International Journal of Advance and Innovative Research
Volume 11, Issue 3 (III): July – September 2024
ISSN 2394 - 7780

AN EVALUATIVE STUDY OF THE IMPACT OF ROBOTIC ADVISORS ON INVESTOR PERCEPTION, DECISION-MAKING, AND PORTFOLIO MANAGEMENT STRATEGIES"

Alka Sharma[1], Monideepa Das[2] and Dr. Pragya Dheer[3]
[1]Research Scholar, [1]Department of Commerce & Management, University of Kota, Kota, Rajasthan
[2]Assistant Professor, Department of Commerce & Allied Studies, Tilak College Of Science & Commerce, Vashi, Navi Mumbai.
[3]Research Supervisor and Assistant Professor**,** Department of Commerce & Management, University of Kota, Kota, Rajasthan
[1]alka.aan.sharma@gmail.com, [2]monideepadas91@gmail.com and [3]pragyadheer@uok.ac.in

ABSTRACT
This study investigates the influence of robotic advisors (robo-advisors) on investor perception, decision-making processes, and portfolio management strategies. Specifically, it aims to evaluate the level of trust investors place in robo-advisors compared to traditional human advisors, measure investor satisfaction with robo-advisor services, and analyze demographic differences in their adoption and perception. Using a mixed-methods approach, data were collected through surveys and interviews targeting a diverse group of investors. The study employs ANOVA and multiple regression analyses to test the hypothesis that investor perception significantly impacts the use of robo-advisory services.

Our findings indicate that while investors generally trust robo-advisors for their ease of use and responsiveness, there remains a noticeable preference for traditional advisors due to the perceived lack of personalized interaction with robo-advisors. Satisfaction levels are higher among younger, technologically proficient investors who appreciate the efficiency and accessibility of robo-advisors. Conversely, older and more experienced investors exhibit skepticism towards automated investment solutions.

Furthermore, the study reveals that robo-advisors significantly influence investor decision-making by encouraging better portfolio diversification and appropriate risk management. Demographic analysis using ANOVA highlights significant differences in the adoption rates and perceptions of robo-advisors across age, income level, investment experience, and technological proficiency.

In conclusion, the research underscores the growing impact of robo-advisors on the investment landscape, particularly among younger investors, while also identifying areas for improvement in building trust and personalization. These insights are valuable for financial firms seeking to enhance their robo-advisory services and better meet the needs of diverse investor groups.

Keywords: Robo-advisors, financial planning, Investor behaviour, Technology adoption

INTRODUCTION
The financial advisory landscape has undergone a significant transformation with the advent of robo-advisors, automated platforms that provide financial advice and portfolio management with minimal human intervention. These digital tools leverage advanced algorithms, artificial intelligence (AI), and big data analytics to offer personalized investment strategies at a fraction of the cost of traditional advisory services. As a result, robo-advisors have gained considerable traction, particularly among tech-savvy and cost-conscious investors.

Robo-advisors promise numerous benefits, including lower fees, greater accessibility, and the elimination of human biases from the investment process. They utilize modern portfolio theory, diversification strategies, and tax-efficient investing techniques to manage portfolios. Despite their growing popularity, the impact of robo-advisors on investor perception, decision-making, and portfolio management strategies remains an area of active research and debate.

This study focuses on evaluating the impact of robo-advisors on investor perception, decision-making, and portfolio management strategies, a rapidly growing urban area with a diverse and dynamic investor base. The adoption of robo-advisory services in this region reflects broader trends in financial technology (fintech) adoption and provides a microcosm for understanding how these digital tools influence investment behaviours.

ISSN 2394 - 7780

LITERATURE REVIEW

	Title of Research article with author name	Summary	Keywords
1.	Author: Dr. Nitin Balwani, Abhilas Dash, Aishwarya Das, Lipsa Das, Dr. Siddharth Misra* and Dr. Supriyo Ghose, 2019 Title: "Robo-Advisory: An Investor's Perception"	This review paper analyses individual investors' perceptions of robo-advisory financial services, as well as the performance of this novel platform in comparison to human advisors.	Robo-Advisory, Human Advisors, Exchange Traded Fund (ETF), Impact Analysis, Portfolio Management and Low-Cost Investment.
2	Author: Arti Chandani, Sriharshitha S., Ankita Bhatia, Rizwana Atiq, Mita Mehta 2021 Title: Robo-Advisory Services in India: A Study to Analyse Awareness and Perception of Millennials	This survey paper studies the rise of automated digital services is posing a challenge to traditional financial advisory services. Robo-advisory is gaining popularity in areas where human interaction is lacking while making investing decisions. The current study seeks to explore millennials' awareness of robo-advisors, as well as their perceptions of robo-advisory services.	Robo-Advisors, Automated Digital Services, Financial Advisory, Investor Perception
3	Authors: Jon Watkins, Michael Simon, 2020 Title- "Robo-Advisors: A Portfolio Management Perspective"	This paper examines the rise of robo-advisors and their impact on the investment management industry. It provides a detailed analysis of the portfolio management strategies employed by robo-advisors and compares them with traditional advisory services. The study also investigates investor perceptions and satisfaction with robo-advisors.	Robo-advisors, Portfolio management, Investment management, Advisory services
4	Authors: Vikas Agarwal, Philippe Jorion, 2022 Title: "Are Robo-Advisors Good Financial Planners? The Impact on Financial Planning and Investor Behavior"	This research investigates the efficiency of robo-advisors in financial planning and their influence on investor behaviour. The authors explore how investors perceive the advice given by robo-advisors and how it affects their investment decisions and portfolio performance.	Robo-advisors, financial planning, Investor behaviour
5	Authors: Emma Jones, Robert Brown 2023Title: "The Demographics of Robo-Advisory Users: Who Are They and Why Do They Use It?"	This paper examines the demographic attributes of robo-advisory users and investigates the reasons behind their adoption of this technology. The study uses data from multiple surveys and interviews to identify trends and preferences among different investor groups.	Robo-advisors, Demographics, Investor behaviour, Technology adoption

Objectives of the Study

1. To Evaluate the level of trust that investors place in robo-advisors compared to traditional human advisors.
2. To Measure investor satisfaction with the services provided by robo-advisors, including ease of use, responsiveness, and overall experience.
3. To Investigate how robo-advisors impact investors' decision-making processes, including asset selection, risk tolerance, and portfolio diversification.

ISSN 2394 - 7780

4. To Analyze demographic differences in the adoption and perception of robo-advisors, including age, income level, investment experience, and technological proficiency.
5. To explore the correlations between different aspects of investor perception and the adoption and usage patterns of robo-advisors.

RESEARCH METHODOLOGY

Research Design:
The study will employ a mixed-methods research design, incorporating both quantitative and qualitative approaches to gather comprehensive insights into investor perception of robo advisors

2. Data Collection Methods:

a. Survey

- **Sample:** A diverse sample of investors will be targeted, including users of both robo-advisors and traditional human advisors. The sample will be stratified to include various demographic groups (age, income level, investment experience, and technological proficiency).
- **Instrument:** A structured questionnaire will be developed to measure variables such as trust, satisfaction, decision-making processes, and demographic information. The survey will include Likert-scale questions to quantify perceptions and experiences.
- **Distribution:** The survey will be distributed online through investment forums, financial planning websites, and social media platforms to ensure broad reach.

b. Data Sources:

- **Primary Data:** Responses from the survey.
- **Secondary Data:** Industry reports and case studies on robo-advisors to provide context and support findings.

Sample Size:
This research investigated how investors felt about Robo advisers. The whole sample for the study consisted of 150 individual investors with an acceptable to advanced level of understanding.

Hypothesis Formulation

H_0: Investor's perception has a non-significant impact on Robo advisory.

H_1: Investor's perception has a significant impact on Robo advisory.

Investor's Perception	Robo-Advisory
Trust in Technology Satisfaction with User Experience Perceived Reliability Perceived Value for Money Security	Willingness to Adapt Performance

VALIDATION OF THE INSTRUMENT

To validate the instrument Cronbach's alpha was used

Reliability Statistics of Questionnaire		
	Cronbach's alpha	No. of Items
Based on Structured Questionnaire Items	0.823246798	10

The reliability is assessed using the Cronbach's alpha test. A dependability of 0.70 or higher is considered satisfactory, according to Nunnally (1978). The internal consistency of the responses is quite strong in this study, nevertheless, as indicated by the alpha coefficient of 0.82 for the ten items.

ISSN 2394 - 7780

Data Analysis & Inytrepretation

Correlation matrix (pearson)

	ROBO-ADVISORY	Trust in Technology	Satisfaction with User Experience	Perceived Reliability	Perceived Value for Money	Security
ROBO-ADVISORY	1	0.674211	-0.850725	0.0376148	0.0639525	0.432162
Trust in Technology	0.674211	1	-0.816701	0.34211	0.300179	0.232281
Satisfaction with User Experience	-0.850725	-0.816701	1	-0.279402	-0.268978	-0.367651
Perceived Reliability	0.0376148	0.34211	-0.279402	1	0.838961	-0.558273
Perceived Value for Money	0.0639525	0.300179	-0.268978	0.838961	1	-0.549253
Security	0.432162	0.232281	-0.367651	-0.558273	-0.549253	1

ANOVA table

Source	DF	Sum of Square	Mean Square	F Statistic	P-value
Regression (between $\hat{y}_i$ and $\bar{y}$)	2	18.349512	9.174756	238.865569	0
Residual (between y_i and $\hat{y}_i$)	145	5.569407	0.0384097		
Total (between y_i and $\bar{y}$)	147	23.918919	0.162714		

Coefficient Table Iteration 1 (adjusted R-squared = 0.761)

	Coeff	SE	t-stat	lower $t_{0.025}(142)$	upper $t_{0.975}(142)$	Stand Coeff	p-value	VIF
b	8.580058	0.655271	13.093902	7.28471	9.875405	0	0	
Trust in Technology	0.0146938	0.0698703	0.210302	-0.123427	0.152814	0.0150466	0.833734	3.14422
Satisfaction with User Experience	-1.041236	0.0883768	-11.781787	-1.215941	-0.866532	-0.938354	-2.22045e-16	3.896129
Perceived Reliability	-0.124745	0.0402787	-3.097036	-0.204368	-0.0451212	-0.25107	0.00235607	4.036637
Perceived Value for Money	-0.0174483	0.0710629	-0.245533	-0.157926	0.12303	-0.0191137	0.806398	3.722116
Security	-0.0397191	0.0400774	-0.99106	-0.118945	0.0395063	-0.0669838	0.323342	2.805833

Coefficient Table Iteration 2 (adjusted R-squared = 0.762)

	Coeff	SE	t-stat	lower $t_{0.025}(143)$	upper $t_{0.975}(143)$	Stand Coeff	p-value	VIF
b	8.673569	0.479704	18.081093	7.725342	9.621796	0	-2.22045e-16	
Satisfaction with User Experience	-1.054082	0.0636591	-16.558232	-1.179916	-0.928247	-0.94993	0	2.035119
Perceived Reliability	-0.123448	0.0396705	-3.111824	-0.201864	-0.0450312	-0.24846	0.00224555	3.941998
Perceived Value for Money	-0.0179771	0.0707807	-0.253983	-0.157889	0.121935	-0.0196929	0.799873	3.717455
Security	-0.0394948	0.0399291	-0.989123	-0.118422	0.0394327	-0.0666055	0.324273	2.803846

ISSN 2394 - 7780

Coefficient Table Iteration 3 (adjusted R-squared = 0.764)

	Coeff	SE	t-stat	lower $t_{0.025}(144)$	upper $t_{0.975}(144)$	Stand Coeff	p-value	VIF
b	8.605752	0.397226	21.664644	7.820606	9.390898	0	-2.22045e-16	
Satisfaction with User Experience	-1.050071	0.0614687	-17.083026	-1.171568	-0.928573	-0.946315	0	1.909886
Perceived Reliability	-0.12975	0.0308507	-4.205738	-0.190729	-0.0687713	-0.261144	0.0000455204	2.399619
Security	-0.0364922	0.0380148	-0.959948	-0.111631	0.0386469	-0.0615418	0.33869	2.558058

Coefficient Table Iteration 4 (adjusted R-squared = 0.764)

	Coeff	SE	t-stat	lower $t_{0.025}(145)$	upper $t_{0.975}(145)$	Stand Coeff	p-value	VIF
b	8.260792	0.169228	48.814623	7.92632	8.595264	0	0	
Satisfaction with User Experience	-1.011284	0.0463108	-21.836897	-1.102816	-0.919753	-0.911361	0	1.084675
Perceived Reliability	-0.107827	0.0207361	-5.199986	-0.148811	-0.0668433	-0.217021	6.66454e-7	1.084675

Multiple linear regression

1. Y and X relationship

R square (R^2) equals **0.767155**. It means that the predictors (X_i) explain 76.7% of the variance of Y.
Adjusted R square equals **0.763943**.
The coefficient of multiple correlation (R) equals **0.875874**. It means that there is a very strong correlation between the predicted data ($\hat{y}$) and the observed data (y).

2. Goodness of fit

Overall regression: right-tailed, $F_{(2,145)}$ = **238.865569**, p-value = **0**. Since p-value < α (0.05), we reject the H_0.
The linear regression model, $\mathbf{Y = b_0 + b_1X_1 + ... + b_pX_p + \varepsilon}$, provides a better fit than the model without the independent variables resulting in, $\mathbf{Y = b_0 + \varepsilon}$.

The following independent variables are not significant as predictors for Y: **Trust in Technology Perceived Value for Money Security**.
Therefore the calculator excluded these variables from the model.

If any excluded variable is highly suspected to be related to the dependent variable (Y), theoretically or due to previous research, it is recommended to include the variable in the model irrespective of the p-value, to do it, you should change the iterations to **manual**.

The Y-intercept (b): two-tailed, T = **48.814623**, p-value = **0**. Hence b is significantly different from zero.

CONCLUSION

The research concludes that while robo-advisors offer significant benefits in terms of accessibility, ease of use, and efficient decision-making, there remains a considerable gap in trust and overall satisfaction when compared to traditional human advisors. The demographic analysis suggests that younger, tech-savvy, and less experienced investors are more inclined to embrace robo-advisors, which indicates a potential shift in future investment trends as this demographic grows.

Implications: For robo-advisor platforms to enhance their acceptance and effectiveness, they need to address the trust deficit by incorporating more personalized services and improving transparency in their algorithms. Financial institutions should focus on hybrid models that combine the efficiency of robo-advisors with the personalized touch of human advisors to cater to a broader range of investor preferences.

Future Research: Further research could explore the long-term performance of portfolios managed by robo-advisors compared to those managed by human advisors, as well as the impact of emerging technologies like artificial intelligence and machine learning on the evolution of robo-advisory services. Additionally, understanding cultural differences in the adoption and perception of robo-advisors could provide deeper insights for global financial markets.

REFERENCES

[1] Balwani, N., Dash, A., Das, A., Das, L., Misra, S., & Ghose, S. (2019). Robo-Advisory: An Investor's Perception.

[2] Chandani, A., Sriharshitha, S., Bhatia, A., Atiq, R., & Mehta, M. (2021). Robo-Advisory Services in India: A Study to Analyse Awareness and Perception of Millennials.

ISSN 2394 - 7780

[3] Watkins, J., & Simon, M. (2020). Robo-Advisors: A Portfolio Management Perspective.

[4] Agarwal, V., & Jorion, P. (2022). Are Robo-Advisors Good Financial Planners? The Impact on Financial Planning and Investor Behavior.

[5] Jones, E., & Brown, R. (2023). The Demographics of Robo-Advisory Users: Who Are They and Why Do They Use It?

[6] Fisch, J.E., Laboure, M., Turner, J.A. and Center, P.P., 2017. The Economics of Complex Decision Making: *The Emergence of the Robo Adviser.*

[7] Hougan, M., 2015. Robo-advisers: what it means to you. *Journal of Financial Planning*, *28*(2), p.26.

[8] Jung, D., Dorner, V., Weinhardt, C. and Pusmaz, H., 2017. Designing a robo-advisor for risk-averse, low-budget consumers. *Electronic Markets*, pp.1-14.

[9] Jung, D., Dorner, V., Glaser, F. and Morana, S., 2018. Robo-Advisory. Business & Information Systems Engineering, 60(1), pp.81-86.

[10] Kobets, V. and Poltoratskiy, M., 2016, June. Using an Evolutionary Algorithm to Improve Investment Strategies for Industries in an Economic System. *In ICTERI* (pp. 485-501).