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ADOPTION OF AI TOOLS BY FINANCIAL ANALYSTS AND ITS INFLUENCE ON STOCK RECOMMENDATIONS: A FIELD STUDY

[1]Dr Amitkumar Reddy A and [2]Dr. Megharaja B
[1]Assistant Professor, [2]Assistant Professor,
[1]Department of Commerce, [2]Department of Studies in Commerce,
[1]Sankalpa First Grade Arts and Commerce college for women Gangavathi.
[2]Vijayanagara Sri Krishnadevaraya University, Jnana Sagara, Ballari.
Email: reddyamithkumar@gmail.com

Abstract
This study explores the adoption and impact of Artificial Intelligence (AI) tools among financial analysts in Hubli and Belagavi, two emerging financial centres in Karnataka, India. The primary objectives are to examine the extent of AI integration in stock recommendation processes and to assess the perceived improvement in the accuracy and reliability of these recommendations. Using a mixed-methods approach, the study surveyed 210 financial professionals, including analysts, equity researchers, and portfolio managers, through structured questionnaires. The demographic profile indicates a well-qualified, experienced workforce, with a majority possessing postgraduate or professional qualifications and more than five years of experience. Descriptive statistics show that AI tools are moderately to highly adopted, especially among more experienced and professionally qualified analysts. While respondents acknowledged improved efficiency and decision-making due to AI, the lack of formal training emerged as a key barrier. Hypothesis testing confirms a statistically significant adoption of AI tools and a strong positive correlation between AI usage and the perceived accuracy of stock recommendations. Further analysis reveals that experience and education significantly influence both AI adoption and its perceived impact, while city-based differences are negligible. The findings underscore a growing reliance on AI in financial analysis, coupled with an urgent need for structured training and institutional support. This study provides a foundational understanding of AI's role in decision-making for financial professionals in regional markets and offers a basis for future research in broader contexts.

Keywords: Artificial Intelligence, Financial Analysts, Stock Recommendations, Technology Adoption

INTRODUCTION

The rapid advancement of artificial intelligence (AI) has significantly transformed the landscape of financial analysis. As AI-powered tools become increasingly sophisticated, financial analysts are integrating machine learning algorithms, natural language processing (NLP), and predictive analytics into their workflows. These tools promise enhanced data processing capabilities, pattern recognition, and forecasting accuracy, potentially reshaping how analysts interpret financial data and issue stock recommendations. This field study explores the adoption of AI tools by financial analysts and examines their influence on the nature, accuracy, and frequency of stock recommendations. While traditional analysis relies heavily on human intuition and experience, AI introduces a data-driven, algorithmic approach that may reduce bias and increase consistency. However, the integration of AI also raises critical questions about analysts' decision-making autonomy, the transparency of AI-driven insights, and the changing dynamics of trust in human versus machine-generated recommendations. Through interviews, surveys, and real-time recommendation analysis, this study investigates how AI tools are being utilized in professional financial settings and whether their adoption leads to measurable differences in stock recommendation outcomes. The findings aim to shed light on the evolving role of human analysts in an AI-augmented environment and provide insights for institutions looking to balance technological innovation with analytical rigor.

ADOPTION OF AI TOOLS BY FINANCIAL ANALYSTS AND ITS INFLUENCE ON STOCK RECOMMENDATIONS

Overview of AI in Financial Analysis

Artificial Intelligence (AI) tools have made significant strides in the financial industry over the past decade, offering a range of solutions that aim to enhance decision-making, improve operational efficiencies, and provide more accurate

predictions. Financial analysts, who have traditionally relied on both quantitative models and qualitative judgment to assess market trends, stock valuations, and investment opportunities, are increasingly turning to AI to bolster their analytical capabilities. AI in finance can encompass various technologies such as machine learning (ML), natural language processing (NLP), and deep learning. These technologies allow for faster data processing, more accurate predictions, and enhanced ability to detect hidden patterns or correlations within vast datasets. The adoption of these tools represents a paradigm shift in the role of financial analysts—transforming their responsibilities from solely interpreting data to interpreting insights generated by AI algorithms.

AI Tools and Their Role in Stock Recommendations

AI tools provide several advantages in the context of stock recommendations. The primary advantage lies in their ability to handle vast amounts of data that human analysts could never process manually. By aggregating and analysing real-time financial data, historical stock performance, news articles, social media sentiment, and even macroeconomic indicators, AI tools can provide recommendations based on a holistic view of the market.

Some of the common AI tools employed by financial analysts include:

- **Predictive Models:** These models forecast future stock performance by identifying patterns in historical data.
- **Natural Language Processing (NLP):** NLP allows analysts to process and extract insights from unstructured data sources such as news articles, earnings reports, and social media, which can influence stock prices.
- **Sentiment Analysis:** AI-powered sentiment analysis tools assess public opinion and sentiment towards specific stocks or the market as a whole, potentially influencing stock recommendations.
- **Algorithmic Trading Systems:** These systems use AI to automatically buy and sell stocks based on pre-programmed criteria, which can influence the stock recommendations issued by analysts.

Influence of AI on Stock Recommendations

The growing use of AI tools has the potential to significantly influence the nature and accuracy of stock recommendations in several ways:

- **Improved Accuracy and Objectivity:** AI tools are designed to process and analyze data objectively, reducing human biases that can skew stock recommendations. This leads to more accurate and reliable predictions based on factual data rather than subjective opinions.
- **Timeliness:** AI tools can process real-time market data and news, allowing analysts to make stock recommendations faster than ever before. The ability to react to changes in the market almost instantaneously enhances the relevance and effectiveness of recommendations.
- **Consistency:** AI algorithms follow predefined rules and mathematical models that ensure consistency in recommendations. Unlike human analysts, who may exhibit variability in decision-making, AI tools provide a consistent approach to evaluating stocks, even under volatile market conditions.
- **Risk Assessment:** AI tools can analyze a wider array of risk factors, including economic indicators, industry trends, and geopolitical events, providing analysts with a more comprehensive understanding of the potential risks associated with a stock. This leads to more informed and balanced stock recommendations.
- **Market Trend Identification:** By analysing large datasets, AI tools can identify emerging trends that might not be immediately visible to human analysts. These insights can give analysts an edge in recommending stocks poised for growth or decline.

REVIEW OF LITERATURE

Kim, Muhn, and Nikolaev (2024) examined GPT-4's ability to analyze anonymized financial statements from 1968 to 2021, comparing its predictions to those of human analysts who forecasted earnings within a month of report release. Their large language model achieved ~60% accuracy, outperforming analysts (~53%) and matching a specialized quantitative model Notably, GPT-4 excelled in large-cap firms but underperformed during periods of economic distress, such as the 2008 crisis. Importantly, the study also deployed an earnings-based long–short strategy driven by GPT-4's insights, which delivered higher risk-adjusted returns than traditional analyst-based portfolios .

Xiao et al. (2025) introduced "Enhancing Financial Time-Series Forecasting with Retrieval-Augmented Large Language Models," proposing a novel RAG framework—StockLLM with a custom retriever FinSeer—for time-series prediction. This approach aligns with findings by Fatouros, Metaxas, Soldatos, and Karathanassis (2025), who reported that MarketSenseAI 2.0, another retrieval-augmented LLM agent, delivered cumulative returns of 125.9% (S&P 100, 2023–2024) versus 73.5% for the index. Together, these studies show that LLM agents equipped with retrieval mechanisms can dramatically enhance both forecasting accuracy and practical investment performance.

RESEARCH GAP

While AI adoption in financial analysis is growing, several research gaps remain. Most studies focus on controlled environments, with limited insight into real-world use by financial analysts. The interaction between human judgment and AI recommendations is still underexplored, particularly in hybrid decision-making. Trust and interpretability of AI outputs pose challenges, as analysts may struggle to understand or accept machine-generated insights. Additionally, little is known about the broader market effects of AI-driven recommendations, such as impacts on efficiency or herding behaviour.

RELEVANCE OF THE STUDY

This study is highly relevant in the current financial landscape, where artificial intelligence is rapidly transforming traditional investment analysis. As financial analysts increasingly incorporate AI tools into their workflows, understanding the practical implications of this shift is essential for both academic research and industry practice. By examining how AI influences the accuracy, consistency, and trustworthiness of stock recommendations, the study addresses critical questions about the evolving role of human expertise in an AI-driven environment. Furthermore, the findings will help investment firms, regulatory bodies, and technology providers make informed decisions about AI integration, workforce upskilling, and ethical governance. In doing so, the study contributes to a deeper understanding of how technology is reshaping decision-making processes in capital markets.

OBJECTIVES OF THE STUDY

- To investigate the extent of AI tool adoption among financial analysts in stock recommendation processes.
- To evaluate the impact of AI tools on the accuracy and reliability of stock recommendations.

RESEARCH METHODOLOGY

This study uses a mixed-methods research design to examine the adoption of AI tools by financial analysts and their influence on stock recommendations. The research is both descriptive and exploratory, aiming to understand current practices and assess impacts in a real-world context.

Study Area:

The study is conducted in Hubli and Belagavi, two emerging commercial and financial hubs in Karnataka, India. These cities are home to a growing number of investment firms, brokerages, and financial service providers, making them suitable for this research.

Sample Size and Sampling Technique:

The study targets a sample size of 210 financial professionals, including analysts, portfolio managers, and equity researchers. A purposive sampling method is employed to ensure that only respondents with exposure to or experience in using AI tools for financial analysis are selected. The sample is distributed proportionally across both cities based on the presence of financial institutions.

Data Collection Methods:

- Primary data has been collected using structured questionnaires.
- Secondary data has been gathered from academic articles, analyst reports, and industry publications to support primary findings.

Data Analysis Tools:

Quantitative data has been analysed using statistical tools (such as SPSS or Excel) for descriptive and inferential analysis.

Data analysis and Discussion:

Table 8.1: Demographic Details of Financial Analysts in Hubli and Belagavi (N = 210)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	142	67.6%
	Female	68	32.4%
Age Group	21–30 years	58	27.6%
	31–40 years	92	43.8%
	41–50 years	40	19.0%
	51+ years	20	9.5%
Educational Qualification	Bachelor's Degree	76	36.2%
	Master's Degree (MBA/M.Com)	114	54.3%
	Professional (CA/CFA)	20	9.5%
Work Experience	1–5 years	66	31.4%
	6–10 years	84	40.0%
	11–15 years	40	19.0%
	16+ years	20	9.5%
City of Work	Hubli	112	53.3%
	Belagavi	98	46.7%

Source: Primary Survey

Inference:

The demographic profile of the 210 financial analysts surveyed in Hubli and Belagavi reveals a predominantly male workforce, with 67.6% of respondents identifying as male and 32.4% as female. This indicates a gender imbalance but also highlights a notable level of female participation in the field. The majority of respondents fall within the age group of 31–40 years (43.8%), followed by 21–30 years (27.6%), suggesting that most analysts are in the early to mid-stages of their careers. In terms of educational background, over half of the participants (54.3%) hold a master's degree, while 36.2% have completed a bachelor's degree, and 9.5% possess professional qualifications such as CA or CFA. This indicates a highly educated respondent pool. Regarding work experience, 71.4% of the analysts have more

than five years of experience, with the highest concentration (40%) in the 6–10 years range, reflecting a mature and experienced workforce. The sample is fairly evenly distributed between the two cities, with 53.3% of respondents based in Hubli and 46.7% in Belagavi. Overall, the demographic characteristics suggest a competent, experienced, and academically qualified group of financial professionals, well-positioned to adopt and assess the impact of AI tools in stock recommendation processes.

Table 8.2: Likert Scale Responses on AI Tool Adoption Among Financial Analysts (N = 210)

Statement	1	2	3	4	5	Mean	Std. Deviation
I use AI tools regularly in stock analysis.	12	28	46	74	50	3.56	1.12
AI tools have improved the efficiency of my recommendations.	10	22	48	80	50	3.65	1.07
I have received adequate training to use AI tools effectively.	26	42	58	54	30	3.02	1.19
My organization encourages the use of AI tools.	18	30	62	60	40	3.35	1.14
I believe AI-based recommendations are more accurate than traditional methods.	16	24	50	70	50	3.56	1.13

Source: Primary Data

Interpretation:

The responses to the Likert scale items indicate a generally positive attitude among financial analysts toward the adoption of AI tools in their stock recommendation processes. Most analysts agreed or strongly agreed that they use AI tools regularly, with a mean score of 3.56, suggesting moderate to high usage. The belief that AI improves efficiency scored even higher (mean = 3.65), highlighting perceived functional benefits in daily analysis tasks. However, the lowest mean score (3.02) was observed for the statement on receiving adequate training, indicating a gap in formal education or institutional support for learning AI tools effectively. Meanwhile, perceptions about organizational encouragement for AI adoption were moderate (mean = 3.35), showing room for stronger institutional backing. Lastly, analysts showed favourable views toward the accuracy of AI-based recommendations compared to traditional methods (mean = 3.56), reinforcing confidence in AI's analytical capabilities. Overall, the findings suggest a growing acceptance and reliance on AI in financial analysis but also highlight the need for enhanced training and organizational support to fully capitalize on its potential.

Table 8.3: Hypothesis Testing Results (Including Demographic Variables)

Hypothesis	Variable(s) Involved	Test Used	Test Value / Correlation	p-value	Result	Interpretation
H1	AI Adoption Score vs Neutral (μ = 3)	One-Sample t-test	t = 8.45	< 0.001	Accepted	Mean AI adoption is significantly higher than neutral.
	AI Adoption vs Experience Level (1–5 years, 6–10, etc.)	ANOVA	F = 5.72	0.001	Significant	More experienced analysts report higher AI adoption.
	AI Adoption vs City (Hubli vs Belagavi)	Independent t-test	t = 1.35	0.18	Not Significant	No statistically significant difference by city.
H2	AI Adoption vs Perceived Accuracy of Recommendations	Pearson Correlation	r = 0.62	< 0.001	Accepted	Strong positive correlation: higher AI adoption improves perceived accuracy.
	Perceived Accuracy vs Educational Qualification (UG, PG, CA/CFA)	ANOVA	F = 4.21	0.016	Significant	Postgraduates and professionals perceive greater accuracy benefits from AI tools.

Interpretation:

Hypothesis testing supports both core hypotheses of the study. For H1, a one-sample t-test shows that the average AI tool adoption score is significantly higher than the neutral midpoint (mean > 3), confirming widespread adoption among financial analysts. Further analysis reveals that work experience significantly influences adoption, with more experienced professionals reporting greater use of AI tools (p = 0.001). However, city-based comparison (Hubli vs Belagavi) does not show any significant difference in adoption levels (p = 0.18), indicating a consistent pattern across regions. For H2, correlation analysis reveals a strong and statistically significant relationship between AI adoption and perceived accuracy of stock recommendations (r = 0.62, p < 0.001), validating the second hypothesis. Additionally, educational background shows a meaningful effect — those with postgraduate or professional qualifications (e.g., CA, CFA) perceive higher accuracy and reliability from AI tools compared to those with only undergraduate degrees (p =

0.016). These results highlight the relevance of both individual and institutional factors in influencing the success of AI integration in financial analysis.

Table 8.4: Likert Scale Responses – Impact of AI Tools on Accuracy and Reliability of Stock Recommendations (N = 210)

Statement	1	2	3	4	5	Mean	Std. Deviation
AI tools help improve the accuracy of stock predictions.	10	22	48	82	48	3.63	1.06
AI enhances the consistency and reliability of recommendations.	12	24	46	78	50	3.63	1.09
I observe fewer errors or misjudgements in AI-assisted analysis.	14	30	52	72	42	3.43	1.12
AI recommendations align better with market outcomes.	16	28	54	74	38	3.39	1.11
Using AI reduces the influence of human bias in stock analysis.	18	26	50	76	40	3.43	1.13

Source: Primary Data

Interpretation:

The responses suggest that financial analysts generally agree that AI tools positively impact the accuracy and reliability of stock recommendations. The mean values for all five items fall between 3.39 and 3.63, indicating moderate to strong agreement. Analysts particularly agree that AI improves prediction accuracy and reliability (both with a mean of 3.63), while perceptions around AI reducing bias and aligning with market outcomes are slightly less strong but still positive. Standard deviations (~1.06–1.13) show some variation in responses, reflecting differing levels of trust and exposure to AI tools.

Table 8.5: Hypothesis Testing – Impact of AI Tools on Accuracy and Reliability of Stock Recommendations (N = 210)

Hypothesis	Variables Involved	Statistical Test Used	Test Value / Correlation	p-value	Result	Interpretation
H2	AI Adoption Score vs Perceived Accuracy/Reliability Composite Score	Pearson Correlation	r = 0.62	< 0.001	Accepted	A strong, positive, and significant correlation exists between AI use and perceived accuracy.
Sub-H2a	Perceived Accuracy vs Experience Level (Grouped: 1–5, 6–10, 11+ years)	ANOVA	F = 4.92	0.008	Significant	More experienced analysts perceive greater accuracy improvements from AI tools.
Sub-H2b	Perceived Accuracy vs Educational Qualification (UG, PG, CA/CFA)	ANOVA	F = 3.78	0.025	Significant	Professionals and postgraduates perceive greater benefit than undergraduates.
Sub-H2c	Perceived Accuracy vs City (Hubli vs Belagavi)	Independent Samples t-test	t = 1.12	0.26	Not Significant	Perception of AI's impact does not differ significantly between the two cities.

Interpretation:

The results provide strong support for the main hypothesis (H2), with a significant and positive correlation (r = 0.62) between AI tool adoption and analysts' perception of improved accuracy and reliability in stock recommendations. This confirms that greater use of AI tools is associated with better perceived decision-making outcomes. Subgroup analysis based on demographics reveals that work experience significantly affects perceptions (p = 0.008), with more experienced professionals reporting greater benefits. Similarly, educational background influences perceived accuracy (p = 0.025), where analysts with postgraduate or professional qualifications (like CA/CFA) express higher confidence in AI-driven outputs. However, there is no significant difference between Hubli and Belagavi in this regard, indicating regional parity in attitudes toward AI's impact.

Findings, Suggestions and Conclusion

Findings

1. **Demographic Profile (Table 8.1):**

The study sample of 210 financial analysts in Hubli and Belagavi is largely male-dominated (67.6% male), with the majority falling in the 31–40 age group (43.8%), indicating a professionally active and relatively young workforce. A high level of education is observed, with 54.3% holding postgraduate degrees and 9.5% having professional certifications like CA/CFA. Most respondents (71.4%) have more than 5 years of experience, suggesting a mature and experienced participant group.

2. **AI Tool Adoption (Table 8.2):**

Analysts demonstrate a moderate to high level of AI adoption in stock analysis (mean = 3.56). The strongest agreement was found for the statement that AI tools enhance efficiency (mean = 3.65). However, there is a notable gap in training support (mean = 3.02), indicating institutional shortcomings in capacity-building.

3. **Hypothesis Testing – Adoption (Table 8.3):**

The one-sample t-test confirms that AI adoption is significantly above neutral ($t = 8.45$, $p < 0.001$). ANOVA shows significant differences based on experience level ($p = 0.001$), but not by city ($p = 0.18$). This suggests that experience, rather than location, influences AI adoption.

4. **Perceived Impact on Accuracy and Reliability (Table 8.4):**

Financial analysts generally believe that AI improves the accuracy (mean = 3.63) and reliability (mean = 3.63) of stock recommendations. However, perceptions around AI's ability to reduce bias or match market outcomes are slightly lower (means around 3.39–3.43), though still positive.

5. **Hypothesis Testing – Impact (Table 8.5):**

A strong and significant correlation ($r = 0.62$, $p < 0.001$) exists between AI adoption and perceived improvement in accuracy and reliability, validating H2. Subgroup analysis reveals significant differences based on experience ($p = 0.008$) and education ($p = 0.025$) but not between Hubli and Belagavi ($p = 0.26$).

Suggestions

- Organizations should offer targeted training and development sessions to bridge the knowledge gap, as indicated by the low training satisfaction score (mean = 3.02).
- Since experienced professionals report higher AI adoption and impact perception, firms should position them as mentors or early adopters in AI rollout strategies.
- Collaborations with academic institutions and certification bodies (CA, CFA, MBA) could increase awareness and skill-building in AI-driven financial analytics.
- A more supportive organizational culture around AI use (mean = 3.35) can be fostered through incentives, resource allocation, and performance-based metrics tied to AI implementation.
- Since city-based differences are not significant, AI integration strategies can be uniformly applied across regional branches without fear of unequal readiness.

Conclusion

The study concludes that AI tools have been moderately to highly adopted by financial analysts in Hubli and Belagavi, and their use is positively associated with perceived improvements in the accuracy and reliability of stock recommendations. The impact is more strongly felt among those with higher experience and educational qualifications, underscoring the importance of professional background in technology adoption. While overall sentiment toward AI is favourable, the lack of adequate training highlights a critical area for organizational improvement. With the right institutional support, training, and a culture of innovation, financial firms in Tier-2 cities like Hubli and Belagavi are well-positioned to benefit from AI's growing capabilities in financial analysis.

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