A study of Artificial intelligent in banking sector: A study of Customer and Bank Employee perception toward AI based banking services

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Abstract: The banking sector is witnessing round breaking changes foremost being the rise in customer centricity. Tech-savvy customers, exposed to advanced technologies in their day-to-day lives, expect banks to deliver seamless experiences. To meet these expectations, banks have expanded their industry landscape to retail, IT and telecom to enable services like mobile banking, e-banking and real-time money transfers. While these advancements have enabled customers to avail most of the banking services at their fingertips anytime, anywhere, it has also come with a cost for the banking sector. This study also gives an insight into the positive and negative impact of an Artificial Intelligence using in Indian Banking Industries. This study is of descriptive nature and customer awareness and perception toward the Artificial intelligence. Relevant data have been taken up from the survey as well as secondary data also taken for the basic information descriptive information the various journals, magazines for published papers and websites.

1. Introduction:
The banking industry has been transforming since the pandemic and to ensure that your business processes are in line with current trends and technologies, it is important to keep an eye on these trends as each trend has the potential to change the banking landscape. And no matter what industry you belong to, technology is highly disruptive. Technology can be a double-edged sword, on one hand it is transforming business processes, on the other hand it can be technically difficult for banking leaders to implement this technology without any expert guidance. Therefore, before implementing any technology trend in banking, it is important for operations to understand customer interests, and characteristics and maintain digital trust. Let's dive deep into the top technology trends in the banking industry and how it can change the current banking operations.

2. Objective of the Study:
1. To study concept of Artificial Intelligence in Banking and Financial Services
2. To study the areas and the application where the Artificial Intelligence is being used by the Banking and Financial Services.

Scope of The Study: Study of Artificial Intelligence in Banking and Financial Services in specific nationalized banks constrained to client benefits as it were.

4. Data and Methodologies: The data gathered is Primary and Secondary data, which is qualitative data, which was further analyzed in order to draw conclusions and suggestions. The Primary data was gathered through a survey on artificial intelligence in banking and financial services. A questionnaire was drafted for the survey and random sampling was done. The secondary data collection was done through internet which includes web, magazines, research papers, e-books, newspapers etc.

Concept AI in Banking: AI in banking refers to the application of artificial intelligence technologies in various aspects of the banking industry. It encompasses a wide range of uses, including customer service, fraud detection, risk assessment, and process automation. Some common applications of AI in banking include:

- **Customer Service**: AI-powered chatbots and virtual assistants can handle routine customer inquiries, provide account information, and assist with basic transactions, freeing up human agents for more complex issues.
- **Fraud Detection**: AI algorithms can analyze vast amounts of data to detect patterns indicative of fraudulent activity. This helps banks identify and prevent unauthorized transactions.
- **Risk Assessment**: AI models can evaluate creditworthiness and assess loan risks by analyzing financial data, payment history, and other relevant factors.
- **Personalized Recommendations**: AI algorithms can analyze customer data to offer tailored product recommendations, such as investment options, loans, or credit cards.
- **Process Automation**: AI can automate back-office tasks like data entry, document verification, and compliance checks, improving efficiency and reducing manual errors.
- **Predictive Analytics**: AI can use historical data to make predictions about future financial trends, which can be valuable for investment decisions and risk management.
- **Voice Recognition and Authentication**: AI-driven voice recognition systems are used for secure customer authentication and authorization.
- **Anti-Money Laundering (AML) Compliance**: AI can analyze transactions to detect suspicious activities that may be indicative of money laundering.
Chatbot-based Sales and Support: Chatbots can be used to guide customers through various financial products and services, providing information and assistance in real-time.

Natural Language Processing (NLP): NLP allows AI systems to understand and respond to human language, enabling functionalities like sentiment analysis for customer feedback.

5. Role of AI in Banking: AI plays a crucial role in various aspects of banking services, enhancing efficiency, security, and customer experience. Here are some specific applications of AI in banking services:

- **Customer Service and Support**: AI-powered chatbots and virtual assistants provide 24/7 support, answering customer queries, assisting with account information, and helping with basic transactions.
- **Fraud Detection and Prevention**: AI algorithms analyze transaction data to detect unusual patterns or anomalies that may indicate fraudulent activity. This helps in early intervention and prevention of financial losses.
- **Personalized Financial Advice**: AI analyzes customer data to offer tailored recommendations for products and services, such as investment options, savings plans, or loan solutions.
- **Credit Scoring and Risk Assessment**: AI models evaluate creditworthiness by analyzing financial data, payment history, and other relevant factors. This helps banks make informed lending decisions.
- **Anti-Money Laundering (AML) and Know Your Customer (KYC)**: AI systems assist in compliance by monitoring transactions and customer data for suspicious activities that may be indicative of money laundering or identity fraud.
- **Automated Process and Workflow Management**: AI automates routine back-office tasks like data entry, document verification, and compliance checks. This increases operational efficiency and reduces manual errors.
- **Predictive Analytics for Financial Trends**: AI uses historical data to make predictions about future financial trends, aiding in investment decisions, risk management, and portfolio optimization.
- **Voice Recognition and Biometric Authentication**: AI-driven voice recognition and biometric systems provide secure customer authentication, enhancing security measures.
- **Chatbot-based Sales and Product Recommendations**: AI-powered chatbots guide customers through various financial products and services, providing information and assisting in the selection process.
- **Natural Language Processing (NLP)**: NLP allows AI systems to understand and respond to human language, enabling functionalities like sentiment analysis for customer feedback and social media interactions.
- **Compliance and Regulatory Reporting**: AI systems help banks stay compliant with ever-evolving regulatory requirements by automating reporting processes.
- **Automated Investment Management (Robo-Advisors)**: AI-driven robo-advisors offer automated investment advice based on individual financial goals, risk tolerance, and market conditions.

6. The adoption of AI in the banking sector offers several significant advantages:

- **Enhanced Customer Experience**:
  a. AI-powered chatbots and virtual assistants provide immediate, 24/7 customer support.
  b. Personalized product recommendations based on individual financial behavior and preferences.
  c. Faster and more efficient handling of routine transactions and inquiries.
- **Improved Fraud Detection and Prevention**:
  a. AI algorithms analyze vast amounts of data to detect patterns indicative of fraudulent activity.
  b. Early detection and prevention of unauthorized transactions or suspicious activities.
- **Efficient Risk Assessment**:
  a. AI models evaluate creditworthiness, enabling banks to make more accurate lending decisions.
  b. Better understanding of customer risk profiles, leading to more tailored financial solutions.
- **Cost Reduction and Efficiency**:
  a. Automation of routine tasks, such as data entry, verification, and compliance checks, reduces manual labor costs.
  b. Improved operational efficiency and productivity, leading to lower operational expenses.
- **Predictive Analytics for Financial Planning**:
  a. AI uses historical data to make accurate predictions about future financial trends.
  b. Helps in investment decisions, risk management, and portfolio optimization.
- **Enhanced Security Measures**:
  a. AI-driven authentication methods like biometrics and voice recognition provide robust security measures.
  b. AI helps in identifying and preventing suspicious activities, strengthening overall security.
- **Regulatory Compliance**:
  a. AI systems assist in monitoring and ensuring compliance with ever-evolving regulatory requirements.
  b. Automation of reporting processes helps in meeting compliance standards.
- **Innovative Product Development**:
  a. AI-driven insights from customer data can lead to the development of new and innovative financial products and services.
- **Quick and Accurate Data Processing**:
  a. AI systems can process and analyze large volumes of data at high speeds, leading to quicker decision-making.
- **Adaptation to Customer Behavior**:
  a. AI systems can adapt and learn from customer behavior, allowing for more personalized and relevant interactions.
• **Competitive Edge:**
  a. Banks that leverage AI effectively can gain a competitive advantage by offering more advanced, efficient, and customer-centric services.

• **Scalability and Flexibility:**
  a. AI systems can scale to handle increasing volumes of data and transactions as the bank grows.
  b. Adaptable to changing market conditions and customer needs.

7. Bank Employee and Bank Customer Satisfaction

**Table No. 1 Customer Satisfaction Based Banking**

<table>
<thead>
<tr>
<th>Particular</th>
<th>Maybe</th>
<th>No</th>
<th>Yes</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective than traditional</td>
<td>13</td>
<td>44</td>
<td>43</td>
<td>100</td>
</tr>
<tr>
<td>Is it easy and secured</td>
<td>10</td>
<td>8</td>
<td>82</td>
<td>100</td>
</tr>
<tr>
<td>Accuracy and Useful</td>
<td>1</td>
<td>2</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>Do you feel safe AI based banking application for the banking transaction?</td>
<td>1</td>
<td>13</td>
<td>86</td>
<td>100</td>
</tr>
<tr>
<td>Anytime you can make transaction without any threads</td>
<td>1</td>
<td>13</td>
<td>86</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>80</td>
<td>393</td>
<td>400</td>
</tr>
<tr>
<td>Average</td>
<td>5.2</td>
<td>16</td>
<td>78.6</td>
<td>100</td>
</tr>
</tbody>
</table>

Table no 1 shows that 43% fees that AI based banking is effective than traditional banking system. 82% customer are also feels that AI based banking services are very and secured to use. 86% Customer are also agreed that AI banking technology is accurate and safe. Averagely 78.6% customer are satisfied with AI Based Banking services.

**Table No. 2 Role of AI in banking**

<table>
<thead>
<tr>
<th>Particular</th>
<th>Cannot exact say</th>
<th>Desirable</th>
<th>Essential</th>
<th>Vital</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role of AI in banking</td>
<td>1</td>
<td>10</td>
<td>52</td>
<td>37</td>
<td>100</td>
</tr>
</tbody>
</table>

The role of the AI Based Banking system is very important therefore customer feel that AI based economy. Banking system is playing essential role in the Economy.

**Table No 3: Bank Employee Perception – AI Based Banking**

<table>
<thead>
<tr>
<th>Particular</th>
<th>Strongly Agreed</th>
<th>Agree</th>
<th>Neutral</th>
<th>Dis Agree</th>
<th>Strongly Disagree</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong need for AI in Banking</td>
<td>49</td>
<td>40</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>AI is used Primary Medium for Consumers Interaction</td>
<td>37</td>
<td>50</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>AI reduce Manpower for Routine Task</td>
<td>47</td>
<td>41</td>
<td>7</td>
<td>3</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>AI application user Friendly</td>
<td>46</td>
<td>43</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Payments are easily done</td>
<td>56</td>
<td>37</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Anytime you can make transaction without any threads</td>
<td>56</td>
<td>46</td>
<td>12</td>
<td>5</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>AI Replace Tele callers For routine Consumers Interaction</td>
<td>1</td>
<td>25</td>
<td>1</td>
<td>72</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>272</td>
<td>282</td>
<td>47</td>
<td>88</td>
<td>11</td>
<td>700</td>
</tr>
<tr>
<td>Average</td>
<td>38.85</td>
<td>40.28</td>
<td>6.71</td>
<td>12.57</td>
<td>1.57</td>
<td>100</td>
</tr>
</tbody>
</table>

Table no 3 shows that AI based application are important in the banking industry. Averagely it is observed that 38.85 bank employee are strongly agreed and 40.28% bank employee are agreed that AI based application are useful in the banking Industry. Bank employee are agreed that AI based Banking services reduces human efforts and reduce Manpower for Routine Task.

**Table No. 4 Use and effectiveness of AI Based Banking Services**

<table>
<thead>
<tr>
<th>Particular</th>
<th>Yes</th>
<th>%</th>
<th>No</th>
<th>%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count of Chatbots</td>
<td>90</td>
<td>90</td>
<td>10</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Count of Voice Assistants</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Count of Authentication and biometrics</td>
<td>65</td>
<td>65</td>
<td>35</td>
<td>35</td>
<td>100</td>
</tr>
<tr>
<td>Count of Authentication and biometrics</td>
<td>90</td>
<td>90</td>
<td>10</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Count of Fraud detection and Prevention</td>
<td>90</td>
<td>90</td>
<td>10</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Count of KYC/AML</td>
<td>65</td>
<td>65</td>
<td>35</td>
<td>35</td>
<td>100</td>
</tr>
</tbody>
</table>
Table no The Above table shows that the frequency analysis for evaluating the useful applications of AI in Banking and Financial Services revealed that 90% of respondents says Chatbots applications of AI is very useful in BFS, 52.5% of respondents says Voice Assistants is not useful in BFS, 65% of respondents says Authentication and Biometrics is very useful, 92.5% respondents says fraud and detection and prevention is used to secure the data, 97.5% respondents says applications of KYC/AML is very useful to provide documents and other details to submit in BFS and 67.5% respondents says Smart Wallet applications in AI handling cashless Transactions in this generation

8. Challenges in Adopting AI in Banking
The wide implementation of high-end technology like AI is not without challenges. Several challenges exist for banks using AI technologies, from lacking credible and quality data to security issues.

1. Data Security: The amount of data collected in the banking industry is huge and needs adequate security measures to avoid any breaches or violations. So, looking for the right technology partner who understands AI and banking well and offers various security options to ensure your customer data is appropriately handled is important.

2. Lack of Quality Data: Banks need structured and quality data for training and validation before deploying a full-scale AI-based banking solution. Quality data is required to ensure the algorithm applies to real-life situations. Also, if data is not in a machine-readable format, it may lead to unexpected AI model behavior. So, banks accelerating toward the adoption of AI need to modify their data policies to mitigate all privacy and compliance risks.

3. Lack of Explainability: AI-based systems are widely applicable in decision-making processes as they eliminate errors and save time. However, they may follow biases learned from previous cases of poor human judgment. Minor inconsistencies in AI systems do not take much time to escalate and create large-scale problems, risking the bank’s reputation and functioning. To avoid calamities, banks should offer an appropriate level of explainability for all decisions and recommendations presented by AI models. Banks need to understand, validate, and explain how the model makes decisions.

9. Conclusion: Artificial Intelligence has numerous advantages to offer for the financial segment. Based on the findings, it can be concluded that Artificial Intelligence in Banking and Financial Services satisfying their clients or consumer’s needs. Banking and Financial Services consumers have good awareness about Artificial Intelligence applications. Adoption of Banking and Financial Services AI in applications was highest followed by KYC/AML, Chatbots and Security Compliance and also helping to fulfil the customer demand faster and easier. The consumers are satisfied with the AI based banking services and it also shows that AI based banking playing essential role in the banking services. Bank employee are also satisfied with AI based banking services it help to bank employee and gives relaxation from monotony work. It is work effective and can easily handle to employee as well as customer. Overall AI is playing Important role in banking Industry.

References:
4. https://www.insiderintelligence.com/content/state-of-banking-5-charts