

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

Kajal Tiwari<sup>1</sup>, Pallavi Patil<sup>2</sup>, Rohit<sup>3</sup>, Ahamadi<sup>4</sup>  
<sup>1,2,3,4</sup>*Student, VTU CPGS Kalburgi*

**Abstract-**The study focuses on evaluating the historical performance of selected IT companies in terms of risk-adjusted returns, utilizing both quantitative and qualitative research methods. Various financial metrics, including stock price volatility, beta coefficients, and return on investment (ROI), are examined to assess the risk and return profiles of IT companies. Additionally, the study explores the relationship between economic and financial indicators and stock returns to provide insights for investors, financial analysts, and policymakers. The research methodology involves data collection from primary and secondary sources, selection of IT companies based on specific criteria, and statistical analysis techniques such as regression analysis and correlation analysis. The findings highlight the diversity in financial performance and risk profiles among IT companies, emphasizing the importance of informed decision-making for investment strategies and market predictions in the dynamic landscape of the IT sector. The findings offer actionable insights for investors seeking to optimize their investment outcomes within the IT Companies.

**Keywords:** Risk and Return, IT sector, Beta.

## 1. INTRODUCTION

In the dynamic landscape of the financial market, investors continuously seek avenues for maximizing returns while managing risks effectively. Within this context, the Information Technology (IT) sector stands out as a hub of innovation and growth, attracting significant investor interest. However, investing in IT companies presents a unique set of challenges and opportunities due to the inherent volatility and rapid technological advancements characterizing the industry. The stock market conditions are dynamic in nature in which predictions play a major role in investing for an investor. An investment is impacted by both risk and return, which are two sides of the same coin. To optimise rewards, one must thus comprehend risk. The analysis of return and

risk with regards to investment has an impression on the individual's decision-making process. Every investment has some risk, but the best investments are those that offer the highest returns with the lowest amount of risk. Market knowledge is required for risk analysis which helps in making appropriate judgements and to take preventive measures. Risk is calculated using the degree of volatility and the difference between actual and expected returns. The Risk and return analysis determine the amount of risk that an investment includes in connection to its potential rate of returns. Diversification reduces overall risk for investors' portfolios but also curbs potential returns. Only investing in one market sector may result in higher returns if that sector outperforms the overall market, but if that sector loses attractiveness, your returns may be lower than they would have been from a more broadly diversified portfolio. The benefits of diversification are reduced the more strongly two assets' returns correlate.

## 2. REVIEW OF LITERATURE

(Horne & James, 2001) argued that although beta may not be a good indicator of the realized returns, it remains a reasonable measure of risk (Horne & James, 2001). Study of the Meric et al (2010) in the stock market of US shows a positive risk-return relationship between Industries listed in US stock market. There are many controversial results have been revealed in empirical literature; therefore, this study reviews Capital Asset Pricing Model (CAPM) to explore the relationship between expected return and systematic risk. The COMPUSTAT database, a major corporate financial data base widely used in both academia and businesses, provides market beta estimates for individual firms. Investment services firms also provide beta estimates as "risk attributes" or "volatility measures" of their bond and stock funds.

No other theoretically well-founded model alternative to the CAPM has been implemented for the estimation of the cost of equity capital (Kaplan & Peterson, 1998). (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. (Markowitz, 1952) Portfolio investment theory was the first modern theory proposed by Markowitz (1952). assumed that the rates of return of individual assets covariance with one another, and there is a rather stable covariance, or correlation coefficient, between the rates of return of every two assets. Thus, he stated that it is theoretically possible to construct a variance-covariance matrix of all risky assets. (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. (Abedi, Dargiri, & Rasiyah, 2012). This study emphasizes the importance of the risk-return relationship in aiding investors and organizations in decision-making. By reviewing theories, empirical studies, and performance measures like Treynor, Sharpe, and Jansen Indices derived from the Capital Asset Pricing Model (CAPM), it aims to enhance the understanding

of industry sectors' risk-return constructs for improved decision support. (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. (Subramanyam, Nalla, & Kalyan, 2018). The study aims to educate investors on mutual funds, emphasizing the potential for maximizing returns amidst India's growing capital market. It sheds light on investor awareness, risk tolerance, and preferences, showcasing the role of mutual funds in diversifying investments for optimal returns and risk mitigation. (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, 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.

### 3. OBJECTIVE OF THE STUDY

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

### 4. SCOPE OF THE STUDY

Given the pivotal role of IT companies in driving global economic growth and innovation, there is a pressing need to conduct a comparative study of risk and return analysis within this sector. This study aims to bridge existing knowledge gaps by systematically examining the risk profiles and return potential of IT companies across different subdomains, market segments, and geographical regions. By doing so, it seeks to provide investors, financial analysts, and policymakers with actionable insights to enhance risk management practices, optimize investment strategies, and foster sustainable growth in the IT industry.

### 5. RESEARCH METHODOLOGY

#### 5.1. Data Collection:

The study will rely on a combination of primary and secondary data sources. Primary data will be gathered through surveys and interviews with industry experts, financial analysts, and investors to gather qualitative insights into the risk and return factors specific to IT companies. Secondary data will be collected from publicly available sources such as financial reports, company websites, and academic journals.

#### 5.2. Selection of Companies:

A carefully curated sample of IT companies will be selected for the comparative analysis based on criteria such as market capitalization, geographical presence, diversity of services/products, and historical financial performance.

#### 5.3. Risk Assessment:

Various metrics will be employed to assess the risk profiles of selected IT companies, including but not limited to beta coefficients, volatility measures, debt-

to-equity ratios, and liquidity ratios. Additionally, qualitative factors such as industry regulations, technological disruptions, and competitive landscape will be considered.

#### 5.4. Return Analysis:

Return on Investment (ROI), Return on Equity (ROE), and other relevant financial metrics will be utilized to analyze the return potential of the selected IT companies. Long-term historical performance, growth prospects, and market expectations will be taken into account to assess the attractiveness of investing in these firms.

### 6. RESEARCH DESIGN

#### 6.1. Comparative Analysis:

The research design will employ a comparative approach to evaluate the risk and return profiles of multiple IT companies simultaneously. This comparative framework will allow for a comprehensive understanding of how different firms within the same industry segment vary in terms of risk exposure and return potential.

#### 6.2. Quantitative Analysis:

Statistical techniques such as regression analysis, correlation analysis, and variance analysis will be utilized to quantify the relationship between risk and return variables. This quantitative analysis will provide empirical evidence to support the findings of the study.

#### 6.3. Qualitative Insights:

In addition to quantitative analysis, qualitative insights from industry experts and stakeholders will be integrated to provide a holistic view of the risk-return dynamics within the IT sector. These qualitative inputs will enrich the analysis by capturing nuanced factors that may not be captured solely through quantitative methods.

#### 6.4. Time Horizon:

The research design will encompass both historical analysis of past performance as well as forward-looking projections to assess future risk and return expectations. This longitudinal approach will enable a comprehensive evaluation of the evolving nature of risk and return within the IT industry.

6.5. Sources of data collection:

The study was conducted using secondary data. The information was gathered from a number of sources, including the NSE website, publications, and journals, among others. This study's research design is a descriptive one.

7. STATISTICAL TOOLS AND TECHNIQUES

7.1. Returns

A company's share price may increase or decrease based on multiple factors. A market return is the profit earned over the period of time. The returns can resemble as positive or negative outcomes. Profit can be considered as positive and loss can be considered as negative.

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

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.

7.2. 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: This 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.

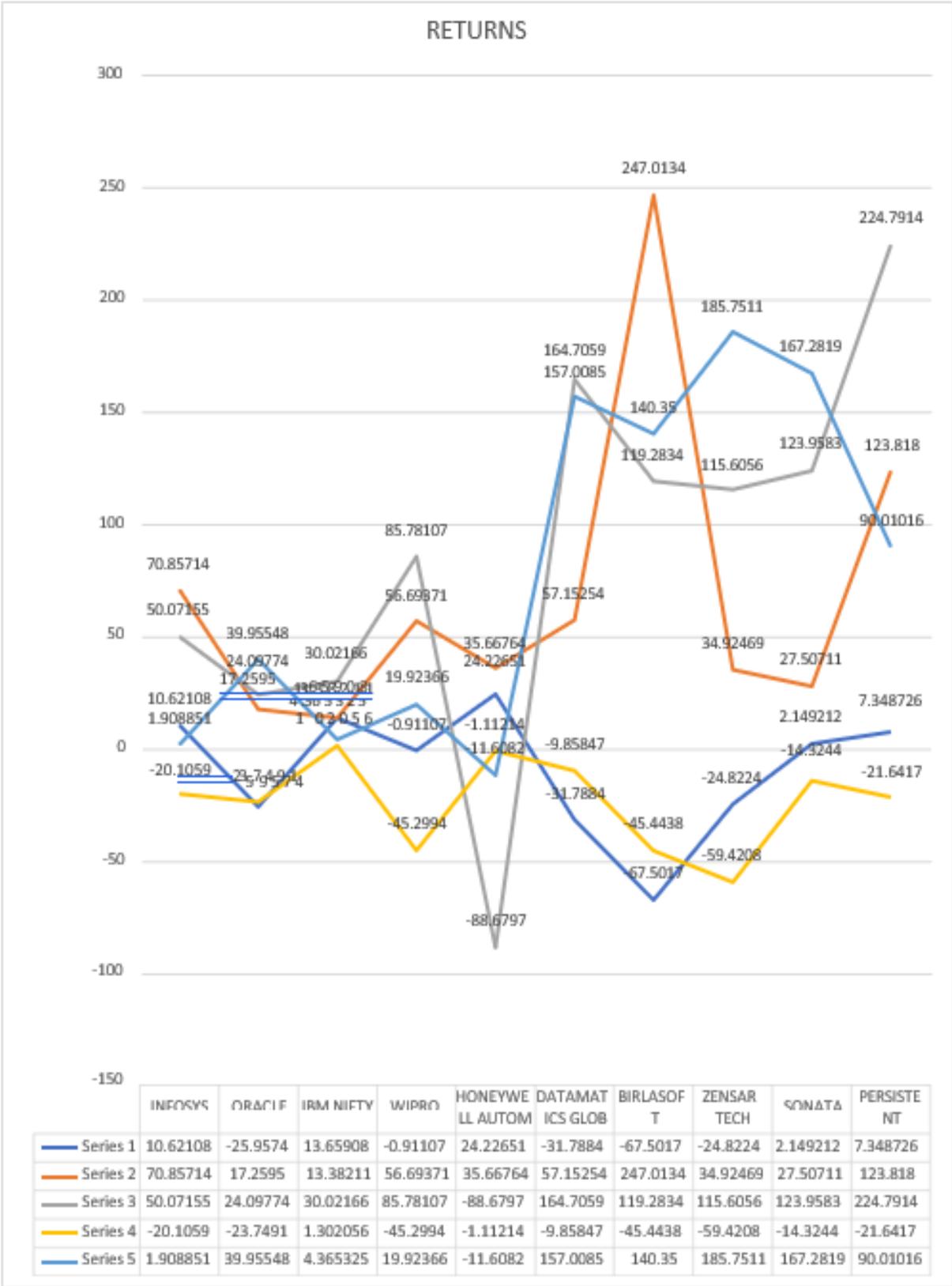
Data Analysis and Interpretation

Table: 1 Table showing the Returns of IT companies

	2019	2020	2021	2022	2023
INFOSYS	10.62108	70.85714	50.07155	-20.1059	1.908851
ORACLE	-25.9574	17.2595	24.09774	-23.7491	39.95548
IBM NIFTY	13.65908	13.38211	30.02166	1.302056	4.365325
WIPRO	-0.91107	56.69371	85.78107	-45.2994	19.92366
HONEYWELL AUTOM	24.22651	35.66764	-88.6797	-1.11214	-11.6082
DATAMATICS GLOB	-31.7884	57.15254	164.7059	-9.85847	157.0085
BIRLASOFT	-67.5017	247.0134	119.2834	-45.4438	140.35
ZENSAR TECH	-24.8224	34.92469	115.6056	-59.4208	185.7511
SONATA	2.149212	27.50711	123.9583	-14.3244	167.2819

Chart: 1; Graph showing the Returns of IT companies

Chart: 1 Graph showing the Returns of IT companies



**Interpretation**

The table displays the annual returns of various IT companies from 2019 to 2023. The returns fluctuate significantly across companies and years, with some experiencing substantial gains while others suffer losses. Notably, companies like Infosys and Oracle exhibit mixed performance over the period, whereas firms like Persistent and Datamatics Global demonstrate remarkable growth despite occasional downturns. Overall, the table illustrates the dynamic nature of returns within the IT sector, reflecting both market trends and individual company strategies.

Table:2 Table showing the Average Returns of IT companies

COMPANIES	AVERAGE RETURNS
INFOSYS	22.670
ORACLE	6.321
IBM NIFTY	12.545
WIPRO	23.237
HONEYWELL AUTOM	-8.3011
DATAMATICS GLOB	67.44
BIRLASOFT	78.7404
ZENSAR TECH	50.407
SONATA	61.31
PERSISTENT	84.865

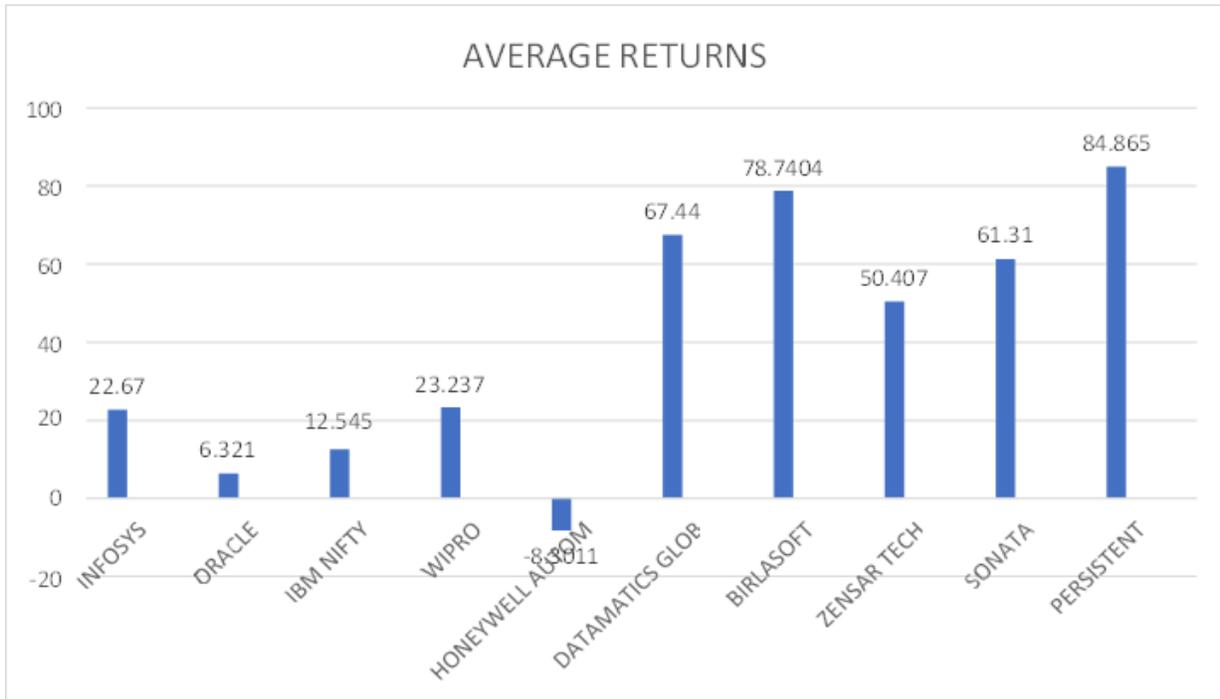


Chart 2: Graph showing the Average Returns of IT companies

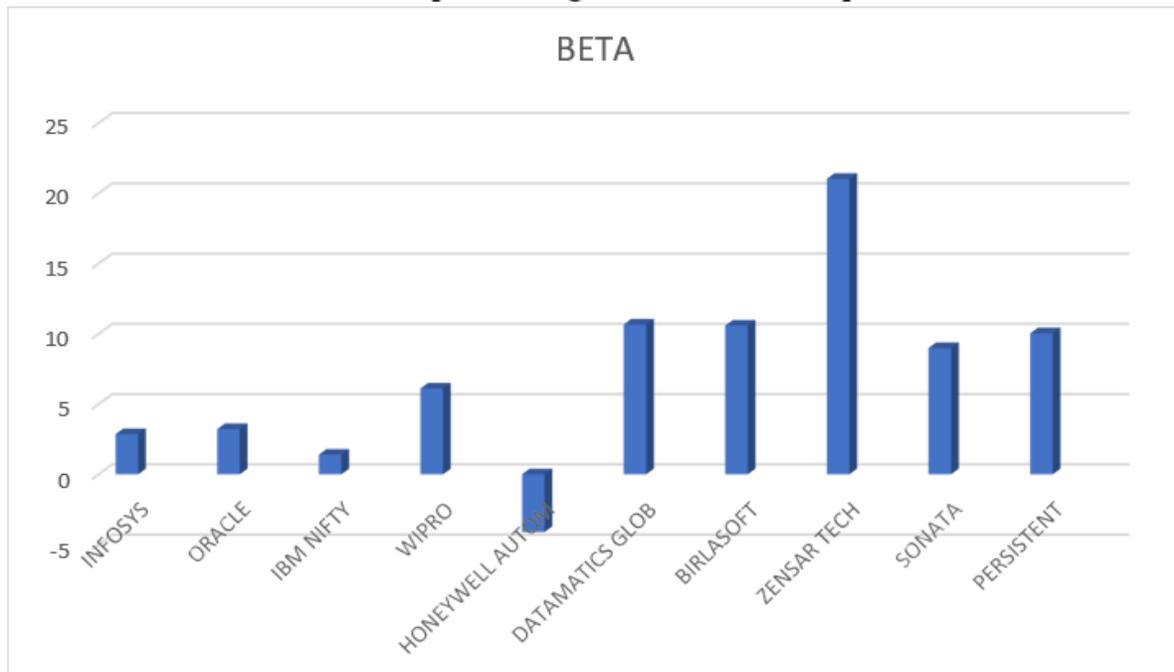
**Interpretation**

The table provides the average returns of various IT companies over a specified period. It reveals that companies like Infosys and Wipro have relatively high average returns, while Oracle and IBM NIFTY show moderate performance. On the other hand, Honeywell Automation exhibits negative average returns, indicating a period of underperformance. Notably, companies like Datamatics Global, Birlasoft, and Persistent demonstrate strong average returns, highlighting their potential as lucrative investment options. Overall, the table offers insights into the average performance levels of different IT companies, guiding investment decisions in the sector.

Table: 3 Table showing the Beta of IT Companies

COMPANY	BETA
INFOSYS	2.86
ORACLE	3.221
IBM NIFTY	1.3955
WIPRO	6.107
HONEYWELL AUTOM	-4.102
DATAMATICS GLOB	10.659
BIRLASOFT	10.579
ZENSAR TECH	21.0246
SONATA	8.983
PERSISTENT	10.03

Chart: 3 Graph showing the Beta of IT Companies



**Interpretation:**

The table displays the beta values of various IT companies, representing their volatility compared to the market. Higher beta values indicate higher volatility, while negative values suggest inverse correlation with the market. Companies like Zensar Tech, Datamatics Glob, and Birlasoft exhibit exceptionally high betas, implying significant sensitivity to market movements. Conversely, Honeywell Autom has a negative beta, suggesting an inverse relationship with the market. Overall, the table highlights the diverse risk profiles among IT companies, crucial for investors in assessing their investment strategies and risk tolerance.

**9.FINDINGS**

- 9.1 The annual returns of IT companies from 2019 to 2023 vary significantly, showcasing dynamic performance within the sector.
- 9.2 Infosys and Oracle demonstrate mixed performance, while Persistent and Datamatics Global show remarkable growth over the period.
- 9.3 Average returns reveal that Infosys and Wipro have high averages, while Datamatics Global, Birlasoft, and Persistent exhibit strong potential as lucrative investments.

9.4 The beta values indicate diverse risk profiles among IT companies, with Zensar Tech, Datamatics Glob, and Birlasoft showing high volatility.

9.5 The negative beta of Honeywell Automation suggests an inverse relationship with the market, emphasizing the importance of considering risk tolerance in investment strategies.

**CONCLUSION**

The comparative analysis of risk and return among IT companies over a five-year period (2019-2023) reveals significant variations in performance and risk profiles within the sector. Notably, companies like Infosys and Wipro exhibit relatively high average returns, while others such as Oracle and IBM NIFTY demonstrate moderate performance. Conversely, Datamatics Global, Birlasoft, and Persistent showcase strong average returns, indicating their potential as lucrative investment options. The beta values highlight diverse risk profiles among IT companies, with some showing high volatility (e.g., Zensar Tech, Datamatics Glob, and Birlasoft) and others displaying negative betas (e.g., Honeywell Automation). These findings underscore the importance of considering both risk

and return factors when making investment decisions within the IT sector. Investors, financial analysts, and policymakers can leverage these insights to optimize investment strategies, manage risk effectively, and foster sustainable growth in the dynamic landscape of IT companies.

#### REFERENCES

- [1] Abedi, H. S., Dargiri, M. N., & Rasiah, D. (2012). A Review Study of Risk-Return Relationship and Performance Measures Comparing Different Industry Sectors. *Australian Journal of Basic and Applied Sciences*, 6(12), 14-22. Retrieved from <https://www.ajbasweb.com/old/ajbas/2012/Nov%202012/14-22.pdf>
- [2] Abhishek.V (2018) A study on Risk and Return analysis of selected stocks in BSE SENSEX, Acharya Institute of Technology.
- [3] Awalakki, M., & Archanna. (2021). Impact of Economic and Financial Performance Indicators ratios on Determination of Stock Returns – A Study with reference to National Stock Exchange. *PSYCHOLOGY AND EDUCATIO*, 58(5(2021)), 6665-6685. Retrieved from <http://psychologyandeducation.net/pae/index.php/pae/article/view/6706>
- [4] Awalakki, M., & Archanna. (2023). OVERCONFIDENCE BIAS AND ITS EFFECTS ON PORTFOLIO DECISIONS. *International Journal of Creative Research Thoughts (IJCRT)*, 11(8), g74- g83. Retrieved from <https://www.ijcrt.org/papers/IJCRT2308664.pdf>
- [5] Awalakki, M. (2022). Neurotransmitters Impact on Emotional Responses and Decision-Making in Investment: A Comprehensive Exploration. *International Journal of Food and Nutritional Sciences*, 11(5),690-708. Retrieved from <https://www.ijfans.org/uploads/paper/fb4237bf576c3b3020696d18585588f8.pdf>
- [6] Awalakki, M., & Archanna. (2021). A Study on Accounting Ratios and Stock Returns with Reference to National Stock Exchange of India. *Turkish Online Journal of Qualitative Inquiry*, 12(7), 6858- 6888. Retrieved from <https://www.tojqi.net/index.php/journal/article/view/4940>
- [7] Awalakki, M., & Archanna. (2023). Exploring the Dynamics of Investor Attention and Market Volatility: A Behavioral Finance Perspective. *International Journal of Science and Research (IJSR)*, 12(8), 2245-2251. Doi:10.21275/SR23823155339
- [8] Awalakki, S. M. (2015). A Study on Investment Patterns and Awareness of Salaried Class Investors. *INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH*, 4(8), 348-350. Retrieved from [https://www.worldwidejournals.com/international-journal-of-scientific-research-\(IJSR\)/fileview.php?val=August\\_2015\\_1441174222112.pdf](https://www.worldwidejournals.com/international-journal-of-scientific-research-(IJSR)/fileview.php?val=August_2015_1441174222112.pdf)
- [9] AWALAKKI, S. M. (2015). FINANCING DECISIONS: A CASE STUDY OF SELECTED CEMENT COMPANIES OF INDIA. *International Journal of Advanced Research*, 3(8). Retrieved from [https://www.journalijar.com/uploads/701\\_IJAR-6789.pdf](https://www.journalijar.com/uploads/701_IJAR-6789.pdf)
- [10] Horne, V., & James, C. (2001). *Financial Management and Policy*. Prentice Hall Publishing.
- [11] Markowitz, H. (1952). Portfolio selection. *Journal of Finance*, 7(1), 77-91. Doi:<https://doi.org/10.2307/2975974>
- [12] Moolbharathi, R., & Sugandi, T. (2021). A Comparison Study on Risk and Return Analysis of selected companies with Benchmark Index in NSE. *International Journal of Business and Management Invention*, 10(10), 04-13. Doi:DOI: 10.35629/8028-1010010413
- [13] Mr. S. Sathish, Ms. A. Nagarathinam (2021) A Study on Risk and Return Analysis of FMCG companies in Indian stock market, *Annals of R.S.C.B.*, ISSN:1583-6258, Vol. 24.
- [14] Subramanyam, P., Nalla, B., & Kalyan, N. B. (2018). A Study on Risk & Return Analysis of Selected Securities in India. *International Journal of Engineering Technologies and Management Research*, 5(4), 79-86. Doi:DOI: 10.5281/zenodo.1244735