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GLANCING INDIA'S AGRICULTURAL EXPORT CONTRIBUTION DURING THE PANDEMIC PERIOD

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Abstract

The study objective was to make a comparative analysis of India's agricultural export during and before the pandemic period. Further to identify a forecasting model to determine India's agricultural export during the pandemic period and regular period. For the study, the analytical research design was adopted. The data was collected from APEDA (The Agricultural and Processed Food Products Export Development Authority) between the time frame of July 2019 – November 2020. Herein July 2019 -February 2020 is considered Pre-Pandemic Period and March 2020 – November 2020 is considered Pandemic Period. From the analysis performed, it is well perceived that there is a significant difference in agricultural export in terms of Quantity and Price Duringthe Pandemic Period and Pre-Pandemic Period. The calculated mean value of agricultural export in terms of quantity at the time of Pre-Pandemic period was 1372085.938 M.T., similarly, agricultural export in terms of quantity during the pandemic was 2121491.429 M.T. This indicates, India has exported high quantity of agricultural products during pandemic time than Pre-Pandemic time. Also, the calculated mean value of agricultural export in terms of price at the time of Pre-Pandemic period was 9198.932 CroreRs., similarly agricultural export in terms of price during the pandemic was 11158.029 CroreRs. This indicates India has exported agricultural products at a high price during pandemic time than Pre-Pandemic time. The forecasting equation governing the agricultural export during regular time: Agriculture Export in Rs (Crore) = -179446.944 + [168.664× Agriculture Export in QT (MT)]. Similarly, the forecasting equation governing the agricultural export during the pandemic time: Agriculture Export in Rs (Crore) = -364313.438 + [222.782× Agriculture Export in QT (MT)]

Keywords: India's international trade, India's Export, Agricultural Export,

Introduction

Locking up during COVID-19 has significantly affected economic activity and supply chains. Millions of people worldwide are infected with COVID-19 and the death toll is rising rapidly. Locking measures are expected to flatten the infection curve soon, and essential economic measures and services will be reintroduced. In India, the mortality rate is, fortunately, not so rapid due to timely government intervention, but the impact of COVID-19 coincides with the recession. Locking is expected to slow economic growth by about 10% or more. This could have an impact on demand for agricultural products, the displacement of labour and the disruption of supply chains. These developments will have an impact on the government's social security net programs. This article discusses some of the implications of locking up within agriculture. The implications of the recession in agriculture are also discussed in detail in subsequent sections.

The current crisis surrounding the COVID-19 pandemic has impacted much of the world's economic activities. In the absence of any vaccine, several nations, including India, have opted for a general lockdown to keep the epidemic from spreading more rapidly. In India, the immediate effects of this lockout on the agricultural front have been noted in the form of interruptions in the processing and marketing activities of crops and commodities. However, contrary to initial forecasts, the lockout has not significantly disrupted harvesting activities. The harvesting operations were conducted more or less smoothly, though delayed by almost two weeks.In almost all areas, the reverse migration of workers and collaboration between farmers and their families allowed them to complete the harvest. Furthermore, there was no significant reduction in yields which resulted in the output of Rabi crops being good.

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In the lack of prompt and sufficient government assistance, the outcome wouldn't have been the same. The government has taken many steps to ensure smooth agricultural operations during the lockout, both at the central and state levels. The sector was helped by easing barriers in agriculture and procurement and supply chain activities by granting exemptions from the lockdown.Postponement, as well as the extension of the procurement window for Rabi crops by the state governments, permitting direct purchase by large buyers/processors/retailers from farmers/ farmer producer organizations (FPOs) etc., have turned out to be a few of the initiatives that have helped the agricultural sector to a great extent. Despite the efforts from the government on several fronts, marketing of farm produce has remained as one of the major challenges on account of lesser number of buyers in the market and transport bottlenecks arising from prevailing market uncertainties and misinformation. To overcome the challenges of marketing of farm produce, all the functions.

A pandemic is not a new event encountered in the history of humanity because mankind hasfaced various pandemics in history. The common point of pandemics is their serious negative effects on the global economy. Considering the food supply chain, one of the most important sectors of the economy, it has been seen that COVID-19 has an impact on the whole process from the field to the consumer. In light of recent challenges in the food supply chain, there is now considerable concern about food production, processing, distribution, and demand. COVID-19 resulted in the movement restrictions of workers, changes in demand of consumers, closure of food production facilities, restricted food trade policies, and financial pressures in the food supply chain.

Since mankind has experienced numerous pandemics in history, a pandemic is not a new occurrence witnessed in the history of humanity. The severe negative consequences of pandemics on the world economy are a common problem. Considering the food supply chain, one of the most critical industries of the economy, COVID-19 has been seen to affect the whole process, from the business to the consumer. Given the recent difficulties in the food supply chain, the substantial concern is now being raised regarding the production, manufacturing, delivery and demand of food.COVID-19 led to limitations on the mobility of workers, shifts in market demand, the closing of food processing facilities, limited food trading policies and financial strains in the food supply chain. Therefore, the transportation of workers and agri-food goods should be encouraged by governments. Also, financial assistance can be provided to small farmers or poor citizens. Facilities can change working standards and preserve staff health and safety by modifying safety controls. To prevent a rise in food costs, food protectionist measures should be resisted.

Review of Literature

Union Budget 2020-21 And Controversy Of Covid-19 Circumstances

On 1 February 2020, the Union Budget for FY 2020-21 was revealed at COVID-19 to herald a decade of progress and development. Its emphasis on governance and the financial sector to improve the ease of living are the main themes of this budget. The budget envisages institutional changes, the digital transition and sustainable development, proceeding with the aspiration to achieve full governance with a minimum government.

There was no mention in the budget of Sitharaman to understand the academician, such as standard deduction and TDS threshold. As PiyushGoyal had vowed to raise these limits in his February interim budget, it came as a dampener for the salaried taxpayer. If there was one aspect that brought no end to investors, it was Jaitley's equity LTCG levy. In some quarters, there were expectations that the budget of Sitharaman would do something to fix the issue. Yeah, they didn't. To the rich, the budget for Sitharaman was a significant blow. The finance minister shunned the wealth tax, but increased the surcharge for the affluent, recommending that the surcharge be increased.With neighbours with high levels of corporation tax and sales tax, the government is gradually finding the economy uncompetitive. Expect the loss of more Indians on the low-tax ground. Sitharaman proposed to increase Special Additional Excise Duty and Road and Infrastructure Cess each by one rupee per

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litre on petrol and diesel in a blow to owners of vehicles and bikes. Sitharaman said the government wants the Reserve Bank of India to earn a higher dividend payment, putting a controversial issue back into view. The 2020-21 budget was then revealed during COVID-19, without understanding the causes and consequences of COVID-19.As these are controversies to the budget, the announcements have mainly influenced the situation towards the general public(Tetteh Anang, 2015).

These initiatives also resulted in the closing of offices and educational facilities and immediate limits on transport and social gatherings. Nowadays, remote working from home and video meetings have become common activities. People who work in the food industry, however, do not have a homework option, so they need to continue their normal office routines(Nicola, 2020).

Response strategies for food staff were created as a result of the COVID-19 crisis to provide advice on the continuation of activities in food processing facilities and coronavirus control in the food industry. The essential infrastructure in food and agriculture can be described as the meat and poultry processing industries in particular. The programme contains a hierarchy of control criteria for the washing, ventilation, disinfection of buildings, screening and supervision of COVID-19 employees, the care of sick workers and the prevention of the dissemination of coronavirus preparation programmes for workers and supervisors.

Any business in the world expects to see how the automotive industry will be affected by the COVID-19 epidemic, and the food industry is no different from other industries. Nevertheless, the distinction between the food industry and other sectors is the production of goods that are important to everyday life. All understand that a certain percentage of workers who work in these factories can starve if one plant closes, but both persons are at risk if processors and distributors are contaminated. Moreover, about the economy, the food industry is a very important field.However, relative to other industries that are not vital for everyday life, such as tourism and aviation after a pandemic, the food industry faces multiple sets of difficulties(Shahbaz, 2020).

Preserving the welfare of the employee and having enough staff instead of those who do not choose to work because of illness or fear of coronavirus is a big concern shared by all food corporations. During this moment of crisis, it is very important to protect and preserve the health of those employed in the food supply chain. However, to satisfy customer needs, it is also important to keep the delivery chain alive by supply management strategies. With the contribution of all parties, the management of the distribution of food and services across the supply chain should be assured. Ensuring customer trust is also important for the safety and quality of food.At this moment of crisis, food sustainability is related to the proximity of customers to food rather than access to food.(De Sousa Jabbour, 2020).

Effects Of Pandemic On Food Supply Chain

India's growing tariff walls and lack of penetration into global supply chains are possibly the reason why India's share of global merchandise exports since 2011 has remained relatively static in a range of 1.6-1.7 percent. This slowdown has arisen at a time when China's share of merchandise exports has declined dramatically in recent years, with other Asian countries covering the void. (Morawska, 2020).

The productivity of the manufacturing and logistics industries is very interdependent. What is there to transport if industrial production is halted? The reasons for this are that adding the new lockout has put curbs on each of the above segments - definitely not a positive sign for India's still weakening economy. "The Indian logistics sector has had its own set of peculiar problems for a long time, which, thanks to Covid 19, will be further amplified," Singh says. Harpreet Singh, the partner at KPMG, says that Indian logistics is essentially an unorganised market, sheds light on these “special” problems.As most industry players do not have any contingency, recovery plan or sporadic operating plan, the industry is therefore seriously affected, says Singh, adding logistics in India is primarily driven by a conventional trucking, loading & unloading and material handling approach. "Technological advancement is also incomplete in this market. Therefore, the lack of modernised

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tools and equipment to clean goods/supplies before shipping will further contribute to the problems(Mohan, 2020).

The food supply chain, including agricultural production, post-harvest handling, manufacturing, distribution/retail/service, and consumption, can be divided into five phases. In the food supply chain, two mechanisms are used with respect to food consistency and protection. The first of these is Centered on legislation and rules that use binding requirements reviewed by state departments. The second is focused on informal principles established by the rules of the industry or international organisations.Protection steps to maintain the continuity of food flow at each point can be grouped as health challenges for food workers, personal hygiene, the use of personal protective equipment such as helmets and gloves, surface and working area sanitization, safe food handling/preparation/delivery, and social distance management. Protective steps are important towards the last stages of the food supply chain when more consumers will be negatively harmed as they head into the last stages of the supply chain.(Rizou, 2020).

The majority of agricultural operations rely on the season and temperature, and thus the activities need to be flexibly tailored to a fine-tuned timetable so that appropriate action can be taken when appropriate. Since all processes and stages are closely linked to each other in a supply chain, a small delay or malfunction will induce a butterfly effect resulting in a significant loss in yield and performance. There are several reports that farmers have been compelled by the restrictions to kill their crops by burning or leaving them to spoil. Because of the interrupted supply chain, Dairy Farmers in America Co-operative considers that 14 million litres of milk are spilt every day.In England, the Chair of Milk Farmers announced that in one week, approximately 5 million litres of milk will be at risk. It was also recorded that tea plants were being lost due to India's logistical difficulties. Maintaining logistical productivity is, thus, a key factor for the food industry, especially in a global crisis. Obtaining raw materials from manufacturers and maintaining the continuity of the product distribution from farmers to end-users are the key challenges in the food supply chain.The challenges are jeopardising farmers' ability to continue their business as normal and can have detrimental effects on food quality, freshness and food safety, as well as hindering consumer access and affordability. They must make every attempt to shift the gears of the food supply chains as countries deal with the pandemic. The effect on agricultural systems of pandemic problems depends primarily on the severity and composition of agricultural inputs and varies depending on the commodity produced and the country in question.The supply chain can also be maintained with a clear emphasis on the fundamentals of logistical problems(Fitton, 2019).

There are many varied items in the food field, including beef, fruit, vegetables, dairy, ready-to-eat foods, and other edible products. However, with capital spending and labour, the food and agriculture chain can be narrowly divided into two groups. Staple products, such as wheat, rice, maize, soybeans, and oilseeds, can be classified as the first. The Second One

One requires products of high importance, such as fruits, vegetables and fisheries. A significant amount of capital investment is needed for staple goods. There is a negative impact of restrictions between cities, provinces, regions, and countries on the distribution of staple products.A great deal of labour is required to obtain high-value goods, unlike staple products. Nevertheless, the time-sensitive nature of agricultural practises and the need for greater productivity over time could contribute to agricultural change, which can be defined as technical innovation and labour force up-skilling(Jeon, 2011).

Effects Of Pandemic On Consumer Behaviour

When analysing the question of how the COVID-19 pandemic affects the food demand of consumers, it is shown that demand varies according to food price, consumer income level,

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sociodemographic condition, use, shopping habits and time constraints. Furthermore, the number of grocery store trips and spending money on food each visit has changed.(Bakalis, 2020).

The COVID-19 epidemic disrupted the everyday routine and contributed to boredom, which can be characterised by the ingestion of large levels of fat, carbohydrates, and proteins as a high energy intake. Furthermore, quarantine induced tension in individuals and forced them to feel good about sugar foods, as carbohydrate-rich foods can be used as self-medicating components due to their potential to stimulate the development of serotonin. These unhealthy eating patterns, however, may lead to the growth of obesity-associated with chronic inflammation and severe complications of COVID-19(Muscogiuri, 2020).

The closing of restaurants and small dining areas changed the patterns of eating/purchasing and contributed to an unusual change in demand from food service to retail. Reports found that buying food from supermarkets and using food facilities had the same ratio as 50 percent before the outbreak; for supermarkets, though, it is almost 100 percent. Although spending money on food was increased each visit, the number of trips to food stores was limited. During the COVID-19 lockdown, customers experienced decreased supply of some types of foods. In European countries, due to the curiosity in home-baking as a household, flour, which is a staple commodity, gained more attention and is not seen on food shelves activity. Interestingly, on the store shelf, bread and baked goods maintained their place. Owing to comfort and everyday cooking at home, customers have concentrated on items with long shelf life, such as dry or processed meat, noodles, milk or milk substitutes, and frozen foods. Due to the switch to home baking and following theories or obtaining fake evidence, people stored these foods at home. As a consequence of social isolation and closing of restaurants, customers favoured takeaway and home delivery choices. It was also interesting to notice that the lack of eggs was due not only to increased demand but also to the absence of retail packaging.In Argentina, household egg use has increased by 40 percent since March 20, and egg prices have increased by 44 percent compared with last year in the USA. Due to the inadequate supply of adequately labelled retail containers to satisfy the demand and promote the delivery of eggs during the COVID-19 pandemic, the U.S. Food and Drug Administration offered flexibility relating to the packaging and labelling of eggs(Beghin, 2014).

Effects Of The Pandemic On Global Food Trade

While the current circumstances appear unprecedented, even before the COVID-19 crisis, food supplies were vulnerable to climate-related and disease-related issues. Food processes have historically been unpredictable because of multiple events and shocks, such as
The oil crises of the 1970s, the outbreaks of SARS and Ebola, and the food crisis of 2006–2008. Only a year ago, Africa's Swine Fever outbreak upset the world commodity markets and became a progressive epidemic in Eastern Europe and Asia. At the end of 2019, the world's biggest pig manufacturer (1/3 of the global market) and largest exporter, China, had lost 37 percent of its pigs.Ebola has had a large negative effect on several African countries' agriculture production, marketing, and trade economies. On the supply side, farmers had limited access to supplies such as seeds, fertilisers, and pesticides because of road restrictions, and most regions faced labour shortages. More than 40 percent of the farmland has not been cultivated for this purpose. However, development was not severely impacted by the pandemic since farming fields were mostly situated in geographic areas far from population densities(Aldaco, 2020).

The new COVID-19 crisis has modified several governments' food trading policies, shifting toward limiting exports and encouraging imports. Ensuring the preservation of the number of goods in the domestic market is the key reason why countries implement export restrictions. Although this outcome is usually produced by an export limitation in the short term, it still has some negative consequences. Second, export controls are forcing domestic prices to slump, which would financially affect producers, leading to a decline in crop production and decreased incentives for the industry.

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Second, by losing their position in world markets, countries would lose their economic edge.Third, export controls weaken the credibility of exporters and allow importers to decrease trust in the global economy, thus decreasing interest in foreign trade and removing potential business prospects for exporters.(Bowler, 2020).

Objective

The study aimed to make a comparative analysis of India's agricultural export during and before the pandemic period. Further to identify a forecasting model to determine India's agricultural export during the pandemic period and regular period.

Methodology

For the study analytical research design was adopted. The data was collected from APEDA (The Agricultural and Processed Food Products Export Development Authority) between the time frame of July 2019 – November 2020. Herein July 2019 -February 2020 is considered Pre-Pandemic Period and March 2020 – November 2020 is considered Pandemic Period.

Analysis and Interpretation

Herein paired sample analysis was carried to identify whether there is a significant difference in agricultural export in terms of Quantity and its equivalent price.

Table No. 1 – Paired Sample Test: Agricultural export

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Pandemic : Agriculture Export in QT (MT) - During Pandemic : Agriculture Export in QT (MT)	-749405.491	441700.497	147233.499	-1088926.549	-409884.433	-5.090	8	0.001
Pair 2	Pre-Pandemc: Agriculture Export	-1959.097	1687.352	562.451	-3256.110	-662.083	-3.483	8	0.008

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	in Rs (Crore) - During Pandemic : Agriculture Export in Rs (Crore)								

Source: (APEDA, 2020)

The estimated significance value is less than 0.05 [Std. Value], meaning the null hypothesis rejected. Therefore, there is a significant difference in agricultural export in terms of Quantity and Price Duringthe Pandemic Period and Pre-Pandemic Period.

Table No. 2 – Descriptive Statistics: Agricultural export

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Pandemic: Agriculture Export in QT (MT)	1372085.938	9	235673.297	78557.766
	During Pandemic: Agriculture Export in QT (MT)	2121491.429	9	364264.437	121421.479
Pair 2	Pre-Pandemic: Agriculture Export in Rs (Crore)	9198.932	9	1230.157	410.052
	During Pandemic: Agriculture Export in Rs (Crore)	11158.029	9	1552.494	517.498

Source: (APEDA, 2020)

The calculated mean value of agricultural export in terms of quantity at the time of Pre-Pandemic time was 1372085.938 M.T., similarly, agricultural export in terms of quantity during the pandemic was 2121491.429 M.T. This indicates, India has exported high quantity of agricultural products during pandemic time than Pre-Pandemic time.

The calculated mean value of agricultural export in terms of price at the time of Pre-Pandemic time was 9198.932 CroreRs., similarly agricultural export in terms of price during the pandemic was 11158.029 CroreRs. This indicates India has exported agricultural products at a high price during pandemic time than Pre-Pandemic time.

Table No. 3 – Regression –Agricultural export: Pre-Pandemic Period

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.880[a]	0.775	0.743	119486.653
a. Predictors: (Constant), Pre-Pandemic: Agriculture Export in Rs (Crore)				

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	344395802317.057	1.000	344395802317.057	24.122	.002[b]
	Residual	99939421748.119	7.000	14277060249.731		
	Total	444335224065.176	8.000			
a. Dependent Variable: Pre-Pandemic: Agriculture Export in QT (MT)						
b. Predictors: (Constant), Pre-Pandemic: Agriculture Export in Rs (Crore)						

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Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-179446.944	318402.247		-0.564	0.591
	Pre-Pandemic: Agriculture Export in Rs (Crore)	168.664	34.341	0.880	4.911	0.002
a. Dependent Variable: Pre-Pandemic: Agriculture Export in QT (MT)						

Source: (APEDA, 2020)

The estimated R square value is 0.775 [Greater than 0.6 Std. Value], meaning the equation has significant forecasting power. Also, the ANOVA significance value is less than 0.05, meaning the model is fit. The calculated coefficient significance value is less than 0.05, hereby the coefficient can be considered.

Therefore, the regression equation governing the agricultural export during regular time:

Agriculture Export in Rs (Crore) = -179446.944 + [168.664× Agriculture Export in QT (MT)]

Table No. 3 – Regression – Agricultural export: During the Pandemic Period

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.949[a]	0.902	0.887	122191.291
a. Predictors: (Constant), During Pandemic: Agriculture Export in Rs (Crore)				

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	956993660025.194	1.000	956993660025.194	64.096	.000[b]
	Residual	104514981061.204	7.000	14930711580.172		
	Total	1061508641086.400	8.000			
a. Dependent Variable: During Pandemic: Agriculture Export in QT (MT)						
b. Predictors: (Constant), During Pandemic: Agriculture Export in Rs (Crore)						

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-364313.438	313153.780		-1.163	0.283
	During Pandemic: Agriculture Export in Rs (Crore)	222.782	27.827	0.949	8.006	0.000
a. Dependent Variable: During Pandemic: Agriculture Export in QT (MT)						

Source: (APEDA, 2020)

The estimated R square value is 0.902 [Greater than 0.6 Std. Value], meaning the equation has significant forecasting power. Also, the ANOVA significance value is less than 0.05, meaning the model is fit. The calculated coefficient significance value is less than 0.05, hereby the coefficient can be considered.

Therefore, the regression equation governing agricultural export during the pandemic time:

Agriculture Export in Rs (Crore) = -364313.438 + [222.782× Agriculture Export in QT (MT)]

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Findings and Conclusion

From the analysis performed, it is well perceived that there is a significant difference in agricultural export in terms of Quantity and Price Duringthe Pandemic Period and Pre-Pandemic Period. The calculated mean value of agricultural export in terms of quantity at the time of Pre-Pandemic period was 1372085.938 M.T., similarly, agricultural export in terms of quantity during the pandemic was 2121491.429 M.T. This indicates, India has exported high quantity of agricultural products during pandemic time than Pre-Pandemic time. Also, the calculated mean value of agricultural export in terms of price at the time of Pre-Pandemic period was 9198.932 CroreRs., similarly agricultural export in terms of price during the pandemic was 11158.029 CroreRs. This indicates India has exported agricultural products at a high price during pandemic time than Pre-Pandemic time. The forecasting equation governing the agricultural export during regular time:Agriculture Export in Rs (Crore) = -179446.944 + [168.664× Agriculture Export in QT (MT)]. Similarly, the forecasting equation governing the agricultural export during the pandemic time: Agriculture Export in Rs (Crore) = -364313.438 + [222.782× Agriculture Export in QT (MT)]

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