*RESEARCH ARTICLE*

## STATISTICAL ANALYSIS OF INDIA'S TRADE WITH USA DURING PRE AND POST COVID-19

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*Manuscript Info*

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*Abstract*

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The Bilateral trade between the USA and India stood at US Dollar 119.42 billion 2021-2022 as against US Dollar 80.51 billion in 2020-21.Exports to the USA increased to US Dollar 76.11 billion in 2021-22 from US Dollar 51.62 billion in the previous fiscal year, while imports rose to US Dollar 43.31 billion as compared to about US Dollar 29 billion in 2020-21.America is one of the few countries with which India has a trade surplus consistently. The general trend has been upwards, though interspersed with slight dips because of the 9/11 terror attacks and the global financial crisis of 2008. In 2021-22, India had a trade surplus of US Dollar 32.8 billion with the USA. India-USA bilateral partnership today encompasses a whole host of issues including the response to Covid-19, economic recovery post-pandemic, the climate crisis and sustainable development, critical and emerging technologies, supply chain resilience, education, the diaspora, and defense and security. The breadth and depth of Indo-US ties remain unmatched and the drivers of this partnership have been growing at an unprecedented rate. The beginning of year 2020 was marked by some of the largest reductions in trade and output volumes since World War II. The declines in both world industrial production and goods trade in the first half of 2020 were of similar depth to those at the trough of the Global Financial Crisis (GFC). Nevertheless, they materialized and disappeared more quickly, facilitating a V-shaped recovery in 2020. Trade continued to grow strongly in 2021 and has compensated some, but not all, of the accumulated losses from the steep declines seen earlier. However, for designing such strategies there is a need to assess the extent to which the global pandemic may impact on total merchandise exports and imports. Hence an earnest attempt has been made to examine the India's trade with USA during pre and post Covid-19 turmoil. The present study is based on secondary data. The statistical tool used in this study is Paired t-test.

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## Introduction:-
### India-USA Bilateral Trade Relations
India-USA trade in goods and services has crossed the100 billion USDollars mark and currently stands at 103 billion USDollars. Service trade between India and the USA has grown 930% since 2002 and was used to be estimated

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around 34 billion USDollars in the year 2013-2014, while merchandise trade grew at approximately 450% in the same period. Merchandise trade between India and the USA has grown almost 5.5 times in the last 15 years. The general trend has been upwards, though interspersed with moderatedips due to the fact of the Sep. 11 terror attacks and the global financial crisis of 2008. In 2012, USA service imports touched 18.5 billion USD, which was a 930% enhance from its 2002 level. Of the complete India-USA trade, exports from India dominate with a 68% share. These exports have enhanced at a CAGR of 11% to reach 45.2 billion USD in 2014 from 10.7 billion USD in 2000. The imports from the US to India enhanced at 8% CAGR during the same period.

**India's Contribution to USA Trade**
India's contribution to USA trade extended during 2000-2014. India's imports contribution to the US doubled from 0.88% to1.8%, whilst its rank as an import partner shot up from 22 to 10 during the same period. Similarly, USA exports to India increased threefold during this time and India's rank as a partner improved from 32 to18. These modifications had been led by using the macroeconomic growth in India, fuelled by a growing middle class, and growing per capita and disposable incomes.

**USA contribution to India's trade**
USA contribution to Indian trade has historically been high. It is India's fourth-largest imports partner and the top exports destination for Indian merchandise. However, USA contribution to Indian trade is decelerating as India is diversifying its trade partners. India has diversified its export pie to EU and China, and its imports from China, the UAE and Saudi Arabia have also grown. This is primarily due to increased dependence on fuel imports because of the rapid growth in consumption and industrialisation.

## Objectives Of The Study:-
1. To analyse India's Exports and Imports with USA during the pre-Covid19.
2. To investigate India's Exports and Imports with USA during the post – Covid19.

**Hypothesis**
**H1:** There is no significant difference   on India's Exports with USA during the pre- Covid19.
**H2:** There is no significant difference on India's Imports with USA during the post- Covid19.

## Data Source And Methodology:-
The source of secondary data used in this study has been collected from UN Trade; the methodology adopted in this study is trend analysis and descriptive statistics. In this research paper paired t test has been applied to find the impact of Covid-19 on Exports and Imports of India with USA during thepre- Covid-19 and post- Covid-19. The period of the study(Monthly data) was from 2018 to 2021.

## Literature Review:-
There are a number of studies that have followed the traditional approach to analyse theposed problem above and have estimated import and export demand elasticity's to determine whether the Marshall-Lerner (ML thereafter) condition holds (for example, Kreinin, 1967; Houthakker and Magee, 1969; Khan, 1974, 1975; Goldstein and Khan, 1976, 1978; Wilson and Takacs, 1979; Haynes and Stone, 1983; Warner and Krein, 1983; and Bahmani-Oskooee, 1986 among others). As per the ML condition as long as the sum of price elasticity of export and import demand functions is greater that one, devaluation will improve the trade balance. Moreover, there are few studies which have estimated trade elasticity's for developing countries. For example, Bahmani-Oskooee and Niroomand (1998) have estimated long run price elasticity's and tested Marshall-Lerner condition for thirty developed and developing countries. Lal and Lowinger (2002) confirmed the existence of both short-run and long-run relationships between nominal exchange rate and trade balances for South Asia countriesHowever, the basic criticisms of these studies has been the use of aggregate trade datawhich may create the problem of so-called "aggregation bias," and hence as (Bahmani-Oskooee and Goswami, 2004) argued a significant price elasticity with one tradingpartner could be more than offset by an insignificant elasticity. This problem ofaggregation bias has opened a new research area for the study of trade elasticities on a bilateral basis.

There are few studies on the bilateral trade between the USA and one or more of its tradingpartners (for example, Cushman, 1990; Haynes et al., 1996; Bahmani-Oskooee and Brooks, 1999; Nadenichek, 2000 among others). There are few studies which has analysed the bilateral trade relationship other that the US (for example, Bahmani-

Oskooeeet al., 2005 studied bilateral trade in Canada, Hatemi-J and Irandoust, 2005 and Irandaustet al., 2006 studied bilateral trade in Sweden, and Harriigan and Vanjani, 2003 studied the bilateral trade of manufacturing goods in Japan). Further, Wang and Ji (2006) and Liu et al., (2007) studied the bilateral trade in China and Hong Kong respectively. This study aims to fill this gap and study bilateral trade elasticity between India and its major trading partner that is US. Bahmani-Oskooee and Harvery (2006), by utilizing the ARDL approach, suggest that a real depreciation of the Malaysian Ringgit can increase Malaysians trade balance with China, France, Germany, Indonesia, and the U.SA.

**Trend Analysis of India's Exports to USA:**
The table 1   and Chart below depicts the India's Exports with USA, during pre covid-19 and post covid -19 has increased consistently with little fluctuations. The data frequency is expressed on monthly basis, from Jan 2018 to Dec 2019 is pre global pandemic and from Jan2019 to Dec 2021 was post global pandemic. The highest exports was registered in March 2019 was \$4.71 billion and lowest was registered in Feb. 2018 was \$3.85 billion. In post global pandemic scenario expect a few months trade was declined but all other period trade has increased consistently.The highest exports was registered in April 2021 was \$7.28 billion and lowest was registered in May 2020 was \$1.47 billion. The mean export of precovid19 was \$ 4.41 billion, the mean export of post covid19 was \$ 5.03 billion.

An attempt has been made to measure the impact of global pandemic by making a comparison of India's Exports with USAduring pre and post Global Pandemicusing paired' test with the SPSS package, result is depicted below

**Table 1:** India's Exports To Usa (Pre And Post Covid-19).

| Year | Month | Exports (US Billion) | Year | Month | Exports (US Billion) | trade balance (US Billion) |
|------|-------|---------------------|------|-------|---------------------|---------------------------|
| 2018 | JAN | 4.69 | 2020 | JAN | 4.70 | 0.01 |
| 2018 | FEB | 3.85 | 2020 | FEB | 3.76 | -0.09 |
| 2018 | MAR | 4.57 | 2020 | MAR | 2.90 | -1.67 |
| 2018 | APR | 4.50 | 2020 | APR | 4.45 | -0.05 |
| 2018 | MAY | 4.30 | 2020 | MAY | 1.47 | -2.83 |
| 2018 | JUNE | 4.38 | 2020 | JUNE | 4.87 | 0.50 |
| 2018 | JULY | 4.01 | 2020 | JULY | 4.90 | 0.89 |
| 2018 | AUG | 4.11 | 2020 | AUG | 4.56 | 0.45 |
| 2018 | SEP | 4.58 | 2020 | SEP | 3.82 | -0.76 |
| 2018 | OCT | 3.92 | 2020 | OCT | 4.42 | 0.50 |
| 2018 | NOV | 4.14 | 2020 | NOV | 5.22 | 1.08 |
| 2018 | DEC | 4.58 | 2020 | DEC | 4.26 | -0.32 |
| 2019 | JAN | 4.51 | 2021 | JAN | 6.85 | 2.34 |
| 2019 | FEB | 4.33 | 2021 | FEB | 5.72 | 1.39 |
| 2019 | MAR | 4.71 | 2021 | MAR | 6.78 | 2.08 |
| 2019 | APR | 4.43 | 2021 | APR | 7.28 | 2.85 |
| 2019 | MAY | 4.53 | 2021 | MAY | 4.97 | 0.44 |
| 2019 | JUNE | 4.94 | 2021 | JUNE | 4.81 | -0.14 |
| 2019 | JULY | 4.17 | 2021 | JULY | 6.43 | 2.26 |
| 2019 | AUG | 4.29 | 2021 | AUG | 5.45 | 1.16 |
| 2019 | SEP | 4.66 | 2021 | SEP | 5.68 | 1.02 |
| 2019 | OCT | 4.97 | 2021 | OCT | 6.34 | 1.37 |
| 2019 | NOV | 4.56 | 2021 | NOV | 5.43 | 0.87 |
| 2019 | DEC | 4.19 | 2021 | DEC | 5.70 | 1.51 |
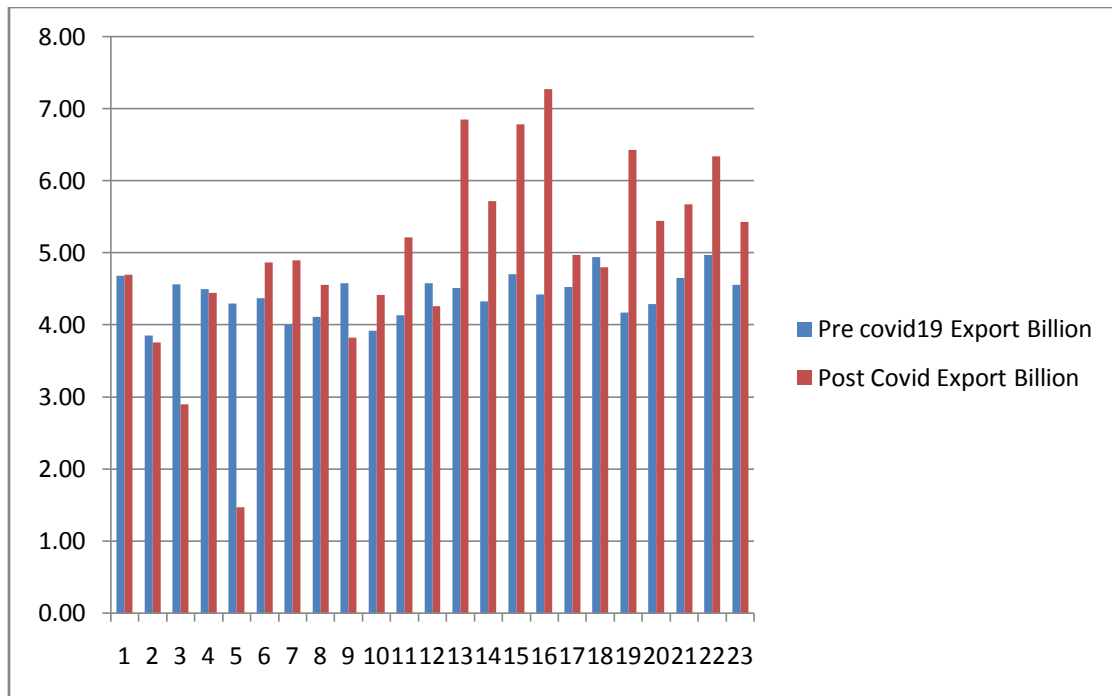
**Figure 1:-** India's Exports To Usa (Pre And Post Covid-19).

**Hypothesis Testing**
**H1:** There is no significant difference of global pandemic on India's Exports with USA.
**H0₁:** There issignificant difference of globalpandemic on India's Exports with USA.

The p - value is less than 0.05 and hence the null hypothesis is rejected. There is no significant effect of Global pandemic on Exports, indicates that the exports during post Global pandemic has been significantly higher as compared with pre Global pandemic. The macroeconomic indicators are fundamentally strong. Hence Global pandemic on India's Export to USA is increasingly significant

**Paired Samples Statistics**

|        |                 | Mean   | N  | Std. Deviation | Std.      Error Mean |
|--------|-----------------|--------|----|----------------|----------------------|
| Pair 1 | Exportsprecovid19  | 4.4133 | 24 | .29343         | .05990               |
|        | Exportspostcovid19 | 5.0321 | 24 | 1.29961        | .26528               |

**Paired Samples Correlations**

|        |                                        |   | N  | Correlation | Sig. |
|--------|----------------------------------------|---|----|-------------|------|
| Pair 1 | Exportsprecovid19                      | & | 24 | .196        | .358 |
|        | Exportspostcovid19                     |   |    |             |      |

**Paired Samples Test**

|        |                                              | Paired Differences |                   |                       |                                                    |          | t      | df | Sig. (2-tailed) |
|--------|----------------------------------------------|--------------------|-------------------|-----------------------|----------------------------------------------------|----------|--------|----|-----------------|
|        |                                              | Mean               | Std. Deviation    | Std. Error Mean       | 95% Confidence Interval of the Difference          |          | Mean   | Std. Deviation | Std. Error Mean |
|        |                                              | Lower              | Upper             | Lower                 | Upper     | Lower  | Upper  | Lower  | Upper           |
| Pair 1 | Exportsprecovid19 - Exportspostcovid19       | -.61875            | 1.27491           | .26024                | -1.15710  | -.08040 | -2.378 | 23 | .026            |

**Trend Analysis of India's Imports from USA:**
The Below 2 above depicts the India's Imports from USA, during pre -covid-19 and post covid -19 has increased consistently with great fluctuations. The data frequency is expressed on monthly basis,        from Jan 2018 to Dec 2019 is pre global pandemic and from Jan 2019 to Dec 2021 was post global pandemic. The highest imports was registered in November 2019 was $3.46 billion and lowest was registered in May 2018 was $0.09 billion. In post global pandemic scenario expect a few months trade was declined but all other period trade has increased consistently.The highest Imports was registered in Dec 2021 was $4 .00 billion and lowest was registered in May 2020 was $1.42 billion. The mean import of precovid19 was $ 1.5 billion; the mean import of post covid19 was $ 2.8 billion.

An earnest  attempt has been made to measure the impact of global pandemic by making a comparison of India's Imports with Bangladesh during pre and post Global Pandemic using paired't' test with the SPSS package, result is depicted below

**Table 2:-** India's Imports From USA (Pre And Post Covid-19).

| Year | Month | Import      (US Billion) | Year | Month | Import (US Billion) | Trade Balance (US Billion) |
|------|-------|-----------------------|------|-------|---------------------|----------------------------|
| 2018 | JAN   | 0.10 | 2020 | JAN   | 2.06 | 1.96 |
| 2018 | FEB   | 0.10 | 2020 | FEB   | 2.01 | 1.91 |
| 2018 | MAR   | 0.10 | 2020 | MAR   | 2.85 | 2.75 |
| 2018 | APR   | 0.14 | 2020 | APR   | 3.04 | 2.90 |
| 2018 | MAY   | 0.09 | 2020 | MAY   | 1.42 | 1.33 |
| 2018 | JUNE  | 0.16 | 2020 | JUNE  | 2.40 | 2.24 |
| 2018 | JULY  | 0.11 | 2020 | JULY  | 2.13 | 2.02 |
| 2018 | AUG   | 0.14 | 2020 | AUG   | 1.85 | 1.71 |
| 2018 | SEP   | 0.20 | 2020 | SEP   | 1.83 | 1.63 |
| 2018 | OCT   | 0.22 | 2020 | OCT   | 2.48 | 2.26 |
| 2018 | NOV   | 0.19 | 2020 | NOV   | 2.14 | 1.95 |
| 2018 | DEC   | 0.21 | 2020 | DEC   | 2.38 | 2.17 |
| 2019 | JAN   | 2.71 | 2021 | JAN   | 2.95 | 0.24 |
| 2019 | FEB   | 2.78 | 2021 | FEB   | 3.27 | 0.48 |
| 2019 | MAR   | 2.91 | 2021 | MAR   | 3.79 | 0.89 |
| 2019 | APR   | 3.08 | 2021 | APR   | 3.18 | 0.10 |
| 2019 | MAY   | 2.57 | 2021 | MAY   | 3.84 | 1.27 |
| 2019 | JUNE  | 2.87 | 2021 | JUNE  | 3.18 | 0.30 |
| 2019 | JULY  | 2.79 | 2021 | JULY  | 4.00 | 1.21 |
| 2019 | AUG   | 2.76 | 2021 | AUG   | 3.91 | 1.16 |
| 2019 | SEP   | 3.17 | 2021 | SEP   | 3.48 | 0.31 |
| 2019 | OCT   | 2.67 | 2021 | OCT   | 3.25 | 0.58 |
| 2019 | NOV   | 3.46 | 2021 | NOV   | 3.22 | -0.24 |
| 2019 | DEC   | 3.17 | 2021 | DEC   | 3.31 | 0.14 |
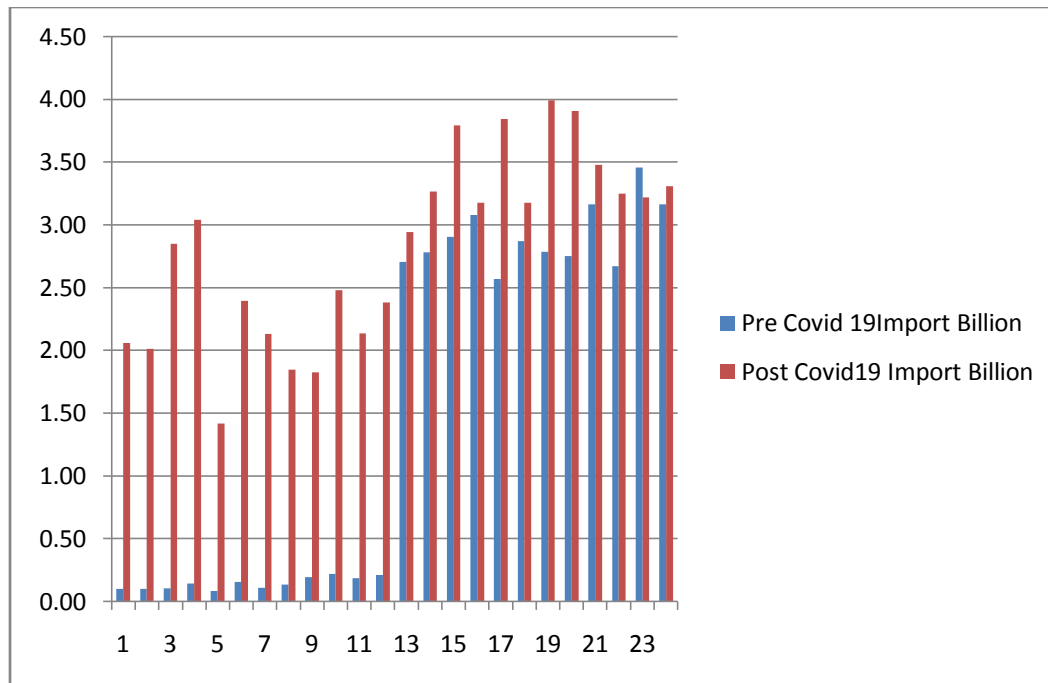
**Figure 2:-** India's Imports From USA (Pre And Post Covid-19).

**Hypothesis Testing**
**H2:** There is no significant difference of global pandemic on India's Imports from USA.
**H$_{02}$:** There issignificant difference of globalpandemic on India's Imports from USA

**Paired Samples Statistics**

|  |  | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pair 1 | Importsprecovid19 | 1.5292 | 24 | 1.42390 | .29065 |
|  | Importspostcovid19 | 2.8321 | 24 | .74149 | .15136 |

**Paired Samples Correlations**

|  |  | N | Correlation | Sig. |
|---|---|---|---|---|
| Pair 1 | Importsprecovid19 & Importspostcovid19 | 24 | .832 | .000 |

**Paired Samples Test**

|  |  | Paired Differences |  |  |  |  | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|---|
|  |  | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference |  | Mean | Std. Deviation | Std. Error Mean |
|  |  | Lower | Upper | Lower | Upper | Lower | Upper | Lower | Upper |
| Pair 1 | Importsprecovid19 - Importspostcovid19 | -1.30292 | .90588 | .18491 | -1.68544 | -.92040 | -7.046 | 23 | .000 |

The p - value is less than 0.05 and hence the null hypothesis is rejected. There is no significant effect of Global pandemic on Imports, indicates that the Imports during post Global pandemic has been significantly higher as compared with pre Global pandemic. The macroeconomic indicators are fundamentally strong. Hence Global pandemic on India's Importsfrom USA is significantnot like exports.

## Conclusion:-

This research study investigates the effect of Covid-19 on Exports and Imports for India with USA using time series monthly data from 2018 to 2021. Further, the study also analysed the trends and patterns of India's Exportsand Imports with USA. The result revealed that the India's Export has increased consistently before Covid-19, with low fluctuations after Covid-19. India Imports has increased consistently during pre- Covid-19 and great volatility after Covid-19. The result also suggests that the growth rate of exports was more than the growth rate of import. The result of paired sample "t" test suggests that there was a positive effect of Covid-19 on India's Exports to and Imports from USA. With strong Macroeconomic fundamentals of Indian Economy it will able to absorb shocks of caused by pandemic, on the exports and imports.

## References:-

1. Bahmani-Oskooee M. (1986). Determinants of international trade flows: The case of developing countries. **Journal of Development Economics**, 20(1), 107–123
2. Bahmani-Oskooee M., Brooks T. J. (1999). Bilateral J-curve between US and her trading partners. **WeltwirtschaftlichesArchiv**, 135(1), 156–165.
3. Kronstadt K. Alan. CRS Report— India–U.S. Relations (RL33529).
4. Warner D., Kreinin M. E. (1983). Determinants of international trade flows. **Review of Economics and Statistics**, 65(1), 96–104.
5. Forbes. Retrieved July 5, 2015, from http://www.forbes.com/ fdc/welcome_mjx.shtm

6. International Monetary Fund (IMF)

**Websites**
1. www.uncomtrade-un-org
2. www.saarc-sec.org.