Role of Artificial Intelligence (AI) in the Indian Banking Scenario

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Abstract

The main intend of having AI (Artificial Intelligence) in the banking sector is to get insight into the customers preferences, to make sure that the customers are happy with the services provided by the banks and help the customers understand their expectations from the banks. The study has highlighted the basic modernism through the AI technology in the banking sector which helps the customers and the banking industry. The study has identified the new trends of AI technology in the banking sector like customer support, past interactions, anti-money laundering pattern, voice assisted banking, underwriting, management decision making and reducing frauds. The study was conducted with 100 respondents and the tools used were factor analysis and regression analysis. The concluding observation of the study is that there is no noteworthy relationship between educational qualification and reducing fraud. The results of the factor analysis were the two factor namely personal factors and societal factors which constitute the new trends of AI in the banking sector.

Keywords: Chabot's, Customer support, Reducing fraud, Underwriting, Voice assistance.

Introduction

The dawn of mobile technology, data availability and the explosion of open-source software provide AI a huge playing field in the banking sector. (editorial@yourstory.com Sameer Dhanrajani 2019). The changing dynamics of an app-driven world is enabling the banking sector to leverage AI and integrate it tightly with the business imperatives. (Kimberly Cook 2019) Banks use artificial intelligence to save on the cost of front office, middle office and back office. AI helps very much in consumer support so as to make the customers to have varied services for the betterment of the services among the consumers. (Eleni Digalaki 2019) AI helps in past interactions with the banking activities of the consumers for the benefit of the economy and the banks. AI's main aim is to have a good view on fraudulent activities for the betterment of the economy. (Darrell M West, John R Allen 2018). The main aim of the AI technology is to have a

keen view on the money laundering activities. (Ellen Zimiles 2019), the following are the areas in which the banks play a major role with the help of Artificial Intelligence:

i. **Customer support:** Customer services and business communication. From assisting people in performing daily tasks to giving them a personalized experience, virtual assistants and Chabot's have many applications.

ii. **Past interactions**: AI has been helping banks see and shape the future. By deriving actionable insights from data, technology has made it possible for banks to predict events and anticipate risks.

iii. **Detect Anti-money laundering pattern:** The combative measures to control fraud and money laundering have changed from prescriptive to predictive, saving millions. Using key recommendation engines, banks have also been able to up-sell and cross-sell their products and services to various customers.

iv. **Voice assisted banking:** Leveraging data and AI, banks can also improve revenue growth and customer retention, if a consumer asks a voice assistant to open an account, the bank can call on customer information it already has from previous voice interactions to automatically recognize and verify customer details

v. **Underwriting:** AI analyzes thousands of data points from credit bureau sources to assess credit risk for consumer and small business loan applicants. Because of its accuracy, underwriter AI claims it can reduce defaults.

vi. **Management decision making:** Cognitive systems, enabled by AI, use augmented intelligence to uncover insights and provide optimal solutions in management decision making.

vii. **Reducing fraud:** Banks should be bankable for providing secure and swift transactions. AI is designed to detect the fraud in the transactions on the basis of a pre-defined set of rules. Also, the mobile app can find out any suspicious activity in the customer's account on the basis of behavior analysis.

Literature Review

Eleni Digalaki (2019) in his work "The impact of AI in the Banking sector and how AI being used in 2020" has quoted the three main channels where the banks can use AI is that the front office, middle office and back office. Conversational Banking with the customers, anti fraud activities detection and underwriting activities can be carried out with the help of AI.

Ryan North (2019) "Artificial Intelligence: A Boon to the Banking Industry" has identified the benefits of artificial intelligence in banking like customer satisfaction, Chabot's and detecting fraud. The author has also identified the application of AI in banking like personalized financial guidance, digital wallets, Interactive Voice Response System.

Kul Bhushan (2018) "Artificial Intelligence in Indian Banking: Challenges and opportunities" has said that not just customer support, banks have also started to introduce robots in some banks and ATMs for customer service.

Anjum Khurshid (2018) has researched on **"**Why banks need Artificial intelligence" and concluded that, AI is strengthening competitiveness of banks through enhanced customer experience, prediction of future outcomes and trends, cognitive process automation, realistic interactive interfaces, effective decision making, robotic automation of processes.

Research Gap

As per the studies pertaining to the AI technologies, there are several studies relating to AI technologies in many fields with the emergence of new trends with the AI. But there are no studies related to AI in the banking sector and their new trends. This study has mainly focused on AI technology with reference to the new trends in the banking sector.

Objectives of the Study

The study aims to identify the level of awareness among the key factors relating to Artificial Intelligence in the banking industry which helps one to carry out the day-to-day transactions and also the management activities.

Research Methodology

Table-1 Research methodology

Research Design	Descriptive
Sampling area	Chennai city
Sample Size	100
Research Instrument	Self-designed structured printed questionnaire with scored using a five - Point Likert scale
Collection of Data	Primary data- questionnaire; Secondary data- Journals
Period of Study	January 2020 to April 2020
Statistical Techniques	Factor and Regression Analysis

Hypotheses of the Study

Ho_1- There is no noteworthy relationship between educational qualification and reducing fraud.

Ho_2- There is no noteworthy relationship between educational qualification and underwriting.

Data Analysis and Interpretation

Demographic Profile

Table-2 Age

	Frequency	Percent	Valid Percent	Cumulative Percent
Below 20 years	20	20.0	20.0	20.0
20- 30 years	20	20.0	20.0	40.0
30-40 years	20	20.0	20.0	60.0
40-50 years	32	32.0	32.0	92.0
Above 50 years	8	8.0	8.0	100.0
Total	100	100.0	100.0	

Source: Primary Data

Interpretation: Table 2 shows that out of 100 respondents, majority of the respondents are from the age group of 40 to 50 years.

Table-3 Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Female	34	34.0	34.0	34.0
Male	66	66.0	66.0	100.0
Total	100	100.0	100.0	

Source: Primary Data

Interpretation: Table 3 shows that majority of the respondents is of Male Gender.

Table-4 Educational Qualification				
	Frequency	Percent	Valid Percent	Cumulative Percent
HSC	6	6.0	6.0	6.0
Undergraduate	32	32.0	32.0	38.0

Table-5 Monthly Income				
	Frequency	Percent	Valid Percent	Cumulative Percent
Below Rs.25000	18	18.0	18.0	18.0
Rs.26000-Rs.35000	14	14.0	14.0	32.0
Rs.36000-Rs.45000	28	28.0	28.0	60.0
Rs.46000-Rs.55000	27	27.0	27.0	87.0
Above Rs.55000	13	13.0	13.0	100.0
Total	100	100.0	100.0	
Source: Primary Data				

Interpretation: Table 4 shows that out of 100 respondents, 42% of the respondents are from postgraduate courses, 32% of the respondents are from undergraduate courses, and the remaining are from Higher Secondary Course, Doctorate and other streams.

Interpretation: Table 5 shows that majority of the respondents are earning Rs.36000 to Rs.45000.

Table-6 Occupation

	Frequency	Percent	Valid Percent	Cumulative Percent
Salaried	26	26.0	26.0	26.0
Business	28	28.0	28.0	54.0
Housewife	18	18.0	18.0	72.0
Student	6	6.0	6.0	78.0
Professional	22	22.0	22.0	100.0
Total	100	100.0	100.0	

Source: Primary Data

Interpretation: Table 6 shows that out of 100 respondents, 28 respondents are business people, 26 respondents are salaried people, 22 respondents are professionals, 18 respondents are housewives and the remaining are students.

Factor Analysis

Factor analysis is adopted on the ten variables of factors where the AI helps in the banking sector. These ten variables of factors are identified after the extensive literature survey using the secondary data. Factor analysis is conducted on these variables using the SPSS 20. The ten variables identified are Customer support Enhanced customer experience, Past interactions, Identify fraud, Detect Anti-money laundering pattern, Customer recommendations, personalized financial services, Smart wallets, Voice assisted banking, Underwriting, Data driven AI application, Management decision making, Reducing fraud, fighting crime.

Principal Component method using Varimax (orthogonal) rotation with factor loading based on Eigen values greater than 1is used in Factor Analysis. Kaiser-Meyer-Olkin Statistic for measuring sampling adequacy is 0.738 (>0.7) is found to be a satisfactory count and these ten factors are considered to be of greater adequacy and Bartlett's test of Sphericity (χ^2=748.677, p=0.000) is significant. Factor loadings less than .5 is not considered. Finally, 2 factors are identified and named as Personal benefits and societal benefits. The variables that constitute the 2 factors are shown in Table 7..

Table-7 Factor Analysis			
Factor name	**Variables**	**Component**	
		1	**2**
Personal benefits	**Customer Support**	**.884**	
	Enhanced customer experience	.871	
	Identify Fraud	.783	
	Past Interactions	.759	
Societal benefits	**Management decision making**		**.899**
	Fighting Crime		.866
	Data driven AI application		.781
	Detect Anti-Money laundering Pattern		.776
	Reducing Fraud		.700
	Underwriting		.575
Extraction Method: Principal Component Analysis. Source: Primary data			

Interpretation: Table 7 explains the values of the two factors derived from the factor loadings which play an important role in the banking sector with the help of AI technology. From the above table 7 it is observed that underwriting has the least score of 0.575 which is less than 0.7, which implies that underwriting is the least important factor in the banking sector with the help of AI technology. All the other factors contribute 70% to 89% towards the AI technology in the banking sectors.

Regression Analysis

Ho_1- There is no noteworthy relationship between educational qualification and reducing fraud.

Ho_2- There is no noteworthy relationship between educational qualification and underwriting.

Table-8 Model summary							
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**R Square Change**	**F Change**	**Sig. F Change**
1	.593[a]	.352	.346	.891	.352	53.280	.000**
2	.196[a]	.038	.028	.670	.038	3.904	.051*
** Significant @ 0.01 level, * Significant @ 0.05 level Source: Primary Data							

Interpretation: According to table 8 the coefficient determination of R Square for model1 is 0.352. It indicates that reducing fraud has contributed up to 35.2 % towards AI in banking sectors. The coefficient determination of R^2 for model 2 is 0.038. It indicates that underwriting has contributed up to 3.8 % towards AI in banking sectors. In model 1 the F value and the significance value p, indicates that there is no noteworthy relationship between the educational qualification and the reducing fraud. Thus **$H0_1$** is accepted. In model 2 the F value and the significance value p, indicates that there is a noteworthy relationship between educational qualification and underwriting. Thus **$H0_2$** is rejected.

Table-9 ANOVA

Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	42.278	1	42.278	53.280	.000**
	Residual	77.762	98	.793		
	Total	120.040	99			
2	Regression	1.753	1	1.753	3.904	.051*
	Residual	44.007	98	.449		
	Total	45.760	99			
a. Dependent Variable: Reducing Fraud						
b. Predictors: (Constant), Educational Qualification						
** Significant @ 0.01 level, * Significant @ 0.05 level						
Source: Primary Data						

Interpretation: Table 9 shows the ANOVA table where the hypothesis is tested further. In model1 F value 53.280 and significance value 0.000, p indicates that there is no noteworthy relationship between educational qualification and reducing fraud. In model 2 F value 3.904 and significance value 0.051, p indicates that there is a noteworthy relationship between educational qualification and underwriting.

Table-10 Coefficients						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**T**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	4.682	.229		20.424	.000**
	Educational Qualification	-.517	.071	-.593	-7.299	.000**
2	(Constant)	2.994	.172		17.362	.000**
	Educational Qualification	-.105	.053	-.196	-1.976	.051*
a. Dependent Variable: Reducing Fraud						
** Significant @ 0.01 level, * Significant @ 0.05 level						
Source: Primary Data						

2 Regression equations were derived from the Analysis.

Table-11 Regression equations	
Model 1 (reducing fraud)	Y=4.682 (Educational qualification) -0.517x_i(reducing fraud)
Model 2 (underwriting)	Y=2.994 (Educational qualification)-0.105x_i(underwriting)
Source: Primary Data	

Findings from the Study

Demographic profile: The majority respondents for the study are male from the age group of 40-50 years have completed their Post-Graduate pursuing business and earning Rs.36000-Rs.45000.

Factor analysis: Factor analysis consists of two component personal benefits and societal benefits. Each component has the highest score factor like customer support which is 88.4% and management decision making which is 89.9% respectively.

Regression analysis: The regression analysis further supports the Factor analysis by rejecting the null hypothesis for the reducing fraud and by accepting the null hypothesis for the underwriting factors and reinstates that educational qualification as a predictor in explaining the reducing fraud and underwriting factors. Both the models have a positive impact in understanding the role of AI in the banking sectors.

Suggestions

The need of the hour is to help the underserved population skills in middle-of-the-road banking with technology. The banks are harnessing the control of AI to deliver new client experiences with a variety of resolutions and are setting novel principles for the Indian banking ecosystem, thereby changing a new gesticulate by embracing technology intensity.

Conclusion

AI will provide the foundation for increased product and service innovation. Further, artificial intelligence has the potential to transform customer experiences and establish entirely new business models in banking. To achieve the highest level of results, there needs to be collaboration between humans and machines that will require training and a reassessment of the future of work in banking. Also, mass customization is the key to unlocking significant opportunities in the future and can be tapped only through technologies like AI and block chain.

Scope for Further Research

The study is constrained only to the banking sectors where the AI technology is used in mass contents. The study can be carried out to various other services sectors and also the technological updates in particular sectors in a deep way. The study can be widened with areas like Chabot's and the particular bank which is providing AI technology in different ways.

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Core Theme: Artificial Intelligence in the Banking Sector.

We declare that the submitted paper is original research work, which has not been Published or submitted for publication.