Basic Computational Techniques For Data Analysis
(Skill enhancement Course)

Project on

Use of Different ToolS of Excel for AnalyZing the Economies OF india and cambodia

Submitted By: Udit Chauhan

Roll No: BAP21477

Course:

BA Programme(Eco+Math)

INTRODUCTION

The submission consists of the sections of Excel File in which I have tried to compare Indian economy with Cambodian economy on the grounds of various aspects such as GDP growth, Gross Capital Formation, Life Expectancy at Birth, Inflation (GDP Deflator), etc. using the data present at the website of World Bank.

This project attempts to present the statistical calculations and measurements of the economy of two countries. Representation of Economical parameters using various methods such as – Scatter plot, Pie chart, Bar chart, Box plot, etc. aligned with numbers stored in variables, will provide an inner insight of what these variables have and their correlation with others. The execution of these variables reveals the various facts and figures that are considerable and noticeable.

INDIAN ECONOMY

The economy of India is characterized as a middle income developing market economy. It is the world's fifth-largest economy by nominal GDP and the third largest by purchasing power parity (PPP). According to the International Monetary Fund (IMF), on a per capita income basis, India ranked 138th by GDP (nominal) and 118th by GDP (PPP). Since the start of the 21st century, annual average GDP growth has been 6% to 7%, and from 2013 to 2018, India was the world's fastest growing major economy, surpassing China. Historically, India was the largest economy in the world for most of the two millennia from the 1st until the 19th century.

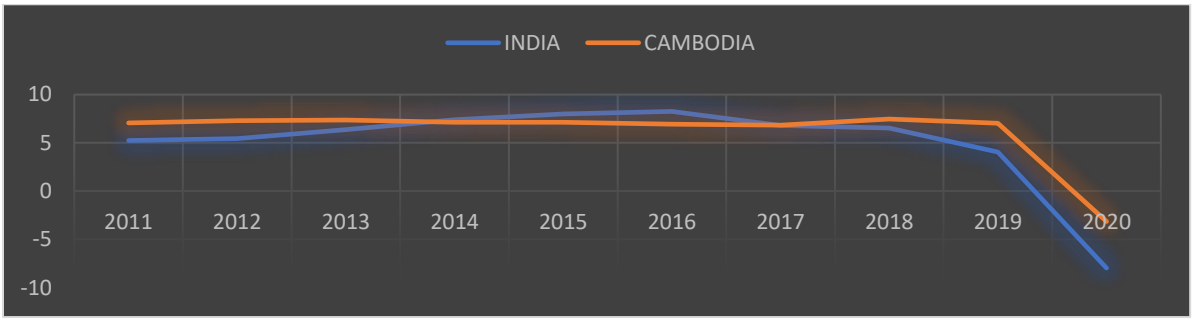
Cambodian Economy

The economy of Cambodia currently follows an open market system (market economy) and has seen rapid economic progress in the last decade. In 1995, with a GDP of $2.92 billion, the government transformed the country's economic system from a planned economy to its present market-driven system. Following those changes, growth was estimated at a value of 7% while inflation dropped from 26% in 1994 to only 6% in 1995. After four years of improving economic performance. Currently, Cambodia's foreign policy focuses on establishing friendly borders with its neighbours (such as Thailand and Vietnam), as well as integrating itself into regional (ASEAN) and global (WTO) trading systems.

ANALYZING THE TWO ECONOMIES

1)Comparing GDP growth using Line Graph:

A **line graph** is a type of chart used to show the information that change over time. We plot line graphs using several points connected by straight lines. We also call it a line chart.



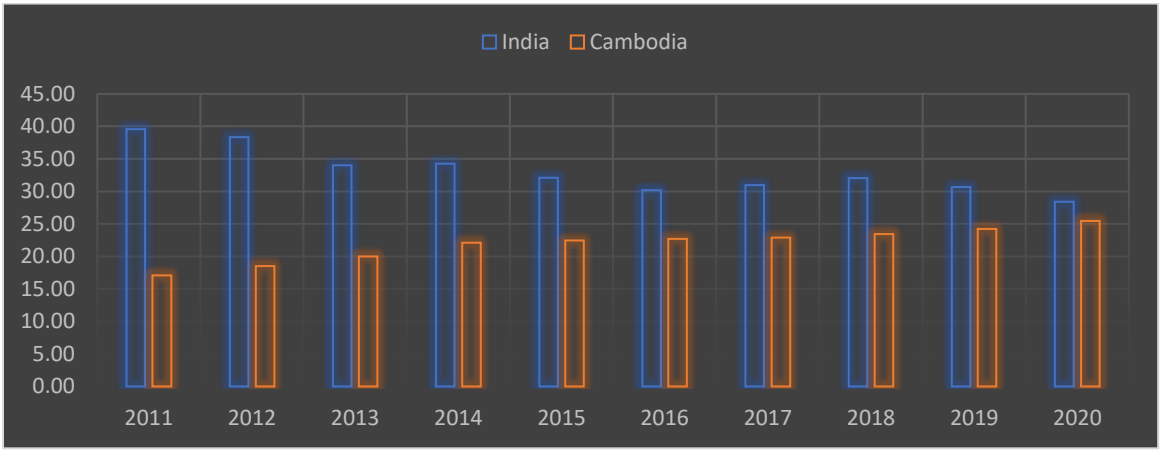
Years	India	Cambodia
2011	5.24	7.07
2012	5.46	7.31
2013	6.39	7.36
2014	7.41	7.14
2015	8.00	7.12
2016	8.26	6.94
2017	6.80	6.84
2018	6.53	7.47
2019	4.04	7.05
2020	-7.96	-3.14

Analysis

The growth of GDP in Cambodia had been more than that of India till 2013 but then for two successive years India's GDP growth was more than that of Cambodia. After 2016, the GDP growth of India started to decline and it declined to 4.04 in 2019, whereas talking about Cambodia it decreased for two years then again it increased. But in 2020, both the countries faced a huge decline in the growth of GDP due to the pandemic.

2)Comparing Gross Capital Formation Using Clustered Column Chart:

A **clustered bar** chart displays more than one data series in clustered horizontal columns. Each data series shares the same axis labels, so horizontal bars are grouped by category.



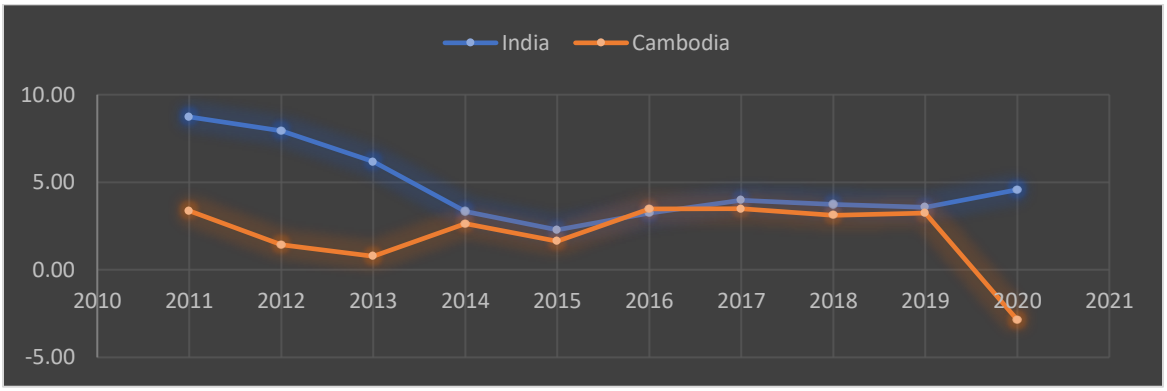
Years	India	Cambodia
2011	39.59	17.10
2012	38.35	18.51
2013	34.02	20.01
2014	34.27	22.09
2015	32.12	22.45
2016	30.17	22.71
2017	30.98	22.89
2018	32.07	23.45
2019	30.66	24.23
2020	28.42	25.45

Analysis

In year 2011, there was a very big difference between the %growths in Gross Capital Formation of the two countries but by the year 2020, the difference has lowered a lot, the difference which was of 22.49 in 2011 has decreased to 2.97 in 2020. The %growth in GCF of Cambodia is continuously increasing since 2011 whereas of India it is sometimes decreasing sometimes increasing.

3)Comparing Inflation, GDP Deflator Using Scatter Plot:

A **scatter plot** (also known as - scatter chart, scatter graph) uses dots to represent values for two different numeric variables. The position of each dot on the horizontal and vertical axis indicates values for an individual data point. Scatter plots are used to observe relationships between variables.



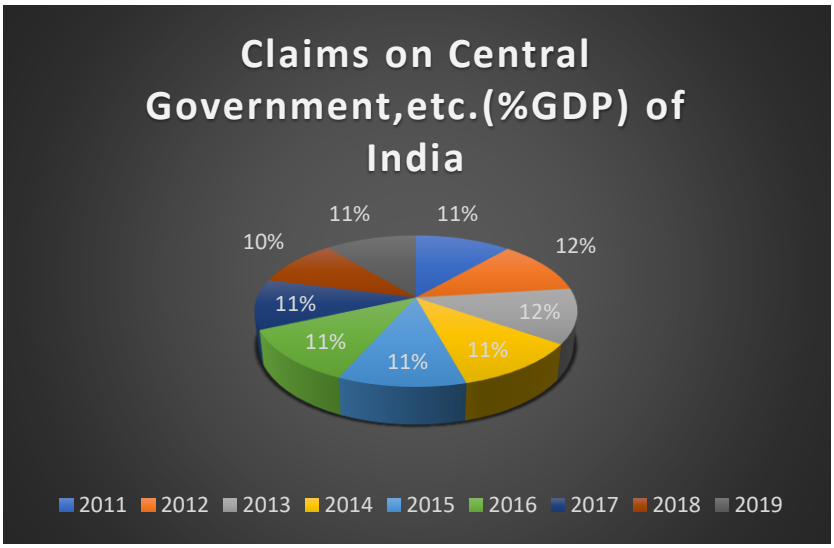
Years	India	Cambodia
2011	8.73	3.36
2012	7.93	1.44
2013	6.19	0.78
2014	3.33	2.63
2015	2.28	1.64
2016	3.24	3.47
2017	3.97	3.49
2018	3.74	3.11
2019	3.57	3.24
2020	4.57	-2.86

Analysis

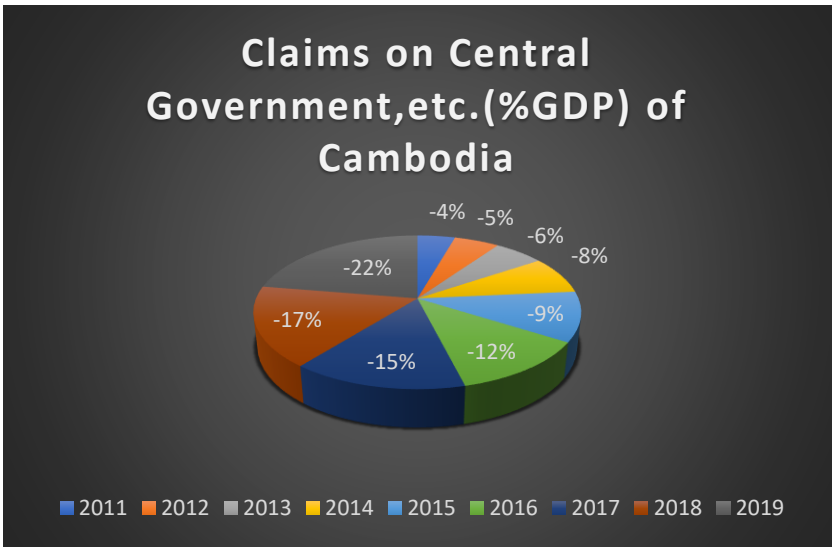
The above scatter plot depicts years on X-axis and count of GDP deflator/inflation on Y-axis. A clear comparison is visible between the two countries. It can be observed that India has witnessed the maximum count of inflation in year 2011, while Cambodia has witnessed the same in year 2017. On the other hand, India has experienced minimum count of GDP deflator in year 2015 whereas Cambodia has experienced the minimum count in year 2020.

4) Comparing Percentage Claims on Central Government(%GDP) using Pie Chart:

Pie Chart is type of graph in which a circle is divided into sectors such that each represents a proportion of the whole. In a pie chart, the size of each part, or slice, varies according to the percentage in each category.



Years	India
2011	24.81907
2012	25.25325
2013	25.46563
2014	23.97973
2015	23.69651
2016	25.22459
2017	23.21227
2018	22.10756
2019	23.73382



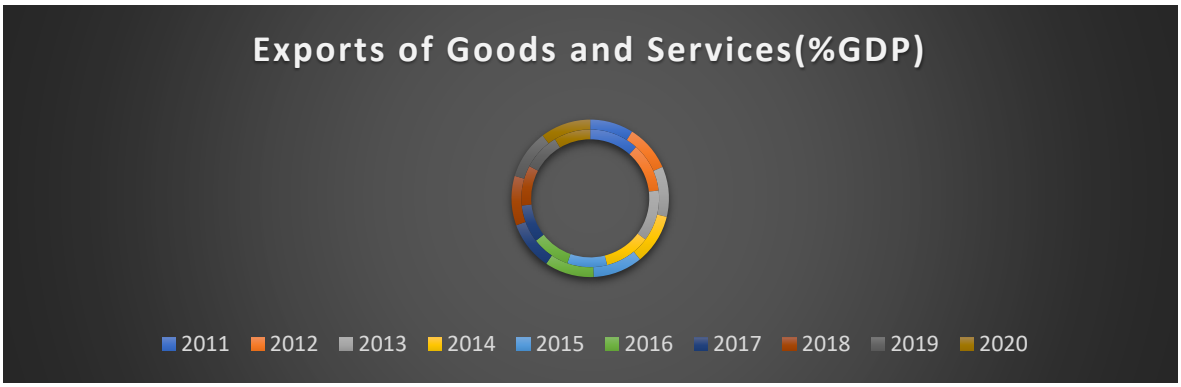
Years	Cambodia
2011	-4.32826
2012	-5.17942
2013	-5.72215
2014	-7.79878
2015	-10.2553
2016	-11.8281
2017	-14.3396
2018	-16.5616
2019	-21.9096

Analysis

Claims on central government include loans to central government institutions net of deposits. It shows the percentage share in each year. The data delineates the positive claims on central government of India which means the government is taking more loans whereas Cambodia is incessantly facing negative claims which mean the country's liabilities are more than the loans incurred on the government

5) Comparing Exports of Goods and Services (%GDP) using Doughnut Chart:

A **doughnut (or donut) chart** is a pie chart with a "hole" - a blank circular area in the center. The chart is divided into parts that show the percentage each value contributes to a total. Like the regular pie chart, the doughnut chart is used with small sets of data to compare categories.



Outer Doughnut-Cambodia

Inner Doughnut-India

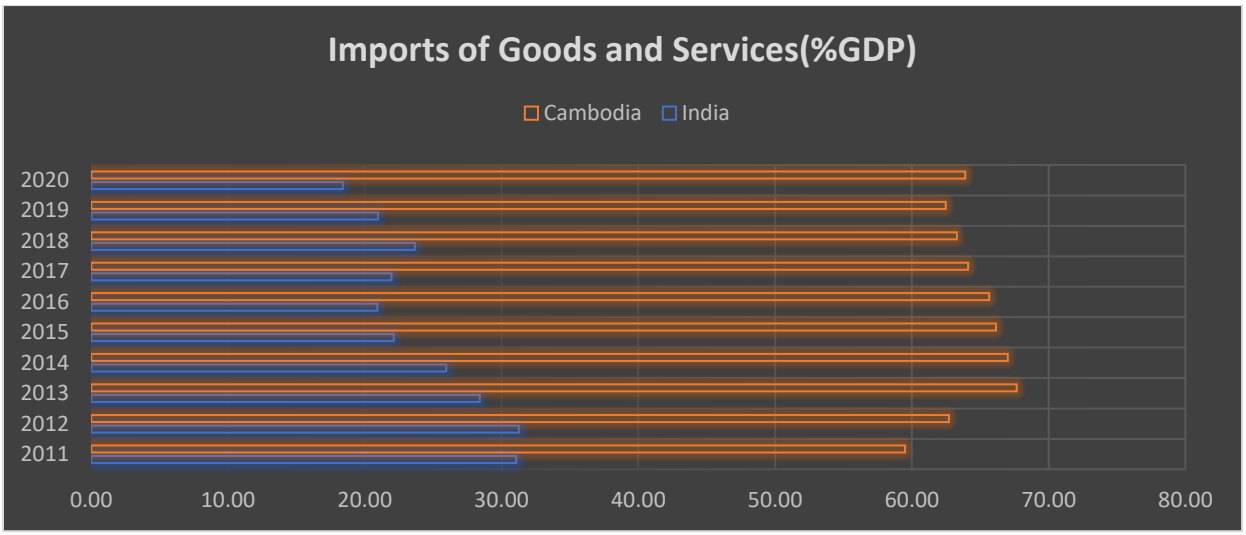
Years	India	Cambodia
2011	24.54	54.08
2012	24.53	57.89
2013	25.43	62.39
2014	22.97	62.60
2015	19.81	61.72
2016	19.16	61.28
2017	18.79	60.68
2018	19.94	61.60
2019	18.43	61.09
2020	18.08	62.45

Analysis

The graph and the data show that the percentage share of exports to GDP of India has been decreasing since 2011, an increase as observed in 2013 but then again it decreased and from 2015 to 2019 it remained near about 18-19%. Talking about Cambodia we can see that the percentage share of exports to GDP had decreased in 2012 but then it increased till 2014 and but then it decreased till 2017 and is increasing since 2017. Therefore there are fluctuations in share of exports to GDP.

6)Comparing Imports of Goods and Services (%GDP) using Clustered Bar Chart:

A **clustered bar** chart displays more than one data series in clustered horizontal columns. Each data series shares the same axis labels, so horizontal bars are grouped by category.



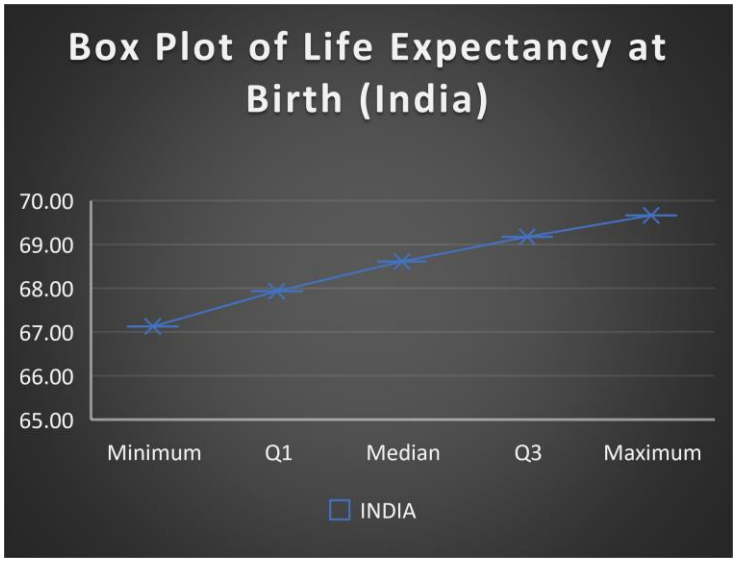
Years	India	Cambodia
2011	31.08	59.50
2012	31.26	62.71
2013	28.41	67.66
2014	25.95	67.01
2015	22.11	66.15
2016	20.92	65.67
2017	21.95	64.11
2018	23.66	63.30
2019	20.96	62.47
2020	18.39	63.90

Analysis

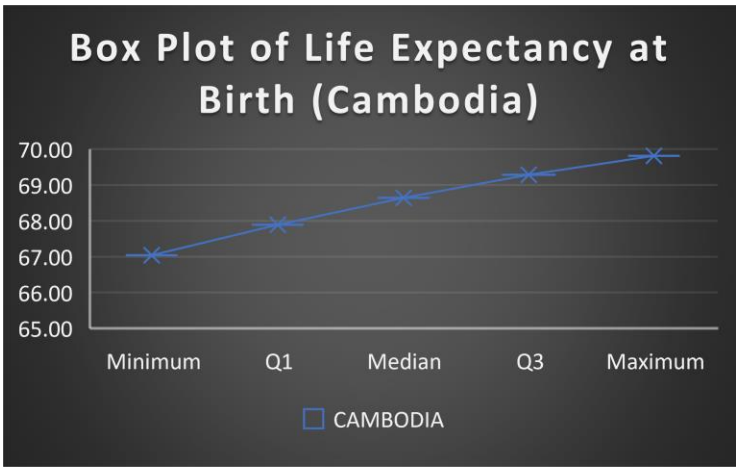
The percentage share of imports to GDP in India has been decreasing since 2011 except 2018 as there was an increase in the percentage share but then again it decreased. Whereas for Cambodia it was increasing till 2014 and then it started to decline till 2019 which had again increased in 2020.

7)Comparing Life Expectancy at Birth using Box & Whisker:

A **Box & Whisker** is the visual representation of the statistical five number summary of a given data set. A Five Number Summary includes: • Minimum • First Quartile • Median (Second Quartile) • Third Quartile • Maximum



Five-Number Summary	INDIA	
		Difference
Minimum	67.13	67.043
Q1	67.93	0.801
Median	68.61	0.676
Q3	69.17	0.558
Maximum	69.66	0.491



Five-Number Summary	CAMBODIA	
		Difference
Minimum	67.04	67.043
Q1	67.89	0.845
Median	68.64	0.749
Q3	69.29	0.652
Maximum	69.82	0.534

Analysis

Through this box plot we represent the life expectancy at birth of India and Cambodia. By this we can conclude that almost both the countries have same health priorities since then current health expenditure of both countries is almost the same since 2011. Clearly, the box plot for both India and Cambodia are positively skewed i.e. the data constitute of higher frequency of high valued scores.

8) Comparing Current Health Expenditure and Life Expectancy using Descriptive Statistics:

Descriptive statistics are brief descriptive coefficients that summarize a given data set, which can be either a representation of the entire population or a sample of a population. Descriptive statistics are broken down into measures of central tendency and measures of variability (spread). Measures of central tendency include the mean, median, and mode, while measures of variability include standard deviation, variance, minimum and maximum variables, kurtosis, and skewness.

INDIA 2011-18

Current Health Expenditure per Capita (India)	
Mean	3.52
Standard Error	0.06
Median	3.54
Mode	#N/A
Standard Deviation	0.16
Sample Variance	0.03
Kurtosis	0.08
Skewness	-0.55
Range	0.50
Minimum	3.25
Maximum	3.75
Sum	28.13
Count	8.00

CAMBODIA 2011-18

Current Health Expenditure per Capita (Cambodia)	
Mean	6.60
Standard Error	0.22
Median	6.45
Mode	#N/A
Standard Deviation	0.62
Sample Variance	0.39
Kurtosis	-1.88
Skewness	0.36
Range	1.58
Minimum	5.93

Maximum	7.50
Sum	52.84
Count	8.00

Covariance (India)	0.05
Correlation (India)	0.49

Covariance (Cambodia)	-0.47
Correlation (Cambodia)	-0.97

Analysis

The descriptive statistics shows the relation between life expectancy and health expenditure. Talking about India, the Mean of Life Expectancy is 68.37 and the mean of Health Expenditure is 3.52. As the Life Expectancy's mean < median it means that the data is Negatively Left Skewed. As the Current Health Expenditure's mean < median it means that the data is Negatively

Left Skewed. In Cambodia, the Mean of Life Expectancy is 68.39 and the mean of Health Expenditure is 6.60. As the Life Expectancy's mean < median, it means that the data is Negatively Left Skewed. As the Current Health Expenditure's mean > median, it means that the data is Positively Right Skewed. Covariance is a measure of the joint variability of two random variables. If the greater values of one variable mainly correspond with the greater values of the other variable, and the same holds for the lesser values, the covariance is positive. Coefficient of Correlation is a numerical measure of some type of correlation, meaning a statistical relationship between two variables.

Conclusion: We can draw the following conclusions after this project -

- Through this project, we can compare India and Cambodia on various different parameters like GDP Growth, Gross National Income (GNI), Life Expectancy, health expenditure etc. the data of which was taken from publicly available resources.
- The various statistical measures help us to see the development in the two countries which are India and Cambodia over the period of time.
- India and Cambodia both are developing nations and hence both of them show growth and decline in several variables.
- Through various Graphical representations, our job of analysing the data gets easier.
- Both India and Cambodia can carefully examine, formulate and adapt policies needed for the betterment of economy.
- They can strategize their trade, export-import policies which can generate huge profits to them.
- Through this analysis, a collective view of different patterns/trends for different parameters can be seen and policies can be made accordingly.
- In total to conclude the measurement of various significant parameters reveal the case studies of two countries in same geographical area that is Asia, bearing the mathematical calculations.

Sources:

- **https://data.worldbank.org**
- **https://dbie.rbi.org.in**