Algorithmic Portfolio Optimization for Retail Investors: Robo-Advisor Performance

Hasmukh Devidas Rathod

Adikavi Nannaya University, Rajamahendravaram, Andhra Pradesh, India

Abstract: *This article explores the potential of Robo Advisors to revolutionize capital market investing for small investors. It discusses how technological advancements in financial services can offer cost efficient, accessible, and personalized investment strategies that are traditionally available only to high net worth individuals. The article examines the benefits of Robo Advisors, including lower fees, diversification, and ease of access, and argues for their growing importance in democratizing investment opportunities.*

Keywords: Separately Managed Accounts, Financial Advisors, Robo - Advisors, Small Investors, Capital Markets, Financial Technology, Investment Strategies

1. Background

A comprehensive literature review and market analysis were conducted to evaluate the features and benefits of Robo Advisors for small investors [4] [5]. The study highlights the transformative potential of Robo Advisors in leveling the playing field for small investors, making advanced financial strategies accessible to a broader demographic. Financial advisors provide managed account services to high net worth individuals. The minimum balance to open a separately managed account could be as high as $100, 000. The account management fee charged on (separately managed accounts) SMA is high. SMA is an investment account owned by an individual investor, managed by a professional investment manager or firm, that offers several distinct features, such as:

1) **Personalized Management:** SMAs provide customized investment portfolios based on the investor's specific financial goals, risk tolerance, and preferences. This personalized approach contrasts with mutual funds or ETFs, which offer a one - size - fits - all strategy.
2) **Direct Ownership:** Investors directly own the underlying securities (such as stocks, bonds, or other assets) within their SMA. This differs from mutual funds or ETFs, where investors own shares of the fund, not the individual securities within the fund.
3) **Transparency:** Investors have full transparency regarding the holdings and transactions in their SMA. They can see exactly what assets are in their portfolio and how they are performing.
4) **Tax Efficiency [3]:** SMAs offer tax advantages such as tax - loss harvesting, where losses can be used to offset gains and reduce taxable income. This personalized tax management is often more effective than pooled investments.
5) **Customization:** SMAs can be customized to fit specific needs or restrictions, such as ethical or socially responsible investing, sector preferences, or avoiding certain types of securities.
6) **Professional Management:** The account is managed by professional portfolio managers or investment firms who make investment decisions on behalf of the investor, aiming to achieve the investor's financial objectives.
7) **Flexibility and Control**: Investors have more control over their investments and can make adjustments based on their preferences and changing market conditions.

In summary, SMAs offer a high degree of customization and professional management, making them suitable for investors who seek personalized investment solutions and have the resources to meet the minimum investment requirements.

2. Problem

All the features provided for SMAs by financial advisories are only targeted at high net worth individuals. SMAs can have higher management fees compared to other investment options, such as mutual funds or ETFs, which might offset some of the benefits for smaller investors. The minimum investment required for an SMA can be significantly higher, making it less accessible for small investors.

3. Solution

Robo - advisors offer a compelling option for small investors due to their cost efficiency, accessibility, and ability to provide diversified, personalized investment strategies. By leveraging technology and data - driven approaches, robo - advisors can help small investors achieve their financial goals with greater ease and efficiency compared to traditional investment methods.

Robo Advisor sounds like the system is autonomously performing trades on behalf of its customers. However, the portfolios are reviewed periodically at the fund level by portfolio managers. Robo advisor accounts are optimized quarterly and as needed, unlike the daily or weekly optimizations performed for managed accounts with dedicated advisors who charge premium fees.

Based on the risk assessment questionnaire answered by the customer, the system would assign the customer a predefined mix of stocks and bonds. This is the reason why the fee for robo advised account management is very low. There is less involvement of the advisor and hence less frequency of account optimization.

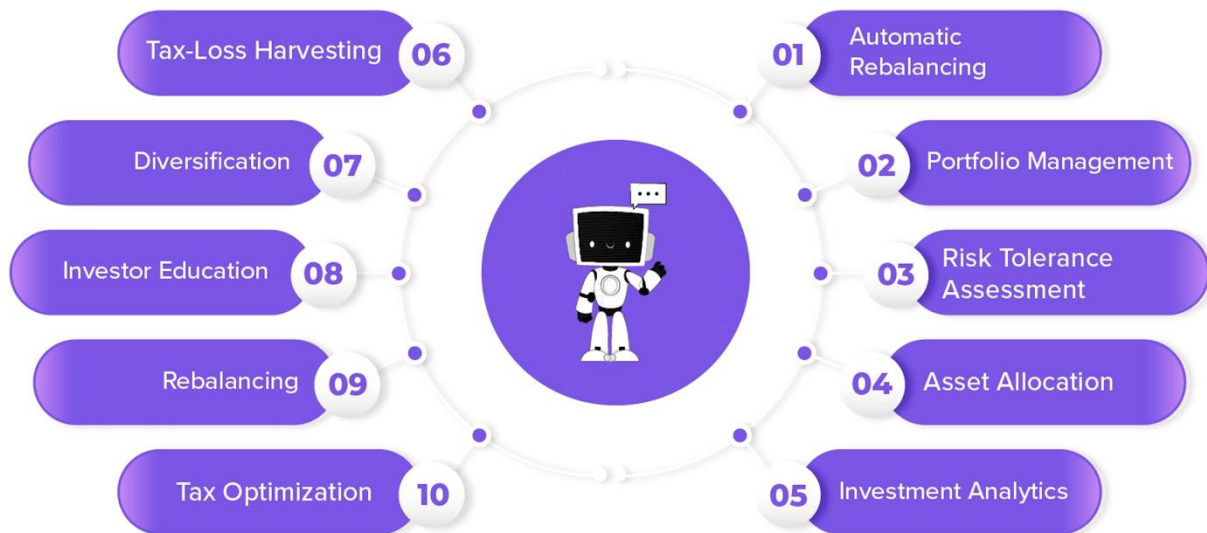A typical robo - advisory platform has several features, as described in the sections below.

Figure 1: Multiple Features of a Robo - Advisor Platform [1]

Technology should be leveraged to enable everyone to invest in the capital markets. With the advancement of technology, robo - advisory solutions can be built using market research, data analytics, Artificial Intelligence (AI) and Machine Learning (ML). Here are some of the key features explained in detail for robo - advisory solutions:

1) **Data - Driven Decisions**: Robo - advisors utilize advanced algorithms and data analytics to optimize investment decisions, which can lead to more informed and effective investment strategies compared to manual methods. Robo - advisors can incorporate behavioral finance principles to help investors avoid common psychological pitfalls, such as panic selling during market downturns.

2) **Personalized Investment Strategies:** While robo - advisors use algorithms, they still offer personalized investment strategies based on individual profiles. This includes adjustments for risk tolerance, investment goals, and time horizons. They frequently offer automatic rebalancing, which helps maintain the desired asset allocation over time and ensures the portfolio remains aligned with the investor's goals.

3) **Diversification [4] [5]:** Robo - advisors can use algorithms to create diversified portfolios tailored to an individual's risk tolerance, investment goals, and time horizon. This helps small investors achieve a level of diversification that might be difficult to achieve on their own due to limited funds. They often use low - cost index funds, or ETFs, which provide exposure to a broad range of asset classes, reducing the risk associated with individual investments.

4) **Convenience**: Investors can manage their portfolios and access account information anytime through online platforms, providing a level of convenience that traditional advisory services might not offer. Robo - advisors allow for automatic contributions and withdrawals, simplifying the process of regularly investing or adjusting savings.

Advantages of building Robo - Advisors:

1) **Cost Efficiency [2]:** Robo - advisors typically charge lower management fees compared to traditional financial advisors. This is largely due to their automated processes and reduced need for human intervention. For small investors, these lower fees can translate into more money remaining in their investment accounts. Many robo - advisors are transparent about their fees, with clear structures that make it easy for investors to understand what they're paying for.

2) **Accessibility:** Robo - advisors often have low or no minimum investment requirements, making them accessible to small investors who may not meet the minimum thresholds set by traditional financial advisors. Robo - advisors offer intuitive online platforms and mobile apps that allow investors to easily manage their portfolios, track performance, and make adjustments.

3) **Educational Resources:** Some robo - advisors provide educational resources and tools to help investors understand their investments and make informed decisions. This can be particularly valuable for those who are new to investing.

4) **Transparency:** Robo - advisors often provide clear, transparent communication about portfolio performance, fees, and investment strategies, which can help build trust and keep investors informed.

5) **Scalability:** As investors' financial situations change, robo - advisors can scale their services to meet evolving needs without requiring significant changes in the management approach.

4. Conclusion

Robo - advisors have gained significant traction in recent years as a viable option for small investors in capital markets. By leveraging advanced technologies, these platforms can democratize financial services, allowing small investors to benefit from the same sophisticated investment strategies traditionally reserved for high net - worth individuals. The adoption of Robo Advisors represents a significant step towards more inclusive financial markets. Investing in capital markets using robo - advisory is a key component of financial

growth and stability for individuals. However, it's important to choose the right financial institute with experience in capital markets and asset management for the continued growth of small investor wealth.

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