



# **Bocconi Students Fintech Society**

**AI IN THE FINANCE INDUSTRY**

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# Artificial Intelligence

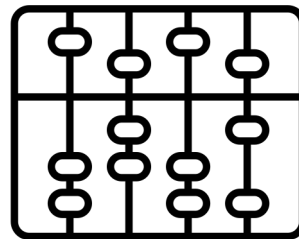


## Introduction to the intriguing world of AI

**Artificial Intelligence**, or AI, refers to the development of computer systems that perform tasks which would otherwise require human intelligence. Namely, these systems can be trained to recognize patterns, solve problems and make decisions due to their ability to learn from large amounts of data. AI's rapid growth is transforming many dominant industries, such as healthcare, transportation, and **finance**.

**AI processes and analyzes data** using algorithms that recognize patterns and make decisions. These algorithms learn from data to improve accuracy and efficiency. AI has **supervised, unsupervised, and reinforcement learning approaches**.

Supervised learning uses labeled data for training, while unsupervised learning finds patterns in unlabeled data. Reinforcement learning involves trial and error with feedback and rewards.



# Applications of AI in Finance



Machine learning	Natural Language Processing	Deep Learning	Computer Vision
<ul style="list-style-type: none"><li>- Predict cash-flow events and advise customers on spending and saving habits (<b>Metro bank</b> monitors customers' transaction data and offers personalized financial advice)</li><li>- Improve credit scores building advanced models</li><li>- Provide machine-learning-based merchant analytics as a service to customers</li><li>- Detect patterns in transactions and identify frauds</li></ul>	<ul style="list-style-type: none"><li>- Read documents and identify errors</li><li>- Improve the underwriting process and capital efficiency</li><li>- Understand customer queries via voice search on digital voice assistants or smartphones (<b>Nordea bank</b> uses a chatbot to interpret customers' queries and decide the relevant response)</li></ul>	<ul style="list-style-type: none"><li>- Read claims documents and rank their urgency, severity, and compliance to expedite triage</li><li>- Build dashboards that provide users with data analytics in a simple and intuitive format</li><li>- Develop innovative trading and investment strategies</li></ul>	<ul style="list-style-type: none"><li>- Classify drivers based on their attention levels so that safer drivers can then be targeted to offer lower premiums</li><li>- Build biometric security for clients, for example for bank ATMs</li><li>- Provide investors and traders immersive experiences to making portfolio allocations and trading decisions</li></ul>

Artificial Intelligence has the potential to disrupt and transform various functionalities in the finance industry due to its wide range of applications.

# Benefits of AI in Fintech



## Increased efficiency

Automating repetitive and time-consuming tasks can free up time for finance professionals to focus on higher-level tasks and core activities, improving overall efficiency.



## Improved security

AI can help financial institutions better manage risk, by analyzing data and identifying potential risks.



## Improved customer experience

AI chatbots offer clients personalized service and answer questions in real time, improving customer satisfaction and loyalty. This enhances the quality of service.



## Strengthened fraud detection

AI algorithms analyze large amounts of data to identify patterns and anomalies that could indicate fraudulent behavior, helping detect and prevent fraud more quickly and accurately.



## Optimized decision-making

With real-time insights and analysis to inform decision-making, AI helps executives to make more accurate and informed decisions. For instance, this happens in loan approvals or investing in a particular asset.



## Reduced costs

The practical impact of all these benefits is that AI has the potential to reduce the operational costs of financial institutions and increase their profitability.

As the amount of available data increases, AI has the power to build more reliable models and help boost efficiency.

# AI in Banking: Overview and several uses of AI



A survey conducted by The Economist Intelligence Unit indicates that 77% of bankers think that the capacity to leverage the value of **AI** will determine whether banks succeed or fail. Additionally, a McKinsey survey from 2021 found that 56% of respondents reported using **AI** in at least one area of their organizations.

Some uses of **AI in banking**...

- **Account Inquiries:** Banking users can employ chatbots to monitor their account balances, transaction history and other account-related information;
- **Money Transfers:** Users could potentially make fund transfers to other accounts or to pay merchants through a virtual assistant;
- **Loan applications:** Chatbots can aid banking customers in applying for loans and guide them through the application process;
- **Credit score Monitoring:** AI can help users review their credit ratings and provide advice on ways to improve them;
- **Fraud Prevention:** Chatbots can be utilized by banks to prevent fraud by monitoring transactions and identifying suspicious activity;
- **Account Management:** AI models can assist customers in managing their accounts by setting up automatic payments, updating personal information, and more;
- **Financial planning:** Chatbots could assist users with financial planning tasks, such as budgeting and setting financial objectives.

Sources: <https://www.forbes.com/sites/forbesbusinesscouncil/2023/03/20/the-future-of-ai-in-banking/?sh=4b6eb9cb5ed5>

# AI in banking: How JP Morgan e BBVA use AI



*JP Morgan* is one of the world's largest investment banks and makes extensive use of artificial intelligence (AI) in its financial models to improve the efficiency and accuracy of its trading, risk management, fraud prevention, and client services. Some uses of AI for JP Morgan are:

- **Algorithmic trading:** JP Morgan uses AI to develop advanced trading algorithms that analyse huge amounts of historical data, news and other market information in real time and in an automated way;
- **Risk management:** AI is useful to analyse companies' financial data and market information in real time, assess credit risk, and model stress test scenarios;
- **Fraud prevention:** JP Morgan uses AI for financial fraud prevention, that is, to detect suspicious behaviour and prevent criminal activities;
- **Customer service:** AI is also used by JP Morgan to provide services to clients, such as virtual chatbot assistance, portfolio analysis, and investment risk assessment.

# AI in banking: How JP Morgan e BBVA use AI



**BBVA** is a large multinational bank based in Spain, with a significant presence in Latin America and a strong reputation in financial technology. In fact, BBVA has developed an AI-based virtual assistant called "Ava" (*"Asistente Virtual de Atención al Cliente"*) to automate the loan application process.

- “*Ava*” uses AI to analyse customer data and assess their ability to repay the loan. The virtual assistant guides the customer through the **loan application process**, collects information about their income, expenses and credit history, using AI to analyse this data and assess their eligibility for the loan;
- In addition, BBVA also uses AI to improve **the credit evaluation process**, speeding up the loan decision process. AI is used to analyse large amounts of data and to develop predictive models that assess loan risk;
- BBVA also uses AI to **monitor loans**, using advanced algorithms to analyse data in real time and detect possible repayment problems. In addition, AI is used to develop default rate **prediction models** and to assess the risks of the bank's loan portfolio.



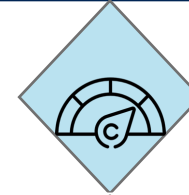
# The Regulation of AI in the Financial System



## Cybersecurity

AI systems used by financial institutions in their dealings with customers, as a result of the personal data processed must be equipped with particularly strict security measures to prevent unauthorized access and/or alteration of algorithms.

As for legal issues related to the more "technical" activities for which AI systems are intended in the financial sphere, problems of a mainly regulatory nature arise.



## Systemic Risk

The introduction of AI systems has brought significant changes to traditional financial operations, enhancing efficiency, reliability, and speed in producing various outputs. However, the sudden deployment of AI systems may disrupt the existing equilibrium and give rise to critical concerns such as systemic crises. This assessment primarily focuses on the potential impact of new AI technologies rather than those already in use, as the latter have already undergone scrutiny for stability.

The encounter between artificial intelligence and financial activities should not be demonized in advance; from both an individual perspective and a macroeconomic perspective: Much will depend on the approach of practitioners to AI issues, and on the effectiveness (and foresight) of the intervention of legislators and regulators.



# The Regulation of AI in the Financial System



## Customer Dependency

Customer dependency in AI services can create legal challenges for financial institutions. When contractual relationships are not well defined, particularly regarding termination, institutions may find themselves obligated to continue their relationship with the initial AI service provider, even on unfavorable terms. Transparency becomes an issue as providers are often unwilling to disclose detailed information about the AI systems used, including the logic behind their operations and data protection measures. This lack of transparency makes it difficult for institutions to effectively exercise audit rights. As a result, financial institutions face significant legal hurdles in ensuring their compliance and protecting their interests in AI service arrangements.

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## Data Protection

When utilizing AI-based individual profiling systems like credit scoring and solvency assessments, two key safeguards must be implemented:

Transparent disclosure and detailed information about AI operations.

Ensuring the use of objective and truthful processed data.

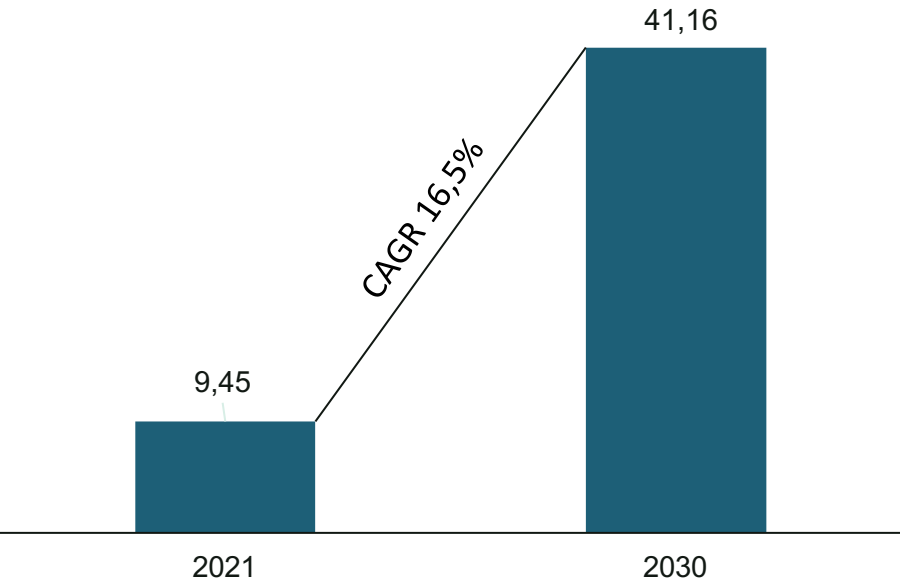
To achieve this, control and audit activities are essential, encompassing both the logic behind AI technologies and the dynamics of data extraction from Big Data databases. These measures uphold accountability and protect individuals' rights in AI-driven individual profiling.

# Industry Overview: Size and Expected Growth



- Fintech business processes are being boosted by advancements in AI technology, which is expected to cause an increase in the market for the coming years. Factors such as growing internet penetration and the availability of geographical data are among the primary drivers of this trend.

Global AI in Fintech Market (US \$ Billion)



## Main Growth Drivers



**Cloud Based AI Solutions**  
Highest Revenue Globally in 2021



**Geographical Data Availability**  
Specifically in Asia Pacific Market



**Growing Internet Penetration**  
Main Connector in the Industry

Sources: PwC, McKinsey & Co., Fintech Futures

# Credits



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## Projet Leader



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