Banking Bot

Rameshwari Kapoor, B. Tech CSE, 2nd year

GEU

Abstract

Artificial intelligence (AI) has transformed the way that banks communicate with their consumers in the banking sector by enabling chatbots. It also investigates the chatbot's current usability to determine whether it can satisfy customers' fluctuating needs. Machine learning-based bots are used to review frequently requested inquiries from clients and process representations. Any nation's development depends heavily on the banking industry. In light of this, this study offers a thorough, systematic analysis of articles that discuss bots in the financial sector. It discusses the understanding of bots in the banking world in terms of implementation, adoption intention, attitude towards use, and acceptance. It also discusses how people interact with bots, specifically in terms of perception, expectation, and trust, as well as how they are engaging and emotionally motivated. Finally, it manages security and privacy vulnerabilities and identifies potential tactics that could thwart the effective, successful evolution of bots in business.

The development of a financial bot project makes use of AI algorithms that can grasp the user's message and the user's questions. Users of the system, which is intended for banks, may ask any inquiries on banking topics including loans, accounts, policies, etc. connected questions. Bank bot solves the issues a user has and clarifies it with its knowledge.

Keywords: Artificial Intelligence, Bot, Banking, Analysis, Algorithms, Methodology, Technology

Banking Bot

A ‘bot’ – short for robot – is a software program that performs automated, repetitive, pre-defined tasks. Bots typically imitate or replace human user behavior. Because they are automated, they operate much faster than human users. They carry out useful functions, such as customer service or indexing search engines, but they can also come in the form of malware – used to gain total control over a computer Earlier, command line or graphical user interface was used by users to communicate with computers. This form of contact is modernising, however, as technology develops in step with the most recent trends and needs, it has led to enormous advancements like artificial intelligence (AI), machine learning, and natural language processing. Speech and text are currently the most common modes of communication between humans and computers. These exchanges take happen via web-based information applications, which are essential for interpersonal contact. Given the state of technology today, a bot is a cutting-edge tool created specifically to respond to customer inquiries. Industries are being redefined by digital disruption, and firms are operating differently. Customers are changing as they can rapidly check their bank accounts on their smart phones and pay their bills by using a tab on a wearable device. Customers that are tech aware have incorporated cutting-edge technologies into their daily lives and want banks to provide seamless experiences. In light of this, we aim to address the following research questions: 1. What are the themes and sub-themes that emerge from prior literature regarding the utilization of AI in the banking industry? 2. How does AI impact the customer's journey process in the banking sector, from customer acquisition to service delivery? 3. What are the current research deficits and future directions of research in this field? The term "artificial intelligence" (AI) was first coined in 1956 by John McCarthy (McCarthy et al., 1956); it describes systems that behave and reason rationally like humans (Kok et al., 2009).

After the dot com bubble burst in 2000, the field of artificial intelligence (AI) changed towards the Web 2.0 era in 2005, and the expansion of data and ease of access to information stimulated further study into AI and its possibilities (Larson, 2021). A more recent development is workplace cognitive computing, which entails integrating algorithms into apps to help organisational operations (Tarafdar et al., 2019). This method is made possible by technological breakthroughs that have made AI more accessible. This entails enhancing the efficiency of information analysis, producing more precise and trustworthy data outputs, and enabling staff to carry out high-level jobs.

# Literature Review

This section presents a comprehensive analysis of the existing literature on banking bots.

The review covers different aspects of banking bots, including bot adoption, bot design, bot effectiveness, customer perceptions, and ethical considerations. The review also identifies the gaps and opportunities for future research in this area.

Bot Adoption

This section examines the factors that influence the adoption of banking bots by customers and banks. It discusses the benefits and drawbacks of bot adoption, the role of regulatory frameworks in promoting bot adoption, and the challenges of integrating bots with existing banking systems.

Bot Design

This section explores the design principles of effective banking bots. It discusses the importance of bot personality, tone, language, and user interface in creating a seamless and engaging customer experience. The section also covers the use of natural language processing (NLP) and machine learning (ML) in bot design.

##### Bot Effectiveness:

This section evaluates the effectiveness of banking bots in achieving their intended goals. It examines the metrics used to measure bot effectiveness, such as customer satisfaction, transaction completion rates, and bot accuracy. The section also discusses the factors that influence bot effectiveness, such as bot complexity, customer expectations, and customer education.

##### Customer Perceptions

This section examines the perceptions of customers towards banking bots. It discusses the factors that influence customer attitudes towards bots, such as bot trustworthiness, privacy concerns, and bot-human interaction. The section also explores the role of customer education in improving customer perceptions of bots.

##### Ethical Considerations:

This section discusses the ethical considerations surrounding banking bots. It examines the potential risks of bot adoption, such as bot bias, data privacy, and customer manipulation. The section also covers the ethical responsibilities of banks and bot developers in ensuring the safe and fair use of bots.

# Comparison

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| **S**  **No.** | **Features** | Research Papers | | | | | | | | | |
| 1 | Title | Chatbots for Customer Service: User Experience and Motivation | Simulating the Effects of Social Presence on Trust, Privacy Concerns & Usage Intentions in Automated Bots for Finance | Conversation to Automation in Banking Through Chatbot Using Artificial Machine Intelligence Language | Text-Based Chatbot in Financial Sector:  A Systematic Literature Review | Banks  banking on AI | Robotic process automation - a study of the impact on customer experience in retail banking industry | The Impact of Chatbots on Customer Loyalty: A Systematic Literature Review | Virtual bank assistance: an ai based voice bot for better banking | Utilization of artificial intelligence in theBanking sector: asystematic literature review |
| 2 | Methodology | Participant Recruitment using Chatbots | Vignette-style methodology; implementing socio-emotional cues that were verbal (textual) and personal in Vignette Emma | The ALICE chatbot system. | Information gathering  ->Search  -> Article Selection  -> Article filtering and reviewing  -> Presentation and discussion | Surge of AI in Banking:  Customer Service:  Customer Engagement:  Voice Assisted Banking & Chatbots: | The survey questionnaire instrument was constructed by identifying relevant measurements from a comprehensive literature review. | Systematic literature review | The Artificial Intelligence-based services used by banks internally for employee’s  performance evaluation, credit evaluation of customers, etc and products | Selection of articular  ->Thematic analysis |
| 3 | Technology | Interview Guide and Analysis | Mann-Whitney U tests were used to see if the recipients of Vignette Emma compared to those who got Vignette XRO23 showed any discernible differences. | AIML – a subset of the markup language (XML) or the mark-up language of artificial intelligence | Adoption intention | Artificial Intelligence | The ADANCO, a programme for variance-based structural equation modelling (SEM), was utilised for the statistical analysis. | Scopus-database | Artificial Intelligence-based services | On every document analysed as part of the study, a Leximancer analysis was done. |
| 4 | Algorithm | 1.Participant Recruitment  -> Initial invitation in chatbot  -> Information and sign-up in questionnaire  -> Find time for interview in text message  -> Telephone interview following guide.  2. The Chatbots: chatbots from two service providers were used to recruit participants  3. Interview Guide and Analysis  4.Results  The Participants and Their Immediate User Experience; User Perceptions of Chatbot Capabilities; User Reflections on Chatbot Appearance and Self-presentation; User Motivations for Chatbot Use; User Suggestions for Future Developments | 1.Participants  2. Procedure  3. Stimuli  Manipulation  4.Measurement  5. Results | Framework for chatbot interaction-  1: Set parameters to open an account  2: Submission of file  3: Checking the status of the account | 1:  Information  gathering  2: Article selection  3: Synthesis of data | AI focussed research | RPA adoption by the Retail Banking Industry to enhance customer experience' has been identified as the dependent variable based on the literature study. The following independent variables have been discovered as influences on the dependent variable: 1) Security and Privacy; 2) Reliability; and 3) Usefulness. 4) Interaction that feels human. In order to better understand how each of these characteristics influences retail banks' adoption of RPA to improve customer experience, a link between them has been constructed to build the study model. | The Scopus database was used to look for pertinent material for the review. In the selection procedure to locate pertinent literature to address the study issue, a differentiation and combination are created between customer loyalty and chatbots. Search terms and selection criteria are used in the selection process. The inclusion criterion required setting up the search parameters, choosing the search keyword, and defining the time range.. | Introduction to bots and a comparative study of the Existing and the Proposed System. | 1:based on a  thorough  assessment  of the literature,  choosing the  right database  and  choosing  keywords.  2.Thematic analysis, which uses human coding to divide the articles into topics and sub-themes. Second, to support the manual categorization process, we used the Leximancer programme.  3: Analyses of concepts and relationships In contrast to relational analysis, which makes links between ideas and records word co-occurrences, conceptual analysis refers to the study of data based on word frequency and occurrence. |

# Result

In banking, bots refer to computer programs or software applications that use artificial intelligence (AI) and natural language processing (NLP) to perform various tasks and interact with customers through chat interfaces, messaging apps, or voice assistants.

These bots are designed to automate routine and repetitive tasks, such as account inquiries, balance checks, fund transfers, and bill payments, which were previously performed by human customer service representatives. They can also provide personalized recommendations, financial advice, and product information based on customer data and preferences.

Overall, bots in banking can help improve customer experience, increase efficiency, and reduce costs, making them an attractive option for many banks and financial institutions.

In the context of the financial industry, the current paper discusses the characteristics of empirical research on chatbots. These elements enable the financial industry to alter their activities and operations, from acceptance and user contact through engagement, happiness, customer service, security, customer and business perception, trust, and adoption of a chatbot. However, the financial industry has a number of difficulties that may prevent the effective adoption and application of chatbot technology.

# Analysis

The dearth of development design research demonstrates the lack of clarity on the critical design issues that must be solved for chatbots in the financial industry. In doing so, the financial industry must discover design research techniques that are more effective with chatbots, a technology that mainly relies on written text and so necessitates consideration of several languages. It is not sufficient to talk about a chatbot's utility, efficacy, and capacity to satiate, entice, and engage individuals in the financial industry. Sometimes it might not be desirable to enhance user experience, or it might not be wise to foster chatbot sympathy.

The broad background of the articles evaluated in this collection is presented and highlighted in this section. The majority of the articles in the collection that have been evaluated focus theoretical research issues and offer theoretical understanding of how individuals interact with chatbots used in the finance industry. Theoretical stances that have been created as broad theories for chatbot integration with financial technology are covered in a sizable number of papers. This evaluation demonstrates that there is a lot of interest in assessing the user experience of a chatbot's design. This implies, however, that there has been little study done on the design and development of chatbots and that there aren't many papers that take these problems seriously.

The utility and application of chatbots are therefore suggested by a systematic literature evaluation, which offers a wider grasp of many conversational and technological elements of chatbots in the financial industry.

# Conclusion

The banking industry is utilising AI and integrating it with the business imperatives due to the shifting dynamics of an app-driven environment. The next wave of digital disruption is about to be unleashed, and banking and artificial intelligence are in a prime position. In the future, decision-making can assist banks in accelerating productivity, lowering the amount of consumer calls ringing into the call centre, and enhancing customer service. It is anticipated that a user-friendly AI environment would benefit the banking sector.

This research conducted a thorough analysis of the literature on AI and banking and banking bots from 2005 to 2020 in order to optimise the value generated from AI technology. The findings are supposed to help decision-makers create strategic judgements on the many uses of AI in the banking industry. We advance the sector by providing a more in-depth perspective that is particularly centred on the area of AI and banking, reflecting current and future uses of AI for formulating business strategies, simplifying logistics, and generating value for customers.

The main conclusions of the literature review are outlined in this part. According to the paper's conclusion, banking bots have the ability to completely change the banking sector, but their success depends on smart bot development, client education, and ethical concerns. The study proposes that future research should concentrate on creating standardized measures for bot evaluation, enhancing bot-human interaction, and addressing the ethical issues associated with the use of bots.

Bots in banking are becoming increasingly popular as they offer several benefits, including faster response times, 24/7 availability, cost savings, and improved customer experience. However, they also raise concerns about data privacy, security, and accuracy, as well as the potential for job displacement and reduced human interaction in banking services.

There are several benefits of using bots in banking, including:

*Improved customer experience*

Bots can provide quick and personalized responses to customer queries and requests, leading to a better customer experience. They can also offer 24/7 availability, which is convenient for customers who prefer to bank outside regular business hours.

*Increased efficiency*

Bots can automate routine and repetitive tasks, such as account inquiries, balance checks, and fund transfers, which can free up human customer service representatives to focus on more complex tasks. This can improve operational efficiency and reduce costs.

*Cost savings*

By automating tasks, bots can reduce the need for human resources and lead to cost savings for banks. Bots can also handle a large volume of customer inquiries simultaneously, which can further reduce costs.

*Personalized recommendations*

Bots can analyze customer data and provide personalized recommendations for financial products and services. This can help customers make more informed decisions about their finances.

*Better security*

Bots can help improve security by detecting and preventing fraud, monitoring transactions, and ensuring compliance with regulatory requirements.

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