

Impact of Artificial Intelligence in Banking Sector with Reference to Private Banks in India

Sharan Kumar SHETTY
Manel Srinivas Nayak Institute of Management
sharansai25@gmail.com

Cristi SPULBAR
Faculty of Economics and Business Administration, University of Craiova, Craiova,
Romania, cristi_spulbar@yahoo.com

Ramona BIRAU
Faculty of Economic Science, University Constantin Brancusi, Tg-Jiu, Romania
ramona.f.birau@gmail.com

Robert Dorin FILIP
University of Craiova, Doctoral School of Economic Sciences, Craiova, Romania
filiprobertdorin@gmail.com

Abstract

After the implementation of AI in Banks it is difficult to access some of them and at the starting stage people not ready to take risk. The study's data was gathered from primary and secondary sources of data. This study was done to know how the implementation of AI in banks impacted to the customer and to the bankers, is it really helps to the work or transaction or not. A variety of hypothesis were developed and evaluated in order to fulfil the goals of valuable suggestion that would benefit the customer for their easy transaction and to the banker to reduce burden of work. We gathered data for the study from both the primary and secondary aspects of data. The primary data collected from the customer is 170 and from the banker is 30 samples. As per customer point of view and banker's point of view total 200 primary data were collected for the study. From axis bank, ICICI bank, Karnataka bank, HDFC bank, etc. primary data collected as a banker point of view. For more information, secondary data were used that is from books, magazines, and from the websites. And chi square, correlation and regression statistical tools are used for the test.

Keywords: Artificial Intelligence; Mobile banking; Private Banks; Customers; emerging economy

INTRODUCTION

Artificial intelligence (AI) is the ability of a computer or a robot controlled by a computer to do tasks that normally require human intelligence and discernment. It is a simulation of human intelligence in machine that think and act like humans. Artificial Intelligence used in different industries like finance, health care, etc.

AI is also implemented in banking sector that is implemented to detect the fraud, solve the customer query, tracking customer behavior and recommending personalized service to them. Artificial intelligence (AI) is one technology that will alter the banking industry; banks are becoming more popular among customers. Traditional banks have begun to offer more online services as well. Artificial intelligence helps them automate procedures, make better judgments, and handle customer support requests with fewer resources. Also helps with risk management by detecting and combating fraud and money laundering in real time. Artificial intelligence can be applied in a variety of ways to improve the banking business. Banks can utilize AI to improve the customer experience by providing frictionless, 24/7 interactions; however, AI in banking apps isn't confined to retail banking. Investment banking's back and middle offices, as well as all other financial services, could benefit from AI. After India's independence, the government intended to nationalize the banks because all of the main banks were privately owned; this was a source of concern because people in rural areas still relied on money lenders for help. Reserve Bank of India was nationalized in 1949. Nationalization of the banking system improves the economy's overall health, creates more job opportunities, and boosts the country's rural and agricultural sectors.

Making internal operations efficient and the customer experience more effective has undoubtedly become a challenge following the demonetization average of Indian consumers becoming comfortable with internet banking. One of the major issues facing banks today is poor data quality and customer segmentation.

With the emergence of technology-oriented payments banks such as Airtel Payments Bank, Paytm Payments Bank, and others, as well as the arrival of neo banks and neo banking platforms, as well as the advent of NBFCs, banks are finding it increasingly difficult to survive in the old paradigm.

AI refers to a system that can see the world around it, analyze and interpret the data it gets, act on that understanding, and improve its performance by learning from its mistakes. And, by allowing robots to interact more naturally with their surroundings, people, and data, technology can expand both humans and machines' capacities well beyond what they can do on their own.

The banking industry has been transformed by artificial intelligence (AI). For greater development possibilities and to better serve new-age consumers, banks are actively implementing new-age technologies. AI is assisting banks in transforming their operations across the board, from accounting to sales to contracts and cybersecurity, Banks are future-proofing their offerings and services with data analytics, block chain, and machine learning.

AI in banking and finance is improving bank and financial company performance and competitiveness. Banks are applying AI to identify fraud, improve customer experience, track customer behavior to offer more tailored services, analyze client credit histories to anticipate risks associated with loan allocation, and many other purposes. Banks are implemented AI in some areas that are as follows: One of the key use cases of AI in the banking business is AI-based chatbot service. It is the modern way of providing service to the customers. AI chatbots in the banking business may serve consumers 24 hours a day, seven days a week and provide correct answers to their questions. These chatbots provide users a customized experience. As a result, AI chatbots for banking and financial operations enable banks to grab client attention, improve service quality, and grow their brand's market presence. Based on user search trends, intelligent mobile apps may monitor user behavior and extract insightful information. These data would aid service providers in making tailored suggestions to customers.

PROBLEM STATEMENT

There is a barter system in India, that time it is very difficult to transact and trade. After that paper notes came to picture and people use the paper currency for the transaction and that feels easy and convenience to transaction and that gives proper value as well.

In the case of banking transaction there need to visit bank and do the transaction. If there is any query then have to go to bank and solve, even the waste of time and errors are more. Implementation of AI reduce the time consuming and error in the transaction but negatively it increases the unemployment.

OBJECTIVE

1. To study the Artificial Intelligence in the banking sector and how it impacted to the customers.
2. To study the influence of AI in to the bankers.
3. To assess the challenges of bankers in the implementation of AI.
4. To examine the performance of banking sector post implementation of Artificial Intelligence.

LITERATURE REVIEW

Singh and Pathak (2020a) argued that an emerging country such as India is not very focused on digitalization so the distribution channels are very important in the context of the buying and selling process of investment for financial tools and assets. The research study also discussed about the the measures implemented by Reserve Bank of India (RBI) in the context of COVID-19 pandemic but also about Securities Exchange Board of India also known as SEBI and the volatility of stock prices.

Noreen et al. (2023) suggested that the banking industry can use suitable methods based on artificial intelligence in order to improve the quality of customer services as well as the banks' performance indicators. Karbassi Yazdi et al. (2022) argued that service industry is essential for a sustainable the economic development, especially because unlike traditional sectors the dependence on conventional resources is much reduced and it is open to the application of new and innovative business models. Birau et al. (2021) also suggested that the banking system is a vital mechanism in terms of reaching a sustainable level of development of the global economy.

Singh and Pathak (2020b) defined the concept of artificial intelligence such as “*the ability of machines to think on their own and do a task without the help of human beings*”. The banking industry represents a data - intensive domain very compatible with artificial intelligence or machine intelligence and its such as the following: the field of machine learning (ML), Natural Language Processing also known as NLP, Deep Learning, interactive voice response (IVR), Speech Recognition or speech- to- text, image analysis and many others.

Mhlanga (2020) investigated the effect of Artificial Intelligence on the process of digital financial inclusion, while highlighting the importance of aspects such as: chatbots, fraud detection and cybersecurity in the context of improving the quality of services provided to bank customers.

Mehdiabadi et al. (2022) suggested that the concept of banking 5.0 is based on the architecture of an industrial revolution generated by artificial intelligence. Moreover, Samartha et al. (2022) examined the impact of mobile-banking applications and online transactions using “Unified theory of acceptance and use of technology” (UTAUT) modified model based on a case study for India which is an emerging country.

NEED FOR THE STUDY

Need for this study is whether the implementation of Artificial Intelligence in banking sector is positively impacted to the bank and the customer or to the clients. AI impacted positively, then how it actually effected to the bankers and to the customer for their transactions. Chatbots is really solving the query of the customer immediately, it gives detail about the loan and what and all improvements are happened after the implementation of AI in banks. After the implementation of AI what and all problems happened to the customer and banks and what are the factor which really positively improved the banking transactions.

RESEARCH METHODOLOGY

Research approach was used to attain the project goal. To complete the project goal gathered information from the primary and secondary data. This is a descriptive study; it divided the large problem in to smaller one. More specific problems and stresses the discovery of fresh ideas and insights. Out of 138 crore population in India, in that divided private bank customer and the banker and based on that 200 sample collected for the study.

Sample means group of the population chosen for the study. Customers of Private Banks and the Bankers of Private Banking Sectors are included in the sample for the study.

Sample Size

Number of sample units are collected for the study is known as sample size. 170 respondents are taken from the customers of private banks. How the application of Artificial Intelligence in banks affected their banking transactions. 30 respondents are collected form the Bank employees.

Sampling Procedure

The Random sampling technique was adopted to select the respondents for the study purpose. Primary method was used to collect the data. There were two parts in the questionnaire Part A is Demographic details and Part B will be Conceptual questions.

Sample Design

Data presented with the help of pie charts, chi square, correlation and regression.

SOURCE OF DATA COLLECTION

Primary data secondary data were collected for this research. Questionnaires were used to collect primary data. There were both open ended and closed ended question used in the questionnaire. Separate questionnaires prepared for the customers and the bankers. Journals, magazines, internet websites, textbooks and literature survey are the secondary sources of data used for the completion of this project.

EMPIRICAL RESULTS

Before any conclusions can be made, the data collected from various respondents must be examined. As a result, efforts have been made in this chapter to assess and gather information

utilizing a questionnaire on "Impact of Artificial Intelligence in Banking Sector with Reference to Private Banks."

The collected data was collected first, and then used to analyze percentage and pie charts.

STATISTICAL TOOLS

Table no 1 - Customer satisfaction and safety in AI

Data collected from customers' perspective Test used Chi-square Table No. 4.35

Case Processing Summary						
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Implementation of AI in Banks increases the safety in transaction* AI gives better experience beyond the customer expectation	170	100.0%	0	.0%	170	100.0%

Table no 2– AI Implementation

Implementation of AI in Banks increases the safety in transaction* AI gives better experience beyond the customer expectation					
	AI gives better experience beyond the customer expectation				Total
	Disagree	Neutral	Agree	Strongly agree	
Strongly disagree	1	3	10	1	15
Disagree	3	10	27	4	44
Neutral	1	18	22	6	47
Agree	1	5	20	2	28
Strongly agree	0	6	18	12	36
Total	6	42	97	25	170

Table no 3

Chi-Square Tests		
Value	df	Asymp. Sig. (2-sided)
22.376a	12	.034
21.289	12	.046
7.134	1	.008
170		

a. 8 cells (40.0%) have expected count less than 5. The minimum expected count is .53.

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.363	.034
	Cramer's V	.209	.034
N of Valid Cases		170	

Source: Data collected from primary data and computation of data completed with the help of spss.

Interpretation

An overview of case processing is provided in the first table, which also shows how many valid instances were used for analysis. The test can only take into account examples with non-missing data for both Implementation of AI in Banks increases the safety in transaction AI gives better experience beyond the customer expectation.

The results of the chi-square testing tables are the individual chi-squares. The test statistic is 22.376 in value. The statistic refers to the expectation that all expected cell counts will be greater than 5, which was satisfied because no cell had an expectation that was less than 5. The degree of freedom (df) is 12. The corresponding p-value for the test statistic is $p = 0.034$. Because the p-value is lesser than the significant level we set ($\alpha = 0.05$), we have to reject the null hypothesis. Instead, we arrive to the conclusion that the evidence is insufficient to establish a connection between Implementation of AI in Banks increases the safety in transaction AI gives better experience beyond the customer expectation.

Chi-square Table no. 4
Digital transaction and customer experience

Case Processing Summary						
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
AI Service motivates the customers to do digital transactions * AI gives better experience beyond the customer expectation Cross tabulation	170	100.0%	0	.0%	170	100.0%

AI Service motivates the customers to do digital transactions * AI gives better experience beyond the customer expectation Cross tabulation

			AI gives better experience beyond the customer expectation Cross tabulation				Total
			Disagree	Neutral	Agree	Strongly agree	
AI9	Disagree	Count	1	4	8	0	13
		Expected Count	.5	3.2	7.4	1.9	13.0
	Neutral	Count	1	21	20	5	47
		Expected Count	1.7	11.6	26.8	6.9	47.0
	Agree	Count	3	12	56	8	79
		Expected Count	2.8	19.5	45.1	11.6	79.0
	Strongly agree	Count	1	5	13	12	31
		Expected Count	1.1	7.7	17.7	4.6	31.0
Total	Count	6	42	97	25	170	
	Expected Count	6.0	42.0	97.0	25.0	170.0	

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	33.908a	9	.000
Likelihood Ratio	31.302	9	.000
Linear-by-Linear Association	12.720	1	.000
N of Valid Cases	170		

7 cells (43.8%) have expected count less than 5. The minimum expected count is .46.

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.447	.000
	Cramer's V	.258	.000
N of Valid Cases		170	

Source: Data collected from primary data and computation of data completed with the help of spss.

Interpretation

An overview of case processing is provided in the first table, which also shows how many valid instances were used for analysis. The test can only take into account examples with non-missing data for both Implementation of AI Service motivates the customers to do digital transactions and AI gives better experience beyond the customer expectation.

The results of the chi-square testing tables are the individual chi-squares. The test statistic is 33.908 in value. The statistic refers to the expectation that all expected cell counts will be greater than 5, which was satisfied because no cell had an expectation that was less than 5. The degree of freedom (df) is 9. The corresponding p-value for the test statistic is $p = 0.000$. Because the p-value is lesser than the significant level we set ($\alpha = 0.05$), we have to reject the null hypothesis. Instead, we arrive to the conclusion that the evidence is insufficient to establish a connection between Implementation of AI in Banks increases the digital transaction and that gives better experience beyond the customer expectation.

Correlation

Table no. 5 Quick and safe transaction in AI and solve the query immediately

Descriptive Statistics				
		Mean	Std. Deviation	N
AI-based mobile applications can make the transaction quicker & safer		3.89	.942	170
Chatbots helps to solve the queries immediately		3.79	.737	170

Correlations			
		AI-based mobile applications can make the transaction quicker & safer	Chatbots helps to solve the queries immediately
AI14	Pearson Correlation	1	.113
	Sig. (2-tailed)		.141
	N	170	170
AI10	Pearson Correlation	.113	1
	Sig. (2-tailed)	.141	
	N	170	170

Table no. 6
Age of the customer and reduction in human error after implementation of AI

Descriptive Statistics			
	Mean	Std. Deviation	N
Age	2.31	.637	170
Implementation of AI in banking sector reduces the human error	3.86	.824	170

Correlations			
		Age	Implementation of AI in banking sector reduces the human error
Age	Pearson Correlation	1	.051
	Sig. (2-tailed)		.512
	N	170	170
AI4	Pearson Correlation	.051	1
	Sig. (2-tailed)	.512	
	N	170	170

Interpretation

The first value of Pearson's r i.e., the correlation coefficient. Which in this case 0.051. Pearson's r varies between +1 and -1, 0 means there is no linear correlation at all.

Age of the customer and reduction in human error after implementation of AI these two factors are taken for the test and it shows weak positive relation because age of the customer mainly effect to the human error because it is difficult to use aged people compare to young one. Because AI is the new concept.

Table no 7 - Chatbots and quick and safety in transaction

Variables Entered/Removed ^b			
Model	Variables Entered	Variables Removed	Method
1	Chatbots helps to solve the queries immediately	.	Enter

Table no 8 - All requested variables entered.

Dependent Variable: AI-based mobile applications can make the transaction quicker & safer.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.113a	.013	.007	.939

a. Predictors: (Constant), Chatbots helps to solve the queries immediately

Regression Table no. 9

Annova						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.925	1	1.925	2.183	.141a
	Residual	148.169	168	.882		
	Total	150.094	169			

Predictors: (Constant), Chatbots helps to solve the queries immediately.

Dependent Variable: AI-based mobile applications can make the transaction quicker & safer.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.345	.379		8.829	.000
	Chatbots helps to solve the queries immediately	.145	.098	.113	1.478	.141

Dependent Variable: AI-based mobile applications can make the transaction quicker & safer.

Interpretation

The model summary table provides the R value. The R value is 0.939 which indicates a high degree of correlation. Here the regression value is more than 0.05 that is 0.141, so we can accept hypothesis and it shows the high level of correlation between the variables. Chatbots and quick and safety in transaction these both are the variables taken for the test and it shows high correlation because everyone accept that chatbot improve the safety in transaction.

Data collected from Bankers' perspective CHI SQUARE

Table no. 10
Age and positive impact of implementation of AI in banks

Case Processing Summary						
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Age * AI positive	30	100.0%	0	.0%	30	100.0%

Age * AI positive Cross tabulation						
		AI positive				Total
		neutral	agree	strongly agree		
Age	21-30	Count	6	4	4	14
		Expected Count	4.7	4.2	5.1	14.0
31-50		Count	1	4	2	7
		Expected Count	2.3	2.1	2.6	7.0
51-60		Count	3	1	3	7
		Expected Count	2.3	2.1	2.6	7.0
above 60		Count	0	0	2	2
		Expected Count	.7	.6	.7	2.0
Total		Count	10	9	11	30
		Expected Count	10.0	9.0	11.0	30.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2- sided)
Pearson Chi-Square	7.541a	6	.274
Likelihood Ratio	8.065	6	.233
Linear-by-Linear Association	1.793	1	.181
N of Valid Cases	30		

a. 11 cells (91.7%) have expected count less than 5. The minimum expected count is 0.60.

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.501	.274
	Cramer's V	.355	.274
N of Valid Cases		30	

Interpretation

An overview of case processing is provided in the first table, which also shows how many valid instances were used for analysis. The test can only take into account examples with non-missing data for both age and the implementation of AI impacted positively to the banks. The results of the chi-square testing tables are the individual chi-squares. The test statistic is 7.541 in value. The statistic refers to the expectation that all expected cell counts will be greater than 5, which was satisfied because no cell had an expectation that was less than 5. The degree of freedom (df) is 6. The corresponding p-value for the test statistic is $p = 0.274$. Because the p-value is greater than the significant level we set ($\alpha = 0.05$), we have to accept the null hypothesis. Instead, we arrive to the conclusion that the evidence is insufficient to establish a connection between age and the implementation of AI in Banks impacted positively.

Table no. 11
Reduction in Fraud and Customer satisfaction
Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
AI fraud reduction * Customer satisfaction	30	100.0%	0	.0%	30	100.0%

AI fraud reduction * Customer satisfaction Cross tabulation						
			Customer satisfaction			Total
			neutral	agree	strongly agree	
AI fraud reduction	disagree	Count	2	3	0	5
		Expected Count	.8	2.5	1.7	5.0
	neutral	Count	0	3	0	3
		Expected Count	.5	1.5	1.0	3.0
	agree	Count	2	8	5	15
		Expected Count	2.5	7.5	5.0	15.0
	strongly agree	Count	1	1	5	7
		Expected Count	1.2	3.5	2.3	7.0
Total		Count	5	15	10	30

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Expected Count			5.0	15.0	10.0	30.0

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.390a	6	.077
Likelihood Ratio	13.702	6	.033
Linear-by-Linear Association	5.757	1	.016
N of Valid Cases	30		

10 cells (83.3%) have expected count less than 5. The minimum expected count is .50.

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.616	.077
	Cramer's V	.436	.077
N of Valid Cases		30	

Interpretation

An overview of case processing is provided in the first table, which also shows how many valid instances were used for analysis. The test can only take into account examples with non-missing data for both fraud reduction and customer satisfaction.

The results of the chi-square testing tables are the individual chi-squares. The test statistic is 11.390 in value. The statistic refers to the expectation that all expected cell counts will be greater than 5, which was satisfied because no cell had an expectation that was less than 5. The degree of freedom (df) is 6. The corresponding p-value for the test statistic is $p = 0.077$. Because the p-value is greater than the significant level we set ($\alpha = 0.05$), we have to accept the null hypothesis. Instead, we arrive to the conclusion that the evidence is insufficient to establish a connection between fraud and customer satisfaction.

Correlation

Table No. 12
Gender and AI is technical

Descriptive Statistics			
	Mean	Std. Deviation	N
Gender	1.33	.479	30
AI technical	3.23	1.431	30

Correlations			
		Gender	AI technical
Gender	Pearson Correlation	1	-.017
	Sig. (2-tailed)		.930
	N	30	30
AI technical	Pearson Correlation	-.017	1
	Sig. (2-tailed)	.930	
	N	30	30

Interpretation

The first value of Pearsonr i.e., the correlation coefficient. Which in this case -0.017. Pearson's r varies between+1 and -1, 0 means there is no linear correlation at all.

AI is technical and gender these two variables are taken for the test that is correlation. As a result, it shows that their negative relation because everyone accept that AI is technical and experts are needed to operate and that is why implementation of AI in bank is so expensive.

DISCUSSIONS

Out of 200 responses collected as sample for the study, in that 170 response from the customers and 30 from the bankers. It shows that response from the below 18 years and above 60 age group is comparatively very low from the other age group. Because 18-25 years age group customers have more knowledge about AI in banks. Because they more eager to learn new things. Response from the female is 69% and from male is 31%. It shows that females are more interested to transact after the implementation of AI in banks. And have knowledge about AI in banking sector and that reduces the burden. Out of 170 respondents when we take the marital status, 70% from the single and 30% from the married. As result of this finding majority of respondents are single. Less age group people know about this because they do search or try to go with changes happens in the economy. Though it shows that highest response got from the graduate and post graduated educational background people. Educated people know about this and they are do more search about and use this for their daily banking transactions to avoid the waste of time. As a result it shows that most of them are aware about using AI in banks.

Nowadays AI implemented in banks and it helpful to the customer, so everyone know about it. As result implementation of AI in Bank is helps to the customer for their transaction and it impacted positively to the bank because it reduces the complication of banking transactions. As per the survey it shows that AI is easy to access and simplify the banking transaction, everyone easily access and the information relates to how to use everything are available through the search engines. It helps to reduce the error as compare to manual transactions. It gives clear statement about any banking related transactions.

AI reduces the work compare to before and as well it save the time of the customer, because any query can solve through the Chatbots no need to visit bank and solve it. And the transaction will be transparency after the implementation of AI in banking sector that is help to the customer because they trust because the transactions are transference. In this come to know that it is safer for the transaction, because transactions are transparency and it is safe. Through this come to one result that AI avoids the waste of time. Because it reduces the time for going bank for every transaction or any query. As a result it shows that not strongly motivates everyone to deposit money in the bank but customers agree to deposit money in the bank. Because people not ready to keep money in bank but they invest in other source and make profit out of that. As a result it says that Chatbots solve the query immediately in some banks and some are not. But most of the bank solve immediately through this they can save the time and get clarity about the problem. As a result it shows that AI gives better experience to the customer than their expectation, because Chatbots gives information regarding problems, it saves the time and easy way of transactions to the customers.

So it results as it gives notification for the expenses and where to invest in bank and that is helps the customer for their decision regarding the transaction. It provides information to the customer what they really want. As a result it shows that AI provides personal suggestion to the customer about the loan insurance and capital bases it helps the customer that what kind of loan is good for them. As a result it shows that AI based mobile applications are safer and quick for the banking transaction; it is even easy for the transaction, and convenience for

everyone. As a result it shows that regular updates about the financial position of the banks are available and that is easy for the customer to invest feel safe to do the banking transactions. When statements are updated then customer feels safer for their transaction in the bank. The corresponding p-value for the test statistic is $p = 0.034$.

Because the p-value is lesser than the significant level we set ($\alpha = 0.05$), we have to reject the null hypothesis. Instead, we arrive to the conclusion that the evidence is insufficient to establish a connection between Implementation of AI in Banks increases the safety in transaction AI gives better experience beyond the customer expectation. The results of the chi-square testing tables are the individual chi-squares. The test statistic is 33.908 in value. The corresponding p-value for the test statistic is $p = 0.000$. Because the p-value is lesser than the significant level we set ($\alpha = 0.05$), we have to reject the null hypothesis.

Instead, we arrive to the conclusion that the evidence is insufficient to establish a connection between implementation of AI in Banks increases the digital transaction and that gives better experience beyond the customer expectation. AI-based mobile applications can make the transaction quicker & safer and chatbots helps to solve the queries immediately, the correlation coefficient between these variable is shown. Which in this case 0.113. Pearson's r varies between +1 and -1, 0 means there is no linear correlation at all. So it indicates positive correlation. Age and implementation of AI in banking sector reduces the human error, the correlation coefficient between these two variable is in this case 0.051. Pearson's r varies between +1 and -1, 0 means there is no linear correlation at all. indicates weak positive correlation. Chatbots helps to solve the queries immediately and dependent Variable AI-based mobile applications can make the transaction quicker & safer. The model summary table provides the R value. The R value is 0.939 which indicates a high degree of correlation. Here the regression value is more than 0.05 that is 0.141, so we can accept hypothesis and it shows the high level of correlation between the variables.

Data collected from Bankers' perspective

As a result it shows that 21-30 age group of bankers young and they have knowledge about the implementation of AI in banks and they are more interested in implication of new technology, so there is more response from the 21-30 age group compare to above 60 age group. More male employees are working in private banks and they are enjoying the impact of AI in banks, so the more response got from the male compare to female. Almost every private employee is known about the implementation of AI in banks. Because compare to the nationalized banks private banks are adopted AI in banks.

So more response for yes compare to no. As a result of the above table and pie chart it shows that some branches of banks are implemented and most of the banks are intended to but not started yet because implementation of AI is reduce the work load with less error but that is more expensive. Implementation AI in the bank is important because it attracts the customer and reduces the error and it is more transparency so most of the responses are agree for the particular statement. Bankers are agreeing for the statement that it reduces the man-hour, because almost every works are computerized and machines are doing. As a result it increases the unemployment in the economy.

Though AI provides more information relates to loan and other things it has to give more information to the customers, so bankers strongly agree that they provide transparency of data to the customers. Because of the implementation of AI in banks it provides internal and external client view that is how many are visited website and did transaction with the bank. And how many clients are solving the query these are available, so the bankers agree for that above mentioned statement. Bankers are strongly agree for the statement because AI reduces the error, improve customers count, and solve the problem immediately it reduces the waste

of time.

AI is difficult to access most of them are agree for this and some are disagree, because for this technical knowledge required and if any mistake happened then that will effect entire procedure, so the more consciousness required for this. Technical changes in the bank make changes in banking system. Before this customer has to visit bank for every transaction but now one finger touch everything can do easily. Implementation of AI in banks are more expensive because it requires to install machines and software that are costly, so bankers agree for the statement and some are neutral because it is expensive and it has more benefits as well. 50% of the responses are agree for the statement, because implementation of AI reduces the human error, because it is done through computers not every transaction done by humans.

AI gives customer satisfaction as compare to before. Because nowadays clients are busy and when an emergency they can do easy transactions, so customers are definitely satisfied of implementation of AI in banks. Where the service gets more and favor to the customer at that time client visit there. So the updating is more necessary to survive in this competitive environment. So the bankers agree that AI helps the private banks to stay in the market with this more number of competitions. The results of the chi-square testing tables are the individual chi-squares. The test statistic is 11.390 in value. The corresponding p-value for the test statistic is $p = 0.077$. Because the p-value is greater than the significant level we set ($\alpha = 0.05$), we have to accept the null hypothesis. Instead, we arrive to the conclusion that the evidence is insufficient to establish a connection between fraud and customer satisfaction. The results of the chi-square testing tables are the individual chi-squares. The test statistic is 11.390 in value.

The corresponding p-value for the test statistic is $p = 0.077$. Because the p-value is greater than the significant level we set ($\alpha = 0.05$), we have to accept the null hypothesis. Instead, we arrive to the conclusion that the evidence is insufficient to establish a connection between fraud and customer satisfaction. Gender and AI technical are the two variables, the correlation coefficient between these two variable is in this case -0.017. Pearson's r varies between +1 and -1, 0 means there is no linear correlation at all.

SUGGESTIONS

Customers should consider switching to digital transactions because current trends are shifting and it is crucial to stay current and follow them. And also when there is something new come into picture customers should do search and follow that and also avoid them from the any fraud. At the same time when AI implemented in the bank, bank should give awareness or knowledge about that to the people. Because of this people more use this and even one who not ready to accept the changes or one who not know how to use or scare to use they will come to know about the implementation of AI in banks that will help the bank to increase the use of AI in banking sector. This also helps to the success of implementation of AI in banks. Implementation of AI in banks is very expensive, when it is come to private bank it is difficult to them. So for this government have to give some fund to the implementation of AI in banks because it also develops the country s economy. For this private bank give more importance to the implementation of AI in banks.

As per the result it shows that Artificial Intelligence is one of the expensive because it is technical parts are involved in it. So, while implementing the AI in Banks the employees should get proper training about it otherwise there is difficulty in transaction and customers won't get benefit. And specialized in that area people required and appointing them in the banks is expensive. When implementing the AI in bank there should need proper technology change and experts are required to install and also employer should get training about the technical part. Implementation of AI in bank will be expensive but it reduces the human error

and give proper information about the transaction and any changes regarding to the banks is easily and fast available to the customer. Proper training should be given to the employees and knowledge about the implementation of AI in banks should give to the customer and that will help to succeed the implementation of AI in banking sector.

CONCLUSIONS

The world of banking is shifting faster than ever, with Artificial Intelligence (AI) leading the way in bringing in sea change in the banking industry. Various AI technologies have been applied in banking in fields such as core banking, operational performance, customer support and analytics. For AI, banking is no longer just physical branches, but a brand-new world of modern banks. The introduction of new banking services by modern day banks is helping them to grow and expand. Technology is enabling increased penetration of the banking system, increased cost effectiveness and is making small value transactions possible. Effective use of technology has a multiplier effect on growth and development of banks. Hence with the introduction of artificial intelligence, more customers are attracted, and it is helping the banks to grow more. Banks can apply AI to improve the client experience by empowering frictionless, round the clock client association - however AI in banking applications isn't simply restricted to retail banking services. The back and middle office of investment banking and all other money related supervisions are gaining by AI. Out of 200 responses 170 from the customers and 30 from the banker's point of view and as a result come to know that most of young people aware about implementation of AI in bank. And it is easy to operate but there is more knowledge required for same. As per banker's response to come to know that it is expense to implement AI in banks but it reduces the work pressure and unwanted error. So implementation AI in banks helped most of them.

References

- [1] Birau, R., Spulbar, C., Karbassi Yazdi, A., ShahrAeini, S.A. (2021) Critical success factors for CRM implementation in the Iranian banking sector: A conceptual analysis, *Revista de Științe Politice. Revue des Sciences Politiques*, No. 69, 32 – 45.
- [2] Karbassi Yazdi, A., Spulbar, C., Hanne, T. & Birau, R. (2022) Ranking performance indicators related to banking by using hybrid multicriteria methods in an uncertain environment: a case study for Iran under COVID-19 conditions, *Systems Science & Control Engineering*, 10:1, 166-180, DOI: 10.1080/21642583.2022.2052996.
- [3] Mehdiabadi, A., Shahabi, V., Shamsinejad, S., Amiri, M., Spulbar, C., Birau, R. (2022) Investigating Industry 5.0 and Its Impact on the Banking Industry: Requirements, Approaches and Communications, *Applied Sciences*, 12(10):5126. <https://doi.org/10.3390/app12105126>.
- [4] Mhlanga, D. (2020) Industry 4.0 in Finance: The Impact of Artificial Intelligence (AI) on Digital Financial Inclusion *International Journal of Financial Studies*, 8(3):45. <https://doi.org/10.3390/ijfs8030045>.
- [5] Noreen, U., Shafique, A., Ahmed, Z., Ashfaq, M. (2023) Banking 4.0: Artificial Intelligence (AI) in Banking Industry & Consumer's Perspective. *Sustainability*, 15(4):3682. <https://doi.org/10.3390/su15043682>.
- [6] Samartha, V., Shenoy Basthikar, S., Hawaldar, I.T., Spulbar, C., Birau, R., Filip, R.D. (2022) A Study on the Acceptance of Mobile-Banking Applications in India—Unified Theory of Acceptance and Sustainable Use of Technology Model (UTAUT). *Sustainability*, 14(21):14506. <https://doi.org/10.3390/su142114506>.
- [7] Singh, T., Pathak, N. (2020a) Yes Bank Debacle: Whom To Blame For Investor Destruction;

Securities Exchange Board Of India (SEBI) Or Reserve Bank Of India (RBI)?, Journal Of Critical Reviews, ISSN- 2394-5125, 7(16), 1459- 1471.

[8] Singh, T., Pathak, N. (2020b) Emerging Role Of Artificial Intelligence In Indian Banking Sector, Journal Of Critical Reviews, ISSN- 2394-5125, 7(16), 1370- 1373.

QUESTIONNAIRE

Impact of Artificial Intelligence in Banking Sector with the reference to Private Banks (to the customers)

1. Name
2. Email
3. Age
18-25 26-40 41-60 61-80 Above 80
4. Gender
Male Female
5. Marital status
Married Single
6. Qualification
Below SSLC SSLC PUC Graduate Post Graduate
7. I am aware about the use of AI in banking sector
Strongly Agree Agree Neutral Disagree Strongly Agree
8. AI implementation in banking sector has impacted positively.
Strongly Agree Agree Neutral Disagree Strongly Agree
9. Implementation of AI will reduce the work of customers.
Strongly Agree Agree Neutral Disagree Strongly Agree
10. AI will help to show transparency of Banking Transaction.
Strongly Agree Agree Neutral Disagree Strongly Agree
11. Implementation of AI in Banks increases the safety in transaction.
Strongly Agree Agree Neutral Disagree Strongly Agree
13. AI reduces the waste of time for transaction.
Strongly Agree Agree Neutral Disagree Strongly Agree
14. AI Service motivates the customers to do digital transactions.
Strongly Agree Agree Neutral Disagree Strongly Agree
15. Chatbots helps to solve the queries immediately.
Strongly Agree Agree Neutral Disagree Strongly Agree
16. AI gives better experience beyond the customer expectation.
Strongly Agree Agree Neutral Disagree Strongly Agree
17. Banks send the notification about the advice for keeping a check on the expenses and investments based on the data
Strongly Agree Agree Neutral Disagree Strongly Agree
18. AI helps to provide personalised prescriptive suggestions to customers on bank offers related to loan, insurance and other banking products from the captured database of information.
Strongly Agree Agree Neutral Disagree Strongly Agree
19. AI-based mobile applications can make the transaction quicker & safer.
Strongly Agree Agree Neutral Disagree Strongly Agree
20. Regular updates are available about the bank, it helps the customer to know the financial position of the bank.

Strongly Agree Agree Neutral Disagree Strongly Agree

Impact of Artificial Intelligence in Banking Sector with the reference to Private Banks (to the bankers)

1. Name
2. Email
3. Age: 21-30years
31-50years
51-60years
above60years
4. Gender:
Male
Female
Other
5. Name of the bank
6. Designation
7. Are you familiar with Artificial Intelligence?
Yes
No
8. Regarding Artificial Intelligence (AI) solutions, have you?
Implemented
Intend to pursue but not yet started
Not planning to implement
9. Implementation of Artificial Intelligence in banking sector is important.
Strongly Agree Agree Neutral Disagree
Strongly disagree
10. Man-hours were reduced after implementation of Artificial Intelligence in Bank
Strongly Agree Agree Neutral Disagree
Strongly disagree
11. AI helps to provide transparency of data to the customer
Strongly Agree Agree Neutral Disagree Strongly disagree
12. Possible to get a real-time Client View, that combines internal and external data
Strongly Agree Agree Neutral Disagree Strongly disagree
13. There a significantly positive impact of AI on the performance of bank.
Strongly Agree Agree Neutral Disagree Strongly disagree
14. AI is difficult to access, because it is technical.
Strongly Agree Agree Neutral Disagree Strongly disagree
15. Implementation of AI in Bank Sector changed the banking system.
Strongly Agree Agree Neutral Disagree Strongly disagree
16. Implementation of AI in Bank is expensive.
Strongly Agree Agree Neutral Disagree Strongly disagree
17. AI helps the Bank to reduce the fraud and error.
Strongly Agree Agree Neutral Disagree Strongly disagree
18. Implementation of AI in Banking Sector improves the Customer Satisfaction.
Strongly Agree Agree Neutral Disagree Strongly disagree
19. AI helps the Bank to survive and success in the competitive environment.
Strongly Agree Agree Neutral Disagree Strongly disagree