**1. Literature survey:**

**1.1 Chatbots in banking industry: a case study**

The authors in [1] have given an introduce about the chatbots to its customers. The paper is a case study of chatbots and its impact in banking systems. Chatbots designed with AI are one of the most promising strategies of a banking business that can lead the bank to win the satisfaction vote of their loyal customers.

The authors have provided the details of the progress made by chatbots in Indian banking. Conducted a case study of HDFC and Kotak Mahindra Bank regarding the Chatbots usage. Established an insight into the views of various banks regarding the use of AI based techniques

There are limitations provided too. The dialogue capability is limited to very a very specific set or format of questions. Chatbots have significant limitations based on accents and languages. Not all consumers are familiar with or comfortable with chatbots. The expansion of chatbot capabilities is limited by the ability to hire trained teams or partner with organizations familiar with this rather new technology.

**1.2 Conversation to Automation in Banking Through Chatbot Using Artificial Machine Intelligence Language**

Utilization of AI techniques is done in [2]. to provide and improve the chatbots in the banking sector. It makes the interaction between the bank and customers comfortable and useful. The algorithms used were Artificial Intelligence Modelling Language, Natural Language Processing and Latent Semantic Analysis.

LSA is basically a technique to identify the patterns from the text document or in simple words, to find out relevant and important information from the text document. It is clearly an unsupervised approach. User need not only used to chat through message, he can also voice chat.

**1.3 Banking with a chatbot – a study on technology acceptance**

In [3], the publishers try to identify the factors that influence the consumers’ intention to use the chatbot technology applied in the banking industry. The measurement development and hypotheses were based on the technology acceptance model extended with compatibility, customers’ perceived privacy risk and awareness of the service.

They have also highlighted the importance of perceived compatibility and perceived usefulness in the adoption of banking chatbot technology.

**1.4 JAICOB: A Data Science Chatbot**

The authors of [4] have come up with a system which is implemented as a personal agent to assist students in learning Data Science and Machine Learning techniques. It aims at researching the application of cognitive computing in blended learning environments. It is a modular cognitive agent architecture for pedagogical question answering, featuring social dialogue, small talk, improved for a specific knowledge domain.

But this software needs more analysing, creates some misunderstanding while conversations, which leads to unsatisfied customers.

**1.5 Xatkit: A Multimodal Low-Code Chatbot Development Framework**

Xatkit chatbot, a multi-channel and multiplatform chatbot modeling framework was introduced in [5], it proposes a set of domain-specific languages for chatbot definition from the technical details of the platform-specific aspects where the bot is going to be deployed.

Xatkit provides a set of Domain Specific Languages to define chatbots in general in a platform independent way. Xatkit also comes with a runtime engine that automatically deploys the chatbot application and manages the defined conversation logic over the platforms of choice. Xatkit’s modular architecture facilitates the separate evolution of any of its components.

At the language level it has to improve the variability of the bot specification, moving towards a product-line approach that enables companies to create and quickly update several versions of the same bot, to create a localized versions of the bot for each branch of the company. At the framework level, it can improve on the integration of chatbot generators, able to create partial bot specifications from existing data sources within the company.

**1.6 Using the SOCIO Chatbot for UML Modelling: A Family of Experiments**

The chatbot named as SOCIO, was made by the writers of [6], is a collaborative tool for creating class diagrams, building models and meta-models. The chatbot is accessible from Twitter or Telegram. The designers and stakeholders can take advantage of social network collaborative and ubiquity to perform lightweight modelling tasks.

Here, the experiments were run to compare the usability of the SOCIO chatbot with a website named “Creately” in order to increase the reliability of the results of the baseline experiment.

They provided the analytics on the experiments that shows the usability of the SOCIO chatbot, and a list of suggestions from SOCIO chatbot users to understand the impact of three human-computer interaction and usability characteristics like effectiveness, efficiency, satisfaction on collaborative modelling and chatbot design.

**1.7 Entertainment Chatbot for the Digital Inclusion of People Without Abstraction Capabilities**

EBER chatbot was proposed in [7] and adapts its responses based on the user’s mood. It is trained with some selected Machine Learning algorithms from the Scikit-Learn Python library, Gradient Descent, Decision Tree and Random Forest, on some datasets. The NLG module employs SA knowledge to avoid monotony by adjusting the polarity of the dialogue depending on the polarity of user responses.

This chatbot combines AI, ML, NLG and SA to generate short coherent contextualised dialogues as connectors between newscasts. EBER behaves realistically as an ‘‘intelligent radio’’ for entertaining elderly people.

As it requires classification dialogue, more keystrokes to understand and learn, it is not predictable of giving right solution all the time.

**References:**

1. Dr. Shalini Sayiwal, “Chatbots in banking industry: a case study”, 2020 JETIR June 2020, Volume 7, Issue 6.
2. S. F. Suhel, V. K. Shukla, S. Vyas and V. P. Mishra, "Conversation to Automation in Banking Through Chatbot Using Artificial Machine Intelligence Language," 2020 8th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO), 2020, pp. 611-618, doi: 10.1109/ICRITO48877.2020.9197825.
3. Mónika-Anetta ALT, Ibolya vizeli, zsuzsa săplăcan, “Banking with a chatbot – a study on technology acceptance”, studia universitatis babeș-bolyai oeconomica, volume 66, issue 1, 2021, pp. 13-35, DOI: 10.2478/subboec-2021-0002.
4. D. Carlander-Reuterfelt, Á. Carrera, C. A. Iglesias, Ó. Araque, J. F. Sánchez Rada and S. Muñoz, "JAICOB: A Data Science Chatbot," in IEEE Access, vol. 8, pp. 180672-180680, 2020, doi: 10.1109/ACCESS.2020.3024795.
5. G. Daniel, J. Cabot, L. Deruelle and M. Derras, "Xatkit: A Multimodal Low-Code Chatbot Development Framework," in IEEE Access, vol. 8, pp. 15332-15346, 2020, doi: 10.1109/ACCESS.2020.2966919.
6. R. Ren, J. W. Castro, A. Santos, O. Dieste and S. T. Acuna, "Using the SOCIO Chatbot for UML Modelling: A Family of Experiments," in IEEE Transactions on Software Engineering, doi: 10.1109/TSE.2022.3150720.
7. S. García-Méndez, F. De Arriba-Pérez, F. J. González-Castaño, J. A. Regueiro-Janeiro and F. Gil-Castiñeira, "Entertainment Chatbot for the Digital Inclusion of People Without Abstraction Capabilities," in IEEE Access, vol. 9, pp. 75878-75891, 2021, doi: 10.1109/ACCESS.2021.3080837.