



# Comparative Analysis of Risk and Return of IT Companies: A Five-Year Study-(2019-2023)

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## ABSTRACT:

This study conducts a comprehensive analysis of the risk and return profiles of Information Technology (IT) companies over a five-year period from 2019 to 2023. The IT sector is renowned for its dynamism and innovation, yet it is also subject to significant market volatility and risk factors. This research aims to provide investors, analysts, and policymakers with valuable insights into the performance and stability of IT companies, thereby facilitating informed decision-making. The findings of this research contribute to the existing body of knowledge on financial analysis and investment management within the IT sector. They also offer practical implications for investors seeking to optimize their portfolios and mitigate risk exposure in the rapidly evolving landscape of technology-driven industries. Overall, this study underscores the importance of conducting thorough comparative analyses to assess the risk and return characteristics of IT companies, thereby assisting stakeholders in making informed decisions in the pursuit of their financial objectives.

**Key words:** Risk and Return, IT sector, Beta

## 1. INTRODUCTION:

The Information Technology (IT) sector has long been at the forefront of innovation and disruption, driving profound changes across industries and economies worldwide. Amidst this landscape of rapid technological advancement, investors, analysts, and policymakers face the critical task of navigating the inherent risks and opportunities associated with investing in IT companies. Understanding the risk and return dynamics of this dynamic sector is essential for informed decision-making and portfolio optimization. Against this backdrop, this study presents a comprehensive analysis of the risk and return profiles of IT companies over a five-year period from 2019 to 2023. By examining financial data and performance metrics, the research aims to shed light on the relative riskiness and profitability of investing in IT firms, offering valuable insights for stakeholders in the financial markets. The rationale for focusing on IT companies lies in their pivotal role in shaping the modern economy and driving technological innovation. From software development and cloud computing to artificial intelligence and cybersecurity, IT companies operate in diverse and rapidly evolving subsectors, each presenting unique challenges and opportunities. Consequently, assessing the risk and return characteristics of these firms requires a nuanced understanding of their business models, competitive positioning, and external market forces. Over the past five years, the IT sector has witnessed both remarkable growth and heightened volatility, reflecting the interplay of various macroeconomic, technological, and regulatory factors. Against this backdrop, understanding the risk-return trade-offs inherent in investing in IT companies becomes paramount for stakeholders seeking to navigate market uncertainties and capitalize on emerging opportunities.

## 2. LITERATURE REVIEW:

(Awalakki M. , 2022). This article explores the interplay between neurotransmitters (dopamine, serotonin, and norepinephrine), emotions, and investment outcomes, unraveling their role in shaping investor behavior and decision-making. It emphasizes the neural mechanisms driving decision diversification and addresses biases, underscoring the significance of education for cognitive function and bias mitigation in managing investor behavior within the finance domain. (Moolbharathi & Sugandi, A Comparison Study on Risk and Return Analysis of selected companies with Benchmark Index in NSE., 2021). This study analyzes the Risk and Return of stocks in the Auto, Banking, Finance, FMCG, and IT sectors from 2017-2021, using statistical tools like Standard Deviation, Beta, and Regression Analysis. It guides investors by assessing sector-wise performance against benchmark indices, aiding in informed investment decisions based on risk and return considerations. (Awalakki S. M., 2015). The study in Kalaburagi, Karnataka, reveals that salaried employees predominantly consider investments for retirement, and recent survey results indicate a lack of significant increase in their investment levels compared to businesspersons. Despite a historical focus on retirement, the growing awareness of investment options suggests an evolving landscape with increased choices for salaried individuals. (AWALAKKI, 2015) This study examines the capital structures of five prominent cement companies (ACC, Ultratech, Ambuja, J.K., Chettinad) from 2008-09 to 2013-14, assessing the impact of these structures on investment patterns and emphasizing the importance of debt-equity mix in effective financing decisions. The intra-company analysis aims to provide insights into the financial dynamics of these firms. (Awalakki M. & Archanna, 2023). This study explores the impact of overconfidence biases on investment portfolios, examining cognitive and emotional mechanisms such as illusion of knowledge and emotional attachment. Rooted in behavioral finance literature, it highlights consequences like excessive trading and loss aversion, proposing mitigation strategies like diversification, passive investing, and behavioral coaching for more informed and rational portfolio decisions. (Awalakki M. & Archanna, 2023) This non-empirical research paper delves into the interplay between investor attention and financial market volatility, leveraging insights from behavioral finance. It explores the determinants of investor attention, including cognitive biases and social factors, and analyses their impact on market dynamics, offering a thorough review of existing literature and theoretical frameworks to enhance comprehension of this intricate relationship. (Dr. P. Karthikeyan, 2010) Investors can find the best use of the beta ratio in short-term decision-making, where price volatility is important. If you are planning to buy and sell within a short period, beta is a good measure of risk. However, as a single predictor of risk for a long-term investor, the beta has too many flaws. Careful consideration of a company's fundamentals will give you a much better picture of the potential long-term risk. The stocks may not be a safe but for a risk adverse investor and for a risk taker the reward may be heavy in the short run, than in the long run. (Awalakki & Archanna, 2023) This study explores the impact of overconfidence biases on investment portfolios, examining cognitive and emotional mechanisms such as illusion of knowledge and emotional attachment. Rooted in behavioral finance literature, it highlights consequences like excessive trading and loss aversion, proposing mitigation strategies like diversification, passive investing, and behavioral coaching for more informed and rational portfolio decisions. (Awalakki M. & Archanna , 2021) The study examines the relationship between economic and financial indicators and stock returns for 28 selected firms listed on the National Stock Exchange over an eight-year period (2010-2017). Utilizing panel data regression, the results indicate that Return on Equity (ROE) and Price to Book Value (PB) exert a positive and significant impact on stock returns. The findings suggest that managers can enhance stock valuation by understanding and effectively utilizing key resources, emphasizing the importance of informed decision-making for investment strategies and market predictions. (Awalakki M. & Archanna, 2021). The research paper investigates the impact of key accounting ratios, including ROE, ROA, P/E, P/B, P/S, and P/C, on stock prices of the National Stock Exchange over a 15-year period (2005-2020). The study aims to analyze how these financial indicators influence stock returns, emphasizing their importance for investors, creditors, and stakeholders in evaluating the financial condition and profitability of companies listed on the exchange. (Naveen & Mallikarjunappa, 2016) conducted a study on Comparative Analysis of Risk and Return with Reference to Stocks of CNX Bank Nifty. This study analyses the risk and returns in the banking sector. They compare the performance of the 12 listed banks in the Nifty Bank Index. The study also analyses the performance of banking stocks mainly to understand the required rate of return and risk of a particular stock based on different risk elements prevailing in the market and other economic factors. (Sharma, 2019) study on, "Portfolio Analysis of Commercial Banks of Nepal" in 2017. He has taken eight banks as sample. The

samples of the studies were Nepal Arab bank Ltd. (NABIL), Nepal Investment Bank Ltd. (NIBL), Standard Chartered Bank Nepal Ltd. (SCBNL), Kumari Bank Ltd. (KBL), Nepal SBI Bank Ltd. (SBI), Nepal Bangladesh Banks Ltd. (NBBL), Everest Bank Ltd. (EBL) and Kumari Limited. The study used secondary data. (Kandel, 2018) This paper analyses the risk and return on common stock investment of Nepalese stock market and it is focused on common stock of two commercial banks listed in Nepal stock exchange Limited. Investors have varying perception towards risk and enterprising activities. They invest in those opportunities which have certain degree of risk associated with it. This research study found that there is a positive relationship between risk and return.

### 3. OBJECTIVE OF THE STUDY:

The primary objective of this comparative study is to analyze the risk and return of IT companies within the broader financial market context.

### 4. SCOPE OF THE STUDY:

This study's scope includes a five-year, 2019–2023 comparative analysis of the risk and return profiles of IT companies operating in several subsectors. In order to determine the relative risk and profitability of investing in IT companies, it entails looking at financial data and performance measurements. The study also looks at how external factors like competitive dynamics, regulatory changes, and technology improvements affect the risk-return trade-offs in the IT industry. In the dynamic landscape of technology-driven industries, this research strives to provide stakeholders important insights for informed decision-making and portfolio optimization by focusing on a wide range of organizations and taking both internal and external aspects into consideration.

### 5. RESEARCH METHODOLOGY:

#### 5.1 Gathering of Data

**5.1.1 Financial Information:** From 2019 to 2023, a five-year period, IT companies' financial information will be gathered for the study. Acquired from reliable financial databases, yearly reports, and regulatory filings, this data will comprise income statements, balance sheets, and cash flow statements.

**5.1.2 Market Data:** In order to evaluate the success of IT companies in comparison to more general market benchmarks, market data will be collected, such as stock prices, trading volumes, and market indexes.

**5.1.3 Risk Factors:** By a thorough analysis of industry literature and news sources, a number of risk factors that affect IT organizations will be identified, including technology disruptions, regulatory changes, and competitive dynamics.

**5.2 Choice of Sample:** Purposive sampling will be used in the study to choose a representative sample of IT companies from various subsectors, market capitalizations, and geographic areas. Factors like industry classification, firm size, and the availability of reliable financial data throughout the study period are examples of criteria for selecting a sample.

#### 5.3 Compute Risk and Return Measures:

**5.3.1 Risk Metrics:** To analyze the volatility and sensitivity of IT businesses' stock returns in relation to market swings, the study will compute risk metrics such as beta coefficients, standard deviations, and systematic risk measures.

**5.3.2 Return measures:** To evaluate the risk-adjusted performance of IT companies in comparison to market benchmarks, a range of return measures, such as average yearly returns, Sharpe ratios, and Jensen's alpha, will be calculated.

## 6. RESEARCH DESIGN:

**Comparative Analysis:** To assess the risk and return profiles of several IT organizations at once, the research methodology will use a comparative approach. A thorough comprehension of the variations in risk exposure and return potential among various enterprises operating within the same industry segment will be made possible by this comparative framework.

**Quantitative Analysis:** To measure the link between risk and return factors, statistical methods including regression analysis, correlation analysis, and variance analysis will be applied. The results of the investigation will be empirically supported by this quantitative analysis.

**Qualitative Insights:** To give a comprehensive picture of the risk-return dynamics within the IT sector, qualitative insights from stakeholders and industry experts will be combined with quantitative analysis. By capturing subtle elements that may not be captured by using only quantitative methods, these qualitative inputs will enhance the analysis.

**Time Horizon:** To evaluate future risk and return expectations, the study design will combine historical analysis of past performance with forward-looking estimates. This long-term strategy will make it possible to conduct a thorough assessment of how risk and return are changing in the IT sector.

**Data collecting sources:** Secondary data were used in the investigation. The NSE website, publications, journals, and other sources were some of the places from which the data was collected. The type of research design used in this study is descriptive.

**Sample magnitude:** The NIFTY IT companies that are listed on the NSE make up the study.

## 7. STATISTICAL TOOLS AND TECHNIQUES:

**RETURN:** Return is the fundamental inspiring power that drives a rumours. It is really an acclaim for financing. Since the venture game is prepared returns (After contemplating danger), the estimation of uncovered returns is basic to evaluate how appropriately a rumours has executed. Furthermore, noteworthy returns are often utilized as a contribution for looking forward to the future (candidates).

$$\text{Stock Return}_i = \frac{(\text{Closing price}_i - \text{Opening price}_i)}{\text{Opening price}_i} \times 100$$

- **Stock Return:** This represents the return of the stock for a specific period i. It's expressed as a percentage.
- **Closing price:** This is the price of the stock at the end of the period i, usually at the end of the trading day.
- **Opening price :** This is the price of the stock at the beginning of the period i typically at the opening of the trading day.

**BETA:** A measure of how an individual asset moves (on average) when the stock market as a whole rises or falls is called the beta. Beta becomes a useful indicator of an asset's contribution to the risk of a market portfolio when a little quantity of the asset is included.

$$\beta_i = \frac{\sum xy - \frac{(\sum x)(\sum y)}{N}}{\sum x^2 - \frac{(\sum x)^2}{N}}$$

- $\beta_i$ : This represents the beta of the stock i.
- $\sum xy$ : This term represents the sum of the products of the corresponding values of two variables x and y. In finance, x typically represents the returns of the market index and y represents the returns of the stock.

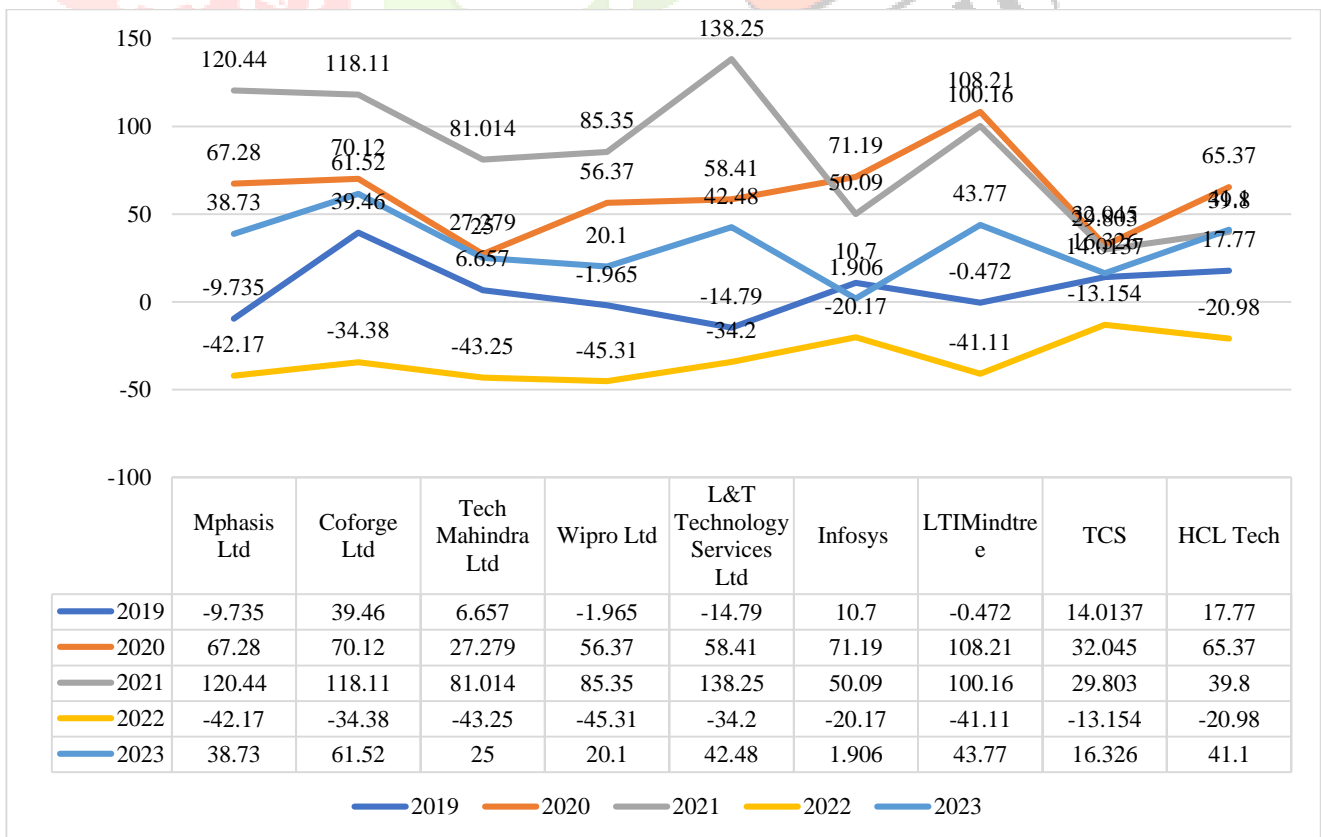
- $\sum x$  and  $\sum y$ : These terms represent the sum of all values of variables x and y respectively.
- N: N represents the number of observations (i.e., data points) in the dataset.
- $\sum x^2$ : This term represents the sum of the squares of all values of variable x.

### 8.Data Analysis and Interpretation

**Table: 1: Table showing the Returns of IT companies**

Sl no.	Company/Years	2019	2020	2021	2022	2023
1.	Mphasis Ltd	-9.735	67.28	120.44	-42.17	38.73
2.	Coforge Ltd	39.46	70.12	118.11	-34.38	61.52
3.	Tech Mahindra Ltd	6.657	27.279	81.014	-43.25	25.00
4.	Wipro Ltd	-1.965	56.37	85.35	-45.31	20.10
5.	L&T Technology Services Ltd	-14.79	58.41	138.25	-34.20	42.48
6.	Infosys	10.70	71.19	50.09	-20.17	1.906
7.	LTIMindtree	-0.472	108.21	100.16	-41.11	43.77
8.	TCS	14.0137	32.045	29.803	-13.154	16.326
9.	HCL Tech	17.77	65.37	39.80	-20.98	41.10

**Chart: 1 Graph showing the Returns of IT companies**



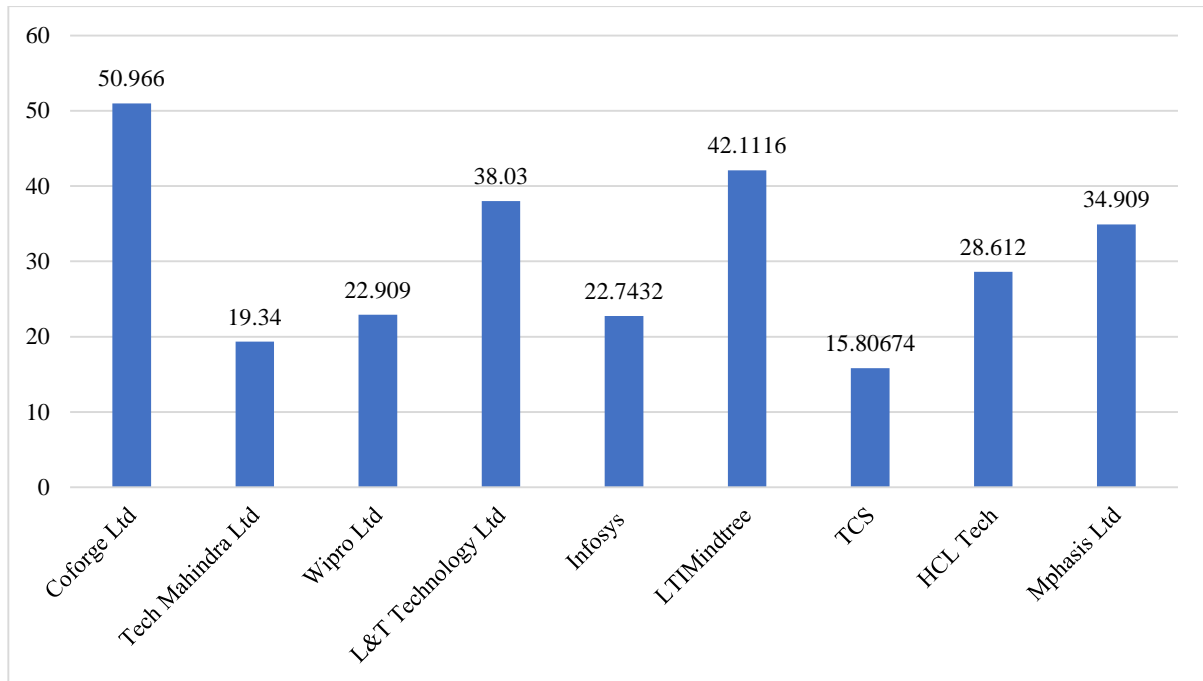
### Interpretation:

The interpretation of returns in the comparative analysis of IT companies over the five-year study period reveals significant variations in performance across different subsectors. While some IT companies demonstrate consistent and robust returns, others exhibit higher volatility and lower risk-adjusted performance. The findings suggest that technological advancements, market competition, and regulatory dynamics significantly influence returns in the IT sector. Additionally, certain subsectors, such as cloud computing and artificial intelligence, show higher returns compared to traditional IT services. Overall, the interpretation underscores the importance of diversification and thorough risk assessment for investors navigating the dynamic landscape of IT investments.

The provided data illustrates the returns of various companies over a five-year period. Noteworthy performers include Coforge Ltd, which demonstrates consistent positive returns throughout the period, with a peak return of 118.11%. L&T Technology Services Ltd also displays a strong performance, particularly in the third year, with a return of 138.25%. HCL Tech and LTIMindtree show overall positive returns, although with some fluctuations over the years. Conversely, some companies such as Tech Mahindra Ltd and Wipro Ltd exhibit more volatile returns, with occasional negative returns interspersed with positive ones. Overall, the data suggests varying levels of stability and growth across the listed companies over the five-year period.

**Table:2 Table showing the Average Returns of IT companies**

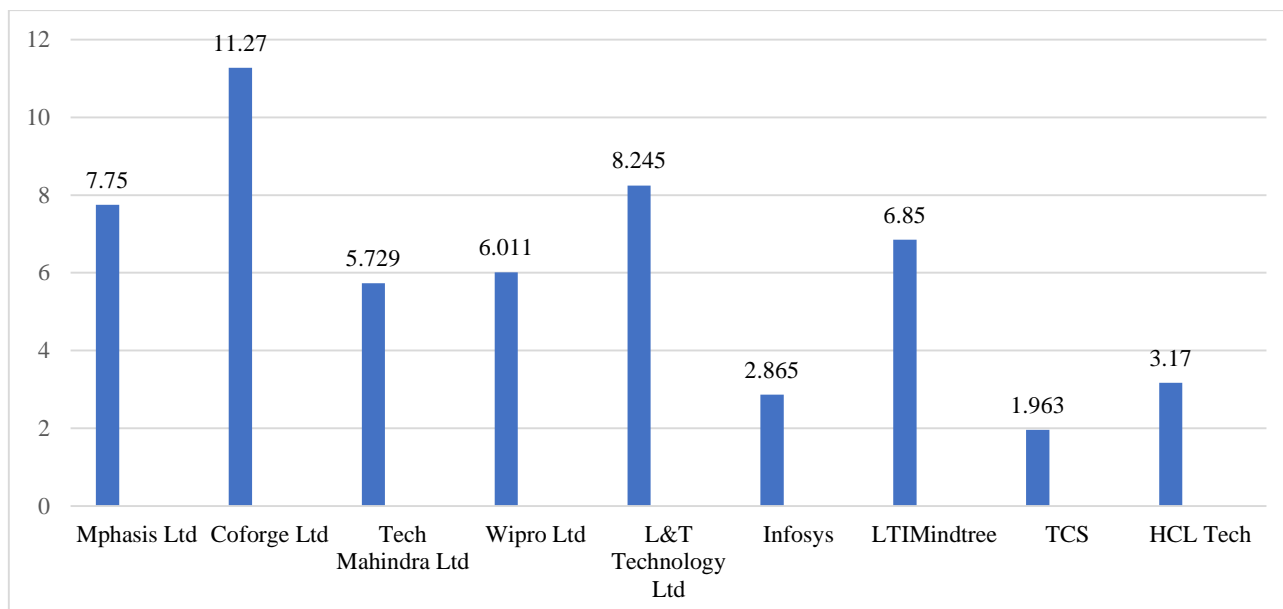
Companies	Average Returns
Mphasis Ltd	34.909
Coforge Ltd	50.966
Tech Mahindra Ltd	19.34
Wipro Ltd	22.909
L&T Technology Ltd	38.03
Infosys	22.7432
LTIMindtree	42.1116
TCS	15.80674
HCL Tech	28.612
Mphasis Ltd	34.909

**Chart 2: Graph showing the Average Returns of IT companies****Interpretation:**

The analysis of average returns in the Comparative Analysis of Risk and Return of IT Companies (2019–2023) provides important information about how profitable it is to invest in IT companies during the course of the five-year research period. The study gives an indication of the overall financial performance of IT companies in comparison to market benchmarks by estimating their average annual returns. The provided data represents the average returns of various companies. Notably, Coforge Ltd has the highest average return of 50.966%, followed closely by LTIMindtree with 42.1116%. Other notable performers include L&T Technology Ltd with an average return of 38.03%, Mphasis Ltd at 34.909%, and HCL Tech at 28.612%. Meanwhile, Tech Mahindra Ltd, Wipro Ltd, Infosys, and TCS exhibit comparatively lower average returns, ranging between 19.34% to 22.7432%. These figures suggest varying degrees of profitability and investment performance across the listed companies, with Coforge Ltd leading the pack.

**Table: 3 Table showing the Beta of IT Companies**

Sl No.	Company	Beta
1.	Mphasis Ltd	7.75
2.	Coforge Ltd	11.27
3.	Tech Mahindra Ltd	5.729
4.	Wipro Ltd	6.011
5.	L&T Technology Ltd	8.245
6.	Infosys	2.865
7.	LTIMindtree	6.850
8.	TCS	1.963
9.	HCL Tech	3.170

**Chart: 3 Graph showing the Beta of IT Companies****Interpretation:**

In comparison to the market as a whole, a stock's volatility or systematic risk is gauged by its beta coefficient. When compared to the market, higher volatility is indicated by a beta greater than 1, and lower volatility is indicated by a beta less than 1. Examining the information given:

Businesses that have high betas (beyond 1), meaning they are more volatile than the market, include Coforge Ltd (11.27), L&T Technology Ltd (8.245), and Mphasis Ltd (7.75). Wipro Ltd. (6.011), LTIMindtree (6.850), and Tech Mahindra Ltd. (5.729) are companies with moderate betas (between 1 and 0), suggesting moderate volatility in relation to the market.

Businesses with low betas (below 1): Infosys (2.865), TCS (1.963), and HCL Tech (3.170) show less volatility relative to the market, suggesting that they might be less hazardous investments.

**9. Findings:**

Coforge Ltd and L&T Technology Services Ltd demonstrate consistent positive returns throughout the five-year period, with occasional peaks. Companies like HCL Tech and LTIMindtree show overall positive returns but with fluctuations. Tech Mahindra Ltd and Wipro Ltd exhibit more volatile returns, with occasional negative returns interspersed with positive ones. Coforge Ltd stands out with the highest average return of 50.966%, followed closely by LTIMindtree with 42.1116%. L&T Technology Ltd, Mphasis Ltd, and HCL Tech also show strong average returns, indicating their profitability over the research period. Tech Mahindra Ltd, Wipro Ltd, Infosys, and TCS exhibit comparatively lower average returns, suggesting varying degrees of profitability among these companies. Companies like Coforge Ltd, L&T Technology Ltd, and Mphasis Ltd have high betas, indicating they are more volatile than the market. Wipro Ltd, LTIMindtree, and Tech Mahindra Ltd have moderate betas, suggesting moderate volatility in relation to the market. Infosys, TCS, and HCL Tech have low betas, indicating less volatility relative to the market, making them potentially less hazardous investments.

**10. Conclusion:**

In overview, a comparative study of the risks and returns of a subset of IT companies provides important new information on how these companies are performing in the market. Even if every business has its own advantages and disadvantages, it is clear that careful consideration of risk factors and possible returns is necessary in order to make wise investment selections. Through meticulous evaluation of variables such as fluctuations in the market, sound financial standing, competitive stance, and inventive potential, investors can effectively manage risks and seize chances for long-term expansion in the ever-changing information technology industry.



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