A Regression Analysis of Visa Inc. and the Nifty 50 Index of India Monthly Returns

Submitted by **Jayati Gopal Vyas** Dated: **November 12, 2025**

Introduction

In recent years, emerging markets' impact on global financial systems has increased dramatically. India's Nifty 50 Index has become one of these markets' most important indicators of investor mood and a major force behind global capital flows. This study looks at the relationship between the stock price performance of Visa Inc. (NYSE: V), a major international payment technology corporation, and the Nifty 50 Index, which comprises 50 of the biggest and most liquid companies listed on the National Stock Exchange of India across 13 sectors. Visa offers credit, debit, and prepaid card solutions in more than 200 countries, as well as value-added services including risk management and airport lounge access. Visa also runs VisaNet, a global network that enables safe electronic payments.

Using a straightforward linear regression model based on past monthly data, the project's goal is to ascertain whether changes in the Nifty 50 Index have a quantifiable and predictable effect on Visa's stock performance. The results are intended to improve knowledge of how new market developments, especially in India, affect the market dynamics and valuation of multinational firms with significant international exposure.

Hypotheses

The research is guided by two core hypotheses:

- **Null Hypothesis H_0:** There is no statistically significant relationship between the Nifty 50 Index and Visa Inc.'s stock price (the coefficient of the predictor is zero).
- **Alternative Hypothesis H_1:** There is a statistically significant and positive relationship: as the Nifty 50 Index increases, Visa Inc.'s stock price tends to perform better.

Testing these hypotheses enables an empirical evaluation of whether changes in the Indian market meaningfully align with movements in Visa's returns.

Data Collection, Cleaning, and Preparation

Variable Selection

The dependent variable (Y) for this analysis is the monthly closing price and returns of Visa Inc. in U.S. dollars, while the predictor variable (X) is the monthly closing value and returns of the Nifty 50 Index, converted to U.S. dollars using the average monthly USD/INR exchange rate. This ensures that both time series are expressed in consistent currency terms, eliminating potential distortions due to exchange rate fluctuations.

Data Sources

All datasets were obtained from reliable financial databases. Visa Inc.'s stock price data were sourced from Investing.com, while the Nifty 50's historical levels were drawn from NSE India and

Investing.com. The USD/INR exchange rate data used for currency conversion were obtained from Investing.com.
(Note: Refer Annexure 5 to 7 for data table)

Period and Frequency
The study covers the period from **January 2020 to November 2025**, comprising **71 monthly observations**. This time frame includes major economic fluctuations, such as the COVID-19 pandemic and subsequent global market recovery, allowing for a robust examination of the data under varying market conditions.

Preparation Procedures
The Nifty 50 index values in INR were converted into USD by dividing each closing value by the respective monthly average USD/INR exchange rate. Monthly returns for both series were computed using the standard formula:

$$Return_t = \frac{Price_t - Price_{t-1}}{Price_{t-1}}$$

No missing values were identified during the data-cleaning process, and all abnormal variations were cross-verified against known global events to ensure accuracy.

Initial Visualization
Time-series plots of Visa's and Nifty 50's price indicated an overall upward trajectory for both, punctuated by short-term volatility during major global risk episodes. Visual trends suggested the possibility of a positive correlation, providing initial motivation for formal statistical testing.

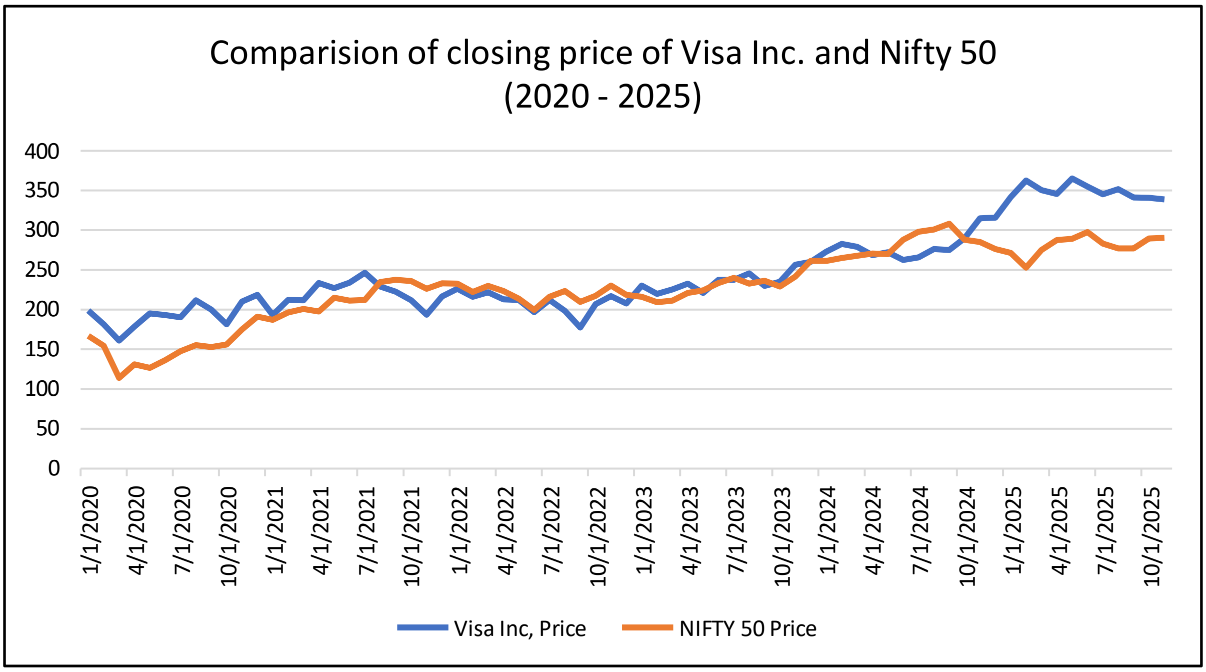

Figure 1: Time series plot comparing Visa Inc. and Nifty 50 (USD) monthly closing prices, January 2020–November 2025.

Graphical and Descriptive Analysis

The monthly returns of Visa Inc. and the Nifty 50 showed a distinct positive slope in a scatter plot, suggesting a high positive correlation between the two variables. Trend charts showed that, especially during times of increased global activity, the expansion and contraction stages of the Visa and Nifty 50 returns were similar.

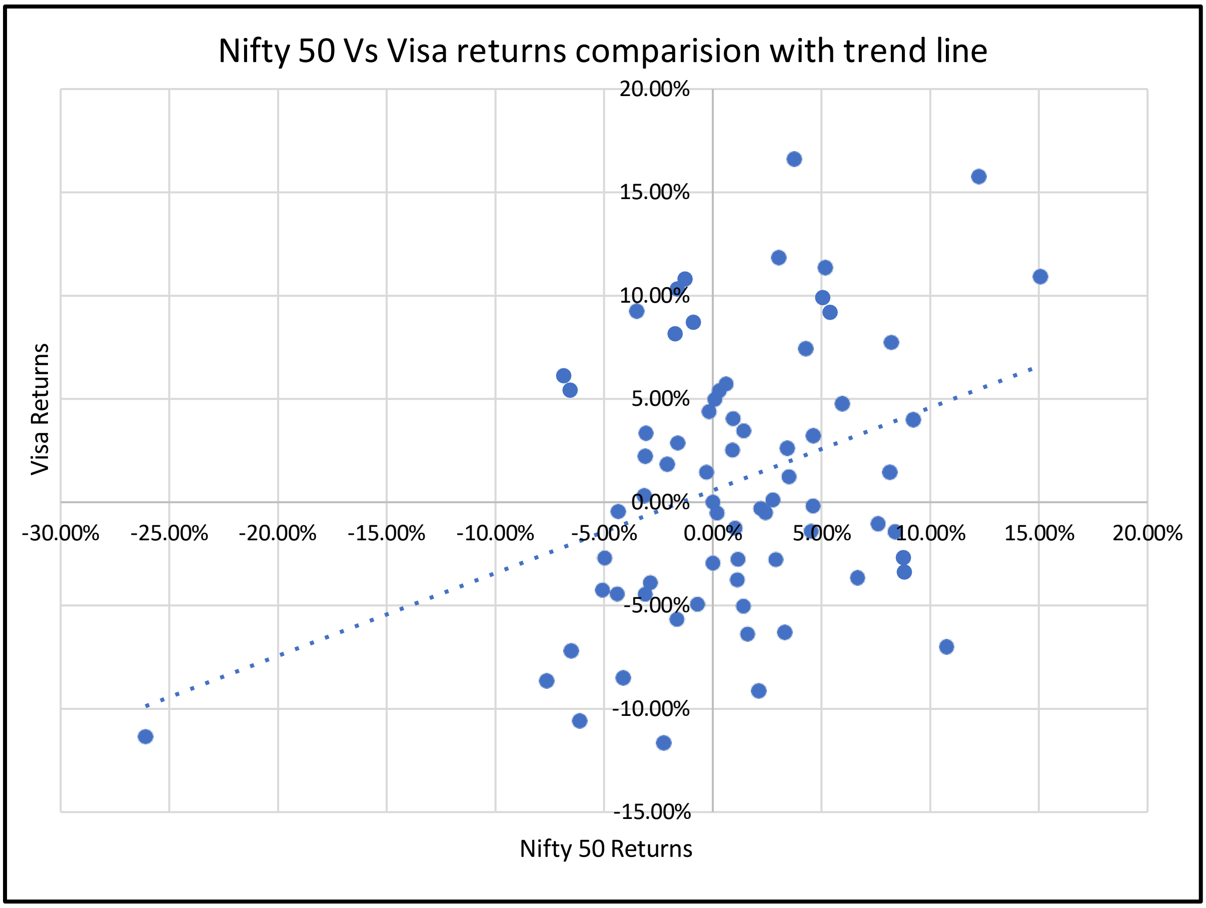

Figure 2: Scatter Plot of Visa Returns vs. Nifty 50 Returns

This association was supported by descriptive statistics: the average monthly return for both series was roughly 0.95%, with standard deviations of 6.4% for Visa and 5.8% for Nifty 50, indicating similar volatility. The empirical foundation for additional inferential testing using regression analysis was established by these summary measures.

Statistic	Visa Returns (%)	Nifty 50 Returns (%)
Mean	0.96%	0.95%
Std. Dev.	6.41%	5.78%
Minimum	-11.65%	-26.10%
Maximum	16.61%	15.07%
Observations	71	71

Table 1: Descriptive statistics for Visa and Nifty 50 monthly returns (2020–2025).

Regression Model and Methodology

- **Model Specification**

  The relationship between Visa Inc.'s returns and the Nifty 50 Index was estimated using the following simple linear regression model:

$$Visa\_Return_t = \beta_0 + \beta_1(Nifty50\_Return_t) + \epsilon_t$$

where $\beta_0$represents the intercept, $\beta_1$represents the sensitivity of Visa's returns to movements in the Nifty 50, and $\epsilon_t$captures the random error component.

- **Method of Estimation**

  Microsoft Excel's Data Analysis Toolpak was used to perform regression analysis. To make sure that the conventional linear regression assumptions linearity, independence, and residual normality were met, diagnostic tests were used. To verify the suitability of the model and identify any indications of heteroscedasticity or nonlinearity, residual plots were analyzed.

Results: Regression, ANOVA, and Testing

The regression output indicates a **strong and statistically significant relationship** between Visa's returns and those of the Nifty 50.

- **Statistics for Regression**

  A strong positive linear relationship is indicated by the correlation coefficient (R) of 0.809, and the R-squared value of 0.655 suggests that changes in the Nifty 50 may account for about 65.5% of the volatility in Visa's monthly returns. The robustness of the model is further shown by the adjusted R-squared (0.654).

Regression Statistics	
Multiple R	0.809148773
R Square	0.654721737
Adjusted R Square	0.649717704
Standard Error	31.99125288
Observations	71

Table 2: Overall model summary statistics.

- **Estimates of Coefficients**

  The regression coefficients show a slope of 0.927 and an intercept of 34.13. The Nifty 50 return is a statistically significant predictor of Visa's return, according to the slope's t-statistic of 11.44 and its incredibly low p-value (< 0.00001).

  T-Test

  Using the t-table, we find the value for a two-tailed test at the 0.03 significance level with 70 degrees of freedom

$$t = \frac{\beta_1 - \beta_1}{SE(\beta_1)}$$

H0 bi=0; H1 bi is not = 0

Particulars	*Amt.*
b1	0.73
Testing Value	0.00
s(b1)	0.15
t	4.87
DF	69.00
Level of significance	0.03
Critical Value t	1.99

Table 3: T- Test summary statistics

Since the T- Value is higher than the critical value t of 1.994 and falls in the rejection region, we will reject the null hypothesis. The explanation is simple when all other variables are held constant, Visa's stock returns typically increase by roughly 0.93% for every 1% monthly increase in the Nifty 50.

Particulars	*Coefficients*	*Standard Error*	*t Stat*	*P-value*
Intercept	34.13118628	18.95967273	1.800199126	0.076200231
Nifty 50	0.927485777	0.081084707	11.43847972	1.36956E-17

Table 4: Regression results for the relationship between Nifty 50 and Visa Inc. returns.

ANOVA Summary

An F-statistic of 130.84 with a matching significance level below 0.00001 is displayed in the analysis of variance (ANOVA) table. This demonstrates that the regression model is extremely significant and offers a reliable explanation for the variability in Visa's returns.

F-Test

The F-test checks if the slope coefficient is zero, testing H_0: $\beta_1 = 0$ against H_1: $\beta_1 \neq 0$.

$$F = \frac{RSS/1}{SSE/(n-2)}$$

H0 bi=0; H1 bi is not = 0

Particulars	**Amt.**
RSS	133905.7
SSE	70617.38
N-2	69
F	130.8388
F(1,69) 5%	4

Table 5: F- Test summary statistics

Since the F- Value is higher than 4, we reject the null hypothesis with high significance.

Particulars	**df**	**SS**	**MS**	**F**	**Significance F**
Regression	1	133905.7142	133905.7142	130.8388182	<0.00001
Residual	69	70617.37798	1023.440261		
Total	70	204523.0922			

Table 6: ANOVA results for the regression model.

Testing Hypotheses

The t-test for β 1 = 0 β 1

At the 5% significance level, =0 unequivocally rejects the null hypothesis, demonstrating a strong correlation between the two variables. The alternative hypothesis that the Nifty 50 has a positive impact on Visa's stock performance is supported by the F-test, which also validates the model's overall explanatory power.

Analysis of Residuals

The assumptions of the linear model were validated by the residuals, which were randomly distributed around zero and showed no systematic pattern. Moderate prediction variability was indicated by the standard error of residuals, which was roughly 31.99.

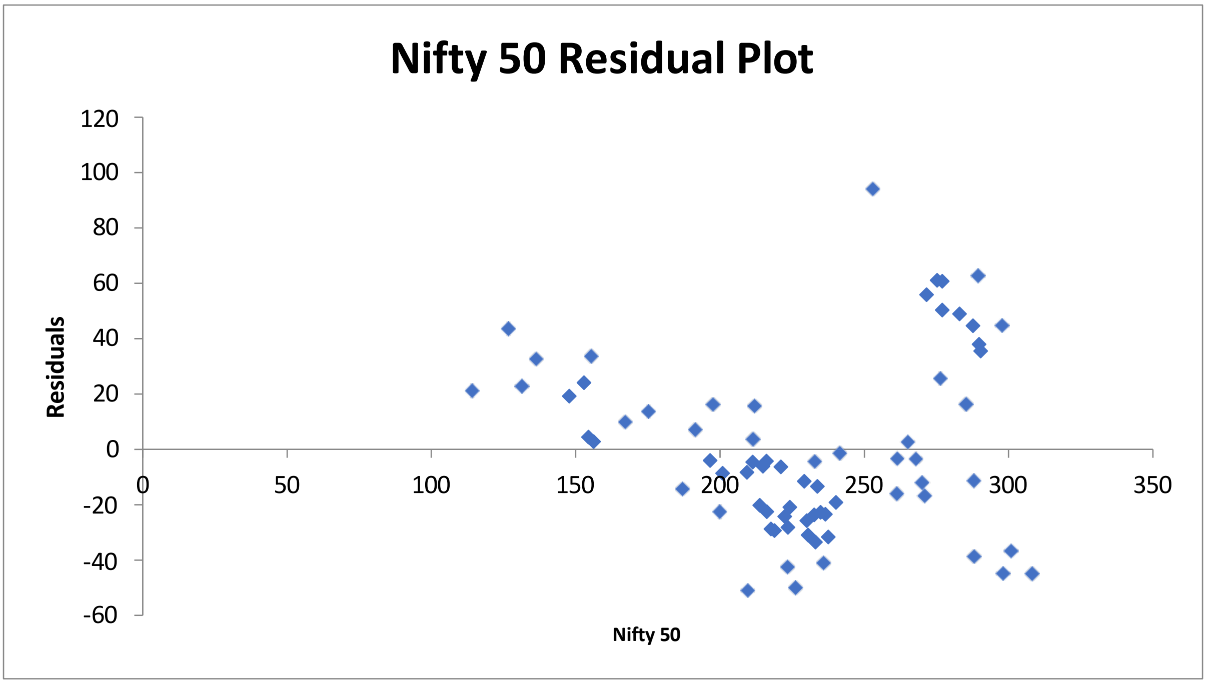

Figure 3: Residuals plotted against fitted values.

Discussion

- **Principal Results**

  The findings show a substantial positive and statistically significant correlation between Visa Inc.'s monthly returns and those of the Nifty 50 Index. A significant amount of Visa's stock performance over the study period may be explained by changes in the Indian market, with an R-squared value of 0.655.

- **Interpretation**

  This link demonstrates how global firms and emerging market economies are becoming increasingly interdependent. Visa's business strategy, which is closely linked to global consumer spending and financial transactions, is vulnerable to shifts in developing nations like India, where transaction volumes are directly impacted by the quick uptake of digital payments and economic growth.

- **Financial Consequences**
  These results suggest that investors in Visa Inc. should keep an eye on important emerging market indices like the Nifty 50 in addition to U.S. benchmarks. Incorporating global market indicators into portfolio allocation models is also supported by the data, especially for multinational corporations with a wide range of geographic exposure.

Restrictions

The analysis is constrained using a single explanatory variable, notwithstanding its importance. Visa's returns may be impacted by additional macroeconomic and financial factors that were left out, such as U.S. stock indices, interest rates, inflation, or company-specific events. Furthermore, the model does not take into consideration possible lag effects or structural breaks and instead assumes linearity. Additionally, short-term volatility that would provide more information in higher-frequency analyses is smoothed out by using monthly data.

In conclusion

The Nifty 50 Index and Visa Inc.'s stock performance from 2020 to 2025 are positively and statistically significantly correlated, according to this study. The results highlight how globalized financial markets are, with developing nations like India having a quantifiable impact on the success of major multinational firms. The study concludes that to comprehend global financial links and optimize portfolio strategies, investors, analysts, and policymakers must keep an eye on cross-market dynamics.

Annexure 1: ANOVA Summary

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Particulars	*df*	*SS*	*MS*	*F*	*Significance F*
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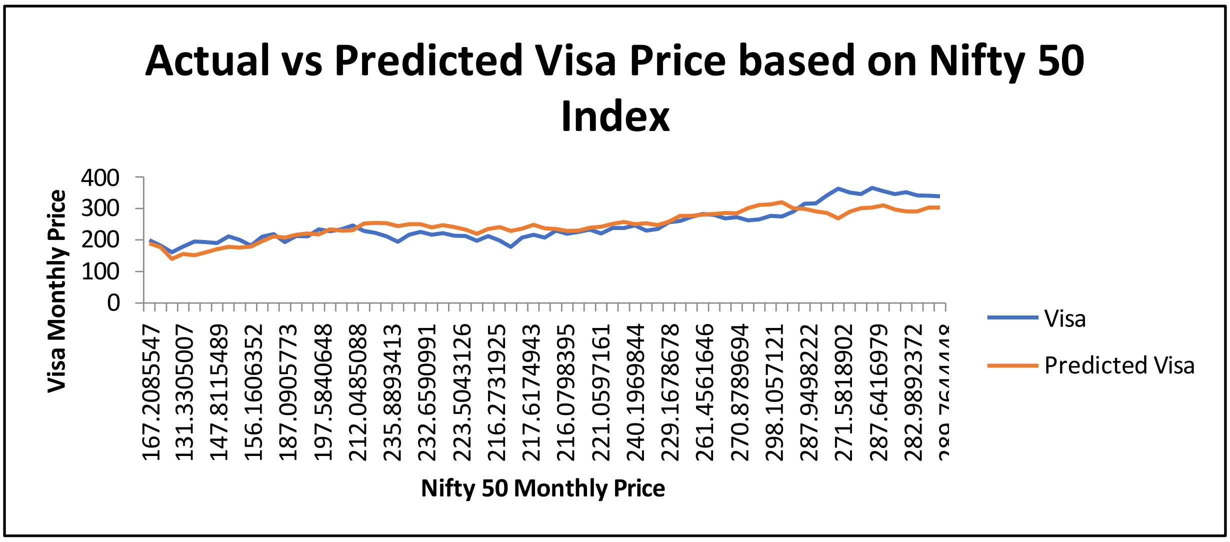
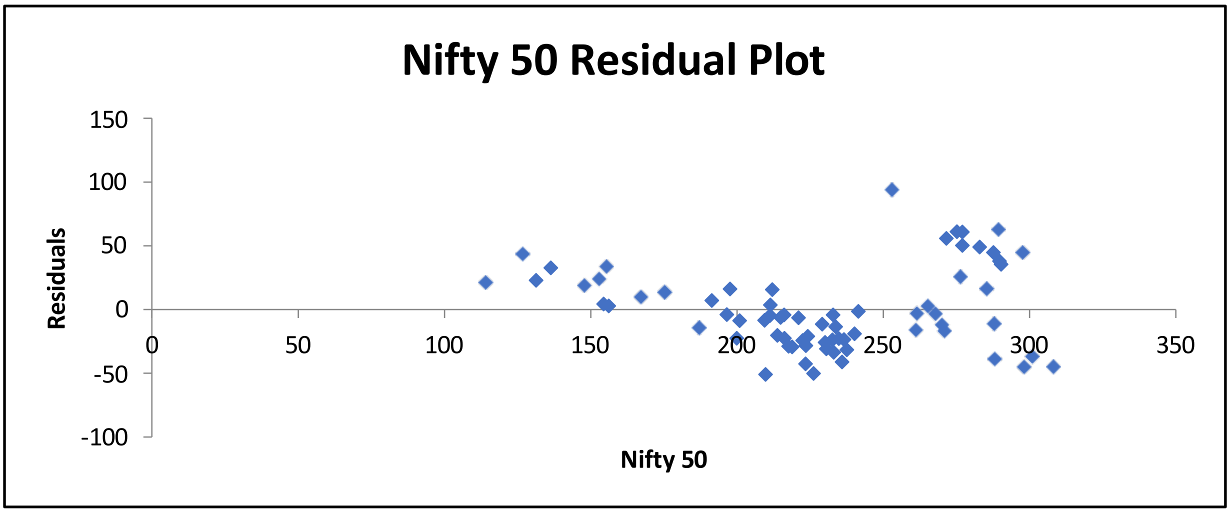




Annexure 2: Price and Returns comparison between Visa Inc. and Nifty 50 Index

Visa Inc, NYSE: V

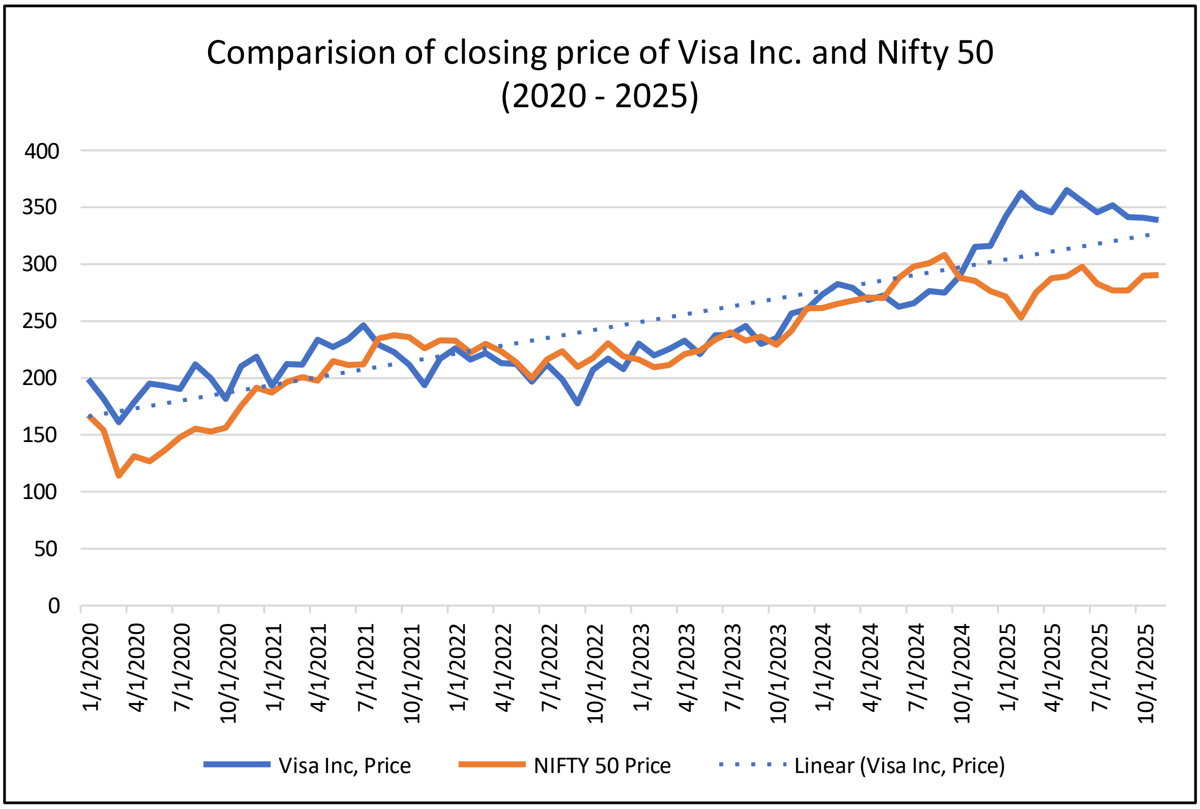
Date	Visa Inc, Price	Change %
1/1/2020	198.97	0
2/1/2020	181.76	-8.65%
3/1/2020	161.12	-11.36%
4/1/2020	178.72	10.92%
5/1/2020	195.24	9.24%
6/1/2020	193.17	-1.06%
7/1/2020	190.4	-1.43%
8/1/2020	211.99	11.34%
9/1/2020	199.97	-5.67%
10/1/2020	181.71	-9.13%
11/1/2020	210.35	15.76%
12/1/2020	218.73	3.98%
1/1/2021	193.25	-11.65%
2/1/2021	212.39	9.90%
3/1/2021	211.73	-0.31%
4/1/2021	233.56	10.31%
5/1/2021	227.3	-2.68%
6/1/2021	233.82	2.87%
7/1/2021	246.39	5.38%
8/1/2021	229.1	-7.02%
9/1/2021	222.75	-2.77%
10/1/2021	211.77	-4.93%
11/1/2021	193.77	-8.50%
12/1/2021	216.71	11.84%
1/1/2022	226.17	4.37%
2/1/2022	216.12	-4.44%
3/1/2022	221.77	2.61%
4/1/2022	213.13	-3.90%
5/1/2022	212.17	-0.45%
6/1/2022	196.89	-7.20%
7/1/2022	212.11	7.73%
8/1/2022	198.71	-6.32%
9/1/2022	177.65	-10.60%
10/1/2022	207.16	16.61%
11/1/2022	217	4.75%
12/1/2022	207.76	-4.26%
1/1/2023	230.21	10.81%
2/1/2023	219.94	-4.46%
3/1/2023	225.46	2.51%
4/1/2023	232.73	3.22%
5/1/2023	221.03	-5.03%
6/1/2023	237.48	7.44%

NIFTY 50, INDEXNSE: NIFTY_50

Date	NIFTY 50 Price	Change %
1/1/2020	167.21	0
2/1/2020	154.43	-7.64%
3/1/2020	114.13	-26.10%
4/1/2020	131.33	15.07%
5/1/2020	126.74	-3.50%
6/1/2020	136.38	7.61%
7/1/2020	147.81	8.38%
8/1/2020	155.45	5.17%
9/1/2020	152.90	-1.64%
10/1/2020	156.16	2.13%
11/1/2020	175.28	12.24%
12/1/2020	191.44	9.22%
1/1/2021	187.09	-2.27%
2/1/2021	196.55	5.06%
3/1/2021	200.87	2.19%
4/1/2021	197.58	-1.63%
5/1/2021	214.90	8.77%
6/1/2021	211.42	-1.62%
7/1/2021	212.05	0.30%
8/1/2021	234.86	10.76%
9/1/2021	237.56	1.15%
10/1/2021	235.89	-0.70%
11/1/2021	226.17	-4.12%
12/1/2021	233.04	3.04%
1/1/2022	232.66	-0.16%
2/1/2022	222.46	-4.39%
3/1/2022	230.10	3.44%
4/1/2022	223.50	-2.87%
5/1/2022	213.80	-4.34%
6/1/2022	199.88	-6.51%
7/1/2022	216.27	8.20%
8/1/2022	223.41	3.30%
9/1/2022	209.72	-6.13%
10/1/2022	217.62	3.76%
11/1/2022	230.56	5.95%
12/1/2022	218.88	-5.07%
1/1/2023	216.08	-1.28%
2/1/2023	209.39	-3.10%
3/1/2023	211.29	0.91%
4/1/2023	221.06	4.62%
5/1/2023	224.17	1.41%
6/1/2023	233.75	4.27%

Date	Visa Inc, Price	Change %
7/1/2023	237.73	0.11%
8/1/2023	245.68	3.34%
9/1/2023	230.01	-6.38%
10/1/2023	235.1	2.21%
11/1/2023	256.68	9.18%
12/1/2023	260.35	1.43%
1/1/2024	273.26	4.96%
2/1/2024	282.64	3.43%
3/1/2024	279.08	-1.26%
4/1/2024	268.61	-3.75%
5/1/2024	272.46	1.43%
6/1/2024	262.47	-3.67%
7/1/2024	265.67	1.22%
8/1/2024	276.37	4.03%
9/1/2024	274.95	-0.51%
10/1/2024	289.85	5.42%
11/1/2024	315.08	8.70%
12/1/2024	316.04	0.30%
1/1/2025	341.8	8.15%
2/1/2025	362.71	6.12%
3/1/2025	350.46	-3.38%
4/1/2025	345.5	-1.42%
5/1/2025	365.19	5.70%
6/1/2025	355.05	-2.78%
7/1/2025	345.47	-2.70%
8/1/2025	351.78	1.83%
9/1/2025	341.38	-2.96%
10/1/2025	340.74	-0.19%
11/1/2025	338.92	-0.53%

Date	NIFTY 50 Price	Change %
7/1/2023	240.20	2.76%
8/1/2023	232.81	-3.08%
9/1/2023	236.52	1.59%
10/1/2023	229.17	-3.11%
11/1/2023	241.53	5.39%
12/1/2023	261.23	8.16%
1/1/2024	261.46	0.09%
2/1/2024	265.17	1.42%
3/1/2024	267.87	1.02%
4/1/2024	270.88	1.12%
5/1/2024	270.07	-0.30%
6/1/2024	288.05	6.66%
7/1/2024	298.11	3.49%
8/1/2024	300.90	0.94%
9/1/2024	308.17	2.42%
10/1/2024	287.95	-6.56%
11/1/2024	285.38	-0.89%
12/1/2024	276.37	-3.15%
1/1/2025	271.58	-1.73%
2/1/2025	252.94	-6.87%
3/1/2025	275.21	8.81%
4/1/2025	287.64	4.52%
5/1/2025	289.40	0.61%
6/1/2025	297.75	2.89%
7/1/2025	282.99	-4.96%
8/1/2025	277.03	-2.11%
9/1/2025	277.02	0.00%
10/1/2025	289.76	4.60%
11/1/2025	290.32	0.19%


Comparision of closing price of Visa Inc. and Nifty 50
(2020 - 2025)
400
350
300
250
200
150
100
50
0
1/1/2020
4/1/2020
7/1/2020
10/1/2020
1/1/2021
4/1/2021
7/1/2021
10/1/2021
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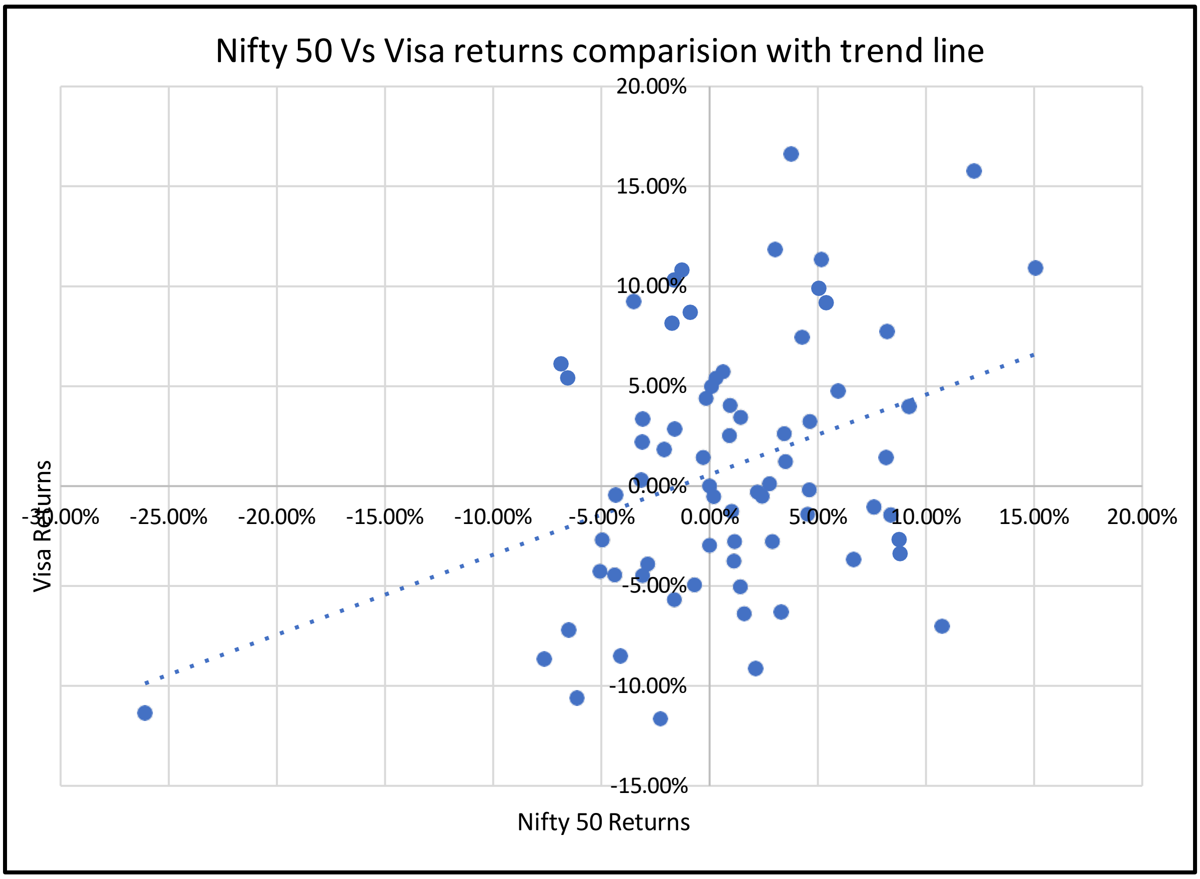
Visa Inc, Price
NIFTY 50 Price
Linear (Visa Inc, Price)


Nifty 50 Vs Visa returns comparision with trend line
20.00%
15.00%
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0.00%
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15.00%
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Visa Returns
Nifty 50 Returns

Annexure 3: T-Test Summary

Using the t-table, we find the value for a two-tailed test at the 0.03 significance level with 70 degrees of freedom

$$t = \frac{\beta_1 - \beta_1}{SE(\beta_1)}$$

<u>T- Test</u>		
H0	bi=0	
H1	bi is not = 0	
b1		0.93
Testing Value		0.00
s(b1)		0.08
t		11.44
DF		70.00
Level of significance		0.03
Critical Value t		1.99
Rejection Region	t>1.994, or, t<-1.994	

Since the T- Value is higher than the critical value t of 1.994 and falls in the rejection region, we will reject the null h

Annexure 4: F-Test Summary

The F-test checks if the slope coefficient is zero, testing H_0: $\beta_1 = 0$ against H_1: $\beta_1 \neq 0$.

$$F = \frac{RSS/1}{SSE/(n-2)}$$

<u>F- Test</u>	
H0	bi=0
H1	bi is not = 0
RSS	133905.71
SSE	70617.38
N-2	69.00
F	130.84
F(1,69) 5%	4.00

Since the F- Value is higher than 4, we reject the null hypothesis with high significance.

Annexure 5: Visa Inc. Historical data (January 2020 to November 2025)

Visa Inc, NYSE: V

Date	Price	Open	High	Low	Vol.	Change %
1/1/2020	198.97	189	210.13	187.16	184.07M	5.89%
2/1/2020	181.76	199.94	214.17	172.98	199.96M	-8.65%
3/1/2020	161.12	186.32	194.49	133.93	418.01M	-11.36%
4/1/2020	178.72	156.32	182.25	150.6	263.80M	10.92%
5/1/2020	195.24	174.45	198.29	171.72	189.88M	9.24%
6/1/2020	193.17	194.71	202.18	186.21	192.26M	-1.06%
7/1/2020	190.4	193.85	200.95	187.18	168.92M	-1.43%
8/1/2020	211.99	191.8	216.16	190.08	161.60M	11.34%
9/1/2020	199.97	212.21	217.35	193.13	176.38M	-5.67%
10/1/2020	181.71	202.21	207.97	179.23	172.18M	-9.13%
11/1/2020	210.35	184.51	217.65	183.89	156.69M	15.76%
12/1/2020	218.73	212.13	220.39	204.5	178.61M	3.98%
1/1/2021	193.25	220.25	220.25	192.81	198.38M	-11.65%
2/1/2021	212.39	195.14	220.53	195.02	197.05M	9.90%
3/1/2021	211.73	214.97	228.23	205.78	228.91M	-0.31%
4/1/2021	233.56	213.78	237.5	212.3	152.92M	10.31%
5/1/2021	227.3	234.05	235.74	220.31	127.25M	-2.68%
6/1/2021	233.82	229.44	238.48	226.28	151.65M	2.87%
7/1/2021	246.39	234.2	252.67	234.05	157.83M	5.38%
8/1/2021	229.1	246.24	247.83	228.66	148.47M	-7.02%
9/1/2021	222.75	229.1	233.33	216.31	175.67M	-2.77%
10/1/2021	211.77	224.17	236.96	208.54	170.24M	-4.93%
11/1/2021	193.77	213.49	221.61	192.55	303.97M	-8.50%
12/1/2021	216.71	196.03	219.73	190.1	189.15M	11.84%
1/1/2022	226.17	217.52	228.12	195.65	224.97M	4.37%
2/1/2022	216.12	226.9	235.85	201.45	171.78M	-4.44%
3/1/2022	221.77	214.48	228.81	186.67	189.04M	2.61%
4/1/2022	213.13	223.08	229.24	201.1	151.96M	-3.90%
5/1/2022	212.17	211.77	214.8	189.95	171.89M	-0.45%
6/1/2022	196.89	212.05	217.58	185.91	128.12M	-7.20%
7/1/2022	212.11	196.79	218.07	194.14	118.60M	7.73%
8/1/2022	198.71	208.45	217.61	198.64	130.18M	-6.32%
9/1/2022	177.65	198.72	207.19	174.83	142.72M	-10.60%
10/1/2022	207.16	179.34	211.52	174.6	160.73M	16.61%
11/1/2022	217	208.91	217	193.32	157.87M	4.75%
12/1/2022	207.76	217	219.98	202.13	136.79M	-4.26%
1/1/2023	230.21	209.28	232.84	206.16	127.62M	10.81%
2/1/2023	219.94	229.37	234.3	217.46	94.46M	-4.46%
3/1/2023	225.46	219.46	227.41	208.76	167.78M	2.51%
4/1/2023	232.73	225.23	235.57	224.12	119.56M	3.22%
5/1/2023	221.03	232.87	234.81	216.14	128.25M	-5.03%
6/1/2023	237.48	222.73	238.28	221.02	156.28M	7.44%

Date	Price	Open	High	Low	Vol.	Change %
7/1/2023	237.73	237	245.37	227.68	113.73M	0.11%
8/1/2023	245.68	237.14	248.23	235.24	101.04M	3.34%
9/1/2023	230.01	247.47	250.06	227.92	114.07M	-6.38%
10/1/2023	235.1	229.24	241.48	227.78	129.13M	2.21%
11/1/2023	256.68	236.14	256.77	235.68	131.30M	9.18%
12/1/2023	260.35	255.79	263.25	252.14	110.00M	1.43%
1/1/2024	273.26	259.61	279.99	256.86	120.41M	4.96%
2/1/2024	282.64	273.39	286.13	272.76	101.44M	3.43%
3/1/2024	279.08	283.2	290.96	276.16	122.86M	-1.26%
4/1/2024	268.61	280.36	283	268.29	147.98M	-3.75%
5/1/2024	272.46	268.15	282.38	266.5	171.40M	1.43%
6/1/2024	262.47	273.09	280.39	261.25	180.29M	-3.67%
7/1/2024	265.67	263.79	273.62	252.7	163.93M	1.22%
8/1/2024	276.37	266.33	276.99	254.51	190.35M	4.03%
9/1/2024	274.95	276.37	293.07	268.23	166.28M	-0.51%
10/1/2024	289.85	276.97	296.34	273.24	128.71M	5.42%
11/1/2024	315.08	288.49	316.37	287.19	116.98M	8.70%
12/1/2024	316.04	316.9	321.61	306.64	131.69M	0.30%
1/1/2025	341.8	317.78	351.25	303.84	118.04M	8.15%
2/1/2025	362.71	340	364	339.24	117.97M	6.12%
3/1/2025	350.46	363	366.54	326.38	162.21M	-3.38%
4/1/2025	345.5	350.44	350.45	299	158.35M	-1.42%
5/1/2025	365.19	345.58	369.15	340.12	112.93M	5.70%
6/1/2025	355.05	362.77	375.51	334.92	153.10M	-2.78%
7/1/2025	345.47	353.82	359.66	344.39	130.42M	-2.70%
8/1/2025	351.78	344.1	353.42	328.7	125.79M	1.83%
9/1/2025	341.38	349.31	352.63	333.47	131.71M	-2.96%
10/1/2025	340.74	340.31	355	334.17	128.84M	-0.19%
11/1/2025	338.92	340.15	342.02	333.2	39.89M	-0.53%

Annexure 6: Nifty 50 Index Historical data (January 2020 to November 2025)

NIFTY 50, INDEXNSE: NIFTY_50

Date	Price	Open	High	Low	Vol.	Change %	USD/INR	Price(USD)
1/1/2020	11,962.10	12,202.15	12,430.50	11,929.60	11.93B	-1.70%	71.54	167.21
2/1/2020	11,201.75	11,939.00	12,246.70	11,175.05	11.19B	-6.36%	72.534	154.43
3/1/2020	8,597.75	11,387.35	11,433.00	7,511.10	21.30B	-23.25%	75.333	114.13
4/1/2020	9,859.90	8,584.10	9,889.05	8,055.80	12.74B	14.68%	75.077	131.33
5/1/2020	9,580.30	9,533.50	9,598.85	8,806.75	13.68B	-2.84%	75.59	126.74
6/1/2020	10,302.10	9,726.85	10,553.15	9,544.35	16.78B	7.53%	75.54	136.38
7/1/2020	11,073.45	10,323.80	11,341.40	10,299.60	14.64B	7.49%	74.916	147.81
8/1/2020	11,387.50	11,057.55	11,794.25	10,882.25	14.04B	2.84%	73.254	155.45
9/1/2020	11,247.55	11,464.30	11,618.10	10,790.20	13.45B	-1.23%	73.56	152.90
10/1/2020	11,642.40	11,364.45	12,025.45	11,347.05	11.60B	3.51%	74.554	156.16
11/1/2020	12,968.95	11,697.35	13,145.85	11,557.40	13.11B	11.39%	73.99	175.28
12/1/2020	13,981.75	13,062.20	14,024.85	12,962.80	12.08B	7.81%	73.036	191.44
1/1/2021	13,634.60	13,996.10	14,753.55	13,596.75	13.02B	-2.48%	72.877	187.09
2/1/2021	14,529.15	13,758.60	15,431.75	13,661.75	14.31B	6.56%	73.92	196.55
3/1/2021	14,690.70	14,702.50	15,336.30	14,264.40	11.36B	1.11%	73.137	200.87
4/1/2021	14,631.10	14,798.40	15,044.35	14,151.40	9.64B	-0.41%	74.05	197.58
5/1/2021	15,582.80	14,481.05	15,606.35	14,416.25	10.27B	6.50%	72.511	214.90
6/1/2021	15,721.50	15,629.65	15,915.65	15,450.90	8.08B	0.89%	74.36	211.42
7/1/2021	15,763.05	15,755.05	15,962.25	15,513.45	6.00B	0.26%	74.337	212.05
8/1/2021	17,132.20	15,874.90	17,153.50	15,834.65	6.35B	8.69%	72.947	234.86
9/1/2021	17,618.15	17,185.60	17,947.65	17,055.05	6.96B	2.84%	74.164	237.56
10/1/2021	17,671.65	17,531.90	18,604.45	17,452.90	7.65B	0.30%	74.915	235.89
11/1/2021	16,983.20	17,783.15	18,210.15	16,782.40	5.85B	-3.90%	75.09	226.17
12/1/2021	17,354.05	17,104.40	17,639.50	16,410.20	5.50B	2.18%	74.467	233.04
1/1/2022	17,339.85	17,387.15	18,350.95	16,836.80	5.44B	-0.08%	74.529	232.66
2/1/2022	16,793.90	17,529.45	17,794.60	16,203.25	5.62B	-3.15%	75.493	222.46
3/1/2022	17,464.75	16,593.10	17,559.80	15,671.45	7.96B	3.99%	75.901	230.10
4/1/2022	17,102.55	17,436.90	18,114.65	16,824.70	5.66B	-2.07%	76.52	223.50
5/1/2022	16,584.55	16,924.45	17,132.85	15,735.75	6.34B	-3.03%	77.569	213.80
6/1/2022	15,780.25	16,594.40	16,793.85	15,183.40	5.51B	-4.85%	78.95	199.88
7/1/2022	17,158.25	15,703.70	17,172.80	15,511.05	5.48B	8.73%	79.336	216.27
8/1/2022	17,759.30	17,243.20	17,992.20	17,154.80	5.59B	3.50%	79.491	223.41
9/1/2022	17,094.35	17,485.70	18,096.15	16,747.70	6.90B	-3.74%	81.509	209.72
10/1/2022	18,012.20	17,102.10	18,022.80	16,855.55	4.54B	5.37%	82.77	217.62
11/1/2022	18,758.35	18,130.70	18,816.05	17,959.20	5.26B	4.14%	81.359	230.56
12/1/2022	18,105.30	18,871.95	18,887.60	17,774.25	4.74B	-3.48%	82.717	218.88
1/1/2023	17,662.15	18,131.70	18,251.95	17,405.55	5.63B	-2.45%	81.739	216.08
2/1/2023	17,303.95	17,811.60	18,134.75	17,255.20	5.69B	-2.03%	82.64	209.39
3/1/2023	17,359.75	17,360.10	17,799.95	16,828.35	5.62B	0.32%	82.16	211.29
4/1/2023	18,065.00	17,427.95	18,089.15	17,312.75	4.46B	4.06%	81.72	221.06
5/1/2023	18,534.40	18,124.80	18,662.45	18,042.40	5.74B	2.60%	82.68	224.17
6/1/2023	19,189.05	18,579.40	19,201.70	18,464.55	5.14B	3.53%	82.091	233.75

Date	Price	Open	High	Low	Vol.	Change %	USD/INR	Price(USD)
7/1/2023	19,753.80	19,246.50	19,991.85	19,234.40	5.80B	2.94%	82.24	240.20
8/1/2023	19,253.80	19,784.00	19,795.60	19,223.65	6.25B	-2.53%	82.702	232.81
9/1/2023	19,638.30	19,258.15	20,222.45	19,255.70	5.67B	2.00%	83.03	236.52
10/1/2023	19,079.60	19,622.40	19,849.75	18,837.85	4.25B	-2.84%	83.256	229.17
11/1/2023	20,133.15	19,064.05	20,158.70	18,973.70	4.42B	5.52%	83.357	241.53
12/1/2023	21,731.40	20,194.10	21,801.45	20,183.70	6.12B	7.94%	83.19	261.23
1/1/2024	21,725.70	21,727.75	22,124.15	21,137.20	6.82B	-0.03%	83.095	261.46
2/1/2024	21,982.80	21,780.65	22,297.50	21,530.20	6.73B	1.18%	82.9	265.17
3/1/2024	22,326.90	22,048.30	22,526.60	21,710.20	6.74B	1.57%	83.35	267.87
4/1/2024	22,604.85	22,455.00	22,783.35	21,777.65	6.28B	1.24%	83.45	270.88
5/1/2024	22,530.70	22,567.85	23,110.80	21,821.05	6.71B	-0.33%	83.424	270.07
6/1/2024	24,010.60	23,337.90	24,174.00	21,281.45	7.75B	6.57%	83.355	288.05
7/1/2024	24,951.15	23,992.95	24,999.75	23,992.70	7.09B	3.92%	83.699	298.11
8/1/2024	25,235.90	25,030.95	25,268.35	23,893.70	6.33B	1.14%	83.867	300.90
9/1/2024	25,810.85	25,333.60	26,277.35	24,753.15	6.16B	2.28%	83.755	308.17
10/1/2024	24,205.35	25,788.45	25,907.60	24,073.90	6.33B	-6.22%	84.061	287.95
11/1/2024	24,131.10	24,302.75	24,537.60	23,263.15	5.89B	-0.31%	84.559	285.38
12/1/2024	23,644.80	24,140.85	24,857.75	23,460.45	5.45B	-2.02%	85.554	276.37
1/1/2025	23,508.40	23,637.65	24,226.70	22,786.90	6.46B	-0.58%	86.561	271.58
2/1/2025	22,124.70	23,528.60	23,807.30	22,104.85	5.65B	-5.89%	87.471	252.94
3/1/2025	23,519.35	22,194.55	23,869.60	21,964.60	6.24B	6.30%	85.46	275.21
4/1/2025	24,334.20	23,341.10	24,457.65	21,743.65	7.66B	3.46%	84.599	287.64
5/1/2025	24,750.70	24,311.90	25,116.25	23,935.75	8.55B	1.71%	85.525	289.40
6/1/2025	25,517.05	24,669.70	25,669.35	24,473.00	7.06B	3.10%	85.7	297.75
7/1/2025	24,768.35	25,551.35	25,608.10	24,598.60	6.28B	-2.93%	87.524	282.99
8/1/2025	24,426.85	24,734.90	25,153.65	24,337.50	5.87B	-1.38%	88.174	277.03
9/1/2025	24,611.10	24,432.70	25,448.95	24,432.70	5.98B	0.75%	88.841	277.02
10/1/2025	25,722.10	24,620.55	26,104.20	24,605.95	6.24B	4.51%	88.769	289.76
11/1/2025	25,694.95	25,696.85	25,802.10	25,318.65	1.55B	-0.11%	88.506	290.32

Annexure 7: USD_INR Historical Data

USD_INR Historical Data

Date	Price	Open	High	Low	Change %
11/1/2025	88.51	88.72	88.81	88.34	0.00
10/1/2025	88.77	88.79	88.89	87.61	0.00
9/1/2025	88.84	88.18	88.94	87.66	0.01
8/1/2025	88.17	87.49	88.31	86.92	0.01
7/1/2025	87.52	85.70	87.85	85.18	0.02
6/1/2025	85.70	85.50	86.92	85.29	0.00
5/1/2025	85.53	84.61	86.12	83.77	0.01
4/1/2025	84.60	85.46	86.75	84.47	-0.01
3/1/2025	85.46	87.45	87.45	85.40	-0.02
2/1/2025	87.47	86.92	88.00	86.33	0.01
1/1/2025	86.56	85.63	86.73	85.60	0.01
12/1/2024	85.55	84.57	85.82	84.53	0.01
11/1/2024	84.56	84.08	84.64	84.03	0.01
10/1/2024	84.06	83.85	84.14	83.79	0.00
9/1/2024	83.76	83.88	84.02	83.44	0.00
8/1/2024	83.87	83.70	84.17	83.65	0.00
7/1/2024	83.70	83.38	83.81	83.35	0.00
6/1/2024	83.36	83.12	83.69	82.95	0.00
5/1/2024	83.42	83.47	83.57	83.02	0.00
4/1/2024	83.45	83.34	83.75	83.15	0.00
3/1/2024	83.35	82.93	83.73	82.65	0.01
2/1/2024	82.90	83.08	83.13	82.81	0.00
1/1/2024	83.10	83.24	83.36	82.77	0.00
12/1/2023	83.19	83.36	83.47	82.91	0.00
11/1/2023	83.36	83.28	83.50	82.91	0.00
10/1/2023	83.26	83.17	83.35	82.96	0.00
9/1/2023	83.03	82.65	83.36	82.58	0.00
8/1/2023	82.70	82.24	83.47	82.22	0.01
7/1/2023	82.24	82.06	82.82	81.67	0.00
6/1/2023	82.09	82.67	82.70	81.84	-0.01
5/1/2023	82.68	81.80	82.95	81.65	0.01
4/1/2023	81.72	82.39	82.48	81.55	-0.01
3/1/2023	82.16	82.59	82.92	81.61	-0.01
2/1/2023	82.64	81.77	83.05	81.68	0.01
1/1/2023	81.74	82.67	83.04	80.87	-0.01
12/1/2022	82.72	81.15	82.99	80.99	0.02
11/1/2022	81.36	82.82	83.00	80.48	-0.02
10/1/2022	82.77	81.53	83.27	81.28	0.02
9/1/2022	81.51	79.54	82.02	79.01	0.03
8/1/2022	79.49	79.19	80.14	78.39	0.00
7/1/2022	79.34	78.97	80.24	78.81	0.00
6/1/2022	78.95	77.65	79.10	77.38	0.02

Date	Price	Open	High	Low	Change %
5/1/2022	77.57	76.51	77.92	75.99	0.01
4/1/2022	76.52	75.93	76.81	75.27	0.01
3/1/2022	75.90	75.29	77.19	75.26	0.01
2/1/2022	75.49	74.56	75.85	74.34	0.01
1/1/2022	74.53	74.46	75.33	73.75	0.00
12/1/2021	74.47	75.08	76.42	74.09	-0.01
11/1/2021	75.09	74.96	75.20	73.83	0.00
10/1/2021	74.92	74.19	75.68	74.08	0.01
9/1/2021	74.16	72.99	74.37	72.91	0.02
8/1/2021	72.95	74.37	74.51	72.91	-0.02
7/1/2021	74.34	74.37	75.03	74.22	0.00
6/1/2021	74.36	72.51	74.47	72.48	0.03
5/1/2021	72.51	74.28	74.33	72.32	-0.02
4/1/2021	74.05	73.17	75.57	73.16	0.01
3/1/2021	73.14	73.59	73.78	72.27	-0.01
2/1/2021	73.92	72.92	74.06	72.26	0.01
1/1/2021	72.88	73.10	73.60	72.79	0.00
12/1/2020	73.04	74.03	74.10	72.95	-0.01
11/1/2020	73.99	74.57	75.02	73.64	-0.01
10/1/2020	74.55	73.60	74.71	72.97	0.01
9/1/2020	73.56	73.22	74.06	72.75	0.00
8/1/2020	73.25	74.92	75.31	73.05	-0.02
7/1/2020	74.92	75.53	75.63	74.49	-0.01
6/1/2020	75.54	75.47	76.40	74.97	0.00
5/1/2020	75.59	75.32	76.15	75.04	0.01
4/1/2020	75.08	75.32	77.01	74.91	0.00
3/1/2020	75.33	72.53	76.39	72.03	0.04
2/1/2020	72.53	71.53	72.57	71.09	0.01
1/1/2020	71.54	71.37	72.13	70.68	0.00