# The Integration and Utilization of AI in Financial Services Sector

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## Introduction

Artificial Intelligence (AI) refers to simulation of the machinations of human intelligence by machines, particularly computer systems. These processes include learning, reasoning, and self-correction, enabling machines to perform tasks that generally require human intelligence.[2] As AI continues to evolve, its impact on society is profound, transforming industries such as healthcare, finance, and transportation by improving efficiency and creating new opportunities via faster processing speeds to name one of many reasons. In finance, in particular AI has the potential to cut costs significantly and to reduce the large processing times in the industry.[3]

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[2] Stuart Russel and Peter Norvig, *Artificial Intelligence: A Modern Approach.*, 4th ed. (Prentice Hall, 2021).

[3] A Geetha, "A STUDY on ARTIFICIAL INTELLIGENCE (AI) in BANKING and FINANCIAL SERVICES," September 9, 2021, https://www.ijcrt.org/papers/IJCRTG020019.pdf.

In particular, large language models (LLMs), called generative AI are quickly becoming more and more applicable in industry. These models allow workers to cut down on time spent on menial tasks, up to 70% of employees time could be automated allowing them to do much for meaningful work.[4] Generative AI's ability to understand natural language has allowed it to become a tool for jobs that require more expertise, this includes a myriad of jobs in the finance sector.

However, alongside these technological advancements, AI poses substantial challenges that must be addressed before making use of the technology. Concerns with data privacy, algorithmic bias, accountability, reliability, fairness, etc. have raised concerns about the potential misuse of AI technologies.[5] The double-edged blade that is AI, in particular generative AI can cut through the menial tasks and obscene amounts of information in the banking industry but firms must be cautious lest they hurt themselves on this new development in human or rather artificial ingenuity.

## Where AI can be Used in Finance

Artificial Intelligence, in particular generative AI is versatile by nature and can be applied to a variety of facets in the finance industry. They can be used to enhance the customer experience, elevate the services provided in the industry as well as better streamline the supply of said services.[6] In other terms, AI has the potential to enhance the front, middle and back office in the financial sector. In the front office, AI can help create a better user interface, make good customer profiles, etc. In the middle office, AI can detect payment fraud quite easily as well as give advice on loan decisions and assist with credit rating. In the back office, AI simplify backend processing and provide business and strategy insights.

## Improving Customer Service

The use of AI, in particular generative AI can elevate the relations consumers have with the bank. Generative AI has led to the creation of chatbots that can answer simple queries that customers might have regarding services a bank can provide. Chatbots also make the life of call operators far

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[4] AI by McKinsey et al., "Economic Potential of Generative AI | McKinsey," www.mckinsey.com, June 14, 2023, https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier#business-and-society.

[5] McKinsey Technology Council and McKinsey Digital, "What Every CEO Should Know about Generative AI | McKinsey," www.mckinsey.com, May 12, 2023, https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/what-every-ceo-should-know-about-generative-ai.
[6]

easier by cutting down on customer requests by dealing with the simple ones. The immediacy with which chatbots can respond to customer queries also makes online banking far more palatable and leaves customers feeling much more satisfied. Research shows that in using a generative AI chatbot in a company with 5000 customer service agents, issue resolution increased by 14 percent per hour and time spent on handling a problem was reduced by 9 percent.[7] As financial institutions normally dedicate a large portion of their workforce to customer service, a large firm such as Bank of America with around 213,000 people employed would be able to cut down on a lot of billable hours by making use of generative AI chatbots which would increase the firm's profit margin.
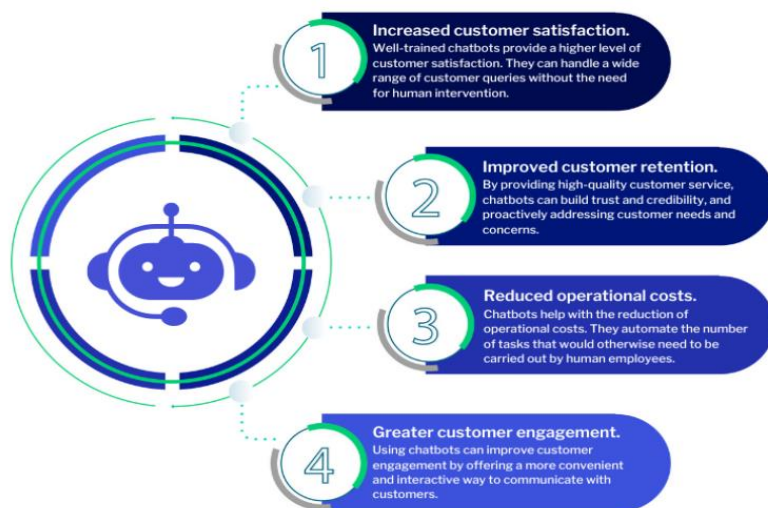


Source: Conversation Design Institute
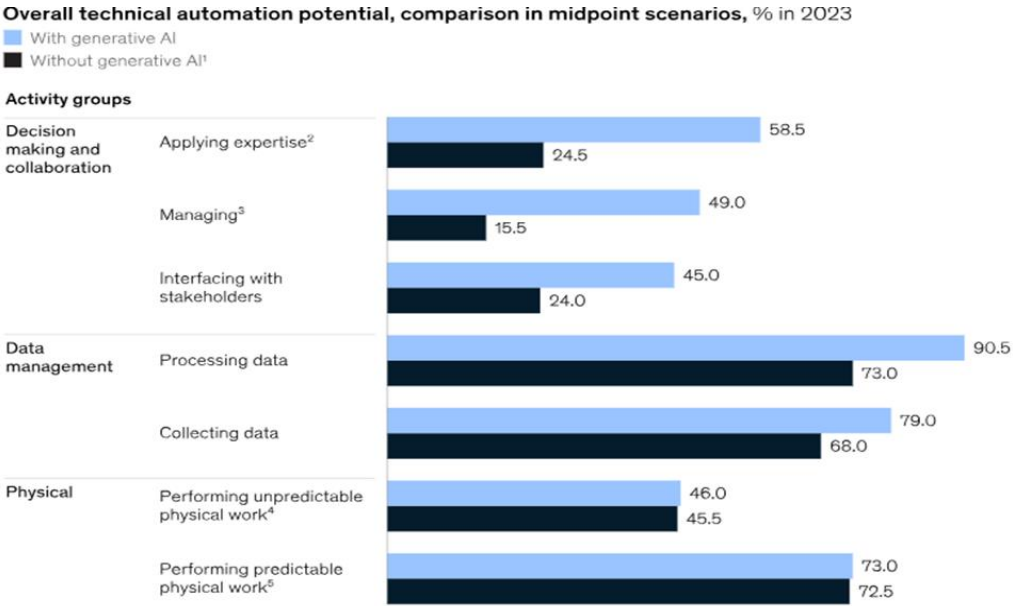
## Marketing and Sales

Generative AI can be used to speed up the time required for ideation and content drafting. It also makes it easier for different members of a firm to work on the same project and have a consistent font and style throughout the work. Content can quickly be translated into another language with the use of generative AI making outreach much broader. Generative AI can also increase the

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[7] Erik Brynjolfsson, Danielle Li, and Lindsay R. Raymond, Generative AI at work, National Bureau of Economic Research working paper number 31161, April 2023

number of sales by creating comprehensive customer profiles and giving helpful suggestions to staff when making a sale.[8] This could be used to market specific financial services to customers that are most likely to need them.

## A Better Workforce

AI has made workers more efficient as they are now able to automate menial tasks and use AI to help with the more complex tasks. Generative AI, in particular has allowed workers who are involved in knowledge-based tasks to reap the benefits of AI as generative AI is able to assist said workers with decision-making and collaboration by enhancing the worker's experience in their field. [9]The fact that generative AI models can understand and communicate in language means that is also possible to automate communication within a firm, which for larger firms would help out with the disruptions caused by a large management chain. The figure below shows the increase in automation potential brought about due to the development of generative AI.

**Overall technical automation potential, comparison in midpoint scenarios, % in 2023**

■ With generative AI
■ Without generative AI[1]

**Activity groups**

| Decision making and collaboration | | |
|---|---|---|
| Applying expertise[2] | With generative AI | 58.5 |
| | Without generative AI | 24.5 |
| Managing[3] | With generative AI | 49.0 |
| | Without generative AI | 15.5 |
| Interfacing with stakeholders | With generative AI | 45.0 |
| | Without generative AI | 24.0 |
| **Data management** | | |
| Processing data | With generative AI | 90.5 |
| | Without generative AI | 73.0 |
| Collecting data | With generative AI | 79.0 |
| | Without generative AI | 68.0 |
| **Physical** | | |
| Performing unpredictable physical work[4] | With generative AI | 46.0 |
| | Without generative AI | 45.5 |
| Performing predictable physical work[5] | With generative AI | 73.0 |
| | Without generative AI | 72.5 |

Source: McKinsey Global Institute Analysis

## Overall Benefits of AI

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[8] McKinsey Global Institute et al., "Economic Potential of Generative AI | McKinsey," www.mckinsey.com, June 14, 2023, https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier#business-and-society.

[9]  McKinsey Global Institute, "Economic Potential of Generative AI | McKinsey"

Integrating and using AI into firms that provide financial services could result in an additional 200-340 billion US Dollars in revenue in the industry globally according to a McKinsey Report.[10] As the industry is heavily invested in technology, much of its processes can be influenced by AI as discussed earlier. An example of this is the OpenAI-powered chatbot that Morgan Stanley is developing to assist its 16,000 financial advisors to find answers from a massive internal database.[11] AI also has some other advantages such as assistance in coding resulting in better, robust code which means better expedited testing and better coverage and effectiveness.[12]

## Drawbacks of AI

It might seem like integrating and utilizing AI must be the forethought for every firm in the financial services sector which it very much is but it must be done so with caution for AI, while extremely beneficial and profitable also carries a lot of risky complications. Some of these which concern the industry are talked about below:

**Confidentiality and Privacy Concerns:** The use of generative AI means that a company's internal database is being used to assist with the services of the firm. This means that the AI model has access to sensitive data which can very much be used to threaten the safety or privacy of the firm's clients. It is also concerning if for example, the AI model used by a central bank falls into a third party's hand.

**Accuracy:** Generative AI models are quite infamous for "hallucinating" wrong answers and insisting that its right. OpenAI's ChatGPT 3.5 model hallucinated 69 percent of the time while Meta's Llama 2 hallucinated 88 percent of the time.[13] AI models are also heavily dependant on the dataset they were trained on as heavy bias can be present depending on how well the model was trained. This does not bode well for banks because if their in-house AI models give a wrong answer when asked a question about the stock market or wealth market or extracts the wrong data, it would either cause clients to lose trust in the firm if the inaccuracy goes through unchecked or cause delays fixing said inaccuracy which is undesirable in an industry where responsive ness is very important.

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[10] McKinsey Global Institute, "Economic Potential of Generative AI | McKinsey"

[11] Hugh Son, "Morgan Stanley Is Testing an OpenAI-Powered Chatbot for Its 16,000 Financial Advisors," *CNBC*, March 15, 2023, https://www.cnbc.com/2023/03/14/morgan-stanley-testing-openai-powered-chatbot-for-its-financial-advisors.html.

[12] McKinsey Global Institute, "Economic Potential of Generative AI | McKinsey"

[13] John Thornhill, "Why AI Hallucinations Can Be a Good Thing," www.ft.com, February 1, 2024, https://www.ft.com/content/3b88cbd7-e72d-48c7-badc-096006488c36.

**Supplier Concentration:** If many financial institutions use similar AI models then all of these firms will suffer from similar biases and technological challenges.[14] This will create a situation where there is no difference for a client to choose one bank over the other making individual firms lose their competitive edge which has the potential to lead into inefficiency.

## A Central Bank Perspective

AI models are very effective at identifying patterns in data, especially non-linear data.[15] As economic indicators are becoming more and more prone to shocks, this will allow central banks to predict future inflation rates for example more accurately and easily. AI models also do this data analysis much faster than traditional methods could saving central banks a lot of time and allowing them to be more responsive to changes in an economy. AI can be used to create warning models that could warn central banks ahead of time if there is a chance of financial instability. This would allow the central bank to set up measures to address the instability better. All in all, the use of AI would allow central banks to better deal with any sudden shocks to an economy and would also allow them to better facilitate the growth of an economy.

## Conclusion

To summarize, the integration and use of AI in the banking sector will increase revenue in the industry by a large amount and will overall have increases in productivity throughout the industry. There is however large risks with utilizing AI as the technology is still being developed and is still not yet completely fault-proof. The costs of building an in-house AI model is also quite an intensive process and is very costly. As such, firms must take caution when implementing AI into its offices as if utilized properly, the firm can reap a lot of benefits but it is a slippery slope if a mistake is made.

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[14] Georg Leitner et al., "The Rise of Artificial Intelligence: Benefits and Risks for Financial Stability," *Www.ecb.europa.eu*, May 15, 2024, https://www.ecb.europa.eu/press/financial-stability-publications/fsr/special/html/ecb.fsrart202405_02~58c3ce5246.en.html#toc4.

[15] European Central Bank, "Artificial Intelligence: A Central Bank's View," *Www.ecb.europa.eu*, July 4, 2024, https://www.ecb.europa.eu/press/key/date/2024/html/ecb.sp240704_1~e348c05894.en.html.