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PREDICTING AIR PASSENGER TRAFFIC DURING COVID-19 & ITS ECONOMIC IMPACT

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Abstract. Most governments have implemented restrictive policies in response to the global coronavirus outbreak to curb the pandemic and reduce the number of deaths. Air traffic suspension is one of the most important restrictive policies in terms of reducing global migration for short period, though it has major and long term impact on all economies of the world. The objective of this study is to analyse the impact global air travel ban on various aviation sectors. This required authors to collect and pre-process the passengers traffic worldwide via flights. Based on historical data from 1970 till 2019 (Source- data.worldbank.org), a predictive model is prepared and implemented to get a clear picture of the losses faced by the aviation sector in terms of air passenger traffic. Further we will be comparing the forecasted values with the real time values in order to study the effect of air travel ban on aviation and its supported sectors. In addition, a study of the economic impact of the air travel bans and the cumulative impact of the Covid-19 pandemic is being conducted by looking at real GDP levels (in percentages) and future estimates, measuring them all in percentages for the world economy and various industrialized countries, developed markets, and developing nations, and a comparison being made and then further analyzing them. In the near term, some countries will be more affected than others, and most airline businesses will lose because of the travel ban. We hope that these early findings will aid in the development of informed policies and exit plans for this global crisis.

INTRODUCTION

The COVID-19 Coronavirus epidemic, which began in late 2019 and was contained by precautionary steps, has a significant effect on global human mobility. In February, which resulted in a decrease in domestic and foreign air passenger traffic to and from one country to another. These results were used all around the globe. This current pandemic has obvious consequences. This current pandemic has direct and indirect effects on the aviation industry, as well as other industries (such as tourism) and the country's economy, as well as society. This study seeks to include air traffic level estimates using a forecasting process that is applied to see if the actual figures vary from the predicted numbers using historical air traffic statistics and real-time flight tracks.

The aviation industry has thrived and grown steadily over the last decade, primarily due to the rising tourism and cargo demand across the globe. As a result, the aviation industry played a critical role in the development of many countries, leading to global social and economic growth. (Dube and Nhamo, 2020)

Past reports on the aviation industry by (Sadi and Henderson 2000) and (Chung 2015) showed that there have been many incidents in history that have shown the global aviation sector's susceptibility to multiple disasters that have existed previously. The sector's susceptibility to diseases and pandemics has been well documented, as shown by the varipus epidemics like SARS, H5N1, H1N1 in 2003 , 2006, 2009 respectively. All these crises posed a threat to the aviation industry. (International Air Transport Association, 2020). These activities, on the other hand, were more geographically restricted or linked to time and length.

Thanks to the COVID-19, something is about to crash off a cliff in 2020. The worst came in April 2020, when two-thirds of the world's fleet of aircraft was grounded, forcing 90 percent of operations to shut down, with overseas operations accounting for 98 percent of all operations. And, according to IATA [International Air Transport Association] reports, international aviation will decline by 60 percent or 65 percent by the end of 2020, relative to the previous year.

LITERATURE REVIEW

The estimation of the Global air traffic passengers was done by using the data obtained from different data sources like using online booking data and real time flight tracking data to see how the covid 19 affected the air travel by comparing it with other pandemics and historical events in the study done by Steffano Maria Iacus in 2020. The authors used the analysis of movements of flights using flight tracking system to predict the adjustments or modifications in the schedule of airpane movements. This is required due to dropped demand of international flights or to limit the mobility due to pandemic. In the study done by Inmaculada Gallego in 2020, used big data to see the effect of covid 19 pandemic on air travel of passengers to inform various developing economies to form tourism policies. The study consists of secondary source of data provided by Forward Keys (2020), a big data company that monitors the aviation industry. In this paper two studies were conducted one was using big data analysis to change in air capacity by destination, based on the number of seats offered by airlines. The second study demonstrated the value of a methodology- the role of Big Data to predict recrudescence that enables Destination Planners to det their policies & packages.

The study done by Laurie Garrow provided us the studies that were done on the Covid-19 impacts on the Airlines Industry and how it paved ways of reshaping the Airlines Industry done in the year 2021. Prior to the events of the Covid-19 pandemic, the Airline industry Supported a whopping 80 million jobs globally. With more than 30% of international trade by value is carried by air and approximately 60% of international tourists travel by air. Further the study discusses how the airlines industry can apply reforms in the industry by focusing on stability and faster decision making. Long term planning for the fleet, network planning and scheduling, crew, logistics, and revenue management to address any potential such circumstances. Next the study done by Kaitano Dube in 2021 described the potential ways to deal with the ongoing pandemic for the recovery of Aviation Industry. The study stated that the recovery process will be slow, and the sector's recovery is likely to be enhanced with domestic and regional aviation demands. Whereas in case of international travel recovery will be based on the markets that will embrace the quick testing instead of quarantine on arrival.

OBJECTIVES

The purpose of this paper is:

- To analyze the impact of air-travel ban due to the pandemic on the aviation sector.
- To study the implications of Covid-19 Coronavirus Outbreak on the world and in turn its economic impact.

RESEARCH METHODOLOGY

Research Design - Qualitative and quantitative both sets of research design have been followed while collecting the research findings. Quantitative technique includes the datasets that we have acquired for the forecasting of aviation industry. Qualitative research includes the literature reviews of the research papers.

Data Collection- Secondary data was collected in this project from-

- Websites- Statista, Flight Radar24, data.worldbank.org
- Research Papers- Elsevier.com, tandfonline.com, academia.edu

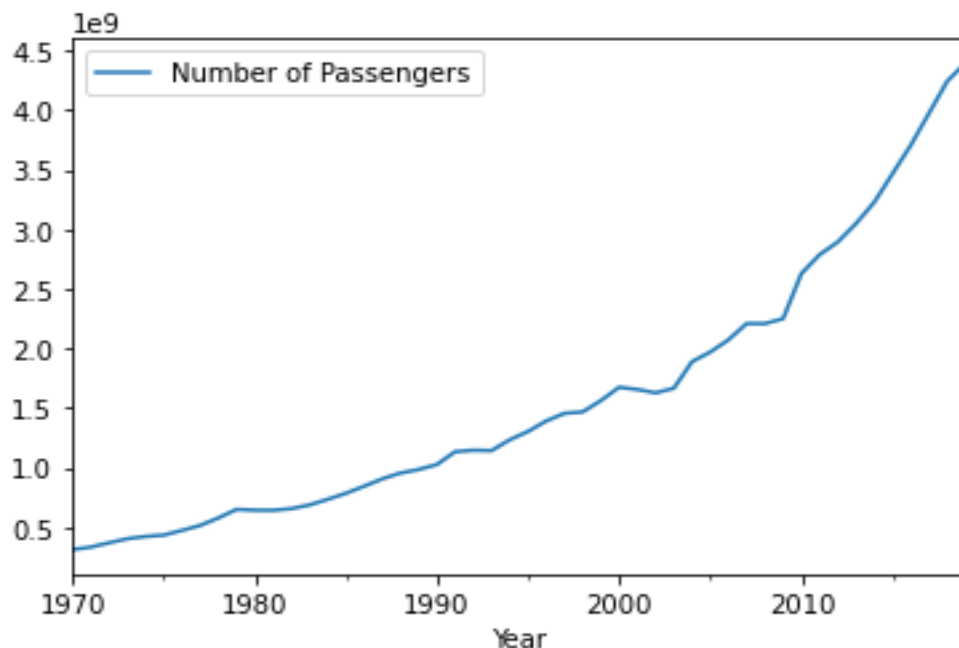
Data Analysis- The Data Analysis will be done with Forecasting through using ARIMA model. And Predicting the Air passenger Traffic for the year 2020 with the help of historical data. And then we will be comparing the forecast with the original data. Analysis for the impact of Covid-19 on the world as well as various developing economies will

be done comparing their data for the prediction as well as the original numbers (in percentage) for the year 2020 & 2021 and further doing a comparative analysis.

ANALYSIS AND DISCUSSION

- **Trend Analysis**

The analysis shows that the international flight trends is increasing day by day ,month by month and year by year. For the past 50-year data, that is from 1970 till 2019(Source- data.worldbank.org) we can observe a trend in the air passenger traffic that kept on rising till the COVID-19 pandemic broke out.



In figure 1, it can be observed that from the year 1970 till 2019, the Air Passenger Traffic has been increasing at an increasing rate. This rise in aviation could be due to the travel time that was reduced and the vast distances the airplanes can travel at a faster speed when compared to the water ways or ships. Earlier people tend to use ships as their mode of transport, but since the invention of airplanes and since the first flight in the year 1914 the aviation industry has come a long way.

Although, the above figure does not provide us the picture of the future for that we need to forecast for the future.

To do the Forecast of Air Passenger Traffic, with the help of python and its various libraries named: **NumPy**, **Matplotlib**, **Pandas**, to name a few were used so that we can have prediction of how the Aviation Industry would have grown in 2020 and beyond if the COVID-19 Pandemic had not occurred in the early 2020.

Before going ahead with the Forecasting, we need to prepare our data, by preparing our data we mean to remove the stationarity from the data, to remove the outliers that are present in the data, and finally to Models like ARIMA or SARIMA whichever is applicable according to the dataset that we have and the reference that we get from the plotting the data that whether the data is having a trend line, or it represents seasonality.

So, what do we mean if we say we need to make our data Stationary? “A stationary time series has statistical properties such as mean, variance, autocorrelation, and so on that remain constant over time.”

To make our data stationary we first need to check the stationarity of the DATA that whether the dataset is already stationary or not. For that we will be using “Dickey-Fuller Test”. We will be having the hypothesis as following:

- Ho: The Data is not Stationary.
- Ha: The Data is Stationary.

| Results of Dickey-Fuller Test: | |
|--------------------------------|-----------|
| Test Statistic | 5.304088 |
| p-value | 1.000000 |
| #Lags Used | 2.000000 |
| Number of Observations Used | 47.000000 |
| Critical Value (1%) | -3.577848 |
| Critical Value (5%) | -2.925338 |
| Critical Value (10%) | -2.600774 |

Note: From the table we observe that the data is not stationary as the P-Value is too high.

To make data stationary there are several different techniques:

- **Differencing**

Under this technique, we difference the data. That is, given the series dt , we create a new series of data:

$$\underline{dt(i) = v(i) - v(i-1)}$$

There would be one point less in the differenced data than in the original data. In most cases, one differencing is enough to stationarise the results. You should, however, differ the data several times if necessary. The `diff()` function in R is used to do differencing. By differencing a time series, a linear pattern may be omitted. A sequence of asset returns, or investment returns, is a differenced time series determined by taking price variations over successive time periods in finance or stock markets.

- **Seasonal Differencing**

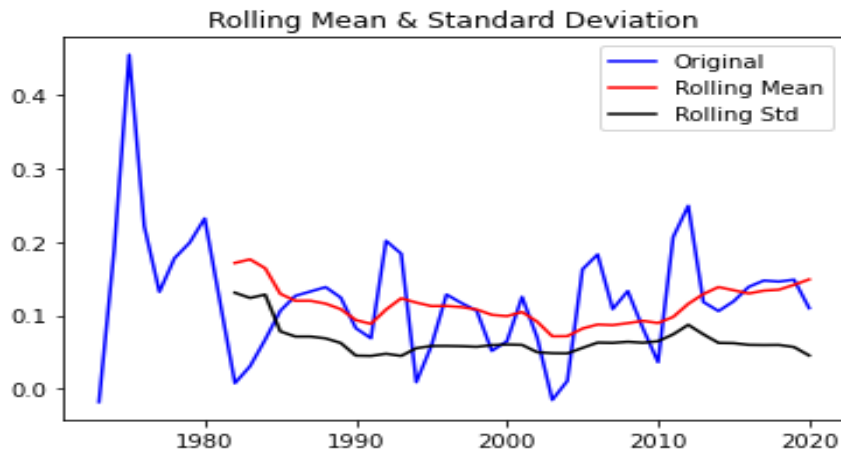
In the event that an arrangement has irregularity present in it, we can utilize occasional differencing to eliminate these intermittent examples. For month-to-month information, where there are 12 periods in a season, the occasional distinction of Y at period t is $y(t) - y(t-12)$. For quarterly information, the distinction will be founded on a slack of 4 information focuses.

- **Log Transformation**

The log transformation can be used to reduce the variance of a non-constant variance sequence. The `df.logscale()` function is used for this. One drawback of log transformation is that it can only be used on time series with positive values. Taking a log reduces the values to zero. The shrinking is smaller for values similar to 1, and more for values greater than 1, decreasing the difference.

Until applying the transformation to negative data, you should add a suitable constant to make all the data positive. The estimated (i.e., fitted) values and predictions for future points can then be obtained by subtracting this constant from the formula.

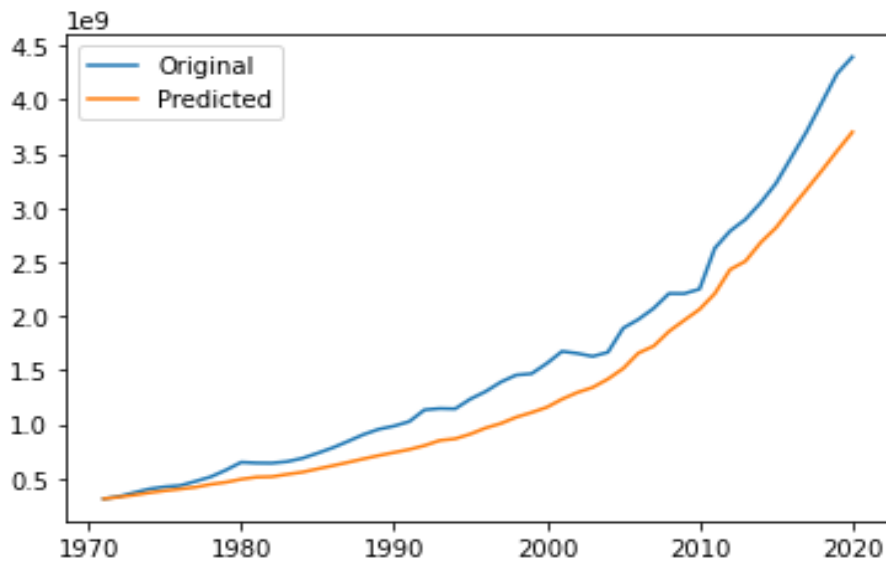
In our study, differencing was of no help, even after taking a lag of 50% of the data the dataset was still non-stationary, same as for seasonal differencing. So, we moved ahead with Log Transformation using the NumPy function “`np.log()`”. This step helped us in making the data stationary for forecasting.



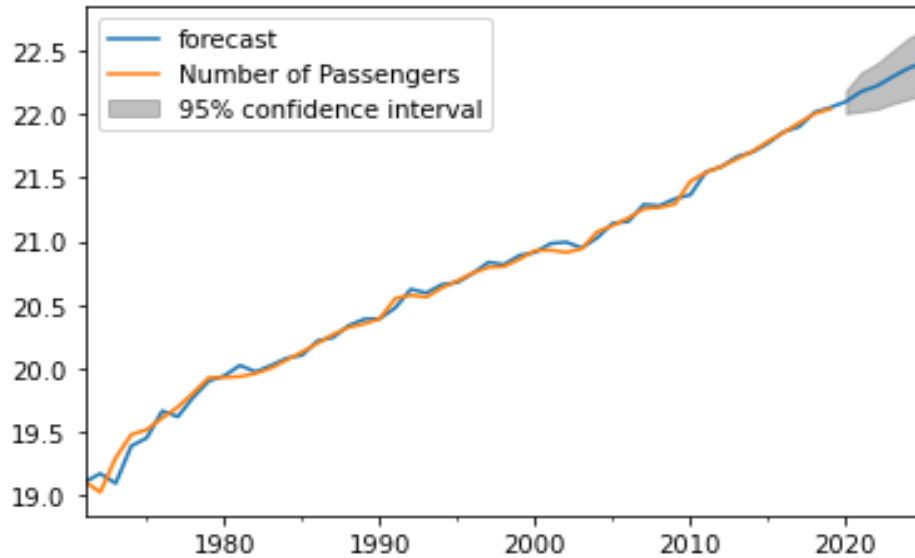
| Results of Dickey-Fuller Test: | |
|--------------------------------|-----------|
| Test Statistic | -3.552622 |
| p-value | 0.006734 |
| #Lags Used | 7.000000 |
| Number of Observations Used | 40.000000 |
| Critical Value (1%) | -3.605565 |
| Critical Value (5%) | -2.937069 |
| Critical Value (10%) | -2.606986 |

After the dataset was forecast using data.

stationary, we did ARIMA Model on the



Note: From the above figure we can see that the prediction model that we ran worked well on the original data.



The above figure provides us the forecast for the future in “Blue”, whereas the number of passengers in “Orange”. The Table below provides us the figures for the next 5 years forecasted Air Passenger Traffic. Although this was not the case due to COVID-19 Pandemic.

| Years | Forecast for the Air Passengers |
|-------|---------------------------------|
| 2020 | 4.58 Billion |
| 2021 | 4.82 Billion |
| 2022 | 5.06 Billion |
| 2023 | 5.32 Billion |
| 2024 | 5.60 Billion |

According to the International Air Transport Association (IATA), passenger traffic around the world in 2020 is projected to be half of what it was in 2019. The Covid-19 Pandemic, which began in early 2020, wreaked havoc on the aviation sector. According to the IATA, 2020 will be the worst year in the history of the global aviation industry due to the Covid-19 pandemic. The overall market has dropped by 65.9%. According to IATA, aviation demand will increase by 50% in 2021, but this is only a guess that may or may not be right. If any restrictions imposed by new coronavirus variants persist, real demand could be lower than the IATA's estimate.

While the aviation industry accounts for a limited percentage of GDP, it is intricately connected to all the operations of other industries that depend on it for funding. Airports, the aircraft production sector, the tourism industry, and import and export are all examples.

The COVID 19 pandemic has resulted in a sharp decrease in demand for air passenger traffic, endangering the survival of many aviation companies and the jobs they provide.

There is little to no doubt in that, that the COVID-19 pandemic brought in destruction for the aviation industry during 2020 how the pandemic affected aviation in 2020. In the beginning of the the crisis of Covid-19, nobody had given a thought that it would have such a great impact. Later only, when the Covid-19 was declared as pandemic, things took a different turn. Travellers started ti take precautions themselves during the flights.

Again, when the pandemic spread through Wuhan, China, things started to change. The Chinese authorities finally placed the city under curfew, closed the Wuhan airport for from January to April 2020, i.e for 11 weeks. But the virus was already spreaded out the city limits. And therefore, airlines like British Airways and the Lufthansa Group restrict flights to cities such as Shanghai and Beijing. Despite attempts to control the virus, it spread across Europe, with Italy becoming the first to be infected. In March, the virus was a hot topic at the conference of Airlines for Europe in Brussels. April 14th was the worst day of the crisis for the United States, according to TSA numbers, on the 14th of April there were just 87,534 passengers that passed through checkpoints. In contrast, this figure was 2,208,688 in the previous year, indicating a 96 percent decrease. Airlines all over the world started to park a variety of planes, including the Airbus A380 and Boeing 747. Air France and Lufthansa both had to retire their A380s, while KLM, Virgin Atlantic, British Airways, Qantas, and other airlines started withdrawing 747s ahead of time. Even if some aircraft were saved from withdrawal, they were still stored in aircraft graveyards.

Many airlines requested government bailouts to deal with the financial consequences of their operations coming to a halt. Most of the main was a €9 billion (\$11 billion) loan for Lufthansa. As a result of the outbreak, several jobs were destroyed. Lufthansa announced in June that up to 26,000 work losses were likely, but these have luckily been avoided. Employees working in the United States were fortunate in terms of airline payroll, as aid by the govt prevented outsourcing and salary cuts. This financial assistance was extended until the end of March 2021. It seemed that conditions were improving by the end of the summer. Many low-cost carriers (LCCs) across Europe were quickly expanding their schedules to meet the travel demand. Ryanair flew seven million passengers in August, a 53 percent decrease from the previous year. Meanwhile, TSA numbers continued to rise. Unfortunately, it was not to last, when a second wave of the COVID-19 virus emerged. Ryanair's passenger numbers fell by 82 percent in November, to just two million. This takes us to the year's end, which came as a shock to everyone. In the United Kingdom and South Africa, there was emergence of two new strains of the COVID-19. Many nations blocked travel from the two countries just before Christmas as a result of this.

In any case, there is motivation to be idealistic. Coronavirus Vaccinations are currently being spread everywhere on the world. Numerous individuals believe that before the finish of 2021, the planet will have gotten back to business as usual. Despite endeavors to guarantee the aviation industry's ability to adapt to dangers to its market, the business frequently clasps under the weight of various stuns, bringing about airline failures, liquidations, and sometimes, government bailouts. Following the September eleventh terrorist attacks (9/11), a few carriers in the United States asked for government's help to remain in business, as per Bailey (2002). The 9/11 assaults brought about a drop in travelers' numbers, provoking the state to acquaint enactment in Congress with incorporate aircraft advances and assurances to guarantee the business' survival (Vig, 2004). As per Voltes-Dorta and Pagliari (2012), the 2007–2009 economic crisis decreased air terminal expense adequacy by around 5.8%, bringing about a deficiency of US\$5.5 billion and leaving numerous airlines seriously hurt and helpless. Fuel value stuns, as indicated by Turner and Lim (2015), may significantly affect aircraft productivity. Regarding complex computational models fit for mimicking modern elements of epidemics and pandemics coursing across the aircraft transportation network through air terminals across the globe, the avionics business has advanced. Notwithstanding these progressions, the area still cannot seem to dominate the development of adequate monetary steadiness to adapt to the always repeating costs incurred by typhoons and other interior and outer stuns. There was broad assumption that the worldwide aviation business sector would see one more year of solid development in 2020. This was regardless of long periods of back-to-back expansions in cargo, traveler numbers, and deals around the business lately. With this backdrop, numerous carriers have been putting resources into and buying new airplane, impelling airplane makers like Airbus and Boeing to a huge excess in new airplane conveyances. Before the Covid pandemic in January 2020, the International Air Transport Association (IATA) anticipated a 4.1 percent ascend in revenue traveler kilometers (RPKs) and a 2.0 percent revenue in freight ton kilometers (FTKs) for the aviation business in 2020. (IATA, 2020). Notwithstanding, when it became evident that COVID-19 would significantly affect the avionics business' performance, IATA refreshed its estimates for the industry a few times. Coronavirus started enormous sector issues as nations battled to control and satisfactorily plan for the pandemic's outcome, bringing about line terminations and prohibitive arrangements. As per past evaluations, the pandemic had a quick and significant impact on air travel and different fragments of the traveler business all throughout the planet. Thus, considering the unanticipated and flighty presence of COVID-19's impact on the worldwide economy, it is critical to track and control the pandemic's effect on various areas of the economy to give necessary exercises to strategize and practice. As economies all throughout the planet intend to work during a

pandemic or the "new norm," seeing how the pandemic is arising is critical. As a result, steps are being taken to ensure that the organizational viability in the different sectors of the economy can be implemented.

The pandemic, according to popular belief, has caused numerous global economies to reboot, allowing for a fresh start on a more prosperous and resilient path. Stakeholders agree that the current economic future must be flexible and consistent with the values pursued by the Sustainable Development Goals (SDGs) emerging from the 2030 Agenda for Sustainable Development and the set of guidelines for reducing disaster risk.

With the above in mind, this paper aims to show how the COVID-19 travel ban affects the global aviation sector and its value chain.

The report further discusses the implications of a pandemic on the environment of different countries, as well as the economic consequences.

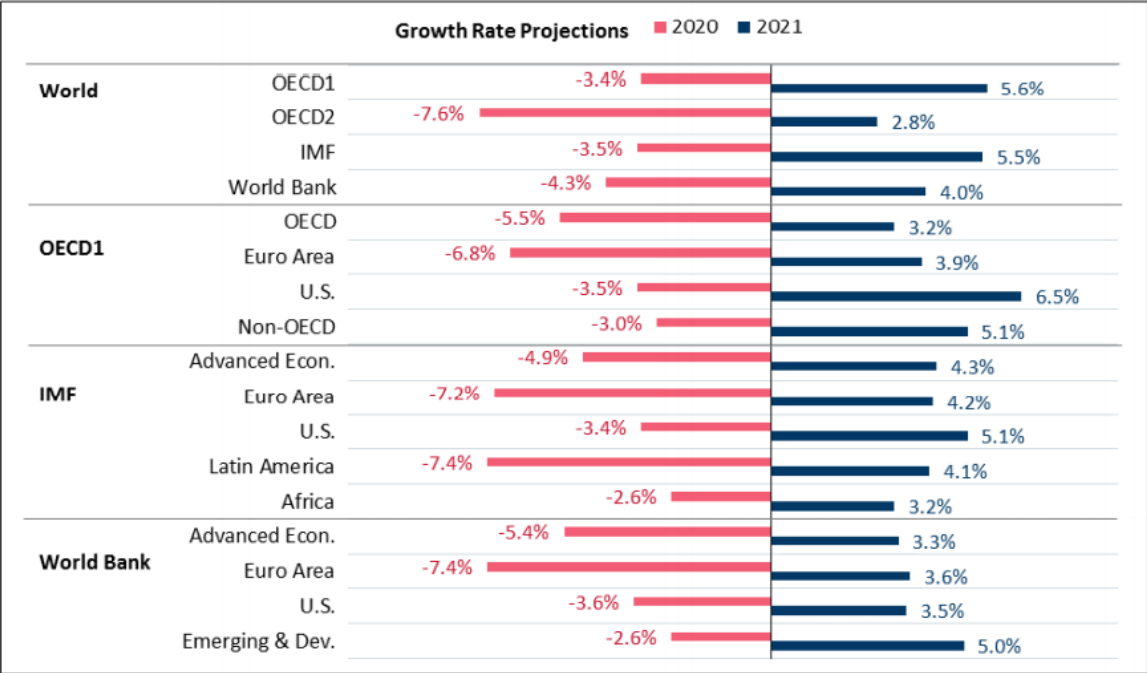
- **Covid-19's Impact on the economy of the world and various developing nations.**

Over 200 countries in the world are now affected by the COVID-19 epidemic. This pandemic in particular has had a much greater impact on economic development in the world negatively, than anything seen in nearly a century. According to current estimates, the outbreak slowed down the global economic development around a -4.5 percent to -6.0 percent annual average in 2020, with a rebound of only 2.5 percent to 5.2 percent has been estimated for the year 2021. At least till 2024, major industrialized economies, nearly accounted for 60% of global economic activity, are estimated to run well under their production levels. The world economy showed signs of a 2-track rebound in the Q3 of 2020, compared to the synchronized existence of the global economic recession in the first half of 2020, with developed economies seeing a nascent recovery and economic activity in emerging economies lagging behind. Since September, a resurgence in infectious cases in Europe, the United States, and numerous emerging economies has prompted calls for lockdowns and curfews, threatening to stymie or stall a sustainable economic rebound until at least the first or second quarters of 2021. Due to high degree of unemployment that was seen since the Economic crisis in the 1930s in the market and significant debt on developing economies, the financial reaction from the pandemic may result in continued labor loss in the services industry, where representatives have been not able to work offsite, work cuts have been thought all the more seriously. Increase in poverty, job losses and civil instability, and the loss of our fellow humans will bring in a long-term impact on the world economy. According to some projections, the global economy's recession would cause 100 million to 110 million people to fall into severe poverty. Furthermore, some projections suggest that as a result of the global economic crisis, global trade could plunge by 9.0 percent or marginally less in 2020, wreaking havoc on trade-dependent developed and emerging economies in particular. The maximum economic influence of the pandemic is unlikely to be known before the negative health impacts have reached their height. This study gives an analysis of the global economic costs to date, as well as how policymakers and foreign organizations have responded to these costs.

The financial economy, as well as the economies of most countries and territories, remain in a state of flux. Uncertainty over the length and breadth of the health-care crisis' economic consequences is fueling risk and uncertainty expectations in financial markets and business decision-making. Furthermore, financial uncertainty has been exacerbated by concerns about the global pandemic and the success of public measures aimed at containing the transmission and preventing a second wave of infections. Corporations are deferring investment decisions, laid off formerly furloughed jobs, and in some cases declaring bankruptcy in increasing numbers. A historic decline in the price of crude oil has added to the economic situation. Although prices have stabilized slightly from their April low of nearly \$20 per barrel, they are still hovering about \$40 to \$45 per barrel, representing the global economic slowdown. When the United States' economic growth rate fell by 33.0 percent at an annual rate in the second quarter of 2020, Federal Reserve Chairman Jerome Powell announced on April 29, 2020 that the Federal Reserve will use its "wide range of resources" to support economic development. "The current public health problem will weigh heavily on economic growth, jobs, and inflation in the short term, and presents significant threats to the economic outlook over the medium term," the Federal Open Market Committee said in a statement reviewing the state of the US economy. Prior to the outbreak of COVID-19, the global economy was struggling to resume a broad-based recovery due to a variety of factors, including the lingering effect of rising trade protectionism, trade tensions among major trading partners, declining commodity and energy prices, and economic uncertainty in Europe over the impact of the United Kingdom's exit from the European Union. Any of these problems posed a solvable problem for the global economy on its own. However, the issues as a whole have undermined the global economy and limited the policy stability of many national leaders, especially in the developing world. As the extent of the economic consequences is becoming clearer, the pandemic's reaction will have a long-term influence on how companies structure their workforces, global supply chains, and policymakers react to a global health crisis. Forecasting the virus's influence

has become particularly difficult due to the virus's accelerated propagation and the compounding effects on national and global rates of economic development. Around late 2019 and mid-20, the Organization for Economic Cooperation and Development (OECD), the International Monetary Fund (IMF), and the World Bank both updated their projections downward, owing to the increasingly weakening condition of the world economy and a significant drop in expected growth rates. For example, the IMF lowered its global economic growth outlook from positive 3.4 percent to negative 4.4 percent between October 2019 and October 2020. Similarly, the Organization for Economic Cooperation and Development (OECD) reduced its outlook from 2.9 percent in November 2019 to -4.5 percent in September 2020. The OECD forecasted the consequences of a single and double wave of infections in its June forecast, with the predictions for a single wave. Most predictions were updated in late 2020 and early 2021, indicating a less extreme recession in 2020 and a more ambitious outlook for 2021, as seen in Figure. In March 2021, the OECD predicted that global GDP would fall by 3.4 percent in 2020, relative to a previous prediction of -4.2 percent, with a greater rebound of 5.6 percent in 2021, compared to a previous forecast of 4.2 percent. From 2019 to mid-June 2020, emerging economies are expected to undergo the steepest reductions in economic activity, according to most estimates.

Figure: Major Economic Forecasts by Region



Source: Organization for Economic Cooperation and Development. March 2021

Economic growth in the most industrialized and large emerging economies was sluggish at the start of 2020, but it was still expected to be optimistic. Countries that depend heavily on exports, such as Germany, Japan, Italy, Canada, South Korea, and Mexico, as well as commodity exporters are expected to be the hardest hit by the pandemic's downturn in economic development. Furthermore, immigration bans and quarantines prove to have a significant economic impact on a variety of countries. Given China's position in supplying computers, electronics, pharmaceuticals, and transportation machinery, as well as being a primary source of demand for many commodities, the OECD states that supply declines in China have global consequences. Some analysts claim that recent data suggest that South Korea, Japan, the Philippines, Indonesia, Thailand, Vietnam, and Malaysia, could face an economic downturn in 2020. Before the COVID-19 outbreak in early January 2020, IMF predicted that economic growth in emerging economies will be marginally higher than in 2019. This forecast was focused on developments in US-China trade negotiations, which were supposed to result in the removal of certain tariffs and a rise in India's growth rate. Latin America and the Middle East were both expected to see growth rates in 2020. Due to the downturn in global trade caused by COVID-19, lower oil and product prices, a rise in the foreign exchange value of the currency, and other secondary effects that may delay inflation, these forecasts are likely to be revised downward. As a result of a

downturn in trade with China and lower oil prices, commodity exporting countries will likely face a greater slowdown in growth than predicted in earlier forecasts.

The economic effect of the air travel bans and the overall as of the Covid-19 pandemic is being investigated by looking at actual GDP values (in percentages) and possible projections and by calculating them all in percentages for the global economy and various industrialized economies, developed markets, developing nations, and further analyzing them. GDP growth rates are on a fiscal year basis and GDP is calculated using weights at 2010 prices and market exchange rates.

Various economies, almost all of the world economies and overall world economy was hit by this pandemic bringing it to a total halt. Talking in numbers the world economy was hit by 7.7 percent lesser in the real GDP of the world that it was supposed to reach bringing it to a -5.2 percent.

This is the similar case in almost all of the economies whether it may be a developed or a developing economy.

Talking in accordance to our country India, as it was a growing economy and predictions were earlier too high for its growth, the decline it had from its projections was too high as compared to the average of the world economy i.e., 9% decline bringing it to a -3 percent real GDP but it is much better than the world economy because in India the lockdown was imposed at the last and didn't last too longer. It was opened in phases. The cases were got into control after the early rise then decline phase started in a short span of time. However, the 2021 projections are a concern as the growth percent is not up to the mark that was projected for the year 2021 and is 3 percent lower than it was supposed to be i.e., 3.1 percent real GDP. Amongst the Developing economies, the best performing is the China that is at 6.9 percentage point and it is having a 1.1 percentage point difference from its projections for 2021 from the January 2020 projections. The worst performing is the Brazil that is at 2.2 percentage point which has a difference of -0.3-point percentage from its predictions for 2021 from its 2020 projections. However, the worst that is performing as in difference from its predictions for 2021 from January 2020 projections is India which has a difference of -3.0 percentage points.

This might be due the pandemic hitting it in waves and the different economies have passed the second wave, but India is still to receive a second wave that is the prediction and after passing it there won't be any disruptions in the way of growth in the real GDP.

However, the world economy as an average is performing at a better term in perspective to the projections that were made for its performance for its real GDP i.e., 4.2 percent that is 1.6 more than the projections that were made for the year 2021.

**Table: Real GDP
(Percent change from previous year)**

| | 2017 | 2018 | 2019e | 2020f | 2021f | Percentage point differences from January 2020 projections | | |
|----|---|------------|------------|------------|-------------|--|-------------|------------|
| | | | | | | 2020f | 2021f | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | World | 3.3 | 3.0 | 2.4 | -5.2 | 4.2 | -7.7 | 1.6 |
| 6 | Advanced economies | 2.5 | 2.1 | 1.6 | -7.0 | 3.9 | -8.4 | 2.4 |
| 7 | United States | 2.4 | 2.9 | 2.3 | -6.1 | 4.0 | -7.9 | 2.3 |
| 8 | Euro Area | 2.5 | 1.9 | 1.2 | -9.1 | 4.5 | -10.1 | 3.2 |
| 9 | Japan | 2.2 | 0.3 | 0.7 | -6.1 | 2.5 | -6.8 | 1.9 |
| 10 | Emerging market and developing economies | 4.5 | 4.3 | 3.5 | -2.5 | 4.6 | -6.6 | 0.3 |
| 11 | China | 6.8 | 6.6 | 6.1 | 1.0 | 6.9 | -4.9 | 1.1 |
| 12 | Russia | 1.8 | 2.5 | 1.3 | -6.0 | 2.7 | -7.6 | 0.9 |
| 13 | Brazil | 1.3 | 1.3 | 1.1 | -8.0 | 2.2 | -10.0 | -0.3 |
| 14 | India ³ | 7.0 | 6.1 | 4.2 | -3.2 | 3.1 | -9.0 | -3.0 |
| 15 | Real GDP¹ | | | | | | | |
| 16 | High-income countries | 2.4 | 2.2 | 1.7 | -6.8 | 3.8 | -8.3 | 2.3 |
| 17 | Developing countries | 4.8 | 4.4 | 3.7 | -2.4 | 4.7 | -6.7 | 0.2 |
| 18 | <i>Memorandum</i> Low-income countries | 5.4 | 5.8 | 5.0 | 1.0 | 4.6 | -4.4 | -0.9 |

Source: World Bank.

1. Aggregate growth rates are calculated using GDP weights at 2010 prices and market exchange rates.
2. GDP growth rates are on a fiscal year basis. Aggregates are calculated using data on a calendar year basis.
3. Column labelled 2018 refers to FY2018/19. The column labelled 2019 refers to FY2018/19.

CONCLUSION

Here, we have shown the force of Machine Learning to forecast air travelers traffic based with the assistance of verifiable historical data & information obtained. The information that we gained was of years from 1970 till 2019. Utilizing ARIMA Model, determining was done and the outcomes were ended up. The Figure for the Air Travelers for the year 2020 was 4.58 billion, an increment of practically 0.18 billion from the year 2019 to be explicit in number. The number that was recorded for the Air Travelers Traffic for the year 2020 was 2.6 billion as per the Global Common Flying Association, a shy of around 2 billion than the figure that was made for the quantity of air travelers. The entire effect that came or the distinctions that came were because of the lockdowns being forced in numerous nations and a general burden of movement boycott i.e., the total stop of avionics industry for the significant bit of the year 2020 because of the Coronavirus Covid Flare-up. This emergency is longer and more profound than anybody might have anticipated. Misfortunes will be decreased from 2020, however the agony of the emergency increments. There is good faith in homegrown business sectors where flying's trademark strength is shown by bounce back in business sectors without inside movement limitations.

Coronavirus is spreading quick across the globe. At the hour of composing, the WHO revealed instances of Coronavirus in 206 nations with the heart-breaking deaths of in excess of 30,29,815 individuals. The essential spotlight is fundamentally on control, treating the evil and assisting networks with adapting to the scourge. Our illustrative situations demonstrate that the expected loss of pay in influenced nations could be critical. The worldwide Gross domestic product declined by up to - 7.7%, and created nations hit the hardest (8% overall). Governments should offer huge help to influenced organizations and families. Our investigation is probably going to belittle the expected monetary expenses of the scourge. World development rates are determined utilizing purchasing power parity (PPP) loads, which characteristic a more noteworthy portion of worldwide Gross domestic product to EMDEs than market trade rates. World exchange volume of products and non-factor administrations are just thought of. Our examination will develop as we align assumptions and situations with later wellbeing and monetary markers. Early indications of the money related costs and the size of evaluated impacts show the necessity for an arranged worldwide response to the crisis. Likewise, depicting the overall economy to rise to a 4.2 rate centers. A worldwide crisis requires a worldwide response and there is a necessity for worldwide participation on prosperity, yet moreover on a trade, account, and macroeconomic plans. Fortunately, worldwide establishments are catalyzing and putting together worldwide endeavors, to offer specialized and money related assistance to countries adjusting to the prosperity and financial outcomes of the erupt.

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