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A Study on the Role of Artificial Intelligence in Financial Services

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Abstract: By enhancing productivity, accuracy, and client satisfaction, artificial intelligence (AI) is progressively changing the financial services industry. Examining the role of AI in financial services and analysing user satisfaction, adoption, and views across various demographic groups are the main goals of this study. Convenience sampling was used to gather primary data from 100 respondents for the study. The hypotheses were tested between variables including age, income, occupation, and gender were examined using statistical techniques like ANOVA and Chi-square tests. According to the findings, there is no discernible variation in the degree of customer satisfaction with AI use among various age, occupational, and income categories. Furthermore, there was no discernible variation between demographic characteristics and the use of AI, recommendations, privacy issues, or user experience. These results show that AI-based financial services are extensively used and offer a consistent user experience for a variety of demographics. In summary, AI has a transformational and inclusive function in financial services, providing customers with similar benefits regardless of their demographics. However, to guarantee ongoing trust and successful application of AI technology in financial services, issues pertaining to data security and privacy must be resolved.

Keywords: Artificial Intelligence (AI), Financial Services, Customer Satisfaction, Data Privacy, User Experience.

1 INTRODUCTION

Artificial Intelligence (AI) has become a key driver of innovation in the financial services industry, enabling improvements in efficiency, decision-making, and customer satisfaction through technologies such as machine learning and data analytics [1]. AI adoption in financial institutions is influenced by multiple factors, including employee readiness, organizational support, and technological infrastructure, which collectively shape its successful implementation [1]. AI plays a significant role in enhancing financial resource allocation and improving the service capacity of institutions by enabling data-driven insights and advanced analytical capabilities [2]. In addition, the adoption of AI-based financial technologies is influenced by factors such as financial literacy, government support, and user innovativeness, which collectively accelerate fintech growth [3].

AI also contributes to financial inclusion by expanding access to financial services and simplifying complex financial processes for underserved populations [4]. This expansion further supports broader socio-economic outcomes, including resilience and sustainable development through improved financial accessibility [5]. Moreover, explainable artificial intelligence (XAI) has gained importance in the financial sector by improving transparency and interpretability in AI-driven decision-making systems [6]. AI applications also enhance corporate productivity and operational efficiency through financial transmission mechanisms and improved resource utilization [7]. Furthermore, AI-powered financial advisory services, such as robo-advisors, are transforming customer engagement and investment decision processes [8].

AI also impacts firms' financialization and labor productivity, thereby influencing overall financial performance and strategic decision-making [9]. From a macroeconomic perspective, AI plays a crucial role in maintaining financial stability and mitigating risks associated with financial crises by enabling early detection and predictive analysis [10]. Additionally, AI techniques are widely used in financial market prediction, allowing institutions to forecast trends and make informed investment decisions [11]. In the Indian context, the adoption of AI-driven services such as robo-advisors demonstrates the growing acceptance and practical implementation of AI in financial services [12]. Despite its numerous advantages, the increasing reliance on AI raises concerns related to data privacy, security, and ethical considerations. Therefore, understanding the role and impact of AI is essential to ensure its responsible and effective use in financial services.

2 LITERATURE REVIEW

Recent studies indicate that artificial intelligence (AI) has significantly enhanced efficiency, accuracy, and decision-making capabilities in the financial services industry.

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Yuniawan et al. [1] examined the determinants of AI adoption from employees' perspectives and highlighted that organizational readiness and technological acceptance are key drivers of AI integration. Liu et al. [2] emphasized that AI improves financial resource allocation and enhances institutional service capacity through advanced data analytics. Similarly, Akhtar et al. [3] demonstrated that financial knowledge, government support, and user innovativeness play a crucial role in accelerating the adoption of AI-driven financial technologies. AI has also been recognized as a major enabler of financial inclusion and sustainable development. Tian et al. [4] reported that AI simplifies access to financial services for underserved populations, thereby expanding financial inclusion. Feng et al. [5] further linked AI-driven financial inclusion with broader socio-economic resilience and sustainable growth.

In addition, Cil and Yildiz [6] highlighted the growing importance of explainable AI (XAI) in improving transparency, trust, and interpretability in financial decision-making systems. From an operational perspective, Fu et al. [7] found that AI contributes to corporate productivity and efficiency through improved financial transmission mechanisms. Zhu et al. [8] discussed the transformation of financial advisory services through AI-powered systems such as robo-advisors, which enhance customer engagement and investment decisions. Furthermore, Zhang and Piao [9] revealed that AI influences firms' financialization and labor productivity, thereby impacting overall financial performance.

At a macro level, Ozili [10] analyzed the role of AI in maintaining financial stability and mitigating risks associated with financial crises. NoorMohammadzadehMaleki et al. [11] provided a comprehensive review of AI techniques used in financial market prediction, highlighting their effectiveness in forecasting trends and supporting investment decisions. In the Indian context, the adoption of robo-advisors and found that AI-based financial services are gaining widespread acceptance among users. Overall, the literature demonstrates that AI plays a transformative role in financial services by enhancing operational efficiency, expanding financial inclusion, improving decision-making, and supporting economic stability. However, concerns related to data privacy, security, and user trust remain critical challenges that need to be addressed for the sustainable adoption of AI technologies.

3 Objectives Of The Study

Primary objective: To study how AI influences financial services.

Secondary objectives:

- To know whether there is a significance difference between satisfaction levels of using AI in financial services across different income level groups.
- To examine whether there is a significance difference between satisfaction levels of using AI in financial services across different age groups.
- To determine whether satisfaction levels of using AI in financial services differ across various occupations.
- To assess the impact of occupation on the likelihood of recommending AI in financial services.
- To evaluate the relationship between income level and privacy concerns regarding AI in financial services.
- To examine the association between age and the use of AI in financial services.
- To determine the relationship between gender and user experience of AI in financial services.

4 Research Methodology

This study adopts a quantitative research approach to examine the role and impact of artificial intelligence (AI) in financial services, with a particular focus on user satisfaction, adoption behavior, and demographic influences. The methodology is designed to systematically collect, analyze, and interpret data to draw meaningful conclusions regarding AI-driven financial services.

4.1. Population of the Study

The population of the study comprises individuals who use AI-based tools and applications in financial services. Since the exact size and characteristics of this population cannot be precisely determined, it is considered an unknown population. The target respondents include users of digital banking platforms, AI-enabled financial advisory services, fraud detection systems, and other fintech applications.

4.2. Sampling Technique

Given the undefined nature of the population, the study employs a convenience sampling technique. This non-probability sampling method allows the researcher to collect data from respondents who are readily accessible and willing to participate.

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Although convenience sampling may limit generalizability, it is suitable for exploratory studies where quick and practical data collection is required.

4.3. Sample Size

A total of 100 respondents were selected for the study. The sample size is considered adequate for performing statistical analyses such as Analysis of Variance (ANOVA) and Chi-square tests, which are used to examine relationships and differences among variables.

4.4. Data Collection Methods

Data for the study were collected using both primary and secondary sources:

- **Primary Data:** Primary data were collected directly from respondents through structured questionnaires. The questionnaire was designed to capture information related to demographic characteristics (age, gender, income, and occupation), usage of AI in financial services, satisfaction levels, privacy concerns, and user experience. This method ensures that the data collected are specific, relevant, and aligned with the objectives of the study.
- **Secondary Data:** Secondary data were obtained from existing sources such as research journals, academic publications, books, reports, and credible online resources. These sources were used to support the theoretical foundation of the study and to understand existing trends and developments in AI-based financial services.

4.5. Variables of the Study

The study includes both independent and dependent variables:

- **Independent Variables:** Age, gender, income level, and occupation
- **Dependent Variables:** Satisfaction level, usage of AI, recommendation behavior, privacy concerns, and user experience

These variables are analyzed to understand the influence of demographic factors on AI adoption and perception in financial services.

4.6 Hypotheses of the Study

To achieve the objectives of the study, the following hypotheses were formulated:

- **H_{01}:** There is no significant difference between satisfaction levels of using AI in financial services across different income level groups.
- **H_{02}:** There is no significant difference between satisfaction levels of using AI in financial services across different age groups.
- **H_{03}:** There is no significant difference between satisfaction levels of using AI in financial services across different occupations.
- **H_{04}:** The respondent's occupation has no impact on the likelihood of recommending AI in financial services.
- **H_{05}:** Privacy concerns regarding AI are independent of a respondent's income level.
- **H_{06}:** There is no association between age and the use of AI in financial services.
- **H_{07}:** There is no association between user experience of AI in financial services and gender.

4.7 Tools and Techniques for Analysis

The collected data were analyzed using appropriate statistical tools to test the hypotheses:

- **Analysis of Variance (ANOVA):** Used to determine whether there are significant differences in satisfaction levels across different demographic groups such as age, income, and occupation.
- **Chi-square Test:** Used to examine the association between categorical variables such as occupation and recommendation, income and privacy concerns, age and usage of AI, and gender and user experience.

These statistical techniques enable the researcher to draw valid conclusions regarding the relationships and differences among variables.

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5 RESULTS

5.1. Demographic Profile

Table 1 shows the frequency analysis of demographic factors.

Table 1. Frequency Analysis of Demographic Factors

Category	Group	Frequency	Percent	Valid Percent	Cumulative %
Gender	Male	50	50.0	50.0	50.0
	Female	50	50.0	50.0	100.0
Age	Below 20	16	16.0	16.0	16.0
	20–30	26	26.0	26.0	42.0
	31–40	17	17.0	17.0	59.0
	41–50	20	20.0	20.0	79.0
	Above 50	21	21.0	21.0	100.0
Occupation	Student	30	30.0	30.0	30.0
	Employee	45	45.0	45.0	75.0
	Business	25	25.0	25.0	100.0
Income	Below 20,000	22	22.0	22.0	22.0
	20,000–50,000	33	33.0	33.0	55.0
	50,000–100,000	25	25.0	25.0	80.0
	Above 100,000	20	20.0	20.0	100.0
Total		**100**	**100.0**	**100.0**	

Inference:

The table 4.1 shows that there are 100 responses altogether representing equal number of male and female. Highest number of people fall under the age of 20-30 i.e., mostly youth and most of the respondents are employees occupying a percentage of 45. Most of the respondents earn an income of 20,000-50,000 INR.

5.2. ANOVA analysis for Satisfaction by Income level

Ho: There is no significance difference between satisfaction levels of using AI in financial services across different income level groups.
H1: There is no significance difference between satisfaction levels of using AI in financial services across different income level groups.

5.3. ANOVA: Satisfaction by Income Level

Table 2 shows the ANOVA: Satisfaction by Income Level.

Table 2. ANOVA: Satisfaction by Income Level

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.441	3	1.480	1.144	.335
Within Groups	124.199	96	1.294		
Total	128.640	99			

Inference:

From the Table 2, one can observe that the significance value i.e., 0.335 is greater than 0.05, therefore we accept the null hypothesis. Hence, we conclude that there is no significance difference between satisfaction levels of using AI in financial services across different income level groups.

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5.4. ANOVA analysis for Satisfaction by Age groups

Ho: There is no significance difference between satisfaction levels of using AI in financial services across different age groups.
H1: There is a significance difference between satisfaction levels of using AI in financial services across different age groups.

5.5. ANOVA: Satisfaction by Age group

Table 3 shows the ANOVA: Satisfaction by Age group.

Table 3. ANOVA: Satisfaction by Age group

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.441	3	1.480	1.144	**.335**
Within Groups	124.199	96	1.294		
Total	128.640	99			

Inference:

From the Table 3 we can observe that the significance value i.e., 0.335 is greater than 0.05, therefore we accept the null hypothesis. Hence, we conclude that there is no significance difference between satisfaction levels of using AI in financial services across different age groups.

5.6. ANOVA analysis for Satisfaction by Occupation

Ho: There is no significance difference between satisfaction levels of using AI in financial services across different occupations.
H1: There is no significance difference between satisfaction levels of using AI in financial services across different occupations.

5.7. ANOVA: Satisfaction by Occupation

Table 4 shows the ANOVA: Satisfaction by Occupation.

Table 4. ANOVA: Satisfaction by Occupation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.690	2	0.845	0.646	.527
Within Groups	126.950	97	1.309		
Total	**128.640**	**99**			

Inference:

From the Table 4 one can observe that the significance value i.e., 0.527 is greater than 0.05, therefore we accept the null hypothesis. Hence, we conclude that there is no significance difference between satisfaction levels of using AI in financial services across different occupations.

5.8. Chi-square test for Occupation Vs Recommendation

Ho: The respondent's occupation has no impact on the likelihood to recommend AI in financial services.
H1: The respondent's occupation has an impact on the likelihood to recommend AI in financial services.

5.9. Chi-Square Test: Occupation vs. Recommendation

Table 5 shows the Chi-Square Test: Occupation vs. Recommendation**.**

Table 5. Chi-Square Test: Occupation vs. Recommendation

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.549	2	.103
N of Valid Cases	100		

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Inference:

From the Table 5 we can observe that the significance value i.e., 0.103 is greater than 0.05, therefore we accept the null hypothesis. Hence, we conclude that the respondent's occupation has no impact on the likelihood to recommend AI in financial services.

5.10. Chi-square test for Income Vs Privacy concern

Ho: Privacy concerns regarding AI are independent of a respondent's income level.
H1: Privacy concerns regarding AI are dependent on respondent's income level.

5.11. Chi-Square Test: Income vs. Privacy concern

Table 6 shows the Chi-Square Test: Income vs. Privacy concern.

Table 6. Chi-Square Test: Income vs. Privacy concern

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.029	3	.258
N of Valid Cases	100		

Inference:

From the Table 6 one can observe that the significance value i.e., 0.258 is greater than 0.05, therefore we fail to reject the null hypothesis. Hence, the privacy concerns regarding AI are independent of a respondent's income level.

5.12. Chi-square test for Age Vs Use of AI services

Ho: There is no association between age and use of AI in financial services.
H1: There is an association between age and use of AI in financial services.

5.13. Chi-Square Test: Age vs. Use of AI services

Table 7 shows the Chi-Square Test: Age vs. Use of AI services.

Table 7. Chi-Square Test: Age vs. Use of AI services

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.310	4	.679
N of Valid Cases	100		

Inference:

From the Table 7 one can observe that the significance value i.e., 0.679 is greater than 0.05, therefore we fail to reject the null hypothesis. Hence, there is no association between age and use of AI in financial services.

5.14. Chi-square test for Gender Vs AI experience

Ho: There is no association between user experience of AI in financial services and gender.
H1: There is a significant association between user experience of AI in financial services and gender.

5.15. Chi-Square Test: Gender vs. AI experience

Table 8 shows the Chi-Square Test: Gender vs. AI experience.

Table 8. Chi-Square Test: Gender vs. AI experience

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.574	4	.467
N of Valid Cases	100		

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Inference:

From the Table 8 one can observe that the significance value i.e., 0.467 is greater than 0.05, therefore we fail to reject the null hypothesis. Hence, there is no association between user experience of AI in financial services and gender.

6 CONCLUSION

The study offers a clear and significant understanding of the functions of AI in financial services base on the analysis of 100 respondents and the use of statistical methods like ANOVA and Chi-square tests. The results show that user happiness and AI adoption are generally consistent across various demographic groupings. Age, income, gender, and employment are examples of variables that have no bearing on utilization, pleasure, or overall experience with AI-driven financial services. This is corroborated by every hypothesis test in which the null hypothesis was accepted since the significance values were higher than 0.05, which implies that AI based financial services are broadly accepted. Users of AI-based services have experiences and perceptions irrespective of their age, income or occupation. Even though the adoption is broad, data security and privacy are to be given most attention to enhance user confidence and guarantee the long-term expansion of AI in the financial industry.

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This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ETHICS STATEMENT

This study did not involve human or animal subjects and, therefore, did not require ethical approval.

STATEMENT OF CONFLICT OF INTERESTS

The authors declare that they have no conflicts of interest related to this study.

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