

Generative AI in the financial services industry

Revolutionizing financial, fraud
detection and personalized
experiences



With the rise of generative artificial intelligence (generative AI), financial services have the opportunity to revolutionize their operations, automate tasks and enhance customer experiences.

But while its applications bring great benefits to the financial services sector, generative AI also comes with implementation challenges.

The power of generative AI in financial services

Generative AI, a subset of artificial intelligence, goes beyond analyzing existing data. It provides users with the ability to generate new content – everything from text to images to even videos.

This technology has found its way into the financial services industry, enabling banks, investment advisors and other financial services providers to automate processes, make more intelligent decisions and create personalized experiences for their customers.

While some prominent financial service companies, like Morgan Stanley, have embraced generative AI by using OpenAI-powered chatbots to support their financial advisors, the industry as a whole is still in the early stages of adoption, and regulatory agencies are contemplating the impact of such technologies.

However, the potential benefits are immense, and financial service organizations are starting to recognize the value that generative AI can bring to their operations.

Chapter 1: Applications of generative AI

Conversational finance: Enhancing customer support

One of the significant applications of generative AI in financial services is conversational finance.

By leveraging chatbots powered by generative AI, financial services companies can provide round-the-clock customer support, answering queries and providing assistance in a conversational and personalized manner.

For example, chatbots can help customers with account inquiries, transaction history, loan applications and more.

These generative AI chatbots use advanced machine learning techniques – particularly natural language generation – to generate humanlike responses.

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They use large datasets and neural networks to understand patterns in language to provide contextually relevant and coherent responses.

These AI-powered virtual assistants can retrieve the required information in real time, reducing

the workload on human support teams – which is particularly important in light of the recent talent shortages – and improving the customer experience.

New vs. old chatbots

Generative AI chatbots	AI chatbots
Leverage advanced machine learning techniques, particularly natural language generation (NLG), to generate humanlike responses based on large datasets and neural networks	Rule-based chatbots or decision-tree chatbots that function based on predefined rules and preprogrammed responses
Pros	Pros
<ul style="list-style-type: none"> Responses mimic human language, leading to more engaging and humanlike interactions Adaptable and continuously learning and improving 	<ul style="list-style-type: none"> Simpler to develop Responses are controlled and predictable
Cons	Cons
<ul style="list-style-type: none"> Not quite plug and play today, so more complex to develop, requires sophisticated machine learning models and larger datasets Potential for errors, since it can learn new responses on its own 	<ul style="list-style-type: none"> Limited adaptability and flexibility for anything that doesn't fit preprogrammed rules Lack of nuance and context understanding

Financial analysis: Making data-driven decisions

Generative AI can also be used for financial analysis, enabling leaders to make data-driven decisions.

By analyzing vast amounts of financial data, generative AI models can identify patterns, trends and anomalies that may indicate potential risks or opportunities.

For instance, generative AI can analyze market data, customer behavior, credit histories and other relevant information to provide insights into investment opportunities, risk management strategies and portfolio optimization.

This can help leaders stay ahead of the curve and make informed decisions in a rapidly changing financial landscape.

Synthetic data generation: Protecting privacy and enhancing analytics

Privacy and data protection are of utmost importance in the financial services industry. Generative AI can address these concerns by generating synthetic data that can be used for training machine learning models and conducting various analytics tasks.

By using synthetic data instead of real customer data, financial services executives can protect the privacy of their customers while still benefiting from advanced analytics. Synthetic data can be used to develop and test models for credit scoring, fraud detection and other applications without exposing sensitive information.

Chapter 2: The benefits of generative AI in financial services

The adoption of generative AI in the financial services industry offers several benefits that can transform the way financial service firms operate and serve their customers.

Here are some of these key advantages:

Personalization: Enhancing customer experience

Generative AI enables financial service companies to personalize their services and offerings based on individual customer preferences.

By analyzing customer data, such as transaction history and purchase behavior, generative AI models can generate customized recommendations and offers that have a meaningful impact on the customer.

Generative AI algorithms can generate customized investment portfolios based on customer-specific parameters such as risk tolerance, investment goals and time horizon.

Generative AI can optimize product profitability and customer value by analyzing historical market data and applying advanced algorithms. This personalized approach ensures that customers receive product recommendations aligned with their financial objectives, enhancing the likelihood of achieving their desired outcomes.

Likewise these same concepts can be applied in commercial lending institutions to better tailor credit extensions to businesses.

This level of personalization enhances customer satisfaction and loyalty, as customers feel understood and catered to.

Financial services firms can create tailored experiences that meet the unique needs of each customer, ultimately building stronger relationships and driving business growth.

Efficiency and productivity: Automation of routine tasks

Generative AI can automate routine and repetitive tasks in financial services, leading to increased efficiency and productivity. By offloading these tasks to AI-powered systems, firms can free up their employees' time and resources, allowing them to focus on more complex and value-added activities.

For example, chatbots powered by generative AI can handle customer inquiries and provide support, reducing the workload on human customer service representatives.

Generative AI chatbots can analyze vast amounts of customer data, including transaction history, account details and browsing behavior, which can, in turn, offer tailored product recommendations and financial advice.

This not only improves response times and consistency in answers but also allows employees to tackle more challenging cases that require human expertise.



Fraud detection: Strengthening security

Fraud detection is a critical area where generative AI can make a significant impact in the financial services industry. Traditional rule-based systems often struggle to identify sophisticated and evolving fraud patterns. Generative AI, on the other hand, can learn from existing data and generate new data points that conform to learned patterns.

By comparing real-time transactions against the generated patterns, companies can detect unusual or fraudulent behavior that may go unnoticed with traditional systems. This enables early detection and prevention of fraudulent activities, protecting both the company and its customers.

Real-time decision-making: Agility in a fast-paced industry

In the fast-paced world of finance, real-time decision-making is crucial. Generative AI can analyze vast amounts of data and provide insights and recommendations in real time, enabling financial service firms to make informed decisions quickly.

Whether it's analyzing market trends, identifying investment opportunities or assessing risk, generative AI can provide timely and accurate information. This agility allows financial service firms to respond swiftly to market changes, optimize their operations and stay competitive in a rapidly evolving industry.

The impact of increased agility can positively impact an organization's enterprise risk management (ERM) program. And executive management understands that the regulatory framework is trending towards enhanced ERM over traditional risk frameworks that are more reactive than proactive.

Chapter 3: Challenges and considerations in implementing generative AI in financial services

While the benefits of generative AI in financial services are evident, there are challenges and considerations that financial services firms need to address when implementing this technology. Let's explore some of these key challenges:

Data quality and bias

The performance of generative AI models heavily relies on the quality and diversity of the training data. Financial services firms need to ensure that their data is accurate, representative and free from bias.

Biased or incomplete data can lead to skewed outputs and incorrect conclusions. For example, bad data could cause unintended unfair lending practices or poor product recommendations.

To mitigate these challenges, executives should invest in data quality management, ensure diverse and representative training datasets and continuously monitor and evaluate the performance of generative AI models.

This includes a sound vendor due diligence selection and monitoring process that reviews the AI framework adopted. The new enhanced third-party risk management guidelines issued by regulatory agencies reflect this concern in the industry.

Interpretability and explainability

Generative AI models are often complex and difficult to interpret or explain.

This can pose challenges in financial services, where transparency and accountability are crucial.

Financial services leaders need to ensure that their generative AI models are explainable, and decisions made by these models can be justified and understood by both customers and regulators.

Interpretability and explainability can be achieved through model documentation, transparency in data sources and processing, and ongoing audits and reviews of AI systems. This ensures trust and confidence in the decisions made by generative AI models.

Compliance and regulatory reporting

The financial services industry faces significant challenges with compliance and regulatory reporting due to complex regulations imposed by authorities.

Compliance involves adhering to laws, while regulatory reporting requires accurate and timely submissions. Generative AI offers opportunities to address these challenges and streamline processes.

Companies can use generative AI to create synthetic data to simulate compliance scenarios, aiding in testing and meeting reporting requirements accurately. This can improve the effectiveness and reliability of compliance practices — but only if you've integrated your systems and data properly.

Generative AI can also help with risk management by identifying compliance breaches and monitoring transactions in real time. It adapts systems to evolving requirements, ensuring ongoing compliance and a strong reputation.

Security and privacy concerns

Financial service firms handle sensitive customer data, and maintaining security and privacy is paramount. Generative AI models require large amounts of data for training, and firms need to ensure that data privacy regulations and security protocols are strictly followed.

Implementing robust security measures, such as encryption, access controls and secure data storage, is essential to protect customer data from unauthorized access or breaches.

Financial service firms must also comply with relevant data protection regulations and establish clear policies for data handling and consent.

In the wrong hands, generative AI makes the old ways of breaching your defenses tougher to stop and/or detect.

AI-based password cracking represents a significant evolution from traditional brute-force methods of cybercriminals.

Instead of trying all possible combinations of characters, AI systems leverage machine learning algorithms to analyze large datasets of previously leaked passwords. By learning patterns in human password-creation behavior, AI systems can make educated guesses about target passwords, significantly reducing the number of attempts required to crack them.

For example, an AI system might learn that many people use their birth dates or common substitutions, such as replacing “a” with “@” or “s” with “\$,” in their passwords.

By incorporating these patterns into their password-cracking attempts, AI systems can crack passwords more efficiently than traditional brute-force methods. A recent study showed that AI can crack a simple password in less than 60 seconds, but it would take 96 trillion years to crack a complex one.

Fostering a strong security-conscious culture with both employees and customers can significantly mitigate that risk.

Conclusion: The future of generative AI in financial services

Generative AI holds immense potential for the financial services industry. As technology continues to advance, we can expect even more sophisticated implementations of generative AI in financial software development.

This progress will enhance the experience for customers, making it more efficient, secure and personalized. And generative AI will play a crucial role in minimizing errors by identifying inconsistencies and providing valuable insights into complex financial matters, improving the quality of work in banking and finance practices.

But AI is only as reliable as the experts operating it and the data driving it.

It is essential to find professionals with expertise in this field and practical experience in applying the technology effectively in financial software development.

The complexity of regulations and data privacy in financial services means executives have to navigate technical, legal, privacy and strategic challenges related to data management.

That often means engaging a reputable technology service provider to help handle those complexities.

But once those hurdles are cleared, generative AI is set to revolutionize the financial services industry, offering a range of applications and benefits.

Those that strategically adopt and implement generative AI have the opportunity to gain a competitive edge and deliver superior services to their customers. With careful consideration of challenges and regulatory requirements, generative AI can propel the financial services industry into the future of innovation and efficiency.

How Wipfli can help

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