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A Comprehensive Study On The Adoption And Effectiveness Of Robo-Advisory Platforms Within India's Wealth Management Industry And An Evaluation Of Their Effect On Investor Behavior And Returns.

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Abstract: This study extensively investigates the effectiveness and adoption of robo-advisory systems in India's emerging wealth management industry. Robo-advisory has become a technologically innovative solution for investment guidance and financial management. In India, which is experiencing rapid expansion, understanding the changing dynamics of robo-advisory and its effect on the behavior of investors and their returns becomes crucial. The study uses an integrated approach that blends an analysis of the adoption rate and performance metrics of robo-advisory platforms and a qualitative analysis of investors' perceptions and preferences. The research employs a variety of data sources to examine trends in historical adoption along with platform-specific data and feedback from investors.

***Index Terms*: Robo-advisory, wealth management, adoption, effectiveness, investor behavior, investment returns, India.**

Introduction: Artificial intelligence has permeated various aspects of human life, including business, employment, healthcare, and education. In finance, there is a shift away from traditional methods reliant on extensive paperwork and repetitive decision-making processes in a mechanized manner for many individuals. Initially, machines were efficiently programmed to perform mechanical tasks. However, the current trend involves programming machines to scrutinize provided information, analyze it, and provide intelligent solutions akin to human advisors. These machine advisors, known as robo-advisors, have been adopted by numerous wealth management companies, yielding promising results. Additionally, some firms have embraced hybrid robo-advisory services, where human advisors complement the automated system (Singh, I., & Kaur, N. (2017). Robo Advisories addresses the primary drawback of traditional investment advice, which is the restricted accessibility due to high management costs and minimum asset requirements, by employing artificial intelligence and algorithms. (Nicoletti, B., Novick, B., Lu, B., Fortin, T., Hafizi, S., Parkes, M., Barry, R., Reher, M., Sun, C., Saad, L., & Schapiro, K. (2017)). The wealth management and maximization process invariably involve making investment decisions, which is consistently recognized as one of the most critical components. This procedure entails evaluating several significant elements, including investors' risk tolerance and preferences for asset allocation. Additionally, another crucial factor that exerts influence is the ability and knowledge of the investment manager to play a significant part in the success of an investment plan—determining the best suitable unbiased approach for each client. However, acknowledging the potential for manual errors and the restricted knowledge in specific domains might be attributed to the limitations of human skills.

The wealth management and maximization process entails making investment decisions, which are consistently considered critical. This procedure entails the examination of several significant criteria, including the risk tolerance of investors and their preferences for asset allocation, among others. Additionally, another crucial determinant that significantly influences the efficacy of an investment strategy is the investment manager's competence and expertise in making impartial and suitable decisions tailored to each client's unique needs. However, it is essential to acknowledge that manual errors and limited knowledge in certain areas due to human capabilities, coupled with the high advisory fees charged by Traditional Investment managers, can hinder effective investment planning and processes. Robo advisory is a significant advancement in the banking business, serving as a comprehensive safeguard against potential human errors or oversights that may arise during the financial process. This paper aims to present a comprehensive analysis of the advantages of Robo advisory services for middle-income investors. This group faces challenges due to the disparity between investment expectations and the associated costs of obtaining advisory services. Additionally, the issue of meeting minimum investment requirements further compounds their limitations. Consequently, this study will investigate the potential of Robo advisors in addressing these constraints and assisting middle-income investors in achieving their financial goals. This paper will also examine the uncertainty surrounding whether Robo advisors, despite their high efficiency, can supplant the roles of traditional investment advisors. This consideration considers various factors, such as providing psychological assistance or support, which clients typically expect as a fundamental service requirement. This support is necessary to address their needs and inquiries, particularly regarding customization based on their ethical values, family background, and other relevant considerations.

This study investigates the use and efficacy of robo-advisory systems in India's thriving wealth management industry. While the traditional wealth advice model is also under threat, it is imperative to examine the extent to which robo-advisors are permeating the Indian investing landscape. We will also examine the factors influencing their acceptance and impact on investor behavior and returns. By analyzing these multifaceted aspects, this research aims to enrich the discussion of academic research on technological adoption in finance and a real-world understanding of the changing relationship between the advisor and the investor.

1.1 The background and motivation: Traditional wealth management services in India were once defined by human advisors interacting directly with investors. But with advances in artificial intelligence and data analysis coming to bear, technology-based solutions such as Robo-advisory platforms offering algorithmically driven financial recommendations based on risk tolerance, goals, and market outlook have disrupted this model, raising important questions regarding its applicability, efficacy, and their broader consequences in Indian settings.

1.2 Research Objectives

The following overarching goals have supported its research:

- To thoroughly review the literature and determine the current adoption of robo-advisory technology within the Indian wealth management industry.
- To comprehend the reasons that affect investors' decision to use or deny robo-advisory.
- To assess robot-advisors' impact on investor behavior, such as risk perception, decision-making processes, and investment decisions.
- To study the performance of investment portfolios supervised by robo-advisors and to evaluate their effectiveness as a group in producing yields.
- To provide information and suggestions for wealth management companies and officials on integrating robotic advisors into the financial advisory market.

1.3 The Research Question: In pursuit of the research goals, the study aims to answer the following major concerns:

- What is the degree of acceptance of robo-advisory services in Indian investors?
- What are the main factors behind the acceptance or decline of robo-advisory?
- How do robo-advisors impact the behaviour of investors, their perception of risk, and investment decision-making?
- What is the performance of portfolios of investments run by robo-advisors in terms of risk-adjusted return?
- What implications do these results hold for the wealth management companies, regulators, investors and other players in the Indian financial system?

1.4 Importance to The Study: This study has a substantial impact on various stakeholders. Investors must consider the potential benefits and drawbacks of integrating robot-advisory platforms into their clients' investment strategy, as it is of utmost importance. Wealth management firms have the opportunity to gain insights on how to tailor their services to align with evolving client tastes. Policymakers and regulators can gain advantages from a more detailed understanding of the regulatory challenges and possibilities arising from the rise of robo-advisory. Moreover, this study contributes to the existing body of literature that examines the acceptability of financial technology (FinTech), investor behavior, and the effectiveness of algorithmic financial services in emerging economies like India. The core principle of robo-advisors is the utilization of a company's proprietary algorithm, which successfully eliminates emotional biases from the investment process. This algorithmic technique seeks to help investors get higher returns at a lower cost compared to traditional human financial advisors.

Robo-advisors are financial systems provided by brokerage firms that utilize technology. The term "comprehensive designation" refers to investment managers and software systems that utilize complex computer algorithms to oversee investment portfolios. Some robo-advisors function with complete automation, while others offer the option for users to get human assistance. Regardless of the particular model, all of them provide customer care to assist individuals along the process.

1.5 Methodology of the Study: This study employs a quantitative methodology to conduct bibliometric analysis, utilizing data from databases of multiple ISSN periodicals. The data-gathering technique comprises selecting precise search criteria, such as keywords and publication dates and meticulously documenting bibliographic information of relevant scholarly works. The sampling technique possesses explicit criteria for both inclusion and exclusion, as well as a predetermined deadline for the literature under consideration. The process of identifying variables encompasses independent factors such as the year of publication and authorship, as well as dependent factors such as citation counts and network metrics. This research aims to ensure the reliability of data by doing comprehensive cross-verification to ensure accuracy and consistency, while also considering the potential for inter-rater reliability. The research is driven by ethical concerns that prioritize rigorous adherence to copyright restrictions and, when applicable, the acquisition of informed consent. The work accepts methodological limitations, such as inherent biases in bibliometric analysis, and provides measures to consider for generalizability.

1.6 Theoretical Framework:

a) The Technology Adoption Model (TAM) is a conceptual framework employed to comprehend and forecast the acceptance and utilization of novel technologies by individuals.

- **Perceived Usefulness:** This element evaluates the degree to which investors perceive robo-advisory platforms as valuable instruments for wealth management. The study seeks to evaluate investors' viewpoints on the benefits and advantages of utilising robo-advisors in contrast to conventional wealth management tactics.
- **Perceived Ease of Use:** This aspect evaluates the user-friendliness and accessibility of robo-advisory systems for investors. This study examines the user-friendliness, comprehensibility, and interactivity level of these platforms, which can impact investors' inclination to utilize them. Actual usage refers to the practical implementation of robo-advisors by investors. The assessment entails quantifying the degree to which investors have included robo-advisory services in their wealth management strategies and the frequency with which they utilize these platforms.

b) Agency theory

- **Principal-Agent Relationship**:The principal-agent relationship in robo-advisory platforms pertains to the association between investors (principals) and robo-advisors (agents). This study investigates the obligations and tasks of each individual involved in the investment process.
- **Robo Advisors as Agents**: This section analyses the attributes and actions of robo-advisors functioning as agents. This study investigates the operating procedures of automated systems in carrying out activities for investors, the algorithms they utilize, and their capacity to prioritize investors' concerns.
- **Actual Usage:** Understanding the objectives and incentives of investors is essential within the agency theory framework. The process entails evaluating the goals and incentives of investors while utilizing robo-advisors, such as safeguarding wealth, increasing capital, mitigating risk, or achieving cost-efficiency.

c) Investment Portfolio Theory:

- **Asset Allocation and Diversification**: As assessed by portfolio theory, asset allocation, and diversification entail the strategic distribution of investments within a portfolio. Within the realm of robo-advisors, this component focuses on the evaluation and execution of techniques used by these platforms to allocate assets to help investors attain their financial goals.
- **Risk Return Trade-off:** The risk-return trade-off examines how robo-advisory systems manage the level of risk and the potential return in investing portfolios. It involves assessing how these algorithms measure investors' willingness to take risks and create investment portfolios that match their desired balance between risk and profit.
- **Robo-Advisory Portfolio Construction:** The Robo-Advisor Portfolio Construction component pertains to the techniques and algorithms utilized by robo-advisors to establish and manage investment portfolios. The procedure involves choosing assets, implementing rebalancing protocols, and continuously monitoring the portfolio. The components within the conceptual framework offer a systematic approach to examining the adoption and efficacy of robo-advisory platforms in India's wealth management sector and their influence on investor behaviour and returns. These components serve as a basis for researchers to formulate hypotheses, gather data, and evaluate the results of their study.

1.7 Robo Advisories in India: Five robo-advisory firms are operating in India. Optimizing the process of financial planning Similar to the well-known robo-advisory platforms Betterment and Wealth Front in the United States, and Nutmeg in the United Kingdom, India has also witnessed the rise of other prominent robo-advisory enterprises. These companies are utilizing automated web solutions to offer streamlined financial planning services. Now, let's examine five well-known robo-advisors in India in greater detail:

1. Arthayantra is a website located at www.arthayantra.com.

Arthayantra asserts its status as one of India's most ancient and pioneering online financial consulting platforms. This firm, situated in Hyderabad, focuses on automated personal money planning. They have been assisting individuals in optimising their financial objectives using state-of-the-art technology.

2. The website BigDecisions (www.bigdecisions.com)

BigDecisions, although not exclusively a robo-advisor, is an excellent tool for making well-informed financial decisions. Their website provides comprehensive information on investment, retirement planning, home loans, life insurance, and other related topics. It functions as a comprehensive tool for making financial decisions.

FundsIndia is a website accessible at www.fundsindia.com.

FundsIndia is recognized as one of the leading robo-advisory firms in India. They have established a strong presence with a track record of embracing new technologies and an expanding clientele. Nevertheless, certain users perceive their platform as somewhat intricate. FundsIndia mainly offers ordinary funds.

4. Scripbox is a website that can be found at scripbox.com.

Scripbox is a user-friendly platform that streamlines mutual fund investments, namely through systematic investment plans (SIPs). Their comprehensive and methodical advice simplifies the process of initiating investments for individuals. Nevertheless, a constraint exists in the form of limited fund diversity, restricting consumers to investing solely in funds selected by Scrip box. Scrip box, like Funds India, provides access to regular money.

5. The website for MyUniverse ZIPSIP is myuniverse.co.in/zipsip.

MyUniverse ZIPSIP, a recent addition to India's robo-advisory sector, is a product of the Aditya Birla Group. They typically prioritize mutual fund investments through systematic investment plans (SIPs). The platform has implemented a proactive marketing strategy to surpass the competition in India's swiftly expanding robo-advisor industry.

Robo-advisory organizations are transforming Indians' financial planning approach, enhancing accessibility and convenience. Regardless of your experience in investing, these platforms provide a variety of choices to assist you in attaining your financial objectives.

1.8 The current level of adoption of robo-advisors in the Indian financial Market: The concept of robo-advisory has been present for a few years, and although it is already a significant sector worldwide, it is rapidly gaining momentum in India as well. Robo-advising is the term used to describe digital platforms that offer financial advisory services using fully automated software driven by artificial intelligence (AI), with minimal human involvement. Although humans design the code, the parameters or filters it employs to select

suitable stocks or recommend replacing current stocks in a portfolio are solely dependent on characteristics such as valuations, governance, and performance, among others.

To put, it does not consider any human prejudice or emotion. Usually, when someone signs up, these bots or platforms inquire about a few questions. This process is primarily conducted to comprehend an individual's risk profile and investment objectives. Based on this assessment, the AI system recommends suitable equities, mutual fund schemes, or exchange-traded funds (ETFs). In a consultation paper released in 2016, the Securities and Exchange Board of India (Sebi), the capital markets regulator, defined robo-advisors as "wealth management firms that offer automated assistance for all financial advisory services without any human involvement... Without human intervention, robots assist investors in several areas, such as trading, investment, portfolio rebalancing, and tax saving. The system utilizes predetermined algorithms and analytics to compute optimal returns and plans tailored to each user's specific needs and preference

A study conducted by Mathias Awuni. "Robo-Advisory: The New Paradigm in Asset Management or a Millennial Fad?" mentions that the value of assets under management in India in the robo-advisors segment amounted to just $7 million in 2017. However, experts anticipate that the total value of assets under management with robo-advisors in India will be worth approximately $100 million by 2021, with an expected 200,000 traders and investors using robo-advisors by that time. The study also highlights the significant growth trajectory of robo-advisors in India, with a compound annual growth rate of 97.4% between 2017 and 2021. These findings suggest a notable and rapidly increasing adoption of robo-advisors in the Indian market.

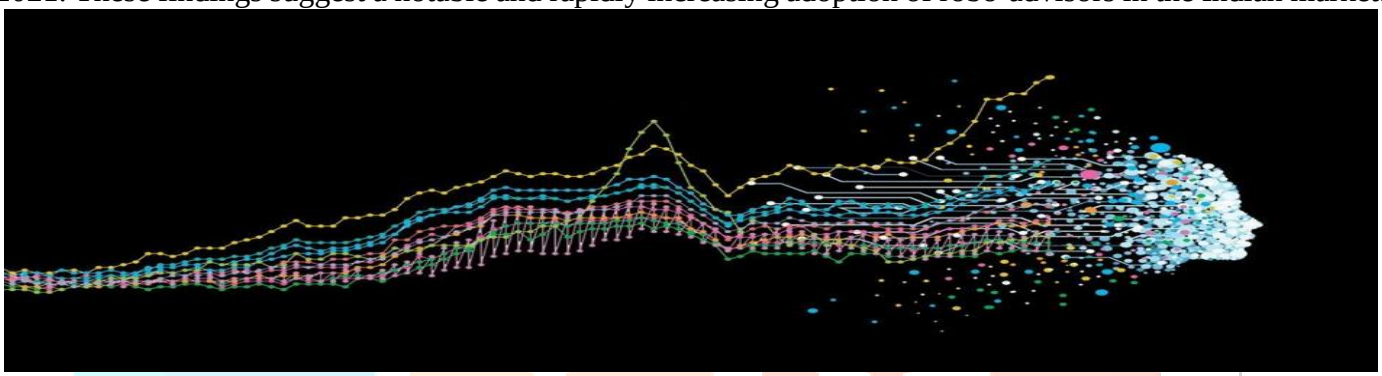

Illustration by Nilanjan Das

1.9 Current market trends in Robo Advisory: The current market trends of robo advisors in India indicate a significant growth trajectory. As of 2024, assets under management in the Robo-Advisors market in India are projected to reach approximately $19.76 billion. This market is expected to demonstrate a compound annual growth rate (CAGR) of 9.21% from 2024 to 2027. Globally, the Robo-advisory Services Market size is anticipated to grow from $8.74 billion in 2023 to $34.72 billion by 2028, at a CAGR of 31.78% during the forecast period (2023-2028). This growth is primarily attributed to the rapid digitization of the Banking, Financial Services, and Insurance (BFSI) industry, which has accelerated the expansion of digital investments where Robo-advisors play a crucial role.

Moreover, the global robo-advisory market, as reported by The Business Research Company, has witnessed extraordinary growth, which positively influences the Indian market as well. However, it's important to note that robo-advisory is still a developing business in India, with only a handful of startups operating in this space as of May 2021. This suggests that while the sector is increasing, it is still in its early stages of development in India.

On a global scale, the robo-advisory market was valued at USD 4.13 billion in 2021 and is expected to grow at a CAGR of 29.7% from 2022 to 2030. This global growth trend will likely influence the Indian market, given the interconnected nature of financial technology and investment services.

2.0 Investors' Perceptions regarding Robo advisors in India: Retail investors are optimistic about the future of artificial intelligence (AI) in wealth management, emphasizing the importance of transparency, security, and simplified processes in Robo advisory services to enhance customer satisfaction and adoption. However, there is a need for professional advice to improve portfolio yields, and Fintech startups in India should focus on enhancing retail investors' understanding of Robo advisory services and their implications.

2.1 Robot advisors' impact on investor behavior, such as risk perception, decision-making processes, and investment decisions:

Robo-advisors, with their integration of artificial intelligence and digital services, are increasingly influencing investor behavior in various ways:

- **Impact on Disposition Effect:** C. Back et al. (2023) A study investigated the impact of investment advice from robo-advisors on the disposition effect, an investor's tendency to sell assets that have increased in value while retaining assets that have dropped in value. This study used a control group and a robo-advisor group to assess how robo-advisors might influence this behavior.
- **Addressing Behavioral Biases:** Ankita Bhatia, Arti Chandani, Jagriti Chhateja (2020): The rise of robo-advisory services is about automation and addressing behavioral biases in financial decision-making. Robo-advisors are gaining attention for their potential to guide investors in a digitally fast-paced world, suggesting a shift in how financial decisions are approached and executed.
- **Investment Decision Assistance:** Financial robo-advisors play a significant role in assisting individuals with investment decisions. This assistance is crucial in reducing uncertainties in the investment process, indicating that robo-advisors may help investors make more informed and confident decisions.
- **Influenced by Individual Characteristics**: Research has shown that retail investors' characteristics can influence their decision to invest through a robo-advisor. This finding highlights the personalization aspect of robo-advisory services, where investment portfolios, typically consisting of stock and bond index funds, are often tailored to the individual's preferences.
- **Improvement in Investment Decisions:** Studies have explored whether and why investment advice from robo-advisors can improve individual investment decisions. This research delves into the effectiveness of AI-enabled digital service agents in enhancing the quality of financial decisions investors make.

2.2 Performance of investment portfolios supervised by robo-advisors and to evaluate their effectiveness as a group in producing yields:

(Front. Artif. Intell., 18 September 2020) In the regression analysis conducted, it was demonstrated that the number of portfolios offered by robo-advisors did not significantly influence portfolio recommendations, thus not causing cross-firm variations. However, robo-advisors with more expertise in equities tended to base their recommendations on this asset class. For these robo-advisors, the recommended share of equity was higher. Conversely, if the robo-advisor had more fixed-income expertise, the weight toward equity in the recommended asset allocation was lower. Robo-advisors have shown the capability to cater to the individual risk profiles of investors and are influenced by factors like their asset class expertise and geographical location. However, the industry faces challenges regarding trust, profitability, and legal uncertainties, indicating the need for more standardized practices and regulations. Despite these challenges, robo-advisors represent a significant evolution in investment management, providing automated, personalized portfolio recommendations based on sophisticated algorithms and investor data.

2.3 Conclusion: Individuals' propensity to embrace robo-advisors is determined by their proficiency in effectively managing investments. Moreover, efficacy can be attained by possessing a restricted yet robust understanding of finance, which can be enhanced by remaining abreast of financial matters. Understand market trends and establish clear financial objectives while being open to taking appropriate risks. Trust is developed by providing transparent information and disclosure procedures, while perceived usability is enhanced by having a user-friendly design and clear, accessible instructions. These three elements have a crucial influence on an individual's preparedness to adopt robo-advisory services. Robo-advisory is a cutting-edge method that aims to provide affordable and customized investment services to a wide range of people using algorithmic technologies.

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