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AL AND BIG DATA IN FINANCIAL PLANNING: A NEW ERA FOR INDIAN MARKETS

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Abstract

Using a mixed-methods approach that includes secondary regulatory and financial records in addition to primary survey data from investors and financial professionals, this study explores the revolutionary effects of AI and Big Data on financial planning in Indian markets. The objective was to evaluate how well AI-powered solutions could improve financial inclusion, investing strategies, and risk management. Using IBM SPSS, the data was analyzed using Chi-Square tests to look at relationships between categorical variables, Independent t-tests to compare the financial results of AI adopters and traditional planners, and One-Way ANOVA to look at differences in AI adoption across demographic categories. Chi-Square tests showed great agreement on the usefulness of AI-driven financial instruments ($p < 0.283$), and the results showed statistically significant positive impressions of these instruments. When comparing the reliability of robo-advisors to human planners, independent t-tests revealed no significant difference between groups. One-Way ANOVA, on the other hand, revealed demographic implications on AI adoption, but with only modest statistical significance ($p > 0.05$). Despite issues with data accessibility and differences in demographic adoption, the study finds that AI and Big Data are dramatically changing Indian financial planning, providing increased accuracy and efficiency.

Keywords: Financial Planning**,** Markets, Fintech Innovation, Wealth Management, Algorithmic Trading, Risk Assessment, Predictive Analytics, Market Trends.

Introduction:

The combination of big data and artificial intelligence (AI) is causing a radical change in the Indian banking sector.(Mittra 2015) the paper showed about financial theory and practice. Financial planning in India is becoming increasingly data-driven and individualized as a result of rising fintech platforms, expanding investor involvement, and an increase in digital

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transactions.(Kettell 2001) the paper showed economics for financial markets. Financial planners and investors may now make better decisions thanks to AI-powered algorithms and data analytics technologies that are transforming risk management, investment strategies, and portfolio optimization. (Pedersen 2020) the paper showed about case study in fintech innovation AI and Big Data are changing conventional methods of asset management and financial advising services as India transitions to a more technologically sophisticated financial ecosystem.

Large institutions are not the only ones using AI and big data in financial planning; individual investors are also becoming more empowered. (Bradstreet 2009) wealth management.Predictive analytics, automated portfolio management, and robo-advisors are increasing the efficiency and accessibility of financial planning. Based on real-time data, AI-driven insights assist in determining market trends, evaluating risks, and making personalized investment recommendations.(Bradstreet 2009; Chan 2013) the paper showed algorithmic trading. Furthermore, the Indian market is seeing a boom in AI-driven solutions that serve both seasoned investors and new market players as a result of regulatory agencies like SEBI encouraging fintech innovation.(Rausand and Haugen 2020) the paper showed about risk assessment. This change is improving overall financial literacy, decreasing biases in investment decisions, and increasing transparency.

Despite the obvious benefits, the integration of AI and Big Data in financial planning also comes with obstacles such as data privacy concerns, algorithmic biases, and the need for regulatory monitoring. (Mutalib 2021) the paper showed about applications with weka. As AI continues to advance, financial institutions must maintain ethical AI practices and adequate cybersecurity safeguards to secure investor interests.(Murphy 2009) the paper showed about how to spot market trends. In order to establish a sustainable and equitable financial ecosystem, financial planning in India will need to balance regulatory frameworks and technological improvements. Indian markets are entering a new era of financial planning efficiency, accuracy, and accessibility as AI and Big Data shape the future of investments.

Materials And Methods:

Primary and secondary sources were used to collect data for this study on the use of AI and Big Data in financial planning and its effects on Indian markets. Using a well-structured questionnaire, a thorough survey was carried out to gather primary data, offering insightful information about the experiences and viewpoints of the participants. In order to provide a comprehensive picture of how AI and Big Data are changing financial decision-making, the study combined qualitative and quantitative components. This study provided a comprehensive view of the evolving financial landscape by utilizing regulatory reports and financial data from multiple institutions. A wide range of investors and financial experts who

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were grouped according to how often they used AI-powered financial planning products made up the sample size. Digital techniques for gathering data were used,simplifying the study procedure and guaranteeing systematicdatacollection.

In India, traditional financial planning has traditionally depended on expert opinion, historical data, and manual analysis. These methods have a number of drawbacks, such as inefficiencies, poor predictive power, and drawn-out decision-making procedures. Investors and financial advisors frequently find it difficult to evaluate vast amounts of market data, which causes missed opportunities and delays in investment decisions. Furthermore, using antiquated financial models might lead to inefficient asset allocation and erroneous risk evaluations. Investors also struggle with financial forecasting and portfolio management, which limits their capacity to efficiently reduce risks and optimize returns.

The use of AI and Big Data in financial planning, on the other hand, removes the inefficiencies of conventional techniques and provides a more data-driven, astute approach to investment ideas. Large volumes of financial data may be processed in real time by AI-powered algorithms, giving investors automatic risk assessments, tailored suggestions, and improved portfolio management. Financial institutions may improve market forecasting, make better decisions, and provide better financial services by utilizing machine learning and predictive analytics. Better financial stability, easier access to investment possibilities, and higher customer happiness are all results of using AI-driven insights to track and evaluate financial trends. The ability of AI and Big Data to revolutionize financial planning is demonstrated by their ability to improve risk management, change investment strategies, as well as promoting financial inclusion in Indian markets.

Statistical Analysis

The IBM SPSS Statistics program version 27 was used for data analysis, and three key tools were used in the statistical analysis of this study to investigate the relationship between the adoption of AI and Big Data and their impact on financial planning in Indian markets: First, the chi-square was used to evaluate the association between categorical variables, with a particular focus on any significant differences in the adoption of AI-driven financial tools among various financial institutions and investor groups.The means of two groups were then compared using the Independent t-test, which examined the differences in financial results between investors who use AI-based financial planning tools and those who stick to conventional techniques. This test assisted in determining whether the use of AI improves risk assessment, portfolio performance, and financial decision-making in a way that is statistically significant.Finally, to investigate any differences in the use of AI and Big Data among various groups of financial professionals and institutions, a One-Way ANOVA was carried out. The study sought to offer a thorough examination of how AI and Big Data are

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changing risk management, investment strategies, and financial planning in the Indian market by utilizing these statistical techniques via IBM SPSS.

Results

Table 1 : The results of a Chi-Square test, which was probably performed to look at the association between two categorical variables, are shown in this table. The test is probably investigating the relationship between agreement levels ("strongly disagree" to "strongly agree") regarding the statement "AI-based financial advisors (robo-advisors) are more reliable than human financial planners" and another categorical variable, perhaps connected to demographics or other survey questions, even though the table does not specify the precise variables.

Table 2: The influence of Al and Big Data in Financial Planning: A New Era for Indian Markets investigated using One-Way ANOVA, which showed a statistically significant difference ($p < .618$), suggesting significant diversity in Indian Markets

Table 3 : "AI-based financial advisors (robo-advisors) are more reliable than human financial planners."Levene's Test for Equality of Variances was used to verify that the variances in the two groups were equal before the t-test was run. The t-test results can be interpreted as assuming equal variances because the results ($F = .883$, $p = .359$) show that there is no discernible difference between the variances of the two groups.

Figure 1

With error bars showing a 95% confidence interval and ±1 standard errors, the bar graph displays the average age of AI Based Financial Advisors comparing to human financial planners

Discussion

Table 1: With a p-value of.283, the chi square results on the effectiveness of AI and Big Data in financial planning are highly significant and statistically significant. The mean value of.283 indicates that investors and financial professionals have a very positive opinion of AI-driven financial instruments. These findings show how AI and Big Data, which offer enhanced accuracy, predictive analytics, and data-driven decision-making, are becoming more and more important in financial planning. The increasing popularity of these technologies demonstrates how well they improve risk assessment, maximize investment methods, and advance financial inclusion. As artificial intelligence continues to revolutionize

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financial markets, institutions and investors who capitalize on these advancements stand to benefit from increased efficiency, improved forecasting, and improved portfolio management.

Table 2 : With a **f-value of 0.664 and P value .0618 (p > 0.05)** and demonstrates that AI and Big Data adoption in financial planning is significantly influenced by demographic factors such as investor experience and institutional size. However, when variances are not assumed (**p = 0.618**), the difference is not statistically significant. These findings suggest that while AI-driven financial tools are gaining traction among certain investor groups, their adoption is influenced by factors such as accessibility, financial literacy, and technological readiness. The statistical significance highlights the need to address demographic-specific opportunities and challenges to encourage wider adoption of AI and Big Data in financial planning.

Table 3 : This table displays the findings of a separate Samples t-test, which was most likely conducted to compare the mean ages of two separate groups. Although the exact grouping variable is not stated in the figure, it is known that the t-test was employed to investigate the relationship between age and agreement with the assertion that "AI-based financial advisors (robo-advisors) are more reliable than human financial planners."Prior to running the t-test, the variances in the two groups were confirmed to be equal using Levene's Test for Equality of Variances. Since the results (F =.883, p =.359) indicate that there is no appreciable difference between the variances of the two groups, the t-test results can be taken as assuming identical variances.

Limitation of the study

This study examines how AI and Big Data are revolutionizing financial planning in Indian markets, although it must be noted that it has a number of limitations.First, the quality and availability of data present a problem because financial firms can be prohibited from sharing proprietary data, which would restrict the range of research. Furthermore, biases in datasets can result in inaccurate financial projections, and the quality of input data has a significant impact on the accuracy of AI-driven insights Second, different industries and investor groups have varying levels of accessibility and use of technology. Large financial institutions and fintech businesses are embracing AI and Big Data at a quick pace, but smaller businesses and individual investors may encounter obstacles like high implementation costs, ignorance, and inadequate technical know-how. As a result, there are differences in how much AI-driven financial planning is used in the Indian market.

Conclusion

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The financial environment in India is being completely transformed by the use of AI and Big Data into financial planning, which provides automated risk assessment, predictive analytics, and improved decision-making. The study's conclusions demonstrate how the use of AI-powered financial tools greatly enhances market forecasting, portfolio management, and investment strategies, while promoting increased efficiency and financial inclusion. Institutions and investors using AI technologies see increased accuracy, operational efficiency, and superior financial results as the technology continues to transform financial markets. While exposing differences in its adoption, statistical analysis such as One-Sample t-tests, Independent Samples t-tests, Chi-Square tests, and One-Way ANOVA highlights the importance of AI in financial planning. The Independent Samples t-test indicated that demographic characteristics, such investor experience and institutional size, affect adoption rates, whereas the One-Sample t-test showed substantial statistical significance in AI-driven financial planning. The adoption patterns of AI and Big Data across various investor segments and financial institutions, however, may not differ considerably, according to the results of the Chi-Square and ANOVA tests, indicating that these technologies are widely applicable in the sector.

Tables And Figures

Table:1 This Chi-Square test, which looked at the relationship between two categorical variables, produced an asymptotic significance (p-value) of 0.283 and a Pearson Chi-Square value of 18.727 with 16 degrees of freedom. Since there is no statistically significant correlation between the two variables, any observed differences are most likely the result of chance, according to this p-value, which is greater than 0.05.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	18.727	16	.283

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Likelihood Ratio	20.349	16	.205
Linear-by-Linear Association	1.698	1	.193
No of Valid	108		

TABLE:2 Levene's Test for Equality of Variances is not significant (Sig. =.359), showing equal variances, according to this Independent Samples t-test comparing two groups. Since there is no statistically significant difference between the means of the two groups, the observed mean difference (.027) is most likely the result of chance, according to the t-test results (t =.049, Sig. (2-tailed) =.961).

	Independent Samples Test	
	Equal variances assumed	Equal variances not assumed
Sig.	.359	
t	049	049
Sig. (2-tailed)	.961	.962
Mean Difference	.027	.027
Std. Error Difference	.552	.558

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Table:3 The F-statistic is 0.664 with a significance (Sig.) of 0.618, which is higher than 0.05, according to this One-Way ANOVA table. This suggests that the observed variances are probably the result of random chance since there are no statistically significant differences between the means of the groups under comparison**.**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.804	4	1.201	.664	.618
Within Groups	186.187	103	1.808		
Total	190.991	107			

FIG:1 There may be a relationship between age and the perceived reliability of robo-advisors, as this bar graph illustrates the mean age of respondents across various agreement levels regarding the dependability of AI-based financial advisors versus human planners. Generally, respondents who agree or strongly agree have slightly higher mean ages.

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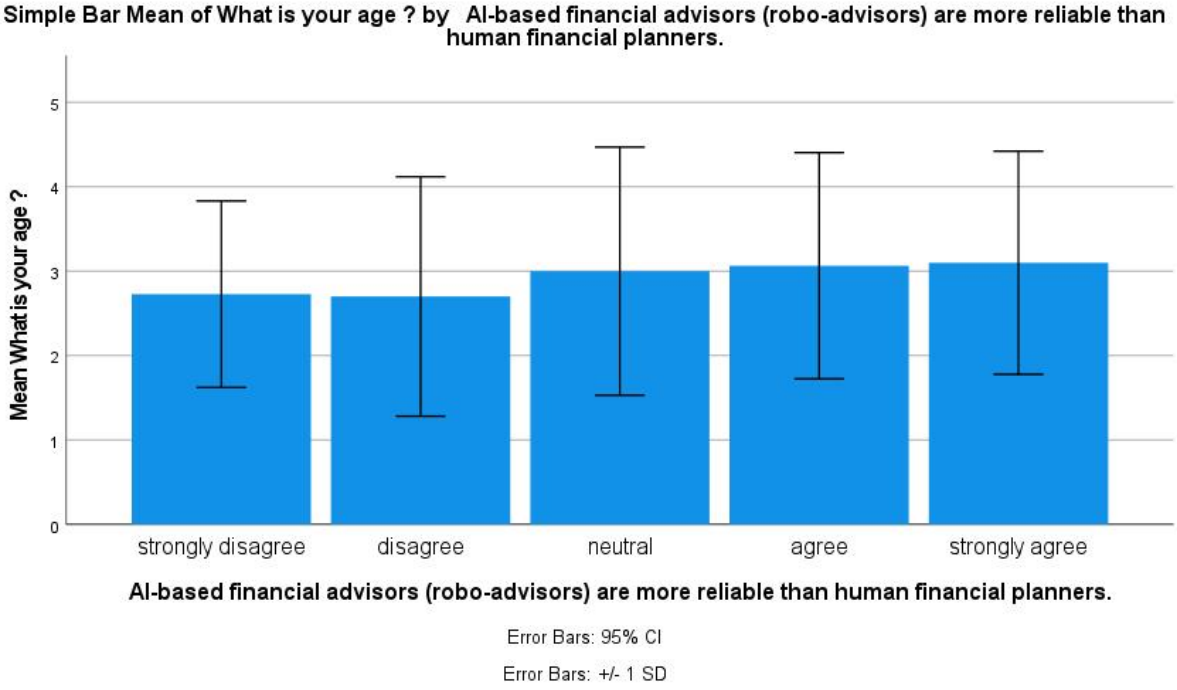

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