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Adoption of AI in Banking System A Case Study on Indian Banks

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Abstract

The banking industry is undergoing ground-breaking reforms, with a focus on the client as the primary driver. Customers that are tech aware and often interact with cutting-edge technologies want banks to provide smooth experiences. In order to meet these expectations, banks have expanded their industrial landscape to encompass retail, IT, and telecom through the use of services like mobile banking, e-banking, and real-time money transfers. While these advancements have allowed customers to access the majority of banking services whenever they choose, they have also cost the banking sector money. The deployment of AI in banking and financial services, however, also has drawbacks, such as concern about data security and privacy, algorithmic bias, and possible job effects. It is crucial to address these issues and make sure that AI is used in an ethical and responsible way as it becomes more commonplace in banking and financial services. This research paper aims to explore the current state of AI in banking and financial services, as well as its potential impact on the industry as the banking and financial services sector has seen major operational changes as a result of the growing usage of artificial intelligence.

I. INTRODUCTION

In the current banking environment, digital innovations are no longer optional for financial organisations rather, they are increasingly essential for them to manage changing consumer expectations and a market that is becoming more competitive. Artificial Intelligence is the driving force behind many new digital technologies in the modern banking era. These innovations have disrupted banking channels, services and solutions (such as chatbots, automated teller machines, online banking, and mobile banking), as well as services related to check imaging, voice recognition, and investment advisory services.

The use of artificial intelligence in Indian banking has been growing gradually. Banks in the country are using AI for risk management, fraud detection, customer service, and personalized recommendations, among other things. And noteworthy case study is HDFC Bank, which has implemented chatbots driven by artificial intelligence to handle client improving customer satisfaction and productivity. Similar to this, ICICI Bank has reduced risk and improved accuracy by

implementing AI algorithms for fraud detection and credit rating. Adoption of AI in Indian banks is primarily motivated by the needs to reduce costs, improve decision making, and increase customer happiness.

AI is being used in banking in a variety of ways and information accessibility promoted additional study on AI and its possibilities. More recently, developments in technology have made it possible for AI to support enterprise cognitive computing, which entails using applications to embed algorithms in order to support organizational activities. The entails accelerating information analysis, producing data outputs thay are more precise and dependable, and enabling workers to carry out high level duties. AI based solutions have shown to be useful and effective in recent years.

In order to comprehend how AI has historically been used in the banking industry, we comprehensively review the literature on AI and banking from the past and present, offer a service framework, and outline specific research opportunities for the future.

II. REVIEW OF LITERATURE

Ayushman Buruah 2020

Highlighted how the use of AI and ML in data analytics and customer support opens up the possibility of much superior insights, automated back-end processes, and customer experiences that are faster and more personalized. Large financial institutions are investing in these technologies at a rate of over 36% currently, and nearly 70% say they aim to do so in the near future. The study investigated the usage of AI applications in India's top commercial banks, including Axis, HDFC, ICICI, and State Bank of India. Several AI technologies have been effectively implemented in these four institutions. In terms of customer chatbots, SBI has introduced SIA. The AI-powered chatbot "Eva," which stands for "Electronic Virtual Assistant," was created by HDFC Bank. ICICI Bank has made software available.

Navleen Kaur , Supriya lamba Sahdev, Dr Monika Sharma 2020

Claimed that machine intelligence, sometimes known as artificial intelligence (AI), is the simulation of human intelligence in a machine. It is the intelligence that robots display as opposed to the innate knowledge that people exhibit. There is more to artificial intelligence in banking than chatbots. The banking industry is one of the many industries that artificial intelligence has taken over. Understanding how artificial intelligence (AI) is affecting modern banking was the main motivation for this project. This study has mostly concentrated on the idea of artificial intelligence (AI) in the banking industry, how it has drastically changed the industry, and how it affects human labour. This study provides an overview of the ways artificial intelligence (AI) is being used in the banking sector currently and how it is transforming the sector.

Amer Awad Alzaidi 2018

Highlighted how cutting-edge technology like artificial intelligence have led the global technological revolution. Because artificial intelligence (AI) systems can make choices that like those of a human and can also avoid mistakes that resemble those of a human, they have the potential to completely alter the banking industry. While certain industries have embraced artificial intelligence more than others, the banking industry is one of the few that has exhibited a modest level of acceptance and use of this techno

C. Vijay 2019

Noted in his study paper that artificial intelligence (AI) is a rapidly advancing field of technology worldwide. Banks are experimenting with and applying technology in a number of ways. Every day, artificial intelligence advances and becomes more sophisticated. In the banking industry, AI

is transforming customer-facing services and corporate procedures. It is also used to evaluate a person's creditworthiness, detect fraud, and comply with regulatory requirements. The use of AI with its potential to improve corporate operations, provide individualized services, and support more ambitious objectives like financial inclusion.

Ms. Bhavna Agarwal, Dr. Himanshu Agarwal and Dr. Parvez Talib 2019

shown that banks have been providing a wide range of services and products that are automated and integrated with technology; the most well-known of them are the ATMs that are present everywhere. The banking industry is prepared to accelerate the implementation of its plan in the current Industry 4.0 age by utilizing cutting-edge digital technology, ensuring that its customers receive quick and safe transaction processing. This study looked at the development, uptake, use, and potential uses of artificial intelligence (AI) in the banking industry in India for effective strategy execution. The researcher made an effort to look at the state of practical AI use in banking strategies today in a number of areas, such as customer service, credit assessment, fraud detection, monitoring, surveillance, and performing repetitive, heavy work. Ultimately, the study recommended the banking.

III. RESEARCH METHODOLOGY

RESEARCH GAP

Banks have consistently adjusted to technological advancements over time. They changed to satisfy consumer demands, bringing in mobile services, internet banking, and ATMs.

Now, in the AI-powered digital age, there are a plethora of options due to the rapid advancements in AI technology, improved connectivity, and declining costs associated with data processing and storage.

NEED OF STUDY

The banking industry is undergoing revolutionary changes, the most notable of which is the increase in customer centricity. Customers that are tech-savvy and regularly interact with sophisticated technologies anticipate frictionless banking services. In order to fulfill these demands, banks have branched out into the retail, IT, and telecom sectors to offer services like real-time money transfers, e-banking, and mobile banking. Although these developments have made it possible for clients to access the majority of financial services whenever and wherever they choose, there has been a price for the banking industry. This study also sheds light on the advantages and disadvantages of artificial intelligence use in India's banking sector. This study focuses on customer awareness and perceptions of artificial intelligence and is descriptive in nature.

PURPOSE OF STUDY

Study of Artificial Intelligence in Banking and Financial Services in specific nationalized banks confined to client advantages as it were.

PROBLEM STATEMENT

The adoption of AI by banks is driven by the need to improve customer experience, increase profitability, and remain competitive. However, banks are hesitant to fully embrace AI due to concerns relating to people, technology, and regulatory compliance.

OBJECTIVE OF THE STUDY

- To research the domains and applications in which the banking and financial services industry uses artificial intelligence.

- To investigate how bank employees and customers view artificial intelligence in banking and financial services.

RESEARCH DESIGN

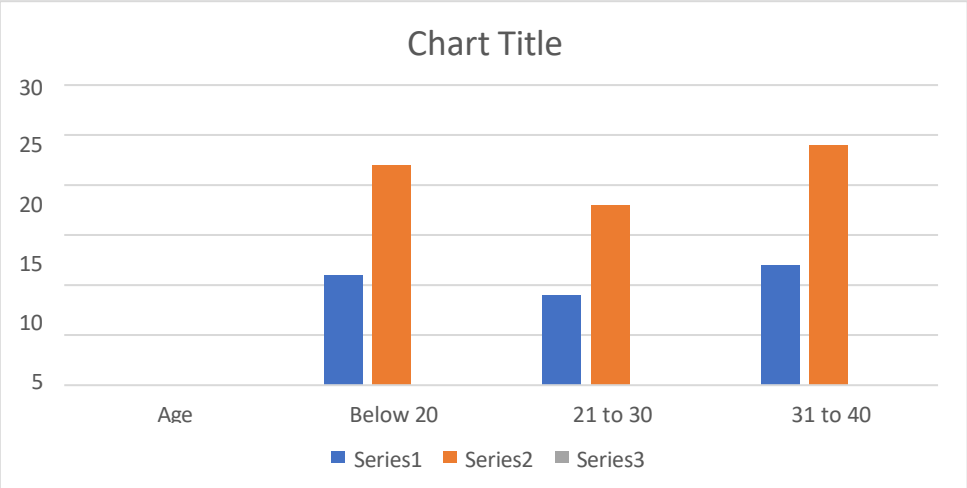
Research Type: Descriptive in nature
Research Design: Qualitative
Data Collection: Gathered in 2 ways
Primary Data: through questionnaire
Secondary Data: Through journals, articles Population: 80
Sample frame: Ranga Reddy Division Sample unit: through students
Sample size: questionnaire
Tools used: Graghs, percentages

HYPOTHESIS

H0: There is no impact of using applications of Artificial intelligence in the banking industry.
H1: There is a impact of using applications of Artificial intelligence in the banking industry.

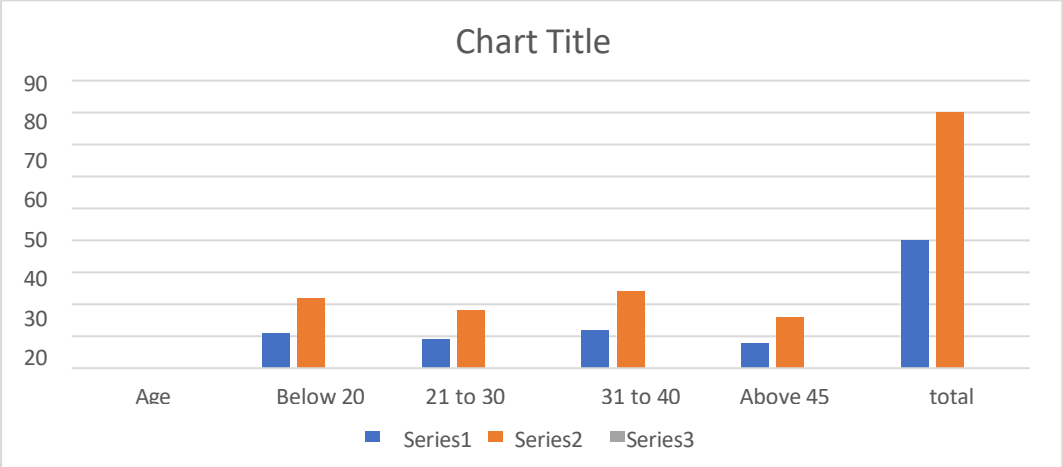
IV. DATA ANALYSIS

Gender	Male	Female	Total
Respondents	12	28	40
Percentages	24	56	80



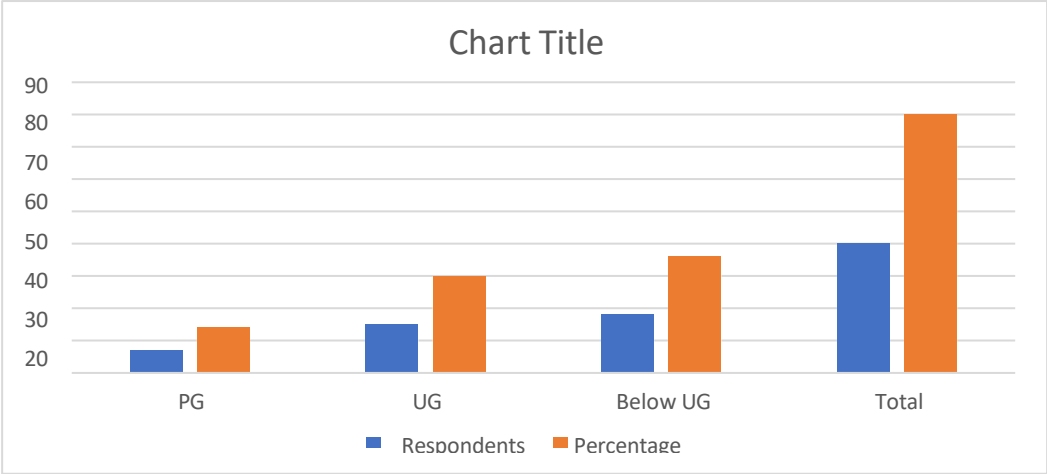
Interpretation: The total respondents are 40 out of which 24% are male and 56% are female.

Age	Below 20	21 to 30	31 to 40	Above 45	total
Respondents	11	9	12	8	40
Percentage	22	18	24	16	80



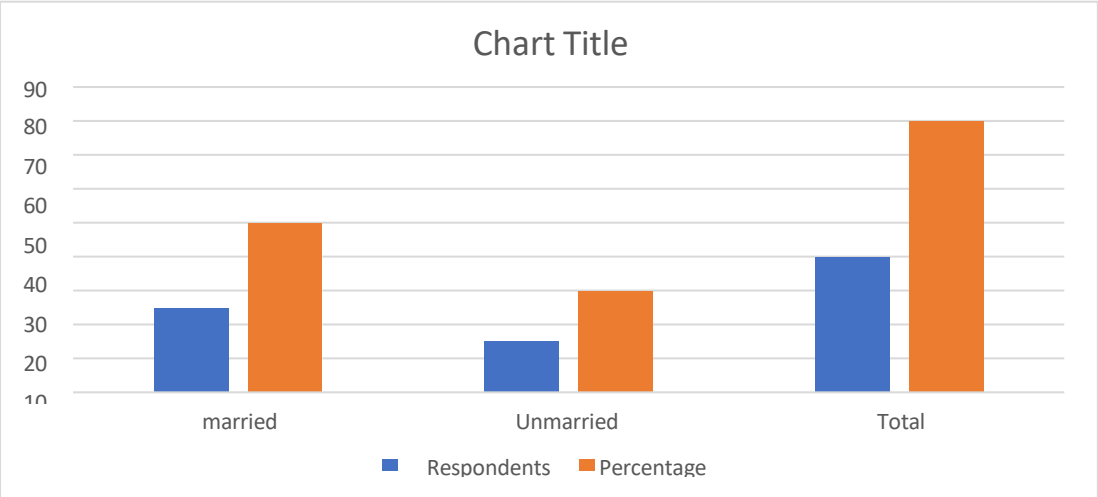
Interpretation: majority of the respondents are between age 31 to 40 with 24%.

Qualification	PG	UG	Below UG	Total
Respondents	7	15	18	40
Percentage	14	30	36	80



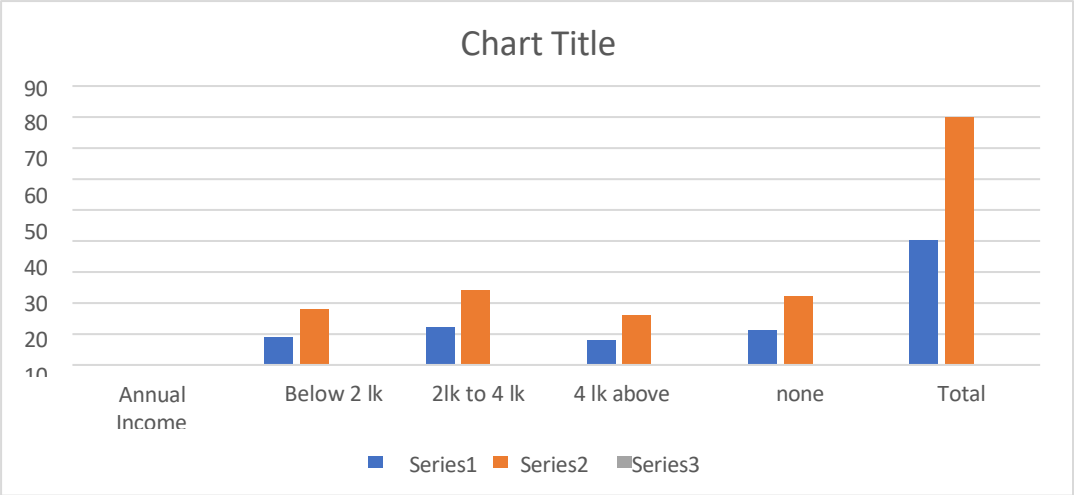
Interpretation: Most of the respondents are from below UG with 36%

Marital status	married	Unmarried	Total
Respondents	25	15	40
Percentage	50	30	80



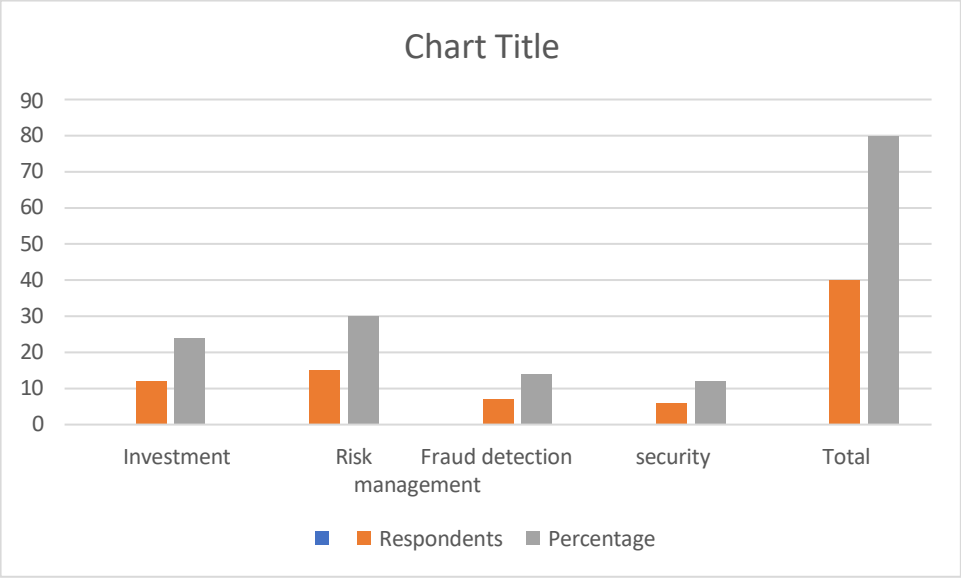
Interpretation: It is observed that 50% are married and remaining 30% are unmarried.

Annual Income	Below 2 lk	2lk to 4 lk	4 lk above	none	Total
Respondents	9	12	8	11	40
Percentage	18	24	16	22	80



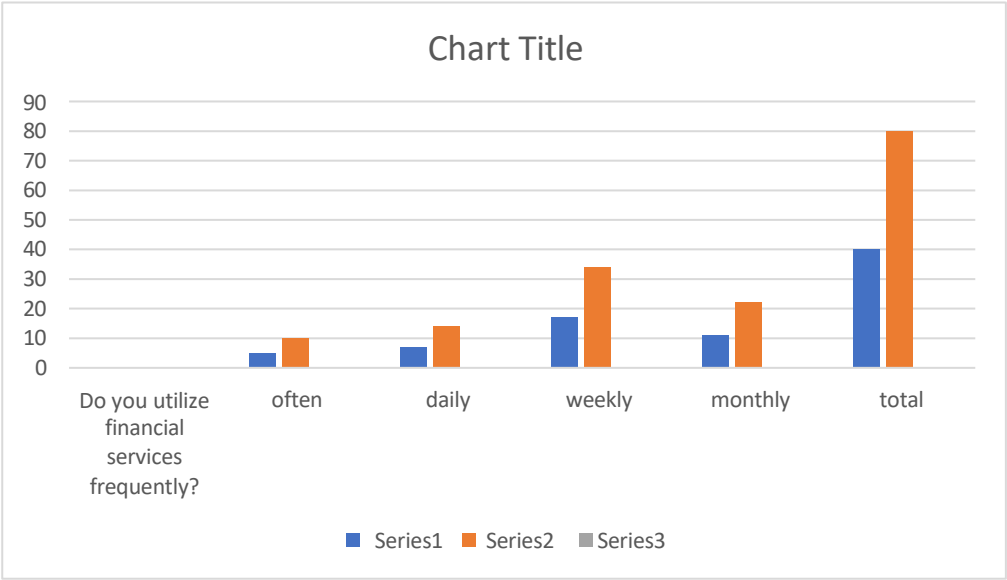
Interpretation: Majority of respondents followed in range between 2lk to 4 lk with 24%

Which aspects of banking do you believe artificial intelligence will have the biggest future effects on, in your opinion?	Investment advising services	Risk management	Fraud detection	security	Total
Respondents	12	15	7	6	40
Percentage	24	30	14	12	80



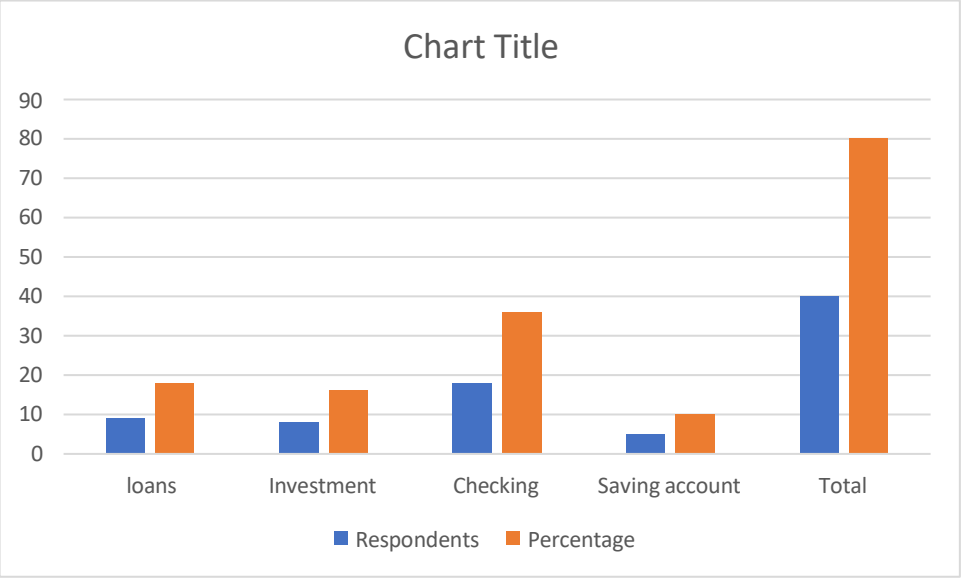
Interpretation: Most respondents believe AI will have the better future with 30%

Do you utilize financial services frequently?	Often	Daily	Weekly	Monthly	Total
Respondents	5	7	17	11	40
Percentage	10	14	34	22	80



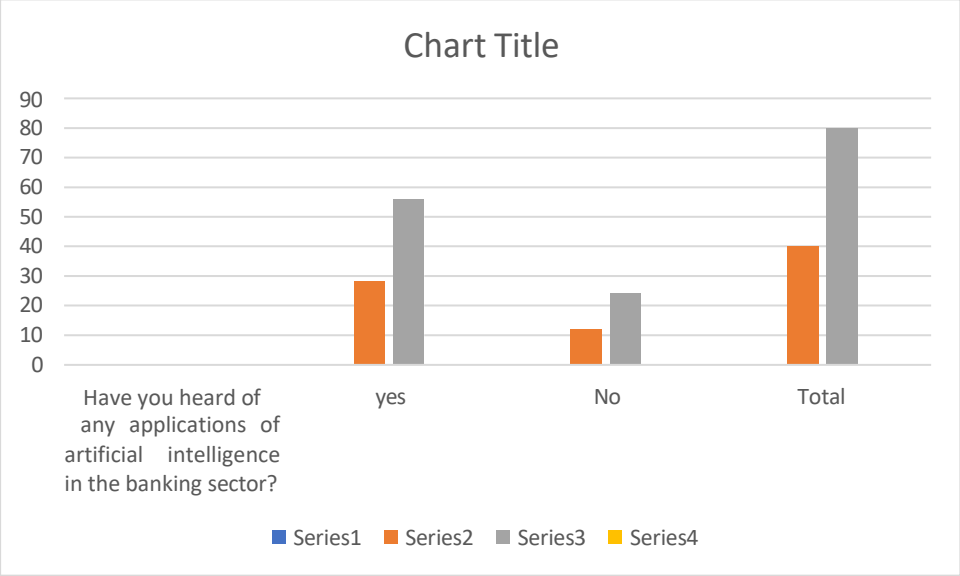
Interpretation: most of respondents use financial services frequently with 34%.

Which financial services are you most likely to use?	loans	Investment	Checking	Saving account	Total
Respondents	9	8	18	5	40
Percentage	18	16	36	10	80



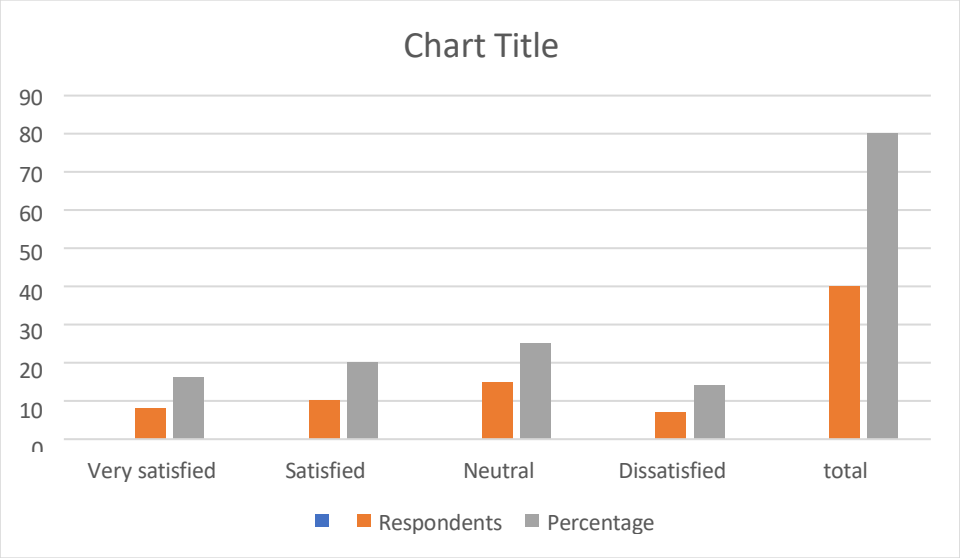
Interpretation: majority of respondents likely to use financial services 36%

Have you heard of any applications of artificial intelligence in the banking sector?	yes	No	Total
Respondents	28	12	40
Percentage	56	24	80



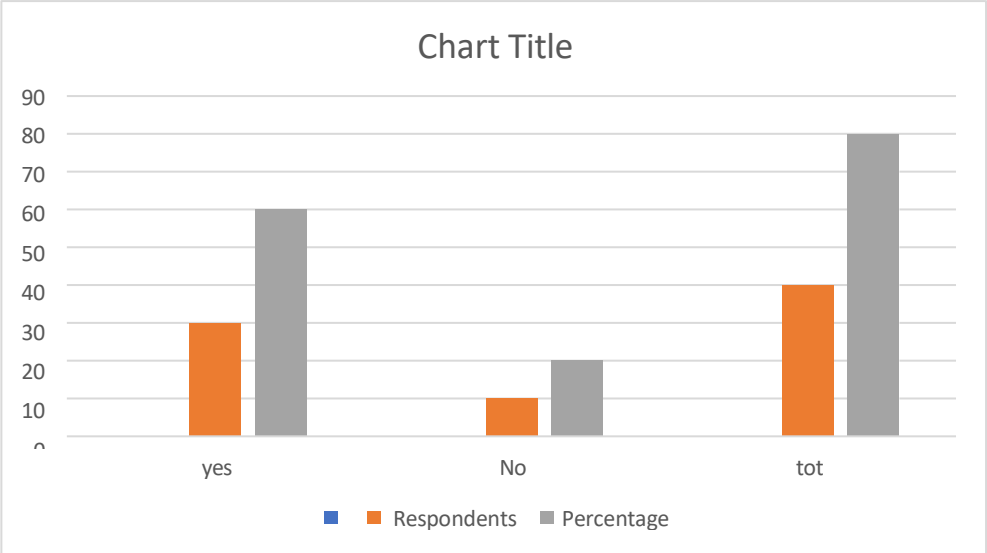
Interpretation: most of the respondents heard about AI in the banking industry with 56%.

How satisfied are you with the AI-powered banking services you've used?	Very satisfied	Satisfied	Neutral	Dissatisfied	total
Respondents	8	10	15	7	40
Percentage	16	20	25	14	80



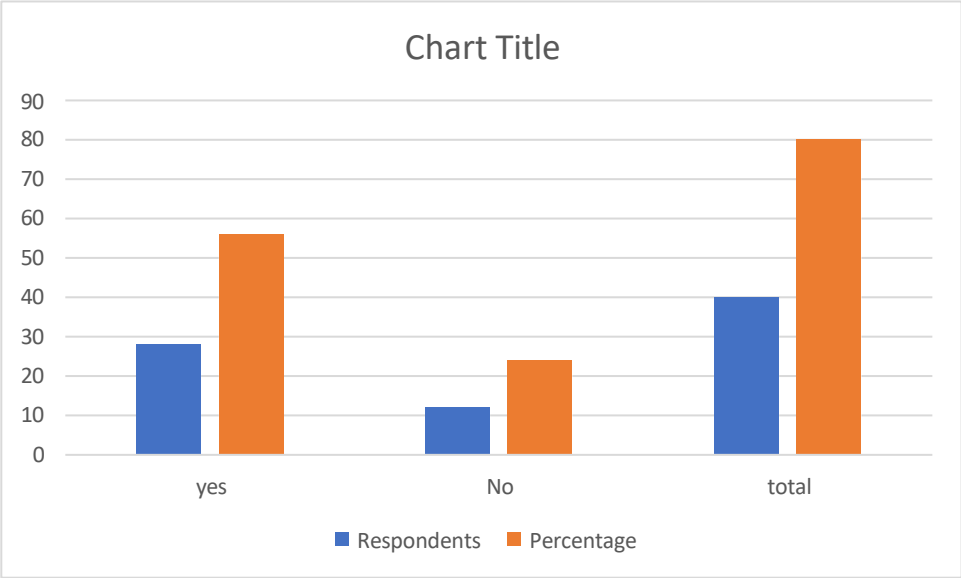
Interpretation: most of the respondents satisfied are with the AI-powered banking services you've used with 25%

In the future, would you be open to using more banking services driven by AI?	Yes	No	Total
Respondents	30	10	40
Percentage	60	20	80



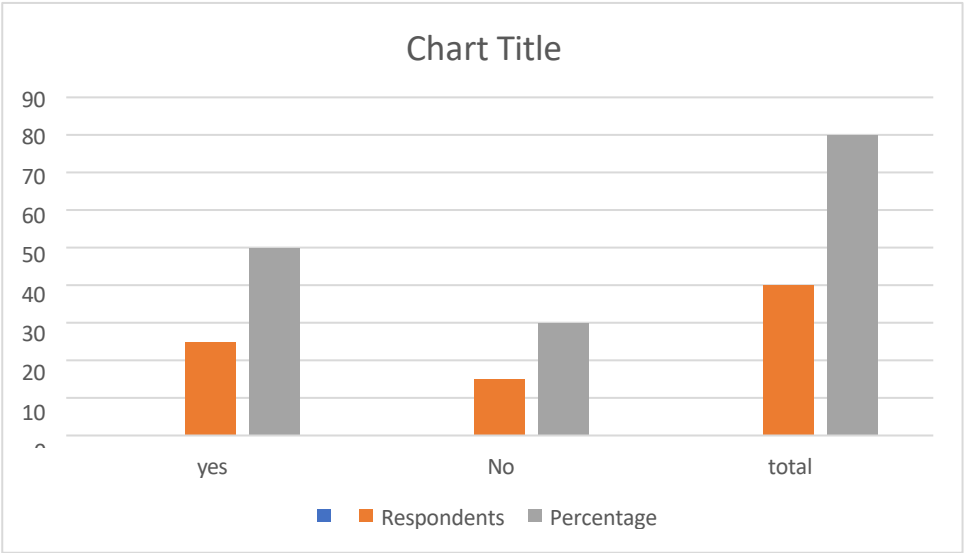
Interpretation: most of the respondents wants to open to using more banking services driven by AI with 60%.

Would you like to add anything more regarding AI in the banking sector?	Yes	No	Total
Respondents	28	12	40
Percentage	56	24	80



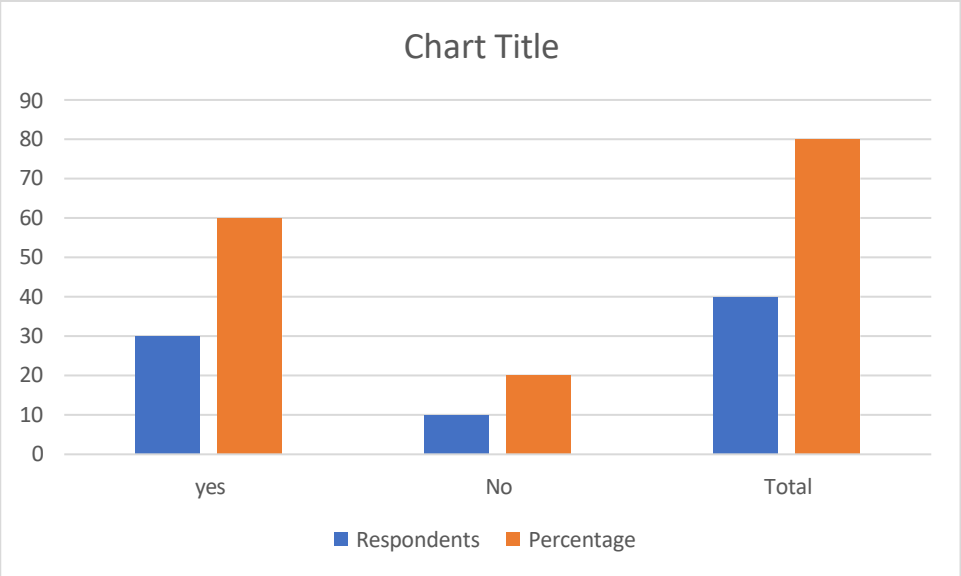
Interpretation: majority of respondents wants to add anything more regarding AI in the banking sector with 56%.

Is AI able to successfully replace human involvement in financial services, in your opinion?	**Yes**	**No**	**Total**
Respondents	25	15	40
Percentage	50	30	80



Interpretation: most of the respondents AI able to successfully replace human involvement in financial services with 50%

There is impact of using AI in banking industry?	**Yes**	**No**	**Total**
Respondents	30	10	40
Percentage	60	20	80



Interpretation: most of the respondents shown impact of using AI in banking industry with 60%

STATISTICAL TOOL FOR ANALYSIS

H0: There is no impact of using applications of Artificial intelligence in the banking industry.

H1: There is a impact of using applications of Artificial intelligence in the banking industry.

	High Impact	**Low Impact**	**Marginal Row Totals**
Male	10(8.93)(0.13)	7(8.07)(0.14)	17
Female	11(12.08)(0.10)	12(10.92)(0.11)	23
Marginal column Totals	21	19	40

The chi-square statistic is 0.4741. The p-value is .491118. The result is not significant at $p < .05$.

Since p value is less than 0.05, H0rejected and Accepted H1. So , there is an impact of adoption of AI in banking industry.

	Yes	**No**	**Margin rows total**
<20years	10 (8.25) (0.37)	1 (2.75) (1.11)	11
21 to 30 years	6 (6.75) (0.08)	3 (2.25) (0.25)	9
31 to 40 years	7 (9.00) (0.44)	5 (3.00) (0.50)	12
>45years	7 (6.00) (0.17)	1 (2.00) (0.05)	8
Margin column total	30	10	40

The chi-square statistic is 4.2626. The p-value is .234466. The result is not significant at $p < .05$.

V. FINDINGS & CONCLUSIONS:

- The total respondents are 40 out of which 24% are male and 56% are female
- It is observed that majority of the respondents are between age 31 to 40 with 24%

- Most of the respondents are from below UG with 36% as UG of 30 %which follows with the difference of 4%
- Most of the respondents are students which contribute with 32%
- It is observed that 50% are married and remaining 30% are unmarried
- Interpretation: Majority of respondents followed in range between 2lk to 4 lk with 24% The respondents believe AI will have the better future with 30%
- Interpretation: most of respondents use financial services frequently with 34% Majority of respondents likely to use financial services 36%
- The respondents heard about AI in the banking industry with 56% Respondents feel AI can make better services with 38%
- Most of the respondents satisfied are with the AI-powered banking services you've used with 25%
- Majority of the respondents wants to open to using more banking services driven by AI with 60%
- Most of the respondents wants to add anything more regarding AI in the banking sector with 56%
- Finally, most of the respondents AI able to successfully replace human involvement in financial services with 50%
- The journey towards becoming AI-first is crucial for maintaining competitiveness and providing value to customers, since the potential benefits are immense

CONCLUSIONS:

Banks have changed over time to accommodate new technology advancements like online banking and ATMs. We currently live in the digital age driven by AI.

Increased automation, better decision-making, and value creation are all possible with AI technologies. According to McKinsey, AI might provide banks with an extra $1 trillion in value every year1.

Four important outcomes that banks may improve using disruptive AI are increased revenues, individualized services, omnichannel experiences, and quick innovation cycles.

AI-first banks will use these technologies to build innovative customer experiences and value propositions.

They'll offer personalized services, seamless omnichannel interactions, and innovative solutions.

AI will improve risk assessment, fraud detection, and customer support.

Adoption of AI is hampered by a lack of a clear AI strategy, obsolete technology infrastructure, fragmented data assets, and operational model issues.

Significant barriers include expertise shortages, data privacy, security issues, and regulatory restrictions.

In conclusion, by improving fraud detection, risk management, and customer service, artificial intelligence has completely transformed routine banking operations. Artificial Intelligence (AI) is poised to become progressively more influential in altering the banking business as technology develops.

Acknowledgement

Nill

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No funding was received to carry out this study.

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