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Risk Profiling of Clients and Portfolio Allocation: A Comparative Analysis of Robo-Advisory Mutual Fund Recommendations

Rajeshwari Ganesh Shinde, Prof. Anita Mathapati

School of Business, Indira University, Tathwade, Pune – 411033, Maharashtra, India

ABSTRACT

Risk profiling is the starting point of suitable investment advice, yet the way a stated risk category is translated into a fund-level portfolio is seldom documented. This paper examines that translation using three investment recommendation reports generated by the Robo-Advisor of Infinity Arthvishva, a Pune-based financial advisory firm, during an on-the-job training assignment (25 May to 25 July 2026). The reports cover a ₹5,000 monthly SIP and a ₹10,000 monthly SIP for a Moderate risk profile and a ₹10,000 monthly SIP for a Moderately Aggressive profile, each over a 20-year horizon. Using a document-based comparative method, the study compares equity–debt allocation, fund-category composition, expected growth CAGR and projected values under conservative, expected and optimistic scenarios. The Moderate portfolios hold 44% in equity and the Moderately Aggressive portfolio 60%, with expected CAGRs of 13.50%, 13.59% and 15.22% and expected projected values of ₹56,80,232, ₹1,14,56,372 and ₹1,34,54,022 respectively. Doubling the SIP roughly doubles the projected corpus, whereas moving to the higher risk profile raises both the equity share and the growth assumption. As the projections are algorithmic estimates and not guaranteed returns, the paper recommends standardized recommendation reports that keep contribution level, risk profile and growth assumptions visibly separate.

Keywords: Risk profiling; Portfolio allocation; Robo-advisory; Mutual funds; Systematic Investment Plan (SIP); Asset allocation

1. Introduction

Investment advice is only as sound as the fit between the client and the portfolio. Risk profiling, the assessment of an investor's willingness and ability to take investment risk, is therefore the first stage of the advisory process, and portfolio allocation, the distribution of capital across asset classes and fund categories, is the decision that follows from it. In India, mutual fund distribution and investment advice operate under the Securities and Exchange Board of India (SEBI) framework (SEBI, 1996; SEBI, 2013), while the Association of Mutual Funds in India (AMFI, 2026) performs a self-regulatory and investor-education role. Retail participation has been supported by SIP adoption, digital onboarding and financial-literacy campaigns (AMFI, 2026; IBEF, 2026).

Nomenclature

AMFI	Association of Mutual Funds in India
AUM	Assets Under Management
CAGR	Compound Annual Growth Rate
CAPM	Capital Asset Pricing Model
MPT	Modern Portfolio Theory
SEBI	Securities and Exchange Board of India
SIP	Systematic Investment Plan

Advisory firms increasingly use algorithmic tools to standardize how a client profile becomes a recommendation. Infinity Arthvishva, the host organisation for this study, describes itself as a one-stop financial advisory firm offering end-to-end solutions in loans, investments and wealth management, and its Robo-Advisor generates investment recommendation reports for client review. Each report bundles several different quantities: the stated risk profile, objective and horizon, the monthly SIP, the equity–debt split, fund-level risk labels, historical three-year CAGR, and projected values under three market scenarios. Reading such a report correctly requires keeping these quantities apart, in particular historical CAGR and expected growth CAGR.

This paper analyses three such reports collected during an eight-week on-the-job training (OJT) assignment. It makes three contributions. First, it documents side by side how the same fund universe is weighted under Moderate and Moderately Aggressive profiles. Second, it separates three effects that are easily confused in a recommendation: contribution level, portfolio profile and growth assumption. Third, it derives practical recommendations for the clarity and consistency of recommendation reports.

The remainder of the paper is organized as follows. Section 2 reviews the theoretical background and literature, Section 3 states the objectives, Section 4 describes the methodology, Section 5 presents the data analysis and results, Section 6 discusses the findings, Section 7 covers challenges and limitations, Section 8 gives recommendations and scope for future work, and Section 9 concludes.

2. Theoretical background and literature review

2.1 Portfolio theory and asset allocation

Modern Portfolio Theory (MPT) provides the mathematical foundation for portfolio construction. Markowitz (1952) showed that an investor can combine assets that are not perfectly correlated to improve the risk–return frontier, so risk and return should be judged at the level of the whole portfolio rather than asset by asset. Diversification across equity, debt and arbitrage-oriented categories can reduce unsystematic risk without necessarily sacrificing long-term expected return. Brinson, Hood, and Beebower (1986) reported that asset allocation decisions explain over 90% of the variability of portfolio returns, which makes the allocation decision more consequential than stock selection or market timing.

In the Indian mutual fund context, the categories examined in this study play distinct roles: large-cap funds contribute relative stability, flexi-cap funds provide adaptive allocation, mid-cap funds provide growth potential at higher volatility, and short-duration debt and arbitrage funds support downside preservation.

2.2 Systematic risk and the Capital Asset Pricing Model

The Capital Asset Pricing Model (CAPM) developed by Sharpe (1964) relates expected return to systematic risk. Beta measures the sensitivity of a fund or security to the broader market; higher-risk categories such as mid-cap equity show higher beta. Systematic (market) risk cannot be removed by diversification, whereas unsystematic risk can be reduced through strategic distribution across funds. This distinction explains why even a well-diversified portfolio carries a fund-level risk label.

2.3 Investor risk profiling

Risk profiling evaluates an investor's risk tolerance (psychological comfort with loss), risk capacity (financial ability to withstand loss) and time horizon. A suitable recommendation considers both tolerance and capacity rather than either alone, and psychometric instruments for assessing financial risk tolerance have been developed for this purpose (Grable & Lytton, 1999). Investors are then classified along a spectrum from Conservative to Moderately Aggressive, which determines the mix of high-volatility instruments (equity) and low-volatility instruments (debt and arbitrage). Rules of thumb also set structural limits on capacity; under the Rule of 110, maximum equity exposure is 110 minus age, so an investor aged 45 is capped at 65% equity.

2.4 Algorithmic advisory and portfolio monitoring

D'Acunto, Prabhala, and Rossi (2019) analyzed robo-advisory tools and found that automated portfolio allocation can reduce behavioral biases such as loss aversion and panic selling during drawdowns. Robo-advisory platforms apply allocation rules consistently, for example by capping equity through age-based guard rules or distributing a SIP across fund categories using three-year CAGR. Projections are typically generated under conservative, moderate (expected) and optimistic scenarios, and portfolios are rebalanced when asset weights drift beyond a threshold or at scheduled reviews.

2.5 Regulatory and tax context

The SEBI (Investment Advisers) Regulations, 2013 and the SEBI (Mutual Funds) Regulations, 1996 govern how advisory platforms conduct risk profiling, disclose fees and structure recommendations (SEBI, 2013; SEBI, 1996). For FY 2026–27, the reports note that long-term capital gains on equity funds held for more than one year are taxed at 12.5% above an exemption of ₹1.25 lakh and short-term gains at 20%, while gains on debt funds are taxed at the investor's slab rate. Because taxation is not the focus of this study, these notes are recorded but not interpreted.

The literature reviewed establishes the principles of diversification, systematic risk, risk profiling and algorithmic advice. It does not show how a specific firm's tool applies them to a stated risk category. This study examines that application in a small practitioner case.

3. Objectives of the study

The study has one primary objective supported by two secondary objectives:

Primary objective: to analyze mutual fund allocations across risk categories and align them with the stated risk profile and investment horizon.

Secondary objective 1: to calculate and compare SIP contributions, expected CAGR and projected portfolio values under the scenarios presented in the recommendation reports.

Secondary objective 2: to document and interpret the portfolio recommendations generated for client review, including allocation, risk classification and stated portfolio-review considerations.

4. Research methodology

4.1 Research design and data sources

The study is document-based and analytical. No questionnaire survey or independent customer sample was used. The principal data are three investment recommendation reports generated by the Infinity Arthvishva Robo-Advisor, and company-level information was taken only from the firm's official website. The reports are labelled Report 1 (₹5,000 monthly SIP, Moderate profile, wealth creation), Report 2 (₹10,000 monthly SIP, Moderate profile, retirement planning) and Report 3 (₹10,000 monthly SIP, Moderately Aggressive profile, retirement planning). Client identities are withheld for confidentiality, and the reports are treated as project documents for academic analysis, not as personalized advice.

4.2 Data structure and analytical procedure

The report contents were organized into common fields so that the reports could be compared without altering source values: risk profile, objective, horizon, monthly SIP, expected CAGR, projected value (three scenarios), asset allocation, fund name, category, allocation weight, monthly amount, fund risk label and three-year CAGR. The practical sequence followed is shown in Fig. 1. Allocation totals were checked before use, profile labels were kept alongside objective and horizon, and charts were drawn only from values stated in the reports.

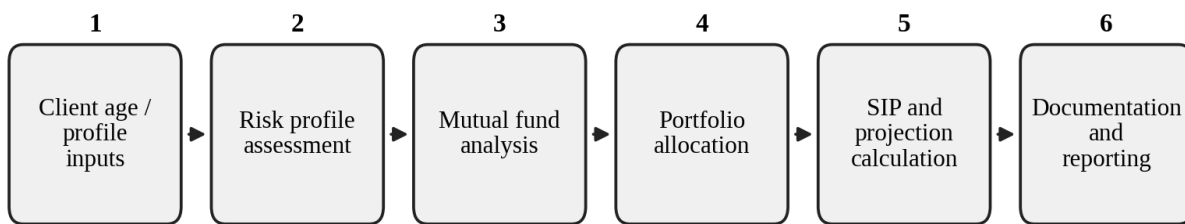


Fig. 1 - Process flow of the analysis, from client profile inputs to documentation and reporting.

Two simple derived measures were computed from the reported values. Total SIP contribution is the monthly SIP multiplied by 12 and by the 20-year horizon, and each projected value is divided by this total to obtain a multiple of contributions. In addition, the weight-averaged three-year CAGR of each portfolio was calculated from the fund-level CAGR and allocation weights. These are comparisons of stated report outputs and not measures of realised return.

5. Data analysis and results

5.1 Comparison of report parameters

The three reports share a 20-year horizon (Table 1). Reports 1 and 2 have the same Moderate profile and 44% equity allocation, but the monthly SIP doubles from ₹5,000 to ₹10,000. Report 3 retains the ₹10,000 SIP but moves to a Moderately Aggressive profile with 60% equity. The expected CAGR is almost unchanged between Reports 1 and 2 (13.50% and 13.59%) and higher in Report 3 (15.22%).

Table 1 - Report parameter comparison.

Parameter	Report 1	Report 2	Report 3
Risk profile	Moderate	Moderate	Moderately Aggressive
Objective	Wealth creation	Retirement planning	Retirement planning
Horizon	20 years	20 years	20 years
Monthly SIP	₹5,000	₹10,000	₹10,000
Equity allocation	44%	44%	60%
Debt / liquid allocation	56%	56%	40%

Parameter	Report 1	Report 2	Report 3
Expected growth CAGR	13.50%	13.59%	15.22%
Expected projected value	₹56,80,232	₹1,14,56,372	₹1,34,54,022

5.2 Portfolio allocation and fund composition

Table 2 lists the funds and weights. Report 1 is a four-fund portfolio with 20.9% in large-cap, 13.4% in flexi-cap, 9.7% in mid-cap and 56.0% in short-duration debt. Report 2 keeps the same equity weights but divides the 56% debt/liquid portion into 39.2% short-duration debt and 16.8% arbitrage, giving a five-fund portfolio. Report 3 raises equity to 60% by increasing all three equity categories, and reduces short-duration debt to 27.9% and arbitrage to 12.0%.

Table 2 - Fund-wise allocation, risk label and three-year CAGR.

Fund (category)	Risk label	3Y CAGR	R1 (%)	R2 (%)	R3 (%)
Nippon India Large Cap (large-cap)	High	12.31%	20.9	20.9	22.2
ITI Flexi Cap (flexi-cap)	High	16.50%	13.4	13.4	22.6
HSBC Midcap (mid-cap)	Very high	24.86%	9.7	9.7	15.3
BOI Short Term Income (short-duration debt)	Low to medium	6.86%	56.0	39.2	27.9
HDFC Income Plus Arbitrage Active FoF (arbitrage)	Low	9.97%	—	16.8	12.0
Equity share as reported			44	44	60

Note: R1–R3 = Reports 1–3. Component weights in Report 3 sum to 60.1% for equity because of rounding in the source report.

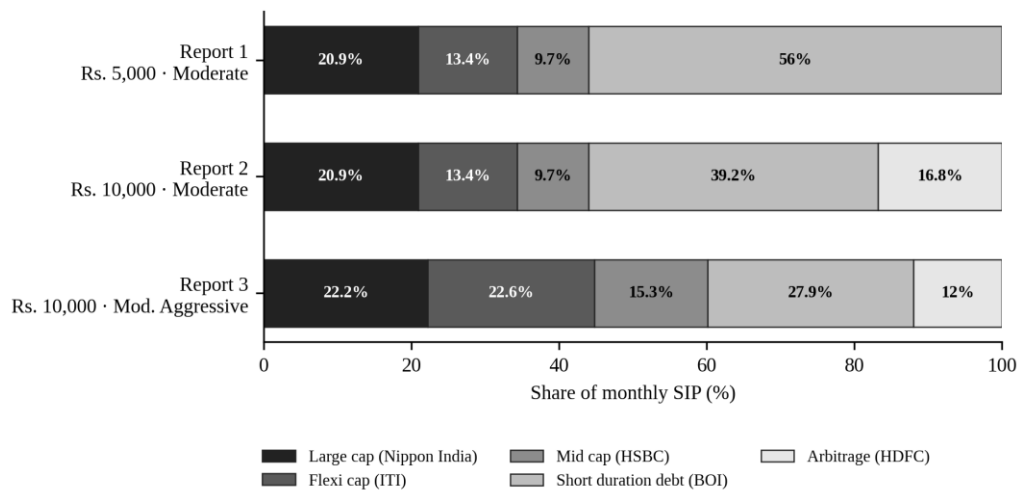


Fig. 2 - Allocation of the monthly SIP by fund category in the three reports.

The shift from Report 2 to Report 3 is not a uniform scaling of equity. Flexi-cap rises by 9.2 percentage points, mid-cap by 5.6 and large-cap by 1.3, so flexi-cap accounts for more than half of the 16-point increase in equity share. The same fund can therefore carry a different weight in different recommendations: Nippon India Large Cap is 20.9% in the Moderate portfolios and 22.2% in the Moderately Aggressive portfolio, and HSBC Midcap is 9.7% and 15.3% respectively. Fund selection alone does not describe a recommendation; the percentage allocation is equally important.

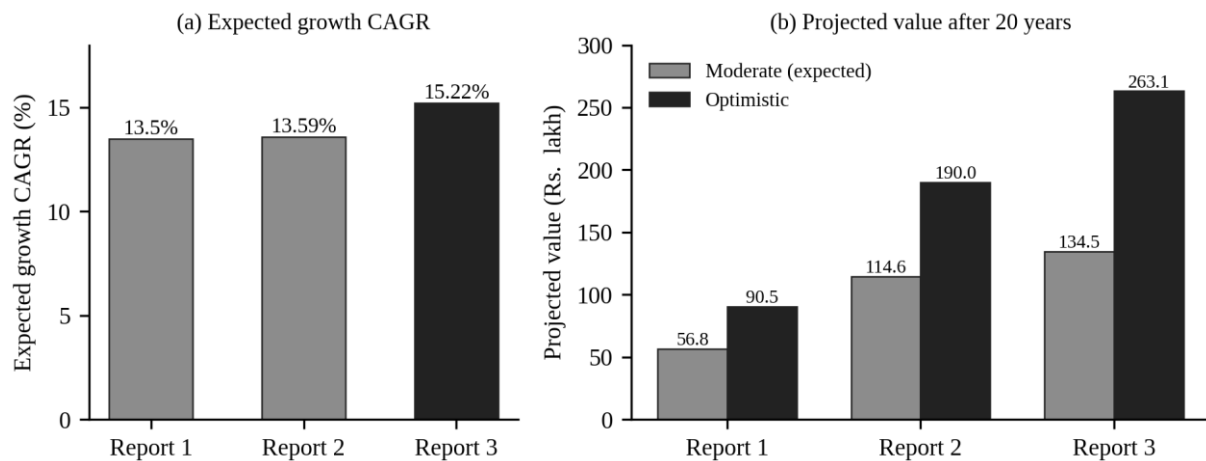
5.3 Expected growth and projected values

Table 3 reports the total 20-year contribution and the projected values. Doubling the SIP from ₹5,000 to ₹10,000 under the same Moderate profile raises the expected projected value by a factor of 2.02, from ₹56,80,232 to ₹1,14,56,372, while the expected CAGR moves only from 13.50% to 13.59%. Report 3 has the same contribution as Report 2 but an expected value 17% higher, reflecting both the more equity-heavy structure and the higher growth assumption (Fig. 3).

Table 3 - SIP contribution and projected values after 20 years.

Measure	Report 1	Report 2	Report 3
Total SIP contribution	₹12,00,000	₹24,00,000	₹24,00,000
Conservative scenario	₹35,40,888	₹69,35,567	n.r.*
Moderate (expected) scenario	₹56,80,232	₹1,14,56,372	₹1,34,54,022
Optimistic scenario	₹90,52,823	₹1,90,04,833	₹2,63,09,537
Expected value ÷ contribution	4.73×	4.77×	5.61×
Optimistic value ÷ contribution	7.54×	7.92×	10.96×

*n.r. = not reported: the conservative value for Report 3 appears inconsistently in the source report, so it is excluded pending verification.

**Fig. 3 - (a) Expected growth CAGR and (b) projected value under the moderate and optimistic scenarios.**

The scenario spread is wide. In Report 1 the optimistic value is 2.6 times the conservative value, and in Report 2 it is 2.7 times, so the reports present a range of outcomes and not a single fixed future amount. The three-year CAGR of the funds must also not be confused with the growth rate used in projections. Weighting the fund-level three-year CAGR by allocation gives 11.04%, 11.56% and 13.38% for Reports 1 to 3, which is 2.46, 2.03 and 1.84 percentage points below the expected CAGRs stated in the reports. The reports do not disclose how the expected CAGR is derived, so this gap is reported as an observation and not as an error.

5.4 Portfolio review guidelines in the reports

The reports state a maximum historical drawdown range of 15–20%, recommend rebalancing when an allocation drifts by more than 10%, and recommend a quarterly portfolio review. The reports also caution that recommendations are algorithmically generated and that future returns are not guaranteed.

5.6 Interpretation against the objectives

The primary objective is addressed by the profile-wise comparison of allocation and fund categories (Tables 1 and 2). The first secondary objective is addressed by the SIP, CAGR and scenario comparison (Table 3 and Fig. 3). The second secondary objective is addressed by documenting the allocation, risk labels and review guidelines in each report.

7. Discussion of findings

Five findings emerge from the comparison.

Risk profile is reflected in allocation. The two Moderate reports allocate 44% to equity and 56% to debt/liquid assets, while the Moderately Aggressive report allocates 60% and 40%. The change appears both in the overall equity share and in its internal composition.

Contribution level drives the size of the projected corpus. Doubling the SIP at an almost unchanged expected CAGR roughly doubles the expected projected value (2.02×).

Diversification is present across categories. All portfolios combine large-cap, flexi-cap, mid-cap and debt categories, with arbitrage added in Reports 2 and 3, giving different risk and return roles within one portfolio, consistent with Markowitz (1952).

Historical and expected measures are different. Three-year fund CAGR is a historical figure, while expected CAGR is a projection assumption. Past performance does not guarantee future returns.

Weights matter as much as fund names. The same funds appear with different weights across risk profiles, so a recommendation must be read as a whole.

Taken together, the findings show three effects that should not be confused: contribution level (Reports 1 and 2), portfolio profile (Reports 2 and 3) and the expected growth assumption. The pairwise design of the three reports isolates the first two effects and makes the set a small but useful comparative dataset. The pattern is consistent with the view that allocation, and not individual fund choice, is the main lever in portfolio construction (Brinson et al., 1986).

8. Challenges and limitations

Two practical challenges arose. The reports used different structures and objectives (a four-fund wealth-creation portfolio and two five-fund retirement portfolios), so a common comparison structure had to be built without changing source values. Historical three-year CAGR, expected CAGR and projected values also appear together in the reports and had to be kept separate. These were addressed by a standard data structure, cross-checking of allocation totals, retention of source terminology, and charts limited to reported values.

The study has the following limitations. It rests on three reports and on public company information, so it supports no statistical inference about a wider population of investors. The algorithm, the market-data inputs and the accuracy of the projection scenarios were not independently verified. No primary survey was conducted. Company financial parameters, competitor market share and sector size were not disclosed in the permitted sources and are not reported. The findings are therefore document-based observations, and not conclusions about investment performance.

9. Recommendations and scope for future work

The main recommendation is a standardized format for preparing and reviewing recommendation reports. Every report should show the investor's risk profile, objective and horizon, monthly SIP, equity and debt allocation, fund-wise allocation and risk classification, historical CAGR, expected CAGR and projected values together. This can be implemented as a common template or checklist applied in a fixed order: confirm profile and objective, then horizon and SIP, then check that the equity–debt split suits the risk category. The expected benefit is better comparison, improved documentation and more consistent recommendations, and it would help an adviser explain whether a difference between two recommendations comes from contribution level, risk profile, horizon, portfolio structure or the return assumptions.

Future work can extend the analysis to a larger set of reports covering Conservative, Moderate and Aggressive profiles, a wider range of fund categories, SIP amounts and horizons, and can test whether differences in recommendations arise mainly from risk profile, contribution level, portfolio structure, fund selection or projection assumptions. A simple digital checklist containing the fields above could also speed up and systematize the review process.

10. Conclusion

The three recommendation reports show a visible link between risk profile and asset allocation: Moderate profiles use 44% equity and the Moderately Aggressive profile uses 60%, with the increase distributed unevenly across equity categories. The SIP amount has a strong visible relationship with the projected corpus, and the expected growth assumption adds a further, separate effect. Because the projections are algorithmic estimates, they should be read together with the stated profile, horizon, SIP and scenario definitions, and not as promised outcomes. Clear, standardized documentation that keeps these elements side by side is the main practical lesson of the study.

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References

- Association of Mutual Funds in India (AMFI). (2026). Mutual fund industry overview. Retrieved August 20, 2026, from <https://www.amfiindia.com>
- Brinson, G. P., Hood, L. R., & Beebower, G. L. (1986). Determinants of portfolio performance. *Financial Analysts Journal*, 42(4), 39–44.
- D'Acunto, F., Prabhala, N., & Rossi, A. G. (2019). The promises and pitfalls of robo-advising. *The Review of Financial Studies*, 32(5), 1983–2020.
- Grable, J. E., & Lytton, R. H. (1999). Financial risk tolerance revisited: The development of a risk assessment instrument. *Financial Services Review*, 8(3), 163–181.
- India Brand Equity Foundation (IBEF). (2026). Financial services industry report. Retrieved August 20, 2026, from <https://www.ibef.org/industry>
- Infinity Arthvishva. (2026). Investment recommendation reports (Client cases A, B, C, D) [Internal organizational data].

Markowitz, H. (1952). Portfolio selection. *The Journal of Finance*, 7(1), 77–91.

Securities and Exchange Board of India (SEBI). (1996). SEBI (Mutual Funds) Regulations, 1996. Retrieved August 20, 2026, from <https://www.sebi.gov.in>

Securities and Exchange Board of India (SEBI). (2013). SEBI (Investment Advisers) Regulations, 2013. Retrieved August 20, 2026, from <https://www.sebi.gov.in>

Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *The Journal of Finance*, 19(3), 425–442.