PREDICTIVE MODEL USING LINEAR REGRESSION

INTRODUCTION:

Infosys Limited is an Indian multinational company that provides Business Consulting, Information Technology, and Outsourcing services.

Infosys is the 2nd largest Indian IT company after TCS by 2020 revenue figures and the 602nd largest public company in the world according to Forbes Global 2000 ranking.

Fundamental factors drive stock prices based on a company's earnings and profitability from selling goods and services. In this project, we are going to check the correlation between Infosys stock price and sales, and profitability. This is the case of the Multiple Regression Analysis (trivariate data), where stock price will be treated as a dependent variable and sales and profitability as independent variable.

OBJECTIVE:

1. Is there any relationship between stock price, sales, and profitability?
2. Is there any impact of stock price on sales and profitability?

DATA:

The following chart contains data from the year 2012 to 2020, where sales and profitability are in crores and stock price is in hundred. This is a secondary data.

Year	INFY Stock Price	Net Sales	Profitability
Mar-12	₹ 353	₹ 31,254	₹ 8,470
Mar-13	₹ 356	₹ 36,765	₹ 9,116
Mar-14	₹ 405	₹ 44,341	₹ 10,194
Mar-15	₹ 547	₹ 47,300	₹ 12,164
Mar-16	₹ 601	₹ 53,983	₹ 12,693
Mar-17	₹ 504	₹ 52,289	₹ 13,818
Mar-18	₹ 558	₹ 61,941	₹ 16,155
Mar-19	₹ 744	₹ 73,107	₹ 14,702
Mar-20	₹ 641	₹ 79,047	₹ 15,543

Table No.: 01

GRAPHICAL REPRESENTATION:

Movement of Infosys Stock Price

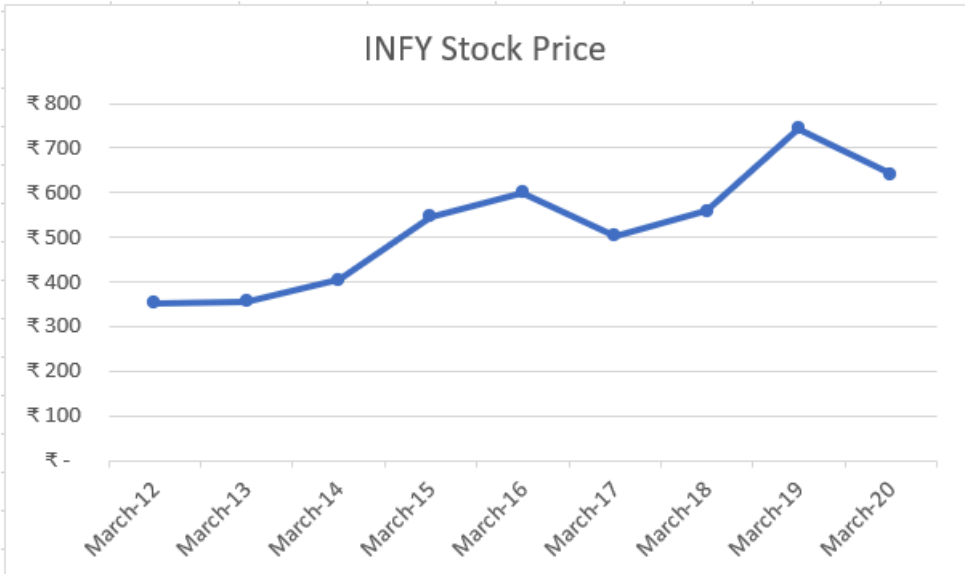

Chart No.: 01

Interpretation: From 2012 to 2020 Infosys stock price shows uptrend, appreciation of price.

Yearly sales data

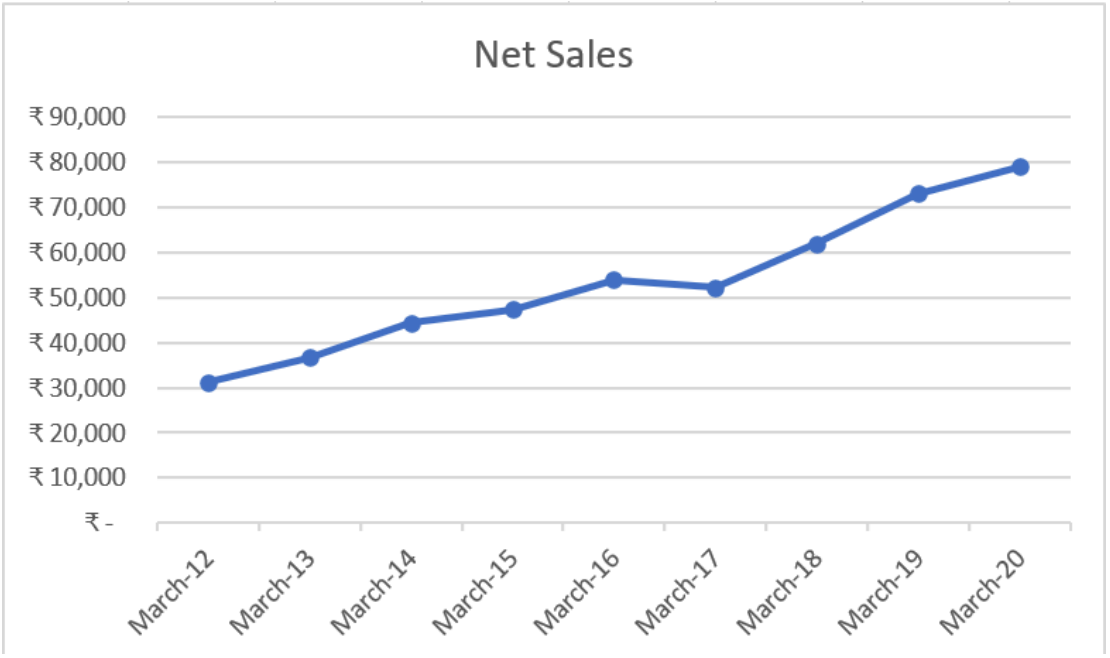

Chart No.: 02

Interpretation: From 2012 to 2020 Infosys sales has increased significantly.

Yearly Profitability

Chart No.: 03

Interpretation: From 2012 to 2020 Infosys profit has increased.

STATISTICAL ANALYSIS:

DESCRIPTIVE STATISTICS:

INFY Stock Price		*Net Sales*		*Profitability*	
Mean	523.2222222	Mean	53336.33333	Mean	12539.44444
Standard Error	44.36645936	Standard Error	5279.763371	Standard Error	930.5832716
Median	547	Median	52289	Median	12693
Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	133.0993781	Standard Deviation	15839.29011	Standard Deviation	2791.749815
Sample Variance	17715.44444	Sample Variance	250883111.3	Sample Variance	7793867.028
Kurtosis	-0.795863324	Kurtosis	-0.671986129	Kurtosis	-1.402272217
Skewness	0.112688617	Skewness	0.367769586	Skewness	-0.250416313
Range	391	Range	47793	Range	7685
Minimum	353	Minimum	31254	Minimum	8470
Maximum	744	Maximum	79047	Maximum	16155
Sum	4709	Sum	480027	Sum	112855
Count	9	Count	9	Count	9

Table No.: 02

Interpretation from descriptive analysis:

1) Mean stock price, sales and profit is 523.23rs, 53336.33cr and 12539.44cr respectively.

Correlation Data:

	INFY Stock Price	*Net Sales*
INFY Stock Price	1	
Net Sales	0.901993867	1

	INFY Stock Price	*Profitability*
INFY Stock Price	1	
Profitability	0.833550318	1

Table No.: 03

Interpretation: Hence the correlation coefficient between Infosys stock price and sales is 0.9019, which represents high correlation. Also, correlation coefficient between stock price and profitability is 0.8335.

Regression Analysis:

Regression Statistics	Coefficients
Multiple R	0.902988721864139
R Square	0.815388631813831
Intercept	99.8581146536293
Net Sales	0.00682645249917144
Profitability	0.00472637857691343

Table No.: 04

The regression equation to estimate the stock price is given by,

Y= 99.8581+(0.006826*X1) +(0.004772*X2).

Where, Y = Infosys stock price, X1= Sales Value, X2= Profit

CONCLUSION:

1) Multiple R gives the strength of linear relationship between dependent and independent variables. Here the value of Multiple R is 0.9029.

2) R Square is the coefficient of determination which shows how well the regression model fits. Hare R Square is 0.8154, that shows 81.54% less variance around the regression line than mean line
3) The intercept term in a regression table tells us the average expected value for the response variable when all of the predictor variables are equal to zero. Here the intercept is 99.8581 which is the average value of the response variable.
4) The regression coefficient represents the difference in the predicted value of the response variable for each one-unit change in the predictor variable. Here the net sales coefficient 0.006826 that means, on average, each additional sales is associated with an increase of sales coefficient. Similarly for-profit coefficient.
5) The regression equation to estimate the stock price is given by,

   Y= 99.8581+(0.006826*X1) +(0.004772*X2).

   Where, Y = Infosys stock price, X1= Sales Value, X2= Profit

CONCLUDING REMARK:

There is a strong correlation between stock price, sales and profitability, which may help in prediction of stock price. Hence fundamentally stock price is driven by sales and profitability of the company.

REFERENCES:

1. https://en.wikipedia.org/wiki/Infosys
2. https://www.moneycontrol.com/financials/infosys/results/yearly/IT