

Generative Artificial Intelligence: Prospects for Banking Industry

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Abstract: Banking, as an indispensable service, operates around-the-clock, catering to diverse clientele ranging from common individuals to professionals. GenAI emerges as a potent tool reshaping the banking landscape, offering immense potential for innovation and efficiency. Its strategic adoption is imperative for banks to stay competitive and cater to the evolving preferences of tech-savvy customers. Reskilling initiatives are crucial to equip banking professionals with the requisite knowledge and skills to harness GenAI effectively. As GenAI continues to evolve, its integration into banking operations promises transformative outcomes, ensuring a customer-centric approach and sustainable growth in the digital era. The advent of Generative Artificial Intelligence (GenAI) marks a significant milestone in banking evolution. GenAI, a subset of AI, leverages neural networks to generate original content based on provided input, thereby transforming banking operations and customer experience. OpenAI, a prominent player in AI research and development, has pioneered GenAI through models like ChatGPT, enabling natural language interactions akin to human conversation. GenAI offers multifaceted benefits with challenges and limitations to the banking sector. It enhances customer experience by providing round-the-clock support through chatbots, offers personalized product recommendations, and assists in loan eligibility assessments. Moreover, it aids in risk management, fraud detection, and personalized marketing campaigns, thereby optimizing operational efficiency and bolstering customer engagement. Despite its capabilities, GenAI necessitates human oversight, especially in critical decision-making processes.

Keywords: Generative Artificial Intelligence, GenAI, ChatGPT, Banking, Open AI, Fraud Detection, Customer Service.

1. Introduction

Banking is an essential service and required to be available 24x7 throughout the year. It is of essence for from a common man to the business and service class professionals. Banking institutions have invested billions in developing and harnessing technology for making processes simpler and accessible. From a ledger book to online platform, banks have completed a transition journey using the technological advancement. Since the introduction of formal banking in British era, many instruments such as Cheque Payment & Electronic Funds Transfers in 1980s, Credit and Debit Cards in late 1990s, Online Banking and Mobile Payments in early 2000s along with e payment gateways for e-commerce and other digital services, Unified Interface Payments (UPI) in 2016 and Digital Wallets and WhatsApp Banking, Central Bank Digital Currency

(CBDC) i.e. Digital Rupee in present era were adopted and made available to the customers by banks.

It is evident in this whole journey that banking industry was open to adept and embrace new instruments and processes supported by latest technological changes to provide its customer a new experience and make the processes user friendly. Digitalization is instrumental in changing the expectation of the people and their manner of interaction and doing business. Entire banking system has been transformed in its operations and experience due to increasing demand from Millennials and Gen Z for digital banking. When it comes to day-to-day banking, Millennials and Gen Z can sort something out without having to speak someone, that's what they will opt to do and tech makes that possible. Their burgeoning enthusiasm to access financial services through digital channels has further the surge in new banking technologies which are reconceptualizing the industry.

2. Artificial Intelligence

Artificial Intelligence (AI) has been in existence for more than a decade, but it surged in popularity and gained significant momentum when Large Language Models (LLMs) were developed to process large data sets, covering the entire web world. Earnst & Youngs surveyed 50 Indian CEOs across sectors in September-October 2023 to know their positivity towards adopting GenAI solutions and most of them showed urgency to integrate GenAI into their businesses and felt that impact of GenAI will be felt as early as within five years.

Generative AI, supported by machine learning models, is radically transforming financial and banking services. The prospects of AI coupled with automation for banking has huge potential and offers a unique approach in automating banking tasks which were earlier completed with the aid of human resources.

A. What is Generative Artificial Intelligence (GenAI)?

Generative AI, also referred to GenAI, is an advance form of artificial intelligence which can be accessed by even a layman, in simple language inputs. GenAI is able to generate texts, images, videos, sounds, 3D designs, codes and other media responses in response to the given text input into AI system for specific desired outcome.

GenAI models use neural networks to identify the patterns

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and structures within existing data to generate new and original content. Generative AI models are a subset of Deep Learning models which produce new content based on descriptive input provided in AI system. It relies on AI models and algorithms trained on extensive data sets, demanding intricate mathematical calculations and significant computing resources for their development. These data sets train the AI to predict the outcomes in the same ways humans might act or create on their own. The rise of generative AI is largely due to the fact that people can use natural language as input. Some examples of foundation models include as Large Language Models (LLMs), Generative Adversarial Networks (GANs), Variational Autoencoders (VAEs).

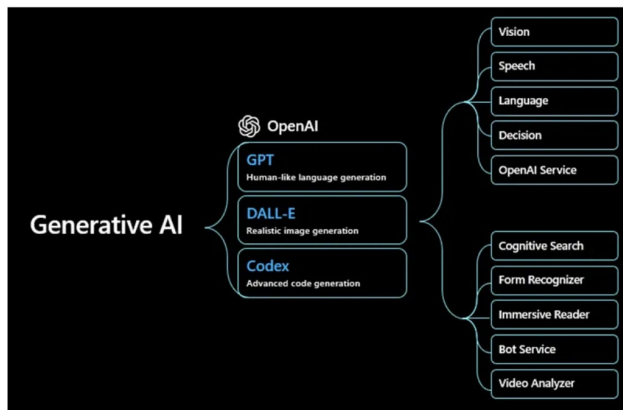


Fig. 1.

B. What is OpenAI?

OpenAI is a U.S. based company incorporated in 2015, who is engaged and focused in research and development of safe and beneficial artificial intelligence. Being one of the leading entity in AI spring, it has developed number of LLM, open source models, for GenAI. The OpenAI models are a stack of generative AI models that provide images, codes or languages as output. Microsoft has partnered with OpenAI to utilize Azure infrastructure, including security, compliance, and regional availability, to help users build enterprise-grade AI applications and to use Azure to power all OpenAI workloads. Azure's new cognitive service that gives REST API access to language models of OpenAI is known as Azure OpenAI. ChatGPT (Chat Generative Pre-Trained Transformer) is the starting artificial intelligence spring of OpenAI.

C. Exemplification of GenAI

Today, one of the most well-known exemplification of Generative AI is ChatGPT which is an artificial intelligence (AI) chatbot developed and released by OpenAI in November 2022. It is erected on top of OpenAI's GPT-3 and GPT-4 foundational large language models (LLMs) and has been fine-tuned using both supervised and underpinning learning ways. ChatGPT is a member of the generative pre-trained transformer (GPT) family of language models and is also a conversation-style model, which means that it performs most aptly when a communication is established with it as we do with a human. It's built on the same transformer base model as GPT-3, but fine-tuned using Reinforcement Learning with Human

Feedback (RLHF) for better alignment with human expectations.

D. Generative AI in Banking

GenAI is about natural language, the way all of us speak. Since GenAI is a technology, it is an opportunity for those who embrace and find ways to use it and those who does not incorporate these technologies in their business model will be at disadvantage compared to their competitors in the long run. Everybody will use it as it will change the way work will get done. GenAI is indispensable, like excel spreadsheets, for businesses.

GenAI based platform will help clients define their business cases, make decisions, navigate AI journeys, choose architectures and understand algorithms and models to derive value responsibly. Its implementation will enhance operational efficiency, streamline workflows and augment decision making processes. It will not only give thrust in creating opportunities for new business models but also show path for innovation for a sustainable long term growth.

It will pave way for doing the simpler things through GenAI and will free the human manpower to do more complex works for their organizations which require deeper insights and knowhow. The cost of getting simpler regular tasks for companies will be almost zero and TAT for completion of the tasks will be lesser in comparison to earlier. Generative AI (GenAI) can be utilized in performing following tasks:

1) Boost the Customer Experience & Customer Satisfaction

GenAI chatbots can be utilized in providing human-like customer support 24/7 for answering customer inquiries, customer complaint allocation to branches and suitable reply, if it is schematic query. It could also be helpful in updating account balances, service request related to KYC updating through Adhaar, Mobile no change if existing mobile is available with customer through OTP authentication, Cheque book issuance and address updating for Cheque book delivery. This will provide a better connect and delightful experience to customers.

2) Product Suggestions and Recommendations

As per the study by Forrester, 72% of customers think products are more valuable when they are tailored to their personal needs. GenAI can recommends a product to a customer based on the analysis of his financial data and credit score.

For example, it can be helpful in assisting simple tasks like SB account opening or can perform and recommend more complex products like credit card, based on a customer's earnings, financial goals, spending habits and lifestyle. This will make customers felt more informed and convenient in choosing the right card as per their preferences and features suitable to their needs. Generative AI can also be used to garner cross-sell business and upsell products.

3) Loan Eligibility and Available Options

GenAI could be used not only in calculating loan eligibility for a particular need like Home or Car or Education but also can be used in suggesting our partners like approved projects for housing loan and their products, mapped car dealers and

features of cars, tie-up universities and their curriculum etc. Generative Artificial Intelligence can assist in educating customers on other financial tasks and literacy topics by resolving queries about schemes of loans and credit scores.

For example, if a customer need help in understanding about a home loan which he can afford, AI models having information related to latest interest rate, down payment amount, and credit score, product features; can provide accurate home purchasing budget by conversationalizing complex math questions and can also recommend our builder tie-up projects.

4) *Maximizing Reach and Customer Connect*

Conversational AI which is subset of AI, can enhance user accessibility as it could simplify the multilingual support in form of virtual assistance and can support through text and voice navigation options to Divyang customers too. This technology is a boost for major banking and financial institutions due to its ability of improving customer experience by delivering personalized interaction and quick response.

5) *Manage Risk and Ameliorate Credit Decisions*

GenAI is an important tool in Credit risk assessment for banks and it aids in managing credit risk to avoid any financial disasters and conduct of smooth operations. Historical credit data used in GenAI assists in detecting and identifying potential financial risks and raise early warning signals which provides banks time to adapt, prevent and/or mitigate expected losses.

Since banks are in business of evaluating borrowers who apply for loans, banks could use AI and ML algorithms for analyzing vast quantum of data from multitudinous available sources to create an overall inclusive financial picture of the applicants before sanctioning the credit proposals. This will improve the efficiency of credit decisions.

6) *Personalized Marketing Efforts*

Targeted marketing campaigns require deep customer analysis and creative work which is time-consuming and costly. GenAI can aid in designing more personalized marketing offers for customers by analyzing their preferences and online behavior for different groups based on current trends and market conditions and could be helpful in penetrating new customer base and attracting and onboarding them.

Generative AI could be used in creating special focused marketing materials for specific segments and track conversion, retention and churning rates for making suitable amendments in marketing campaigns accordingly.

7) *Generate Financial Advice for Customers Based on Proprietary Data*

GenAI is beneficial in providing tailor-made investment solutions and financial advices to bank's premier and wealth segment clientele based on client's financial goals, income levels, spending habits and risk profiles. Human expertise combined with power of AI will result in customized and more comprehensive plans for customers be it personalized budgeting or saving recommendations or smarter investment & wealth management and trading decisions.

Generative AI can help in portfolio optimization, risk management, and trade executions by empowering asset management teams to make data-driven informed decisions that align with customer's risk appetite and financial goals.

8) *Detection and Prevention of Fraud*

GenAI models are very useful in detection and prevention of frauds. RBI report shows that banking sector reported 13530 frauds amounting Rs. 30252 Crores in 2022-23. Data security and fraud prevention is one of the key areas of banking industry which necessitates huge human and capital infrastructure and despite that its effectiveness is not at par.

By utilizing Generative AI for fraud detection, banks can track transactions and patterns of customers like location, device and operating system and flag any anomalies or behavior that doesn't fit expected patterns. Such flags could be reviewed and addressed by bank personnel for such a suspicious behavior and further investigation be conducted, if required. GenAI could be used for continuous mining the synthetic data and update the detection algorithms with the latest tactics used by fraudsters. This proactive approach can help in detection of fraudulent behavior before occurrence of any fraud.

E. *Summarize Large Documents*

It is a known fact that banks deal in massive quantum of paperwork and it is not only a Hercules's task to manually sorting and analyzing such large volume of documents and applications but also ask for lot of time and money. GenAI having its expertise in dealing with large data, can address and assist in sorting and analyzing by going through such large volume of documents and identifying important data for summarizing them future use.

3. Challenges and Limitations

Though this perspicacious narrative accentuates the impact of generative AI in enhancing customer engagement, prompt delivery and functional effectiveness in operations in the banking and financial services industry but working with Generative AI in the banking sector has its own reservations and challenges. It's not a magic bullet that can do everything but a bare tool.

For example, while dealing with sensitive customer data, GenAI need to be cautiously used in compliance with different government regulations, like the General Data Protection Regulation (CCPA) and/ or the General Data Protection Regulation (GDPR).

LLM-powered bots have become the most formidable tool for spreading misinformation or fake news and propaganda in present time which also led to discussion about ethical AI. Deepfakes are already making headlines in India. It warrants laws and regulations to get it used ethically for the good of the people.

Another limitation of Generative AI is that feeding of poor or incomplete data will produce incorrect results which will lead to poor financial decision-making.

As a rule of thumb, we can not rightly trust the outcome of GenAI in loan approvals and other vital decisions that have impact on customers but engagement of banking and financial professionals are still required to make the final decisions.

4. Conclusion

All that said, Generative AI is a powerful banking tool with

its cautious and purpose driven proper use. GenAI is the future and banks must learn to embrace GenAI to survive in long run. Not adopting the GenAI tools will provide competitors an edge. Banks must devise strategies for adoption and implementation of GenAI in their operational and marketing areas to fetch desired results in years to come and make a deep connect with Gen Z who prefer new technology in every sphere of their life. Banks need to evolve with the pace of evolvement of technological changes in Generative AI and improve cyber security measure to arrest any possible data breach or cyber threat.

Financial institutions and banks in India are presently using ML for applications like voice assistants and fraud detection. SBI Card, a subsidiary of State Bank of India, leverages Generative AI and machine learning to enhance their customer experience.

Reskilling of existing human capital assets about GenAI is a must for being relevant in the future. Everyone must learn and

get reskilled, because it will make them dearer for next world. Innovation is happening across globe by people who know how to use it and who solve problems using them. E-learning company Coursera claimed that 35 odd courses offered by global universities and industry educators related to GenAI witnessed 196000 enrollments in the year 2023 in India.

Undoubtedly GenAI is reshaping banking services with prediction of financial trends, employing AI for detection of frauds, enhancing customer service through AI-based Chatbots and tailoring banking services suitable to individual customer needs. It is helping with expansion in market reach, enhanced delivery efficiency, sales optimization and increased productivity.

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