A STUDY ON THE APPLICATION OF GEN AI TOOLS SUPPORTS TO FINANCIAL SERVICES

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ABSTRACT

The Generative AI, also known as GenAI. It is a subset of artificial intelligence (AI) that is reshaping the collaboration with technology by the minute. GenAI possesses the unique ability to create the information. GenAI has been used for many applications across various areas, demonstrating its powerful capabilities for generating creative and even life-like content. As an innovation in GenAI image style transfer tools such as DeepArt and DeepDream have signifies the potential of generative AI tools by making users capable of creating amazing artworks out of ordinary images. Latest, the Generative Pre-trained Transformer (GPT) series, particularly ChatGPT-3 has taken the world by an electrifying storm for its remarkable ability to generate human-like text from simple prompts, igniting global imagination about the creative potential of AI. Gen AI tools uses in financial services for fraud detection, cybersecurity, Chabot's, risk management, Alpha sense, and sentiment analysis. This research paper describes GenAI tools supports to financial services and some specific applications in both the financial and non-financial sector and also this research paper will examine the difficulties that lie ahead and the business opportunities for this fundamental technology that is going to transform our digital world. Also by addressing both the opportunities and challenges, this paper aims to provide a holistic perspective on the role of GenAI in the evolving Financial services.

Keywords: GenAI, Tools, Financial and non-financial sector, Technology

1. INTRODUCTION

The emergence of Generative AI, a branch of Artificial Intelligence (AI) with the potential to produce data such as text, images, and synthetic data, has presented business organizations with a new opportunity to explore the economic implications in several sectors. The introduction of Generative AI has facilitated the creation of this novel pathway. Generative AI (gen AI) is revolutionizing the banking industry as financial institutions use the technology to supercharge customer-facing Chabot's, prevent fraud, and speed up time-consuming tasks such as developing code, preparing drafts of pitch books, and summarizing regulatory reports. Subsequently, McKinsey (2023) conducted a scholarly investigation wherein they analysed the economic consequences that Generative AI is exerting on the Gross

Domestic Product (GDP): 'According to McKinsey's estimation, the use of generative AI is resulting in significant economic implications, with projected annual impacts ranging from "$2.6 trillion to $4.4 trillion". There are best AI tools for finance departments such as Datarails FP & A Genius, Domo, Booke.AI, Stampli, Nanonets, Planful Predict, Trullion, Vena Insights. The objective of this paper is to examine the diverse applications of generative artificial intelligence (AI) and offer an analysis of the current implementation of real use cases in various financial services. Furthermore, the current corpus of research pertaining to this subject matter provides a cursory examination, hence underscoring the significance of delving deeper. Consequently, to ascertain the difficulties on the GenAI tools to the various financial services also utilization scenarios of general artificial intelligence (GenAI) in the domain of financial services. This study examines how the GenAI technology uses to improve financial IT operations.

2. REVIEW OF LITERATURE

Kalpesh barde and Parth Kulkarni (2024)- Applications of Generative AI in Fintech- In this research paper they discuss the main problems these companies are solving, from identification and mitigation of fraudulent activities and ensuring compliance with regulatory frameworks to improving customer service and operations and making better data-driven decisions. By addressing both the opportunities and challenges, this paper aims to provide a holistic perspective on the role of GenAI in the evolving FinTech sector.

Bahadur Singh (2024)- Generative Artificial Intelligence: Prospects for Banking Industry

This paper explained – 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.

Saroj P. Dhake, Leena Lassi, Amrutha Hippalgaonkar, Ruchita Ajit Gaidhani, Jyothi N M (2024)- Impacts and Implications of Generative AI and Large Language Models: Redefining Banking Sector

The integration of GenAI and LLM has brought forth numerous contributions and capabilities to banking software. By examining both the immediate effects and the far-reaching outcomes, the study's findings offer insightful information into the evolving landscape of banking in the GenAI and LLM era.

Liu, Irene (2024) - Compliance redefined: Using GenAI to navigate a complex regulatory landscape with reduced risks and cost

The recommendations proposed support the notion that GenAI is able to help financial institutions reap cost savings and resolve some of the common challenges of regulatory reporting, such as data quality. Furthermore, GenAI could also transform regulatory reporting as we know it, through its visualisation capabilities and real-time monitoring. The paper concludes with a view of industry initiatives on GenAI and regulatory reporting and considerations for moving the landscape forward.

K Huang, X Chen (2023)- Chat GPT in Finance and Banking

In this paper, we further discuss the intersection of ChatGPT and decentralized finance (DeFi), covering automation, security, and financial inclusion. The chapter also addresses security and privacy considerations, outlining strategies to ensure data protection, mitigate adversarial attacks, and enable continuous monitoring. Lastly, we gaze into the future, exploring emerging technologies, ethical considerations, workforce adaptation, and a maturity framework for AI adoption within financial institutions. This comprehensive exploration sets the stage for a new era of AI-driven innovation in the financial sector.

Leeway hertz (2023)-GenAI in Asset Management: Redefining Decision Making in Finance
This article delves the transformative realm of generative AI in asset management. It explores the benefits, challenges, real-world applications, and emerging trends of generative AI and also the shedding light on how this technology is reshaping financial decision-making and portfolio optimization.

Xceedance (2023): GenAI in Insurance a game –changer
This articles explain on the insurance industry stand on generative AI and its impact on daily operations across the value chain? we have analysed that AI has the potential to revolutionize the industry, which has traditionally used legacy systems and manual processing across its entire value chain. It explains that industry has relied on human-centric manual methods of underwriting, claims processing, and customer service. The article explains on digital transformation grows in the insurance industry and the acceptance of the demands of a digital age in terms of accuracy, quality of data, and quick turnaround across the entire industry workflows. Generative AI presents an opportunity for the industry to address the challenges around data-driven decision-making, customer engagement, and operational optimization.

Davide Nuessle & Julian Staubli (2021): The impact of AI along the insurance value chain and on the insurability of risk
The paper has overview of various artificial intelligence applications within the insurance industry and analyse their impact along the insurance-specific value chain based and also identified areas of future work from both an academic and practical perspective, the paper has explained the use of additional customer insights for entering new revenue streams.

2.1 Scope of the study
This research study concentrates on the role of GenAI tools in the financial services.

2.2 Objective of the study
-To familiarize with the application of GenAI tools in financial services.
-To analyse the support of GenAI tools in financial services.
-To ascertain the difficulties on the GenAI tools to the various financial services.
-To suggest and recommend the specified GenAI tools to the financial services.

3. Research methodology
This is descriptive research method based on secondary data, which is collected through secondary sources, like reports, newspapers, magazines, internet for the research.

4.0 How GenAI is relating to financial services
Generative AI tool can analyse transaction data and generate risk profiles for customers, flagging unusual patterns or anomalies that may indicate fraudulent activity. Also it can also help in predicting credit default risks by analysing historical payment behaviour, thus enabling proactive risk management. The Artificial intelligence is a unique technology that can be used in different industries, and finance is no exception. AI's main advantage is its ability to work with massive amounts of data, finance can benefit from using AI even more than other areas. AI is already being used by many companies that work in such areas as insurance, banking, and asset management.

Today AI in Finance:

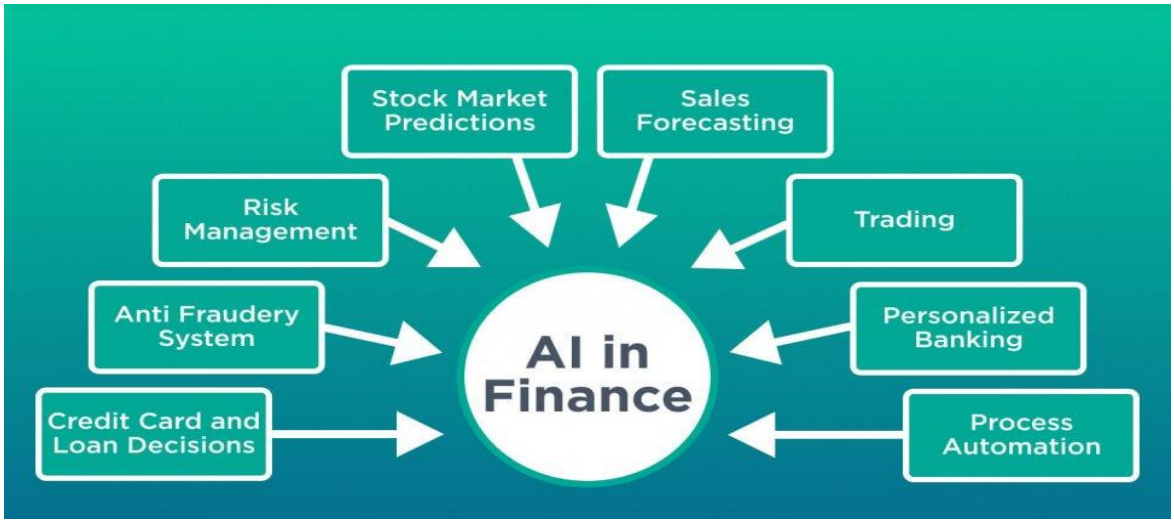

Figure:1: AI in Finance

Automation: Automation is more than just a cross-industry trend. It is so popular because it enables organizations to boost productivity and cut operational costs.

Credit Decisions: AI also helps banks assess potential borrowers much faster and more accurately, while also saving costs. AI-based solutions can immediately analyse countless factors that can have an impact on a bank's decision.

Trading: The trend of data-driven investments has been demonstrating steady growth during the last decade. Two years ago, data-driven investments closed on a trillion dollars

Sentiment and News Analysis: Hedge funds do not like to share information about the way they operate, so it can be difficult to understand how exactly they may use sentiment analysis.
However, AI has already demonstrated its capabilities in digital marketing, and its ability to work with data from social media can be used in the financial industry, as well.

Risk Management: Risk management is another area of application of machine learning in finance. Given that AI offers incredible processing power and can handle massive amounts of both structured and unstructured data, it can handle risk management tasks much more efficiently than humans can.

Fraud Prevention: AI has also proven to be very effective in preventing and fighting fraud. Cybercriminals constantly develop new, more effective tactics, but AI-based solutions can use machine learning and quickly adapt to the hackers' strategies.

Personalized Banking: AI become obvious when it comes to personalization and providing additional benefits for users. For instance, banks use AI-powered chatbots to offer timely help while also minimizing the workload of their call centres. Financial organizations can also use various voice-controlled virtual assistants.

4.1 Ways How AI Transformed the Finance Industry:

The financial industry has changed dramatically since the mid-1990s. Financial industry has been strongly influenced by digital technologies, and now it is more digitized than ever because of digital banks and mobile banking. The digital transformation of the financial industry increased the competition and created so-called neo banks, such as Chime or Varo, which only operate online. Even some tech companies, including Google, are starting to explore

the consumer-banking segment. Experts predict that AI will have saved financial companies about $1 trillion by 2030. According to research, more than 32% of banks are already using AI to decrease the response time, improve recommendation engines, and implement voice recognition and predictive analytics.

The New areas of application appear all the time, and companies learn to use AI for their specific purposes. The Robots also enable companies to hire fewer employees. According to Gartner, robotic process automation costs five times less than onshore employees and three times less than offshore ones.

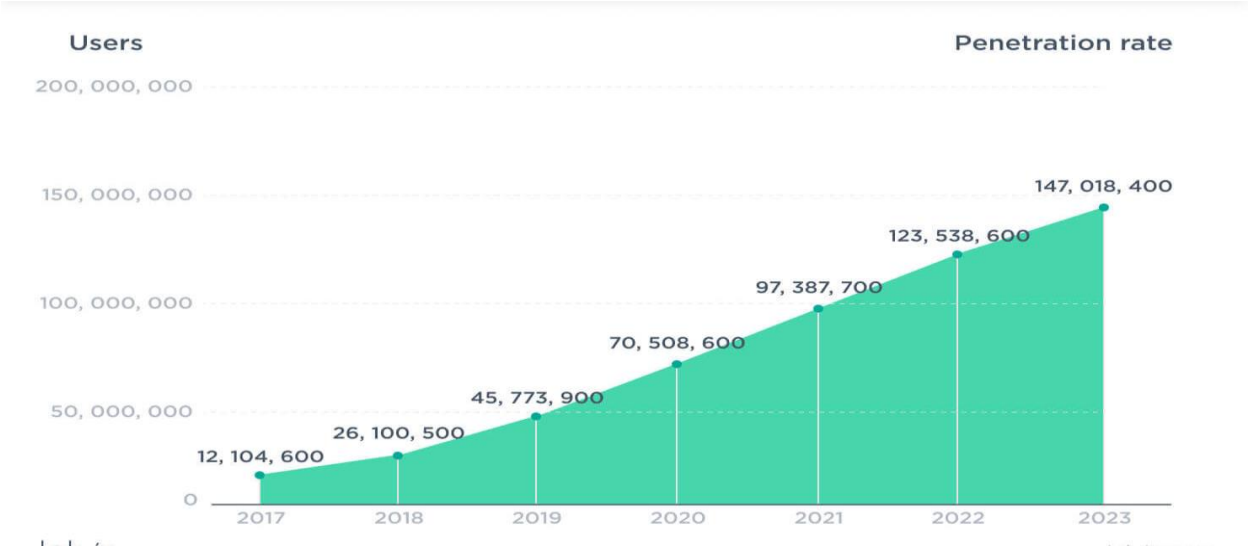

Figure:2: Robots Penetration Rate

As per above **figure:2** gives an analysis of robots' users from 2017-2023 all over the world. In the year 2017 total 12,104,600 penetration rate, in 2018 total 26,100,500, in 2019 45,773,900, in 2020 70,508,600, in 2021 total 97,387,700, in 2022 total 123,538,600 and in 2023 147,018,400. The figure gives a clear picture that the robot's user's penetration rate was increasing at present scenario. Adopting a AI is increasing in all over the world.

The AI is already being used by many financial services rendered areas such as insurance, banking, and asset management

5.0 How Gen AI used in the Banking Sector

The Gen AI is transforming the banking sector by empowering financial institutions to enhance customer service chatbots, detect and prevent fraud, and streamline laborious processes like coding, creating pitch book drafts, and summarizing regulatory documents.

The banks and other financial institutions strive to adopt the technology swiftly; they encounter various obstacles. The correct implementation of Gen AI holds the potential to unlock significant value, while its mishandling can result in complications. Companies from diverse sectors confront gen AI risks, such as the generation of inaccurate or nonsensical data, infringement upon intellectual property, limited transparency regarding system functioning, concerns regarding bias and fairness, security issues, and more.

AI Tools	Supportive		Not Supportive		Total
	Count	%Age Contribution	Count	%Age Contribution	
Chatbots	92	92%	8	8%	100
IVA	84	84%	16	16%	100
Mobile App Assistance	94	94%	6	6%	100
Fraud Detection	97	97%	3	3%	100
Credit Scoring Modelling	97	97%	3	3%	100
Personalized Financial Advice	89	89%	11	11%	100
Customer Relationship Management (CRM)	98	98%	2	2%	100

Figure:3: Different Gen AI Tool supportive to Customers in Banking sector

The client readily embraced and effectively utilized various AI tools. Among all the AI tools, the Customer Relationship Management application received the highest rating, with an impressive 98% support. Additionally, it was highly regarded for Fraud Detection and providing support in Credit Score advice, garnering a 97% support rating. Also the AI tools helped 94% for Mobile App Assistance. However, there is a need for further interactivity through voice assistance (IVA), especially considering the diverse Indian market with its dependence on different languages. General AI has the potential to transform the banking sector through increased efficiency, enhanced customer experiences, and improved decision-making.

5.1 Enhanced Fraud Detection in banking

The most banks adopt traditional rule-based methods of fraudanalysis. Today due to the availability of advanced technologies the number of fraudsters is increasing, which is also an increased threat level to the banking industry. Fraud patterns are changing due to inconsistency in the banking systems. Fraud detection is possible with a valuable dataset and a high-performance machine learning algorithm. The data are gathered from a public dataset and categorized, based on these we can classify the users as benign or fraudulent.

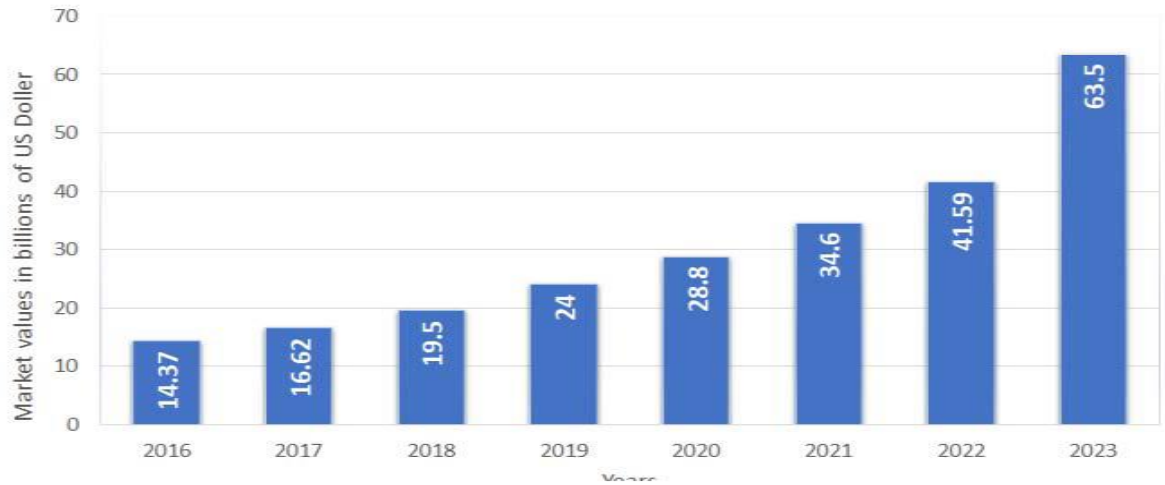

Figure:4: Fraud detection and prevention market size in 2016 – 2023, worldwide

As per above graph, the Fraud Detection and Prevention providing support in worldwide, garnering a 63.5% market size in the 2023. Especially considering the diverse in market with its dependence on digitalisation. General AI has the potential to transform the banking sector through increased efficiency, enhanced customer experiences, and improved decision-making from 2016-2023. Gen AI algorithms can monitor transactions continuously and detect patterns that suggest fraudulent activities more efficiently than traditional rule-based systems. By examining historical data and identifying anomalies in real-time, AI can help banks prevent fraudulent transactions in advance and protect customers' financial resources.

5.2 How Gen AI Used in the Insurance sector

The Generative AI can also revolutionize other aspects of insurance services. For instance, it can automate the generation of policy and claim documents upon customer request. This automation eliminates the need for human staff to manually process these requests, significantly reducing wait times and improving efficiency. The Insurance companies can use generative AI to reinvent their approach to providing customer service and creating new products. Personalised and empathetic human interactions, for example, become easier to achieve when generative AI removes mundane processes from insurance professionals' workload.

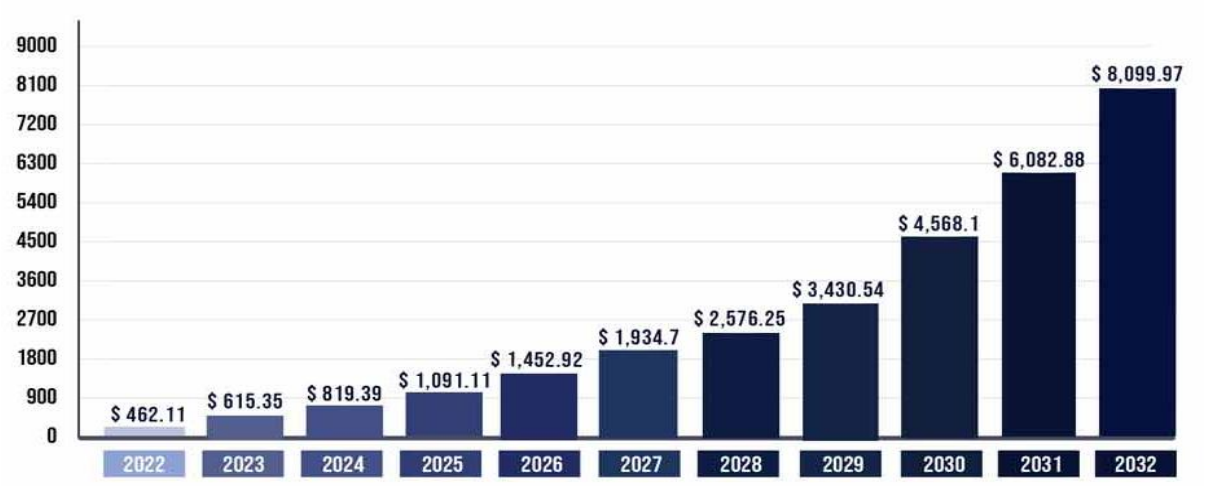

Figure:5: Generative AI in Insurance Market Size 2022-2032, worldwide

As per the above graph: The AI probably can have increased in a drastic level from 2022-2032 in insurance market. AI will help companies reimagine their customer service and product development strategies. Personalised and sympathetic human connections, for example, become easier to achieve when generative AI reduces the workload of insurance experts in future.

5.3 Enhanced Fraud Detection in Insurance

Preventing insurance fraud is not just a matter of saving money also for insurance companies; it is about maintaining the integrity and trustworthiness of the insurance industry as a whole. The financial burden caused by fraud affects both policyholders and insurance providers. By utilizing advanced technologies like Visualogyx the insurance industry can take proactive measures to prevent and detect fraud. Visualogyx is an efficient, user-friendly, and precise data collection and inspection management tool utilized by teams worldwide.

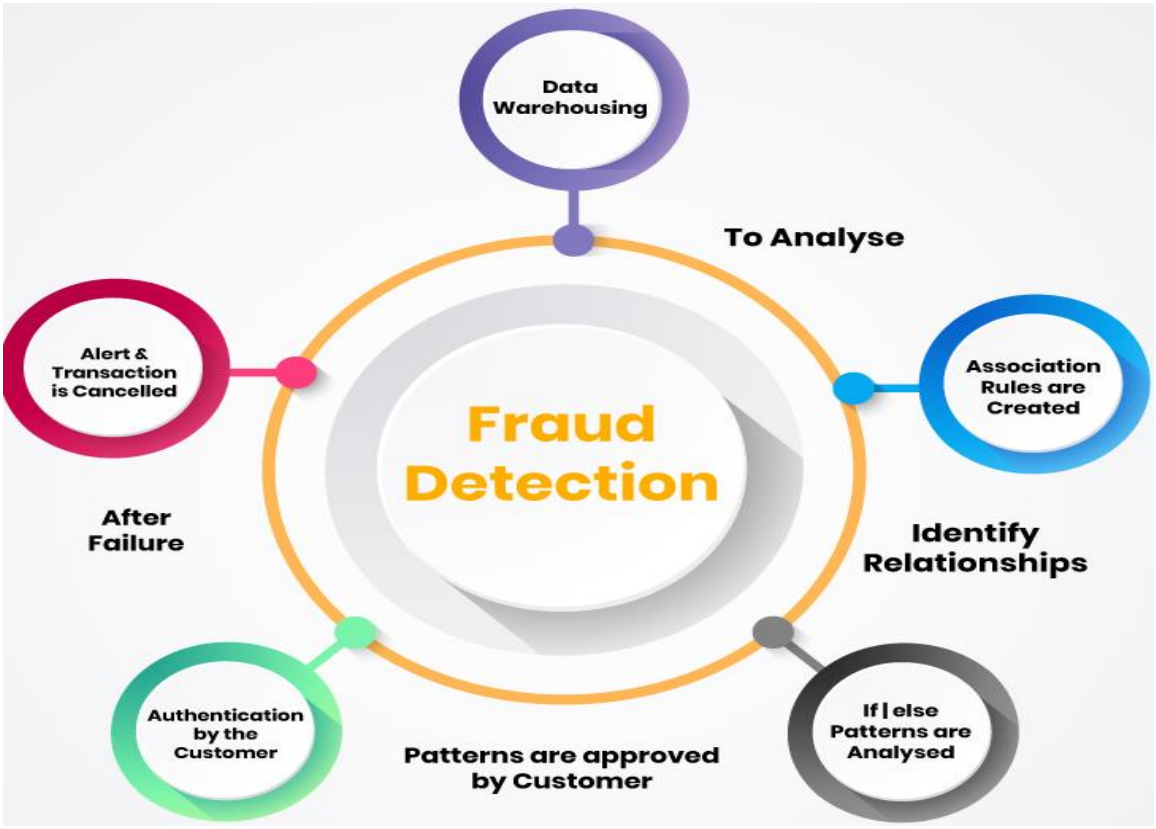

Figure:6: Generative AI in Fraud detection and prevention

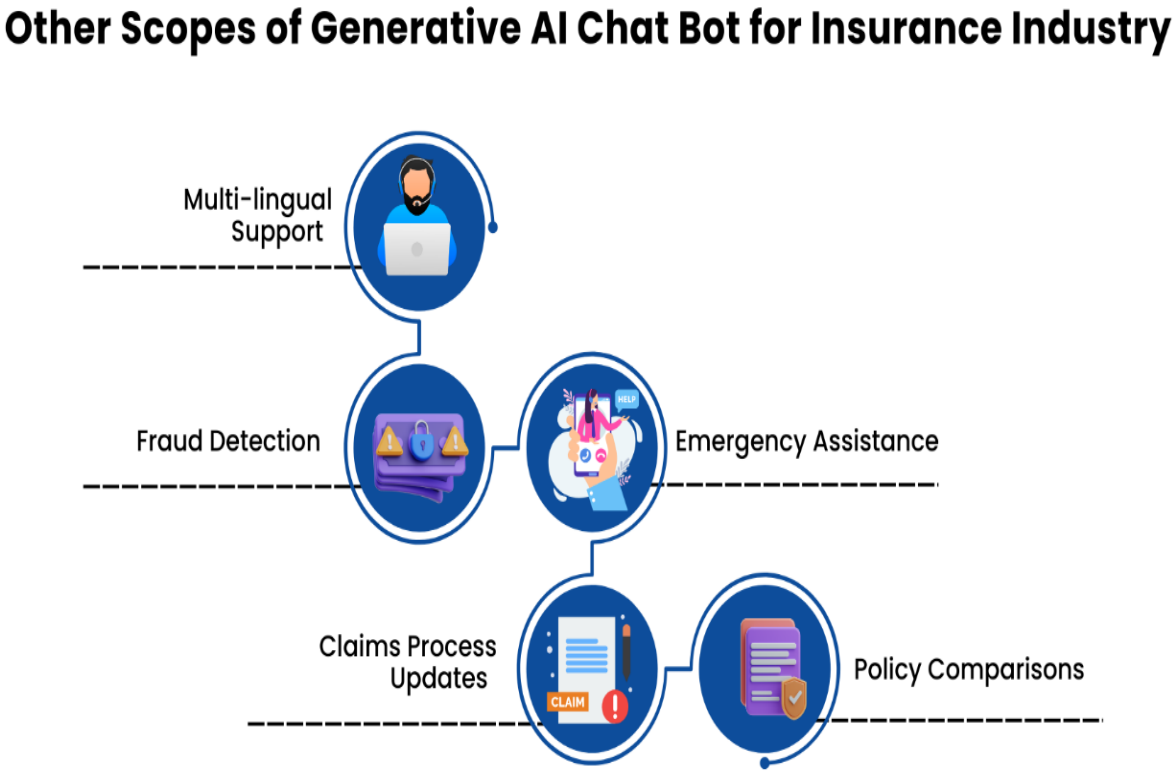

Figure:7: Other Scopes of Generative AI Chat Bot for Insurance Industry

5.4 How Gen AI Used in the Asset Management sector

Asset management is an important financial discipline that involves the strategic administration and supervision of various assets owned by individuals, businesses, or entities. These assets may include a number of investments, such as stocks, bonds, real estate, commodities, and others. The fundamental goal of asset management is to improve the efficiency of these assets while lowering risk in accordance with the investor's financial objectives and risk tolerance. There are several compelling reasons why AI is becoming increasingly essential in asset management, including improved decision-making, portfolio optimisation, and operational efficiency in the financial sector.

Figure:8: Benefits of Generative AI in Asset Management

Asset management combines financial knowledge, strategic insight, and a thorough understanding of market trends with the use of technology, notably generative AI, to make well-informed decisions that are aligned with an investor's specific goals. The use of technology in this context is prompted by the increasing complexity of financial markets and the need for data-driven decision-making, positioning asset management as a forward-thinking and fluid sector of the financial realm.

Figure:9: Generative AI in Asset Management Market Size 2022-2032, worldwide

5.5 TOOLS OF GEN AI IN ASSET MANAGEMENT

Several techniques and technologies can be used to improve various parts of the asset management and artificial intelligence (AI) processes. Here are some often used ones:

1. Machine Learning Algorithms: Machine learning algorithms are at the heart of AI-powered asset management. These algorithms are applied to predictive analytics, risk assessment, portfolio optimisation, and anomaly identification.

2. Natural Language Processing (NLP): NLP approaches are used to analyse sentiment in news stories, social media feeds, and other textual data about assets. This assists in understanding market mood and making sound investing selections.

3. Data Visualization Tools: Complex data sets, trends, and patterns are visualised using tools such as Tableau, Power BI, or custom dashboards. Clear visualisation facilitates decision-making and efficient communication of ideas.

4. Big Data Technologies: Big data systems like as Hadoop, Spark, and Kafka are used to process and analyse enormous amounts of structured and unstructured data from a variety of sources, including market feeds, financial statements, and social media.

5. Quantitative Analysis Software: Statistical analysis, backtesting trading methods, and constructing predictive models are all done using quantitative analytic tools like MATLAB and R, as well as Python modules like NumPy, pandas, and SciPy.

6. Robotic Process Automation (RPA): RPA solutions automate monotonous processes like data entry, report preparation, and trade execution, allowing asset managers to focus on more valuable activities.

7. Blockchain Technology: Blockchain technology is used to improve transparency, security, and efficiency in asset management operations like trade settlement, identity verification, and regulatory compliance.

8. Cloud Computing Platforms: Cloud platforms such as AWS, Azure, and Google Cloud offer scalable infrastructure for hosting AI models, storing massive datasets, and performing computations, allowing for cost-effective and adaptable asset management solutions.

9. APIs and Web Scraping Tools: APIs (Application Programming Interfaces) and online scraping technologies are used to extract real-time market data, news updates, and social media feeds from a variety of sources for analysis.

10. Cybersecurity Solutions: Given the sensitivity of financial data, effective cybersecurity solutions are required to prevent data breaches, fraud, and other cyber threats.

These technologies, combined with domain experience, play an important role in harnessing AI for asset management, allowing for better decision-making, risk management, and, ultimately, enhanced portfolio performance.

6.0: Challenges and Limitations

Banking sector

Though this insightful narrative emphasises the impact of generative AI in improving customer engagement, timely delivery, and functional effectiveness in banking and financial services operations, working with generative AI in the banking sector comes with its own set of reservations and challenges. It is not a magic bullet that can do everything, but rather a basic instrument. For example, when dealing with sensitive client data, GenAI must be used with caution

and in accordance with various regulatory rules, such as the General Data Protection Regulation (GDPR) and/or the CCPA.LLM-powered bots have become the most potent instrument for distributing misinformation or fake news and propaganda in the current period, leading to a discussion over ethical AI. Deep fakes are currently generating waves in India. It demands laws and regulations to ensure that it is used ethically and for the benefit of the people. Another disadvantage of Generative AI is that supplying bad or inadequate data produces inaccurate outputs, resulting in poor financial decision-making. As a general rule, we can trust GenAI's results in loan approvals and other critical decisions affecting clients, but the involvement of banking and financial specialists is still essential to make final decisions.

Insurance sector

The first hurdle that insurers must consider before pursuing generative AI is addressing the core data problem, particularly across legacy systems. Data quality is crucial, and most insurers around the world have adopted systems that remove the human element in order to reduce errors. The industry's digital transformation initiative is already improving data quality and consistency across the whole value chain.

A second obstacle is related to ethical issues, which we will address separately below. However, a comparable concern was raised by a recent poll, which was mentioned in an article published in the Insurance Business Magazine. According to the survey mentioned in the article "Are Insurance Customers Ready for Generative AI," customers were not particularly enthusiastic to encounter ChatGPT along their insurance journey, with nearly three in five (59%) stating they distrust or completely distrust generative AI. Furthermore, despite the fact that the latest innovation may improve the customer experience, nearly 70% of respondents said they would prefer to engage with a human.

Asset Management

Asset managers can use generative AI to improve their decision-making processes, optimise portfolio management, and address issues such as data quality, market uncertainty, compliance, performance consistency, and more. It is critical to recognise that, while generative AI can provide vital assistance, it is not a cure-all; rather, it is a strong tool that, when used wisely, can greatly improve the asset management environment.

7.0: Conclusion

Around 76% of financial services executives believe this is where Gen AI will find the most use in the near to medium term. Gen AI's capacity to absorb massive data sets to base its prediction outcomes on allows it to spot trends and anomalies that indicate fraudulent activity.GenAI can help detect non-traditional features or trends to more accurately assess a borrower's creditworthiness, as well as enrich current data by creating statistically similar synthetic data and using it to train more robust credit scoring models. GenAI boosts efficiency, security, and customer experience in the banking industry while also automating repetitive tasks like data entry and fraud detection, cutting operating expenses. All things considered, Generative AI is a powerful banking tool when applied carefully and purposefully. GenAI is the future, and banks must embrace it to succeed in the long run. Not using GenAI technologies will give competitors an advantage. Banks must develop strategies for adopting and using GenAI in their operational and marketing areas in order to achieve the necessary results in the coming years and establish a strong relationship with Generation Z, who prefer modern technology in all parts of their lives. Banks must keep up with technical breakthroughs in Generative AI and increase cyber security measures to avoid a potential data leak or cyber threat. By focusing on technically feasible applications, insurance companies can leverage Gen AI to determine innovation, improve efficiency, and enhance customer experience. As technology advances, the potential application of AI in insurance will continue to expand, offering new opportunities for growth and transformation. However, it is critical to approach this advancement with a clear understanding of the technical ethical and regulatory implications. Asset managers using Gen AI are better able to traverse hurdles and size possibilities, ultimately serving clients and thriving in this competitive landscape, but they must be conscious of the ethical, regulatory, and operational considerations that come with the deployment of AI technologies.

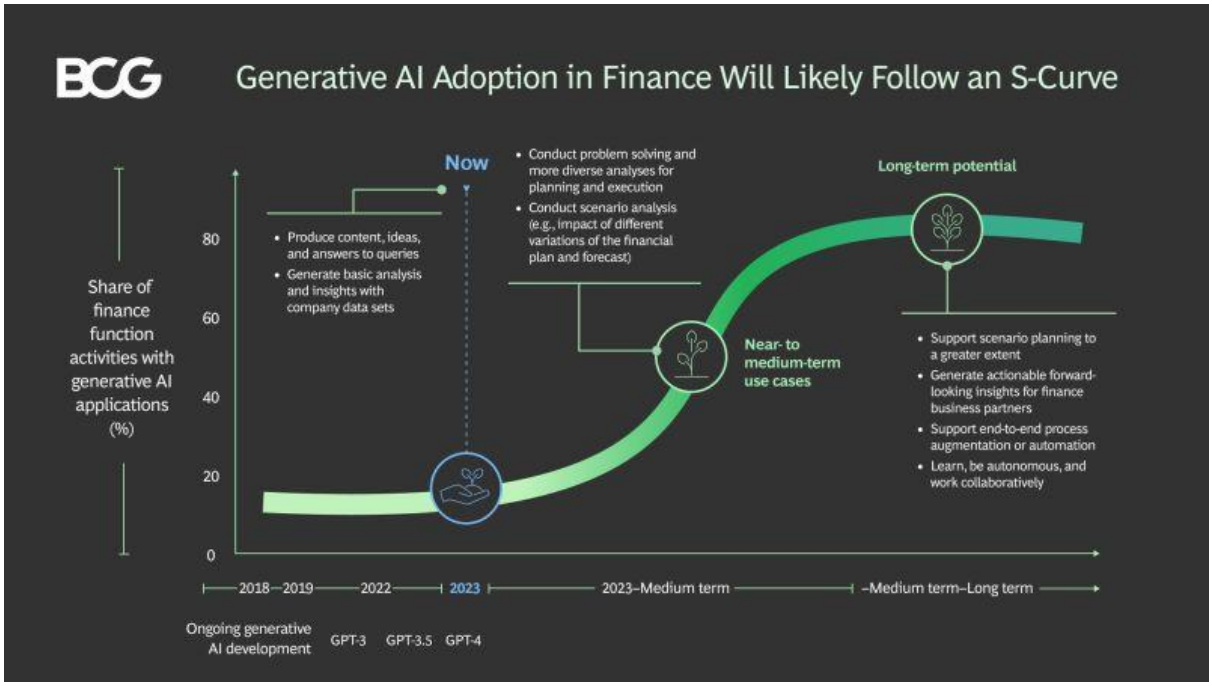

Figure:10: Generative AI adoption in finance –S Curve

References:

1. SP Dhake, L Lassi, A Hippalgaonkar. The GenAI is out of the bottle: generative artificial intelligence from a business model innovation perspective
2. K Huang, X Chen, Y Yang, J Ponnapalli… - Beyond AI: ChatGPT (2023)
3. G Shabsigh, EB Boukherouaa - FinTech Notes, 2023- Generative Artificial Intelligence in Finance
4. M Nuruzzaman, OK Hussain, IntelliBot: A Dialogue-based chatbot for the insurance industry.
5. M Riikkinen, H Saarijärvi, P Sarlin, using artificial intelligence to create value in insurance
6. M Luk- Generative AI: Overview, Economic Impact, and Applications in Asset Management.
7. SM Bartram, J Branke, M Motahari- Artificial Intelligence in Asset Management
8. https://www.ucl.ac.uk/teaching-learning/generative-ai-hub/introduction-generative-ai#:~:text=GenAI%20can%20produce%20diverse%20and,relevant%20responses%20to%20user%20prompts.
9. https://www.techtarget.com/searchenterpriseai/definition/generative-AI
10. https://www.mckinsey.com/industries/financial-services/our-insights/scaling-gen-ai-in-banking-choosing-the-best-operating-model#:~:text=Generative%20AI%20(gen%20AI)%20is,books%2C%20and%20summarizing%20regulatory%20reports.