THE IMPACT OF COVID-19 ON THE SUPPLY CHAIN OF WHEAT BREAD IN NIGERIA

CHISOM JUDITH CHIDEBE

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Abstract

No pandemic has hit the modern world as much as the COVID-19 pandemic has. For a developing country like Nigeria, its effects have rippled through every section of human life and have even caused irreparable demand in some sections. The research focused on how a basic household commodity like wheat bread and how its supply chain has been affected by the pandemic. Wheat, which is the basic raw material for bread is largely imported from temperate countries. This research addressed questions with regards to three aspects of the economics of the wheat bread market which is a national staple: demand, supply, and price. These questions are: what is the effect of the COVID-19 pandemic on the price of wheat bread in Nigeria? What is the effect of the COVID-19 pandemic on the supply of wheat bread in Nigeria? What is the effect of the COVID-19 pandemic on the demand for wheat bread in Nigeria? To answer these questions, a well-structured questionnaire using the Likert scale model was presented using the online Google form platform. The three Nigeria states of Lagos, Abuja and Plateau were used as study areas knowing they were most affected by the restrictions put in place by the Government of Nigeria (GON). These states provided 161 respondents across several locations. Using multiple regression to analyse the data, the results show that the economics of demand, supply and price of wheat demand were affected by the COVID-19 pandemic. Therefore, current and future policy considerations for any form of lockdown must have a tripartite outlook as regards demand, supply and price without neglecting any of the three aspects. The research can help the GON better position its policies to address the economics of a basic household commodity like wheat bread, given that the pandemic is still ongoing.

Keywords: *COVID-19, Supply Chain, Wheat, Bread, Nigeria*

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COVID-19	Coronavirus Disease 2019
WHO	World Health Organization
FMCG	Nigerian fast-moving consumer goods
GON	Government of Nigeria
GDP	Gross domestic product
SPSS	Statistical Package for Social Sciences

CHAPTER ONE

INTRODUCTION

1.1 Context

The ongoing COVID-19 pandemic has greatly disrupted many economic sectors. The COVID-19 pandemic has been rated as the greatest challenge facing humankind since the Second World War (Chakraborty and Maity, 2020). According to Haleem, Javaid and Vaishya (2020), the pandemic has affected the global economy by slowing down the manufacturing of essential goods and disrupting the supply chain of products, leading to losses in national and international business, poor cash flow in the market and slow revenue growth. Even with multiple vaccines already being administered at the time of this writing, there is still no definitive end in sight for the pandemic. Some ((The Lancet Microbe Editors, 2020), (Gibbs, 2020), (Jandrić and Hayes, 2020), (Ashton and Toland, 2021), (Vallee, 2020)) have asserted that there will never be the old normal, arguing that the COVID-19 pandemic has created an irreversible new normal. Therefore, the impact of the COVID-19 pandemic on the economy is a subject of continuous investigation, given its sudden and widespread nature (Vadyala et al., 2020).

Some of the most critical aspects of the economy needing investigation to ascertain the impact of the aforementioned COVID-19 disruption involve local value and supply chains, especially those that were hitherto reliant on international supply chains. According to Kaustubh et al. (2021), the supply chain is very crucial for manufacturers, distributors, and retailers. Moreover, the international supply chain plays an important role in shaping the global economic outlook (Piraveenan et al., 2020). The lockdowns and travel restrictions imposed by many countries to curb the spread of the Coronavirus made the situation even more precarious for local value and supply chains that are dependent on cross-border trade. In Nigeria, traders have reported a bigger drop in importation, with struggling local sources that cannot effectively replace international sources (Bishi, Grossman and Startz, 2020).

Of particular note, Irivboje and Irivboje (2020), highlights that the lockdowns and movement restrictions put in place to curb the COVID-19 pandemic have constrained the exportation and importation of agricultural products, affected the food system in most developing countries, and caused plant failure due to the inability of farmers to

plant and maximise vital farm input. The situation is very delicate in Nigeria given that the agricultural sector holds the key for the country's drive for economic diversification; being the singular largest employer of labour, accounting for more than one-third (36.4%) of the labour force (Price Waterhouse Coopers, 2020). Moreover, Ayanlade and Radeny (2020) also noted that the pandemic had coincided with the planting periods of most staple crops in Nigeria and the larger Sub-Saharan Africa. Wheat is one of the most important staple crops in Nigeria given that it was among the top 4 imports and also based on the fact that the country was the largest importer of US hard red and white wheat, amounting to about $1.7 billion annually (Sowunmi, Daramola and Tijani, 2020).

Wheat trade dominates the world food trade (FAO, 2020). Wheat was also reported to have dominated Nigeria's agricultural imports in the year 2019, accounting for an estimated 40.7% (₦390.6 billion) (Price Waterhouse Coopers, 2020). In 2005, Nigeria was the number one market for US wheat (David, 2006). Although Nigeria is a grain import-dependent country, domestic production of wheat has been projected to fall 8 per cent to 55,000 tonnes in the 2020-2021 marketing year because the Nigerian COVID-19 lockdown of March 2020 restricted access to wheat farms (Demaree-Saddler, 2020). A report by Ibirogba (2020) had directly linked the production deficit of wheat in Nigeria to the COVID-19 pandemic. The situation is made worse by the fact that country-wide looting of COVID-19 palliatives in Nigeria led to the depletion of wheat seeds; looters had mistaken the seeds as hoarded COVID-19 palliatives, carting away over 15,000 metric tonnes of wheat seeds (Adewale, 2020).

1.2 Research Rationale

The outbreak of the COVID-19 virus started in Wuhan, China in December 2019 (Bhattacharjee, 2020). By January 22nd of 2020, the disease had spread to other provinces of China and other countries through infected travellers (Luo, McHenry and Letterio, 2020). By 30th January 2020, the disease was declared a public health emergency of international concern and thereafter named Coronavirus disease (COVID-19) by the World Health Organization (WHO) on 11th February 2020; the virus itself was named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Bhattacharjee, 2020) (WHO, 2020b). By the 11th of March 2020, the World Health Organization designated the global situation as a pandemic (Jebril, 2020). The virus

had quickly spread to about 143 countries by the 15th of March 2020 (WHO, 2020c). By June 2020, the United States became the new global epicentre of the pandemic with almost 2.6 million confirmed positive COVID-19 cases; the global number was 6.06 million (WHO, 2020a) (Gharehgozli et al., 2020).

The first COVID-19 positive case in Nigeria and the larger Sub-Sahara Africa was confirmed on January 28, 2020 (Ogundokun et al., 2020). By June 2020, Nigeria was trailing South Africa with 10,162 positive cases: the second-highest number of positive cases in Africa (WHO, 2020a). To minimise the spread of the Coronavirus, many countries including Nigeria, went into a lockdown that included putting local and international travel restrictions in place. According to Fuwape, Okpalaonwuka and Ogunjo (2020), the response of the Nigerian government to the spread of the Coronavirus included international travel bans, domestic air travel bans, ban on social and cultural activities, and general movement restrictions, among others. The lockdown in Nigeria was announced on 30th March 2020, with the easing of local restrictions announced on 4th May 2020 (Ajide, Ibrahim and Alimi, 2020).

According to Kumari and Toshniwal (2020), the global lockdown resulted in the temporal closure of economic activities such as importation and exportation. This abrupt end to importation will no doubt have unintended consequences for local value and supply chains that depend on international trade. The situation is worse for the agricultural sector because there was no room to plan during the last farming season. According to Abdul (2020), the greatest impact of the COVID-19 lockdown and border closure in Nigeria was felt by the agriculture sector where there were challenges to cross-border transportation of key food items affecting both producers and consumers. One of such key food items is wheat which is vital for making all forms of bread, an important staple in Nigeria.

Wheat is an important part of the diet in most Nigerian homes. Every household in Nigeria consumes wheat products such as bread, noodles, pasta, etc. (Yusuf, 2020). Bread is of particular interest in Nigeria for many reasons. It is no doubt an important staple food in Nigeria (Edema, Sanni and Sanni, 2005). It is also the second most consumed non-indigenous food after rice (Ijah et al., 2014). There is practically no gender, age group, tribe, social class or household in Nigeria that does not consume bread, which comes in various flavours, sizes, shapes and price tags to meet the needs

of its myriad consumers (Ewa, 2018). The major raw material for making all forms of bread in Nigeria is wheat (Piraveenan et al., 2020).

According to Agunbiade, Ojezele and Eze (2017), the different types of bread produced and sold in Nigeria are usually made from 100 per cent wheat. This is due to the gluten content of wheat which is required for bread to form a dough with the right texture, hardly replaceable by other local raw produce in Nigeria (Edema, Sanni and Sanni, 2005) (Adeniji, 2012) (Akubor, 2003) (Shewry, Tatham and Lazzeri, 1999). Therefore, bread produced from wheat is more desirable. Moreover, the tropical climate of Nigeria is not conducive for the production of wheat because wheat is a temperate crop (Ohimain, 2014). As a result of the foregoing, Nigeria is heavily reliant on wheat imports (Olapade and Oluwole, 2013). Consequently, the outbreak of the COVID-19 pandemic has had many problematic implications for the local value chain of wheat in Nigeria.

1.3 Research Questions

The foregoing sections create an interesting ongoing research problem requiring investigation. The following research questions will drive an investigation of the impact of the ongoing COVID-19 pandemic on the supply chain of wheat bread in Nigeria.

1. What is the effect of the COVID-19 pandemic on the price of wheat bread in Nigeria?
2. What is the effect of the COVID-19 pandemic on the supply of wheat bread in Nigeria?
3. What is the effect of the COVID-19 pandemic on the demand for wheat bread in Nigeria?

1.4 Research Objectives

The objectives of this research include the following.

1. To determine the effect of the COVID-19 pandemic on the price of wheat bread in Nigeria.
2. To determine the effect of the COVID-19 pandemic on the supply of wheat bread in Nigeria.

3. To determine the effect of the COVID-19 pandemic on the demand for wheat bread in Nigeria.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter is based upon a systematic review of several articles as seen in relevant sources across the fields of supply, price, and demand. A structured literature review is provided as compared to a narrative review because of its methodical approach, implying a detailed description of the steps taken to select, scan and analyse the literature, with the sole purpose of reducing biases and increasing transparency. Hence, this chapter will look into the Nigerian agricultural industry with a microscope on wheat production, processing, and consumption. Discussions into the research done in the wheat industry will be brought forward and better synthesized for a better conceptual understanding of the research.

2.2 COVID-19 and the Market Overview

The World Health Organization's (WHO's) pandemic declaration of COVID-19 on the 11th of March 2020, many countries worldwide put restrictions on movement which brought major parts of the global economy to a standstill (WHO, 2020e). Despite the effects on the world economy by the COVID-19; Research and Market (2021), the world's largest online market research store still projects that the world wheat market would reach USD 3.1 billion by 2026, from USD 2.4 billion as at the beginning of 2021 with the food sales cumulative annual growth rate (CAGR) at 5.0% (Vasavada, 2020). The Coronavirus Disease 2019 (COVID-19) is a disease spread by the novel coronavirus SARS-nto2. It spread rapidly to all six continents of the world causing many countries to declare a state of a health emergency. WHO made it clear that a pandemic caused by the SARS-nCoV-2 has not happened before, and is the first to cause a pandemic among the coronaviruses. According to history, COVID-19 is the fifth pandemic. Before it, we had the Pandemic flu (H1N1) in 2009, influenza virus (H3N2) in 1968, influenza virus (H2N2) in 1957 and influenza virus (H1N1) in 1918. These pandemics resulted in 300 000, 1 million, 1.5 million and 50 million respectively during their reign (Liu et al., 2020). WHO made it very clear that this outbreak will affect all aspects of human existence and it will require all individuals to take part in the fight against the virus (WHO, 2020f). The COVID-19 pandemic shows the

lockdown of many countries with restrictions placed on movement and person to person contact. The implementation of these measures caused the closure of workplaces, educational institutions and other areas of the public sector. As a result, plans were made for food workers to provide protocols for continued operations in the food processing facilities to manage coronavirus in the food industry. These were several steps to be strictly followed such as cleaning, sanitation, disinfection of facilities, screening, and close monitoring of workers, managing the sick employees and education programs for workers and supervisors to prevent the spread of coronavirus (CDC, 2020). All in the manufacturing sector are called to follow these protocols but the food industry is in focus because they see to the production of materials that are essential for daily life. It is a known fact that if one factory is shut down, there would be a percentage of people who would likely have to starve and if the processors and distributors are infected, then consumers are at risk (Staniforth, 2020). With the widespread of the COVID-19, no study has shown that it is transmitted through food consumption as at the time this research has been carried out. Therefore, there is no certainty that food poses a public health risk in the face of the pandemic. However, there was a known case of infections in the Xinfandi market in China due to salmon processing (Aday and Aday, 2020). It can then be concluded that the chances of the virus being transmitted through foods are lower than it was earlier perceived risk. This is so because the chances of SARS-CoV-2 living in different environments such as plastic, steel, or cardboard is very slim.

The food industry is a very important sector in any economy because a large percentage of disposable income is spent on it. That is the reason why on the international market, wheat is one of the principal grain open for trade. More farmers cultivate it on their land than any other commercial crop. It is known to be the most important grain food source for human consumption (Curtis, Rajaram, and Macpherson, 2002). World wheat production is ranked third in weight production, with corn and rice coming in at first and second respectively (Aliakbar Enghiad et al, 2017). This high demand for wheat has been linked to several factors attributed to the various sectors of the manufacturing industry that utilizes wheat as a base material. It has been estimated that 21% of the world's food depends on wheat crop harvest annually (FAO, 2015). Developing countries like Nigeria use up 77% of total global wheat production, accounting for approximately 24% of food commodities imported by developing countries (Ortiz,

Sayre and Govaertsetal, 2008). It has been said that a growing bakery industry, increasing consumer preference for alternatives to meat, better nutritional options for lactose intolerants and healthy living consumers, and increasing applications of wheat protein in varied end-user industries such as pet food and cosmetics; has contributed to the increase in demand for wheat in the coming years. Africa will play a vital role in this market growth. The reason being for more than a decade now, Africa has experienced growth in its grain import market. This is not due to only its population boom but from statistics released by Bunge Limited (2019), the population on the African continent has been on the increase with an annual percentage change of a positive 2 per cent (Worldometer, 2019). In the 2018 - 2019 growing seasons the continent's wheat imports went up to 68% over the mentioned period, going as high as 47 million tonnes from 27.3 million tonnes. The bakery and snacks sector are the largest sector that consumes a large per cent of the import due to the increased use of wheat in bakery products. "The market demands are increasing; the population is increasing and here in East Africa we're seeing a shift from maize to wheat" Görkem Alapala (2018). He continues by saying "As a result, people are buying new applications, they want different types of bread, the products are getting a bit more diversified. People want a loaf of bread for the family, but there is also now diversity in cereal brands and niche products."

2.3 Nigeria's Market Overview

Nigeria has scarcely been able to maintain its ranking as Africa's largest economy, being a major oil producer on the continent with a population of over 202 million people. The irregularities in global oil prices continue to affect its economy and caused declining government revenues. The economy is said to have shrunk by -8.9 per cent in the first quarter of 2020 but recorded a -2.48 per cent for the first nine months of 2020 closing the year better than it started. The country's budget is 90 per cent dependent on the income from oil and gas exports. This large dependence on oil coupled with the flaunting oil prices over the years has hampered economic growth resulting in a snail-paced development. This growth has shown to be too low to lift the bottom half of the population out of poverty according to information from the World Bank.

Looking at a developing market economy like Nigeria, the factors of production respond to the market requirements. The actions of individuals via the market have

succeeded in setting up an organisation of production and exchange that has opened up the market until it encompasses the bulk of all economic activities. In this type of system, as in any other, the individuals are relatively free to act as they please. Whereas the isolated individual can improve his position only by adjusting himself to and manipulating the conditions imposed by the pandemic. In this type of market economy, the individual acts to make the most of the conditions and opportunities made available by the market (Kirzner, 1963). From examining the market, it has been noted that the pandemic has caused chaos for all participants in the market from the producers to the suppliers and consumers. Analysis shows that the transactions that take place are subject to definite forces at work in the market. These market forces are light for participants in making decisions concerning the market. Keeping in mind that each market decision is made under the strain of the pandemic as market forces set up by the decisions of all the market participants (Baker et al, 1995). Under these conditions, the decisions made by individual market participants constitute an interlocking system embracing the entire scope of the market (Thomas and Gupta, 2005). These decisions made by individuals is what makes up the market system. The decisions are what constitutes the achievements of the market system, and the tasks that society may seek to fulfil by permitting a market economy, are the assigned functions of the market system.

There is a silver lining in the Nigerian agricultural sector. It holds the key to the country's move towards economic diversification and has shown a lot of promise over the years with the projects looking favourable to give growth and development a capacity to provide economic stability to more than one-third of the vast labour force Nigeria possesses. The sector has seen steady growth in the past three years at an average rate of 2.6 per cent. In the first quarter of 2020, it accounted for 22 per cent of the gross domestic product (GDP) concerning other sectors like financial services (3.8 per cent), oil and gas (9.5 per cent), manufacturing (9.7 per cent), and trade (16.1 per cent). Although the sector is seen to be improving, it faces many challenges and with special mention to the lockdown announced on the 30th of March 2020 by the Government of Nigeria (GON) after the first case of COVID-19 was recorded on February 27, 2020. With the pronouncement intra and interstate movement was curtailed stopping farmers from accessing their farms or getting seedlings for planting. The already weak economic situation coupled with the heavy cost of having the

lockdown restrictions imparted on the food production process of the country. The protective tune of Nigeria's agricultural policies giving preference to domestic food and agricultural production has also affected the ability of the market to meet the demand. In August 2019, the Nigerian President shot its borders to neighbouring countries and later placed a ban on the dollar to purchase imported food items. This action forced wheat importers to look for other sources for the dollar like the parallel market. The action translated to an increase in prices and declining consumption of bread and other wheat flour-based products. Other limiting factors are affecting the wheat market. For instance, the ever-present trait of climate change, herder-farmer clashes, banditry, terrorism in the north-eastern region, low level of mechanisation put all these together with a poor knowledge base for improvement and a growing population that has overrun its food production capacity has crept the growth which the sector can turn out.

2.4 **Nigerian Wheat Bread Market**

Despite the challenging economic environment, Nigeria still experiences a massive move to urban cities. These rapid moves have boosted the Nigerian fast-moving consumer goods (FMCG) sector. In many Nigerian urban areas, food expenditure patterns are highly dependent on the household budget according to studies undertaken by the National Beaurea of Statistics. Among West African countries, Nigeria is the major player in the wheat production industry (Ibidapo et al, 2019). This is made possible in the northern part of Nigeria (i.e., states of Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe), an area of dry savannah land that is largely devoted to grain cultivation utilising irrigation (Kilby, 1965). However, Nigeria is not known for the exportation of wheat. It has an informal sales outflow from northern Nigeria into landlocked neighbouring Sahel countries. This practice has been increasing mostly amid Nigeria's currency devaluation that is resulting in attractive prices causing low prices for Nigerian flour across the Sahel. There also exist other informal exports to the Sahel countries where it is being used by households in preparing traditional meals. Recently, the Islamist insurgencies in the northeast region have affected the production of wheat. Sources comment that for production levels to increase to meet local demand, there will be a need for long-term private sector investment along with massive infrastructure development and greater access to free lands for more cultivation (Nzeka and Beillard, 2019).

Wheat as a crop has many nutritional qualities making it highly sort after. It contains carbohydrates, protein, minerals, vitamins, and dietary fibre. Therefore, making it a crop of choice used basically in the production of bread and confectioneries. The consumption of wheat bread has been well received by all socio-economic groups, mostly by urban areas with a potential market in many rural areas. The demand for wheat bread is a result of its desirable nutritional attributes and consumer preference. There is however a downside to this need for wheat bread. This kind of bread can only be made from high gluten wheat, which is foreign to the Nigerian climate but does well in temperate climates (Abdelghafor et al., 2010; Edema et al., 2005). Therefore, to meet the demand for wheat consumption, Nigeria located in the tropical regions would have to rely on countries located in the temperate regions for wheat importation (Ohimain, 2014). In 2021 the projected import of wheat is to hit 4.9 million tons, a reduction by about 6 (six) per cent compared to the previous year due to the pandemic. The GON's restrictions on imported agricultural commodities such as wheat continue to affect the market adding to the increasing cost of flour and reducing consumption of bread and other wheat flour-based products.

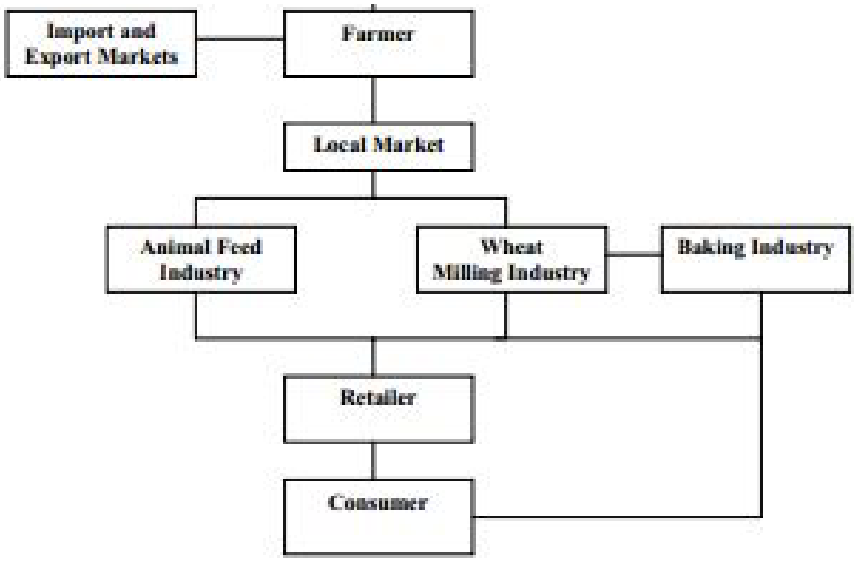

Figure 2.1: Wheat Industry structure

Source: Adapted from a report completed for the Competition Commission

Consequently, it falls on flour millers and bakers to find a solution to this challenge as passing on the cost to consumers who are losing ground due to declining household incomes over the last year due to the economic situation caused by the pandemic would

only reduce the market size of the wheat industry. If measures are not taken, it is expected that wheat and flour prices would go up and consumption will decline. To help the industry, the GON has had to step in in the past to help with the view of avoiding a food crisis. An example can be cited in October 2019 where Nigerian bakers went on strike to press the GON in subsidizing the production costs of bread and wheat-flour products. The GON recognizing the food security implications of the bakers' demands, intervened and negotiated an acceptable price increase for bread, noodles, and pasta. The market absolved the price increase without major shock on consumption.

2.5 Effects of the pandemic on food supply chain

A critical look at the extent to which the pandemic resulted in the reorganization of the food supply chain in Nigeria will help give an understanding of the research to be carried out. The wheat bread market is a choice market with a select clientele. Nevertheless, an overview of the food supply process would help put the research into perspective. The term supply chain refers to a sequence of (decision making and execution) processes and (material, information, and money) flows with a focus on meeting the final customer's requirements and take place within and between different supply chain stage. There are five stages involved in the food supply chain; production, postharvest handling, processing, distribution/retail/service, and consumption (Bendekovic et al., 2015). With the need for competition in today's global markets, products like wheat bread with short life cycles, coupled with the customers unsatiable needs has forced business enterprises to invest in, and pay attention to the relationships between customers and suppliers (Simchi-Levi et al., 2000). The outbreak of the COVID -19 has also heightened this need at ensuring that the food supply chain is protected to the benefit of all players in the industry. Safety in the stages of distribution and retail services are critical since contact with a large number of people happens in these stages (Rizou et al., 2020). Research has shown that unlike epidemics and pandemics in recent times like bird flu, Escherichia coli (E. coli), or Listeria, the COVID-19 pandemic would not hinder the production process as it is not communicable through livestock or agricultural products (FAO, 2020a).

Figure 2.2: Schematic diagram of a supply chain

In a developing country such as Nigeria, the availability of employment depends heavily on the farming seasons. These seasons are classified as planting, sorting, harvesting, processing, or transporting crops to markets. Therefore, the migration of labour greatly affected the food supply chain. The inability of local or migrant workers to get to point of production due to travel restriction caused by the lockdown also weakened the production rate (FAO, 2020b). However, the shortage of farmworkers was a major issue well before the COVID-19 outbreak (Richards and Rickard, 2020) due to security issues experienced in many parts of the northern region of Nigeria. All the process and stages involved in the supply chain are sequential and any distortion in the process can result in losses for all involved in the industry. Therefore, the supply chain has to be well-tuned to schedule giving room for immediate changes when the need arises. A highly efficient process is needed in the food industry especially in the face of a global pandemic. Getting the food to the consumer is of great importance to the supply chain (Alonso et al., 2007) but as countries face the pandemic, they must make every effort to ensure the gears of the food supply chains keeps rolling with the new reality. In other to effectively ensure the continued running of the supply chain, calling up Cooper et al. (1997) using supply chain management (SCM) to integrate goals and activities with other organisations in the supply process to optimise the results of the chain. SCM is known to be "the integration of planning, co-ordination and control of all business processes and activities in the supply chain to deliver superior consumer value at less cost to the supply chain as whole whilst satisfying requirements of other stakeholders in the supply chain" (Vorst, van der Jack, 2004). SCM improves the profitability of the supply chain by a more efficient delivery system (improved responsiveness and reliability of deliveries, fewer stock-outs, higher product quality, more receiver-friendly loads) and easy access to information (better demand insight, more predictable order cycles, accurate, real-time) at the operational level and a reduction of the time-to-market at the tactical and strategic level. The potential for improvement when the SCM-concepts implemented is in the area of reduced inventory-carrying (reduced overstocks, faster inventory turns) and transportation costs (pooling of transport), the count down on indirect and direct labour costs and the increase of sales and sales margins. The pandemic circumstance has made many industries re-engineer their processes and rationalising the supply chain network to get the maximum benefits from the limitations which the pandemic has created (van der Vorst, 2004).

The impact of the pandemic has created problems for the agricultural systems which are largely dependent on the intensity and composition of agricultural inputs and varies depending on the product produced and the country (FAO, 2020b). The restriction in movement (both national and international border closures) has brought a change to the consumer demand pattern. With the restrictions, consumers cannot go to retailers and had to rely on meals prepared at home. Besides, consumers do not want to go to markets and supermarkets due to the phobia of getting the COVID-19 by interactions at the stores (FAO, 2020c). The players in the industry are adjusting to this new reality by proactively adjusting the supply chain based on market needs. Varying the supply chain has become necessary for businesses when Fisher (1997) pointed out that the supply chain is not a rigid system. There are at least two fundamentally different supply chain types: a market-responsive type for innovative products and a cost-efficient type for functional products. This supply chain differentiation is needed in the face of the pandemic. The first step in such a strategy is to segment the market and the second step is to establish appropriate supply chains for each segment, i.e., supply chain differentiation follows market segmentation. The more homogeneous the market segment, the higher the possibility to identify the true nature of order winners, qualifiers, preferences, and trends. When a previously homogeneous market segment becomes heterogeneous, the need for supply chain differentiation arises.

2.6 Effects of the pandemic on consumer behaviour

Looking at the effect of the pandemic on consumers' food demand during the COVID-19 pandemic, the prerogative for the purchase of foodstuff and especially wheat bread in Nigeria would appear to depend upon the state of the country's economy within the period. Besides, due to the restrictions in place the number of visitors to the food store and consequently spending money on food has changed (Bakalis et al., 2020; Cranfield, 2020). Although since Nigeria's independence in 1960 there has been a spectacular spurt in bread consumption with a need for distribution networks in the sparsely populated Northern region and remote rural areas of the East. This expansion would surely contribute to the total bread consumption in the country. A further automatic increase of a similar magnitude would be expected as a result of the growing population. In all, an improvement in the general economic atmosphere, the rate of urbanization, the size of the wage-earning labour force, and the pace of social change, are factors that would control the level of bread consumption (Bauer and Yamey, 1951).

Some theories help explain the particular situation of consumers during the various periods of the pandemic. Hawkins Stern (1962) theorized about the irrational behaviour of consumers. Stern argued that sudden buying impulses fit alongside irrational purchasing decisions and can be used to paint a complete picture of the average consumer. Impulse buying is driven mostly by external stimuli and are removed from traditional consumer decision-making schemes. This action was seen in most consumers in the beginning stages of the pandemic period with the need to contain the virus. Strict measures had to be implemented. There are four types of impulse buying. The first being the pure impulse purchases, an example of which is a candy bar at the checkout line of a grocery store. Second, consumers make reminded impulse buys. For instance, placing hot dog buns next to a meat cooler in a kiosk. The third being the suggested impulse purchases. Finally, consumers make planned impulse decisions, this is made possible by the consumer wanting to buy a product but is unsure about the specifics of it. Abraham Maslow (1943) came up with his hierarchy of needs to explain consumer behaviour towards commodities. These needs are necessities to all human beings, and once they are not satisfied, nothing else matters. As we satisfy these basic needs, we start looking to satisfy higher-order needs. Once a lower-level need is satisfied, it no longer serves as a motivator. He theorized that people act to fulfil their needs based on a five-part priority system. These needs are physiological (survival), safety, love, esteem, and self-actualization; all arranged in order of priority. Maslow's hierarchy provides a systematic way of thinking about the different needs a consumer may have at any given point and explains different reactions they may have when each need arises.

Circumstances can be investigated from other parts of the world, Europe as an example. There was an increase in the demand for food. In a study, demand data due to COVID-19 were showed that Fresh bread demand increased by 76% and frozen vegetables by 52% in the week after the pandemic was announced, while alcoholic beverage demand remained stable. However, one month after the pandemic announcement, the demand for alcoholic beverages increased roughly twice as much. (Crisp, 2020). The prolonged lockdown restrictions resulted in income losses and changes in social interaction, some changes needed to be made in various household expenditure patterns. Economically disadvantaged households had limited access to nutritious food as a result of lower income – due to the interrelated factors of movement restrictions and reduced economic

activity. It is important to note that the decrease in income for many households has compounded the effect of reduced nutritious food intake, such as the ability to pay for protein-rich foods. Lower-income consumers, who spend more than half of their income on food, have been severely hampered by income loss, putting their diets at risk.

Nonetheless, the interruption of daily life by the pandemic gives way to boredom and a high energy intake by allowing for large amounts of fat, carbohydrate, and proteins to be ingested. For some, it resulted in large sugar consumption due to the anxiety created by the uncertainty of the times. However, these unhealthy eating habits are only a psychological response to environmental conditions (Muscogiuri et al., 2020). The shutting down of restaurants also altered purchasing habits and resulted in consumers moving from food servicing to retail. Before the pandemic, worldwide statistics show that patronage of supermarkets and using food services had the same ratio as 50% but there has been a change of almost 100% in favour of supermarkets (Aday and Aday, 2020). In contracts to the earlier stated effect of the pandemic, some study has shown that food buying behaviour of the consumers has changed in their will to consume healthy foods, but at the same time without exceeding normal budget. These consumers have adopted the basic approach of returning to natural food and beverage products that contain ingredients that provide nutritional supplements such as fruits and vegetables, legumes, whole grains, or olive oil. This was seen to be common among those in the rural areas where they mostly on what they grow but have had to depend on it fully because of the pandemic. Also, most consumers are concerned about the effect of COVID-19 on their mental effects; the tendency for consumers looking for food products to improve this mood was noted (Hughes, 2020; Muscogiuri et al., 2020).

In Nigeria, wheat bread and wheat-flour based foods are a staple in homes and receive more attention but due to the pandemic, many of these products which are mostly found on food store shelves have received less attention. Interestingly, consumers have focused on the products with long shelf life such as dried or canned foods, pasta, milk, or milk substitutes, and frozen foods due to convenience and daily cooking at home during the period of lockdown. Consumers resulted in takeout and home delivery options because of social distance and the closure of restaurants (Bakalis et al., 2020; Shahidi, 2020). Experience has shown that consumers play an important role in the food supply chain, changes in consumer behaviour have affected the food supply chain. The

focus has been on how best to maximize the available food supply, paying attention to less food wastage and improving food security (Shafiee-Jood and Cai, 2016). However, there has also been a lot of wastage in some quarters like schools and restaurants where perishable foods were discarded or dumped due to the closure. Statistics have also shown that transportation problems during the lockdown or overbuying of perishable items because of panic buying resulted in higher food waste levels (Fleetwood, 2020; Sharma et al., 2020).

2.7 Wheat Price in Nigeria

Wheat along with other grains has been grown in Nigeria for many years. The price of wheat has been rising and falling over these years demand on a myriad of factors. For example, a slight fall in 1981 for two years, because there were massive wheat importation and the sale of fertilizer for wheat production, was heavily subsidized during the period. In contrast to the increase in price from 1984 to 1988 which was a result of a large demand for wheat products in the country, particularly in urban areas. In 1985, there was a policy to reduce wheat importation in other to encourage consumption of its indigenous (which is so expensive to produce) in its place, this was a move by GON to offset increasing debts and stagnancy export revenue. As a result of the action, the producer price of domestic wheat shoots up by an alarming 650% between 1986 and 1988 could further suggest a reason for an increased wheat price within that period (Togun et al., 2019). However, in 1989 there was a sharp fall in the price of wheat in the country. This fall in the price of wheat during the period was as a result of policy made that all Nigerian northern states have wheat cultivation programmes in all the states and GON was tasked to ensure this was carried out. This opened the market giving room for more players thereby flooding the market for the population of the country at the time. There was a period of high prices in the 1990s mostly due to the political instability and the lack of direction for the GON, but things took a turn for the better by the turn of the millennium. Prices of wheat dropped drastically to the delight of all in the industry, but this was short-lived. By 2010, the wheat price in Nigeria Naira per tones was up again and there was no going back from there. This is so because the demand for wheat in the country outgrows its supply as the years go by. It also means that Nigeria may not be wheat self-sufficient at the end of 2023 due to the likelihood of population explosion, insurgency, banditry, Fulani herdsmen's related crises that persist in most of the northern wheat-producing states.

Moreover, the projected price result also revealed that time is coming when poor and average Nigerian may find it so hard to purchase wheat food crop due to the likelihood of price hike as the years move on. Some economic theories can help understanding how the commodity behaviours in the pandemic period. Several economic authors have investigated how price fluctuation come about and how they affect economic activities (Kalecki, 1939; Lucas, 1975; Slutzky, 1937), they have often attributed these fluctuations to random factors, e.g., the weather for agricultural commodities. On the other hand, others have speculated that economic cycling might be an inherent behaviour characteristic of unstable economic systems. Their works and that of others has played a fundamental role in sharpening the debate between the various schools of thought on pricing commodities. It is expected that prices will vary in response to differences in demand in different commodity markets or for different seats in the same venue as expressed by Stole (2007) and Courty (2010).

During the pandemic, the price of Nigerian grown wheat rose by 33 per cent due to the low production volumes of the product during the period. Since wheat is the major raw material for flour used in baking, the rise in wheat translated to a corresponding rise in the prices of bread and other pastries. Due to the COVID-19 restrictions, the harvest process affected and led to the loss of the product by farmers. The price of N180, 000 per metric tonne of wheat increased to N240, 000 per metric tonne in the period. Meanwhile, bakers and caterers also lamented an increase in the prices of baking materials due to the COVID-19 pandemic. A bag of flour that went for N9, 000 before the COVID-19 pandemic, increased to go for N13, 000. The instability of foreign exchange, high cost of power generation and other baking materials, were reasons given by flour millers for the hike in the prices of baking materials and also bakers for the increase in scarcity of wheat-based products during the period. Moreover, an increase in the price of commodities has an effect on food security in both the short and long run. The availability of food, accessibility of food as well as stability of prices (Pangaribowo et al., 2013) are all linked to ensure food security and signify the general mood of demand and supply situations. Usually, a price increase indicates lower or less accessibility. In this case, all is due to the aftereffect of the pandemic due to the protocols put in place to ensure that the virus is contained. Price fluctuations mirror the instability of the food supply due to several factors. Concerning wheat bread, a few

come to mind among which are weather exposure and natural variable factors or other macro-economic and international linkages.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter provides the methodology adopted to assist in achieving the research objectives. According to Newing (2011), a research methodology is concerned with the methods that will be applied to address specific objectives and research questions that have been developed. Therefore, a well-structured approach of the tools needed to carry out this study will be made known. This research examines the Impact of COVID-19 on the Supply Chain of Wheat Bread in Nigeria using quantitative means of data collection. This chapter covers the study area, population, sampling technique, and sample size, instruments, and data analysis.

3.2 Study Area

This study is carried out in Nigeria, a country located in the West region of Africa with a total area of 923,768 km2 (356,669 sq mi). It shares its borders with Benin, Niger, Chad, and Cameroon and its maritime borders with Equatorial Guinea, Ghana and Sao Tome and Principe. Nigeria lies between latitudes 4° and 14°N, and longitudes 2° and 15°E and is rich in culture and blessed with almost 250 different ethnic groups. There are two seasons applicable to Nigeria: the dry season and the rainy season. There is a connection between the climatic conditions of the country and its vegetation spread. Going from the South to North the vegetation can be named as follows: Mangrove Swamp and Coastal Vegetation, Freshwater Swamp Forest, Lowland Rain Forest, Derived Savanna, Guinea Savanna, Sudan Savanna, and Sahel Savanna. According to a World Bank survey, the agricultural sector is known to be the main employer of labour despite GON dependency on crude oil. The study area for this research will focus on three states in the country most affected by the COVID-19 pandemic. These states were mandated to adhere to several restriction protocols to curtail the spread of the virus which in many ways is a focus of this study. These states are also those most affected by the GON policies during the pandemic, and they are Lagos State Ogun State, alongside the Federal capital territory, Abuja.

3.3 Research Design

To ensure a comprehensive study of the topic of research, a descriptive research survey design is being used. This method of research is preferred because the researcher collects data to answer questions concerning the status of the subject of study. Descriptive research determines and reports the way things are done and also helps a researcher to describe a phenomenon in terms of attitude, values and characteristics (Mugenda and Mugenda, 2013). The descriptive survey is a method of collecting information by interviewing or administering a questionnaire to a sample of individuals. This method is appropriate for the study in that it helps in portraying the accuracy of people's profile, the events, and the situations in question (Orodho, 2003). The aim of this research which is to understand the demand, supply, and price activity of wheat bread during the pandemic period will be achieved by administering a questionnaire that targets the right audience. The questionnaire comprising of close-ended questions asked most comprehensively ensures that the degree of accuracy in the analysis is maintained to a high degree. Information is retrieved from these questions using the Likert type rating scale. The construct of the scale is symmetrical, in which the neutral position is located between two extremes of strongly disagree (SD) to strongly agree (SA). In this way, there is independence given to each respondent to choose any reply in a balanced way in either direction. This scale enables access to the opinions, attitudes, or behaviours of the respondents concerning the research objective. It enables the researcher to easily operationalise personality traits or perceptions. Each question or statement is allowed a continuum of possible responses posted in gradations, five (5) in the case of this research. Each gradation is given a numerical score so that the data can be analyzed quantitatively. With grade one (1) being the case of strong agreement and five (5) being the case of strongly disagree.

3.4 Research Material

The questionnaire is divided into two sections. The first section contains information about the demographic of the respondents. The second section is divided into three parts with questions to address three main stakeholders in the wheat bread value chain. The questions for each of the parts has been tailored to address the objectives of the research. Each part has a minimum of four questions to get data to evaluate the aim of the research

which is to evaluate the effect of the COVID-19 on the supply chain of wheat bread in Nigeria. Each question used a five-point Likert type interval scale to obtain information from the respondents. The ratio scale was also employed mostly in the demographic data section. The nominal scale was used to obtain a level of precision. The descriptive survey is best suited for this research because the survey style helped to focus the data on the desired characteristics of the sample the research question is aiming to answer. Responses from the questionnaire will be obtained through the electronic means of distribution using the Google Form sheet which will be sent to the individual respondent. With the electronic format, ethical consideration will be made in the formation. For instance, protection of identity and right to withdraw are all made clear to each respondent. According to Osuala (2002) in a research study, utilising a sample drawn from the population is to provide a clearer insight on the issue under examination and the representative sample from the population will be used to generalise the results to a wider population.

3.5 Sampling Techniques

Data gathering is important to any research, knowing that data is used to obtain a better understanding of a theoretical framework (Bernard, 2002). Therefore, the right sampling technique of obtaining data is important in other to conclude the research. The judgment sampling technique was used to select respondents from three of the cities most affected by the COVID- 19 pandemic in Nigeria. This is a non-random technique that does not consider theories or known participants. The researcher is allowed to decide on what needs to be known and sets out to find people who provide the needed information under their experience or knowledge. The research was narrowed to various sections of the community in these cities. From the developing to the semi-developing and semi-developed communities. Using the simple random sampling technique, a diverse cross-section of the respondent was obtained to ensure the aim of the research is arrive at. We should know that sample size is a subset of the population drawn to represent the entire population or any combination of sampling units that do not include the entire set of sampling units that has been defined as the population (Garson, 2012). Also, finding the right sample size for any research is essential to the outcome of the research as several factors affect what the size becomes. These include the population of the study, aim of research and allowed sampling error. Researchers over the years have used new technologies to improve the level of precision, level of

confidence and degree of variability of sample size. With the information gathered from the population, a simplified formula put forward by Yamane (1967) was used to determine the sample size of the study. Invariably, from the population of the study a sample size of 200 respondents was selected. This number was chosen to give a level of clarity and precision in the data analysis. Bryman and Bell (2007) say a large sample size adds to the accuracy of the result.

3.6 Data Collection

Cresswell (2013) describes the data collection procedure as a way through which data is collected from the subjects under study. Data was collected from the primary source. Primary data sources are known to be first-hand information obtained from the distribution of well-structured questionnaires and relevant adoption of theoretical concepts. These questionnaires can be presented in different formats. They can be written or oral interviews as well as personal observations and experience of the researcher who has come in contact with the study area. In this research, the instrument of focus is a questionnaire. In defining a questionnaire, Mugenda and Mugenda (2013) said it is a research instrument made up of questions and other indicators to obtain information from respondents with a focus on a research objective. Zikmund (2013) noted that a questionnaire can be adequately utilised to obtain objective data because this means the researcher's interference and manipulation is minimal. It can also be considered as a cheap means of collecting data and require less time to administer. The structured questionnaire was administered to bakers, wheat bread suppliers and consumers.

3.7 Reliability of Research Instrument

It is concerned with the need to maintain a certain level of consistency in the results. Tavakol and Dennick (2011), recommends the use of Cronbach's alpha which is a measure used to ascertain the internal consistency of a scale. Cronbach's alpha is measured on a scale of zero to one, with zero indicating no internal consistency and one indicating maximum internal consistency. The rule of the thumb, as advised by Nunnally (1978) is that 0.5 is an acceptable level of consistency. In this study, the data collection instrument, a questionnaire, was tested on 20% of the questionnaire sample to ensure that it was relevant and effective. The reliability of the questionnaire was tested using eleven randomly selected respondents from the study population.

3.8 Data Analysis

Data analyses are a series of step aimed towards making sense out of research respondents' views and opinions of situations, recognizing corresponding patterns, themes, categories and regular similarities (Cohen *et al.*, 2007). Gibbs (2007) pointed out that data analysis is a process of converting qualitative data, done employing analytic procedures, into a clear, understandable, insightful, trustworthy and authentic analysis. Data analysis began with field editing to ensure that data is accurate, consistent with other facts gathered, uniformly entered, complete and well arranged to facilitate coding and tabulation. Descriptive and inferential statistical analysis will be done in chapter four. Descriptive statistics help with the comprehension of the raw data obtained from the respondents because presenting them plainly would not be helpful for easy study. It will enable easy conclusion with regards to the objectives of the research. It is therefore a simple way to describe our data. Inferential statistics play with allowing us to use the obtained data from the sample population to make generalizations from which the samples were drawn. Therefore, it is important that the sample accurately represents the population (van Elst, 2019). Multiple linear regression analysis using Statistical Package for Social Sciences (SPSS) was used to answer the research questions**.** Multiple linear regression is the same as simple linear regression, but the difference is we have more than one dependent variable (Rosenthal, 2017). Multiple linear regression helps to explore the relationship between a quantitative outcome and more than one quantitative explanatory variable. Data will be summarized and presented in percentages and frequencies to show how many times a score occurs and also the probability of occurrence. Thus, tables and figures are used to present the data obtained.

3.9 Validity of Instrument

This study uses both construct validity and content validity. For construct validity, the questionnaire has been divided into several sections to ensure that each section assessed information for a specific objective, while also maintaining the same close ties to the conceptual framework for this study. To ensure content validity, the questionnaire was subjected to thorough examination by two randomly selected managers. They were asked to evaluate the statements in the questionnaire for relevance and whether they are meaningful, clear, or offensive. Based on the evaluation, the instrument was adjusted

appropriately before subjecting it to the final data collection exercise. Their reviews and comments were used to ensure that content validity was enhanced.

3.10 Confidentiality

Information obtained from the questionnaire will be done with utmost anonymity and no sensitive information will be obtained from respondents. The researcher during analysis ensured the data of respondents were handled as sensitive material. There was no third-party access to this information and all data received were used for this research only.

3.11 Ethical Consideration

To guarantee ethical standards, the researcher obtained informed consent from participants and ensured that all participated voluntarily. The participants could pull out of the study at any time without prior notice to the researcher. The respondents were not required to indicate their names on the questionnaire to ensure anonymity. However, email addresses were required to monitor the entries since the information was electronically collected.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

In this section, the analysis and interpretation of the empirical findings are made which comprises of the analysis and interpretation based on the research variables and questions raised for the study. It means that the empirical analyses of this study were carried out and compared with the variable of the study as it relates to the literature review of the study as well. The chapter begins with the analysis of the demographic information then we move to the other analyses of the empirical evidence which came about by research questions using frequency counts, percentage, and multiple linear regression analysis to answer the research questions. The responses to the questionnaire are presented in tables as well as figures to give a pictorial view of the data. The other part of this section discusses the result of the research findings.

4.2 Demographic Information

Table 4.1: Age of Respondents

Age	Frequency	Percentage
Under 18	0	0
18-24	4	2.5
25-34	50	31.1
35-44	81	50.3
45-54	23	14.3
55-64	3	1.9
65 and above	0	0
Total	161	100

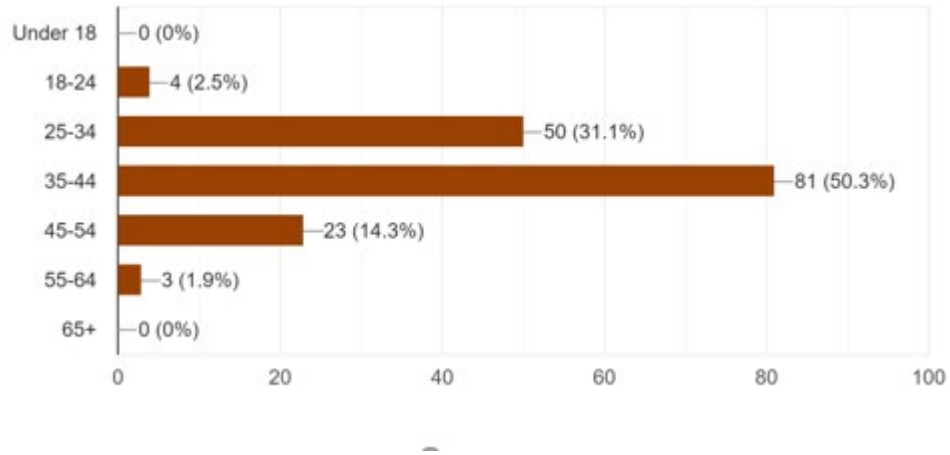

Figure 4.1: A Chart on Age of Respondents

Table 4.1 and figure 4.1 above shows that no response for those below the age of 18 years, but 2.5% were between 18-24 years of age, 31.1% were between 25-34 years of age, 50.3% were between 35-44 years, 14.3% were between 45-54 years of age, 1.9% were between 55-64 years while there is no response for those that are 65 years and above.

Table 4.2: Gender of Respondents

Gender	Frequency	Percentage
Female	66	41
Male	93	57.8
Prefer not to say	2	1.2
Total	**161**	**100**

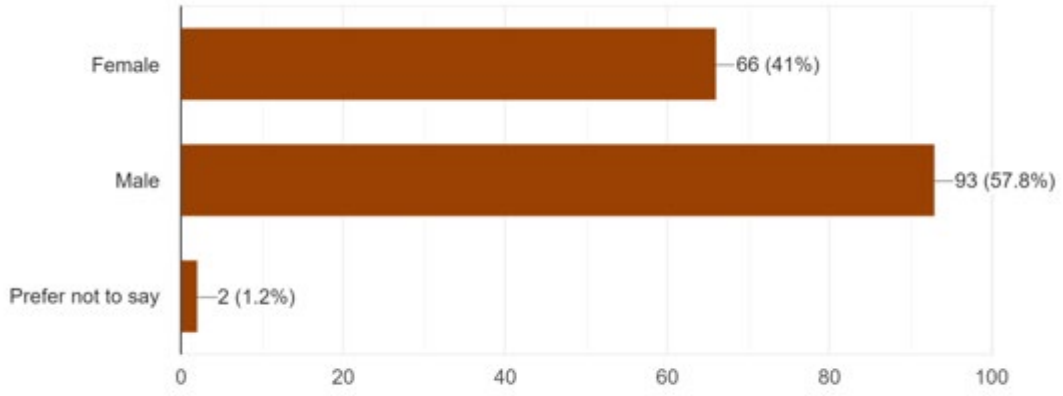

Figure 4.2: A Chart on Gender of Respondents

Table 4.2 and figure 4.2 shows that the female respondents were 41%, the male was 57.8% while the remaining 1.2% prefer not to talk about their gender. The males are more than the females because it is a male-dominated occupation.

Table 4.3: State of Residence

State of Residence	Frequency	Percentage
FCT Abuja	54	33.6
Lagos state	51	31.6
Plateau state	55	34.2
Imo state	1	0.6
Total	**161**	**100**

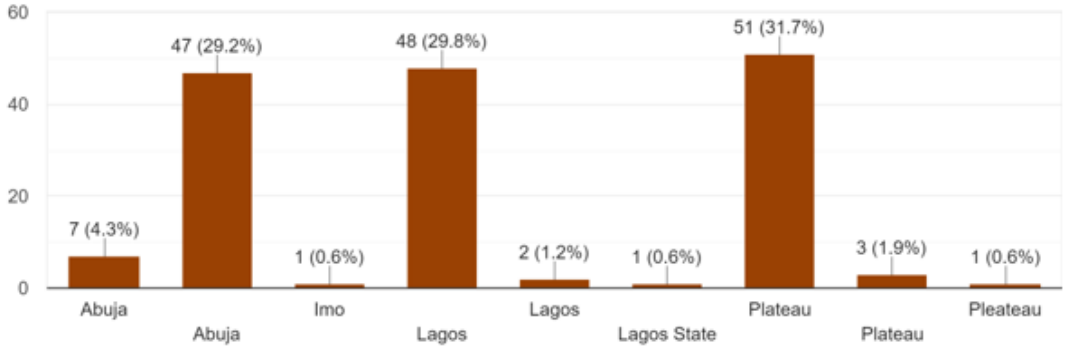

Figure 4.3: A Chart on the State of Residence

Table 4.3 and figure 4.3 above shows that 33.6% of the respondents are residents of federal capital territory Abuja, 31.6% were residents of the commercial hub of Nigeria, Lagos state, 34.2% of the residents are from Lagos state while the remaining 0.6% is from Imo state, Nigeria. The majority of the respondents are residents in plateau state.

Table 4.4: Area of Residence in the Selected State

State of Residence	Frequency	Percentage
Badagry	22	13.6
Gwarinpa	14	8.7
Ikeja	77	47.9
Lekki	15	9.3
Mushin	13	8.1
Owerri	1	0.6
Wuse 2	19	11.9
Total	**161**	**100**

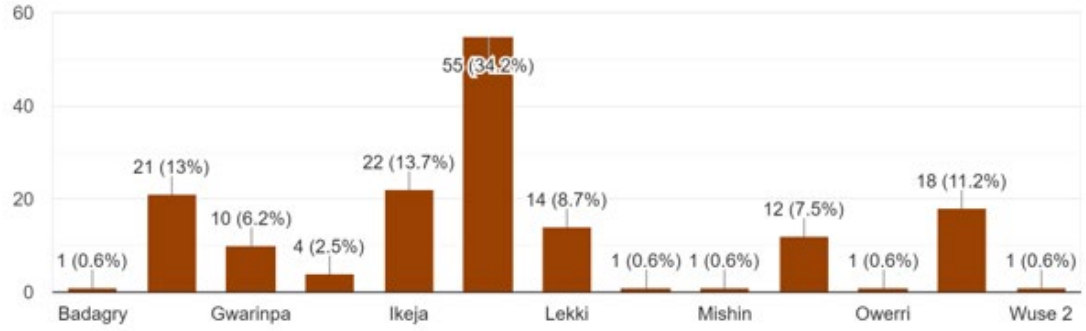

Figure 4.4: Chart on Area of Residence in the Selected State

Table 4.4 and figure 4.4 revealed that 13.6% of the respondents reside in Badagry Lagos, 8.7% in Gwarinpa, 47.9% resides in Ikeja, 9.3% resides in Lekki, 9.1% resides in Mushin, 0.6% resides in Owerri while the remaining 11.9% resides in Abuja.

Table 4.5: Category of Respondents

Category	Frequency	Percentage
Wheat bread producers	29	18
Wheat bread supplier	37	23
Wheat bread consumer	95	59
Total	**161**	**100**

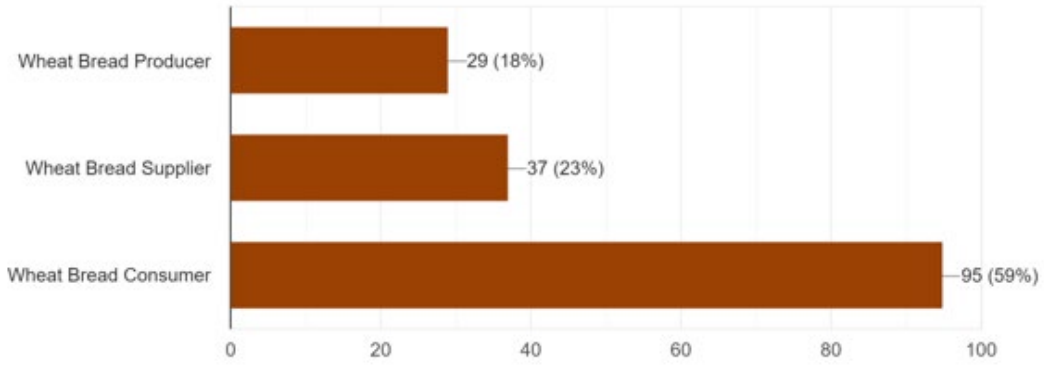

Figure 4.5: Chart on Category of Respondents

Table 4.5 and figure 4.5 shows that 18% of the respondents were Wheat bread producers, 23% were wheat bread suppliers while the remaining 59% were wheat bread consumer. The majority of the respondents were wheat bread consumers.

4.3 Responses to Research Questions

Research Question One: What is the effect of the COVID-19 pandemic on the price of wheat bread in Nigeria?

4.3.1 Part One: Bread Producers

Table 4.6: Effect of Pandemic on Purchasing of Ingredients

Options	Frequency	Percentage
Strongly agree	26	86.7
Agree	3	10
Undecided	1	3.3
Disagree	-	-
Strongly disagree	-	-
Total	**30**	**100**

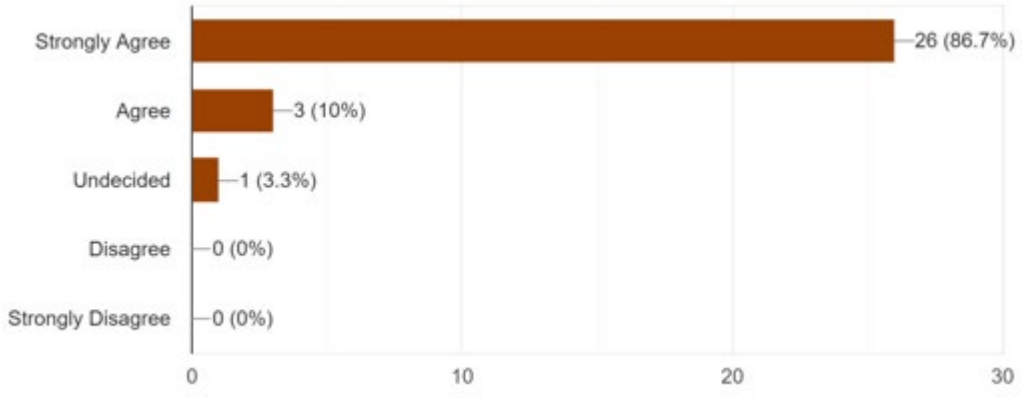

Figure 4.6: Chart on Effect of Pandemic on Purchasing of Ingredients

Table 4.6 and figure 4.6 shows that 86.7% of the respondents' producer strongly agreed that pandemic affected the purchasing price of baking ingredients, 10% also agreed as only 3.3% indicated undecided. Therefore, the majority of the wheat bread producer agreed that pandemic affected the purchasing power of baking ingredients.

Table 4.7: COVID-19 protocols affected the working hours causing a decline in production

Options	Frequency	Percentage
Strongly agree	23	75.7
Agree	8	26.7
Undecided	-	-
Disagree	-	-
Strongly disagree	-	-
Total	**30**	**100**

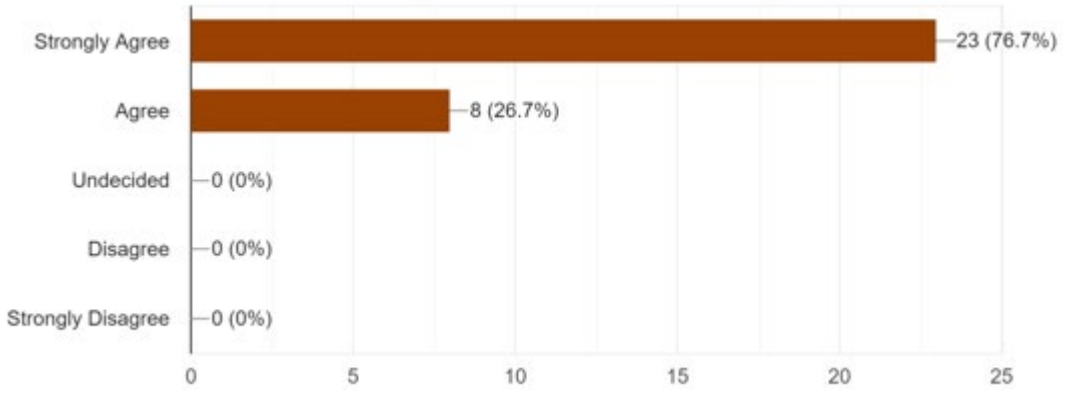

Figure 4.7: Chart on COVID-19 protocols affected the working hours causing a decline in production

Table 4.7 and figure 4.7 shows that 76.7% of the respondents strongly agreed and 26.7% agreed that COVID-19 protocols affected the working hours causing a decline in production. Hence, the majority of the respondents agree that COVID-19 protocols affected the working hours causing a decline in production.

Table 4.8: The pandemic caused an increase in the cost of wheat bread production

Options	Frequency	Percentage
Strongly agree	21	70
Agree	8	26.7
Undecided	-	-
Disagree	1	3.3
Strongly disagree	-	-
Total	**30**	**100**

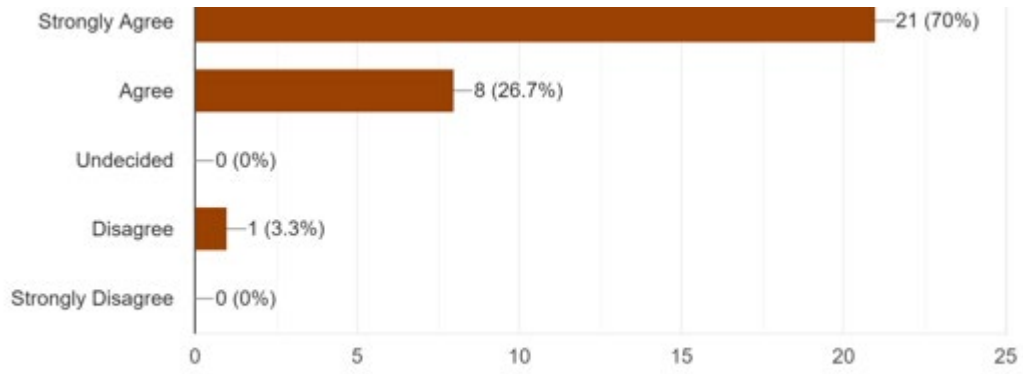

Figure 4.8: Chart on the pandemic caused an increase in the cost of wheat bread production

Table 4.8 and figure 4.8 shows that 70% of the respondents strongly agreed and 26.7% agreed that the pandemic caused an increase in the cost of wheat bread production, but the remaining 3.3% disagreed with the statement. Therefore, the majority of the respondents agreed that the pandemic caused an increase in the cost of wheat bread production.

Table 4.9: The lockdown restriction reduced the speed of dispatch of produced bread

Options	Frequency	Percentage
Strongly agree	24	80
Agree	6	20
Undecided	-	-
Disagree	-	-
Strongly disagree	-	-
Total	**30**	**100**

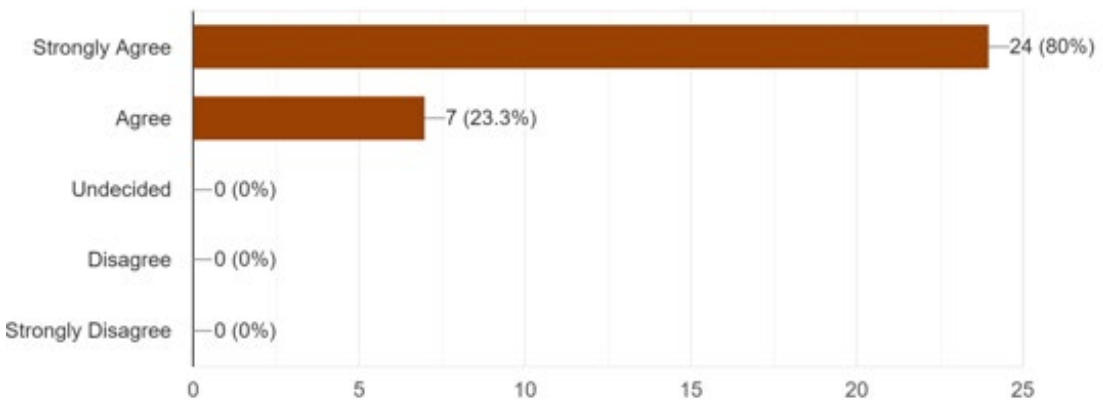

Figure 4.9: Chart on the lockdown restriction reduced the speed of dispatch of produced bread

Table 4.9 and figure 4.9 shows that 80% and 20% of the respondents strongly agreed and agreed respectively that the lockdown restriction reduced the speed of dispatch of produced bread. Therefore, the majority of the respondents agreed that the lockdown restriction reduced the speed of dispatch of produced bread.

Table 4.10: The pandemic caused a reduction in available manpower.

Options	Frequency	Percentage
Strongly agree	20	66.7
Agree	4	13.3
Undecided	5	16.7
Disagree	1	3.3
Strongly disagree	-	-
Total	**30**	**100**

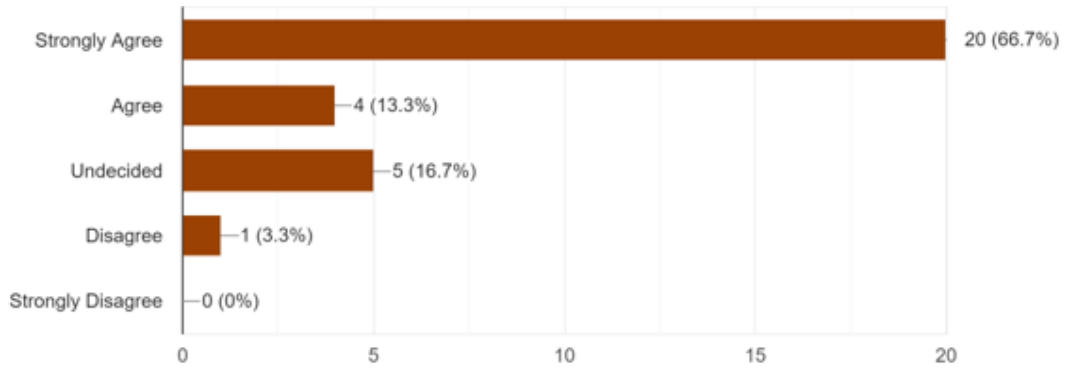

Figure 4.10: Chart on the pandemic caused a reduction in available manpower

Table 4.10 and figure 4.10 shows that 66.7% of the respondents strongly agreed and 13.3% agreed that the pandemic caused a reduction in available manpower, while 16.7% indicated undecided, 3.3% of the respondents disagreed with the statement. However, the majority of the respondents agreed that the pandemic caused a reduction in available manpower.

Table 4.11: The pandemic period showed a drop in overall sales

Options	Frequency	Percentage
Strongly agree	25	83.3
Agree	5	16.7
Undecided	-	-
Disagree	-	-
Strongly disagree	-	-
Total	**30**	**100**

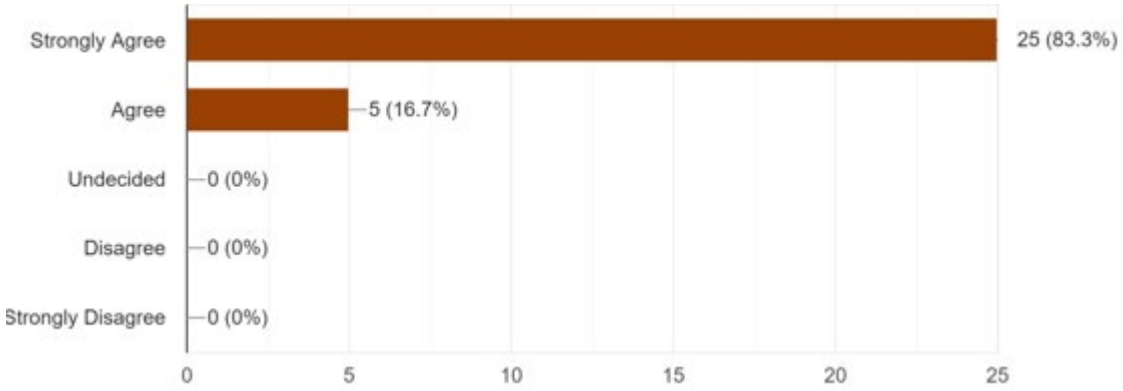

Figure 4.11: Chart on the pandemic period showed a drop in overall sales

Table 4.11 and figure 4.11 shows that 83.3% and 16.7% strongly agreed and agreed respectively that the pandemic period showed a drop in overall sales. It is therefore concluded that the pandemic period showed a drop in overall sales.

Table 4.12: Summary of Multiple Linear Regression Analysis on the effect of the COVID-19 pandemic on the price of wheat bread in Nigeria.

Source	Sum of Squares (SS)	Df	Mean Square	F. Ratio	P-value	Remark
Regression	1709.658	1	1709.658	176.242	.000[b]	S
Residual	2105.036	29	9.701			
Total	3814.694	30				
Multiple R (r_p) =.669[a] R. Square (r^2) = .778 Adjusted R^2= .446 Standard Error of Estimate =3.11458						
a. Dependent Variable: Price of wheat bread in Nigeria						
b. Predictors: (Constant), COVID-19 pandemic						

Table 4.12 shows that the use of COVID-19 pandemic to Predict the Price of wheat bread in some selected state in Nigeria yielded a coefficient of multiple regression R (r_p) of 0.669 and multiple regression square (R^2) of 0.778. This also shows that F is 176.242 which is significant at $P < 0.05$ because the value of P is less than 0.05.

This shows that the COVID-19 pandemic contributed to 77.8 per cent of the variance in the price of wheat bread in some selected states in Nigeria. In other words, approximately 78% of the variance in the change in the Price of wheat bread in Nigeria can be explained by pulling different variables together. This means that 22.2% of the variation in the Price of wheat bread in Nigeria cannot be explained by the variables of the COVID 19 pandemic. Thus, there must be other variables. However, the COVID-19 pandemic affects the price of wheat bread in Nigeria.

4.3.2 Part Two: Bread Supplier

Research Question Two: What is the effect of the COVID-19 pandemic on the supply of wheat bread in Nigeria?

Table 4.13: Scarcity of bakeries producing during the pandemic

Options	Frequency	Percentage
Strongly agree	21	55.3
Agree	8	21.1
Undecided	1	2.6
Disagree	5	13.2
Strongly disagree	3	7.9
Total	**38**	**100**

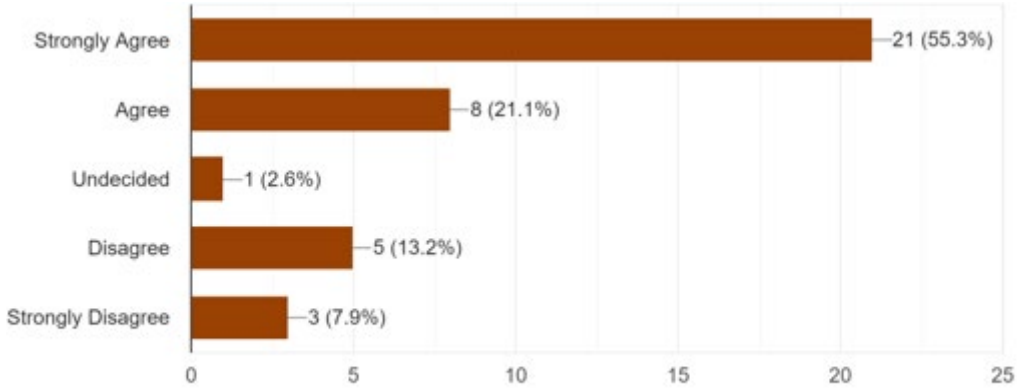

Figure 4.13: Chart on Scarcity of bakeries producing during the pandemic

Table 4.13 and figure 4.13 shows that 55.3% strongly agreed and 21.1% agreed that there was a scarcity of bakeries producing during the pandemic, 2.6% indicated undecided, 13.2% disagreed, and the remaining 7.9% of the respondents strongly disagreed with the statement. However, the majority of the respondents agreed that there was a scarcity of bakeries producing during the pandemic.

Table 4.14: Lockdown restrictions affected wheat bread distributed to consumers

Options	Frequency	Percentage
Strongly agree	28	73.7
Agree	7	18.4
Undecided	2	5.3
Disagree	1	2.6
Strongly disagree	1	2.6
Total	**38**	**100**

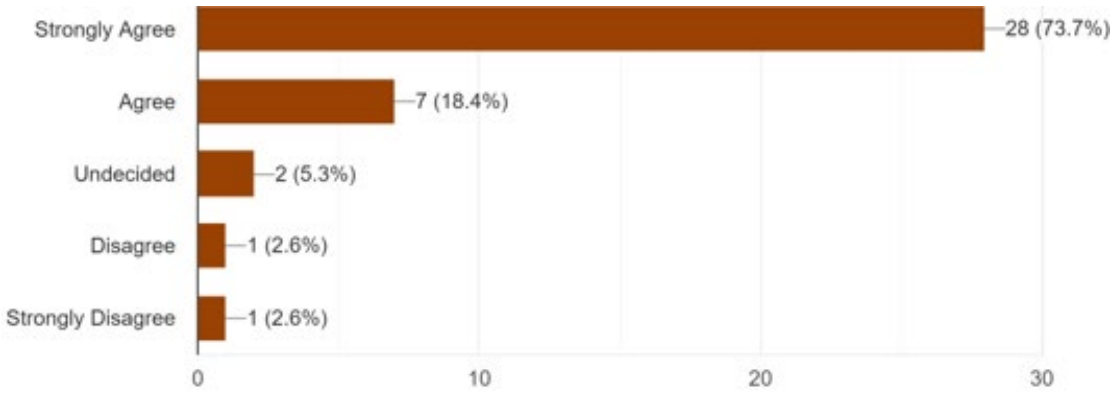

Figure 4.14: Chart on Lockdown restrictions affected wheat bread distributed to consumers

Table 4.14 and figure shows that 73.7% of the respondents strongly agreed and 18.4% agreed that lockdown restrictions affected wheat bread distributed to consumers, 5.3% indicated undecided, while 2.6% and another 2.6% disagreed and strongly disagreed respectively. However, most of the respondents agreed that lockdown restrictions affected wheat bread distributed to consumers.

Table 4.15: The pandemic caused suppliers to close shop

Options	Frequency	Percentage
Strongly agree	21	53.8
Agree	12	30.8
Undecided	6	15.4
Disagree	-	-
Strongly disagree	-	-
Total	**39**	**100**

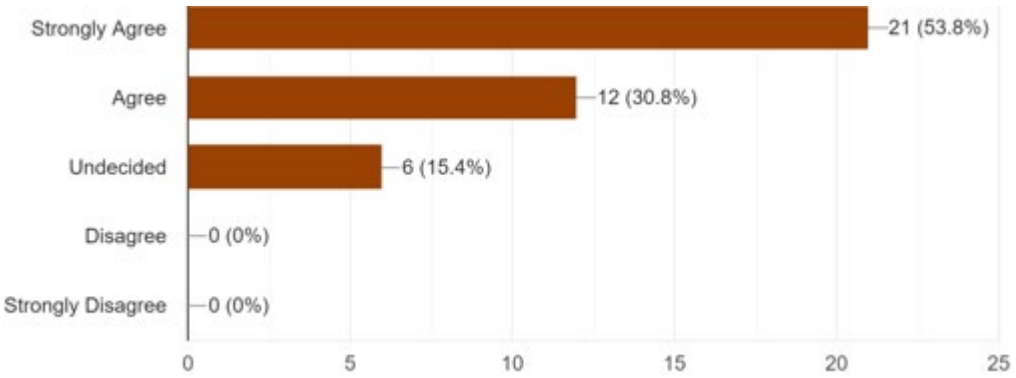

Figure 4.15: Chart on the pandemic caused suppliers to close shop

Table 4.15 and figure shows that 53.8% of the respondents strongly agreed and 30.8% agreed that the pandemic caused suppliers to close shop while the remaining 15.4% of the remaining respondents indicated undecided. Therefore, the majority of the respondents agreed that the pandemic caused suppliers to close shop.

Table 4.16: The pandemic caused an increase in the purchase price of bread from bakeries

Options	Frequency	Percentage
Strongly agree	33	86.8
Agree	4	10.5
Undecided	1	2.6
Disagree	-	-
Strongly disagree	-	-
Total	**38**	**100**

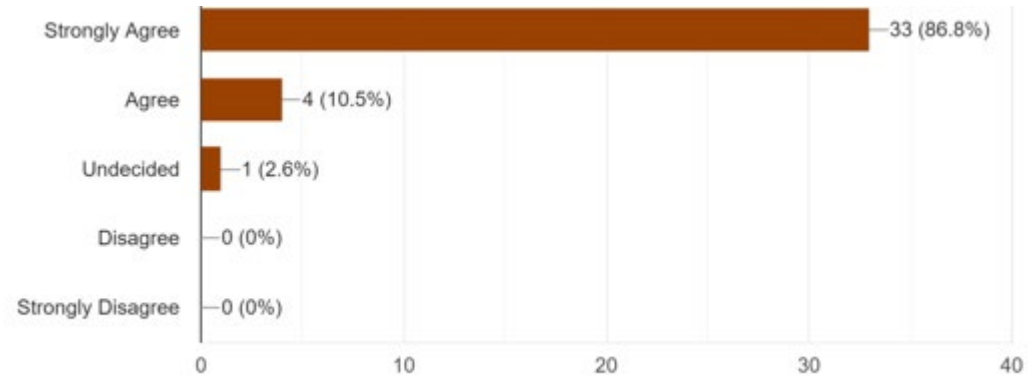

Figure 4.16: Chart on the pandemic caused an increase in the purchase price of bread from bakeries

Table 4.16 and figure 4.16 shows that 86.8% of the respondents strongly agreed and 10.5% of them agreed that the pandemic caused an increase in the purchase price of bread from bakeries, only 2.6% of the respondents indicated undecided. However, the majority of the respondents agreed pandemic caused an increase in the purchase price of bread from bakeries.

Table 4.17: The pandemic caused an increase in the selling price of bread to consumers

Options	Frequency	Percentage
Strongly agree	35	92.1
Agree	3	7.9
Undecided	-	-
Disagree	-	-
Strongly disagree	-	-
Total	**38**	**100**

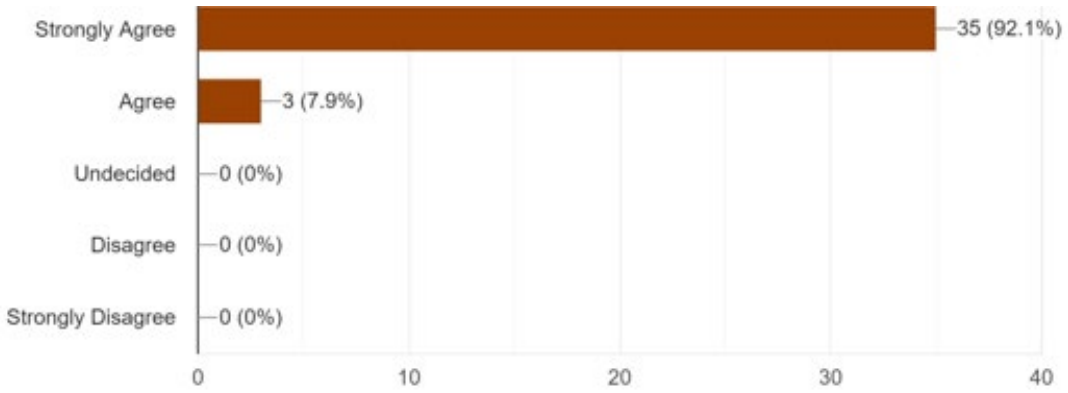

Figure 4.17: Chart on the pandemic caused an increase in the selling price of bread to consumers

Table 4.17 and figure 4.17 shows that 92.1% of the respondents strongly agreed and 7.9% agreed that the pandemic caused an increase in the selling price of bread to consumers. This means that the pandemic caused an increase in the selling price of bread to consumers.

Table 4.18: The pandemic caused a drop in consumer's in-shop purchase

Options	Frequency	Percentage
Strongly agree	29	74.4
Agree	8	20.5
Undecided	-	-
Disagree	2	5.1
Strongly disagree	-	-
Total	**39**	**100**

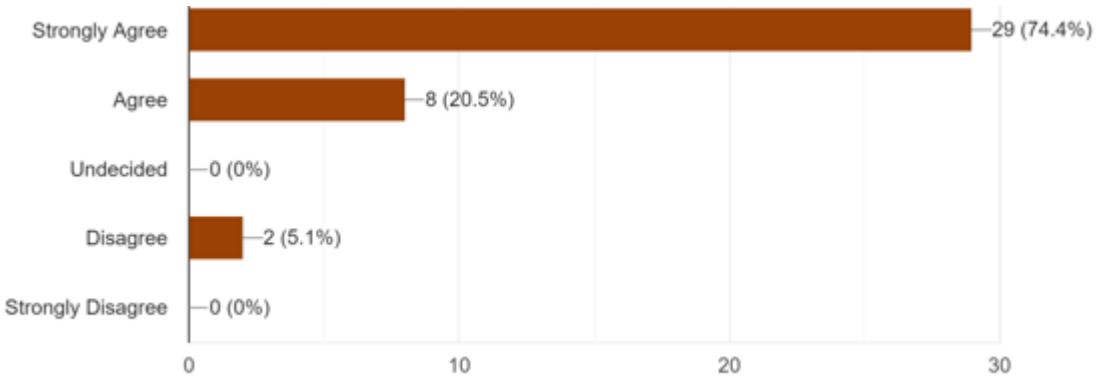

Figure 4.18: Chart on the pandemic caused a drop in consumer's in-shop purchase

Table 4.18 and figure 4.18 shows that 74.45 of the respondents strongly agreed and 20.5% agreed that the pandemic caused a drop in consumer's in-shop purchase while only 5.1% of the remaining respondents disagreed with the statement. Therefore, most of the respondents agreed that the pandemic caused a drop in consumer's in-shop purchase.

Table 4.19: The pandemic caused an increase in home delivery for wheat bread

Options	Frequency	Percentage
Strongly agree	36	94.7
Agree	2	5.3
Undecided	-	-
Disagree	-	-
Strongly disagree	-	-
Total	**38**	**100**

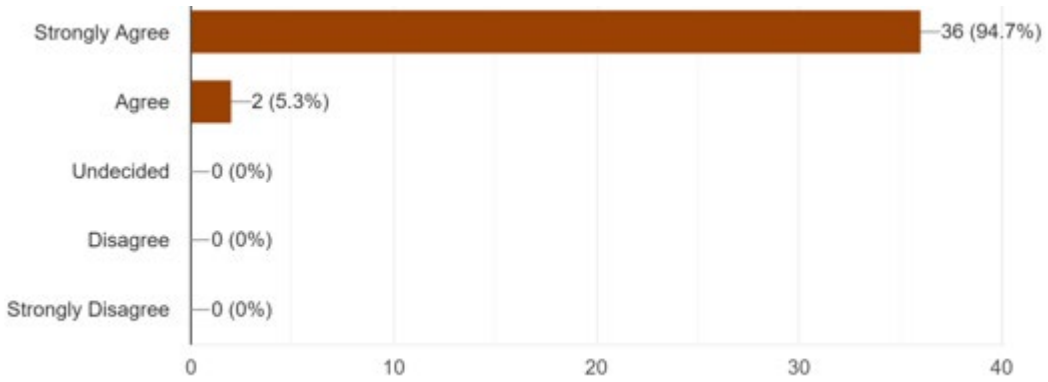

Figure 4.19: Chart on the pandemic caused an increase in home delivery for wheat bread

Table 4.19 and figure 4.19 shows that 94.7% and 5.3% of the respondents strongly agreed and agreed respectively that the pandemic caused an increase in home delivery for wheat bread. It can thus be concluded that the pandemic caused an increase in home delivery for wheat bread.

Table 4.20: Summary of Multiple Linear Regression Analysis on the effect of the COVID-19 pandemic on the supply of wheat bread in Nigeria.

Source	Sum of Squares (SS)	Df	Mean Square	F. Ratio	P-value	Remark
Regression	1966.647	1	1966.647	230.926	.000[b]	S
Residual	1848.047	37	8.516			
Total	3814.694	38				
Multiple R (r_p) =.918[a] R. Square (r^2) = .816 Adjusted R^2= .813 Standard Error of Estimate =2.91828						
a. Dependent Variable: Supply of wheat bread in Nigeria						
b. Predictors: (Constant), COVID-19 pandemic						

Table 4.20 shows that the use of COVID-19 pandemic to predict the Supply of wheat bread in Nigeria yielded a coefficient of multiple regression R (r_p) of 0.918 and multiple regression square (R^2) of 0.816 This also shows that F is 230.926 which is significant at $P < 0.05$ because the value of P is less than 0.05.

This shows that the COVID-19 pandemic contributed to 81.6 per cent of the variance in the Supply of wheat bread in Nigeria. In other words, approximately 82% of the variance in the Supply of wheat bread in Nigeria can be explained by pulling the different variables together. This means that 18% of the variation in the Supply of wheat bread in Nigeria cannot be explained by the variables of the COVID-19 pandemic. Thus, there must be other variables. In other words, the COVID-19 pandemic affects the supply of wheat bread in Nigeria.

4.3.3 Part Three: Bread Consumers

Research Question Three: What is the effect of the COVID-19 pandemic on the demand for wheat bread in Nigeria?

Table 4.21: Wheat Bread was scarce during the pandemic

Options	Frequency	Percentage
Strongly agree	66	69.5
Agree	13	13.7
Undecided	8	8.4
Disagree	7	7.4
Strongly disagree	3	3.2
Total	**95**	**100**

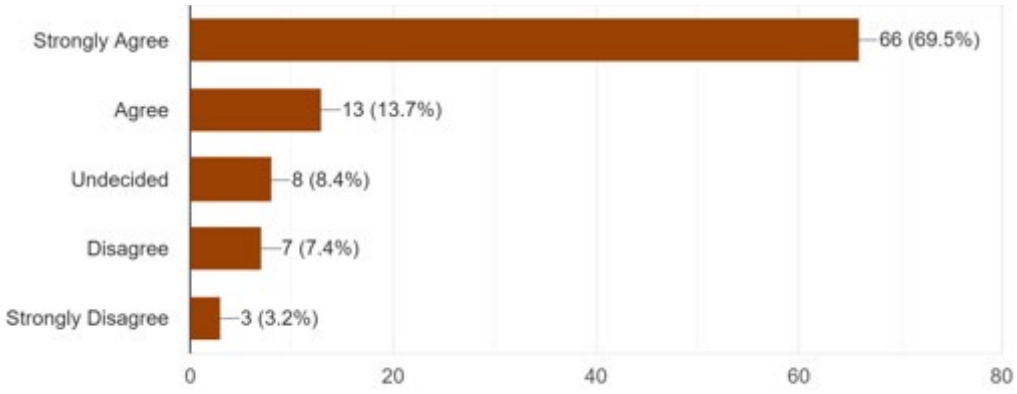

Figure 4.21: Chart on Wheat Bread was scarce during the pandemic

Table 4.21 and figure 4.21 shows that 69.5% strongly agreed and 13.7% agreed that wheat Bread was scarce during the pandemic, 8.4% couldn't decide, but 7.4% and 3.2% of the respondents disagreed and strongly disagreed respectively with the statement. Therefore, the majority of the respondents agreed that wheat Bread was scarce during the pandemic.

Table 4.22: The lockdown affected the frequency of bread purchase

Options	Frequency	Percentage
Strongly agree	73	76.8
Agree	11	11.6
Undecided	7	7.4
Disagree	2	2.1
Strongly disagree	2	2.1
Total	**95**	**100**

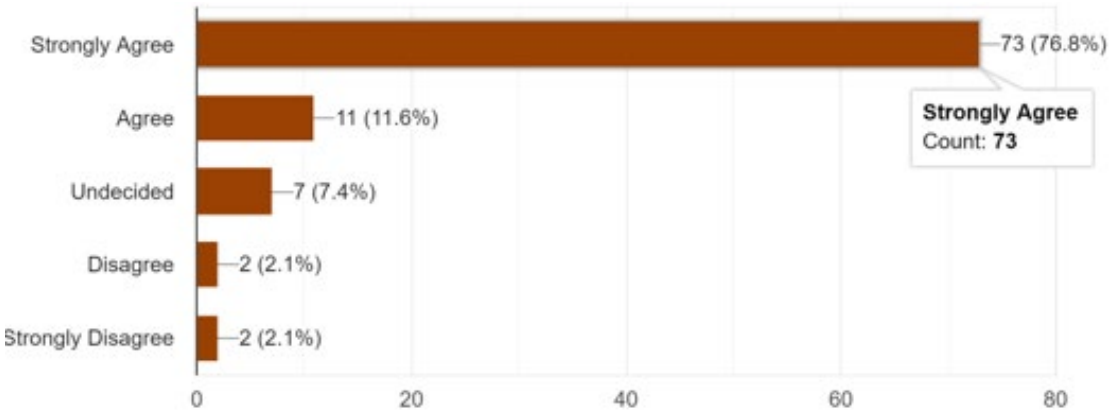

Figure 4.22: Chart on the lockdown affected the frequency of bread purchase

Table 22 and figure shows that 76.8% strongly agreed and 11.6% agreed that the lockdown affected their frequency of bread purchase, as 7.4% indicated undecided, 2.1% and another 2.1% disagreed and strongly disagreed respectively with the statement. Therefore, the lockdown affected the frequency of bread purchase.

Table 4.23: The pandemic affected going to the supplier

Options	Frequency	Percentage
Strongly agree	73	82.1
Agree	12	12.6
Undecided	3	3.2
Disagree	1	1.1
Strongly disagree	1	1.1
Total	**95**	**100**

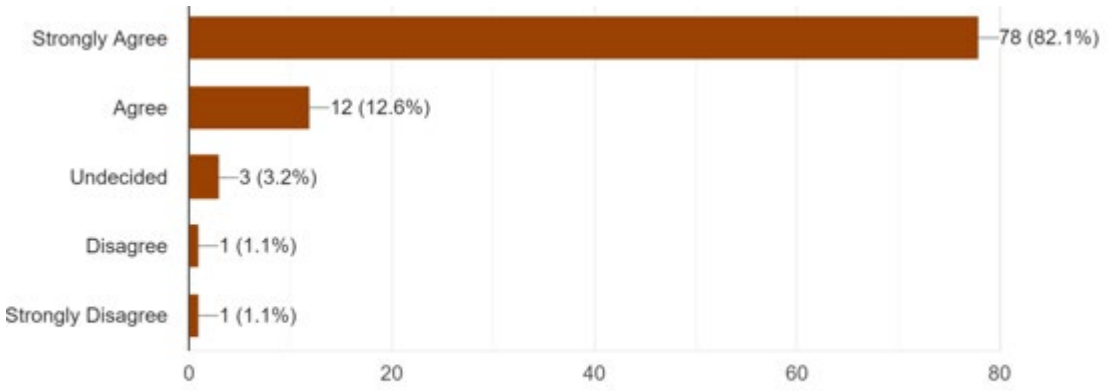

Figure 4.23: Chart on the pandemic affected going to the supplier

Table 4.23 and figure 4.23 shows that 82.1% strongly agreed and 12.6% agreed that the pandemic affected going to their supplier, 3.2% of the respondents indicated undecided, while the remaining 1.1% and another 1.1% disagreed with the statement. However, the pandemic affected going to the supplier.

Table 4.24: Income made look for other commodities other than wheat bread

Options	Frequency	Percentage
Strongly agree	46	48.4
Agree	18	18.9
Undecided	14	14.7
Disagree	15	15.8
Strongly disagree	2	2.1
Total	**95**	**100**

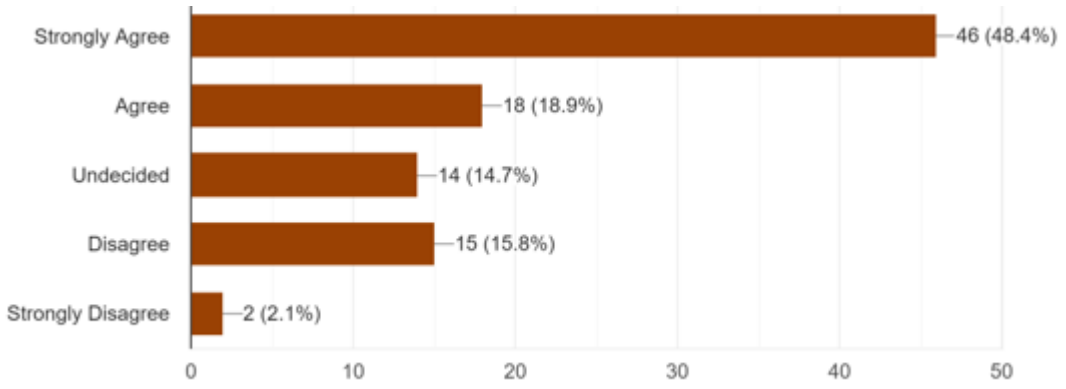

Figure 4.24: Chart on Income made look for other commodities other than wheat bread

Table 4.24 and figure 4.24 shows that 48.4% and strongly agreed and 18.9% agreed that income made them look for other commodities other than wheat bread, 14.7% indicated undecided, 15.8% disagreed and 2.1% strongly disagreed with the statement. The study further shows that income made the consumers look for other commodities other than wheat bread.

Table 4.25: An increase in-home delivery of bread during the pandemic was seen

Options	Frequency	Percentage
Strongly agree	83	87.4
Agree	10	10.5
Undecided	-	-
Disagree	2	2.1
Strongly disagree	-	-
Total	**95**	**100**

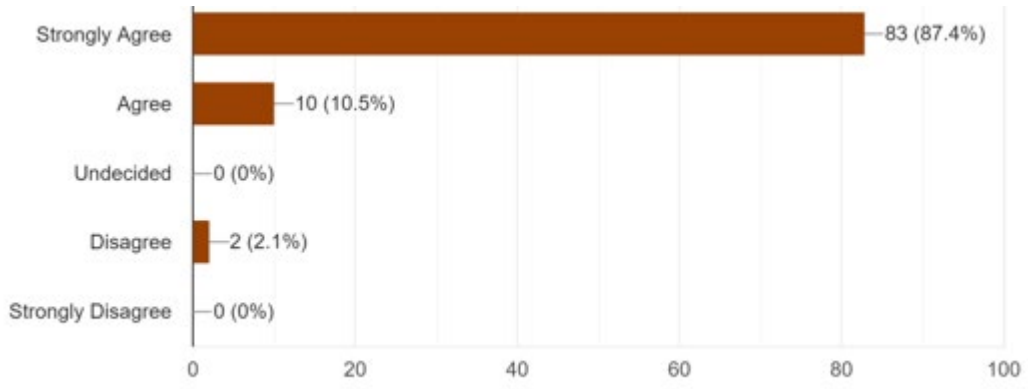

Figure 4.25: Chart on an increase in home delivery of bread during the pandemic was seen

Table 4.25 and figure 4.25 shows that 87.4% of the respondents strongly agreed and 10.5% agreed that an increase in home delivery of bread during the pandemic was seen but only 2.1% of the respondents disagreed with the statement. Therefore, it is concluded that an increase in home delivery of bread during the pandemic was seen.

Table 4.26: The scarcity of bread made customer bought at a higher price

Options	Frequency	Percentage
Strongly agree	75	78.9
Agree	11	11.6
Undecided	8	8.4
Disagree	0	0
Strongly disagree	1	1.1
Total	**95**	**100**

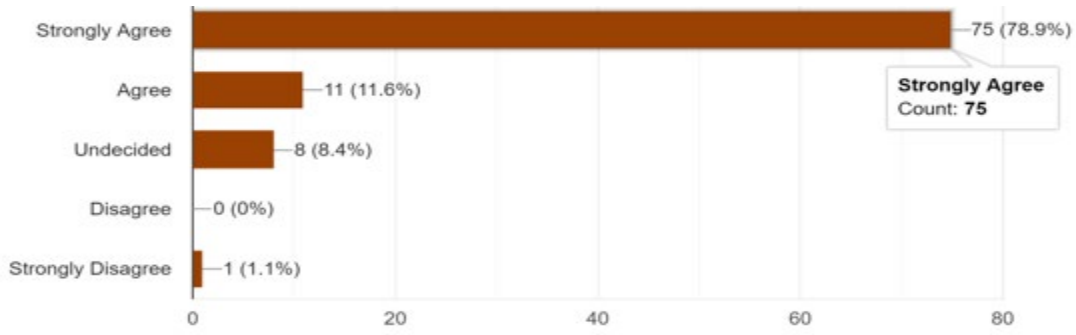

Figure 4.26: Chart on the scarcity of bread made customer bought at a higher price

Table 4.26 and figure 4.26 shows that 78.9% of the respondents strongly agreed and 11.6% agreed that the scarcity of bread made them buy at a higher price, 8.4% of the respondents were indecisive while 1.1% disagreed with the statement. The result further shows that most of the respondents agreed that the scarcity of bread made them buy at a higher price.

Table 4.27: The psychological effect of the pandemic affected buying bread.

Options	Frequency	Percentage
Strongly agree	38	40
Agree	28	29.5
Undecided	19	20
Disagree	9	9.5
Strongly disagree	1	1.1
Total	**95**	**100**

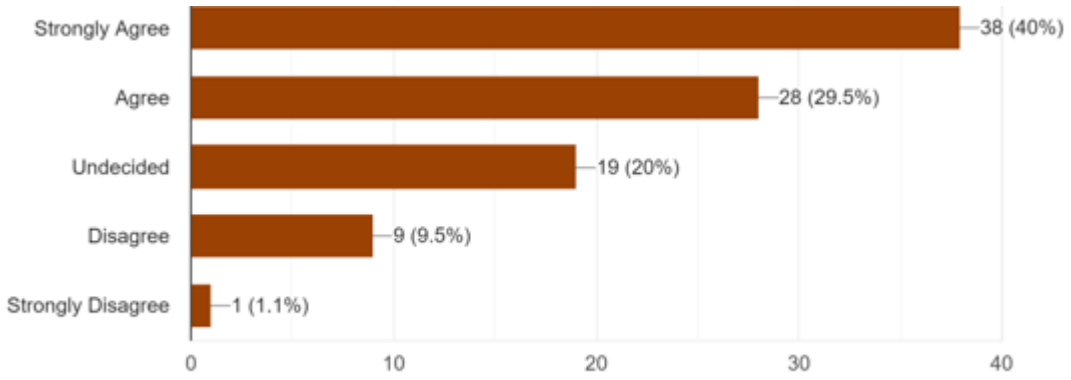

Figure 4.27: Chart on the psychological effect of the pandemic affected buying bread.

Table 4.27 and figure 4.27 shows that 40% of the respondents strongly agreed and 29.5% agreed that the psychological effect of the pandemic affected their buying bread, 20% were indecisive as 9.5% and 1.1% disagreed and strongly disagreed respectively. The table and figure further show that the psychological effect of the pandemic affected buying of bread.

Table 4.28: Summary of Multiple Linear Regression Analysis on the effect of the COVID-19 pandemic on the demand for wheat bread in Nigeria.

Source	Sum of Squares (SS)	Df	Mean Square	F. Ratio	P-value	Remark
Regression	2205.883	1	1102.941	148.082	.000[b]	S
Residual	1608.811	94	7.448			
Total	3814.694	95				
Multiple R (r_p) =.760[a] R. Square (r^2) = . 678 Adjusted R^2= .674 Standard Error of Estimate =2.72914						
a. Dependent Variable: Demand of Wheat Bread in Nigeria						
b. Predictors: (Constant), COVID-19 pandemic						

Table 4.28 shows that the pattern in the relationship between the variables of COVID-19 pandemic and demand of wheat bread in Nigeria resulted in a coefficient of multiple regression R (rp) of 0.760 and multiple regression square (R2) of 0.678 This also shows that F is 148.082 which is significant at $P < 0.05$ because the value of P is less than 0.05.

This shows that the COVID-19 pandemic contributed to 67.8 per cent of the effect of demand for wheat bread in Nigeria. In other words, approximately 68% of the variance in the change in the effect of the COVID-19 pandemic on the demand for wheat bread in Nigeria can be explained by pulling the different variables together. This means that 32% of the variation in the effect of COVID-19 on the demand for wheat bread in Nigeria cannot be explained by the COVID-19 pandemic alone. Thus, there must be other variables. However, the result of the Multiple Linear Regression Analysis shows that the COVID-19 pandemic affects the demand for wheat bread in Nigeria.

CHAPTER FIVE
DISCUSSION

5.1 Introduction

This chapter presents a detailed understanding of the data obtained from the research work. The findings from the analysis are discussed in the light of another research carried out. The discussion also gives more information on the relation that exists between a fast-moving commodity and the quantities of demand, supply and price. The focus of this chapter is on the research questions and how the data from respondents has helped to answer them.

5.2 Summary of Findings

With the help of a digital questionnaire, data were obtained through the Google Form, all 161 respondent's data were analyzed. From the responses obtained from the questionnaires, the data revealed the following:

1. COVID-19 pandemic affected the price of wheat bread in Nigeria. This is seen in 77.8 per cent of the variance in the price of wheat bread in some selected states of Lagos and Abuja because they were most affected by the restrictions during the pandemic. Plateau is one of the wheat-producing states that also experienced restrictions being place on movement. Therefore, an estimated 78% of the variance in the change in the price of wheat bread in Nigeria can be explained by pulling several variables like flour production, scarcity of materials, unavailability of labour and so on.
2. COVID-19 pandemic affected the supply of wheat bread in Nigeria. It was shown that the COVID-19 pandemic contributed 81.6 per cent of the variance in the supply of wheat bread in the area of study. These areas were highly affected by the pandemic with tough measure used to contain the pandemic to the extent that the supply of basic commodities was affected.
3. COVID-19 pandemic affected the demand for wheat bread in Nigeria. The pandemic contributed to 67.8 per cent of the effect of demand for wheat bread

in Nigeria. Nigeria being heavily dependent on the production of bread, the respondents made it clear that they had to cut down on the need for the common commodity in the uncertainty of the pandemic. This is not underplaying the fact that the area of study were commercial centres.

The section below will help relate the findings with the research questions and help find a relationship between the variables in the research.

5.3 Discussion concerning Research Questions

Research question one result shows that the COVID-19 pandemic affects the price of wheat bread in Nigeria. However, even before the outbreak of the COVID-19 pandemic, there was already a decrease in the supply of food for Nigeria's growing population in 2020. Moreover, the agricultural sector of Nigeria has been performing poorly in comparison with its former state. The effect of this has manifested in the rising importation of food products to cater to the consumption need of the growing population of the country, which is estimated to be among the world's biggest in the years to come. Therefore, Nigeria as a country has been facing food security challenges. It is only natural that the pandemic would amplify this effect. The country-wide lockdown and restriction of movement due to the COVID-19 pandemic have thus resulted in drastically increasing food prices in all states across Nigeria. According to Pulitzer (2020):

> *"An interview with a residence of Abule-Ado, Mr Abdulhafeez, in April 2020 further affirmed this information. Mr Abdulhafeez informed us that a bowl of garri (1.3kg) which formally sells for 400 Naira is now being sold for 800 Naira ($2). Another residence and store owner in the area said that there has been an increase in the prices of foodstuff generally, and basic household needs such as milk, groundnut oil, and soup condiments".*

Research question two result shows that the COVID-19 pandemic affects the supply of wheat bread in Nigeria. According to Béné (2020), the COVID-19 pandemic has created a multifaceted adverse effect on local food systems and consequently on the various stakeholders in the industry. This has also led to several negative impacts with effects that include but are not limited to the disruption in the supply of raw material inputs for supply chains, a decrease in the demand of certain food commodities, the loss

of labour for certain economic activities, and the disruption in transportation (of inputs and final products), as well as the effect on food retailers and vendors' activities. The inevitable and compounded effect of all these impacts consequently leads to an upward trend in the prices of food commodities. In terms of food security, this increase in the price of consumer food commodities is another impact on the supply chain that can be attributed to the COVID-19 pandemic (see e.g., Mogues, 2020).

Research question three result shows that the COVID-19 pandemic affects the demand for wheat bread in Nigeria. This result seems to be against natural perception because the effect led to an increase in demand. One may consider that since Nigerians are less busy, they should eat less. This does not seem to hold in this case. The effect of food demand is generally inelastic and when overall consumption is considered, it will be likely limited. However, dietary patterns are generally altered as a result. A disproportionately larger decrease in meat consumption, for example (which may be due to fears and not science largely because of conceptions that animals might be hosts of the COVID-19 virus) and other products of higher value like fruits and vegetables (which are likely to cause price falls). In this regard, demand will continue to reduce because of higher uncertainty, increased precautionary behaviour, containment efforts, and rising financial costs that reduce the ability to spend.

In the global context of things, international food markets are not immune to these developments that have been caused by the COVID-19 pandemic. But these food markets are likely to be affected to a greater degree than other sectors of the global economy. This is because they are more exposed to logistical disruptions and alterations in demand (Market Monitor, AMIS, March 2020). Given the multifaceted nature of global food value chains and the importance of trade and transportation, the sector is usually exposed to extremely vulnerable. While COVID-19 continues to represent a deflationary shock for the economy of the world on the global scene, reflected in early fluctuations of the FAO Food Price Index, the real cost of a healthy diet in the short term may rise because of the increase in the cost of perishables. This would have a particularly adverse impact on low-income earners in the society and ultimately result in the rise of prices, invariably affecting the progress towards Sustainable Development Goals.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATION

6.1 Summary of Major Findings

This study focused on the impact of covid-19 on the supply chain of wheat bread in Nigeria, literature concerning COVID-19 and the Market Overview, Nigeria's Market Overview, Nigerian Wheat Bread Market, Effects of the pandemic on food supply chain etc. were reviewed**.** Data for the study were obtained by administering questionnaires to elicit information on the socio-demographic profile of the respondents, input profile, and respondents' category and their view on covid19 effect of wheat bread in Nigeria. Frequency counts and percentage and Multiple Linear Regression Analysis were used to interpret the responses of the research questions obtained through the google form questionnaire administered to respondents.

The following therefore were the study findings:

- That COVID-19 pandemic contributed to 77.8 per cent of the variance in the price of wheat bread in some selected states in Nigeria. In other words, approximately 78% of the variance in the change in the Price of wheat bread in Nigeria can be explained by pulling different variables together. This means that 22.2% of the variation in the Price of wheat bread in Nigeria cannot be explained by the variables of the COVID 19 pandemic. Thus, there must be other variables. However, the COVID-19 pandemic affects the price of wheat bread in Nigeria.
- That COVID-19 pandemic contributed to 81.6 per cent of the variance in the Supply of wheat bread in Nigeria. In other words, approximately 82% of the variance in the Supply of wheat bread in Nigeria can be explained by pulling the different variables together. This means that 18% of the variation in the Supply of wheat bread in Nigeria cannot be explained by the variables of the COVID-19 pandemic. Thus, there must be other variables. In other words, the COVID-19 pandemic affects the supply of wheat bread in Nigeria.
- That COVID-19 pandemic contributed to 67.8 per cent of the effect of demand for wheat bread in Nigeria. In other words, approximately 68% of the variance in the change in the effect of the COVID-19 pandemic on the demand for wheat bread in Nigeria can be explained by pulling the different variables together.

This means that 32% of the variation in the effect of COVID-19 on the Demand for wheat bread in Nigeria cannot be explained by the COVID-19 pandemic alone. Thus, there must be other variables. However, the result of the Multiple Linear Regression Analysis shows that the COVID-19 pandemic affects the demand for wheat bread in Nigeria.

6.2 Conclusion

Generally, the COVID-19 pandemic has social, religious, political and economic effects on Nigeria's economy. Its effects are still being felt now with several variations of the virus and several rebounds from areas said to have reduced numbers of cases of the virus. The effects of the COVID-19 pandemic in Nigeria include jobs losses, a sharp drop in income of the informal workers and the poor, food insecurity, business and school closures, a steep decline in oil revenues and economic uncertainties. The analysis suggests that the spread of the pandemic, have significant impacts on food chain supply especially wheat bread in our sample. These effects on the supply couldn't have been remote as other variables also directly or indirectly caused these effects on the price, demand and supply of our sample commodity.

The scale and speed at which COVID-19 has spread across the globe, and the rapid adoption of wide-ranging policy measures to contain the disease, have combined to produce sudden and severe economic shocks. This research measured the impacts of the shocks from COVID-19 and the policies adopted to curb the spread of the virus in Nigeria. As the pandemic continues, the continuing supply in the agriculture and food sector, which is one of the most important sectors together with health, is vital to prevent the food crisis and reducing the negative impact of shocks on the global economy. Although from this research, it can be concluded that some major problems have been observed in the food supply chains, it remains unclear the extended effect that the pandemic will have in the future if it persists for a longer time. Therefore, Nigeria has to realize the severity of the situation and make necessary arrangements to tighten or loosen policies according to the spread of the pandemic. These policies should be flexible enough to respond to the challenges in the food supply chain.

6.3 Recommendation

Based on the findings of this study and conclusions drawn, several policy implications and recommendations are made:

Government should implement more robust and targeted social protection programmes to improve access to healthy foods. While governments may be faced with continuous budgetary constraints, now is not the time to cut back on social safety net programmes. More effort should be focused on improving the ability of the vulnerable household to access healthy food like wheat bread. Palliatives such as financial assistance, food vouchers for households, renter eviction protections, housing assistance, and school lunch programmes have all been shown to be effective means of support in some other social contexts. Vouchers for food purchases should function in formal and informal markets and allow for adequate fruit and vegetable purchases. In cases where schools shut down indefinitely, due to COVID-19, the Nigerian government needs to think creatively about ways to deliver alternatives to school lunch.

Unfortunately, the international community has fallen short in providing the necessary assistance needed for the country to tackle the rippling effect the pandemic has had on its economy. This is also due to the many countries are still trying to figure out the best possible way to save their population while also saving their economy. Nigeria should also place priority actions on the following:

- To provide adequate emergency food aid, wherever possible with the local and regional purchase of foods for food assistance.
- Design food assistance programmes that offer adequate access to healthy food, not just sufficient calories.
- Engage all levels of government in ensuring that relief packages are adequately attended to and get to where it is needed.

In the Nigerian context, there should be agricultural production collection centres at various locations across the country for easily reaching small-scale farmers relating to mobility reduction and different insecurity problems that they may be facing. Agricultural production collection centres should be designed to provide high-capacity storage (FAO, 2020). Having improved and advanced storage structures also can be

used to minimize the loss of foods throughout the food value chain. However, modern facilities or improved technologies entail higher production costs as it requires additional capital injection. The importance of acknowledging the foregoing is so that small, and medium-sized agricultural enterprises, bakeries, etc can maintain their activities using the capital injections from the government or donors.

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APPENDIX

Questionnaire

This survey is for the research titled "THE IMPACT OF COVID-19 ON THE SUPPLY CHAIN OF WHEAT BREAD IN NIGERIA". The questionnaire is divided into two sections. The questions in section one with * are compulsory while section two is to be answered depending on the respondent's circumstance.

SECTION 1: DEMOGRAPHIC DATA

*Email address: _____

*1. How old are you?

- Under 18
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65+

*2. What is your gender?

- Male
- Female
- Prefer not to answer

*3. Which State do you reside? _____

*4. What area in the State? _____

*5. Which of these categories do you fall under?

- Wheat Bread Producer
- Wheat Bread Supplier
- Wheat Bread Consumer

SECTION B: RESEARCH QUESTIONS

The subsequent questions should be answered in the following manner: Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), Strongly Disagree (SD), and tick the most appropriate option thatexpressess your opinion. You answer the part appropriate to you according to your response to question five above.

	Part One: Bread Producer	SA	A	U	D	SD
	The pandemic affected the purchasing price of baking ingredients					
	COVID-19 protocols affected the working hours causing a decline in production					
	The pandemic caused an increase in the cost of wheat brad production					
	The lockdown restriction reduced the speed of dispatch of produced bread					
	The pandemic caused a reduction in available manpower.					
	The pandemic period showed a drop in overall sales.					
	Part Two: Bread Supplier					
	There was a scarcity of bakeries producing during the pandemic.					
	Lockdown restrictions affected having wheat bread distributed to consumers					
	The pandemic caused suppliers to close shop					
	During the pandemic, there was an increase in the purchase price of bread from bakeries					
	There was an increase in the selling price of bread to consumers					
	There was a drop in consumer's in-shop purchase					
	There was an increase in home delivery for bread during the pandemic					
	Part Three: Bread Consumers					
	The bread was scarce during the pandemic					
	The lockdown affected my frequency of bread purchase					
	The pandemic affected my going to my supplier					

	Income made me look for other commodities other than wheat bread					
	The pandemic made me use home delivery of bread					
	The scarcity of bread made me buy at a higher price					
	The psychosocial effect of the pandemic affected my buying bread.					