Introduction

Overview

It takes a pre-pandemic analysis route which can help to shed the light on the current situation and future prospects to measure which commodities are performing well in the global market. The project is made though a data visualization tool Tableau. The project is equipped with comparative analysis of the data and interactive study of the international Import/Export market. It compares the years of 2018-19 and 2019-20 to give a brief overview of the best commodities to export so that additional revenue can be generated.

Purpose

The project aims to bring light to the situation of Imports and Exports through and by India. It allows the audience to understand how India is performing on the global market. It aims to provide a bird's eye view to the situation of the country on an international trade level through interactive charts and exploratory data analysis. The purpose of the project was to bring an insight to the pre-pandemic and during pandemic analysis of Imports and Exports and which commodities are performing well in the International market additionally which countries seek what category of commodity which can eventually help India improves its position in the international market by reserving and exporting what gives the country a greater value.

Proposed Solution

The solution uses Data first approach to determine the well performing commodities in the market and target them eventually to get a better deal with the respective trade country. The project is developed using visual and analytical thinking to determine the subtler aspects of the international Import/Export market. The process involved in the solution is as follows:

- Get the data from data.gov.in.
- Analyze the data types involved and perform Data cleaning techniques if necessary.
- Answer basic Exploratory Data Analysis questions to determine the extent of Data.
- Perform visual analysis through Data visualization tool to answer those questions.
- Share it with the concerned stakeholders.

Experimental Investigations

As per the proposed solution the following dataset is obtained from the website for the years 2018-2019 and 2019-2020.
Link for the dataset named Under Principal Commodity Export and Import Respectively - https://data.gov.in/node/6789947

Following the proposed step and taking the basic Data Cleaning process in consideration it is visible that the data values are inconsistent and variable which can hamper the analysis. Hence following steps are taken to account:

- Converting the UNIT column KGS to TON and simultaneously changing the values in QUANTITY column for the analysis.
- Removing the N/A values and respective rows which have both the UNIT and QUANTITY values as N/A since they will not provide any sufficient data for analysis.

- Summing the Values column for the above step to calculate appropriate findings.
- Adding the Type and Year column to differentiate between the category of import or export and the year.
- Merging the Data of 2018-2019 and 2019-2020 Import and Export so a single comparative analysis can be carried out.
- Renaming the columns.

All the above steps are done using Pandas and numpy in Python and the processed dataset is obtained.

COMMODITY	COUNTRY	UNIT	QUANTITY	Value (US$ million)
TEA	ARGENTINA	KGS	1621440	2.46
TEA	AUSTRALIA	KGS	3349	0.02
TEA	AUSTRIA	KGS	884	0.00
TEA	BELGIUM	KGS	2	0.00
TEA	BRAZIL	KGS	2	0.00
TEA	CANADA	KGS	56	0.00
TEA	CHINA P RP	KGS	314081	1.76
TEA	CZECH REPUBLIC	KGS	3648	0.04
TEA	DENMARK	KGS	8	0.00
TEA	ECUADOR	KGS	171417	0.41
TEA	FRANCE	KGS	394	0.07
TEA	GERMANY	KGS	83134	0.56
TEA	HONG KONG	KGS	80	0.00
TEA	INDONESIA	KGS	534416	0.82
TEA	IRAN	KGS	101620	0.25
TEA	ITALY	KGS	27	0.00
TEA	JAMAICA	KGS	6	0.00
TEA	JAPAN	KGS	13153	0.25
TEA	JORDAN	KGS	101022	0.23
TEA	KENYA	KGS	3122636	8.21
TEA	KOREA RP	KGS	1440	0.05
TEA	MALAWI	KGS	245360	0.46
TEA	MALAYSIA	KGS	40975	0.04
TEA	MAURITIUS	KGS	153	0.00
TEA	MOZAMBIQUE	KGS	250971	0.37
TEA	MYANMAR	KGS	19800	0.06
TEA	NEPAL	KGS	9827911	19.63
TEA	NETHERLAND	KGS	7780	0.02
TEA	POLAND	KGS	6202	0.02
TEA	QATAR	KGS	2149	0.01
TEA	SAUDI ARAB	KGS	7380	0.02
TEA	SINGAPORE	KGS	19398	0.38
TEA	SOUTH AFRICA	KGS	5400	0.03

Original Dataset

	COMMODITY	COUNTRY	UNIT	QUANTITY	VALUE (US$ million)	YEAR	TYPE
0	TEA	ARGENTINA	TON	887.98	1.415	2018	IMPORT
1	TEA	AUSTRALIA	TON	0.011	0.001	2018	IMPORT
2	TEA	BAHARAIN IS	TON	0.336	0.006	2018	IMPORT
3	TEA	BRAZIL	TON	1.6	0.014	2018	IMPORT
4	TEA	CHINA P RP	TON	732.426	2.824	2018	IMPORT
5	TEA	CROATIA	TON	3.0	0.021	2018	IMPORT
6	TEA	CYPRUS	TON	0.002	0.0	2018	IMPORT
7	TEA	CZECH REPUBLIC	TON	3.729	0.051	2018	IMPORT
8	TEA	ETHIOPIA	TON	0.191	0.0	2018	IMPORT
9	TEA	FRANCE	TON	0.625	0.008	2018	IMPORT
10	TEA	GERMANY	TON	62.162	0.34	2018	IMPORT
11	TEA	HONG KONG	TON	0.698	0.01	2018	IMPORT
12	TEA	INDONESIA	TON	826.491	1.252	2018	IMPORT
13	TEA	IRAN	TON	3365.796	3.76	2018	IMPORT
14	TEA	ITALY	TON	0.325	0.022	2018	IMPORT
15	TEA	JAPAN	TON	41.064	0.26	2018	IMPORT
16	TEA	KENYA	TON	2027.875	6.385	2018	IMPORT
17	TEA	KOREA RP	TON	0.908	0.019	2018	IMPORT
18	TEA	KUWAIT	TON	4.0	0.015	2018	IMPORT
19	TEA	MALAWI	TON	487.18	1.025	2018	IMPORT
20	TEA	MALAYSIA	TON	80.356	0.073	2018	IMPORT
21	TEA	MOROCCO	TON	0.139	0.016	2018	IMPORT
22	TEA	MOZAMBIQUE	TON	120.0	0.247	2018	IMPORT
23	TEA	MYANMAR	TON	19.8	0.067	2018	IMPORT
24	TEA	NEPAL	TON	15874.219	29.069	2018	IMPORT
25	TEA	NETHERLAND	TON	0.052	0.002	2018	IMPORT
26	TEA	PAKISTAN IR	TON	1.3	0.008	2018	IMPORT
27	TEA	POLAND	TON	0.0	0.0	2018	IMPORT
28	TEA	QATAR	TON	5.144	0.024	2018	IMPORT
29	TEA	RWANDA	TON	0.001	0.0	2018	IMPORT
30	TEA	SAUDI ARAB	TON	5.92	0.024	2018	IMPORT
31	TEA	SINGAPORE	TON	22.332	0.377	2018	IMPORT
32	TEA	SOUTH AFRICA	TON	28.224	0.215	2018	IMPORT
33	TEA	SRI LANKA DSR	TON	1022.422	5.53	2018	IMPORT
34	TEA	SWITZERLAND	TON	0.206	0.008	2018	IMPORT
35	TEA	TAIWAN	TON	59.27	0.126	2018	IMPORT
36	TEA	TANZANIA REP	TON	322.0	0.72	2018	IMPORT

Processed Dataset

Tableau analysis

Link for the dashboard -
https://public.tableau.com/profile/rutvik.j#!/vizhome/ImportExportAnalysis/ImportExportAnalysis

For the obtained Dataset following questions were answered as a part of Exploratory Data Analysis phase:

- Which countries provide a major value ($USD in millions to the country) for which year and which sector?
- What are the top 10 commodities each by the Import and Export sector and how much quantity of that particular commodity is being sold?
- What are the top commodities for every individual country and what is their value to quantity ratio?
- Which are the bottom performing commodities to be avoided?

These questions help in answering majority of the trade involved in the international market.

Results

- As visible through the visualization obtained, year 2019-2020 has suffered a huge loss in each sector of Import and Export the major reason which can be at point is the pandemic (Covid 19) in action.
- The major Imported country which costs India is China at whopping 85,711 million $USD and the major commodity which costs us is Iron and steel.
- The major exported country which provides value to India is USA providing almost 72,026 million $USD and the major commodity being sold is Drug manufactures and biologicals.
- India's total Import was 279,460 and Export marked at 160,609 all values in million $USD.

Conclusion

India can be a global market leader if it focuses on what countries require the most and assimilates what it needs to produce. Cutting down the bottom tire import commodities like raw Silk can possibly improve the government spending and allocation of the resources. Hence resources could be utilized in a much-organized manner.