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EVALUATING THE IMPACT OF AI ON SERVICE EFFICIENCY IN URBAN COOPERATIVE BANKS

Neelam Dharamraj Maurya¹, Dr. Sangeeta Shinde²

¹Research Scholar, Department of Economics, Savitribai Phule Pune University, Pune, India.

²Associate Professor, Department of Economics, Sarhad College of Arts, Commerce and Science, Pune, India.

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Keywords

Urban Cooperative Banks,
Artificial Intelligence,
One Sample t-test,
Exploratory.

Abstract

The technology advancement and the emergence of Artificial Intelligence (AI) is transforming the world. Finance industry is no different from rapidly transforming itself by increasing the customer satisfaction and optimising the services provided by them. Urban Cooperative Banks (UCBs) are an important fraction of the finance industry that supports financial inclusion by serving the local rural communities. Hence, the purpose of the research paper is to evaluate the impact AI has on the service efficiency of UCBs. One Sample t-test was used to analyse the collected data using the R Studio software. The analysed data found that Faster transaction processing, 24/7 uninterrupted banking services, Reduction in operational costs, Better integration with core banking systems, Voice-enabled banking services, I-powered chatbots for customer support, Real-time fraud detection, Improved customer complaint resolution, Market trend forecasting, Efficient workforce planning, and Automated regulatory compliance checks are high impacts of AI on service efficiency in UCBs.

1. INTRODUCTION

The way financial services are provided has changed significantly with the move from traditional banking to AI-powered solutions. Artificial intelligence (AI) fraud detection systems have demonstrated remarkable success in identifying and preventing fraudulent activity, according to recent study presented at the International Conference on Smart Electronics and Communication



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(Biswas, A. et al. 2022). In detecting early-stage fraud, these systems have achieved detection rates of over 95%, which is a significant improvement above conventional rule-based methods. This transformation impacts every aspect of banking operations, including risk management and customer service, and it has far-reaching effects beyond security. It completely changes the way banks communicate with their customers. There have been many stages in the evolution of AI integration in banking, each distinguished by notable technological breakthroughs and expanding capabilities. Early attempts mostly concentrated on rule-based systems and simple automation, both of which were ineffective. Better risk assessment and fraud detection were made possible by banks utilising more sophisticated analytics and machine learning as technology matured. With systems that can automate complicated procedures and make judgements in real time, the current stage of AI integration is a significant advancement that is changing the banking industry. (V. K. R. Kovvuri, 2024).

Adoption of AI has fundamentally changed the banking industry's competitive environment. With cost reductions of 45% on average across automated activities, financial institutions that have adopted full AI solutions have seen significant increases in operational efficiency. AI-enabled banks report an average 60% rise in customer happiness scores, demonstrating the impressive improvement in customer satisfaction indicators. Early AI adopters saw an average 35% rise in market share in their respective market areas, and these gains have been equally spectacular. Most notably, these banks have used sophisticated AI detection systems to reduce fraud-related losses by 50%. As a result of their experiences with digital-first financial services, customers' expectations have changed considerably. Customers of today's banks expect instantaneous, personalised financial advice across a variety of channels and want constant access to banking services. With consumers placing a greater value on advanced security measures that safeguard their financial assets while preserving transaction simplicity, the expectation for flawless digital experiences has grown significantly. The AI revolution in banking has had a significant and quantifiable commercial impact. With revenue growth rates that are 25% higher than industry norms, financial institutions that have effectively deployed complete AI solutions often beat their counterparts. AI-enabled banks have 40% greater customer retention rates than traditional institutions, demonstrating a notable increase in customer retention measures. (Kovvuri, V. K. R. 2024).

Role and Characteristics of Urban Cooperative Credit Institutions

Aspect	Details
Classification	Cooperative credit is divided into Urban Cooperative Banks (UCBs) and Rural Cooperative Banks.
Regulation - UCBs:	Regulated by Reserve Bank of India (RBI).
Focus of Rural Cooperatives	Delivering credit to rural areas.
Focus of UCBs	Attracting savings from middle- and low-income groups and providing loans to those in need.
Target Borrowers of UCBs	Small merchants, craftsmen, individuals with regular



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	monthly income.
Loan Types Offered by UCBs	Loans against gold, movable and immovable property.
Other Services	Offers various financial services similar to commercial and nationalized banks.
Operational Area	Primarily cater to Non-Agricultural Credit Societies and meet the credit needs of urban populations.
Social Role	Serve middle, lower-middle, and underprivileged sections of society.
Institutional Character	Jointly owned, democratically governed, ethically managed financial institutions.

Source: Pandian, V. A., & Yadav, U. (2022). A Study on the Funds and Investment Management of the Dehradun Urban Co-Operative Bank in Uttarakhand. *Shanlax International Journal of Management*, 9(S1-Mar), 92–103. <https://doi.org/10.34293/management.v9is1-mar.4897>

2. REVIEW OF LITERATURE

Bhadauria, B. & Mishra, D. (2025) Investigated in their study about the role played by Artificial Intelligence in transforming the process of appraisal of performance in the banking industry. The banks have been in an increased manner integrate various tools of Artificial Intelligence through advancements of technology for enhancing efficiency, accuracy, as well as fairness in the evaluation of performance. Through automation of the routine job, identification of the patterns, as well as provide predictive analysis, Artificial Intelligence shows potentiality for revolutionising the system of traditional appraisals. This study offers insightful analysis of contemporary performance management techniques together with tactical suggestions to improve operational efficacy globally.

Witts, J. (2024) Analysed in their research seeking in exploring role of Artificial Intelligence in order to improve experience of the customers as well as personalizing of the banking services in the emerging market. The conclusions derived from the research shows that the role played by AI is important for financial inclusion of the emerging nations, which is also involves onboarding of the customers, process of authentication, management of risk as well as portfolio, data analytics, detecting frauds, credit appraisal, as well as investments. Inclusion of Artificial Intelligence provides banks with a groundbreaking prospect for stimulating financial system of emerging economies, improving it's efficiency, & facilitating better experience for the customers.

Shaikh, A., Kumar, A., et al. (2024) Conveyed in their research study about examining the satisfaction of the customers while using the services of banks with the help of Artificial Intelligence in India. The research addresses firstly, that will the customers find the use of Artificial Intelligence technology efficient as well as a reliable alternative in comparison to traditional banking activities, and secondly, will the use of AI be able to save the time of the customers. The use of Artificial



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Intelligence will help in improving the experience of the customers through way of making that more enjoyable as well as accessible leading to customer satisfaction.

Zulfiqar, N., Ghafoor, F., et al. (2024) Described in their research study about understanding the limit to where the transformation of core activities have reached with the help of Artificial Intelligence in providing customer services, detecting frauds, operations, as well as managing risk within the banks. So as in maximizing the benefits of Artificial Intelligence, the study focuses on the need for implementing comprehensive policies which will be able in balancing adoption of technologies through data security, ethical considerations, as well as by providing training to the staff/personnel.

Ofuani, A., Omoera, C., et al. (2024) Examined in this research study regarding the integration of Artificial Intelligence and its impact on the performance of money deposit banks in Nigeria, specifically focusing on the United Bank for Africa. The study analyzed various factors related to artificial intelligence and their influence on banking performance. The results indicated that mobile banking and robotic process automation positively and significantly enhance bank performance, while the use of Integrated Chatbots and Digital Customer Support Systems showed a negative correlation and are unlikely to significantly impact performance. The study recommends that organizations incorporate artificial intelligence into their banking operations to help employees navigate challenges and improve their productivity as well as satisfaction of employment.

Almustafa, E., Assaf, A., et al. (2023) Determined in their research paper about investigating as well as illuminating the potential of transformation performed by Artificial Intelligence with respect to enhance the financial services in the context of commercial banks in Jordan, especially focusing on management of credit risk. The main objective of this research is in providing insights within the working of the Artificial Intelligence technology that could prove to be instrumental in reshaping the practices of traditional banking as well as improving the complete effectiveness as well as efficiency of the process of managing credit risk. As essential elements of AI-driven transformation in the banking industry, the study integrates ideas from data analysis, machine learning, and predictive modelling.

3. OBJECTIVES OF THE STUDY

(I) To evaluate the impact of AI on Service efficiency in Urban Cooperative Banks

(II) To propose suggestive measures for effective integration of AI tools in Urban Cooperative Banks.

Hypothesis:

H₀: The mean score of the impact of AI on service efficiency in Urban Cooperative Banks is less than or equal to 3

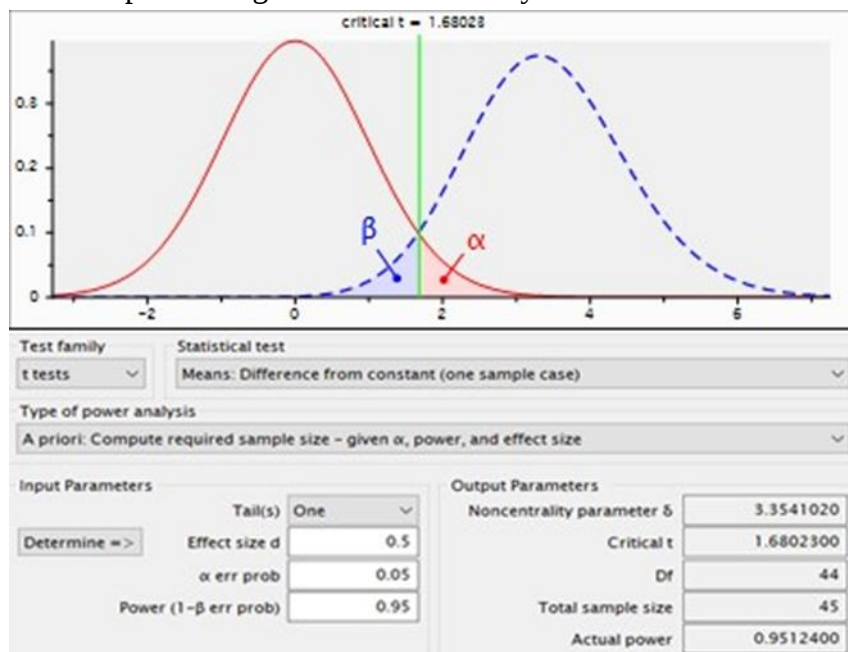
H₁: The mean score of the impact of AI on service efficiency in Urban Cooperative Banks is greater than 3



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3. RESEARCH METHODOLOGY

The current study used Descriptive research design. The data was collected through primary (questionnaire) and secondary (journals, articles, thesis, etc) both. The sampling technique used in the current study is Non-Probability Purposive. This sampling technique is specifically used to target individuals actively who have specific characteristics that is most relevant to the purpose of the research. In the present study, 150 UCBs Managers. The sample size was determined based on Faul et al. 2007 where in a minimum sample size of 45 is required for conducting a one-tailed one-sample t-test. The statistical technique used is a parametric one-sample t-test. This test is used to determine whether the mean of a simple sample has any significant difference from a known or hypothesized population mean. The R Studio Software which is most commonly used for commuting statistical data and visualisation and performing advanced data analysis.



Data Analysis and Interpretation:

Table No 1: One sample t test

Items	t – statistics	P – value	Ha: mean score of Impact of AI on Service Efficiency in Urban Cooperative Banks > 3
Faster transaction processing	20.98	0.000	High impact
24/7 uninterrupted banking services	21.90	0.000	High impact
Reduction in operational costs	24.44	0.000	High impact
Better integration with core banking systems	21.77	0.000	High impact
Voice-enabled banking services	23.44	0.000	High impact



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AI-powered chatbots for customer support	20.45	0.000	High impact
Real-time fraud detection	20.12	0.000	High impact
Improved customer complaint resolution	23.11	0.000	High impact
Market trend forecasting	24.65	0.000	High impact
Efficient workforce planning	22.89	0.000	High impact
Automated regulatory compliance checks	21.77	0.000	High impact

The results of the one-sample t-test reveal that all the evaluated items related to the impact of AI on service efficiency in Urban Cooperative Banks have t-values significantly greater than zero and p-values of 0.000, which are well below the standard significance level of 0.05. This indicates a statistically significant difference from the test value of 3, supporting the alternative hypothesis that AI has a positive and high impact on various dimensions of service efficiency. Key areas such as faster transaction processing, 24/7 service availability, operational cost reduction, real-time fraud detection, chatbot-based customer support, and automated compliance have all shown strong and consistent high impact, suggesting that AI integration is significantly improving the performance and service quality of Urban Cooperative Banks.

4. CONCLUSION

The findings of this study concluded that AI is greatly improving UCBs service efficiency in several ways. AI applications are revolutionizing Faster transaction processing, 24/7 uninterrupted banking services, Reduction in operational costs, Better integration with core banking systems, Voice-enabled banking services, I-powered chatbots for customer support, Real-time fraud detection, Improved customer complaint resolution, Market trend forecasting, Efficient workforce planning, and Automated regulatory compliance checks are the main advantages of these services. These developments facilitate strategic decision making and regulatory compliance in addition to raising the satisfaction of the customers. It can be concluded that AI is emerging as a strategic tool that enables UCBs to modernize their services, stay competitive, and better serve their community focused banking mission. It can be said that AI significantly improves both operational and customer-facing aspects of UCB functioning.

5. SUGGESTIONS

The Urban Cooperative Banks are suggested to form an AI task force which is dedicated towards assessing the digital readiness and identifies specific areas where AI can be implemented effectively, these task forces can consist of IT professionals, Banking Staff and AI experts. UCBs can even invest in literacy programs of AI implementation that helps in capacity-building for the employees so that the knowledge gap can be bridged and smooth adoption of AI tools can be ensured across all the



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levels of the institution. These organizations can also look at partnership with the current trending fintech firms and institutions that provides AI solutions to access cost-effective technologies tailored to the cooperating banking norms. They can also develop ethical and data governance framework that addresses important factors such as security, privacy, regulatory compliance, most importantly customer facing applications so as to ensure that AI is being used responsibly. The UCBs can launch pilot projects of AI solutions in selected branches to evaluate performance, make necessary adjustment gathered through feedback before rolling out these suggestions to the entire bank network. They can also foster customer awareness campaigns to educate the users of the benefits of AI-enables services like voice banking, chatbots, and fraud detection tools to develop trust and adoption across the customers.

6. AUTHOR(S) CONTRIBUTION

The writers affirm that they have no connections to, or engagement with, any group or body that provides financial or non-financial assistance for the topics or resources covered in this manuscript.

7. CONFLICTS OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

8. PLAGIARISM POLICY

All authors declare that any kind of violation of plagiarism, copyright and ethical matters will take care by all authors. Journal and editors are not liable for aforesaid matters.

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