume and is determined by two factors: economic and physical access (FAO 2013). Economic access is determined by disposable income, food prices and accessibility of social support, while physical access depends on the physical infrastructure that aids access (Headey & Ecker 2012; Barrett et al. 2009). This dimension reflects the demand side of food security and highlights uneven inter- and intra-household food distribution and socio-cultural limits on food choices. (Bickel, Price, et al. 2000) include other elements in their definition of food access like: social access (adequate access in a socially acceptable way i.e. not stealing or prostituting for food); food quality and safety (ensuring sufficient diversity and safety to promote good health) and low risk of losing assets. The indicators of physical access include levels of physical infrastructure development, like paved roads, railways, electricity, irrigation facilities etc., while those for economic access include domestic food price index, disposable income, expenditure survey (FAO 2013a). Other widely used access indicators are the HFIAS, DDS and CSI (Webb et al. 2006). It follows that, access addresses the physical and financial ability of households to provide them with food. The first factor considers the effect of distance between producers and consumers. Consequently, it considers the stability of temporal supply cycles and the regulating role of any stocks (Bonnet et al. 2011). This includes the processing of delicate foodstuffs into more stable products. The other component addresses consumers access to a variety of products offered at prices compatible with their income and purchasing power, which also relates to market segmentation and demand elasticity among the various categories of consumers. Physical access can be shown in several levels of the production system; for instance, in the case of on-farm consumption one can observe direct dependence on food commodities produced within households where they are both producers and consumers of these products Bonnet et al. (2011). Mostly, consumers are dependent on local producers or on distribution and marketing channels for unprocessed or processed food products Bonnet et al. (2011).

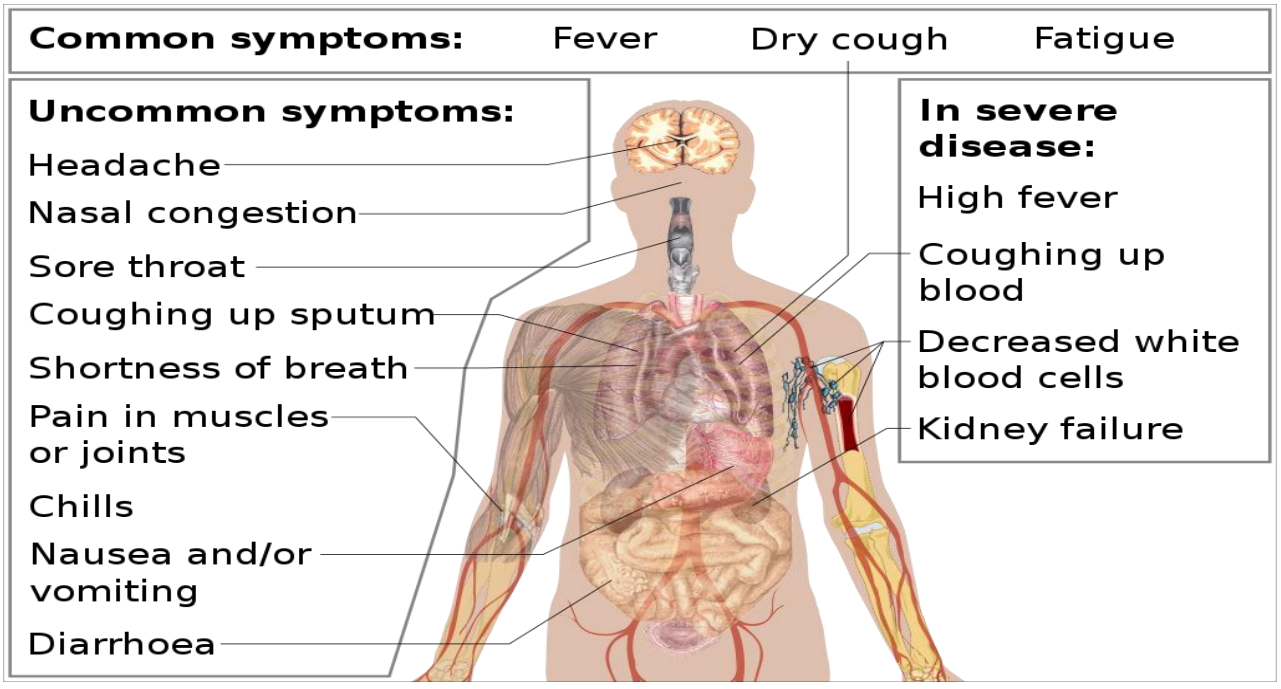
Additionally, in livestock or fish productions these differences can be seen between systems where animal products make a strong and direct contribution to the producers own dietary intake (such as milk in some pastoral systems). The Financial access refers to the point of view of the consumer faced with a range of prices for available food products, and to the capacity of households to acquire

various categories of food (plant products and animal products), obtained on the market or under the terms of a balanced exchange transaction, monetary or otherwise (Bonnet et al. 2011).

For livestock or fish producers, the critical point is the direct or indirect contribution that animal production (milk, meat, etc.), and their accumulated assets (livestock) make to safeguarding and improving their family income, thereby increasing their food purchasing power. Thus, the intensive livestock systems are an important source of affordable animal based foods for urban consumers and by making efficient use of resources; they provide abundant low-cost food contributing to the availability and access to food (FAO, 2009).

Understating of the Corona Virus

Corona viruses are a group of enveloped viruses with nonsegmented, single-stranded, and positive-sense RNA genomes. Apart from infecting a variety of economically important vertebrates (such as pigs and chickens), six coronaviruses have been known to infect human hosts and cause respiratory diseases. Among them, severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV) are zoonotic and highly pathogenic coronaviruses that have resulted in regional and global outbreaks Coronaviruses possess a distinctive morphology, the name being derived from the outer fringe, or corona of embedded envelope protein. Coronaviruses are a large family of viruses, some of which cause illness in people, and others that circulate among mammals and birds. Rarely, animal coronaviruses can spread to humans, and then spread between people. Zoonotic coronaviruses have emerged in recent years to cause human outbreaks such as coronavirus disease 2019 (COVID-19), severe acute respiratory syndrome (SARS), and Middle East respiratory syndrome (MERS).



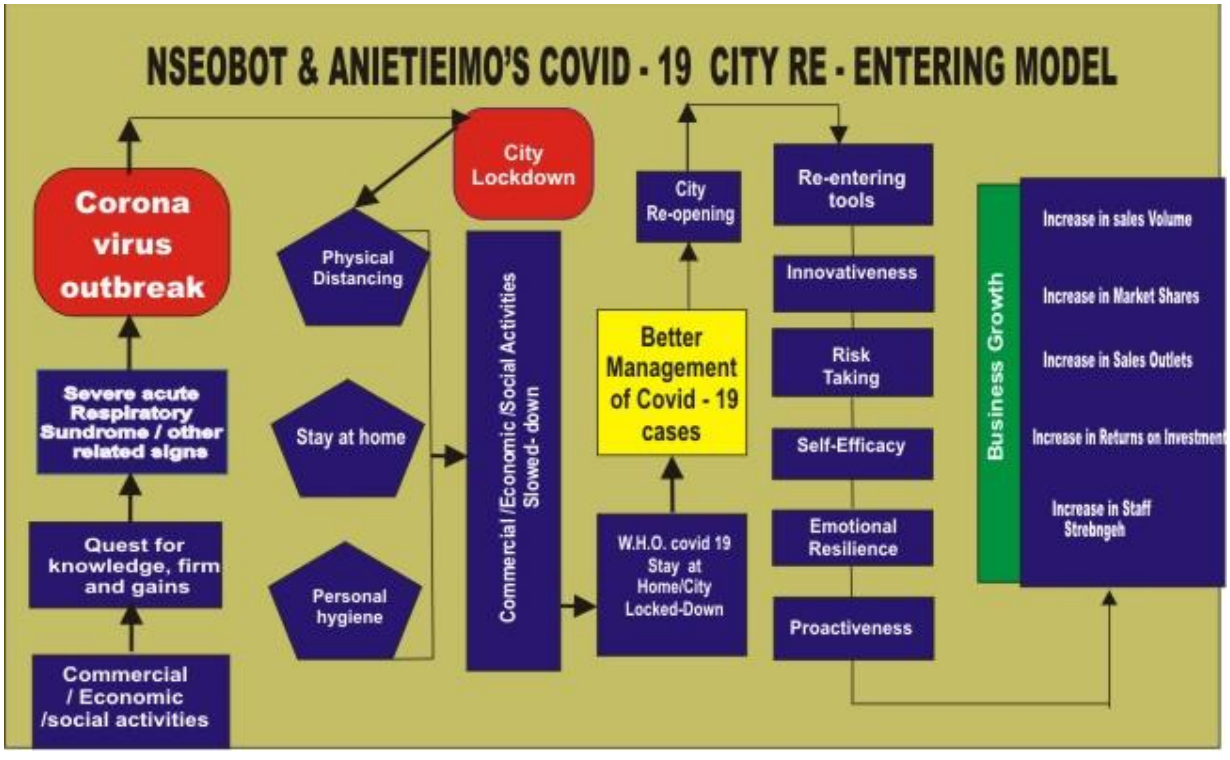
***Source**: Mehtab, A. Rizwana P.; Ihtiram, R. K (2020) Role of Information Technology in Covid-19 Prevention. International Journal of Business Education and Management Studies, Vol. 5. Issue 1.*

If temperature rises above 37.8^{C}, this can make you feel warm, cold or shivery. A sore throat, headache and diarrhoea have also been reported and a loss of smell and taste may also be a symptom. It takes five days on average to start showing the symptoms, but some people will get them much later. The World Health Organization (WHO) says the incubation period lasts up to 14 days **USCDCP, (2020)**. On 18 April, the US's Centers for Disease Control and Prevention (CDC) updated its list of symptoms to look out for, to include:

- Chills
- Repeated shaking with chills
- Muscle pain
- Headache
- Sore throat
- New loss of taste or smell

Nseobot & Anietieimo's Covid-19 City Re-Entering Model (2020)

Nseobot & Anietieimo's Covid-19 City Re-Entering Model idea, as represented in Nseobot & Anietieimo's work 2020, focuses primarily on how individuals, group of persons, corporation organizations etc. can recover from the unfriendly and harsh economic weather around the world to continue in businesses operation. Their model concepts of work simply implies a well thought out plan that presents a sequential or orderly manner by which process of city re-entering process that will help businesses.



Effiong, A. I. and Nseobot, I. R. (2020) Nseobot & Anietieimo's Covid-19 City Re-Entering Model (2020) International Journal of Business Education And Management Studies. Vol. 5. Issue 2. 2020

The emergence of coronavirus is the product of discovery, a search for information, either for profits or for firms that led to the coronavirus outbreak (Covid-19). This disease belongs to the pathogen family that causes severe acute respiratory syndrome (SARS) that can be easily contacted by another person. Various strategies and methods are used to control the spread of the virus, which have adversely impacted economic activities around the world. The spread of the virus has now altered the traditional way of life and industry around the world; companies needing physical contact could

be pushed out of the market. As part of measures to curb the spread of covid-19, governments across the globe have introduced a locked-in city to achieve the "Stay at Home" initiative. In the words of Umoh, Nseobot, Hamid, Elyassami, Effiong, Ette, & Soomro, (2020) lockdown is a security measure that prevents an individual or group of persons from leaving or entering a building, place, venue, country by air, land, water, etc. in the event of an emergency, e.g. covid-19. This method of containment is used to eliminate the risk of spreading the virus in society. If the city has to be re-opened for entry and continuous commercial, economic and social activities, there must be evidence of better management of the cases of covid-19 in the affected nations; there must be a downward slope in the curve of newly confirmed cases and death. Then, we may assume that there is better control of the covid 19 events. The re-opening of the city for activities is followed by a change in activities and operations, where business owners / managers must try to hold on to their market shares, there must be an adequate mental re-orientation to adjust to the changing situation. City re-entry methods are a mental orientation and a prepared strategy for business owners / managers to enter post-covid-19 society. Re-entry resources include: creativity, risk-taking, self-efficiency, mental endurance and pro-activeness. Innovativeness is an innovative thinking that gives rise to new concepts, technologies, goods, markets, strategies and processes that produce a better outcome that meets new requirements and challenges. Innovation upon acceptance would offer the company concerned competitive advantages over its rivals. Post covid-19 companies must take calculated risks in order to gain advantages, instead of taking risks that would have a proportionate impact on the overall performance of the company. Typical risk-taking components included but limited to pouring money into a course of action, borrowing, taking action in the face of uncertainty, e.g. covid-19, as well as investing funds in a company with little to no technological expertise to awareness. Post covid-19 company owners/managers with new creative concepts and blue risk printing should have emotional resilience, which is also seen as the degree to which a person trusts in his or her ability to execute tasks or clear goals effectively, given challenging circumstances and limited resources. After the implementation of the new creative concept and taking all the risk measured, some of the results the go out of proportion, or even not, to the efforts of the company. Therefore, the need to develop emotional resilience in order to stay competitive in the market in the midst of their dropping aspirations, emotional resilience is the capacity of the company to adapt to

stressful and awful situations and incidents in the process of operating and managing business operations. The practice of emotional resilience should lead to a constructive spirit among post-covid-19 firms that will enable company activities to escape potential obstacles, requirements and improvements that are necessary for the identification and judgment of new opportunities. In short, companies that successfully used the city re-entry model will experience business growth that includes increased revenue, return on investment, increased distribution channels, increased market shares, and increased staff strength. Covid-19 city re-opening business climate will be characterized by a lot of uncertainties and aspirations, survival and development in this turmoil climate, success-oriented sector, government, non-profit making organization and families are strongly advised to adopt and continue the above model.

Methodology

The present study is undertaken to analyze the correlation between effect of corona virus pandemic on agricultural activities and food accessibility in Nigeria. From that regard, the Simple regression model was used to determine the correlation between the covid - 19 and it proportional effects on agricultural activities and food accessibility. To determine the correlation of the study, variables the study assumes covid- 19 confirmed cases to be independent variable while agricultural activities and food accessibility to be dependent variables of the study. Expost Facto survey method was used for the study. Data for the study was collected from central bank of Nigeria and Nigeria Bureau of Statistics and they were subjected to regression analysis.

Model Specification:

The model that will be used for the purpose of this research is presented below. This model is formulated based on the hypothesis that was specified in the first chapter of this research.

Model:

CV = F (CPI, IFL, TR, ERI, FI, FE)

$$\mathbf{CPI = a_0 + a_1\,IFL + a_2\,TR + a_3\,ERI + a_4\,FI + a_5\,FE}$$

Where:

CPI	=	Consumer Price Indexes
IFL	=	Inflation
ERI	=	Exchange Rate Instability

NFI = Nigerian Food Inflation

a_0 = Constant intercept

a_1, a_2, a_3, a_4, a_5, a_6 = Slopes of the regressions

U = Error term

Table 1. Stylized Fact of Agricultural Activities and Food availability

S/N	Month	CPI (N)	IFL (%)	ERI (₦)	NFI
1	Jan.	310.2	12.13	365.80	14.85
2	Feb.	312.6	12.2	378	14.9
3	March.	315.2	12.26	386	14.98
4	April	318.4	12.34	388	15.03
5	May	322.2	12.4	388	15.04
6	June	326.1	12.56	388	15.18

Source: Researchers Computation, (2020)

Hypothesis

There is no significant effect of corona virus pandemic on agricultural activities and food availability in Nigeria.

Table 1. Multiple linear regression model summary of relationship between corona virus pandemic on agricultural activities and food availability in Nigeria

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.895a	.801	.799	.835	2.258
Model	**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	1109.640	4	277.410	397.421	.000b
Residual	275.720	395	.698		

Total	1385.360	399			

a. Predictors: (Constant), Consumer Price Indexes, Inflation, Exchange Rate Instability & Nigerian Food Inflation

b. Dependent Variable: COvid-19 Cases in Nigeria

Table 2. Coefficient analysis of the relationship between relationship between corona virus pandemic on agricultural activities and food availability in Nigeria

Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**	**95.0% Confidence Interval for B**	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	4.905	.334		14.690	.000	4.249	5.562
Consumer Price Indexes	-.080	.253	-.045	3.17	.751	-.577	.417
Inflation	1.069	.346	.622	3.086	.002	.388	1.749
Exchange Rate Instability	.859	.166	.379	5.186	.000	.534	1.185
Nigerian Food Inflation	-.133	.073	-.065	4.834	.067	-.276	.010

Based on table 1 and table 2, a standard multiple regression was performed between corona virus pandemic as independent variable on agricultural activities and food availability in Nigeria as the dependent variables. The multiple correlation coefficient (R=.895) was significantly different from zero, F (4, 395) = 397.421, with p = 0.000, p<0.05, and 79.9 percent of the variation in the dependent variable as explained by the set of dependent variables. The value of Durbin Watson (DW) of 2.258 is greater than the adjusted R square of .799. Hence, the result was significant. The result therefore means that there is a significant relationship between corona virus pandemic on agricultural activities and food availability in Nigeria.

Conclusion and Recommendations

Based on the findings of the data analysis, the study concluded that in the long-run, covid-19 on agricultural activities and food availability is positive as expected, indicating that a unit increase in consumer price index as a result of the covid-19 increases and thus leading to food inflation in Nigeria. And also, recommended that, government should intensify efforts to curb the spread and effect of the virus in order to promote healthy environment where agricultural activities can continue. Monotorium should be given to some farmers, SMEs, agro allied industries, businesses to help their business sprout again. Because of them has used the business working capital/operational cost for family feeding during the lock-down. Government can give interest free loans to help some stressed business swing into operation.

The Federal Government of Nigeria at all levels should introduce programmes that will encourage the farmers to remain in agriculture sector. These programmes should also address the plight of the substantial farmers who are the major stake holders in farming. In this regard, agriculture sector of the state will remain attractive and effective thereby providing the necessary cushion against social vices and generating more employment opportunities as well as ensuring food security of the state.

Contract and out-growing farming system should be developed in the state as a way of ensuring consistent market and steady agriculture output prices. This will enable farmers the opportunity to earn high income from their participation in agriculture and help in the fulfillment of their dreams. These systems of farming can also help reduce poor access to farm machinery as the involved agro – allied industries and other participants will make some of the required machinery available to those farmers that may be involved.

Declaration of conflicting interests

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