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Impact of COVID-19 on Indian Agricultural Exports

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Abstract

The present study discusses the impact of COVID-19 on Indian Agriculture exports and its consequent effect on the global food supply disruptions. Considering the monthly data points from July 2010 (Pre-COVID 19) to June 2021 (During COVID 19), the proposed descriptive study is entitled to employ the Philips-Perron test to check the stationary property of the data which is followed by Regression analysis to measure the impact of pandemic (COVID 19) and other explanatory variables; producer price, consumer price index, real effective exchange rate and real interest rate on the agricultural exports of India. However, the EGARCH model has also been employed by the authors to substantiate the effect of the former on the latter. The empirical findings of the Regression model with dummy reveal that there is no significant impact has been seen of Covid-19 on the agricultural exports of India whereas the EGARCH model confirms the presence of a significant impact of the former on the latter. The results of the present study are of immense use to Agri-Exporters, global food suppliers, and government policymakers. Also, the application of research findings in policymaking can ensure increased Agri-export earnings as well as worldwide food security.

Keywords: *COVID-19, Indian Agri-Exports, EGARCH Model, Government of India, CPI.*

Introduction

Witnessing of COVID-19 outbreak has prolonged unprecedented effects across all the dimensions of human life. This long-worthy arena has still unfolded scenarios for economic and social activities around the world. Causing overstretched death toll due to the failure of the health system has provoked to contain the virus through restrictive measures which have resulted in a deep global recession. Introducing poverty, this pandemic has also devastatingly impacted the chronic food

security and supply deficiency throughout the world agriculture markets. Controlling measures for the containment of such breakthroughs have influenced agriculture supply chain activities including processing, production, logistics, and exporting (FAO, 2021). The stringency of border control policies has led to a shortfall in international agriculture trade which may further disintegrate the global food system (Chen and Mao, 2020). However, WHO and FAO have confirmed the non-existence of evidence in support of virus transmission due to food products and promoted the free agriculture trade between the nations (Chen and Mao, 2020). Thus, despite such shocking disruptions in the food chain, the worldwide agriculture market remained open with smooth trade flow inclusively to maintain resiliency in the agriculture exports market (FAO, 2021). Absorbing this pattern, Indian exports were also propelled not to disrupt the global food supply chain during the current pandemic period. Even, India has seen a sharp incline of 23.24 percent in global agricultural exports from March 2020 to June 2020 against the same period of last year, which reflects a commendable performance of Indian agriculture exports even though in tough times (DD News, 2020). However, this needs to be studied in-depth considering the strained logistic system as a key factor that may have influenced the agricultural exports of India since transportation disruptions have made Agri-foods delivery difficult. Henceforth, the present study discusses the impact of COVID-19 on Indian Agriculture exports and how much does it affect global supply disruptions. To measure the effectiveness of COVID 19 on India's agriculture exports, the authors are entitled to probe the period of July 2010 (Pre-COVID 19) to June 2021 (During COVID 19), which has been marked as a growth decade for Indian agriculture exports sector.

Indian Agriculture Exports – At a glance since COVID 19 Outbreak

During first wave

The profound effect of the COVID-19 pandemic has led to the global economy is fragile since its outbreak in February and March 2020. China-Wuhan, being the origin country was the first to restrict the people and trade movement on 23 January 2020 throughout several cities that later, the rest of the world had followed around the end of March or at beginning of April 2020 (Hale et al., 2020). The first arrival of this virus infringed the production and supply of goods and services due to strict lockdown imposition across all the economies. Other containing measures such as restricted business activities, travel restrictions, confinements, and curfews by the government all over the world had also disrupted the food supply chain of the global economy (Laborde et al., 2020; FAO 2021). Imposing the lockdown restriction in March 2020, Indian exports were also dipped down in April 2020. However, the Indian government had exempted agriculture and allied activities from COVID-19 restrictions but somehow disruptions were noticed at the beginning of the lockdown due to the temporary closures of trading ports, warehouses, trading facilities, and closures of retail units (FAO, 2021). Though, despite such trading obstacles, Indian agricultural export was witnessing a boom from April to September 2020. This period was observing a sharp jump in exports of all essential agricultural commodities in comparison to same period of the last fiscal year (The Economic Times, October 2020). Thus, a positive response to agricultural exports has been marked in the first wave of COVID-19.

During Second Wave

Perhaps, the first wave of COVID 19 has impacted the lives of people devastatingly around the globe but the second wave of this pandemic has taken its effect to the next level, causing much more intense effects on the life of people in India. During the second wave, the number of positive COVID 19 cases was hiked to more than four lakh cases in the first week of May 2021, which was roughly four times higher than the first wave of COVID 19 recorded cases (ICRIER, 2021). This spike has caused serious health and economic shocks in India. Controlling the surge of this pandemic led to imposing the

lockdown again in the country henceforth, the second wave was bound to reverse the financial and economic recovery achieved after the first wave. However, by easing the lockdown restrictions government has promoted the recovery of the economy during the fourth quarter of the financial year 2020-2021(Cariappa et al., 2021). Whereas despite exhilarating economic growth, the GDP of the nation was growing only at 1.6 percent which has seen a contraction of 7.3 percent during the FY 2020-21, and all the major sectors like manufacturing, trade, services, and construction have seen a negative growth during this tenure (ICRIER, 2021). But noticeably agriculture was the only sector that has seen a positive growth of 3.4 percent during the same tenure which again enabled a robust recovery of the nation (Cariappa et al., 2021). So, during the second wave also agriculture production and exporting has cushioned the country via marking the growth rate of 18 percent in agricultural exporting commodities during the FY 2020-21 which has helped in improving the domestic farm prices and procurement of more food items for the country (ICRIER, 2021). And, also India has gained a significant hike of 21.8 percent in agricultural and processed food exports during the period of April 2021 to August 2021 in comparison to the corresponding period of last FY 2020-21 (IBEF, 2021). Nonetheless, we can count on the resilient performance of the Indian agriculture sector in terms of robust production and exports during the first and second waves of the pandemic but this sector has witnessed the burden of excessive food supply even after being in already a production-surplus agriculture cycle. This seems to be a half-empty vessel which creates worrisome by increasing the actual food prices due to higher production and transportation costs. Therefore, keeping such mixed views, the authors are bound to explore the phenomenon that whether the vessel is half empty or it is half filled in the present situation which enforces them to practically examine the relationship between these two variables (COVID 19 and Indian Agri-Exports).

Thus, it is evident that several conceptual types of research and discussions have been made which ascertain the positive impact of COVID 19 on the agricultural exports of India but none of the studies has been found that shows the empirical impact of the former on the latter which promote the authors to dive deeper into this investigation. So, considering this, the present study is entitled to empirically examine the impact of COVID 19 on Indian Agricultural Exports using the time period from July 2010 (Pre-COVID 19) to June 2021 (During COVID 19), which sets it apart from the earlier studies. And, also the novelty of this study lies in the use of econometric tools like regression analysis and the EGARCH model to check the cause-and-effect relationship of the pandemic to Indian Agri-Exports which has not been followed in the other studies. Furthermore, the authors have incorporated the other explanatory variables; producer price, consumer price index, real effective exchange rate, and real interest rate (Kumari and Kakar, 2020) to check their significant effect on the Indian Agricultural Exports during the given time period, which also differentiates the current study from others.

Henceforth, the identified variables for the present study are represented in table 1:

Table 1: Variables of the study

Variables	Abbreviations
Indian Agricultural Exports	IAX
Producer Price	PP
Consumer Price Index	CPI
Real Effective Exchange rate	REER
Real Interest Rate	RIR
COVID 19	D1

Data and Research Methods

Comprising the monthly datasets from July 2010 (Pre-COVID 19) to June 2021 (During COVID 19), the present study is proposed to examine the impact of COVID 19 on Agri-exports of India using the Regression Analysis and EGARCH model. The secondary data for variables; Indian Agricultural Exports, producer price, consumer price index, real effective exchange rate, and the real interest rate has been collected from the CEIC Global Database. Further, the Philips-Perron test has been implied to check the stationary property of the data. And, prior to applying Regression analysis, the Ramsey RESET test has been employed to check the best fit of the regression model on the sample data series. EViews software has been used to perform the analysis of sample data.

Here the dummy values of COVID 19 have been used in Regression and EGARCH model. So, both the models have been applied in two situations that are with and without a dummy. The other independent variables; PP, CPI, REER, and RIR has been considered only in the case of Regression analysis (with or without dummy) however, the EGARCH model has checked the variation in Indian Agricultural Exports with or without considering dummy values of the global unfavourable event (COVID 19) which is termed as D_1.

A brief description of the following testing models has been described below:

Philips-Perron Test

The Philips-Perron Test is also approached to check the stationarity of the sample data. It was developed in 1988 by Philips-Perron to test the stationarity property in financial time series data. This test has also the assumption of non-stationarity property in data under the null hypothesis which defines the acceptance of the null hypothesis in the case of non-stationary sample series. However, the PP test deals differently from ADF in terms of serial correlation problems and heteroscedasticity of errors. The testing equation for the PP test is given below as equation 1.

$$\Delta X_t = \mu D_t + \rho X_{t-1} + e_t \qquad (1)$$

Here, e_t is *I (0)* which may be heteroskedastic. The PP test is used to correct any serial correlation and heteroscedasticity in the errors e_t of the test regression by directly modifying the test statistics. The advantage of using the PP test is that of being it robust to general forms of heteroscedasticity in the error term in comparison to the ADF test.

Ramsey RESET Test

It is important to check the most suitable regression model to fits on data. This is a mandatory requirement because the wrong selection of the regression model may result in misleading of findings and information. So, the present study employs the Ramsey RESET test to find the best fit regression model to employ on sample data. Ramsey Regression Equation Specification Error Test (RESET) is used for determining the linear or non-linear relationship between the sample variables. The null hypothesis of Ramsey reset test states that there is a linear relationship exist among the given sample series whereas, the alternate hypothesis states the presence of non-linear relationship between the variables. Ramsey's RESET test works by regressing y_t on the higher order values of fitted values $\hat{y}_t$ along with the original independent variables. The equation is given as follows:

$$y_t = \alpha_1 + \alpha_2 \hat{y}_t^2 + \alpha_3 \hat{y}_t^3 + \cdots + \alpha_p \hat{y}_t^p + \sum \beta_i x_{it} + v_t \qquad (2)$$

$$\hat{y}_t = \hat{\beta}_1 + \hat{\beta}_1 x_{2t} + \hat{\beta}_3 x_{3t} + \cdots + \hat{\beta}_k x_{kt} \qquad (3)$$

Higher order of $\hat{y}_t$ is capable for capturing the variety of non-linear relationships between the variables.

Regression Models (With or Without Dummy)

The impact of the variables; producer price, consumer price index, real effective exchange rate and real interest rate on the agricultural exports of sample economy is analysed with the help of regression equation 4. However, the dummy has been introduced to analyse the effect of the global unfavourable event (COVID 19 outbreak) on the Agri-exports of India. The equation 5 is represented including dummy in the regression model.

$$Y = \beta_0 + \beta_1 X_1 + \cdots \beta_n X_n + \varepsilon \quad (4)$$

$$Y = \beta_0 + \beta_1 X_1 + \cdots \beta_n D_1 + \varepsilon \quad (5)$$

In above equation β_0 represents beta constant and $\beta_1 \ldots \beta_n$ are the regression coefficients, D_1 are dummy variables and ε is the error term. Here, dummy is a binary variable having value 1 for the post COVID 19 period and 0 for the pre-COVID 19 period to foresee its impact of former inputs on the latter.

EGARCH Model

The present study has an objective to measure the impact of COVID 19 outbreak on agricultural exports of India with the help of Exponential Generalized Autoregressive Conditional Heteroscedasticity (EGARCH) model using dummy values for pre-COVID 19 and post-COVID 19 period. EGARCH model identifies the asymmetric effect on fluctuations of sample series due to any global event. Thus, it is used to measure the COVID 19 effect on Agri-Exports of India. The mean and Variance equations of EGARCH is mentioned below:

Mean Equation: $$y_t = c + \mu_t \quad (6)$$

Variance Equation: $$\ln(\sigma_t^2) = \omega + \alpha \left|\frac{\mu_{t-1}}{\sigma_{t-1}}\right| + \beta(\sigma_{t-1}^2) + \gamma\left(\frac{\mu_{t-1}}{\sigma_{t-1}}\right) \quad (7)$$

Where, α, β, and γ represent the ARCH, GARCH, and leverage effects respectively. α defines the effect of variance from the previous period on the variation of the current period. Also, a positive α signifies the clustering of the variance. On the contrary, γ is expected to be negative which implies that unfavourable events have a bigger impact on variance than the favourable events of the same degree. Whereas, β measures the effect of the last period's variance.

Empirical Analysis and Findings

Unit Root Test

The Philips-Perron test has been performed to check the stationary property of the given time series data of all six sample variables. The null hypothesis of Philips-Perron test states that the sample series has a unit root and it is non-stationary in nature. The PP test was conducted at level and first difference in both 'intercept' and 'trend & intercept' forms. The results of the PP test depicts that the null hypothesis is accepted for the raw data (at level) therefore, the data has been made stationary at first difference which is found significant in the case of all six sample log series. Hence, the sample variables are integrated of first order *I* (1).

Table 2: Stationary Test Results

Philips-Perron Test Results					
Index	Test Form	Level		First Difference	
		PP Statistics	*p*-value	PP Statistics	*p*-value
LIAX	Intercept	-2.883	0.62	-2.883	0.00*
	Trend and Intercept	-3.444	0.49	-3.444	0.00*
LPP	Intercept	-2.883	0.00*	-2.883	0.00*
	Trend and Intercept	-3.444	0.05	-3.444	0.00*
LCPI	Intercept	-2.883	0.35	-2.883	0.00*
	Trend and Intercept	-3.444	0.81	-3.444	0.00*
LREER	Intercept	-2.883	0.44	-2.883	0.00*
	Trend and Intercept	-3.444	0.45	-3.444	0.00*
LRIR	Intercept	-2.883	0.54	-2.883	0.00*
	Trend and Intercept	-3.444	0.93	-3.444	0.00*
LD1	Intercept	-2.883	0.92	-2.883	0.00*
	Trend and Intercept	-3.444	0.93	-3.445	0.00*

Regression Analysis

Before analysing the impact of explanatory variables on the Agri-exports of India, it is important to check whether the relationship between of the explained and explanatory variables are linear or not. So, the present study employs the Ramsey Reset Test for the given regression model.

Ramsey Reset Test

Table 3 is representing the reported results of Ramsey Reset Test, which depicts that p-value of FITTED^2 is 0.8860, that is greater than the level of significance 0.05. Thus, the null hypothesis of linear relationship between returns of Indian agricultural exports and returns of producer price, consumer price index, real effective exchange rate and real interest rate cannot be rejected at 5% level of significance. So, it is concluded that association between natural logarithmic returns of Indian Agri-Exports and natural logarithmic returns of PP, CPI, REER, and RIR is linear in nature.

Table 3: Results of Ramsey Reset Test

Ramsey Reset Test Results			
	Value	*Df*	*Probability*
t-statistic	0.143599	125	0.8860
F-statistic	0.020621	(1, 125)	0.8860
Likelihood ratio	0.021609	1	0.8831
Variable	Coefficient	Std. Error	Prob.
C	-0.003923	0.003728	0.2946
RPP	-0.005998	0.009285	0.5195
RCPI	1.796134	0.847054	0.0359
RREER	0.029876	0.422828	0.9438
RRIR	-0.012146	0.062917	0.8472
FITTED^2	-6.992527	48.69481	0.8860

Regression Results (without Dummy)

The results of regression model are represented in Table 4 which defines that the F-significance value is 0.282221 which is more than the 5 % level of significance. Thus, the explained variation of the model is same as the error term which reveals that there is not any long-run relationship exist between the given sample explanatory variables (PP, REER, RIR) and Agricultural exports of India. Moreover, the results reflect that the null hypothesis "$\beta = 0$" is accepted in the case of all three explanatory variables; PP, REER and RIR but in case of CPI the results are significant for the coefficient β in the given regression model and null hypothesis is rejected here. It means the variable; CPI has a significant positive impact on the agricultural exports of India.

Table 4: Regression Output without Dummy

Regression Results (without Dummy)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RPP	-0.006046	0.009243	-0.65412	0.5142
RCPI	1.812598	0.83599	2.168206	0.0320
RREER	0.040084	0.415187	0.096544	0.9232
RRIR	-0.012481	0.062629	-0.199278	0.8424
C	-0.004200	0.003177	-1.321993	0.1886
Model Summary				
R-Squared	Adjust. R-Squared	F-Statistic	Prob. (F-statistic)	Durbin Watson
0.038985	0.008476	1.27783	0.282221	2.03963

Regression Results (with Dummy)

To analyse the effect of COVID 19, dummy is added to the given regression model (Gay and Kim, 1987). Regression results in Table 5 shows that there is significant impact of CPI to Indian Agricultural Exports but the COVID 19 is insignificant to the latter because the results are non-significant for the coefficient β, i.e., null hypothesis " $\beta = 0$" is being accepted here at 5% level of significance. Thus, it concludes that there is no significant impact of COVID 19 has been seen on the Agri-Exports of India.

Table 5: Regression Output with Dummy

Regression Results (With Dummy)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RPP	-0.00605	0.00928	-0.651471	0.5159
RCPI	1.812594	0.83946	2.159244	0.0327*
RREER	0.040093	0.41787	0.095946	0.9237
RRIR	-0.01248	0.06288	-0.19847	0.8430
D_1	3.10E-06	0.00982	0.000315	0.9997
C	-0.0042	0.00327	-1.284072	0.2015
Model Summary				
R-Squared	Adjust. R-Squared	F-Statistic	Prob.(F-statistic)	Durbin Watson
0.038985	0.000544	1.01415	0.412257	2.039635

EGARCH Results

In Table 6, EGARCH model has been used to analyze the effect of COVID 19 on the Indian agricultural exports. This model has compelled on the given return series in the respective case of both dummy and without dummy. The dummy (D_1) takes a value of zero for pre-COVID 19 period (July 2010 to February 2020) and value of one for during COVID 19 period (March 2020 to June 2021). Without dummy, the coefficients for β and γ are found non-significant at 5 percent level of significance whereas in case of α, the coefficient is found significant at 0.05 which implies that the ARCH effect is present in the series and news about the variation in the previous period had a significant impact on the variation of current period. However, there is no GARCH and leverage effect has been noticed in the case of β and γ coefficient as it is not significant at 5% level of significance. This indicates that the positive changes will not lead to any further positive outcomes. While introducing dummy, we found that the coefficients α, β and γ are highly insignificant which reflects that there is no ARCH, GARCH and Leverage effect is present in the return of given sample series however the coefficient of D_1 is found significant at 0.05 that clearly indicates that the COVID 19 has a significant impact on the agricultural exports of India.

Table 6: Parameter Estimates of EGARCH model

Variable	Without Dummy		With Dummy	
	Coefficient	Prob.	Coefficient	Prob.
	Mean Equation			
C	-9.16E-07	0.029*	-0.000334	0.8911
D_1	-	-	0.000334	0.8911
	Variance Equation			
ω	-7.01973	0.000	-7.03377	0.0000
α	-4.081358	0.000	0.004011	0.9812
β	-0.00997	0.7111	0.010299	0.9516
γ	0.013273	0.7734	0.009759	0.9465
D_1	-	-	-22.73237	0.0000

Discussion

Nevertheless, we have witnessed the robustness and resilience in the Indian agricultural system but uncertainty imposed due to the COVID 19 crisis caused the absence of transportation that disrupted the global food supply chains and led in increasing the food prices (Kalsi et al., 2020). However, global food crisis enforces us to first understand the impacts of COVID 19 on the agricultural system that has faced the interruption in certain activities and supply chain due to this pandemic. The previous researches indicated that the harvesting and irrigations were suspended due to the absence of manpower. The migration of workers and obstructed transportation brought the noticeable impact on supply of food grains, milk and dairy products (Dilnashin et al., 2021). While discussing globally, value chain disruptions have caused food wastage unleashing variations in food prices and have implications for nutritional and food security. For instance, India has witnessed a sharp reduction in consumption of poultry and meat due to owing the rumors of spreading COVID 19. Furthermore, such supply disruptions have also contributed in rising of food grain prices like pulses, wheat flour, milk and vegetables (Cariappa et al., 2021). But the excess stock of food grains and harvesting of previous crops has safeguarded the instant fallout of food items. With disruptions in global food delivery, the world supply chain has been more adaptable because the foreign trade is mostly undertaken by big enterprises that deals in capital intensive supply chain activities. Moving with geographical disruptions is comparatively easy for such firms because they flexibly switch for global sourcing and diversify themselves to manage their shocks of such crisis period (Swinnen & McDermott, 2021). So, the global supply chain has been found more resilient than the domestic supply system during this pandemic.

Research Implications

The present study has the research implications for agriculture and allied sector of India and other developing nations. The economic impact of the COVID-19 pandemic has brought the significance on agricultural sector and have highlighted the responsibility of this sector to feed the millions of populations even in the period of crisis. This sector has been found more promising than the other sectors of the economy which enlighten us with its brighter spot amid this COVID-19 period. Thus, the present study helps us in verifying the impact of COVID-19 to Indian Agri-Export sector which further helps in understanding the need of prioritizing the Agri-exports sector in comparison of others to get the speedy recovery

of the economy. So, the present study has the practical implications for stakeholders and government policymakers for designing the appropriate interventions so as to promote Agri-exports from India. This defines that present study helps in understanding the importance of feasible assistance which government should provide to all the Agricultural Exporting Houses and Agri-Exporting companies for sustaining during any global unfavorable event like COVID 19. Further, the macroeconomic variable; CPI has a significant effect on the Agri-Exports of India which suggests that the lower Consumer Price Index will lead to higher Agri-Export from the country. So, this study has an important implication for policy makers to designing the pertinent policy structure to influence the Agri-Export determinant; CPI of the country so that to enforce higher exports of Agri-Commodities. In addition, the present study also helps in ensuring of worldwide food security with the help of Capital and Knowledge centric supply chain movements that summarizes to use the capital-intensive techniques to steer away from the recession during the unfavorable time period. Moreover, the results are also of immense use of other similar developing economies in which agriculture has been the primary source of revenue generation during this pandemic like China, Pakistan and Nigeria.

Conclusion

The present study investigates the impact of pandemic COVID-19 to the Indian agricultural exports and its consequent effect on the global supply disruptions. The triad of given objectives have been analyzed via incorporating two different econometric methods; Regression Analysis and EGARCH model in both the cases of with dummy and without dummy. While using the exponential generalized autoregressive conditional heteroskedastic (EGARCH) model, authors found the significant impact of COVID 19 on the Indian Agri-Export sector whereas in contradictory of EGARCH model, the Regression output has inclined towards the evidences of no effect of former on the latter. However, in case of Regression Analysis, the authors have also considered the other macroeconomic variables; Producer Price (PP), Consumer Price Index (CPI), Real Effective Exchange Rate (REER) and Real Interest Rate (RIR) that has an impact to the Indian Agricultural Exports in the post reform period (Kumari and Kakar, 2020). But while analyzing them in the case of present study, the regression results only confirmed the presence of CPI impact to the Indian Agricultural Exports sector which reveals that the Consumer Price Index has a significant effect on the exports of Agri-Commodities from India. Further, the similar results have also been noted by a report of ICRIER (2021).

Moreover, along with the disruptions of economic activities and supply chain movements during the first and second wave of COVID 19, Indian Agri-export performance has been found more resilient in the Financial Year 2020-2021. This is quite impressive to know that Indian Agricultural exports have marked a growth sign even in the tenure of this crisis period. Despite of such growth performances, the COVID 19 has raised the question on vulnerability of global food supply disruptions. The channel has faced the two major restrictions in which most evident is government policy restrictions and the other one is reduction in human mobility, which has caused the major impact on the global agricultural trade during the COVID 19 period. Although India has found itself more resilient in global food supply activities during this crisis period. But the evidences have been found in support of that trade flows under the lower income and least developed nations have been more sensitive in the pandemic period (Arita et al., 2021). So, when we come back to the primary objective of the present study that impact of COVID 19 on Indian Agricultural Exports, our findings and discussions suggest that the *Yes* there is a significant positive impact has been seen on the Agri-Exports of India during the first and second wave of pandemic however the regression tool does not support this argument but several reports have given the evidences in favor of this phenomenon. Further on, talking about our second objective, we have found the negative effects of pandemic on the global food supply system which has been robust to various dimensions such as government policy restrictions and decreased mobility of human mankind due to lockdown restrictions, etc. But in response of these

disruptions the global food supply chain has been found more resilient than the domestic supply system because of using the capital and knowledge centric supply method. Hence, the capital and knowledge centric supply chain model should be adopted to avoid any inverse effect of any global unfavorable event like COVID 19.

This study has a future scope of examining the COVID-19 impact to other sectors on Indian economy and also other nations can be considered to check the impact of this pandemic on their Agri-exports sector. In addition, this study can also be diversified in terms of finding the pandemic effect on the specific Agri-commodity export from India. Moreover, the analysis made under the present study is only limited to first and second wave of COVID 19 which directly or indirectly avoid its ongoing impact to Agri-Export sector of India. On the other hand, there must be some important dynamics which might be underlying the COVID 19 indicators but they have been ignored in the current study.

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