Major Research Project On

"MAXIMIZING RETURNS: LEVERAGING INDUSTRY MATURITY INSIGHTS FOR OPTIMAL PORTFOLIO CONSTRUCTION"

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Certificate

This is to certify that the project entitled " **Maximizing Returns: Leveraging Industry Maturity Insights for Optimal Portfolio Construction** " is submitted by Amritesh Kumar, 23/DMBA/17 to Delhi School of Management, Delhi Technological University, in partial fulfilment of the requirement for the award of the degree of Masters in Business Administration during the academic year 2024–2025.

Submitted to:

(Dr. Chandan Sharma)

Place:

Date:

Declaration

I, **Amritesh Kumar**, student of MBA 2023-25 of Delhi School of Management, Delhi Technological University, Bawana Road, Delhi - 42, hereby declare that the research report " Maximizing Returns: Leveraging Industry Maturity Insights for Optimal Portfolio Construction " submitted in partial fulfilment of Degree of Masters of Business Administration is the original work conducted by me.

The information and data given in the report is authentic to the best of my knowledge.

This report is not being submitted to any other University, for award of any other Degree, Diploma or fellowship.

Place: (Amritesh Kumar)

Date:

Acknowledgement

I, **Amritesh Kumar**, wish to extend my gratitude to Dr. Chandan Sharma, Asst. Professor, Delhi School of Management (DSM), Delhi Technological University; for giving me all the direction and valuable insights to take up this Semester Project.

I also take this opportunity to convey sincere thanks to all the faculty members for directing and advising during the course.

I am equally grateful to my peers, friends, and family for their unwavering support, motivation, and understanding during the entire journey of this project.

This work would not have been possible without the contributions of each of the aforementioned individuals, and I express my deepest appreciation to all.

Executive Summary

This project is all about helping people make smarter investment decisions by understanding how different industries grow and change over time. Think of industries like people—they start off young and full of potential (emerging), grow rapidly (growing), settle into a stable rhythm (mature), and eventually slow down (declining). By looking at 14 industries in India—like IT, aviation, consumer goods, and pharmaceuticals—we figured out which stage each one is currently in.

To do this, we looked at things like how much money the industry is making, how fast it's growing, how profitable it is, and what investors are willing to pay for its companies. Based on this, we picked two strong companies from each industry—for example, TCS, Sun Pharma, IndiGo, and Cochin Shipyard—using a mix of financial analysis and stock performance.

Next, I created different investment portfolios depending on how much risk someone is willing to take. Some portfolios were balanced with a little bit of everything, while others focused on high-growth but riskier companies. I used tools like Excel to find the best mix—so investors could get good returns without taking unnecessary risks.

In short, this project shows that by simply understanding where an industry stands in its journey, we can make better choices about where to put your money. Whether you're a safe investor or someone who’s okay with taking a few chances, there’s a way to build a portfolio that fits your goals—and this research helps you get there.

CHAPTER 1: INTRODUCTION

Equity Research:

Equity research is the process of analysing and evaluating publicly traded companies and their stocks to provide investors with insights and recommendations for making informed investment decisions. This analysis includes a comprehensive examination of a company's financial statements, industry position, competitive landscape, management team, and growth prospects. Equity research typically results in detailed reports that include buy, sell, or hold recommendations, target prices, and in-depth analysis of the factors that could impact the company's future performance.

Key Components of Equity Research:

Fundamental Analysis**:**

Basic analysis is a technique of application by equity research analysts for establishing the intrinsic value of a stock or other security through examining relevant economic, financial, qualitative and quantitative considerations. It is in the hopes of ascertaining whether the security is overvalued, undervalued, or reasonably valued based on these considerations.

Key Components of Fundamental Analysis:

1. Economic Analysis:

   Macroeconomic Indicators: Looking at such variables as GDP growth rates, interest rates, inflation, unemployment rates, and other economic statistics in trying to grasp the general economic climate.

   Industry Analysis: Assessing the industry or sector as a whole in which the business operates. This involves the understanding of the industry growth opportunities, competition, regulatory climate, and drivers and threats.
2. Financial Analysis:

   Financial Statements: Analysing the financial statements of the company, such as the income statement, balance sheet, and cash flow statement, to evaluate its performance and financial health.

   - Income Statement: Evaluates revenue, expenses, and profitability over a specific period. Key metrics include gross profit, operating profit, net income, and earnings per share (EPS).

- Balance Sheet: Captures the snapshot of assets, liabilities, and shareholders' equity at one point in time. The most important measures are current ratio, debt-to-equity ratio, and book value.

3. Cash Flow Statement: Reveals the inflows and outflows of cash of the company over a period. Key measurements include operating cash flow, free cash flow (FCF), and cash flow from financing and investing activities.
4. Quantitative Analysis:

   Financial Ratios: Using ratios to compare different aspects of the company's performance and financial health. Important ratios include:

   - Liquidity Ratios: Current ratio, quick ratio.
   - Profitability Ratios: Gross margin, operating margin, net margin, return on equity (ROE), return on assets (ROA).
   - Leverage Ratios: Debt-to-equity ratio, interest coverage ratio.
   - Efficiency Ratios: Asset turnover, inventory turnover, receivables turnover.
5. Qualitative Analysis:

   Management Analysis: Assessing the quality and experience of the company’s management team, their strategic vision, and their execution capabilities.

   Business Model: Understanding the company’s business model, revenue streams, and competitive advantages (e.g., brand strength, patents, technological edge).

   Corporate Governance: Evaluating the company's governance practices, board composition, and any potential conflicts of interest.

   Market Position: Analysing the company's position within its industry, its market share, and its competitive dynamics.
6. Valuation Methods:

   Discounted Cash Flow (DCF) Analysis: Estimating the value of the company based on the present value of its expected future cash flows.

   Comparable Company Analysis: Comparing the company's valuation multiples (e.g., P/E ratio, EV/EBITDA) to those of similar companies in the industry.

Precedent Transactions: Analysing past transactions involving similar companies to establish a valuation benchmark.

Dividend Discount Model (DDM): Valuing the company based on its present value of future anticipated dividends.

7. Industry and Competitive Analysis:

   Market Position: Evaluating the position of the company in its industry, market share, competitive strengths, and threats from competitors.

   Industry Trends: Analysing broader industry trends and economic factors that could impact the company's operations and growth potential.

Investment Thesis:

- Buy, Sell, or Hold Recommendations: Providing clear recommendations based on the comprehensive analysis conducted.
- Target Price: Estimating a target price for the stock, indicating its potential upside or downside from the current price.
- Risk Factors: Identifying and discussing potential risks and uncertainties that could impact the stock's performance.

Research Reports:

- Initiation Reports: Comprehensive reports when starting coverage on a new company, providing in-depth analysis and valuation.
- Update Reports: Periodic reports updating the investment community on any significant developments, earnings results, or changes in the company's outlook.
- Sector Reports: Analysing trends and developments in specific sectors, providing insights into how individual companies may be affected.

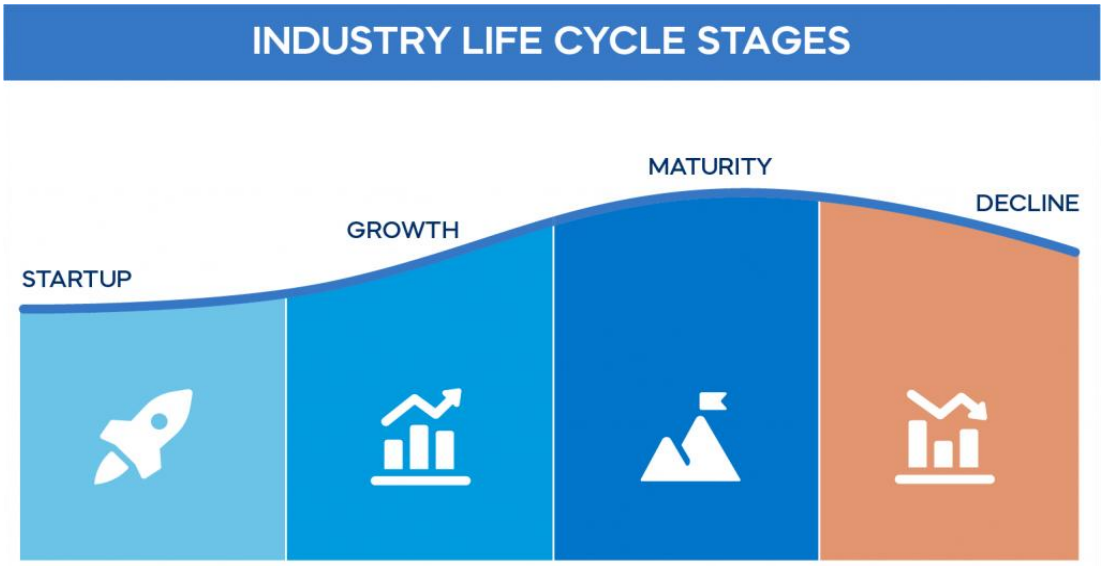
Technical Analysis:

- Price Patterns: Using historical price action and trends on charts to anticipate future price directions.
- Trading Volume: Examining trading volumes to understand the strength and direction of price movements.

- Technical Indicators**:** Utilizing metrics such as moving averages, relative strength index (RSI), and Bollinger Bands for short-term trading decision-making.

Industry Life Cycle:

The various stages of development that an industry usually goes through throughout time are referred to as the industry life cycle. It depicts the cycle of development, maturation, and decline that industries go through in response to shifts in consumer demand, technological improvements, and market forces. By anticipating opportunities and difficulties unique to each stage of the industry life cycle, businesses and governments may make more informed strategic decisions about investments, innovations, and market positioning. It offers perceptions into profitability, competitive dynamics, and the overall economic importance of industries in larger marketplaces. Various levels of innovation, consolidation, regulatory scrutiny, and market saturation are displayed by industries at different stages of their life cycles. These factors impact tactics for growth, gaining market share, and sustainability.



Source: 365 Financial Analyst **Fig- 1.1- Industry Life Cycle Stages**

Emerging Industry-

Emerging Industry: Creation and initial promotion of a new good or service are part of the introduction, or startup, phase. Innovators prefer to form new firms for producing and selling the new product. Demand is likely to be vague as details about the products and industry participants are typically scanty. While the new suppliers are producing and refining the product, customers must understand the goods and services

in this period. In the early stages of the company, the sector tends to be highly fragmented. Because the expenditure is incurred to build and sell the service but the revenues are minimal, the competitors are not profitable. For example, let us take the biotechnology, virtual reality, and autonomous car industries. It is mostly a pre-revenue phase and funds that are invested are invested in R&D initially, followed by marketing and sales later.

Growth Stage

There is a substantial financing requirement for the expansion stage. Here, the role of marketing initiatives is to distinguish a company's products from those of its peers in the market. In order to enable the expansion dictated by the market, the expansion stage needs financing for not just the introduction of a newly targeted marketing initiative but also ongoing investment in property, plant, and equipment.

At this juncture, however, the company is experiencing a wider range of product standardization, which can promote economies of scale and facilitate easier creation of a line-flow structure for more efficient production. To satisfy better customers' requirements and concepts, changes in products or services will necessitate research and development funds. If the company is well performing in the marketplace at this stage, increased demand will lead to increased sales. Companies will have positive returns, with earnings and comparable assets increasing as well. Growth stage products are occasionally described in marketing terms as "stars." The products are increasing and taking a substantial majority of the marketplace. Competition in the market is the current issue at hand. The market is adopting the product, and this will lead to new entrants emerging and increasing harder competition.

Similar to the other stages, time duration in the growth stage is at the whims of the specific industry or product category one is investing in. There are some products like fashionable clothes that may only experience a short growing stage before reaching the next stages which are maturity and decline. The growth stage curve is very steep, reflecting accelerated growth. In this period of the life cycle, firms tend to geographically disperse, and this trend repeats in the maturity and declining stages as well. For example, the Detroit area and surrounding cities were once the hub of the U.S. auto industry. As the industry is mature, auto maker firms are presently scattered all over the country and even abroad.

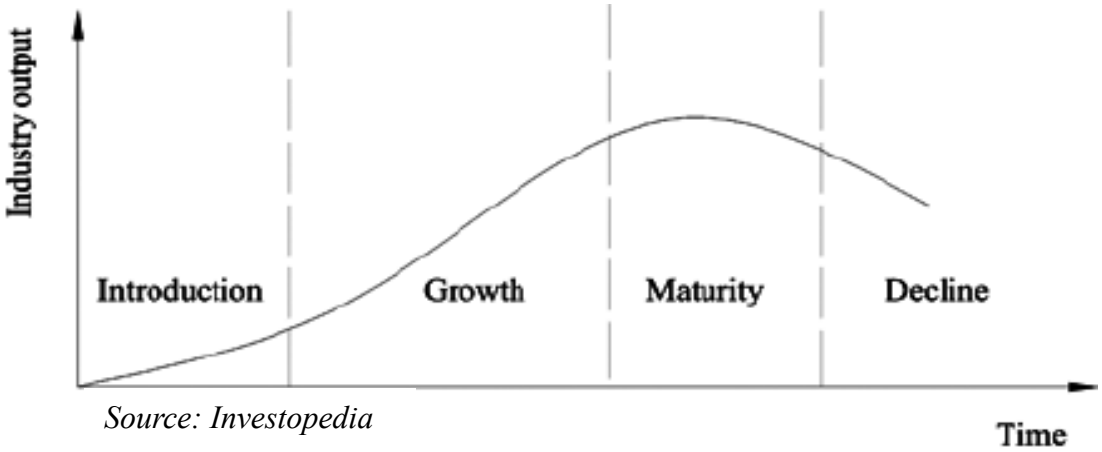
Maturity Stage

The growth stage has an extremely steep life cycle curve, which shows rapid growth. The companies in this stage of the life cycle tend to spread geographically, and the trend continues in the maturity and declining stages. For example, the American automobile industry used to be centered in the Detroit area and neighbouring towns. Because of the maturity of the industry, automobile companies today are widespread across the nation and globally.

There will be noticeable competition from late arrivals, who will attempt to take market share away from already established products. Therefore, in order to keep setting a company's products apart from those of its competitors in the sector, marketing efforts must be robust and focused on the distinctive qualities of the product or the company. Businesses may use a low-cost/low-price approach to boost sales volume and profit from inventory turnover, or they may compete on quality to set themselves apart from competing lower-cost alternatives. At this point, a company might have enough cash on hand to give shareholders dividends. However, there are often fewer businesses in mature industries, and the ones that do survive will be more sizable and powerful. Though innovations persist, they are rarely as drastic as previously and can only involve a colour or formulation modification to emphasize "new" or "improved" to customers. Mature goods include laundry detergents.

Declining Stage-

Declines are virtually inevitable in a company. Sales go down and the life cycle goes down if product innovation has lagged behind rival products and/or services, or if new products or technological developments have made the industry obsolete. Sales are decreasing at an increased rate in this stage. As competitors that are still operational during the maturity phase leave the market, it typically results in an even larger shake-out. But there will also be some companies staying in the smaller market. With companies trying every means of staying alive or growing via acquisition and/or diversification, mergers and consolidations will also become the norm.



Source: Investopedia

Fig- 1.2- Industry Life Cycle Graph

Optimal Portfolio

An optimum portfolio is one in which the return and the risk are equal. An optimum portfolio is one that purchases securities yielding the largest possible return at a risk level it is willing to bear, or securities with the smallest possible risk for any return.

The ideal portfolio contains more than low-potential-return and high-risk investments. A perfect portfolio which has securities with the highest potential returns for a reasonable amount of risk or the least amount of risk for a specified level of potential returns is perfect. The efficient frontier is the area where perfect portfolios fall on a risk vs expected return graph.

Key Considerations for creating an optimal portfolio:

- Diversification: Investing in numerous asset classes, industries, and geographic regions for risk diversification.
- Asset Allocation: Determining the proportion of various asset classes (equities, bonds, real estate, etc.) in the portfolio.
- Risk Management: Identifying and mitigating potential risks through strategies like hedging, stop-loss orders, and diversification.
- Performance Measurement: Using metrics like Sharpe ratio, alpha, and beta to evaluate portfolio performance.

Financial metrices used:

1. Market Capitalization (Market Cap):

- Definition: Market cap is the sum total market value of all the outstanding shares of one company calculated as a product of share price and outstanding shares.
- Reason for Consideration: Market cap helps classify industries and companies based on their size and influence in the market. Larger market caps often indicate more mature companies, while smaller caps are typical of emerging companies. It is essential for assessing the industry's stability and growth potential.

2. Revenue:

- Definition: Revenue refers to the overall income obtained through business activity of an enterprise, normally on selling services or products.
- Reason for Consideration: Revenue indicates the size and market demand for a company's products or services. Higher revenue is often seen in mature industries, while lower or rapidly growing revenue is characteristic of emerging or growing industries. It's crucial for understanding industry performance and growth trends.

3. Profit After Tax (PAT):

- Definition: PAT means net profit of a business after all expenses, e.g., tax, have been subtracted from total revenues.
- Reason for Consideration: PAT reflects a company's profitability and efficiency. High PAT is often associated with mature industries, while emerging industries may show lower or fluctuating PAT. It's vital for evaluating the financial health of companies within different industry stages.

4. Price-to-Earnings (P/E) Ratio:

- Definition: The P/E ratio measures the valuation of a company by dividing its current share price by its earnings per share (EPS).
- Reason for Consideration: The P/E ratio indicates how much investors are willing to pay for a company's earnings. A higher P/E ratio often reflects

growth potential in emerging or growing industries, while lower P/E ratios are common in mature or declining industries. It helps assess market expectations and investor sentiment.

5. Return on Capital Employed (ROCE):

- Definition: ROCE is a profitability and capital utilization efficiency measure of a firm, expressed as Earnings Before Interest and Tax (EBIT) over Capital Employed.
- Reason for Consideration: ROCE provides insight into how well a company uses its capital to generate profits. Higher ROCE is typical of mature industries, while lower ROCE might indicate an emerging or declining industry. It's essential for assessing the effectiveness of capital utilization across industry stages.

CHAPTER 2: LITERARTURE REVIEW

1. Sector Analysis and Portfolio Optimisation: The Indian Experience

With the ever-changing nature of the world economy and the emergence of new world economic powers in the last three decades, portfolio diversification across regions and industry sectors was increasingly important. The optimal choice of a portfolio in a capital market largely relies on maximizing the risk-reward ratio across industry sectors. Majority of the market volatility, according to study, is caused by excessive sector-specific and sub-sector-specific risks. Return correlation dynamics of India's industry sectoral stock market have been estimated in this research work using Asymmetric DCC GARCH model and efficient portfolios cross-tested with higher returns than the market. A look at the monthly and daily return data from April 1997 to April 2007 on a random sample of 10 sectors shows that investors can dramatically boost their market returns for risk taken. The major contributions of this research are two-pronged. It employed an efficient computationally model for correlation estimation that can handle the time-varying correlations and it applied the model in the Indian market where the research is very weak.

2. Influence of portfolio management in decision-making

The aim of this research is to illustrate the role of portfolio management in decision making for projects within a financial institution. And for that purpose, was employed the single case study technique. For the fulfilment of this purpose were carried out bibliometric studies on the subject of portfolio management and subsequently bibliographic studies on the subject, decision making. Secondly, decision-making and portfolio management linkages were examined. The conclusion of the findings of the results of the information collected confirmed the interaction between "the application of the project identification process in portfolio management to influence decision making" in order to add value to the business. It can also be set moderately that "the use of project selection criteria has implications for the implications of decision making," assisting in the strategic management of the organization. One of the academic advances was to note the transformation of the process of portfolio management, i.e., a tool that just administers the projects that will constitute an organization's portfolio, to a process with a target of immediate synchronization with an organization's strategic management. Practically, it was deduced the usability of portfolio analysis in the decision-making at the cost of merely a project appraisal. On

the basis of profitability and return on investment of the projects, as being the major determinants in making a decision.

3. The Impact Made on Project Portfolio Optimisation by the Selection of Various Risk Measures

In this research, the influence of choosing an appropriate risk measure and how it influences company's project portfolio efficient frontier, has been studied. Appropriate choice of company's project portfolio has a powerful influence over organizational success. Every portfolio manager chooses the best projects based on several criteria, and depending upon company's strategic goals. We have used the best projects of the organization, using Markowitz efficient frontier method. Proper selection of measures are included in this selection and can reshape the portfolio of the organization. For this, the standard deviation has been used and the corresponding optimization has been performed. Then the semi-standard deviation has also been utilized to distillate positive and negative opportunities. Then Value at Risk and Expected Shortfall come into play as the suitable measures of risk, in order to have a greater estimation of tail risks. By using all of these measures of risk the optimum projects were chosen. Managers are required to choose the suitable measure of risk according to their target, approximation of their projects distribution, and character of the projects. In the present research, the best practices in accordance with construction projects and the effect of changes in these practices have been examined.

4. Management of project portfolios: Relationships of project portfolios with their contexts

Firms construct and sustain project portfolios in order to implement and refresh their strategy. Projects and internal administration have been the most emphasized in the majority of researches, the dominant contingency theory hypothesis argues, since other methods would be necessary under other conditions. Strategic management of project portfolios is more outwardly focused, though both inside and outside the firm. As research for the purpose of this paper, we are researching for project portfolio management. We deal with the alignment of project portfolios and their context based on four alternative theoretical perspectives: institutional theory, stakeholder theory, resource dependence theory, and sensemaking theory. The results give insight to the processes that connect project portfolios and their context, promote reawakening portfolio success, and recommend a new research agenda to revive the study of managing project portfolios in their context.

CHAPTER 3: PROJECT DESIGN AND METHODOLOGY

Problem Statement:

To develop a robust framework for classifying industries based on their life cycle stage, identifying top-performing companies within each industry, and optimizing investment portfolios that align with the industry composition and investor risk preferences.

Objectives of the research:

1. To fundamentally analyse the industries and classify them in the industry life cycle. The industry life cycle has classified the industries as Emerging, growing, mature, and declining industries. The classification is done using financial metrics and ratios such as market capitalization, revenue, profit after tax (PAT), price-to-earnings (P/E) ratio, and return on capital employed (ROCE).
2. To identify 2 top-performing companies within each industry using fundamental analysis and technical analysis and create optimal investment portfolios with different risk levels.
3. To analyse the industry composition of the optimized portfolio to understand which industries are most represented and the reasons behind their prominence.

Problems Identified:

1. Determining the appropriate criteria and thresholds to classify industries as emerging, growing, mature, or declining can be challenging, as misclassification can lead to suboptimal portfolio construction.
2. Investors often struggle to confidently identify and invest in promising industries based on their maturity stages; risking missed high-return opportunities. Additionally, aligning risk tolerance with the right industries can be challenging, leading to overly conservative or aggressive portfolio choices.
3. Understanding the reasons behind the prominence of certain industries in the optimized portfolios requires a deep understanding of the industry dynamics, growth prospects, and market trends.

Data Details:

The data collected for this research are secondary in nature and are collected from sources like Capitaline, company annual reports, NSE India website, etc.

1. **Industry Financial Parameters:**
    - Market Capitalization: This measure is the aggregate market value of outstanding shares of a corporation, determined by multiplying the share price as of a specific date by the number of outstanding shares.
    - Revenue: The total sum of revenue obtained by the company from its operations, such as sale of goods and services. It represents the ability of the firm to sell and market demand.
    - Profit After Tax (PAT): This is the net profit of the company after removing all operating costs, interest, tax, and other fees.
    - Price-to-Earnings (P/E) Ratio: A price-to-earnings ratio that indicates the company share price compared to the earnings per share of a company. It is used to determine if a company is overvalued or undervalued.
    - Return on Capital Employed (ROCE): A profitability and capital-employed efficiency ratio that calculates a company's profitability as well as with what effectiveness the company's capital is being utilized. It is calculated by dividing the company's earnings before interest and taxes (EBIT) by the company's employed capital altogether.
2. **Company Financials:**
    - Balance Sheet: This type of financial statement reflects the financial position of a company at a particular point in time and indicates its assets, liabilities, and shareholders' equity.
    - Income Statement: Also referred to as the profit and loss statement, it reports the revenues and expenses of the company for a specific time.
    - Cash Flow Statement: The statement accounts for the inflowing and outflowing cash of the business's operating, investing, and financing activities within an interval.
    - Quarterly and Annual Reports: These reports give in-depth details concerning the financial health of the company, its strategic goals, management discussion and analysis, and forward-looking statements.

3. Company Stock's Closing Prices:

- Daily Closing Prices: Historical closing prices of the company's stock, which are essential for performing technical analysis. These prices reflect the final trading price of the stock at the end of each trading day.
- Price Trends and Patterns: Historical price action analysis to determine trends, support and resistance levels, and most likely places to invest. This involves the analysis of different technical indicators and chart patterns to make investment decisions.

Research Design:

This project adopts a mixed methods research design to provide the insights about the different industry's maturity, company's performance, and their effects on different risk averse portfolios. Qualitative analysis is important to understand the fundamentals of the industries and companies to take informed investment decisions. This includes the analysis of ratios of the companies and industries, recent news of both industries and companies and the financials. Quantitative analysis includes technical analysis of stocks to understand the price pattern and trends of the company. This will also delve into creating optimal portfolios with different risk tolerance. This research design will help us determine the industry maturity in the industry life cycle and choose the top companies from these industries to create various portfolios. The portfolios will help us understand which types of industries are more concentrated in low risk, medium risk and high-risk portfolio and hence this model will help the investor to choose the companies from different industries as per their risk profile to invest in.

Methodology:

To proceed with the study 14 Indian industries were selected randomly. The industries selected were Aviation, Ship building, Electronics system design manufacturing, Information technology, Consumer goods, financial services (NBFC), telecommunications, power generation, Chemicals, Cement, Jewellery, Textiles & Apparels, footwear and Pharmaceuticals & Drugs. To analyze the industries further they were fundamentally analysed using financial ratios, industry's overall financials and other news related to the industry. Based on these parameters the industries were

divided into emerging, growing, mature and declining industries. The screener used to analyse the industries are:

Emerging Industries- High market cap (>100,000), High sales growth (>15% CAGR), High P/E ratio (>75), High profitability (>15% ROCE, >10% PAT margin)

Growing Industries- High market cap (>100,000), Moderate sales growth (10-15% CAGR), Moderate P/E ratio (30-75), Moderate profitability (5-15% ROCE, 5-15% PAT margin)

Mature Industries- High market cap (>500,000), Low sales growth (<10% CAGR), Moderate P/E ratio (30-50), Moderate profitability (10-20% ROCE, 10-20% PAT margin)

Declining Industries- High market cap (>50,000), Low sales growth (<5% CAGR), High P/E ratio (>50), Low or negative profitability (<5% ROCE, <5% PAT margin).

The top 2 companies were selected from each industry. The companies selected were Aarti Industries Ltd., Vinati Organics Ltd. , Syrma SGS Technology Ltd. , Amber Enterprises India Ltd., InterGlobe Aviation Ltd. , SpiceJet Ltd., Tata Consultancy Services Ltd. , Infosys Ltd. ,Sun Pharmaceutical Industries Ltd., Dr. Reddy's Laboratories Ltd., Bajaj Finance Ltd, Cholamandalam Investment and Finance Company Ltd., Britannia Industries Ltd., Nestle India Ltd., Vodafone Idea, Bharti Airtel, UltraTech Cement Ltd., ACC Limited, Cochin Shipyard Limited, Mazagon Dock Shipbuilders Limited, Tata Power Company Limited, NTPC Limited, Titan Company Limited, Kalyan Jewellers India Limited, Arvind Ltd., KPR Mill, Bata India Ltd., Relaxo Footwears Ltd. The closing stock prices of these companies were taken and the daily returns were found out. Using this closing prices and their returns and risks the optimal portfolios are created with different beta values. The Solver function in MS excel is used to create the portfolios. Microsoft Excel's Solver function is a powerful means of obtaining the best solution to a problem by varying values of some cells in a workbook. It is most useful for determining solutions to optimization problems, e.g., maximizing revenues, minimizing cost, or optimal allocation of resources.

Data Sources-

Secondary data**:**

1. Industrial financial parameters- The industry parameters Market cap, Sales, P/E, PAT, ROCE (%), PAT margin (%) are collected from Capitaline. The growth CAGR of industries have been collected from various industry reports from IBEF.org.
2. Company financials- The company financials have been collected from the financial statements of the company and other sources like Moneycontrol and screener.
3. Closing prices- The closing prices of the company stocks has been collected from NSE India for a time period of 1 year from 1st April 2024 to 1st April 2025.
4. News and Facts- The company and industry news and trends have been studied from various news articles and management videos. This was highly used for the fundamental analysis of the industries and companies.

Limitations of the study-

1. Classifying industries into emerging, growing, mature, or declining stages based on financial metrics like market cap, sales growth, P/E ratio, ROCE, and PAT margin involves subjective judgment. Different analysts might apply different thresholds or criteria, leading to inconsistent classifications.
2. Industries and companies were selected randomly, which may not fully represent the entire market.
3. Technical analysis relies on historical price data and patterns to predict future price movements. It may not account for sudden market shifts, external economic factors, or unforeseen events that impact stock prices.
4. External economic, political, or regulatory changes not captured in the data or analysis could significantly impact industry performance and stock prices.

CHAPTER 4: DATA ANALYSIS AND INTERPRETATION

Objective 1:

To fundamentally analyse the industries and classify them in the industry life cycle. The industry life cycle has classified the industries as emerging, growing, mature, and declining industries. The classification is done using financial metrics and ratios such as market capitalization, revenue, profit after tax (PAT), price-to-earnings (P/E) ratio, and return on capital employed (ROCE).

Table 4.1: Classification criteria of industries

Emerging Industries • High market cap (>100,000) • High growth (>15% CAGR) • High P/E ratio (>75) • High profitability (>15% ROCE, >10% PAT margin)	Growing Industries • High market cap (>100,000) • Moderate growth (10-15% CAGR) • Moderate P/E ratio (30-75) • Moderate profitability (5-15% ROCE, 5-15% PAT margin)
Mature Industries • High market cap (>500,000) • Low growth (<10% CAGR) • Moderate P/E ratio (30-50) • Moderate profitability (10-20% ROCE, 10-20% PAT margin)	Declining Industries • High market cap (>50,000) • Low growth (<5% CAGR) • High P/E ratio (>50)

Source: Own Analysis

Table 4.2: Classification of industries

Sl. No.	INDUSTRY	MARKET CAP	P/E	ROCE (%)	GROWTH CAGR
1	Chemicals	933040	49.79	17.25	10.10
2	ESDM	153833	73.32	12.86	26.2
3	Aviation	213612	33.27	23.76	21.27
4	IT	4051627	38.04	41.09	10.11
5	Pharmaceuticals & Drugs	2173224	41.31	21.08	10.72
6	Financial Services- NBFC	1483380	27.61	39.34	18.76
7	Consumer Food	1263750	52.98	52.98	6.66
8	Telecommunications	1398233	40.29	13.98	6.13
9	Cement	978692	51.39	9.77	6.76
10	Ship Building	187118	50.32	26.229	9
11	Power Generation/Distribution	1784790	34.36	13.33	5.52
12	Jewellery	408405	84.67	31.70	4.46
13	Textiles & Apparel	198749	29.58	17.07	2.93
14	Footwear	71633	59.06	18.59	4.05

Source: Screener and Trendlyne

Emerging Industries

ESDM (Electronic System Design and Manufacturing)

The ESDM industry exhibits clear signs of being in the emerging stage:

- Extremely high market cap of ₹153,833 crore
- Very strong growth of 26.2% CAGR
- High P/E ratio of 73.2, indicating high growth expectations
- High ROCE of 12.86%, suggesting strong profitability and competitiveness

The ESDM industry in India has seen rapid growth in recent years, driven by factors such as the growing middle-class population, rising disposable incomes, and declining electronics prices.

To further accelerate the ESDM industry, the Government of India has launched various schemes like the Production Linked Incentive (PLI) Scheme, the Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors (SPECS), and the Modified Electronics Manufacturing Clusters Scheme (EMC 2.0). The motive behind these schemes is to augment the manufacturing base, enhance value addition, and generate additional employment opportunities in the ESDM industry.

Ship Building

The ship building industry also shows characteristics of an emerging industry:

- Very high market cap of ₹187,118crore
- Moderate sales growth of 9% CAGR
- High P/E ratio of 50.32
- Relatively high profitability with 10.65% PAT margin and 18.07% ROCE

The ship building industry in India has been growing steadily, driven by factors such as the government's focus on the "Make in India" initiative, the increasing demand for commercial and defence vessels, and the country's strategic location along major shipping routes. However, the industry has faced challenges in the past, such as overcapacity, intense competition, and the impact of the global economic downturn.

To support the ship building industry, the Government of India has introduced various policies and initiatives, such as the Shipbuilding Financial Assistance Policy, the Shipbuilding Subsidy Scheme, and the Sagarmala program, which aims to modernize the country's ports and coastal infrastructure.

Growing Industries

Aviation

The aviation industry is in the growth stage:

- Extremely high market cap of ₹213,612 crore
- High growth of 21.27% CAGR
- P/E ratio of 33.27
- However, ROCE 23.76%

Indian aviation sector has seen tremendous growth over the past few years due to increasing middle class, increasing disposable income, and increase in air traveling needs. India is already the world's third-largest domestic aviation market and is poised to become the third-largest overall aviation market by 2024.

However, the industry has also faced several challenges, such as intense competition, high operating costs, and the impact of the COVID-19 pandemic, which has severely affected the industry's profitability. The government has introduced various initiatives to support the aviation sector, such as the Regional Connectivity Scheme (RCS) and the Udan scheme, which aim to improve air connectivity and make air travel more accessible.

Financial Services - NBFC

The NBFC segment of the financial services industry is in the growth stage:

- Very high market cap of ₹1,483,380 crore
- Extremely strong growth of 18.76% CAGR
- ROCE is 39.34%

The NBFC (Non-Banking Financial Company) segment in India has experienced rapid growth in recent years, driven by factors such as the increasing demand for credit, the expansion of financial inclusion, and the growing adoption of digital technologies. NBFCs have played a crucial role in providing credit to underserved segments of the population and supporting the growth of small and medium enterprises.

However, the NBFC sector has also faced challenges, such as the liquidity crisis in 2018-19 and the impact of the COVID-19 pandemic. The government and the Reserve Bank of India have introduced various measures to support the NBFC sector, such as the Partial Credit Guarantee Scheme and the Targeted Long-Term Repo Operations (TLTRO)

Telecommunications

The telecom industry is in the growth stage:

- High market cap of ₹1,398,233 crore
- Moderate sales growth of 6.13% CAGR
- High P/E ratio of 40.29

The Indian telecommunication industry has shown robust growth over the recent past, fuelled by trends like growing smartphone usage, 4G and 5G network expansions, and demand for data services. India became the world's second-largest telecommunications market with over 1.2 billion mobile subscribers.

However, the industry has also faced several challenges, such as intense competition, regulatory changes, and the impact of the COVID-19 pandemic. The industry has also been impacted by the financial stress faced by some of the major players, leading to consolidation in the sector.

The government has launched several initiatives to spur the telecommunication sector, including the National Digital Communications Policy for creating strong digital communications infrastructure and spurring the innovation in new technologies.

Power Generation/Distribution

The power industry is in the growth stage:

- Very high market cap of ₹1,784,790 crore
- Low sales growth of 5.25% CAGR
- Moderate P/E ratio of 34.36

The Indian power sector has been undergoing a transformation, driven by factors such as the increasing demand for electricity, the government's focus on renewable energy, and the implementation of various policy initiatives. The sector has seen significant investments in generation, transmission, and distribution infrastructure, as well as the adoption of new technologies such as smart grids and energy storage.

However, the power sector has also faced challenges, such as the financial stress faced by some of the state-owned power distribution companies, the lack of adequate infrastructure in some regions, and the impact of the COVID-19 pandemic on electricity demand.

The government has introduced various initiatives to support the power sector, such as the Ujwal DISCOM Assurance Yojana (UDAY) scheme, which aims to improve the business and financial efficiency of distribution companies, and the National Electricity Policy, which aims to promote the development of the power sector.

Mature Industries

Consumer Food

The consumer food industry is in the mature stage:

- Very high market cap of ₹1,263,750 crore
- Solid sales growth of 6.66% CAGR
- Moderate P/E ratio of 52.98

The Indian consumer food industry has been growing steadily, driven by factors such as the rising middle-class population, the increasing urbanization, and the growing demand for processed and packaged food products. The industry has also benefited

from the government's initiatives to promote food processing, such as the Pradhan Mantri Kisan SAMPADA Yojana (PMKSY) and the Food Processing Policy.

However, the industry has also faced challenges, such as the impact of the COVID-19 pandemic on consumer demand, the increasing competition from e-commerce platforms, and the need to adapt to changing consumer preferences.

Pharmaceuticals & Drugs

The pharma industry is in the mature stage:

- Very high market cap of ₹2,173,224 crore
- Moderate sales growth of 10.72% CAGR
- High P/E ratio of 41.31

The Indian pharmaceutical industry is one of the largest in the world, producing a significant portion of the global generic drug supply. The industry has been driven by factors such as the growing demand for affordable healthcare, the increasing prevalence of chronic diseases, and the government's initiatives to promote the industry.

The industry has also faced challenges, such as the impact of the COVID-19 pandemic on supply chains, the increasing competition from other countries, and the need to invest in research and development to develop new drugs and therapies.

Several schemes have been announced by the government to boost the pharma industry, including the Pharma Vision 2020 with a vision to establish India as a global power in end-to-end drug manufacturing and the Production Linked Incentive (PLI) Scheme for the pharma sector.

Information Technology

The IT industry is in the mature stage:

- Extremely high market cap of ₹4,051,627 crore
- Moderate sales growth of 10.11% CAGR

- Moderate P/E ratio of 38.04

Indian IT has largely distinguished Indian economic growth and distinguished a high share in exports, The industry has been spurred by trends including the expanding demand for digital transformation, expanding use of cloud computing and artificial intelligence, and availability of a high number of highly qualified IT professionals in the country.

The industry has also faced challenges, such as the impact of the COVID-19 pandemic on the global economy, the increasing competition from other countries, and the need to invest in new technologies and skills to remain competitive.

The government initiated a series of initiatives for the IT industry, including the Digital India initiative that focuses on giving a fillip to India's emergence as a digitally empowered society and knowledge economy and the Startup India initiative that focuses on driving the growth of the startup ecosystem.

Chemicals

The chemicals industry is in the mature stage:

- High market cap of ₹933,040.50 crore
- Moderate sales growth of 10.10% CAGR
- High P/E ratio of 49.79

The Indian chemicals industry is a key contributor to the country's economy, accounting for a significant share of the manufacturing sector. The industry has been driven by factors such as the growing demand for chemicals in various end-use industries, the increasing focus on sustainability and green chemistry, and the government's initiatives to promote the industry.

However, the industry has also faced challenges, such as the impact of the COVID-19 pandemic on supply chains, the increasing competition from other countries, and the need to invest in research and development to develop new products and technologies.

The government has introduced various initiatives to support the chemicals industry, such as the Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIR) policy, which aims to promote the development of integrated chemical hubs, and the

Production Linked Incentive (PLI) Scheme for the chemicals and petrochemicals sector.

Jewellery

The jewellery industry is in the mature stage:

- High market cap of ₹408,405 crore
- Low sales growth of 4.46% CAGR
- P/E ratio of 84.67

The Indian gold and precious stone jewellery industry is amongst the largest globally, driven by reasons including the cultural demand for gold and precious stones, an expanding middle class, and the demand for luxury goods. The industry has also benefited from the government's initiatives to promote the sector, such as the Gold Monetization Scheme and the Sovereign Gold Bond Scheme.

However, the industry has also faced challenges, such as the impact of the COVID-19 pandemic on consumer demand, the increasing competition from e-commerce platforms, and the need to adapt to changing consumer preferences.

Cement

The cement industry is in the mature stage:

- Very high market cap of ₹978,692crore
- Low sales growth of 6.76% CAGR
- P/E ratio of 50.32

The Indian cement industry is one of the largest in the world, driven by factors such as the growing infrastructure development, the increasing urbanization, and the government's focus on affordable housing. The industry has also benefited from the government's initiatives to promote the sector, such as the Pradhan Mantri Awas Yojana (PMAY) and the Smart Cities Mission.

However, the industry has also faced challenges, such as the impact of the COVID-19 pandemic on construction activity, the increasing competition from other building

materials, and the need to invest in sustainable production methods to reduce the industry's environmental impact.

Declining Industries

Footwear

The footwear industry is in the declining stage:

- High market cap of ₹71,633 crore
- Low sales growth of 4.05% CAGR
- High P/E ratio of 59.06

The Indian footwear industry has been facing challenges in recent years, driven by factors such as the increasing competition from e-commerce platforms, the changing consumer preferences, and the impact of the COVID-19 pandemic on consumer demand.

The industry has also faced challenges related to the availability of skilled labour, the need to invest in new technologies and production methods, and the increasing focus on sustainability and environmental impact.

Several schemes have been initiated by the government for the support of the footwear sector, including the Scheme for Integrated Textile Parks (SITP) and the Pradhan Mantri Formalisation of Micro food processing Enterprises (PM FME) Scheme, which aim to promote the development of the textile and food processing sectors, respectively.

Textiles & Apparel

The textiles and apparel industry are in the declining stage:

- High market cap of ₹198,749 crore
- Low sales growth of 2.93% CAGR
- Moderate P/E ratio of 29.58

The Indian textiles and apparel industry is one of the largest in the world, contributing significantly to the country's exports and employment. The industry has been driven by factors such as the growing demand for affordable and fashionable clothing, the

increasing focus on sustainability and ethical production, and the government's initiatives to promote the sector.

But the industry also faced major challenges in recent years, including the impact of the COVID-19 pandemic on international trade, the increasing competition from other countries, and the need to invest in new technologies and production methods to remain competitive.

The government has introduced various initiatives to support the textiles and apparel industry, such as the Textile Upgradation Fund Scheme (TUFS) and the Amended Technology Upgradation Fund Scheme (ATUFS), which aim to promote the modernization and upgradation of the industry.

Objective 2:

To identify 2 top-performing companies within each industry using fundamental analysis and technical analysis and create optimal investment portfolios with different risk levels.

1. Chemicals:
   a. Aarti Industries Ltd**.**

      Aarti Industries Ltd. is a prominent Indian specialty chemicals player involved in the business of pharma, agrochemicals, and personal care. The company has recorded impressive financial growth with a CAGR in revenue and EPS of 8.86% and 10.2%, respectively, over the last 10 years. It has a diversified product basket, strong R&D capabilities, and global customers. Its balance sheet is a picture of financial health with a debt-to-equity ratio of 0.71 and ROE of 8.22%, and it is priced at a P/E ratio of 45.6, which is in line with the industry average.

   b. Vinati Organics Ltd.

      Vinati Organics Ltd. deals in the manufacture of isobutyl benzene and other specialty organic intermediates. It has demonstrated healthy financials with 10.9% CAGR in revenue and 13.8% CAGR in EPS. Its clientele is diversified with high domestic and international exports, which reduces domestic market volatility. It has a debt-free balance sheet, 13.8% ROE, and is trading at a P/E ratio of 43.7, which is slightly higher than the industry average.

2. ESDM (Electronic System Design and Manufacturing)
   a. Syrma SGS Technology Ltd.

      Syrma SGS Technology Ltd. is a top Indian ESDM company, providing end-to-end electronic product design, manufacturing, and testing solutions. It caters to automotive, industrial, healthcare, and consumer electronics industries. Dedicated to R&D and proprietary technologies, the company has a 1-year return of 75.2%. Its debt-to-equity is 0.4, ROE is 6.81%, and the company is listed at a high P/E of 61.3 based on growth opportunities.

   b. Amber Enterprises Ltd.

      Amber Enterprises India Ltd. is experienced in producing air conditioners and home appliances with a dominant leadership in the OEM and ODM segments.

The company has diversified client base and has given a 3-year return of 16.3%. Its debt/equity ratio is 0.96 and ROE is 6.7% with a high P/E multiple of 91.4.

3. Aviation
   a. InterGlobe Aviation Ltd

      InterGlobe Aviation Ltd. (IndiGo) is India's largest airline by market share, focusing on cost efficiency and operational excellence. It has a diversified fleet and strong domestic network, delivering a 3-year return of 45%. It maintains a debt-to-equity of 15.9, ROCE of 24.5%, and trades at a P/E of 33.8, indicating undervaluation.

   b. SpiceJet

      SpiceJet, despite challenges, posted a Q4 FY2024 profit of ₹25 crore after a FY2024 net loss of ₹409 crore. The company's high leverage, negative ROE, and a negative P/E ratio reflect financial stress. Its 3-year return is -3.53%.

4. Information Technology
   a. Tata Consultancy Services

      Tata Consultancy Services Ltd. (TCS) is India's largest IT services provider with strengths in digital transformation and cloud technologies. With a global client base, TCS has maintained consistent performance but a modest 3-year stock return of 0.27%.

   b. Infosys Ltd.

      Infosys Ltd., one of the IT services and consulting leaders, is R&D strong and driven by digital innovation. Having a diversified client base and stable financial performance, it enjoys a 3-year stock return of -0.68%.

5. Pharmaceutical and Drugs
   a. Sun Pharmaceutical Industries Ltd.

      It is a diversified pharma major of India and India's largest pharma company with international operations. It's an R&D-driven company with a robust growth pipeline. The stock has generated 27.2% returns over 3 years, a debt-to-equity of 0.04, ROE of 16.7%, and a P/E of 36.2.

b. Dr. Reddy's Laboratories Ltd.

It is a high R&D-focused generics/API leader with a strong product pipeline. It has given a return of 13.9% in 3 years, and its debt-to-equity is 0.16, ROE is 21.4%, and P/E is 18, which is below the industry average by a margin.

6. Consumer Foods
   a. Britannia Industries Ltd.

      Britannia Industries Ltd. is one of India's leading food companies with an efficient distribution channel and new product pipeline. It has a 17.7% 3-year return on investment, debt-to-equity of 0.86, ROE of 57.1%, and a P/E of 59.3.

   b. Nestle India

      Nestlé India Ltd. is the food and beverage sector leader with brands such as Maggi and KitKat. It possesses innovation orientation and brand and distribution strength. It possesses a 3-year return of 11.5%, debt-to-equity of 0.95, ROE of 83.1%, and P/E of 72.6.

7. NBFC
   a. Bajaj Finance Ltd.

      Bajaj Finance Ltd. is a large Indian NBFC with major focus on digitalization and retail/SME lending diversification. The stock has provided 13.6% returns over 3 years.

   b. Cholamandalam Investment and Finance Co. Ltd.

      Cholamandalam Investment and Finance Co. Ltd. has excellent home loans and vehicle loans capabilities. It has been helped by excellent rural and semi-urban penetration and low NPA ratio and has demonstrated consistent performance.

8. Telecommunications
   a. Vodafone Idea Ltd.

      Vodafone Idea has spent on 4G and 5G but is financially stressed, with ₹1.8 trillion debt, debt-to-equity of 2.01, -3.61% ROCE, and 3-year return of -8.7%.

   b. Bharti Airtel Ltd.

      Bharti Airtel Ltd., a giant telecom player, dominates digital services and 5G launch also. The company has yielded a 3-year return of 38.8%, debt-to-equity of 2.59, ROE of 14.9%, and P/E of 56.9.

9. Cement
    a. UltraTech Cement Ltd.

       UltraTech Cement Ltd. is India’s largest cement company with a focus on capacity expansion and a wide product portfolio. It has returned 23.6% over 3 years.

    b. ACC Ltd

       ACC Ltd., with 34 MTPA capacity and 17 plants, focuses on sustainability and digitalization. It reported ₹21,762 crore in revenue and ₹2,337 crore profit in FY2025.

10. Ship Building Industry
    a. Cochin Shipyard Ltd.

       Cochin Shipyard Ltd. constructs defense and merchant ships. It reported ₹3,645 crore top line and ₹813 crore bottom line in FY2024, aided by a robust order book and capacity addition.

    b. Mazagon Dock Shipbuilders Ltd.

       Mazagon Dock Shipbuilders Ltd. handles defense ships and reported ₹9,467 crore top line and ₹1,937 crore bottom line in FY2024. It invests in skill upgradation and modernisation.

11. Power Generation/Distribution
    a. Tata Power Co. Ltd.

       Tata Power Co. Ltd. has diversified thermal, hydro, solar, and wind generation. It is aiming for 25 GW by 2027 and recorded ₹61,449 crore revenue and ₹4,280 crore profit in FY2024.

    b. NTPC Ltd.

       NTPC Ltd. is India's largest most powerful generating company with a generation capacity of 70 GW. It will contribute to the achievement of the 500 GW by 2030 target with FY2023 revenue of ₹178,501 crore and ₹21,332 crore profit.

12. Jewellery
    a. Titan Company Ltd.

       Titan Company Ltd. is India's largest jewellery retailer with FY2023 sales of ₹51,084 crore and profit of ₹3,496 crore. It is concentrating on retail growth and digitalization.

b. Kalyan Jewellers.

It has presence in India and the Middle East for Kalyan Jewellers India Ltd., generating ₹18,548 crore revenue and ₹596 crore profit in FY2024. It is increasing its retail presence and strengthening its brand presence.

13. Textile and Apparel Industry

a. Arvind Ltd.

Arvind Ltd. is a major textile firm with a 1-year stock return of 4.35%, ₹7,738 crore revenue, and ROE of 9.73%. It is expanding into branded apparel and sustainable materials.

b. KPR Mill

KPR Mill has automated operations and a strong balance sheet with a 0.08 debt-equity ratio and 19.5% ROE. It posted a 3-year return of 17.3% with a PAT margin of 13.28%.

14. Footwear

a. Bata India Ltd.

Bata India Ltd. is a leader in organized footwear, with ₹3,479 crore in revenue and a PAT margin of 7.56%. It is focusing on casual and athleisure segments. However, it recorded a -8.41% return over the past year.

b. Relaxo Footwears Ltd.

Relaxo Footwears Ltd. offers affordable footwear and has a wide rural and semi-urban reach. It recorded ₹2,914 crore in revenue and a PAT margin of 6.86%, but had a -51.2% 1-year stock return.

Objective 3:

To analyze the industry composition of the optimized portfolio to understand which industries are most represented and the reasons behind their prominence.

Table 4.3- Risk and Returns of Companies

Company	Mean Returns	Risk	
		Std. Dev.	Variance
Aarti Industries Ltd.	-0.002595	0.025690	0.000660
Vinati Organics Ltd.	0.000416	0.019237	0.000370
Syrma SGS Technology Ltd.	0.000751	0.035617	0.001269
Amber Enterprises India Ltd.	0.002692	0.034629	0.001199
InterGlobe Aviation Ltd.	0.001514	0.018676	0.000349
SpiceJet	0.000081	0.035758	0.001279
Tata Consultancy Services Ltd.	-0.000358	0.013411	0.000180
Infosys Ltd.	0.000259	0.015547	0.000242
Sun Pharmaceutical Industries Ltd.	0.000736	0.012884	0.000166
Dr. Reddy's Laboratories Ltd.	-0.000143	0.013192	0.000174
Bajaj Finance Ltd	0.001040	0.016916	0.000286
Cholamandalam Investment and Finance Company	0.001426	0.022855	0.000522
Britannia Industries Ltd.	0.000548	0.013764	0.000189
Nestle India Ltd.	-0.000170	0.011969	0.000143
Vodafone Idea	-0.001777	0.037952	0.001440
Bharti Airtel	0.001345	0.014974	0.000224
UltraTech Cement Ltd.	0.001070	0.015928	0.015928
ACC Limited	-0.000969	0.018898	0.000357
Cochin Shipyard Limited	0.000851	0.034744	0.001207
Mazagon Dock Shipbuilders Limited	0.003977	0.041747	0.001743
Tata Power Company Limited	-0.000216	0.020668	0.000427
NTPC Limited	0.000174	0.020055	0.000402
Titan Company Limited	-0.000121	0.015425	0.000238
Kalyan Jewellers India Limited	0.001199	0.030759	0.000946
Arvind Ltd.	0.001188	0.029146	0.000849
KPR Mill	0.000948	0.023860	0.000569
Bata India Ltd.	-0.000312	0.015843	0.000251
Relaxo Footwears Ltd.	-0.002649	0.015011	0.000225
NIFTY 50	0.000299	0.009468	0.000090

Source: Own Analysis

I. In the first step all the closing prices data was collected for all 28 companies and each day returns were found. The mean returns and risk of each stock was calculated for making the portfolio.

The following results were interpreted from the Returns and Risk table.

1. Risk and Return Characteristics:

- The data shows a range of mean returns and risk levels (standard deviation and variance) for various companies.
- Highest Mean Returns: Mazagon Dock Shipbuilders Ltd. (0.003977) and Amber Enterprises Ltd. (0.002692) exhibit the highest mean returns, indicating potentially higher rewards for investors.
- Lowest Mean Returns**:** Relaxo Footwears Ltd. (-0.002649) and Aarti Industries Ltd. (-0.002595) have the lowest mean returns, indicating potential losses over the observed period.

2. Risk Analysis:

- Highest Risk: Mazagon Dock Shipbuilders Ltd. (standard deviation: 0.041747) and Vodafone Idea (standard deviation: 0.037952) show the highest levels of risk, suggesting higher volatility in their stock prices.
- Lowest Risk: NIFTY 50 (standard deviation: 0.009468) and Nestle India Ltd. Ltd. (standard deviation: 0.011969) demonstrate the lowest levels of risk, indicating more stable and less volatile stocks.

Key Observations:

- Companies like Mazagon Dock Shipbuilders Ltd. and Amber Enterprises, with high mean returns, also show higher risk, aligning with the general investment principle of higher risk potentially yielding higher returns.
- Conversely, companies with lower mean returns, such as Relaxo Footwears Ltd. and Aarti Industries Ltd., show a mix of high and low risk, suggesting that low returns do not always correlate with lower risk.

II. Secondly, the covariance table was formed to determine the β (beta) value of each stock. The covariance table applications are:

- Portfolio Diversification: Investors use covariance matrices to build diversified portfolios. By diversifying low or negative covariance assets, they can minimize the overall portfolio risk.

- Risk Management: Companies and investors can use covariance matrices to assess and manage risk by understanding the relationships between different assets.

III. Lastly, four portfolios were constructed—one with equal industry weightage and the remaining three with randomly assigned allocations—to analyze the distribution of industries across different portfolios.

Table 4.4- Weightages of stock in different portfolios

CONSTRUCTION OF PORTFOLIO				
	A: EQUAL WEIGHTS	**B**	**C**	**D**
Aarti Industries Ltd.	3.6%	0.0%	0.1%	1.0%
Vinati Organics Ltd.	3.6%	0.0%	0.1%	0.0%
Syrma SGS Technology Ltd.	3.6%	10.0%	0.1%	0.0%
Amber Enterprises India Ltd.	3.6%	0.0%	7.1%	0.0%
InterGlobe Aviation Ltd.	3.6%	0.0%	9.9%	0.0%
SpiceJet	3.6%	0.0%	0.1%	0.0%
Tata Consultancy Services Ltd.	3.6%	0.0%	12.4%	0.0%
Infosys Ltd.	3.6%	0.0%	0.1%	0.0%
Sun Pharmaceutical Industries Ltd.	3.6%	0.0%	32.6%	0.0%
Dr. Reddy's Laboratories Ltd.	3.6%	0.0%	0.1%	0.0%
Bajaj Finance Ltd	3.6%	0.0%	0.1%	0.0%
Cholamandalam Investment and Finance Company Ltd.	3.6%	0.0%	0.1%	0.0%
Britannia Industries Ltd.	3.6%	0.0%	0.1%	0.0%
Nestle India Ltd.	3.6%	0.0%	0.1%	0.0%
Vodafone Idea	3.6%	0.0%	0.1%	0.0%
Bharti Airtel	3.6%	0.0%	0.1%	0.1%
UltraTech Cement Ltd.	3.6%	0.0%	0.1%	0.1%
ACC Limited	3.6%	0.0%	0.1%	0.1%
Cochin Shipyard Limited	3.6%	45.0%	7.5%	98.5%
Mazagon Dock Shipbuilders Limited	3.6%	45.0%	5.5%	0.1%
Tata Power Company Limited	3.6%	0.0%	0.1%	0.1%
NTPC Limited	3.6%	0.0%	3.8%	0.0%
Titan Company Limited	3.6%	0.0%	0.1%	0.0%
Kalyan Jewellers India Limited	3.6%	0.0%	19.2%	0.0%
Arvind Ltd.	3.6%	0.0%	0.1%	0.0%
KPR Mill	3.6%	0.0%	0.1%	0.0%
Bata India Ltd.	3.6%	0.0%	0.1%	0.0%
Relaxo Footwears Ltd.	3.6%	0.0%	0.1%	0.0%
TOTAL	100%	100%	100%	100%

Source: Own Analysis

Portfolio A-

Table 4.5- Portfolio A

Portfolio A	
Portfolio Returns	0.039%
Portfolio Variance	0.000135
Portfolio Risk	1.162%
Risk Free Rate	0.019%
Sharpe Ratio	0.0168
Beta	1.02

Source: Own Analysis

Weights Assigned to Stocks

In Portfolio A, an equal weight of 3.6% has been assigned to each of the 28 stocks. This equal- weight approach ensures that no single stock dominates the portfolio and that the risk is diversified across multiple sectors and industries. The rationale behind this approach is to create a well-balanced portfolio that provides exposure to a diverse range of companies without overconcentrating in any stock.

Portfolio Returns

The portfolio returns for Portfolio A are 0.0389%. This is the total return expected on the portfolio, or the weighted average of the stock returns. The equal-weighting method causes all the stocks to have an equal influence on the performance of the portfolio.

Portfolio Variance and Risk

The portfolio variance is 0.000135, which translates to a portfolio risk (standard deviation) of 1.1619%. This moderate level of risk is achieved through the diversification provided by the equal- weight approach. By spreading the investment evenly across multiple stocks, the portfolio is able to mitigate the impact of any individual stock's volatility, resulting in a relatively low overall risk.

Sharpe Ratio

The Sharpe ratio for Portfolio A is 0.0168. The Sharpe ratio is a measure of the portfolio's risk- adjusted returns, which considers both the portfolio's returns and its risk. A higher Sharpe ratio indicates a more efficient portfolio, as it generates higher

returns for the level of risk taken. The Sharpe ratio for Portfolio A suggests that the portfolio is generating a reasonable level of returns relative to the risk it is taking on**.**

Portfolio B-

Table 4.6- Portfolio B

Portfolio B	
Portfolio Returns	0.225%
Portfolio Variance	0.001128
Portfolio Risk	3.36%
Risk Free Rate	0.0194%
Sharpe Ratio	0.0612
Beta	1.62

Source: *Own Analysis*

Weights Assigned to Stocks

In Portfolio B, the weights assigned to the stocks vary significantly, with some stocks receiving much higher allocations compared to others. This approach suggests a focus on specific companies and sectors that are expected to outperform the market or contribute to the portfolio's overall objectives. For example, Cochin Shipyard Limited and Mazagaon Dock Shipbuilders Limited each have a 45% weight in the portfolio and Syrma has 10% weightage in overall portfolio, indicating a strong conviction in these companies' potential. Similarly,

However, observe that more returns tend to be associated with increased risk, as the portfolio is more vulnerable to the success of a few stocks. If the selected stocks underperform, the portfolio's returns may suffer more compared to a more diversified approach.

Portfolio Variance and Risk

The portfolio variance for Portfolio B is 0.001128, which translates to a portfolio risk (standard deviation) of 3.3584%. This level of risk is higher than the 1.1609% risk for Portfolio A, as expected due to the concentrated nature of Portfolio B. The higher risk in Portfolio B can be attributed to the uneven distribution of weights and the potential for individual stocks to significantly impact the portfolio's overall performance. While the concentrated bets have the potential to generate higher returns, they also expose the portfolio to higher volatility and risk.

Sharpe Ratio

The Sharpe ratio for Portfolio B is 0.612, which is higher than the 0.0168 Sharpe ratio for Portfolio A. This suggests that Portfolio B is generating higher returns per unit of risk compared to Portfolio A.

Portfolio C-

Table 4.7- Portfolio C

Portfolio C	
Portfolio Returns	0.1055%
Portfolio Variance	0.00016
Portfolio Risk	1.28%
Risk Free Rate	0.019%
Sharpe Ratio	0.067
Beta	0.95

Source: Own Analysis

Weights Assigned to Stocks

In Portfolio C, the weights assigned to the stocks vary significantly, with some stocks receiving much higher allocations compared to others. This unequal-weight approach suggests that the portfolio manager has identified certain stocks as having higher potential returns or lower risk compared to others. Some notable weight allocations include:

- Sun Pharmaceutical Industries Ltd. receiving 32.6%, making it the largest holding
- Kalyan Jewellers India Limited receiving 19.2%, the Second -largest holding
- Tata Consultancy Services Ltd. receiving 12.4%, the third-largest holding 67%
- Amber Enterprises India Ltd. and InterGlobe Aviation Ltd. receiving 7.1% and 9.9% respectively

The remaining stocks have much lower allocations, ranging from 0.1% to 3.8%. This unequal- weight approach suggests that the portfolio manager has a concentrated view on certain sectors or industries and is more likely to take on greater risk for potentially greater reward.

Portfolio Returns

The portfolio returns for Portfolio C are 0.1055%. This high level of returns is likely driven by the concentrated bets on certain stocks, such as Sun Pharmaceutical Industries Ltd and Kalyan Jewellers. However, it is important to note that this high return comes with increased risk.

Portfolio Variance and Risk

The portfolio variance is 0.000165, which translates to a portfolio risk (standard deviation) of 1.2854%. This level of risk is higher compared to Portfolio A, which had a risk of 1.1619%. The higher risk in Portfolio C is a direct result of the unequal-weight approach and the concentrated bets on certain stocks. While the concentrated bets may have contributed to the higher returns, they also expose the portfolio to higher volatility and risk. If any of the heavily weighted stocks underperform, it can significantly impact the overall portfolio performance.

Sharpe Ratio

The Sharpe ratio for Portfolio C is 0.0670. This ratio is higher compared to Portfolio A, which had a Sharpe ratio of 0.0168. The higher Sharpe ratio suggests that Portfolio C is generating a better risk-adjusted return compared to Portfolio A.

Portfolio D-

Table 4.8- Portfolio D

Portfolio D	
Portfolio Returns	0.081%
Portfolio Variance	0.0019
Portfolio Risk	3.43%
Risk Free Rate	0.019%
Sharpe Ratio	0.018
Beta	1.44

Source: Own Analysis

Weights Assigned to Stocks

In Portfolio D, the weights assigned to the stocks are not equally distributed. The portfolio has a significant concentration in a few stocks, with Cochin Shipyard Limited and Mazagon Dock Shipbuilders Limited each having a 98.5% and 0.1% weight,

respectively. The remaining stocks have much smaller weights, ranging from 0.0% to 7.5%. This unequal weighting approach is in contrast to the equal-weight approach used in Portfolio A, where each stock was assigned a 3.6% weight. The rationale behind the weights in Portfolio D seems to be a focus on a few select stocks, likely based on their perceived potential for higher returns or other investment criteria.

Portfolio Returns

The portfolio returns for Portfolio D are 0.0818%. This is significantly higher than the returns for Portfolio A. The high returns in Portfolio D can be attributed to the concentrated exposure in a few stocks, particularly Cochin Shipyard Limited and Mazagon Dock Shipbuilders Limited, which appear to have performed exceptionally well.

Portfolio Variance and Risk

The portfolio variance for Portfolio D is 0.001181, which translates to a portfolio risk (standard deviation) of 3.4369%. This level of risk is significantly higher than the 1.1619% risk in Portfolio A. The concentrated nature of Portfolio D, with a few stocks dominating the portfolio, has led to a higher overall risk compared to the more diversified approach of Portfolio A.

Sharpe Ratio

The Sharpe ratio for Portfolio D is 0.0181. This is higher than the Sharpe ratio of 0.0168 for Portfolio A, indicating that Portfolio D is generating higher returns relative to the level of risk it is taking on.

CHAPTER 5: FINDINGS AND CONCLUSION

FINDINGS

1. Based on the screener created and fundamental analysis the industries were divided as emerging, growing, mature and declining industry. The classification of the industries is given below.

Emerging Industry • ESDM (Electronics System Design & Manufacturing) • Ship Building	Growing Industry • Aviation • Financial Services- NBFC • Telecommunications
Mature Industry • Consumer food • Pharmaceuticals & Drugs • IT (Information Technology) • Chemicals • Power Generation/Distribution • Jewellery	Declining Industry • Footwear • Textiles & Apparel • Cement

2. Based on our fundamental and technical analysis the top companies of

- ESDM (Electronics System Design & Manufacturing)- Syrma SGS Technology Ltd., Amber Enterprises
- Ship Building- Cochin Shipyard Limited, Mazagaon Dock Shipbuilders Limited
- Aviation- InterGlobe Aviation Ltd., SpiceJet Ltd.
- Financial Services- NBFC- Bajaj Finance Ltd., Cholamandalam Investment and Finance Company Ltd.
- Telecommunications- Vodafone Idea, Bharti Airtel Ltd.
- Consumer Food- Britannia Industries Ltd., Nestle India Ltd.
- Pharmaceuticals & Drugs- Sun Pharmaceutical Industries Ltd., Dr. Reddy's Laboratories Ltd.
- IT (Information Technology)- Tata Consultancy Services Ltd., Infosys Ltd.
- Chemicals- Aarti Industries Ltd., Vinati Organics Ltd.
- Power Generation/Distribution- Tata Power Company Limited, NTPC Limited
- Jewellery- Titan Company Limited, Kalyan Jewellers India Limited
- Footwear- Bata India Ltd., Relaxo Footwears Ltd.
- Textiles & Apparel- Arvind Ltd., KPR Mill

- Cement- Ultratech Cement Ltd., ACC Limited

c. Based on the portfolio constructed with different risk levels, the composition on Industries were studied.

Analysis of Portfolio Composition by Industry

Portfolio A: Equal Weights

In Portfolio A, each company is assigned an equal weight of 3.6%. This means that the portfolio is diversified equally across all listed industries. There is no single industry that is more heavily weighted than others.

Portfolio B (Medium Risky)

In Portfolio B, the weight distribution is more concentrated among a few companies:

- Ship Building Industry: Cochin Shipyard Limited and Mazagon Dock Shipbuilders Limited both have the highest weight of 45% each.
- ESDM (Electronic System Design and Manufacturing): Syrma SGS Technology Ltd. has a weight of 10%.
- Other industries have negligible or zero weights.

Portfolio C (Low Risk)

In Portfolio C, the weight distribution is highly skewed towards specific industries:

- Pharmaceuticals & Drugs: Sun Pharmaceutical Industries Ltd. has the highest weight of 32.6%.
- Jewellery: Kalyan Jewellers India Limited at 19.2%.
- Information Technology: Tata Consultancy Services Ltd. at 12.4%.
- ESDM (Electronic System Design and Manufacturing): Amber Enterprises India Ltd. at 7.1%.
- Ship Building Industry: Cochin Shipyard Limited at 7.5% and Mazagon Dock Shipbuilders Limited at 5.5%.
- Power Generation/Distribution Industry: NTPC Limited at 3.8%.
- Other industries have negligible or zero weights.

Portfolio D (High Risk)

In Portfolio D, the weight distribution is extremely concentrated:

- Ship Building Industry: Cochin Shipyard Limited has a dominant weight of 98.5%.
- Other industries have negligible or zero weights, making this portfolio highly concentrated in the shipbuilding industry.

Analysis of Portfolio as per the classification of the industry

Portfolio A:

In Portfolio A, an equal weight of 3.6% has been assigned to each of the 28 stocks. This equal-weighting method makes sure that there is no one stock that will overpower the portfolio and the risk is distributed among various sectors and industries. The rationale behind this approach is to create a well-balanced portfolio that provides exposure to a diverse range of companies without overconcentrating in any stock.

The portfolio includes a mix of emerging, growing, mature, and declining industries, with no particular focus on any specific industry type. This diversification strategy aims to mitigate the risks associated with individual industry performance and provide a balanced exposure to the overall market.

Portfolio B:

Portfolio B has a significant concentration in the shipbuilding industry, with Cochin Shipyard Limited and Mazagon Dock Shipbuilders Limited each having a 45% weight. This indicates a strong focus on the growing shipbuilding industry in this portfolio.

The remaining weights are allocated to Syrma SGS Technology Ltd. (10%), which is in the emerging ESDM industry, and a few other stocks with smaller weightings.

Portfolio C:

Portfolio C is more diversified, with a higher allocation to mature industries such as IT (Tata Consultancy Services Ltd. at 12.4% and Infosys Ltd. at 0.1%),

Pharmaceuticals (Sun Pharmaceutical Industries Ltd. at 32.6%), and financial services (Kalyan Jewellers India Limited at 19.2%).

The portfolio also includes exposure to the growing aviation industry (InterGlobe Aviation Ltd. at 9.9%) and the emerging ESDM industry (Syrma SGS Technology Ltd. at 0.1% and Amber Enterprises India Ltd. at 7.1%).

Portfolio D:

Portfolio D is highly concentrated in the shipbuilding industry, with Cochin Shipyard Limited accounting for a dominant 98.5% weight. This indicates a strong focus on the growing shipbuilding industry in this portfolio.

The remaining weights are allocated to Mazagon Dock Shipbuilders Limited (0.1%), Bharti Airtel (0.1%), UltraTech Cement Ltd. (0.1%), and ACC Limited (0.1%), which represent a mix of growing, mature, and declining industries.

Learnings

Objective 1: Fundamental Analysis and Industry Life Cycle Classification

Learning: The classification of industries based on financial metrics and ratios, such as market capitalization, revenue, profit after tax (PAT), price-to-earnings (P/E) ratio, and return on capital employed (ROCE), provides valuable insights into the stage of the industry life cycle. This analysis helps identify emerging, growing, mature, and declining industries, which is crucial for making informed investment decisions.

Recommendation: Regularly review and update the industry life cycle classification as market conditions and industry dynamics evolve. This will ensure that the investment portfolios are aligned with the current state of the industries and can capitalize on emerging opportunities while mitigating risks in declining sectors.

Objective 2: Top-Performing Companies and Optimal Investment Portfolios

Learning: Identifying the top-performing companies within each industry using fundamental and technical analysis is essential for constructing optimal investment portfolios with different risk levels. This approach allows for the selection of

companies with strong financial performance, growth potential, and technical indicators that align with the desired risk profile of the portfolio.

Recommendation: Continuously monitor the financial and technical performance of the selected companies to ensure they maintain their top-performing status. Regularly review and rebalance the portfolios to respond to new market conditions and take advantage of new opportunities.

Objective 3: Industry Composition of Optimized Portfolios

Learning: The analysis of the industry composition within the optimized portfolios reveals the varying degrees of industry concentration and diversification. Portfolios with different risk levels exhibit distinct industry weightings, reflecting the investment strategies and risk preferences of the portfolio managers.

Recommendation: Carefully consider the industry composition of the portfolios when making investment decisions. Diversification across industries can help mitigate risks, while a focused approach on specific high-performing industries can potentially generate higher returns. The optimal industry composition should align with the investor's risk tolerance and investment objectives.

CONCLUSION

The classification of industries based on their life cycle stage (emerging, growing, mature, and declining) provides a valuable framework for fundamental analysis and informed investment decision-making. Identifying the top-performing companies within each industry through a combination of fundamental and technical analysis is crucial for constructing optimal investment portfolios that cater to different risk profiles. The industry composition of the optimized portfolios reflects the investment strategies and risk preferences of the portfolio managers, where diversification across industries can help mitigate risks, while a focused approach on specific high-performing industries can potentially generate higher returns. Regularly reviewing and updating the industry life cycle classification, as well as the performance of the selected companies and the portfolio compositions is essential for adapting to changing market conditions and capturing new investment opportunities. These learnings and recommendations can be applied to various investment scenarios, benefiting investors and portfolio managers to make the best decisions and realize the highest investment strategies.

REFERNCES

1. Gupta, R., & Basu, P. K. (2009). Sector Analysis and Portfolio Optimisation: The Indian Experience. International Business & Economics Research Journal (IBER), 8(1). https://clutejournals.com/index.php/IBER/article/view/3096
2. Baptestone, R., & Rabechini, R., Jr. (2018). Influence of portofolio management in decision- making. Journal of Industrial Engineering and Management, 11(3), 406–428. https://doi.org/10.3926/jiem.2464
3. Yousefi, V., Yakhchali, S. H., Šaparauskas, J., & Kiani, S. (2018). The impact made on project portfolio optimisation by the selection of various risk measures. Engineering Economics, 29(2), 168–175. https://inzeko.ktu.lt/index.php/EE/article/view/17405
4. Martinsuo, M., & Geraldi, J. (2020). Management of project portfolios: Relationships of project portfolios with their contexts. International Journal of Project Management, 38(7), 441–453. https://www.sciencedirect.com/science/article/abs/pii/S0263786320300156?via%3Dihub
5. Investopedia. (2023, December 13). Understanding the industry life cycle: Phases and examples. https://www.investopedia.com/terms/i/industrylifecycle.asp
6. Mergers and Inquisitions. (2016, July 20). Equity research report: Samples, tutorials, and explanations. https://mergersandinquisitions.com/equity-research-report/
7. CFA Institute. (2020, September). Equity research report essentials. https://www.cfainstitute.org/-/media/documents/support/research-challenge/challenge/rc-equity-research-report-essentials.pdf
8. Corporate Finance Institute. Business life cycle - Understanding the 5 different stages. https://corporatefinanceinstitute.com/resources/valuation/business-life-cycle/
9. Ministry of Finance, Government of India. (2023). Economic survey 2024-25. https://www.indiabudget.gov.in/

10. Investopedia. (n.d.). Portfolio optimization techniques. https://www.investopedia.com/terms/p/portfolio-optimization.asp
11. Financial Management Pro. (n.d.). Risk and return analysis. https://www.financialmanagementpro.com/risk-and-return-analysis/
12. Securities and Exchange Board of India (SEBI). (2024). Annual report 2024-25. https://www.sebi.gov.in/sebiweb/home.jsp
13. Industry Research. (n.d.). Textiles & apparel industry analysis https://www.industryresearch.com/textiles-apparel-industry-analysis
14. Market Research. (n.d.). Footwear industry overview. https://www.marketresearch.com/footwear-industry-overview

ANNEXURE

	Aarti Industries Ltd.	*Vinati Organics Ltd.*	*Syrma SGS Technology Ltd.*	*Amber Enterprises India Ltd.*	*InterGlobe Aviation Ltd.*	*SpiceJet*	*Tata Consultancy Services Ltd.*	*Infosys Ltd.*	*Sun Pharmaceutical Industries Ltd.*
Aarti Industries Ltd.	0.0006600	0.0002365	0.0003178	0.0002390	0.0001311	0.0003469	0.0000633	0.0000645	0.0000936
Vinati Organics Ltd.	0.0002365	0.0003701	0.0001541	0.0001018	0.0000925	0.0000435	0.0000435	0.0000435	0.0000435
Syrma SGS Technology Ltd.	0.0003178	0.0001541	0.0012686	0.0002402	0.0000834	0.0003420	0.0000319	0.0000591	0.0000871
Amber Enterprises India Ltd.	0.0002390	0.0001018	0.0002402	0.0011992	0.0001548	0.0003182	0.0000358	0.0000576	0.0000799
InterGlobe Aviation Ltd.	0.0001311	0.0000925	0.0000834	0.0001548	0.0003488	0.0002395	0.0000117	0.0000247	0.0000503
SpiceJet	0.0003469	0.0001873	0.0003420	0.0003182	0.0002395	0.0012786	0.0000067	0.0000346	0.0000608
Tata Consultancy Services Ltd.	0.0000633	0.0000249	0.0000319	0.0000358	0.0000117	0.0000067	0.0001799	0.0001448	0.0000354
Infosys Ltd.	0.0000645	0.0000326	0.0000591	0.0000576	0.0000247	0.0000346	0.0001448	0.0002417	0.0000399
Sun Pharmaceutical Industries Ltd.	0.0000936	0.0000781	0.0000871	0.0000799	0.0000503	0.0000608	0.0000354	0.0000399	0.0001660
Dr. Reddy's Laboratories Ltd.	0.0000954	0.0000452	0.0000938	0.0000762	0.0000355	0.0000821	0.0000472	0.0000527	0.0000760
Bajaj Finance Ltd	0.0001240	0.0000294	0.0001531	0.0001104	0.0000597	0.0000968	0.0000497	0.0000760	0.0000458
Investment and Finance Company Ltd.	0.0001925	0.0000896	0.0001461	0.0001353	0.0001276	0.0002057	0.0000516	0.0000899	0.0000636
Britannia Industries Ltd.	0.0000589	0.0000350	-0.0000013	0.0000187	0.0000276	0.0000305	0.0000373	0.0000294	0.0000348
Nestle India Ltd.	0.0000472	0.0000269	0.0000354	0.0000126	0.0000135	0.0000225	0.0000278	0.0000220	0.0000341
Vodafone Idea	0.0003732	0.0001823	0.0003778	0.0002369	0.0001828	0.0004979	0.0000045	0.0000439	0.0000941
Bharti Airtel	0.0000833	0.0000602	0.0001120	0.0000871	0.0000729	0.0000955	0.0000574	0.0000818	0.0000693
UltraTech Cement Ltd.	0.0001383	0.0000595	0.0001694	0.0001345	0.0000992	0.0001422	0.0000449	0.0000602	0.0000707
ACC Limited	0.0001979	0.0000898	0.0002354	0.0001815	0.0001361	0.0002635	0.0000320	0.0000413	0.0000609
Cochin Shipyard Limited	0.0003156	0.0001893	0.0004812	0.0000790	0.0001314	0.0003377	0.0000213	0.0000229	0.0000530
Mazagon Dock Shipbuilders Limited	0.0003238	0.0001706	0.0004552	0.0003208	0.0001764	0.0004833	-0.0000039	0.0000191	0.0000569
Tata Power Company Limited	0.0002879	0.0001427	0.0002899	0.0002291	0.0001871	0.0003210	0.0000402	0.0000526	0.0000992
NTPC Limited	0.0002024	0.0001014	0.0002802	0.0001700	0.0001265	0.0002373	0.0000292	0.0000377	0.0000857
Titan Company Limited	0.0000798	0.0000524	0.0000801	0.0000566	0.0000572	0.0000814	0.0000461	0.0000825	0.0000608
Kalyan Jewellers India Limited	0.0001534	0.0000515	0.0002807	0.0003087	0.0001797	0.0003160	0.0000331	0.0000934	0.0000834
Arvind Ltd.	0.0002530	0.0000945	0.0003469	0.0000916	0.0000100	0.0002785	0.0000236	0.0000341	0.0000901
KPR Mill	0.0002084	0.0001054	0.0001502	0.0000401	0.0000826	0.0001773	0.0000321	0.0000572	0.0000782
Bata India Ltd.	0.0001405	0.0000682	0.0001223	0.0000956	0.0000891	0.0001725	0.0000280	0.0000414	0.0000392
Relaxo Footwears Ltd.	0.0001867	0.0000959	0.0001874	0.0000790	0.0000649	0.0001806	0.0000191	0.0000302	0.0000499
NIFTY 50	0.0001254	0.0000565	0.0001383	0.0001010	0.0000778	0.0001260	0.0000568	0.0000716	0.0000551
BETA	1.3985796	0.6301711	1.5428896	1.1263824	0.8675927	1.4053531	0.6333976	0.7986582	0.6149960

Covariance Table

	Dr. Reddy's Laboratories Ltd.	Bajaj Finance Ltd	Cholamandalam Investment and Finance Company Ltd.	Britannia Industries Ltd.	Nestle India Ltd.	Vodafone Idea	Bharti Airtel	UltraTech Cement Ltd.	ACC Limited	Cochin Shipyard Limited
Aarti Industries Ltd.	0.0000954	0.0001240	0.0001925	0.0000589	0.0000472	0.0003732	0.0000833	0.0001383	0.0001979	0.0003156
Vinati Organics Ltd.	0.0000435	0.0000435	0.0000435	0.0000435	0.0000435	0.0000435	0.0000435	0.0000435	0.0000435	0.0000435
Syrma SGS Technology Ltd.	0.0000938	0.0001531	0.0001461	-0.0000013	0.0000354	0.0003778	0.0001120	0.0001694	0.0002354	0.0004812
Amber Enterprises India Ltd.	0.0000762	0.0001104	0.0001353	0.0000187	0.0000126	0.0002369	0.0000871	0.0001345	0.0001815	0.0000790
InterGlobe Aviation Ltd.	0.0000355	0.0000597	0.0001276	0.0000276	0.0000135	0.0001828	0.0000729	0.0000992	0.0001361	0.0001314
SpiceJet	0.0000821	0.0000968	0.0002057	0.0000305	0.0000225	0.0004979	0.0000955	0.0001422	0.0002635	0.0003377
Tata Consultancy Services Ltd.	0.0000472	0.0000497	0.0000516	0.0000373	0.0000278	0.0000045	0.0000574	0.0000449	0.0000320	0.0000213
Infosys Ltd.	0.0000527	0.0000760	0.0000899	0.0000294	0.0000220	0.0000439	0.0000818	0.0000602	0.0000413	0.0000229
Sun Pharmaceutical Industries Ltd.	0.0000760	0.0000458	0.0000636	0.0000348	0.0000341	0.0000941	0.0000693	0.0000707	0.0000609	0.0000530
Dr. Reddy's Laboratories Ltd.	0.0001740	0.0000354	0.0000560	0.0000135	0.0000238	0.0000874	0.0000431	0.0000573	0.0000517	0.0000645
Bajaj Finance Ltd	0.0000354	0.0002862	0.0002017	0.0000222	0.0000479	0.0001332	0.0000966	0.0001035	0.0001442	0.0000829
Investment and Finance Company Ltd.	0.0000560	0.0002017	0.0005224	0.0000126	0.0000400	0.0001966	0.0000789	0.0001056	0.0001460	0.0001912
Britannia Industries Ltd.	0.0000135	0.0000222	0.0000126	0.0001894	0.0000809	0.0000065	0.0000393	0.0000234	0.0000091	0.0000082
Nestle India Ltd.	0.0000238	0.0000479	0.0000400	0.0000809	0.0001433	0.0000134	0.0000453	0.0000411	0.0000192	0.0000138
Vodafone Idea	0.0000874	0.0001332	0.0001966	0.0000065	0.0000134	0.0014404	0.0001715	0.0001502	0.0003575	0.0004688
Bharti Airtel	0.0000431	0.0000966	0.0000789	0.0000393	0.0000453	0.0001715	0.0002242	0.0000924	0.0001061	0.0000716
UltraTech Cement Ltd.	0.0000573	0.0001035	0.0001056	0.0000234	0.0000411	0.0001502	0.0000924	0.0002537	0.0001621	0.0001567
ACC Limited	0.0000517	0.0001442	0.0001460	0.0000091	0.0000192	0.0003575	0.0001061	0.0001621	0.0003571	0.0002638
Cochin Shipyard Limited	0.0000645	0.0000829	0.0001912	0.0000082	0.0000138	0.0004688	0.0000716	0.0001567	0.0002638	0.0012071
Mazagon Dock Shipbuilders Limited	0.0000607	0.0001207	0.0002257	-0.0000308	0.0000134	0.0006164	0.0001290	0.0001883	0.0003461	0.0010706
Tata Power Company Limited	0.0000948	0.0001201	0.0001760	0.0000227	0.0000281	0.0004130	0.0001110	0.0001704	0.0002464	0.0003226
NTPC Limited	0.0000702	0.0001179	0.0001418	0.0000062	0.0000206	0.0003181	0.0001172	0.0001585	0.0002328	0.0002473
Titan Company Limited	0.0000447	0.0000742	0.0000891	0.0000291	0.0000660	0.0000788	0.0000844	0.0000867	0.0000887	0.0000892
Kalyan Jewellers India Limited	0.0000826	0.0001002	0.0001539	0.0000225	0.0000256	0.0002762	0.0000994	0.0000984	0.0001665	0.0002245
Arvind Ltd.	0.0000802	0.0000510	0.0000373	0.0000167	0.0000152	0.0003361	0.0000472	0.0000953	0.0001360	0.0001934
KPR Mill	0.0000561	0.0000303	0.0001052	0.0000438	0.0000362	0.0000489	0.0000632	0.0000628	0.0000531	0.0001647
Bata India Ltd.	0.0000360	0.0000560	0.0000639	0.0000512	0.0000451	0.0001321	0.0000604	0.0000577	0.0000629	0.0001101
Relaxo Footwears Ltd.	0.0000503	0.0000378	0.0000453	0.0000635	0.0000403	0.0001678	0.0000478	0.0000406	0.0000829	0.0001862
NIFTY 50	0.0000477	0.0000977	0.0001108	0.0000259	0.0000341	0.0001621	0.0000880	0.0000960	0.0001210	0.0001294
BETA	0.5316336	1.0898236	1.2356665	0.2892523	0.3798955	1.8080923	0.9816576	1.0713055	1.3500506	1.4437732

Covariance Table

	Mazagon Dock Shipbuilders Limited	*Tata Power Company Limited*	*NTPC Limited*	*Titan Company Limited*	*Kalyan Jewellers India Limited*	*Arvind Ltd.*	*KPR Mill*	*Bata India Ltd.*	*Relaxo Footwears Ltd.*	*NIFTY 50*
Aarti Industries Ltd.	0.0003238	0.0002879	0.0002024	0.0000798	0.0001534	0.0002530	0.0002084	0.0001405	0.0001867	0.0001254
Vinati Organics Ltd.	0.0000435	0.0000435	0.0000435	0.0000435	0.0000435	0.0000435	0.0000435	0.0000435	0.0000435	0.0000435
Syrma SGS Technology Ltd.	0.0004552	0.0002899	0.0002802	0.0000801	0.0002807	0.0003469	0.0001502	0.0001223	0.0001874	0.0001383
Amber Enterprises India Ltd.	0.0003208	0.0002291	0.0001700	0.0000566	0.0003087	0.0000916	0.0000401	0.0000956	0.0000790	0.0001010
InterGlobe Aviation Ltd.	0.0001764	0.0001871	0.0001265	0.0000572	0.0001797	0.0000100	0.0000826	0.0000891	0.0000649	0.0000778
SpiceJet	0.0004833	0.0003210	0.0002373	0.0000814	0.0003160	0.0002785	0.0001773	0.0001725	0.0001806	0.0001260
Tata Consultancy Services Ltd.	-0.0000039	0.0000402	0.0000292	0.0000461	0.0000331	0.0000236	0.0000321	0.0000280	0.0000191	0.0000568
Infosys Ltd.	0.0000191	0.0000526	0.0000377	0.0000825	0.0000934	0.0000341	0.0000572	0.0000414	0.0000302	0.0000716
Sun Pharmaceutical Industries Ltd.	0.0000569	0.0000992	0.0000857	0.0000608	0.0000834	0.0000901	0.0000782	0.0000392	0.0000499	0.0000551
Dr. Reddy's Laboratories Ltd.	0.0000607	0.0000948	0.0000702	0.0000447	0.0000826	0.0000802	0.0000561	0.0000360	0.0000503	0.0000477
Bajaj Finance Ltd	0.0001207	0.0001201	0.0001179	0.0000742	0.0001002	0.0000510	0.0000303	0.0000560	0.0000378	0.0000977
Investment and Finance Company Ltd.	0.0002257	0.0001760	0.0001418	0.0000891	0.0001539	0.0000373	0.0001052	0.0000639	0.0000453	0.0001108
Britannia Industries Ltd.	-0.0000308	0.0000227	0.0000062	0.0000291	0.0000225	0.0000167	0.0000438	0.0000512	0.0000635	0.0000259
Nestle India Ltd.	0.0000134	0.0000281	0.0000206	0.0000660	0.0000256	0.0000152	0.0000362	0.0000451	0.0000403	0.0000341
Vodafone Idea	0.0006164	0.0004130	0.0003181	0.0000788	0.0002762	0.0003361	0.0000489	0.0001321	0.0001678	0.0001621
Bharti Airtel	0.0001290	0.0001110	0.0001172	0.0000844	0.0000994	0.0000472	0.0000632	0.0000604	0.0000478	0.0000880
UltraTech Cement Ltd.	0.0001883	0.0001704	0.0001585	0.0000867	0.0000984	0.0000953	0.0000628	0.0000577	0.0000406	0.0000960
ACC Limited	0.0003461	0.0002464	0.0002328	0.0000887	0.0001665	0.0001360	0.0000531	0.0000629	0.0000829	0.0001210
Cochin Shipyard Limited	0.0010706	0.0003226	0.0002473	0.0000892	0.0002245	0.0001934	0.0001647	0.0001101	0.0001862	0.0001294
Mazagon Dock Shipbuilders Limited	0.0017428	0.0004014	0.0003043	0.0000837	0.0002988	0.0003289	0.0001510	0.0001272	0.0001685	0.0001636
Tata Power Company Limited	0.0004014	0.0004271	0.0002945	0.0000947	0.0002167	0.0002286	0.0001423	0.0001107	0.0001205	0.0001379
NTPC Limited	0.0003043	0.0002945	0.0004022	0.0000886	0.0001761	0.0001720	0.0000893	0.0000648	0.0000832	0.0001282
Titan Company Limited	0.0000837	0.0000947	0.0000886	0.0002379	0.0001369	0.0000626	0.0000813	0.0000766	0.0000612	0.0000683
Kalyan Jewellers India Limited	0.0002988	0.0002167	0.0001761	0.0001369	0.0009461	0.0001730	0.0001856	0.0001228	0.0001381	0.0001039
Arvind Ltd.	0.0003289	0.0002286	0.0001720	0.0000626	0.0001730	0.0008495	0.0001636	0.0000415	0.0001446	0.0000784
KPR Mill	0.0001510	0.0001423	0.0000893	0.0000813	0.0001856	0.0001636	0.0005693	0.0000537	0.0001287	0.0000644
Bata India Ltd.	0.0001272	0.0001107	0.0000648	0.0000766	0.0001228	0.0000415	0.0000537	0.0002510	0.0000926	0.0000538
Relaxo Footwears Ltd.	0.0001685	0.0001205	0.0000832	0.0000612	0.0001381	0.0001446	0.0001287	0.0000926	0.0002253	0.0000495
NIFTY 50	0.0001636	0.0001379	0.0001282	0.0000683	0.0001039	0.0000784	0.0000644	0.0000538	0.0000495	0.0000896
BETA	1.8252529	1.5380940	1.4306752	0.7622791	1.1587043	0.8750650	0.7180914	0.5996639	0.5520410	1.0000000

Covariance Table

11% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

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8% Internet sources
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  Matches that are still very similar to source material
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  Matches with in-text citation present, but no quotation marks

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1	Internet	worldwidescience.org <1%
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