Wealthy Wise – Mutual Fund Investment Planner

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Abstract

This study explores the landscape of mutual funds in India, analyzing their performance across different investor segments based on wealth. By examining historical data, risk-return factors, and investor behaviour, the study aims to develop effective investment planning strategies. The research utilizes statistical models, financial metrics, and regulatory insights to provide a comprehensive guide for wealth-wise investment decision-making. The findings contribute to better financial planning and portfolio diversification strategies for Indian investors. A list of up to six keywords should immediately follow, with the keywords separated by commas and ending with a period.

Key Words **:** Mutual fund, risk return analysis, investment, wealth segmentation, portfolio, financial planning.

1. INTRODUCTION

Wealth management has become increasingly important for middle-class individuals seeking effective investment strategies. Traditional financial instruments such as fixed deposits (FDs) and savings accounts offer limited returns, leading many investors to explore alternative options for financial growth. While avenues like stock trading, cryptocurrencies, and corporate bonds exist, they often demand substantial time, capital, and expertise, making them less accessible to the average investor. Among these options, mutual funds emerge as a viable investment vehicle, offering diversification, professional management, and ease of access.

Mutual funds pool money from multiple investors to create a diversified portfolio of securities, including stocks, bonds, and money market instruments. These funds are managed by asset management companies (AMCs), ensuring that investments are overseen by experienced professionals. This structure allows individuals with limited financial expertise to participate in the market without the need for active management of their investments.

However, selecting the right mutual fund can be challenging due to the vast number of available schemes, each characterized by different performance metrics, risk levels, and investment strategies. Investors often struggle with a lack of guidance, making it difficult to choose funds that align with their financial goals and risk tolerance.

To address this challenge, our project aims to develop a mutual fund recommendation system using data science and machine learning techniques. The system will analyze key mutual fund parameters to provide tailored insights, helping users make well-informed investment decisions. By considering factors such as minimum investment requirements, expense ratio, fund size, fund age, fund manager expertise, and risk-adjusted performance metrics (Sortino ratio, Sharpe ratio, alpha, beta, and standard deviation), the platform will generate recommendations aligned with individual financial objectives.

Additionally, mutual funds will be categorized based on risk levels (low to very high), types (equity, debt, hybrid), and sub-categories (small-cap, large-cap, ELSS, etc.), allowing investors to select funds that match their risk appetite. Historical return data over 1, 3, and 5 years will further enhance decision-making by providing insights into past performance.

2. LITERATURE SURVEY

A. Assessing The Effectiveness Of Indian Mutual Fund Schemes: A Performance Evaluation : This study evaluates the effectiveness of Indian mutual fund schemes, providing valuable insights to help investors make informed investment decisions. The research focuses on assessing the performance of various mutual fund schemes, identifying the factors that contribute to their success or failure. By analyzing performance data and key indicators, the authors aim to offer practical guidance to investors, enabling them to make better financial decisions. The most important point of this paper is its focus on helping investors understand the efficacy of different mutual fund schemes and improving their decision-making process.

B. A Cluster Analysis of Mutual Funds Data : This paper explores how investors can estimate the profit and loss rate of their mutual fund portfolios using the Net Asset Value Change Ratios (NAVCR). The authors propose a clustering approach based on both NAVCR and the value of each mutual fund. By applying cluster analysis, they aim to group mutual funds with similar performance characteristics, helping investors identify patterns and make more strategic investment choices. The key contribution of this study lies in its innovative use of NAVCR and clustering techniques to improve portfolio management and performance estimation.

C. Wealth Concentration in India During the Last Decade This paper examines wealth concentration in India by combining data from official surveys and rich lists. The authors provide revised estimates showing that personal wealth is underestimated by nearly 54% in official data, and this gap increased significantly during the 2010s. They find that wealth concentration rose sharply between 2012 and 2018, indicating a growing disparity between the wealthy and the rest of the population. The most significant insight from this paper is the revelation that official data significantly underestimates wealth concentration, highlighting the increasing inequality in India.

D. Why Should Older People Invest Less in Mutual Funds Than Younger People? : This paper argues that mutual funds are less risky over a young person's long investment horizon, making them more suitable for younger investors. The authors explain that young people have more years of labor income to recover from potential losses associated with mutual fund investments. Additionally, mutual funds can help younger investors meet large financial obligations, such as college tuition for their children. The most critical takeaway from this paper is that younger people should invest more aggressively in mutual funds due to their longer time horizon and ability to recover from market downturns.

Sr. No.	Author Name	Publication Year	Name of Paper	Description
1.	Yash R Rathod, Nishita Thakrar	2024	Assessing The Effectiveness Of Indian Mutual Fund Schemes: A Performance Evaluation	The purpose of this study is to evaluate these schemes' efficacy and offer investors useful information to support their investment.
2.	Santit Narabin; Laor Boongasame	2018	A Cluster Analysis of Mutual Funds Data	This research helps an investor can estimate profit and loss rate of the mutual fund in his/her portfolio by using the net asset value change ratios
3.	IshanAnand, Rishabh Kumar	2023	The Sky and the Stratosphere: Wealth Concentration in India During the Last (Lost) Decade	By combining official surveys and rich lists, we provide new estimates of top wealth shares and total personal wealth in India.
4.	Ravi Jagannathan Narayana R.	2022	Why Should Older People Invest Less in Mutual funds Than Young People	They argue that mutual fund are less risky over a young person's long investment.

3. OBJECTIVES

Several studies have examined mutual fund performance and investor behavior in India. Prior research indicates that equity funds offer high returns over the long term, while debt funds provide stability. Section 2.1 details existing risk-return assessment models, and Sec. 2.2 discusses investor segmentation based on income groups.

Portfolio Allocation Model

Income Group	Debt Funds (%)	Equity Funds (%)	Hybrid Funds (%)
Low-Income	70%	20%	10%
Middle-Income	40%	50%	10%
HNIs	20%	70%	10%

3.1 Risk - Return Assessment Models

Mutual funds are evaluated using financial models such as the Sharpe ratio, Treynor ratio, and Jensen's alpha. These models help in comparing funds based on return per unit of risk.

3.2 Investor Segmentation

Investors are categorized into low-income, middle-income, and high-net-worth individuals (HNIs), influencing their mutual fund preferences. Sec. 3 provides the methodology used to segment investors and assess their investment choices.

4. PROPOSED METHODOLOGY OF SYSTEM

The data scraped from the National Stock Exchange (NSE) undergoes a comprehensive analysis process to ensure accuracy and actionable insights. The first step is **Data Cleaning**, which involves removing errors, duplicates, and inconsistencies, handling missing values, standardizing formats, and correcting inaccuracies to improve data quality for analysis. This is followed by **Data Wrangling**, where raw data is transformed into a usable format through filtering, merging datasets, and reshaping data to create structured datasets ready for analysis. The next phase, **Data Preprocessing**, prepares the data for modeling by normalizing it, encoding categorical variables, and splitting it into training and test sets, optimizing the data for machine learning algorithms.

Once the data is preprocessed, **Data Visualization** is employed to graphically represent the data, using charts, graphs, and maps to reveal trends and patterns, thereby enhancing the understanding of data relationships. This is complemented by the development of an interactive **Dashboard**, which provides real-time data insights through visualizations and key performance indicators (KPIs), offering a centralized view of critical metrics for decision-makers. The insights derived from the dashboard support **Input-Driven Decision Making**, enabling data-backed, informed decisions based on statistical models and data trends. Further, **Portfolio**

Planning helps optimize resource allocation across projects or investments by analyzing performance metrics, risks, and returns on investment (ROI), ensuring balanced and diversified portfolios. Additionally, **Risk Management** is conducted to identify, assess, and mitigate risks using risk analysis, modeling, and contingency planning, which helps minimize potential losses and enhance organizational stability.

4.1 Data Collection and Sources

Primary Data: Investor surveys.

Secondary Data: AMFI reports, SEBI guidelines, and financial statements from mutual fund houses.

4.2 Investment Estimation Formula

We employ the formula:

Estimated investment - : 100 – Age = Equity

Remaining / 2 = Hybrid & Debt

This formula is used to evaluate fund allocation across equity, debt, and hybrid funds.

4.3 Mutual Fund Landscape in India

Types of Mutual Funds

Equity Funds: High risk, high return.

Debt Funds: Low risk, stable returns.

Hybrid Funds: Balanced risk-return approach.

Index Funds & ETFs: Passive investment strategies.

Regulatory Framework

The Securities and Exchange Board of India (SEBI) regulates mutual funds to ensure investor protection and transparency. Recent regulatory changes, such as risk-o-meter updates, have influenced investor choices.

4.4 Equity Fund Analysis

Equity mutual funds tend to provide high returns but involve significant risk. The investment estimation formula applied to equity investments yields insights into risk-adjusted returns.

4.5 Debt Fund Analysis

Debt mutual funds are preferred by risk-averse investors. Applying the investment estimation formula here shows a stable return pattern with lower market volatility.

4.6 Hybrid Fund Analysis

Hybrid funds offer a balanced mix of equity and debt. Using the formula in this context helps determine the proportion of equity and debt allocation for optimal returns.

Fund Category	Average Annual Return (%)	Risk Level
Large-Cap Equity	12%	High
Mid-Cap Equity	16%	Very High
Small-Cap Equity	20%	Very High
Debt Funds	7%	Low
Hybrid Funds	10%	Moderate

5. EXPECTED RESULT AND DISCUSSION

Personalized Investment Recommendations: Users can input their age, investment amount, and risk tolerance to received personalized recommendations on mutual funds that suit their investment profile.

Data-driven Fund Selection: We analyze a vast dataset of mutual fund performance metrics, including returns, volatility, Sharpe Ratio, Sortino Ratio, Alpha, beta, and Standard Deviation. By evaluating historical fund performance and risk characteristics, we identify top-performing funds and present them to users for consideration.

Interactive User Interface: Our intuitive and interactive user interface allows users to explore different mutual fund options, compare fund performance metrics, and make informed investment decisions seamlessly.

6. CONCLUSIONS

The expected results of this mutual fund recommendation system are centered around making mutual fund investing more accessible, personalized, and effective for middle-class investors in India. By empowering users with the right tools, data, and personalized advice, the platform aims to improve financial decision-making, foster long-term wealth creation, and ensure better risk management for investors. As the system continues to evolve, it has the potential to transform how millions of Indians approach investing and grow their wealth, contributing to greater financial inclusion and stability in the country.

REFERENCES

1. Rathod, Y.R., Thakrar, N.: Assessing the Effectiveness of Indian Mutual Fund Schemes: A Performance Evaluation. (2024).
2. Anand, I., Kumar, R.: The Sky and the Stratosphere: Wealth Concentration in India During the Last (Lost) Decade. (2023).
3. Jagannathan, R., Kocherlakota, N.R.: Why Should Older People Invest Less in Mutual Funds Than Younger People? (2022).
4. Harris, T., Adams, R.: Building a Recommendation System for Mutual Funds Based on User Profiles. (2022).
5. Agrawal, D.: Measuring Performance of Indian Mutual Funds. Finance India. (June 2019).
6. Kaur, I.: Mutual Fund Investor's Behaviour Towards Information Search and Selection Criteria: Do Knowledge and Perception About Mutual Funds Matter? Qual. Res. Financ. Mark. 10 (4) (2018) 395–414.
7. Narabin, S., Boongasame, L.: A Cluster Analysis of Mutual Funds Data. (2018).
8. Sharma, S., Gaur, A., Arora, N.: Mutual Fund Performance Evaluation: A Benchmark Comparison. Int. J. Multidiscipline Consort. (2017).
9. Goyal, M.M.: Performance Evaluation of Top 10 Mutual Funds in India. Indian J. Commer. Manag. Stud. 6 (1) (2015) 46–50.
10. Jayadev: Mutual Fund Performance—An Analysis of Monthly Returns. (2012).