EFFECTS OF COVID 19 RESPONSE POLICIES ON STRATEGIC GOVERNMENT DELIVERIES IN AGRICULTURE AND FOOD SECURITY SECTOR IN KENYA: A CASE OF KISUMU COUNTY

BY

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DECLARATION

This is my original work and has not been presented for award of a Master of Business Administration in any other university or any other institution of higher learning for examination.

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This research project has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

I dedicate my Thesis work to my family. A special appreciation to my loving and caring wife, Tullu whose encouragement and push for completion of this work rings in my ears. My daughters, Abbi, Aaira, and Iba I thank you for seeing me through "school", and finally makadudu gets to graduate! To my grandmother, who now lives in the stars. May this tale reach you; for you lived to inspire me throughout my young life. You left a mark of success in me.

ABSTRACT

The performance of the Strategic Government Deliveries (SGDs) in Kenya has demonstrated inconsistent progression over the period 2012 to 2021.Strategic Government Deliveries being a portfolio of interventions consisting of infrastructural improvement, improved farmer institutions and farmer groups, enhanced financial assistance, land conversion functions and use of technology. Strategic Government Deliveries (SGD) in Agriculture are broad policy guided outcomes and practices that target optimization of agricultural potential in terms of its production, processing, distribution and economic value addition for all levels of agricultural practice. Covid-19 pandemic attack of human existence and the socio-economic operating environment in diverse proportions, created production, distribution and value chain challenges, which have been difficult to recover from even in a post pandemic period. The international and Kenya's response to the devastation through regulations and policy instruments for control and mitigation have had non-standardized implementation, hence may not lend similar effect to all the sectors of the economy. The fact that the agricultural sector contributes 51 percent to the total GDP; 26% directly and around 25% indirectly, 60 percent of employed and 65 percent of Kenya's total exports, and is dominated by small scale farmers; who produce 78 percent of the total agricultural production when compared with large scale producers, it becomes important to examine the effect/contribution of COVID-19 Response Policies on Strategic Government Deliveries in the Agriculture and Food Security Sector in Kenya. Specifically, the study sought to; establish the extent of COVID 19 response policies' effect on volume agricultural food production in Kisumu County; determine the effect of COVID 19 response policies on agro food prices in Kisumu County; analyze the effect of COVID 19 response policies on agricultural food access in Kisumu County. The study area was Kisumu county having a target population of 106,557 (47% to total) of farmer households. It constitutes 224 food producers, 15 Agro support staff, 55 processors, 135 distributors and 750 consumers. Purposive sampling was used to select 1179 respondents. The study adopted a correlational research design. The study was guided by systems theory. Primary data, consisting of demographic characteristics, agro food access and quality and secondary data, consisting of agro food prices and volume was used for the study. Data was quantitatively analysed using correlational method, to generate the magnitude of effect of the response policies on strategic government deliveries in the Agriculture and Food Security Sector. The results revealed that that implementation and enforcement of Covid-19 Response policies (Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure), explains 60.5% variation of Agro Food Product Volume (R^2=0.605); 46.5% variation in Agro Food Product Prices (R^2=0.465) and 60.0% variation in Agro Food Product access (R^2=0.600). Therefore, it is concluded that implementation and enforcement of Covid-19 Response policies adversely affected the food situation in Kisumu County; hence the need for structured mitigation that cushions Agro Food Product Volume, Prices and Access. The study recommends operationalisation of controlled and selected enforcement of Covid-19 and any other pandemic Response policies (Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure) to create food supply corridor.

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ABBREVIATIONS AND ACRONYMS

ASDS	Agriculture Sector Development Strategy
CFS	Committee of World Food Security
COLEACP	Europe-Africa-Caribbean-Pacific Liaison Committee
ERS	Economic Recovery Strategy
FAO	Food and Agriculture Organization
FEWSNET	Famine Early Warning Systems Network
GDP	Gross Domestic Product
GOK	Government of Kenya
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
KHPFP	Kenya Health Policy Framework Paper
MAFF	Ministry of Agriculture, Forestry and Fisheries
OECD	Organisation for Economic Co-operation and Development
OxCGRT	Oxford Coronavirus Government Response Tracker
PRSP	Poverty Reduction Strategy Paper
SGD	Strategic Government Deliveries
SGDA	Strategic Government Deliveries in Agriculture
SMEs	Small and medium-sized enterprises
SRA	Strategy for Revitalizing Agriculture
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Emergency Fund
WFP	World Food Program
WHO	World Health Organization

OPERATIONAL DEFINITION OF TERMS

Financial literacy- Financial literacy is the ability to understand and apply a variety of financial skills, including personal financial management, budgeting and investing.

Budget- A budget is an estimate of income and expenses for the future period, which is usually prepared and re-evaluated periodically.

Agro food product volume - Volume of agricultural production of small-scale food producer in crop over a specific period.

Agro food product prices – Refers to the want satisfying power of the agricultural commodity expressed in terms of money.

Agro food product access - Refers to the process of accessing agricultural food products physically and economically.

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CHAPTER ONE

INTRODUCTION

1.1 Background Information

Strategic Government Deliveries (SGD) in Agriculture refers to broad policy guided outcomes and practices that target optimisation of agricultural potential in terms of its production, processing, distribution and economic value addition for all levels of agricultural practice (Alila & Atieno, 2006). These include programs aimed at strengthening food security and increasing incomes through economic development and a more competitive and diverse lifestyle. This is achieved by connecting farmers to the market and modern agriculture, improving the quality of products and agricultural equipment, increasing access to finance and supporting tailored solutions (GOK, 2004). SGD also helps vulnerable communities build resilience to reduce the need for humanitarian assistance by accelerating community economic development so they can withstand agricultural disruptions; and improving nutrition and access to diverse and quality foods for improved health. This may also include promoting private sector investment in the agricultural value chain through improved productivity and incomes of smallholder farmers (Njuguna, Katumanga & Gareth, 2004).

Traditional agriculture in Kenya contributes to the economy in terms of food security, employment, productivity and international trade. Trade is considered the backbone of the economy and constitutes approximately 33% in Kenya's GDP, provides employment for over than 40% of its citizens, 70% of which are rural inhabitants (Laborde et al., 2020). Kenya is East Africa's largest and most diverse economy; It is the basis of agriculture and the development of the country depends on agriculture. Since only 20% of Kenya's land is suitable for agriculture, it is important to maximize the potential of the land. Additionally, the

production of products from raw materials limits job creation and causes waste of resources and production (UNCTAD, 2020).

Agricultural production sector is considered a socio-cultural and economic sector with a divergent ecological and expansive framework of activities, which can only be successfully realised based on human and socio ecological factors in the production scenarios. Existing community's health, economic, social and cultural status are therefore key platforms for achieving effective results in agriculture (GOK, 2004; Alila & Atieno, 2006; Baumular, 2016). This implies that agro production innovation and technology processes must be reviewed on the basis of factors that support human existence, culture, health and environment. However, despite frequent crises such as flooding in Kenya's arid and semi-arid regions, many farmers in Kenya operate without agricultural strategies, fields or new technology and without adequate financial assistance or additional services; this increases livelihood risks (World Bank, 2020a). This situation poses a serious problem in terms of food safety; over time, food aid has been provided to more than 2 million Kenyans each year.

According to Household Food Insecurity Access Prevalence in 2018,71.3% of households in Kisumu county were either moderately food insecure (26.3%) or severely food insecure (45%), implying a high prevalence of food insecurity in Kisumu. Measured in terms of the Months of Adequate Household Food Provisioning indicator, 27% of the households consider their monthly food access to be constrained.

Strategic government deliveries are a strategic management orientation for enhancing product and service to the public. As a strategy, it fits in the strategic management phenomenon/concept which according to Baker, Tufail, Yusof, & Virgiyanti (2011) enables productive decision making and proper execution of ideas. Pearce & Robinson, (2005) argues that strategy involves

decisions made and the measures undertaken to achieve the formulation and implementation of plans meant for attainment of firm goals.

Strategic Government Deliveries in Agriculture(SGDAs) are a function of Agricultural structure, operating environment, farming systems and practices, information sharing, agricultural technology framework and relevant capital assignment levels (GOK, 2010). The new Agricultural Sector Development Strategy (ASDS) within which the Strategic Government Deliveries in Agriculture (SGDAs) is was established to focus on producing the results achieved under Revitalization of Agriculture Strategy (SRA) 2004. It provides guidance on how to address the most pressing challenges facing Kenyan agriculture while ensuring food and nutrition security. Creating greater income and capacity work for all Kenyans, especially in the rural. Concurrently, within the economic framework of Vision 2030, agriculture's achievement of 10% annual economic growth has become an important driving force. In general, the aim is ensuring that farmers, producers and traders of agricultural products have access to modern methods and technologies. Technology that will make agricultural business profitable and competitive at all levels; It is necessary to control production carefully, without underestimating development. Bringing production costs such as land, water, materials and financial resources into line with international standards and keeping food prices at the lowest level under local conditions.

(Africa Green Revolution Forum (AGRF) 2016), Strategic Government Deliveries refers to a portfolio of interventions consisting of infrastructural improvement (through roads, irrigation channels and markets), improvement of farmer institutions and farmer groups, enhanced financial assistance (through banks, cooperatives and the informal credit institutions), land conversion functions and use of technology (for regulatory product quality, marketing networks and technology based agribusiness systems). The delivery of the enshrined

government strategies in Agriculture in Kenya has experienced inconsistent realization over time. The agriculture and food security of the Kenyan economy is currently facing significant and unforeseen changes, making the implementation of government strategies more difficult and difficult than before. Based on the history of this concept (Harvey, 1988) and Holman (1999), explaining the importance of using the concept, stated that 80% of managers in the organization believe that they have good ideas, but only 14% believe that they have good ideas. He said they did a good job.

According to (Aosa, 1992), the aim of operational strategies is to increase environmental resources use in agriculture under the guidance of currently existing management and policies to obtain the most resources. The main ideas in government therefore concern problems with the coordination and integration of activities within a department they use (Hax and Majluf, 1991). (African Development Bank, 2016), Feed Africa; Africa's Agricultural Development Program explains that the public sector is significant in creating the conditions for implementing government policies and enabling business to thrive. In the favorable conditions of agrarian reform, business strategy, new financial development, infrastructure (water, storage and rural roads) and Land reform are as important as technology and sustainability. Employing new technologies, especially ICT in agriculture, financial services and information, opens up new opportunities that will supersede these achievements and stimulate new ways of restructuring value chains in unique ways.

COVID-19 has spread across the East African region, especially at a time when many countries' economies are struggling to recover from the effects of 25-year drought, floods, and other ecological challenges such as desert locust invasions; This, along with other human health emergencies, is gradually causing a major impact on the population and weakening the capacity of governments and humanitarian organizations (UNHCR, 2020). Covid-19 response to

prevent the global epidemic; Kenya imposes quarantine, travel bans and travel restrictions; Most low- and middle-income people live in rural areas or informal settlements based on agriculture and cash, and daily chores lead to reduced survival. (Yilmaz and Njora, 2021). While analysing the agricultural policies' impact on Kenya's food security, they assert that the country is still widely off from being food secure, although it is at the forefront through multiple interventions of combating food insecurity. They cite various important regulations put in place to prevent Covid 19. Some of these interventions include; Economic Recovery Strategy (ERS), Agricultural Sector Development Strategy (ASDS), Agricultural Revitalization Strategy (ARS), Vision 2030 and Poverty Reduction Strategy (PRS) Paper, as some of the important policies adopted to help address food insecurity.

Whereas the government is putting a frantic against food insecurity and food quality standards, by creating various policies, most of the policies have not achieved the desired results due to misuse (FEWS.NET, 2020). To stabilize agricultural production, enhance economic activity, develop agribusiness through agribusiness, and promote environmental sustainability, Kenya has implemented a long series of regulatory measures. As of 2020, there are more than 130 direct and indirect agricultural impact certificates in Kenya (Faling, 2020). Other examples such as National Irrigation Policy, National Land Use Policy, National Agricultural Research Policy, National Seed Policy and National Horticulture Policy have also been developed to forestall inconsistencies in the food supply system (GOK, 2010).

Despite excessive food production, the situation of food security and the danger of hunger in the world are inevitable because of the interaction of socioeconomic and ecological elements that affect the food security results of people and different places. The main reasons for this are the increasing world population, food need, food prices increase, the loss of many plants, food waste and food loss, and the increase in plant areas. According to (Hanjra et al., 2013),

global food production has exceeded global food demand in the last 50 years due to changes in water harvesting, promotion of policies, and interventions in the organization. However, future predictions indicate that food shortages will decrease, especially in some African and Asian countries that are currently experiencing food shortages.

Kenya and Sub Saharan nations have experienced food insecurity for decades. According to van Ittersum, van Bussel, Wolf, Grassini, van Wart, Guilpart, Claessens, … (2016), Sub-Saharan Africa has the greatest risk of malnutrition in the world, with the main reasons for this being caused by many risks such as food dependency, pests and diseases, plant and human health environment, rapid population development and poor agriculture. Therefore, appropriate measures and strategies need to be adopted to ensure that everyone have economic, physical and social access to enough, safe and healthy food that suits their food needs and diet at all times. A healthy and active life as envisaged in Vision 2030, Kenya expects to rapidly transform into a middle-income country by 2030. The Kenyan food security agenda therefore aims to increase the average income of farmers by 34% every day and reduce malnutrition in children under 5 by 27%. Creating 1,000 agro-processing SMEs, creating more than 600,000 new jobs and reducing food instability. The number of Kenyans has decreased by 50%. It also needs to increase agriculture's contribution to the country's GDP by 48% and reduce food prices as a percentage of income by 47%. The government plans to achieve the above goals through large-scale agricultural production, machinery support, agricultural production and agricultural services. Regarding Africa's response to pandemic-19, examine the nature of the disease, its impact, and its impact on preparedness. (Badu et al., 2020).

Corn and bean prices vary across the city between February and April in 2021 because of the third wave of Covid-19. According to FEWS NET, maize prices in February 2021 were 19% below average due to good rains from October to December 2020, which helped the highlands

and between Western Kenya and the North Rift Valley. Production imports from Uganda increased. However, in Garissa and Mandera, the price of corn is 16-20 percent above average due to reduced production because of Covid-19 restrictions and the closure of borders with Somalia and Ethiopia. Similarly, pulse rates in Taita Taveta and Mombasa are 29% above average after being below average for three consecutive seasons.

Kenya's food industry relies on small independent suppliers who provide the link between producers and consumers. Marketing is the heart of distribution in the city, serving consumers and small stores. This informal regulation covers approximately 90% of the market (Conversation, 2020).

The agricultural sector faces supply and distribution problems due to transportation restrictions and border closures. The temporary closure resulted in post-harvest losses, reduced incomes and left more than 3.5 million Kenyans unemployed in the agricultural sector (MAFF, 2020). Difficulties in entering the market, combined with a decline in consumer spending, have raised concerns about food security and the viability of farmers working on small farms to avert the crisis. Default rates of loans and insurance costs have increased due to economic uncertainty and low investment.

(Quaife et al., 2020) states that there is no security and a negative impact and impact is expected to occur. Low quality honest programs. These controls are being replaced by government policies for preventing the disease spread; Sustainable development of food systems and their impact on agricultural systems and disadvantaged groups (FAO, 2020). The MOH's guidelines (2020) on Covid-19 Management, control and regulatory policies revolve around four main pillars, which are; quarantine and social distancing, quarantine implementation procedures, modalities of implementing social distancing and recommended isolation practices. The

communities are therefore facilitated to ensure compliance with these policies no matter the adverse socio- economic impact meted on the communities or the general economy at large. COVID-19 according evidence poses a challenge and a serious threat to the country's health, as Kenya's healthcare sector has experienced persistent problems since independence, resulting in increased demand for medical services. According to Wamai, (2009), the problems include but not limited to inadequate allocation of resources, corruption, unequal spread of health facilities across the country and the failure of doctors to fulfill their service mission population.

The extent to which the COVID-19 response policies affect the government capacity, versatility and operationalization of adaptive mechanisms to realise the SGDs is critical both for central and devolved governments (OECD, 2020). The Counties' information on the other hand presents a grim picture as far as the strategic government delivery parameters are concerned (Kunyoria, 2022). Agricultural productivity and stability are knowledge-based processes. (Rosegrant & Cline, 2003) acknowledge that it will be difficult to produce cheap and quality food if farmers miss access to new, regular and up-to-date agricultural information. Therefore, if farmers are informed about successful agricultural practices and new agricultural technologies, their agricultural production will increase. These technologies should take into account the reasons for ecosystem sustainability and education and technology needs. Kisumu County Integrated Development Plan (2018), reveals the food deficit that needs to be addressed through agricultural ingenuity, innovation and efficient resources utilisation. It further states that the deficit is being met by externally sourced food products, from within the country and neighboring countries.

Quarantines and movement restrictions will also impact the provision of essential food safety, quality controls and certifications, with those needed to support the economy. The industry's new biosecurity plans may need further testing as the response to COVID 19 is implemented

(News, 2020). In some cases, steps for controlling the spread of COVID-19 pandemic have resulted in disruptions and delays in shipping and transporting services. Border closures and extra procedures and inspections have caused delays and disruptions, affecting the shipment of damaged goods. For example, distancing rules have reduced the number of people inspecting imports and exports at the border and increased the time required for customs clearance (OECD, 2020). Some protections, such as cutting off movement in key hotspot cities, were later partially lifted in July 2020 to facilitate the movement of food within the country. The influence of Covid-19 on local food and nutritional products; These include reduced sales to exporters, reduced sales to SMEs producing nutritious food, delivery delays causing delivery delays in planting, and the marginalization of women and youth. The nexus between decrease in employment in the food chain systems as an adverse impact of COVID-19 and increase in digitalisation, calls for change in the food distribution market (GAIN, 2021).

COVID-19's impact on Kenya's Food System explains that COVID 19 has influenced life through the response policies meant to lower the spread of the virus in Kenya and globally in more diverse ways, based on a people's culture, weighted priorities; such as the balance observing the controls and starvation, and general availability and access to food products, internally or externally. These are the diversities that this study refers to as COVID 19 response policies, whose impacts require investigation on a country to country or region to region basis. The Government of Kenya's enforcement of a regional lockdown of the regions widely affected by the virus, implemented a 10 pm to 5 am curfew, mandatory restrictions such as compulsory 14 days of quarantine after travel, wearing of face faces in public spaces, prohibition of indoor social gatherings, closure of nightclubs, restaurants, and churches, and closure of schools; ultimately resulting into changed dynamics of people' life patterns, negatively affected the strategic government deliveries, and significantly impaired agricultural food production and

distribution, creating insecurity; through reduced/lost personal incomes, purchasing power, food products accumulation and distribution/access (GAIN, 2021). Therefore, this study will attempt to highlight the correlation between the COVID 19 response policies and the food production, food aggregation, processing and value addition, food distribution, consumer access, and cost of food, as they are all elements of the government's strategic deliveries to attain food security. Erinle et al., (2021) study of the impact of COVID-19 on food security in developing countries, considering strategies for mitigation, rapid response strategies for reducing the spread of coronavirus, explains that while the country uses various restrictions on movement at local and international levels to determine its impact on agriculture, food availability and access, the impact is different for each region of the country, depending on external and domestic capacity.

Erinle and Adewole (2021) noted that for many countries, the direct impact of the virus on agriculture required to be contained the it does not affect the resources alone but the entire production system. The subsequent onset of the coronavirus pandemic damaged production and prowess in many countries; Improving food security in these countries has given Kenya and other countries in general the opportunity to leverage domestic resources for agriculture and food production increases capacity and reduces the chance of relying on delivery. This reduces the complexity of agricultural systems caused by various internal and environmental factors that caused food insecurity in developing nations (Bwala et al., 2023).

International data show that restrictions and limitations on the movement across borders have led to unemployment in agriculture in a number of countries, especially in jobs that require seasonal or intensive work. For example, the new travel ban in the EU and the closure of the Schengen area have led to a decrease in fruit and vegetable trade in many European countries (FAO, 2019). Later (OECD, 2020), when analyzing the Covid 19 food and agriculture crisis,

confirmed that there was sufficient food around the world, but Covid-19 was disrupting supplies and demands in difficult ways. For countries developing agricultural business models; On farms that still use agricultural methods, some crops can cause further damage, increasing dependence on storage facilities, often damaging vegetables. Rice falls from a very perishable product. For some products, the impact of supply externalities is exacerbated by reductions in demand. Together, these effects increase farm income. Additionally, a decrease in non-farm income may cause farmers to lose more money.

The COVID-19 pandemic may also impact farmers' access to critical inputs. Currently, unemployment is not a problem in developing regions in developing countries, but farmers in developing economies, which are mostly small business and medium-sized, will face more problems in supplying goods since the movement of people and goods is restricted. The Committee on Global Security (CFS) report (2020) presents facts showing that low and/or high prices of inputs such as pesticides may affect the growth and further harvesting of crops in 2020, 2021 and 2022, especially in developing countries. It is stated that closing borders or slowing down the cross-border movement of seeds may disrupt seed production and timely delivery of seeds, and may negatively affect agriculture and food supply in the following season.

Food distribution in Kenya is dominated by small independent distributors and importers (World Bank, 2020). These include restrictions such as usage restrictions; It continued until March 2021 during the pandemic. Nechifor et al., (2021) to examine changes in food security and health in response to COVID-19 in sub-Saharan Africa; It focuses on the impact and response in Kenya, arguing that government policies have led to high transport costs by reducing public transport. The 2021 Consumer Price Index was 113.4, compared to the pre-COVID-19 Consumer Price Index in 2020, which was 107.2. Food inflation has fluctuated in

different parts of Kenya; The highest level was seen in Kenya between 2020 (8.15%) and 2021 (7.36%). Other factors causing food prices to rise include the new 16% VAT that came into force on January 1, 2021 (later reduced to 14% as part of COVID-19 health support) and rising transport costs. Diesel and gasoline prices. (Kunyanga et al., 2023) In a study examining the impact of the COVID-19 pandemic on food and food availability in urban markets in Kenya, insect outbreaks led to changes in household culture and reduced family consumption; It leads to different methods, reducing size (52%), reducing food (44%) and skipping meals (32%). In the grain and legume market, prices went up 13.8%, while cabbage prices fell by 30.8% and Irish potato prices by -19.4%; Nairobi and Kiambu districts.

(Nechifor et al., 2021) noted that although agriculture in Kenya is the world's largest employer with a share of approximately 80%, measures to contain it have been taken by the country. A developing country with intensive agriculture and production of agricultural products in many areas (Singh, Siddiqui, and Shukla, 2022). While most countries avoid it by singling out agriculture as an essential service and restricting mobility, the transfer of demand from businesses to families with limited logistics services has affected business challenges.

(Ramos et al., 2020) Findings from an economic policy support study in Kenya show that policies to prevent and lower COVID-19 spread are aimed at affecting the performance of food products. They acknowledge that the impact on workers in particular has raised concerns that the food industry is vulnerable to the negative impacts of the spread of Covid-19 on agricultural workers. As a result, this will lead to reduced productivity and increased export costs, as health and safety measures are designed to reduce worker injuries. To control the risk to workers in close proximity to and in contact with contaminated areas, changes must be made in food processing and distribution, regardless of the method of transmission of the disease (Feuerbacher et al., 2020). Although many of these changes have already been made, they will

be hard to actualise in the short term. (Amewu et al., 2020) argued that packaging and working in factories put workers at risk of contracting COVID-19. Although customer demand in supermarkets is high, the need to cover the distance to the area, such as packaging and classification of fruits and vegetables, processing of animal feed, as well as absenteeism, increases costs and reduces production capacity. There is also a reduction in the number of workers, even in essential jobs, because of increasing infections and absenteeism, and in response to the lockdown.

(Schmidhuber et al., 2020) reduces trade and creates serious problems in the export of valuable food products, including seafood, fruits and vegetables. Following the travel ban, international shipping costs increased from 30% to 60%. Trade volumes at China's Shenzhen port, are estimated to have dropped by 50-75% due to the Covid-19 outbreak. Fertilizer production at some suppliers has been disrupted due to less workers, causing problems for producers and difficulties for food producers.

Even the short-term impacts of COVID-19 pandemic will be long-term food losses and waste Supply chain resulting from logistics bottlenecks and product pricing Losses will remain high in the long term due to demand contraction. Food production in developing countries can be divided into three types: traditional models based on agricultural production or short-term local products. Farmers can influence less than the "middle" and "lower" parts of the food supply; Daily food items can be prepared well. In contrast, changing the food supply may have a greater impact. COVID-19 may also lead to increased food prices due to transportation disruptions in developing countries.

1.2 Statement of the Problem

Agricultural productivity in Kenya has been performing poorly for the last decade, despite the strategic interventions and policy directions provided by the government. This has over time lead to reduced agro-product range and volumes, continually increasing agro food prices, limited marketed quantities locally and externally. The 2020 World Health Insecurity Report found that 135 million people in 55 nations and territories face an "emergency" or higher level of food insecurity, requiring action quickly. More than 183 million people face "stress" levels of food insecurity and are at high risk of falling to "emergency" levels if they face further Covid-19 shocks. This event is dedicated to discussing the evolution of the global COVID-19 pandemic and the interplay between health and nutrition; and how local food connects with the world. The Kenyan government has implemented a number of policies to monitor public health and well-being, such as travel bans, restrictions, school and business closures, expansion of health insurance, cash and food aid, and tax payments. Although the reported death toll in Kenya continues to fall, the economy remains under pressure due to the agricultural sector's contribution to overall production losses. The public controlled responses to the policy guidelines have presented few measured and largely a higher proportion of yet to be accounted devastation, not only to the entire nation but also in disproportionate measures to the various regions of the country. While the direct effect of Covid-19 relates more to the infection of the virus, the agriculture and food security sector of the economy has suffered untold devastation to its productive distributive and nutritional management systems; all of which require in-depth investigation. Given the severity of the COVID 19 effects, severity and longevity of COVID 19 response policies, and their potential to slow down the development plan, it is essential to investigate the extent to which COVID 19 response policies; controlled/loss of livelihood, mandatory lockdowns, and mandatory restrictions, affected and continues to food production, food aggregation, processing and value addition, food distribution, consumer access and cost

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of food. Literature reveals food deficit in Kisumu County that other than being addressed through agricultural ingenuity, innovation and efficient resources utilization, is also met by externally sourced food products, from within the country and neighboring countries. Available information has differences and, in other cases, inconsistencies; this shows that although the restrictions have greatly increased the cost of food in rural and urban areas due to the increase in transport costs due to the lack of public transport, the size is not equal in different parts of the country. Therefore, this study attempted to highlight the correlation between the COVID 19 response policies and the food production, food aggregation, processing and value addition, food distribution, consumer access, and cost of food, as they are all elements of the government's strategic deliveries to attain food security. From the foregoing, no attempts have been made to assess the effect of the policies on the agricultural value chain; food production, food aggregation, processing and value addition, food distribution, consumer access, and cost of food, in a wholesome and also from a Kenyan perspective.

1.3 Objectives

The main objective of the study is to investigate the extent to which COVID 19 response policies affected the strategic government deliveries in the Agriculture and food security sector in Kenya.

1.3.1 Specific Objective

The specific objectives were:

1.3.1.1 To establish the extent of COVID 19 response policies' effect on volume agricultural food production in Kisumu County.

1.3.1.2 To determine the effect of COVID 19 response policies on agro food prices in Kisumu County

1.3.1.3 To analyze the effect of COVID 19 response policies on agricultural food access in Kisumu County.

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1.4. Hypotheses

The following hypothesis will guide the study:

1.4.1. H_{01}: There is no effect of COVID 19 response policies on volume agricultural food production in Kisumu County.

1.4.2. H_{02}: There is no effect of COVID 19 response policies on agro food prices in Kisumu County

1.4.3. H_{03}: There is no effect of COVID 19 response policies on consumer agro food access in Kisumu County

1.5. Justification of the Study

COVID 19 in Kenya is still a new topic and a field of study, mainly because COVID 19 is still a new concept that is quite broad and keeps on evolving day after day. Consequently, its effects may vary from nation to nation or even from organization to other. Therefore, there is a need to research and increase the knowledge on COVID 19, its impacts, COVID 19 influenced changes and their implications from a Kenyan perspective. Moreover, food security is essential in assuring the county's development as no nation can sustain continuous development when there is constant food insecurity hence highlighting the need to study it and the factors that may affect the attainment of food security comprehensively. However, previous studies focused on the correlation between COVID 19 and how it affects Kenyans from a personal level. No past research investigates COVID 19 and how it affects strategic measures by the government for helping the nation achieve food security. Additionally, this study will be unique as it does not investigate COVID 19 impacts, but COVID 19 response policies and how they impact the agricultural value chain; food production, food aggregation, processing and value addition, food distribution, consumer access and cost of food, in wholesome and also from a Kenyan perspective explicitly focused in the County of Kisumu.

1.6 Conceptual Framework

In the conceptual framework, we think that the price impact of the restrictions imposed on COVID-19 measures depends on whether the local market is a local supplier and local buyer, cross-border transportation and cross-border transportation, and net exporter or independent of work. In the absence of native advertising data, we use price to measure market segmentation, which we think can predict market success. Since this hypothesis is important to explain our findings, we present several additional experiments to confirm it. Since published information is not available, we focus on domestic production as a prerequisite for commercialization. For these reasons, materials used but not produced locally need to be imported. We are the first on the market to use remote sensing to measure agriculture; We then focused on obtaining local production data for specific products and combining this with the store.

Conceptual Framework
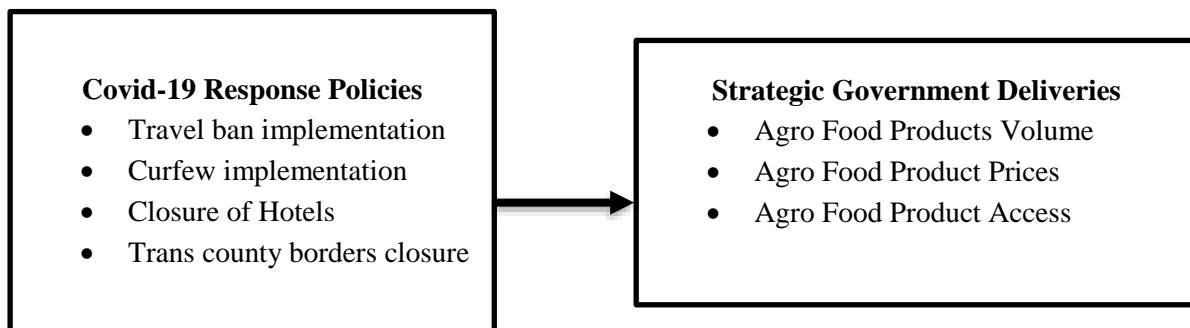
Source: Author (2023)

Figure 1.1: Conceptual Framework

(Miles & Huberman, 1994) a conceptual framework sets out the key variables and presumes relationships among them. Travel ban implementation, Curfew implementation, Closure of hotels and Trans county borders closure formed independent variables. The dependent variables were Agro food product volume, prices and access.

<center>**CHAPTER TWO**</center>

<center>**LITERATURE REVIEW**</center>

2.1 Introduction

The literature review consists of the theoretical framework of the study and also the empirical review. The theoretical framework section is an elaboration of theories underpinning this study. The empirical review is a compilation and assessment of various studies undertaken COVID-19 impacts. The section culminates in a conceptual framework that reveals the variables of the study.

2.2 Theoretical foundation

The theory that is most suitable to this study is the systems theory advanced by (Boulding, 1956; von Bertalanffy, 1951). The argument by Von Bertalanffy was that everything is interconnected. This showed a different point of view from traditional scholars that looked at individual components. Another origin of systems theory came from cyberneticsystems theory in mechanical engineering (Ashby, 1954; Wiener, 1948). The term cybernetics refers to control and communication in the machine system (Almaney, 1974). Similar to general systems theory, the concepts of cybernetic systems theory were found useful in explaining the behaviors of social systems extended from machine systems. According to systems theory, components of each system are structured in a hierarchical ordering, and components are interdependent with one another in the system to the extent thatone component cannot function without the support of other components. At the organizationallevel, the organizations and other organizations in the environment are also interdependent onone another. Underlying this interdependence are the pervious boundaries, both inside and among organizations. The process of receiving resources (input) and exporting products (output) is the exchange process. When the raw

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materials are received, components of a system will work together to transform the materials into products exported to the environment. During this throughput process, the system is engaged in two types of feedback mechanisms: negative and positive. Negative feedback is to correct errors to maintain the current state of the system whereas positive feedback is to change the system through improvement or growth. In reaction to the change in the environment, a system develops the capacity to become complicated as the conditions of the environment become complex (Schneider & Somers, 2006).

2.3 Strategic Deliveries

(Henry, 2021) defines strategic management as identifying and describing strategies managers can undertake to attain better performance and competitive advantages over other institutions. (Lynch, 2018) believes that strategic management is not a one-time activity, but an endless process evaluating the business in which the organization is engaged and its competitors, lays goals that will meet each individual's experience and candidates' needs, and then re-evaluate each strategy. (Henry, 2021) also asserts that strategic management entails a continuous process of setting goals, procedures to achieve these goals, and objectives to make one's organization more competitive. All the functions above require deploying resources and the organization's staff to meet the set goals and objective**s.**

However, in governments and governmental organizations, the understanding of strategic management is a little different as they are not out to make a profit but to deliver public functions. According to (Steiss, 2019), the management of nonprofit organizations and government agencies selects the organization's goals, determines the best plans needed to achieve specific goals, and develops appropriate procedures to ensure the implementation of policies and strategies. A more précis and straightforward way of defining strategic management in governmental organizations is the formalized long-range planning process used

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to set goals and objectives and deploy the necessary resources to achieve the set goals most effectively and efficiently.

2.4 Strategic Government Deliveries

The Kenyan agriculture lost approximately $3 million per day during the COVID-19 shutdown, although sales increased slightly following the shutdown, but demand remained low (Kenya National Bureau of Statistics, 2020). Agriculture dominates Kenya's economy, employing more than 70% of the workforce and generating annual exports of US$1.37 billion. The international blockade has hindered Kenya's agricultural exports due to the movement of goods being restricted. However, it is interesting that the export impact of horticultural products increased from 2019 to 2022, with 35%, 54%, 60% and 69%, respectively. (FAO, 2020). The epidemic not only caused a decrease in family income, but also caused a shortage of agricultural products and unclear sales, resulting in a decrease in production. Farmers producing commercial crops are unable to sell their products and therefore suffer losses, reducing the income of 45% of farmer families in Kenya (Varangis and Bouri, 2022). The burden of repayment has increased and credit will further reduce production; This situation causes farmers to have more difficulties (IMF, 2023). While 47 percent of the farmers who took part in the survey received loans after the epidemic, the remaining farmers could not receive loans due to the strictness and conditions of the regulations; especially in terms of product, performance and capabilities. This facilitates the choice of seeking credit from unofficial sources (Marcello, Zeidane and Murgasova2020).

Borrowing from the above, strategic government deliveries are strategically selected programs by the responsible governmental body to deliver the intended public function to the people. They are government plans and actions that, when put together, will provide a much bigger objective. Despite the efforts of the Kenyan government and development partners, technology

adoption remains low (Kenya USA, 2007; Ogada et al., 2010). Although the average use of maize seed amendment and weak fertilizers is 65% and 76% respectively, there are significant differences between regions and agro-ecological zones. In some regions, fertilizer use is as low as 12% (Olwande et al., 2009) and crop improvement is as low as 30% (AGR, 2010). For other good crops the situation is even worse. Only 10% (AGRA, 2010). Given the connection between technology and agriculture and the need for the Kenyan government to encourage the development and use of agricultural technology (Kenya, 2007), it is key to have an understanding of the factors affecting using new technologies and/or technological advances.

The World Bank's Kenya Economic Update (2019) report on Business Transformation to Achieve Food Security states that Kenya is a developing nation having a GDP of US$95.5 billion and agriculture plays a significant role with its direct and indirect contribution to the Total product accounts for 61% of total GDP; It constituted 26% directly and 25% indirectly. The report notes that agriculture remains the largest employer of Kenya's workforce; although small farmers with 0.2 to 3 hectares of land still account for 60% of all jobs in Kenya, the number is growing. 65% of Kenya's total exports; Compared to large producers, its profit is approximately 78% of all agricultural products. GOK (2020) explains in its Agriculture Sector Development Strategy 2020 - 2030 that Kenya's GDP in terms of agriculture is currently mainly driven by crops and horticulture as opposed to foods such as rice. The economy is dominated by the poor trying to survive, not for economic production. According to the Kenya Government Report (2017), Kenya's agricultural sector is divided into six sub-sectors; food crops, horticulture, commercial crops, animal husbandry, fisheries and forestry. The report shows that agriculture is the largest economy, accounting for about 33% of GDP, with commercial crops accounting for 17%, food crops accounting for 32%, and raising livestock 17%. In relation to

export share, the largest part of agricultural GDP is the horticulture subsector with 33 US dollars, 7% is livestock farming and 0.5% is food products.

Farming (FS) can be defined as a unique and sustainable agricultural enterprise managed according to effective practices adapted to the natural environment, biological and economic factors, based on the goals, interests, emotions and resources of the family. (Shana, Philip and Schmel 1982). The main problem identified is low crop yield. The main reasons for this are: insufficient material, ineffective fertilizers, continuous cultivation without additional nutrients causing high soil erosion and soil fertility loss. This situation affects crop yield, causing the productivity of agricultural enterprises that use their own agricultural methods to decrease. If integrated and used effectively, ICT platforms can facilitate the dissemination of agricultural knowledge. It's cheap, fast and easily adaptable for most people who now own at least one mobile phone. The program promotes information sharing, which is an easier and cheaper way of communication between farmers themselves, extension service providers and other agricultural organisations. Information about new technologies can be published in record time. However, information should be allowed to flow freely and its return should be more deliberate. This can be done by avoiding social media ads. Farmers should be given space to ask questions about specific technologies, receive clarification and take appropriate action. This can also increase the knowledge of researchers and extension officers. Zijp (1994) states that ICT can support and improve knowledge in two ways, thus ensuring that performance improvement is not lost. Two-way communication is collaborative in nature.

Many innovations are emerging around the world to secure rights and lands, including inheritance rights. Many of the legal and cultural aspects of the land are problematic. They tend to have weak property and contract rights over natural resources. Although laws are in place, lack of legal awareness and mismanagement often limit the ability to enforce rights on the

ground (Quisumbing and Pandolfelli, 2009). Financial services e.g. loans, savings and insurance offer the opportunity to increase agricultural production, food security and economic importance for families, communities and the country. Many studies have shown that improving direct access to financial resources can increase investment in human capital in child health, nutrition and education (FAO, 2011).

Food also evaluates the impact of Covid-19. In many countries, because of measures taken to prevent the disease spread, the movement of commercial chains was restricted, thus agriculture fell into a bad situation. The food supply so far is starting to impact the food supply. Agricultural products move inward, serving foreign markets and consumers Schmidhuber et al., (2020). The mix of markets and the level of demand for certain products are also undergoing significant changes. The extent to which these impacts will affect food security and farmers' livelihoods and others involved in the food supply depends on the response (OECD, 2017). In the short term, the government needs to meet many needs. Although the disease has caused serious problems for food in the short run, it is still time to promote changes in agriculture to combat many challenges, including climate change (Curran, 2020).

Food security is ensured by people being able to easily access, consume and adequately metabolize safe and healthy food that is necessary for human health (Prosekov and Ivanova, 2018). FAO has published the most accepted definition of food security: "Food security occurs when every person has at all times physical, health and financial access to adequate, safe and financial food for healthy life." security" (McDonald, 2010). The term food safety has been around for decades. In the mid-1970s, the term referred to the need to produce enough food and distribute it to everyone.

At that time, in the debate on food security, it was emphasized that it was important to mention the total amount of calories in the national and international food supply about malnutrition (UNICEF, 2020). Over the years, the term food security has become broader and more comprehensive to include a variety of issues. Factors contributing to a variety of eating disorders across a wide range of foods include the role played by health perception and eating habits in some cases. In today's world, the concept of food security includes four important elements: availability, access, consumption and sustainability.

The grain is focused on rice only. It refers to physical access and availability of safe and healthy food at any place and time (McDonald, 2010). For example, in Kenya, the availability of food refers to the market access and availability of nutritious and safe food for the Kenyan people. This means that everyone needs enough food at the right time and place. Food supply events include food production, distribution and exchange. Access to food determines whether an individual, family or household can always access nutritious and safe food. In other words, access to food means that a person can purchase food through food shopping or money (McDonald, 2010). Access to food can be influenced by many factors, such as the value, distribution and preferences of food. Food utilization then refers to the body's ability to make the most of food. There are many factors that can affect food consumption. They include improper storage, cooking, food safety, spoilage, and diseases such as diabetes, cancer, and HIV/AIDS (McDonald, 2010). The above properties can improve food intake and digestion. Nutrition, food safety, preparation and consumption, and consumer health will impact the body's ability to metabolize food. Food safety is also one of the main components of food safety and is unique in that it includes all three elements. Food will be available to those who can use it, but this must be stable and stable over time, not a temporary state that is subject to change (McDonald, 2010).

2.5. Strategic Government Deliveries Aimed at Attaining Food Security

These are strategic ideas of the government that, if implemented, will lead to ensuring food security. Food and agriculture have also been impacted by Covid-19; Poor food quality in many countries due to measures restricting the movement of the printing industry. Steps to control the proliferation of the disease have begun to affect the supply of agricultural products to domestic and foreign markets and consumers (Schmidhuber, Pound and Qiao 2020). Business models and the level of demand for certain products are also subject to significant changes. The level to which these impacts will affect livelihoods and food security of farmers and other food stakeholders will depend on the responses (OECD, 2017). In the short term, the government needs to meet many needs; in response to the health crisis, managing the effects of economic shock and ensuring the efficiency of food supply. Although the pandemic has created some serious problems for food in the short run, it is also time to make changes in food and agriculture that can withstand many challenges, including climate change (Curran, 2020).

The first step of the chain is food production, which entails growing crops, nurturing the crops, inputting the necessary inputs, and harvesting the produce to turn the harvest into safe consumable food. The primary players or actors in this step are the farmers who plant and take care of food crops. Adequate safe, and consumable food production enhances food availability, which is key in attaining food security. Put differently, to achieve food security, there must be adequate food production from the farming stage. In addition to ensuring food availability for the larger population, including non-farmers, food production is critical as it creates employment opportunities for many farmers. According to an article by the (World Bank, 2022), the agricultural sector employs 53.84% of total employment in Kenya, which is more than half of all other sectors of the Kenyan economy. Notably, these jobs are not only in food production but in all agricultural value chains. The article denotes a decrease in the number of

employment available in the agricultural sector in the past two decades. Therefore, farming creates employment for millions of people across the nation as actual farmers, machine operators, input suppliers, collectors, and manual laborers.

Often it entails changing one form of food to another. The introductory phase is primary processing, where farm produce is converted into edible food. The second is secondary processing, where food is created from already existing ready-to-use ingredients, such as making sausages from already processed meat. Food processing or value addition on food presents a vast range of benefits such as removal of toxins, preservation, food consistency, and increasing yearly availability of foods by deactivating spoilage and pathogenic microorganisms, making it susceptible to early spoilage, reducing incidences of food-borne diseases, among others. This process depends on the ability of human workers to operate machines, which has been reduced due to COVID 19 response policies required to lower the number of workers in the workplace to lower the disease spread. Food delivery solves the problem of how food reaches the customer from its location without losing its value and nutritional value. Generally speaking, food distribution requires a lot of organization and planning; collecting food from farmers and producers, storing it in supermarkets, and then dividing it into companies, grocers, restaurants, restaurants, stores, local stores, grocery stores and Civil Services (Fram, 2019). They transport food from producers and manufacturers/processors to the consumers' convenience. With the regional lockdowns and curfews, the food distribution significantly slowed down, affecting the sufficiency of food in the market.

Information on food security status in the world, including food transformation, improved nutrition and nutritional value to ensure food security (FAO, 2021), approximately 657 million people (8% of world population) is predicted to face malnutrition food shortages by 2030 due

to the impact of the global COVID-19; This number means approximately 30 million more people compared to 2020, when there was no epidemic. About the World Health Index (2021), which deals with food issues in hunger and conflicts, draws attention to the seriousness of the hunger problem, which affects many problems caused by the Covid-19 epidemic in the world, and affects policies to reduce hunger by 2030. (Erokhin and Gau, 2020) noted that the Covid-19 epidemic is everywhere. Following strict controls on business and social services, it has ceased to be a health problem and become a threat to global health. In many countries it has been proven that the disease actually causes more damage; It manifests itself in many ways. Economic downturns, Lockdowns, food trade restrictions and rising food prices The new health crisis is affecting underdeveloped countries and developing economies, difficult but affecting The effects of macroeconomic fluctuations and food insecurity are still little researched.

How easy it is for the consumer, who is the end-user, to access and purchase food depends on the affordability and availability of the food. Consumer access relies on the amount the consumers have and are willing to spend on food, food prices, and the availability of the food in the market. For example, if customers have to walk or drive long distances to purchase food, they are most likely to buy food less often. Most Kenyans' shopping carts have shrunk since the COVID-19 pandemic began. Loss or reduction in income and increase in the cost of living have caused great stress for many Kenyans (Warah, 2022). Data from KNBS shows that between 2020 and 2021, Kenyan consumers increased their food and beverage spending by 8% and transportation spending by 14% increased by 4%. Inflation reached a 23-month high (6.91%) in September 2021 and is now around 5.8% (Warah, 2022). Inflation increases the cost of basic needs like food and often increases the cost of living as well. Increases in food and living costs have reduced the ability of Kenyans to access adequate and healthy food.

The global economic meltdown accessioned by the pandemic and its spread have increased inequality in many countries, Ashford et al., (2020). The inequalities impacts rights, access to basic needs such as water, food and health, access to jobs and activities, life, and everything related to nutrition and food security. The COVID-19 pandemic has caused a global economic downturn, consequently lowering living standards and incomes worldwide (World Bank, 2020a). As a result of the reduced income needed to purchase goods, food and nutrition security is greatly affected, especially for those who are already in trouble. Those in the informal economy are affected considerably. Soon after the announcement of the first few COVID 19 cases in Kenya, the government enforced restrictions such as mandatory 14 days of quarantine after travel, wearing of face faces in public spaces, prohibition of indoor social gatherings, closure of nightclubs, restaurants, and churches, and schools. These restrictions had severe impacts on various groups of people. For example, closing schools meant a cessation of income for educators. The closure of clubs meant owners of clubs and employees could not make money; celebrities such as musicians, bands, and comedians, among others, also saw their revenues stagnate as they could not perform in nightclubs or any other forms of public gatherings. These people whose purchasing power went down thus faced challenges with being able to afford or were at the risk of not being able to access food.

Environmental challenges such as in 2019, when the world saw the outbreak and spread of COVID 19 virus, there arose unique challenges that governments and people worldwide continue to face due to the rapidly evolving nature of the virus. The economic and social implications of the pandemic are evident in both developed and developing countries (Sharifi & Khavarian-Garmsir, 2020). Such ramifications include loss of economic activities across all economic sectors, high unemployment levels, increased inequalities, income poverty, and vulnerabilities. Developing nations where primary level production preferably agriculture

commands a greater portion to employment, food systems and revenue capacities, there occurs further challenges, as they already have a scarcity of functional health care systems, financial resources, formal economy, and fiscal and macroeconomic policy interventions (Sharifi & Khavarian-Garmsir, 2020). Developing nations also face the issue of limited governance accountability systems, which are essential in determining how a country manages severe social, cultural, health and general economic shocks; as well the overall well-being of its people (McKibbin et al., 2021). As a result, developing nations may suffer prolonged and exacerbated effects of the COVID 19 pandemic. While providing urgent relief at a substantial financial cost, there are significant risks of mismanagement, fraud, corruption, and waste, especially where accountability and governance mechanisms are underdeveloped.

The increase in transportation costs makes it difficult for farmers to enter the market. The government can set up collection centers for farmers to transport and sell their produce. It will also allow the government to store supplies for the future, improve food security, and reduce trade and product fluctuations (Laborde, Martin, Swinnen, and Vos 2020a). The availability of food services decreased significantly between 2019 and 2022; The availability of additional services for agriculture in farming communities decreased by an average of 55%; Transportation costs increased and caused damage due to public transportation capacity being limited to 60% in farmers' income; slow delivery; and more and more sellers are experiencing problems such as declining sales.

Kenya and most of the nations in the sub-Sahara put in measures to hinder the disease's spread. Among the efforts put in place was controlling the people's livelihoods. Organizations asked most of their employees to work from home. Very few or no workers were allowed to work from the office. In extreme cases, organizations afraid of incurring losses had to let go of a significant percentage of their employees. Lying off workers increased inequality and poverty

as those laid off saw their sources of livelihood end, implying that they faced the risk of not being able to purchase basic needs, including food. Working from home also adversely affected various workers such as Uber drivers, Matatu operators, and Boba Boda operators, who help employees commute from home to work and from work to home every day. Catering businesses supplying food to employees in the office were also affected as their contracts were terminated after employees started working from home. All the above changes led to the reduction of the purchasing capability of those affected.

Laborde, Martin, Swinnen, and Vos (2020a) note that closures and movement restrictions also affect essential food products, quality controls, and certification, including those required to support the business, such as physical inspection of food products. State that the shipment complies with health and hygiene regulations (SPS). Additionally, additional checks are required to address new biosecurity plans implemented for businesses against COVID 19. In some cases, standards for which the purpose of application is asked are approved to meet household food requirements, precaution, health and safety against domestic trade.

Yaffe-Bellany & Corkery, (2020), following the COVID 19 outbreak, regional lockdowns were enforced by government to stop the virus spreading to the more significant Kenyan population. The government also implemented a dusk to dawn curfew and international travel. All these lockdowns disrupted the nation's economy and supply chain disruptions. Kenya being a 24-hour economy, cut that time by half, meaning that the impact on the economy was quite severe. The curfew caused a major disruption to the supply of food, affecting the availability, quality and price of food. Without adequate storage facilities, including cold storages, farmers find their food unsellable. From March to May 2020, many countries followed the epidemic and there were media reports of food being wasted or recycled, reacting due to the collapse in demand or the difficulty of getting this food to market, which Kenya also experienced. Due to

lockdown measures, the flow of food through international trade pipelines was interrupted. As borders close and demand for specialty foods declines, food producers who rely on selling their products through foreign markets are particularly vulnerable, especially those who focus on perishable goods and produce foods such as fresh fruits and vegetables. Overall, the quarantine created problems for the country's supply, access, consumption and food security.

2.6 Empirical Literature

(Dietrich et al., 2022) examines COVID-19 policy responses, liquidity, and prices of food and finds that restrictive responses increase food prices in a mixed economy, but not in a segmented market. Before COVID-19, the impact of tightening the policy response to food prices was due to the decline in income and the dependence of business on the economy. They also noted that countries varied in the severity of their response to COVID-19 in 2020. The Oxford Coronavirus Government Response Tracking System (OxCGRT) has the highest average score in Iraq, India and Kazakhstan, above 0.5, and the lowest in Iraq. Yemen, Burundi's score is around 0.1 (see Annex B1). We provide more information about changes in pressure gauges and their impact on local waters. Barrett (1996) stated that business connections are often modeled on exchange rates and supply and demand relations in different markets, which together determine high value and business flow. In the absence of local markets and data collection, we estimate market integration from the spread of price changes between two markets (Fackler, 2001).

A considerable number of previous studies investigate the impacts of COVID 19 on food security. Swinnen & McDermott, (2020) research the influence that COVID 19 has had on global food security since the virus outbreak. The study establishes that COVID 19 and the government and organizations' policy reactions adversely affected the food value chains, reducing availability for billions of poor individuals worldwide. Poor people were more

affected by the shortage of food supply compared to wealthy individuals. Other groups of individuals majorly affected are women, children, and migrants. Labourde et al. (2020) also investigate the risks to global food security emanating from the outbreak and the spread of COVID 19. Labourde and team assert that policies in prevention of the spread of the disease significantly disrupt the global agricultural and food markets due to the labour shortage due to movement restrictions and shifts in food demand due to the closure of schools, restaurants, and income losses. The study also established that COVID 19 impacted food security elements; access, availability, utilization, and stability. O'Hara & Toussaint (2021) examine the food access crisis resulting from COVID 19 in Washington DC. The study establishes that the nation's capital has experienced disparities in food access over many years, but COVID 19 exacerbates these disparities further as the poor face more challenges.

Similar studies were carried out across the continent. (Amare et al., 2021) examined the impact of COVID 19 on market participation and food security in Nigeria. Research shows that families affected by more Covid-19 information and mobile phone shutdowns are at risk of malnutrition at home. The study also found that the spread of disease is associated with a decline in labor market participation. Arndt et al. 2020 Analysis of the impact of the South African government's intervention policy on income distribution and food security. The findings revealed that quarantines and movement restrictions reduce or cut income distribution. Research shows the same thing: People with the lowest incomes face greater risk of food insecurity than rich families. Kenya is not far behind in learning about the impact of COVID 19 on Kenyans. (Shupler et al., 2021) investigated the impact of government-imposed shutdowns following the COVID 19 pandemic on household food security and fuel consumption. Research shows that incomes have declined or stagnated and most Kenyans are experiencing food shortages.

The impact of COVID-19 regulations on food prices is far from uniform; Prices increase because products not produced locally must be transported. This also affects other shocks such as natural disasters Hill & Porter (2016) or loss of good income Cunha et al., (2019). However, our analysis focuses on the short-term impact of COVID-19, which may differ from the medium- and long-term impact of the pandemic on food security. Our results also have some important policy implications. Recent evidence shows that a 2% increase in food prices is associated with a 0.24% increase in malnutrition (IMF, 2021).

Kansiime et al (2021) assessed the impact of COVID 19 on income and food security in Uganda and Kenya. A survey was used in this study and a total of 442 participants were collected. The findings show a decline of more than 67% in both countries. The results also show that malnutrition increased in both countries during this period, with food insecurity increasing by 38% in Uganda and 44% in Kenya. As can be seen from the studies above, the impact of COVID 19 on food safety has been widely studied. However, COVID 19 is still a serious and emerging problem that requires further research. Additionally, no previous study has examined the impact of COVID 19 on food security from the perspective of how COVID 19 response policies impact food, examining all agricultural benefits from food production to consumers, from health monitoring to food itself.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology to be employed by this research, including research design, study area, sampling techniques, target population, data collection method, data collection instruments and data analysis method.

3.2 Research Design

The study used a correlational design to compare the quantitative data collected from the two variables as it measures two variables, understanding and assessing the statistical relationship between the two with limited influence from any extraneous variables. The study's objective was to establish the effect of COVID 19 response policies on strategic government deliveries Kenya, making correlation research design the ideal option. The correlation research approach enables scholars and researchers to establish the statistical patterns between two seemingly interconnected variables.

3.3 Study Area

This study was conducted by farmers in Kisumu County. This study was conducted in Kisumu County as literature reveals food deficit in the county that other than being addressed through agricultural ingenuity, innovation and efficient resources utilization, is also met by externally sourced food products, from within the country and neighboring counties. The total area of Kisumu is 2,085.9 square kilometers (km2). It borders Homa Bay, Nandi, Kericho, Vihiga, and Siaya counties to the South, northeast, east, west and west respectively. It has an area of 253,000 hectares and a water area of 100,500 hectares. The cultivated area is 200,000 hectares, accounting for 80% of the entire city.

3.4 Target Population

Groups of interest in the survey are;

3.3.1 Food producers who are small-scale and large-scale farmers, producer groups such as self-help groups and co-operatives.

3.3.2 Agricultural support services such as financial institutions, input suppliers, government regulatory agencies including KEBS, NIA, Ministry of Agriculture, livestock, Fisheries, and Co-operatives.

3.3.3 Food processors and manufacturers.

3.3.4 Food distributors such as local shop owners, retailers, wholesalers, and transporters.

3.3.5 Food Consumers who are the end-users of food

Table 3.1 below shows the target population.

Table 3.1: Target population distribution

S/N	Target Group	Number
1	Food Producers	224
2	Agricultural Support Service Providers	15
3	Food processors/manufacturers/aggregators	55
4	Food distributors	135
5	Food consumers	750
TOTAL		**1,179**

Source: Department of trade, commerce and tourism, Kisumu County

3.5 Sample Size and Sampling Technique

The total sample size is 1,179. According to Neuman, W. L. (2007), For populations under 1,000, a minimum ratio of 30 percent (300 individuals) is advisable to ensure representativeness of the sample. This study population was slightly above 1000.

Therefore, 30% of 1179 = 354.

Agricultural Support Service Providers will be 15. The remaining categories proportionately shared 354 less 15 (339).

Food producers = 65

Food processors/manufacturers/aggregators = 16

Food distributors   = 39

Food consumers   = 218

3.6 Data Collection Procedure

Data collection was through self-administered questionnaires and the questionnaires were collected after the respondents are done answering all the questions. The choice of this method was appropriate as it covers all inquiry areas. A pilot testing was carried out using 35 respondents to determine the level validity and reliability of the questionnaire being used in data collection. Once the pilot test was complete, any weaknesses and inconsistencies that was determined from the study questionnaire, was corrected before the actual data collection. This was followed by the researcher appointing a research assistant who located the possible respondents and explain to them what the study intends to fulfill and how their bank would benefit from it.

3.6.1 Data Type and Source

The study collected primary data from the respondents by use of structured questionnaires administered on respondents. The questionnaire was structured into two sections, the general

information and the extent to which COVID 19 response policies impacted the strategic government deliveries in the Agriculture and food security sector in Kenya sections.

3.7 Data Collection Instruments and Techniques

The instruments of data collection were open-ended and closed-ended questionnaires. A survey questionnaire is a group of questions that evaluates the beliefs, opinions, attitudes, and factual information (McMillan& Schumacher, 2001). They were used to gather data concerning the independent and dependent variables.

3.8 Validity

Internal validity was achieved using a simple closed questionnaire. External validity can be increased by facilitating the participants' work. In this study, an expert was assigned for constructive criticism. Additionally, the questionnaire will be piloted before the actual study.

3.9 Reliability

This was ensured by the use of surveys and research methods and the personal involvement of the researchers in the actual data collection process. Questions are reviewed daily to ensure accuracy and consistency. It was ensured by pre-testing the data using Cronbach's alpha.

3.10 Data Analysis and Presentation

The survey was edited to be consistent and complete. Captured items are coded and analyzed using percentage, total, mean, and standard deviation. Correlation was used to analyze the collected data. OLS was used to determine the effect of each predictor variable on the explained variable. Data were run using SPSS version 26. The data was analyzed to determine whether there was an association between the identified factors. Research results are presented in tables, charts, graphs and charts.

3.10.1 Model Specification

The regression model is as below:

$$Y_1 = \beta 0 + \beta 1 X1 + \beta 2\ X2 + \beta 3 X3 + \beta 4 X4 + \varepsilon$$

$$Y_2 = \beta 0 + \beta 1 X1 + \beta 2\ X2 + \beta 3 X3 + \beta 4 X4 + \varepsilon$$

$$Y_3 = \beta 0 + \beta 1 X1 + \beta 2\ X2 + \beta 3 X3 + \beta 4 X4 + \varepsilon$$

$$Y_4 = \beta 0 + \beta 1 X1 + \beta 2\ X2 + \beta 3 X3 + \beta 4 X4 + \varepsilon$$

Where:

Y= Government strategic Indicator

$\beta 0$= Intercept

$\beta 1$,$\beta 2$,$\beta 3$ and $\beta 4$= Beta coefficients

X1= Travel bans implementation score

X2= Curfew enforcement score

X3= Closure of hotels and restaurants and social places score

X4= Closure of transcounty borders

$\acute{\varepsilon}$= error term

In analyzing data for objective one, the model below was applied.

$$Y_1 = \beta 0 + \beta 1 X1 + \beta 2\ X2 + \beta 3 X3 + \beta 4 X4 + \varepsilon$$

In this model;

Y1= Agro food product volume

$\beta 0$= Intercept

$\beta 1$,$\beta 2$,$\beta 3$ and $\beta 4$= Beta coefficients

X1= Travel bans implementation score

X2= Curfew enforcement score

X3= Closure of hotels and restaurants and social places score

X4= Closure of trans county borders

$\acute{\varepsilon}$= error term

In analyzing data for objective two, the model below was applied.

$$Y_2 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

In this model;

Y2= Agro food product prices

β0= Intercept

β1 ,β2 ,β3 and β4= Beta coefficients

X1= Travel bans implementation score

X2= Curfew enforcement score

X3= Closure of hotels and restaurants and social places score

X4= Closure of transcounty borders

έ= error term

In analyzing data for objective three, the model below was applied.

$$Y_3 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

In this model;

Y3= Agro food product access

β0= Intercept

β1 ,β2 ,β3 and β4= Beta coefficients

X1= Travel bans implementation score

X2= Curfew enforcement score

X3= Closure of hotels and restaurants and social places score

X4= Closure of trans county borders

έ= error term

In analyzing data for objective four, the model below was applied.

$$Y_4 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

In this model;

Y4= Agro food product quality

β0= Intercept

β1 ,β2 ,β3 and β4= Beta coefficients

X1= Travel bans implementation score

X2= Curfew enforcement score

X3= Closure of hotels and restaurants and social places score

X4= Closure of transcounty borders

έ= error term

3.10.2 Tests of Regression Assumptions

3.10.2.1 Normality

Normality tests are used to determine whether a sample or data set meets a standard distribution and the likelihood that the underlying data follow a normal distribution (Anderson and Darling, 1954). Normality testing is used to determine whether data comes from a normal population distribution. If the static hypothesis is false, the test results will not be reliable. If the variables do not meet the normality test and are not different, they can be changed to normalize the data

3.10.2.2 Multicollinearity

It is a situation where two or more predictor variables in a regression model are neutral or highly correlated, thus limiting the conclusions we can draw. Relationships often arise from mistakes or misunderstandings (Kumar, 2012). Multicollinearity is a learning problem that may or may not exist. Multicollinearity is measured using tolerance and variation inflation factors. Closer to 0, the degree of multicollinearity increases, and a value closer to 1 means less multicollinearity. The inverse of the tolerance is called the variation inflation factor (VIF),

which is the result of the correlation between the regressors. A VIF greater than 10 indicates that there is too much variance in the variable and therefore poor prediction.

3.10.2.3 Autocorrelation

Autocorrelation occurs when values of the same variable as the items of interest are present, thus the assumption of independence is violated. It collects time series data from the same source instead of random selection. Reasons include: specification error, data manipulation, sustained shock, and analysis error.

3.10.2.4 Heteroscedasticity

It is the change in the residual distribution of the variable. It assumes that all residuals in the population have constant variance and are therefore homoskedastic in nature. He tried using the Breusch-Pagan test. Testing whether residual balance variation depends on the value of a variable, if this is the case heteroscedasticity arises.

3.11 Ethical Considerations

An attempt was made to obtain informed consent from participants before participating in this study. Participants in the study will be informed about the purposes of the research and their consent will be confirmed. Level of confidentiality of information received by participants. The data collected will be used for educational purposes only and will not be assessed by third parties without the permission of the contestants.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The study set out to investigate the extent to which COVID 19 response policies impacted the strategic government deliveries in the Agriculture and food security sector in Kenya. The chapter is organized into presentation of findings, interpretation of results, discussion of results, and implications. The study achieved 84.0% response rate.

4.2 Gender

Table 4.1 shows gender of study of the study participants to whom the study questionnaire was administered. A total of 296 participants were reached out of whom the following statistics were obtained.

Table 4.1: Gender of the participants

	Frequency	Percent
Female	161	54.4
Male	135	45.6
Total	**296**	**100.0**

The survey reached out to 54.39 percent of females and 45.61 percent of males, revealing an 8.78 percent more females than males. This may an indication that the women are more into agricultural and food security related activities as compared to men who may not find farming related practices as really interesting as compared to other income generating activities.

4.3 Length of service

Table 4.2: Length of service by the survey participants

	Frequency	Percent
1-5 years	93	31.4
11-15 years	34	11.5
6-10 years	150	50.7
More than 15 years	19	6.4
Total	**296**	**100.0**

From the table 4.2 it is evident that more than half of the participants at 50.68 percent, have been in service for between 6-10 years. This is represented 150 out of the 296 respondents. 31.42 percent of the participants in the sector do not operate beyond 5 years. On the other hand, 11.49 percent of the participants have been in operation for between 10 to 15; while only 6.42 percent of the participants in the sector have operated beyond 15 years. This implies that the attrition rate before 6 years of operation is fairly high at 31.42, while the resilience in the sector is also very low after 10 years; moving from 11.49 percent to 6.42 percent.

4.4 Group of participants/participants categories

Table 4. 3 Group of participants/participants categories

	Frequency	Percent
Agricultural service providers	9	3.0
Food Consumers	178	60.1
Food distributors	31	10.5
Food processors	25	8.4
Food producers	53	17.9
Total	**296**	**100.0**

Table 4.3 shows which group/category of participants were targeted with the questionnaire. The study participants are practitioners in five categories of food consumers, producers, processors, distributors and also agricultural service providers. The food consumer category takes up to 60.14 percent, while food producer category takes 17.91 percent. Subsequently, food processors account for 8.45 percent, in the circumstance where the food distributors account for 10.47 percent. On the other hand, the Agricultural service providers accounts only for 3.04 percent.

The 60.14 percent of the consumer category is more than all the categories put together. The producer category which essentially feeds the consumer category only accounts for 17.91 percent. This leaves a big gap which implies that a large portion of the consumer category is serviced from outside the County agriculture and food security domain. Limited participation of the food processor and distribution category is confirmatory to the fact that the consumer sector is provided for from outside the County Agriculture and food security structure. The minimal provision for agricultural service which are critical for production, processing and distribution at 3.04 percent explain the depressed requirement for agro based advisory services

4.5 Normality Tests

Normality testing is used to determine whether a data set follows a normal distribution and to calculate the probability that the variance in the data set follows a normal distributio. The main results of this study ($p < 0.05$) did not show normality. In this study, travel restrictions, time restrictions, hotels, restaurants, social closures and border closures were used as independent variables, and farm, agriculture, agricultural products and agricultural products were used as different products. The ShapiroWilk test value is greater than 0.05 and the data is normal. If it is less than 0.05, it means that the data is different from normal distribution.

Table 4. 4: Normality Test results

	Shapiro-Wilk		
	Statistic	**df**	**Sig.**
Travel Ban Implementation	.751	296	.061
Curfew Implementation	.848	296	.108
Closure of Hotels, Restaurants and Social Places	.880	296	.070
Trans County Border Closure	.802	296	.088
Agro Food Product Volume	.859	296	.112
Agro Food Product Volume	.811	296	.214
Agro Food Product Access	.798	296	.093

Source:

4.6 Multicollinearity

Multicollinearity is a situation where more than one explanatory variables in a regression model are neutral or highly correlated, thus limiting the conclusions we can draw. Perfect relationships emerge due to mistakes or misunderstandings (Kumar, 2012). Multicollinearity is a learning problem that may or may not exist. Multicollinearity is measured using tolerance and variation inflation factors. Closer to 0, the degree of multicollinearity increases, and a value closer to 1 means less multicollinearity. The inverse of the tolerance is called the variation inflation factor (VIF), which is the result of the progression of the regressors. A VIF greater than 5 indicates that there are multiple linear variables with different variables and hence poor prediction. The tolerance of each variable is greater than 0.1 and the VIF is less than 10. This means there is no multicollinearity.

Table 4.5 Multicollinearity

	Collinearity Statistics	
Model	Tolerance	VIF
Travel Ban Implementation	.312	3.203
Curfew Implementation	.259	3.868
Closure of Hotels, Restaurants and Social Places	.350	2.859
Trans County Border Closure	.527	1.896

Source

4.7 Correlation Analysis

Correlation analysis measures the strength and direction of the relationship that exists between two variables measured at least once. It tries to draw a thin line between data between two variables. The Pearson correlation coefficient r is the average distance of all data points to the line of best fit.

Table 4.6 Correlation coefficient for all the variables

		Travel Ban Implementation	Curfew Implementation	Closure of Hotels, Restaurants and Social Places	Trans County Border Closure	Agro Food Product Volume	Agro Food Product Price	Agro Food Product Access
Travel Ban Implementation	Pearson Correlation	1.000						
	Sig. (2-tailed)							
	N	296						
Curfew Implementation	Pearson Correlation	.797**	1.000					
	Sig. (2-tailed)	.000						
	N	296	296					
Closure of Hotels, Restaurants and Social Places	Pearson Correlation	.704**	.790**	1.000				
	Sig. (2-tailed)	.000	.000					
	N	296	296	296				
Trans County Border Closure	Pearson Correlation	.652**	.625**	.598**	1.000			
	Sig. (2-tailed)	.000	.000	.000				
	N	296	296	296	296			
Agro Food Product Volume	Pearson Correlation	-.678**	-.735**	-.681**	-.625**	1.000		
	Sig. (2-tailed)	.000	.000	.000	.000			
	N	296	296	296	296	296		
Agro Food Product Price	Pearson Correlation	-.474**	.626**	.597**	.547**	.784**	1.000	
	Sig. (2-tailed)	.000	.000	.000	.000	.000		
	N	296	296	296	296	296	296	
Agro Food Product Access	Pearson Correlation	-.584**	-.736**	-.633**	-.634**	.814**	.787**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	296	296	296	296	296	296	296

**. Correlation is significant at the 0.01 level (2-tailed).

Source

Table 4.6 presents correlation results as coefficients revealing the association between each pair of the variables describing the independent and dependent factors, and their significance and levels of association. The correlation results reveal that all the associations between the variables have significant correlation coefficients; also reflecting reliability in selection of the describing parameters of the variables.

Accordingly, Travel Ban Implementation (TBI), Curfew Implementation (CI), Closure of Hotels, Restaurants and Public Places (CHRPP), Trans-Country Border Closure (TCBC), Agro Food Product Volume (AFPV), Agro Food Product Price (AFPP) and Agro Food Product Access (AFPA) correlation results are as indicated in figure 4.7.

Travel Ban Implementation had a positive and significant association with Curfew Implementation ($r = .797$, $p = 0.000 \leq 0.05$), Closure of Hotels, Restaurants and Social Places.

($r = .704$, $p = 0.000 \leq 0.05$) and Trans County Border Closure ($r = .652$, $p = 0.000 \leq 0.05$). Curfew Implementation had a positive and significant association with Closure of Hotels, Restaurants and Social Places ($r = .790$, $p = 0.000 \leq 0.05$) and Trans County Border Closure ($r = .625$, $p = 0.000 \leq 0.05$). Closure of Hotels, Restaurants and Social Places had a positive and significant association with Trans County Border Closure ($r = .595$, $p = 0.000 \leq 0.05$).

Travel ban implementation had a negative and a statistically significant association with strategic government deliveries ($r = -0.6785$ $p = 0.000 \leq 0.05$). There is travel ban implementation but with restriction for food distribution across the regions because the community feeding patterns have not changed. Curfew implementation had a negative and a statistically significant association with strategic government deliveries ($r = -0.735$ $p = 0.000 \leq 0.05$). This could be attributed to creating a window for food distribution where the same is not impaired. Closure of hotels, restaurants and public places had a negative and a statistically significant association with strategic government deliveries ($r = -0.6807$ $p = 0.000 \leq 0.05$).

Trans-country border closure had a negative and a statistically significant association with strategic government deliveries (r=-0.6251 p =0.000 ≤ 0.05). This may be due to border porosity, an indication that agro food products still flow through the borders. Travel ban implementation (r=-0.4742 p =0.000 ≤ 0.05), curfew implementation (r=0.626 p =0.000 ≤ 0.05), closure of hotels, restaurants and public places (r= 0.5967 p =0.000 ≤ 0.05), and trans-country border closure (r=-0.5474 p =0.000 ≤ 0.05) had moderate association with agro food product prices. Travel ban implementation (r=-0.5843 p =0.000 ≤ 0.05), curfew implementation (r=-0.7361 p =0.000 ≤ 0.05), closure of hotels, restaurants and public places (r=-0.6329 p =0.000 ≤ 0.05), and trans-country border closure (r=-0.6335 p =0.000 ≤ 0.05) had strong negative association with agro food product access.

This show consistency with the findings of a study by Arndt et al. (2020), who in examining the effects resulting from policy responses imposed by the South African government on income distribution and food security established that lockdowns and movement restrictions significantly lower or terminate the distribution of incomes. The study also shows a similar trend where individuals with minimal income levels are at a higher risk of food insecurity than in well-endowed households. Similarly, the results of this study show similarity with the findings of a study by Shupler et al. (2020) who investigated the effects that lockdowns imposed by the government after the outbreak of COVID 19 had on household food security and fuel use. The study revealed a reduction or cessation of income and most Kenyans having feelings of food insecurity.

4.8 Regression Analysis

Since correlation statistics show relationships which are significant but devoid multicollinearity, the study proceeds for further inferential analysis. Ordinary Least Square regression analysis has been adopted to analyse the effect of independent variables on dependent/explained variables. The study anchored on three objectives being; i) Effects of

Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure on Agro Food Product Volume, ii) Effects of Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure on Agro Food Product Prices and iii) Effects of Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure on Agro Food Product Access.

4.8.1 Effects of Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure on Agro Food Product Volume

The study's first objective was to determine the effect of Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure on Agro Food Product Volume.

Table 4.7: Model Summary for all the variables under review on agro food product volume

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.778[a]	.605	.600	.27004

a. Predictors: (Constant), Trans County Border Closure, Closure of Hotels, Restaurants and Social Places, Travel Ban Implementation, Curfew Implementation

Source: Research data, 2023

Table 4.7 presents Ordinary Least Squares (OLS) regression model summery. A modified R value of .778 indicates that the results were trending in the right direction (positively), based on the provided range of -1 to +1. There exist a 0.778 (77.8%) chance that the Covid-19 response policies will affect the agro food product volume in Kisumu County. The combined effect Travel Ban Implementation Curfew Implementation, Closure of Hotels, Restaurants and

Public Places and Trans-Country Border Closure on Agro food Product Volume available for consumers, accounts for 60.5%, leaving 39.5% to other factors not considered in this study. The value of R indicates how closely actual values of the dependent variable match those forecasted value of Agro Food Product Volume in Kisumu County.

Table 4.6: ANOVA for

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	32.510	4	8.127	111.454	.000[b]
	Residual	21.220	291	.073		
	Total	53.730	295			

a. Dependent Variable: Agro Food Product Volume

b. Predictors: (Constant), Trans County Border Closure, Closure of Hotels, Restaurants and Social Places, Travel Ban Implementation, Curfew Implementation

Source: Research data, 2023

Table 4.7 is a presentation of the analysis of variance (ANOVA), The F-statistic and significance level. From the table 4.7, F statistics of 111.454 is above 2 and significant at 95% confidence level where (P=0.000<0.05), this implies that Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure collectively have a significant effect on Agro Food Product Volume at 95% confidence level.

Table 4.7: Regression Coefficients of the variables

Table 4.8 shows the coefficients of the regression analysis in relation to Effects of Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure on Agro Food Product Volume.

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	8.938	.244		36.584	.000
	Travel Ban Implementation	-.116	.058	-.129	-1.984	.048
	Curfew Implementation	-.369	.075	-.358	-4.931	.000
	Closure of Hotels, Restaurants and Social Places	-.202	.069	-.183	-2.944	.004
	Trans County Border Closure	-.284	.069	-.208	-4.108	.000

a. Dependent Variable: Agro Food Product Volume

Source: Research data, 2023

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$

AFPV= 8.93 - 0.115**TBI** - 0.369**CI** - 0.202**CHRSP** - 0.284**TCBC** +0.244

Travel Ban Implementation (p=0.048), Curfew Implementation (p=0.000), Closure of Hotels, Restaurants and Public Places (p=0.004) and Trans-Country Border Closure (p=0.000) significantly affect Agro Food Product Volume.

A unit increase in Travel Ban Implementation causes a decrease in Agro Food Product Volume by 0.1159 units, a unit increase in Curfew Implementation causes a decrease in Agro Food Product Volume by 0.3693 units, a unit increase in Closure of Hotels, Restaurants and Public Places causes a decrease in Agro Food Product Volume by 0.202 units and finally a unit increase in Trans-Country Border Closure causes a decrease in Agro Food Product Volume by 0.2841units.

The established that travel ban implementation, curfew implementation, closure of hotels, restaurants and public places and trans-country border closure have a negative association with agro food product volume as revealed by the correlation analysis. The results of the correlation analysis were further validated by the results of regression analysis. This show consistency with the results of a study by (Arndt *et al*. 2020) who examined the effects resulting from policy responses imposed by the South African government on income distribution and food security.

The results reveal that lockdowns and movement restrictions significantly lower or terminate the distribution of incomes. Research shows the same thing: People with the lowest incomes face greater risk of food insecurity than rich families. This findings are consistent with those of Shupler et al. (2020) who investigated the impact of government-imposed lockdowns following the COVID 19 pandemic on household food security and fuel consumption. Research shows that most Kenyans face food insecurity due to reduced or stagnant incomes. The findings are consistent with those of Nechifor et al., (2021) and Laborde et al., (2020b) who realised that the virus has a negative impact food security.

4.8.2 Effects of Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure on Agro Food Product Prices.

The second objective of this study was to establish the effect of Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure on Agro Food Product Prices. Table 4.9 presents model summery. A modified R value of .682 indicates that the results were trending in the right direction. The value of R indicates how closely actual values of the dependent variable match those forecasted for it. The R2 value was 0.465. According to the findings, the dependent variable is responsible for 46.5% of the total variance. A high R2 implies that the model used to illustrate the link between the independent factors and the dependent variable is robust, while the remaining 53.5% suggests that additional variables are causing fluctuations in the dependent variable that are not accounted for in the current study.

Table 4.8: Model Summary for all the variables under review on agro food product prices

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.682[a]	.465	.457	.28227

a. Predictors: (Constant), Trans County Border Closure, Closure of Hotels, Restaurants and Social Places, Travel Ban Implementation, Curfew Implementation

Source: Research data, 2023

The F-statistic of 63.146 in table 4.10 is above 2 and significant at 95% confidence level (P=0.000<0.05), this is an indication that Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure collectively have a significant effect on Agro Food Product Volume at 95% confidence level. Given the ANOVA value which is statistically significant, the model is adequate.

Table 4.9: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.125	4	5.031	63.146	.000[b]
	Residual	23.185	291	.080		
	Total	43.310	295			

a. Dependent Variable: Agro Food Product Volume

b. Predictors: (Constant), Trans County Border Closure, Closure of Hotels, Restaurants and Social Places, Travel Ban Implementation, Curfew Implementation

Source: Research data, 2023

Table 4.10: Regression Coefficients of the variables

Table 4.11 shows the coefficients of the regression analysis in relation to Effects of Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure on Agro Food Product Prices.

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	8.338	.255		32.653	.000
	Travel Ban Implementation	.186	.061	.231	3.049	.003
	Curfew Implementation	-.415	.078	-.447	-5.297	.000
	Closure of Hotels, Restaurants and Social Places	-.241	.072	-.243	-3.355	.001
	Trans County Border Closure	-.335	.072	-.273	-4.638	.000

a. Dependent Variable: Agro Food Product Volume
Source: Research data, 2023

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$

AFPP= 8.33 + 0.186**TBI** - 0.414**CI** - 0.240**CHRSP** - 0.335**TCBC** +0.255

The significance values were; Travel Ban Implementation (p=0.003), Curfew Implementation (p=0.000), Closure of Hotels, Restaurants and Public Places (p=0.001) and Trans-Country Border Closure (p=0.000) significantly affect Agro Food Product Prices.

The results established that travel ban implementation, curfew implementation, closure of hotels, restaurants and public places and trans-country border closure have a negative association with agro food product prices as revealed by the correlation analysis. The results of the regression analysis also confirm the results of the correlation analysis. The results of the

study are consistent with Dietrich, Giuffrida, Martorano1, and Schmerzeck's (2021) who found that the decline in production was due to COVID-19 response policies. However, the findings are higher than the findings of the study (Cunha et al., 2019), who examined the short-term impact of COVID-19 policies on food prices, which may differ in terms of medium and long-term effects. The spread of food security found that food prices increased by 2 percent. The findings are also more significant than a study by (FAO, 2020c) which found that food production in Venezuela and Guyana increased by nearly 50% in late July 2020, while in Kenya it increased by only 2.6%.

4.8.3 Effects of Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure on Agro Food Product Access

The third objective was to determine the effect of Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure on Agro Food Product Access.

Table 4.11: Model Summary for all the variables under review on agro food product access

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.775[a]	.600	.595	.25351

a. Predictors: (Constant), Trans County Border Closure, Closure of Hotels, Restaurants and Social Places, Travel Ban Implementation, Curfew Implementation

Source: Research data, 2023

Table 4.12 provides a summary of the results of the Ordinary Least Squares (OLS) regression model. A modified R value of .775 indicates that the results were trending in the right direction based on the provided range of -1 to +1. The combined effect Travel Ban Implementation

Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure on Agro food Product Access available for consumers, accounts for 60.0%, leaving 40.0% to other factors not considered in this study The value of R indicates how closely actual values of the dependent variable match those forecasted value of Agro Food Product Access in Kisumu County.

Table 4.12: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.053	4	7.013	109.127	.000[b]
	Residual	18.701	291	.064		
	Total	46.754	295			

a. Dependent Variable: Agro Food Product Access

b. Predictors: (Constant), Trans County Border Closure, Closure of Hotels, Restaurants and Social Places, Travel Ban Implementation, Curfew Implementation

Source: Research data, 2023

The F-statistic of 109.127 in table 4.13 is above 2 and significant at 95% confidence level (P=0.000<0.05), this is an indication that Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure collectively have a significant effect on Agro Food Product Volume at 95% confidence level. Given the ANOVA value which is statistically significant, the model is adequate.

Table 4.13 Regression Coefficients of the variables

Table 4.14 shows the coefficients of the regression analysis in relation to Effects of Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure on Agro Food Product Access.

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	8.881	.229		38.725	.000
	Travel Ban Implementation	.128	.055	.153	2.333	.020
	Curfew Implementation	-.578	.070	-.600	-8.222	.000
	Closure of Hotels, Restaurants and Social Places	-.084	.064	-.082	-1.307	.192
	Trans County Border Closure	-.394	.065	-.309	-6.070	.000

a. Dependent Variable: Agro Food Product Access

Source: Research data, 2023

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$

AFPP= 8.88 + 0.128**TBI** - 0.578**CI** - 0.084**CHRSP** - 0.394**TCBC** +0.2293

A unit increase in Travel Ban Implementation causes an increase in Agro Food Product Access by 0.1279 units, a unit increase in Curfew Implementation causes a decrease in Agro Food Product Access by 0.5781units, a unit increase in Closure of Hotels, Restaurants and Public Places causes a decrease in Agro Food Product Access by 0.0841 units and finally a unit increase in Trans-Country Border Closure causes a decrease in Agro Food Product Access by 0.4141units.

The results established that curfew implementation, closure of hotels, restaurants and public places and trans-country border closure have a negative association with agro food product access as revealed by the correlation analysis results. This is consistent with the findings of Kansiime et al. (2021) who assessed the impact of COVID 19 on food security in Kenya and

Uganda. An online survey was used in the study, collecting a total of 442 participants. The findings show that both countries are down more than 67%. The results also show that food insecurity and malnutrition decreased in both countries during this period, while food insecurity increased by 38% in Uganda and 44% in Kenya. This finding was also confirmed by the findings of Shupler et al. (2020) investigated the impact of government-imposed lockdowns following the COVID 19 pandemic on household food security and fuel consumption. Research shows that most Kenyans face food insecurity due to reduced or stagnant incomes. The findings of this study are consistent with research from (Devereux et al., 2020) which found that food security is directly and indirectly affected by food shortages resulting from disease and the harm-inducing effects of quarantine. Family income and real access Time to food and other studies (Nechifor et al., 2021) have shown that the presence of coronavirus affect food security. There is required preparedness for handling pandemics in relation to their effect on socioeconomic activities. There is need to re-orientate strategic government deliveries to sector based operational outcomes.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This section provides a brief summary of the research findings based on the research objectives. It also provides the conclusion of the study and complements it by suggesting and recommending areas for further research.

5.2 Summary of Major Findings

The first objective sought to establish the extent of COVID 19 response policies' effect on volume agricultural food production in Kisumu County. The study hypothesis stated that 'There is no effect of COVID 19 response policies on volume agricultural food production in Kisumu County'. The study unearthed overwhelming evidence supporting the fact that COVID 19 response policies and volume of agricultural food production were strongly and negatively correlated. Correlation analysis of COVID 19 response policies and volume of agricultural food production revealed a significant association between each variable effectively proving that travel ban implementation, curfew implementation, closure of hotels, restaurants and social places and trans-country borders are significantly associated with agricultural food products volume.

The second objective sought to establish the extent of COVID 19 response policies' effect on agricultural food product prices in Kisumu County. The study hypothesis stated that 'There is no effect of COVID 19 response policies on agricultural food product prices in Kisumu County'. The study unearthed overwhelming evidence through data analysis supporting the fact that COVID 19 response policies and agricultural food product prices were strongly and negatively correlated. Correlation analysis of COVID 19 response policies and volume of

agricultural food product prices revealed a significant association between each variable effectively proving that travel ban implementation, curfew implementation, closure of hotels, restaurants and social places and trans-country borders are significantly associated with agricultural food product prices.

The third objective sought to establish the extent of COVID 19 response policies' effect on agricultural food product access in Kisumu County. The study hypothesis stated that 'There is no effect of COVID 19 response policies on agricultural food product access in Kisumu County'. The study unearthed overwhelming evidence supporting the fact that COVID 19 response policies and agricultural food product access were strongly and negatively correlated. Correlation analysis of COVID 19 response policies and volume of agricultural food product access revealed a significant association between each variable effectively proving that travel ban implementation, curfew implementation, closure of hotels, restaurants and social places and trans-country borders are significantly associated with agricultural food product access.

5.3 Conclusion

5.3.1 The extent of COVID 19 response policies' effect on volume agricultural food production in Kisumu County

The study attests that COVID 19 response policies will most certainly affect volume of agricultural food production. Thus, it is concluded that implementation and enforcement of Covid-19 Response policies adversely affected the food situation in Kisumu County. The combined effect of the factors of the factors considered under Covid-19 response policies significantly contributes to Agro food product volume in Kisumu County which requires further analysis to determine Kisumu County's Agro food product potential.

5.3.2 The impact of COVID 19 response policies on agro food prices in Kisumu County

The study attests that COVID 19 response policies will most certainly affect agro food product prices. The combined effect of the factors of the factors considered under Covid-19 response policies significantly contributes to Agro food product prices which implies that internal production of agro food product to respond to agro food demand is low.

5.3.3 The impact of COVID 19 response policies on agro food access in Kisumu County

The study attests that COVID 19 response policies will most certainly affect agro food product access. The combined effect of the factors of the factors considered under Covid-19 response policies significantly contributes to Agro food product access in Kisumu County which requires further analysis to determine Kisumu County's Agro food product potential.

5.4 Recommendations

5.4.1 The extent of COVID 19 response policies' effect on volume agricultural food production in Kisumu County

The study recommends operationalization of controlled and selected enforcement of Covid-19 and any other pandemic Response policies (Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure) to create food supply corridor. This will increase agro food product volume. Provision of cash grants to farmers to improve production techniques and adopt new technologies, procure inputs like-fertilizer for increasing agro food product volume.

5.4.2 The impact of COVID 19 response policies on agro food prices in Kisumu County

There is need for policies aimed at cushioning Agro Food Product prices. This will lower agro food product price. The government should develop mechanisms and support smallholder farmer to increase market demand and price of their products and retain their business.

5.4.3 The impact of COVID 19 response policies on agro food access in Kisumu County

Mitigating measures should be taken to prevent the entry of agricultural products. Relevant organizations should ensure access to production by offering alternative production methods to seasonal farmers and production.

The study recommends operationalization of controlled and selected enforcement of Covid-19 and any other pandemic Response policies (Travel Ban Implementation, Curfew Implementation, Closure of Hotels, Restaurants and Public Places and Trans-Country Border Closure) to create food supply corridor.

5.5 Suggestions for Further Studies

The quantity, price, and access to agricultural food are affected by many factors not included in this study. The COVID 19 response policy discussed in this study includes some factors affecting the quantity, price and access to agricultural products. More research should be conducted to determine other factors that affect the quantity, price, and availability of agricultural products. The study focuses on food consumers, food producers, food suppliers, food suppliers andk agricultural service providers. More research is needed in different countries to determine whether Covid19 response policies affect the quantity, price, and access to agricultural products in these countries. Further research can be conducted in different cities to determine how Covid19 response policies affect the availability, price and access of agricultural products in that city.

5.6 Limitations of the study

    i.   The study was done in Kisumu County hence may not really apply to other counties

    ii.   The study only focused on Covid-19 response policies as one of the factors influencing agro food product volume, prices and access, there are other factors that can influence agro food product volume, prices and access a part from Covid-19 response policies.

REFERENCES

Africa Green Revolution Forum (AGRF) (2016). Retrieved September 29, 2023, from https://ccafs.cgiar.org/events/africa-green-revolution-forum-agrf-2016

African Development Bank. (2016). *AfDB Annual Report 2016 | African Development Bank Group - Making a Difference*.

https://www.afdb.org/en/documents/document/afdb-annual-report-2016-95954

AGR. (2010). *Alliance for a Green Revolution in Africa*.

https://www.rockefellerfoundation.org/initiative/alliance-for-a-green-revolution-in-africa/

Amare, M., Abay, K. A., Tiberti, L., & Chamberlin, J. (2021). COVID-19 and food security: Panel data evidence from Nigeria. *Food Policy*, *101*, 102099. https://doi.org/10.1016/J.FOODPOL.2021.102099

Amewu, S., Asante, S., Pauw, K., & Thurlow, J. (2020). The Economic Costs of COVID-19 in Sub-Saharan Africa: Insights from a Simulation Exercise for Ghana. *The European Journal of Development Research*, *32*(5), 1353–1378. https://doi.org/10.1057/S41287-020-00332-6

Aosa. (1992)..*An Empirical Investigation of Aspects of Strategy Formulation and Implementation within Large Private Manufacturing Companies in Kenya. Unpublished PhD Thesis, University of Strathclyde, Glasgow. - References - Scientific Research Publishi*. https://www.scirp.org/(S(vtj3fa45qm1ean45 vvffcz55))/reference/referencespapers.aspx?referenceid=1121938

Badu, K., Thorn, J. P. R., Goonoo, N., Dukhi, N., Fagbamigbe, A. F., Kulohoma, B. W., Oyebola, K., Abdelsalam, S. I., Doorsamy, W., Awe, O., Sylverken, A. A., Egeru, A., & Gitaka, J. (2020). Africa's response to the COVID-19 pandemic: A review of the nature of the virus, impacts and implications for preparedness. *AAS Open Research*, *3*, 19. https://doi.org/10.12688/AASOPENRES.13060.1

Bwala, D. G., Otekunrin, O. A., Adebowale, O. O., Fasina, M. M., Odetokun, I. A., & Fasina, F. O. (2023). COVID-19 Pandemic Impacted Food Security and Caused Psychosocial Stress in Selected States of Nigeria. *International Journal of Environmental Research and Public Health*, *20*(5), 4016. https://doi.org/10.3390/IJERPH20054016/S1

Cunha, J. M., De Giorgi, G., & Jayachandran, S. (2019). The Price Effects of Cash Versus In-Kind Transfers. *Review of Economic Studies*, *86*(1), 240–281. https://doi.org/10.1093/RESTUD/RDY018

Dietrich, S., Giuffrida, V., Martorano, B., & Schmerzeck, G. (2022). COVID-19 policy responses, mobility, and food prices. *American Journal of Agricultural Economics*, *104*(2), 569–588. https://doi.org/10.1111/AJAE.12278

Erinle, K. O., Ogwu, M. C., Evivie, S. E., Zaheer, M. S., Ogunyemi, S. O., & Adeniran, S. O. (2021). Impacts of COVID-19 on agriculture and food security in developing countries: Potential mitigation strategies. *CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources*, *16*.

https://doi.org/10.1079/PAVSNNR202116016

Erokhin, V., & Gao, T. (2020). Impacts of COVID-19 on Trade and Economic Aspects of Food Security: Evidence from 45 Developing Countries. *International Journal of Environmental Research and Public Health 2020, Vol. 17, Page 5775*, *17*(16), 5775. https://doi.org/10.3390/IJERPH17165775

Fackler, M. (2001). *M.L. Fackler's research works*. https://www.researchgate.net/scientific-contributions/ML-Fackler-2083525007

FAO. (2011). *2011 | FAO | Food and Agriculture Organization of the United Nations*. https://www.fao.org/news/archive/news-by-date/2011/en/?page=4&ipp=10&tx_dynalist_pi1percent5Bparpercent5D=YToxOntzOjE6IkwiO3M6MTMiMCI7fQpercent3Dpercent3D

FAO. (2019). *MOVING FORWARD ON FOOD LOSS AND WASTE REDUCTION FOOD AND AGRICULTURE*. www.fao.org/publications

FAO. (2020). COVID-19: Channels of transmission to food and agriculture. *COVID-19: Channels of Transmission to Food and Agriculture*. https://doi.org/10.4060/CA8430EN

Feuerbacher, A., Mcdonald, S., & Thierfelder, K. E. (2020). *(PDF) Peasant Farmers and Pandemics: The Role of Seasonality and Labour-Leisure Trade-Off Decisions*. https://www.researchgate.net/publication/342657772_Peasant_Farmers_and_Pandemics_The_Role_of_Seasonality_and_Labour-Leisure_Trade-Off_Decisions

Fram. (2019). *Fram (2019) - IMDb*. https://www.imdb.com/title/tt11128188/

FSD. (2020). *2021 annual report - Financial Sector Deepening Kenya*. https://www.fsdkenya.org/annual-reports/2021-annual-report/

GAIN. (2021). *The Global Alliance for Improved Nutrition (GAIN)*. https://www.gainhealth.org/

GOK. (2010). *GOK (Government of Kenya) (2010) Agricultural Sector Development Strategy (ASDS) 2010-2020. Ministry of Agriculture, Nairobi. - References - Scientific Research Publishing*. https://www.scirp.org/(S(czeh2tfqyw2orz553k1w0r45))/reference/ReferencesPapers.aspx?ReferenceID=1808074

Hanjra, M. A., Ferede, T., Blackwell, J., Jackson, T. M., & Abbas, A. (2013). Global food security: facts, issues, interventions and public policy implications. *HELVETAS Swiss Intercooperation*. https://cgspace.cgiar.org/handle/10568/37212

Harvey, C. R. (1988). The real term structure and consumption growth. *Journal of Financial Economics*, *22*(2), 305–333. https://doi.org/10.1016/0304-405X(88)90073-6

Hax, & Majluf. (1991). *Week 3 - Strategic planning - Articles - Hax and Majluf (1991), A formal strategic planning process - Studeersnel*. https://www.studeersnel.nl/nl/document/universiteit-van-amsterdam/strategy-and-organisation/week-3-strategic-planning-articles/10373835

Henry, A. (2021). *Understanding strategic management*. 387.

IMF. (2023). Front Matter. *IMF Staff Country Reports*, *156*. https://doi.org/10.5089/9781513543284.002.A000

Kansiime, M. K., Tambo, J. A., Mugambi, I., Bundi, M., Kara, A., & Owuor, C. (2021). COVID-19 implications on household income and food security in Kenya and Uganda: Findings from a rapid assessment. *World Development*, *137*, 105199. https://doi.org/10.1016/J.WORLDDEV.2020.105199

Kunyanga, C. N., Byskov, M. F., Hyams, K., Mburu, S., Werikhe, G., & Bett, R. (2023). Influence of COVID-19 Pandemic on Food Market Prices and Food Supply in Urban Markets in Nairobi, Kenya. *Sustainability*, *15*(2), 1–20. https://ideas.repec.org/a/gam/jsusta/v15y2023i2p1304-d1031055.html

Laborde, D., Martin, W., Swinnen, J., & Vos, R. (2020). COVID-19 risks to global food security. *Science*, *369*(6503), 500–502. https://doi.org/10.1126/SCIENCE.ABC4765

Lynch, R. L. (2018). *Strategic management*. 676. https://www.researchgate.net/publication/325264184_Strategic_Management_8th_Edition_published_by_Pearson_Education

MAFF. (2020). *Supplementary Budget for COVID-19 Response*.

McKibbin, W., Fernando, R., McKibbin, W., & Fernando, R. (2021). The Global Macroeconomic Impacts of COVID-19: Seven Scenarios. *Asian Economic Papers*, *20*(2), 1–30. https://doi.org/10.1162/ASEP_A_00796

Miles, M. B., & Huberman, M. A. (1994). Qualitative Data Analysis. *Management and Marketing*, *12*(4), 591–613. https://doi.org/10.1515/MMCKS-2017-0035

Nafula, N., Kyalo, D., Munga, B., & Ngugi, R. (2020). *Bringing Rigour and Evidence to Economic Policy Making in Africa Poverty and Distributional Effects of COVID-19 on Households in Kenya.*

Nechifor, V., Ramos, M. P., Ferrari, E., Laichena, J., Kihiu, E., Omanyo, D., Musamali, R., & Kiriga, B. (2021). Food security and welfare changes under COVID-19 in Sub-Saharan Africa: Impacts and responses in Kenya. *Global Food Security*, *28*, 100514. https://doi.org/10.1016/J.GFS.2021.100514

NEWS, F. (2020). *Latest news from Farm Africa - 2020.* https://www.farmafrica.org/latest/news/yearposts/2020

O'Hara, S., & Toussaint, E. C. (2021). Food access in crisis: Food security and COVID-19. *Ecological Economics*, *180*. https://doi.org/10.1016/j.ecolecon.2020.106859

OECD. (2020). *OECD Economic Outlook, Volume 2020 Issue 1.* https://doi.org/10.1787/0D1D1E2E-EN

Olwande, J., Ngigi, M., & Nguyo, W. (2009). Supply Responsiveness Of Maize Farmers In Kenya: A Farm-Level Analysis. *2009 Conference, August 16-22, 2009, Beijing, China.* https://doi.org/10.22004/AG.ECON.50786

Prosekov, A. Y., & Ivanova, S. A. (2018). Food security: The challenge of the present. *Geoforum*, *91*, 73–77. https://doi.org/10.1016/J.GEOFORUM.2018.02.030

Quaife, M., Van Zandvoort, K., Gimma, A., Shah, K., McCreesh, N., Prem, K., Barasa, E., Mwanga, D., Kangwana, B., Pinchoff, J., Edmunds, W. J., Jarvis, C. I., & Austrian, K. (2020). The impact of COVID-19 control measures on social contacts and transmission in Kenyan informal settlements. *BMC Medicine*, *18*(1), 1–11. https://doi.org/10.1186/S12916-020-01779-4/FIGURES/5

Quisumbing, A. R., & Pandolfelli, L. (2009). Promising approaches to address the needs of poor female farmers: Resources, constraints, and interventions. *IFPRI Discussion Papers*. https://ideas.repec.org/p/fpr/ifprid/882.html

Ramos, M. P., Custodio, E., Jimenez, S., Causape, A. M., Boulanger, P., & Ferrari, E. (2020). Assessing market incentive policies in Kenya with a food security and nutrition perspective: a macro-microsimulation approach. *JRC Research Reports*. https://ideas.repec.org/p/ipt/iptwpa/jrc119390.html

Republic of Kenya. (2007). *Kenya Vision 2030 Economic, Social and Political Pillars. Nairobi The National Economic and Social Council of Kenya (NESC), Office of the President. - References - Scientific Research Publishing*. https://www.scirp.org/(S(lz5mqp453edsnp55rrgjct55.))/reference/referencespapers.aspx?referenceid=2867006

Rosegrant, M. W., & Cline, S. A. (2003). Global Food Security: Challenges and Policies. *Science*, *302*(5652), 1917–1919. https://doi.org/10.1126/SCIENCE.1092958

Schmidhuber, J., Pound, J., & Qiao, B. (2020). *Mitigating the Socio-Economic Impacts of COVID-19; Role of Governments in Sub-Saharan Africa, Fiscal and Monetary Policy Perspectives*. https://www.google.com/search?client=firefox-b-d&q=Schmidhuberpercent2C+Pound+and+Qiao+percent282020percent29percent2C

Sharifi, A., & Khavarian-Garmsir, A. R. (2020). The COVID-19 pandemic: Impacts on cities and major lessons for urban planning, design, and management. *Science of The Total Environment*, *749*, 142391.

https://doi.org/10.1016/J.SCITOTENV.2020.142391

Shupler, M., Mwitari, J., Gohole, A., Anderson de Cuevas, R., Puzzolo, E., Čukić, I., Nix, E., & Pope, D. (2021). COVID-19 impacts on household energy & food security in a Kenyan informal settlement: The need for integrated approaches to the SDGs. *Renewable and Sustainable Energy Reviews*, *144*, 111018. https://doi.org/10.1016/J.RSER.2021.111018

Steiss, A. W. (2019). Strategic Planning: Mission, Vision, Goals, and Objectives. *Strategic Management for Public and Nonprofit Organizations*, 60–83. https://doi.org/10.4324/9781482275865-4

Swinnen, J., & McDermott, J. (2020). Covid-19 and Global Food Security. *EuroChoices*, *19*(3), 26–33. https://doi.org/10.1111/1746-692X.12288

UNCTAD annual report 2020 / *UNCTAD*. (n.d.). Retrieved September 29, 2023, from https://unctad.org/annual-report-2020

UNHCR. (2020). *UNHCR Global Report 2020 - UNHCR Flagship Reports*. https://www.unhcr.org/flagship-reports/globalreport/

UNICEF. (2020). *UNICEF Annual Report 2020 / UNICEF*. https://www.unicef.org/reports/unicef-annual-report-2020

Van Ittersum, M. K., Van Bussel, L. G. J., Wolf, J., Grassini, P., Van Wart, J., Guilpart, N., Claessens, L., De Groot, H., Wiebe, K., Mason-D'Croz, D., Yang, H., Boogaard, H., Van Oort, P. A. J., Van Loon, M. P., Saito, K., Adimo, O., Adjei-Nsiah, S., Agali, A., Bala, A., … Cassman, K. G. (2016). Can sub-Saharan Africa feed itself? *Proceedings of the National Academy of Sciences of the United States of America*, *113*(52), 14964–14969. https://doi.org/10.1073/PNAS.1610359113

Varangis, P., & Bouri, X. (2022). *Panos VARANGIS | Principal Economist | World Bank, Washington, D.C. | Agricultural and Rural Development Department | Research profile*. https://www.researchgate.net/profile/Panos-Varangis

World Bank. (2020). *World Development Report 2020 Chapters and Data*. https://www.worldbank.org/en/publication/wdr2020/brief/world-development-report-2020-data

World Bank. (2022). *World Bank (2022)*. https://www.google.com/search?client=firefox-b-d&q=World+Bank+percent282022percent29percent2C

Yilmaz, H., & Njora, B. (2021). *Eurasian Journal of Agricultural Research » Submission » Analysis of The Impact of Agricultural Policies on Food Security in Kenya*. https://dergipark.org.tr/en/pub/ejar/issue/66343/959656

Appendix I: Questionnaire

The purpose of this survey is to study the effect of implementation of Covid-19 response policies on strategic government deliveries in the agriculture and food security sector in Kenya. The information obtained will be used for educational purposes only and treated with confidentiality. Please complete this survey objectively.

Instructions

Please check the appropriate box and fill in the space provided for questions that require detailed answers. If you need more space for answers, consider using the back pages.

Section A: General Information

i) Name of Respondent (Optional)...

ii) Kindly indicate your gender: 1. Male   2. Female

iii) Length of service

    1. 1-5 years   2. 6-10 years

    3. 11-15 years   4. More than 15 years

iv) Which group are you in?

    1. Food producers

    2. Agricultural service providers

    3. Food processors

    4. Food Distributors

    5. Food Consumer

  v) What is your level of education?

    1. No formal education   2. Primary education

    3. Secondary education   4. Technical level

    5. Undergraduate and above   6. Others (Specify)……………………

1. Transforming key agricultural institutions.

Kindly indicate whether you agree/disagree with the following statement on transforming key agricultural institutions during Covid-19. 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

No.	Statement	1	2	3	4	5
1	Efficient determination of food surplus and food deficit areas					
2	Access to adequate quantities of food supply					
3	Maintaining high nutritional value of the available food					
4	Guaranteed revolving funding from previous harvests					
5	Access to sustainable productive resources					
6	Agricultural extension information system					
7	Frequency of famine phenomenon in the country					
8	Balance between Agriculture as the mainstay of the Kenyan economy and the frequency of famine.					
9	State preparedness to pandemics, epidemics and natural uncertainties					
10	Sectoral (70percent to 75percent smallholder farmers) contribution to Agro-economic portion of the GDP					
11	Gender parity in the Agro sector participation (40percent SH farms are managed by women)					
12	Disparities in opportunities and incomes between rural agricultural pricing urban agricultural pricing					
13	Environmental degradation and rising poverty					

2. Increasing crop and livestock production (Total agricultural output)

Kindly indicate whether you agree/disagree with the following statement on increasing crop and livestock production during Covid-19. 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

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Issues considered are *Total Agricultural output of food crops*

No.	Statement	1	2	3	4	5
1	Pandemic effect on total food production					
2	Pandemic effect on food security					
3	Increase in land under food crop production					
4	Range of food crops produced					
5	Access to Farm inputs for food production					
6	Distribution of Farm food products to needy consumers					
7	Market location for Farm food products					
8	Efficient Infrastructural networks and linkage					
9	Availability and use of quality farm inputs					
10	Producer farmers' incentives to sustain consistent production					
11	Access to adequate quantities of food supply					
12	Explore ways to maintain transport links					
13	Ensuring that support measures are provided to farmers					

3. Marketing Networks (Food value chain)

Kindly indicate whether you agree/disagree with the following statement on marketing networks during Covid-19. 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

Issues considered are *Total Agricultural output exchange*

No.	Statement	1	2	3	4	5
1	Building strategic reserves in major food commodities					
2	Coordinating proper food distribution systems					
3	Allowing importation of food products from other countries					
4	Food pricing variation due to risk factors in food transportation					
5	Creation of artificial food shortages					
6	Bottlenecks in farm labour on food production harvesting & distribution.					
7	Food processing for quality & value addition					
8	Food transportation and logistics Co-operate with private stakeholders					
9	Shift in food demand conditions					
10	Food access safety enhancement					
11	Food surplus management strategy					
12	Food deficit management schemes					
13	Food stocks to demand balance management					
14	Alternative food products substitutes to ease demand on traditional staple foods					
15	Food products mapping and logistics switching					
16	Diversifying food delivery modes especially personalized Restaurant deliveries					
17	Diversified/multiple sources of food supply from local and external sources					
18	Food product preservation and food quality (were food qualities a priority; checking of contamination, storage & expiration)					

Independent Variables

1. Travel ban compliance

Kindly indicate whether you agree/disagree with the following statement on travel ban compliance during Covid-19. 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

No.	Statement	1	2	3	4	5
1.	Travel advisory against non-essential travel and all travel					
2.	Health screening at all international airports					
3.	Restriction prohibiting entries					
4.	Expansion of contact tracing to all travelers					
5.	Most international flights are restricted to arriving at key airports.					
6.	All international travelers requested to self-isolate for 14 days.					

2. Curfews enforcement

Kindly indicate whether you agree/disagree with the following statements concerning curfew enforcement. 1= Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree.

No.	Statement	1	2	3	4	5
1.	Reduction in incidence of covid-19 post-curfew enforcement					
2.	Curfew enforcement is associated with a reduction in transmission					
3.	Reductions in covid-19 related mortality post-curfew enforcement					

3. Closure of Hotels, Bars & Restaurants

Indicate the extent to which you think the closure of hotels, bars, restaurants and social places led to the following; 1= Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

No.	Statement	1	2	3	4	5
1.	Guest cancellations/postponements					
2.	Supply chain disruptions					
3.	Limited availability of labor					
4.	Lower consumer spending					
5.	Uncertainty on the COVID pandemic					
6.	Economic uncertainty					
7.	Long-term impact on the economy					

4. Closure of Trans country Borders

The following statements relate to the closure of Trans country borders during the COVID-19 pandemic. Indicate whether you agree/disagree on their possible association with strategic government deliveries.1= Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

No.	Statement	1	2	3	4	5
1.	Put in place a more systematic approach for managing border closures and openings					
2.	Enhance measures to test transport personnel along the border points.					
3.	Need for harmonization of regulations and procedures at the regional level on COVID-19 protocols.					
4.	Need for regional and international cooperation. Promote and enhance access to the COVID-19 vaccine to reach all people in a timely manner.					
5.	Measures such as the RECDTS should be fully implemented across all regional borders					

Appendix II: Map of Kisumu County