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The Prospects of Partnership Between Artificial Intelligence and Financial Technology: A Comparative Study Between Visa and Mastercard

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Abstract:
This study aims to shed light on the prospects of the partnership between Artificial Intelligence and Financial Technology, considering that this integration represents the future of the financial industry and its outputs. This study adopts a deductive approach using descriptive and analytic tools. Complemented by a comparative analysis between Visa and Mastercard we reached several conclusions, notably that the integration of Artificial Intelligence and Financial Technology drives the financial sector to become more .efficient, secure, and customer-centric
Keywords: Artificial Intelligence, Financial Technology, Digital payments, Visa lnc, Mastercard Incorporated, Comparative study.
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I- Introduction:

Artificial intelligence (AI) is experiencing its widest range of application across industrial, economic, and technological fields, with its impact extending beyond merely automating routine processes and existing services. It is expected to open the door to radical innovations, a phenomenon already evident in the financial technology revolution.

This development is a vital part of the global technological transformation, as AI merges with financial technology to create a comprehensive shift in the upcoming years. AI offers countless services within the fintech sector, which has become one of the most dynamic and vital sectors in the global financial services market. In today's digital world, AI has become a superior technological force in the financial industry, sweeping through many areas, helping to reduce costs and effectively increase productivity. Moreover, this change has led to the reshaping of existing business models, opening new horizons.

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The intersection of AI and fintech creates enormous opportunities for growth across all sectors and entities that can benefit from technological innovation, leading to improved efficiency, better and more personalized services, enhanced financial inclusion, and the opening of new markets that were previously inaccessible. It also opens prospects for reducing fraud and deception, especially in the fintech sector, which is considered more sensitive compared to other sectors**.** Artificial intelligence (AI) is experiencing its widest range of application across industrial, economic, and technological fields, with its impact extending beyond merely automating routine processes and existing services. It is expected to open the door to radical innovations, a phenomenon already evident in the financial technology revolution.

The intersection of AI and fintech creates enormous opportunities for growth across all sectors and entities that can benefit from technological innovation, leading to improved efficiency, better and more personalized services, enhanced financial inclusion, and the opening of new markets that were previously inaccessible. It also opens prospects for reducing fraud and deception, especially in the fintech sector, which is considered more sensitive compared to other sectors**.** Based on that, the research problem lies in the pursuit of an answer to the question:

What are the future prospects of the partnership between artificial intelligence (AI)technology and financial technology, and how does and this integration reflect on the efficiency and security of financial services?

1. **Significant of study**

The significance of this study stems from shedding light on the future of the financial industry and its outputs by exploring the prospects of the strategic partnership between artificial intelligence and financial technology. Its value lies in providing an analytical framework that contributes to understanding how to drive the financial sector to become more efficient, secure, and customer-centric, in tandem with global digital transformations.

2. **Study Objectives**

In light of the rapid digital transformations in the financial sector, this study seeks to achieve a set of main objectives that address the dimensions of integrating artificial intelligence into financial technology, as outlined below:

Highlighting Al-FinTech Opportunities: Shedding light on the prospects and opportunities arising from the integration of artificial intelligence technologies with financial technology (FinTech).

- **Highlighting Al-FinTech Opportunities**: Shedding light on the prospects and opportunities arising from the integration of artificial intelligence technologies with financial technology (FinTech).
- **Comparative Analysis of Visa and Mastercard**: Comparing "Visa" and "Mastercard" in terms of employing artificial intelligence technologies to enhance the effect and security of digital payment solutions.

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- **Deriving Actionable Insights for Decision-Makers**: Reaching clear conclusions (utilizing descriptive and analytical methodological tools) that support decision-makers in developing the financial sector.
- **Evaluating the Impact on Financial Services**: Assessing how this technological and competitive integration contributes to making banking and financial services more efficient, secure, and customer-centric.
- **Deriving Actionable Insights for Decision-Makers:** Reaching clear conclusions (utilizing descriptive and analytical methodological tools) that support decision-makers in developing the financial sector.

3. Study Hypotheses:

- Hypothesis (H1): differences between Visa and Mastercard in terms of operational security driven by Al applications.

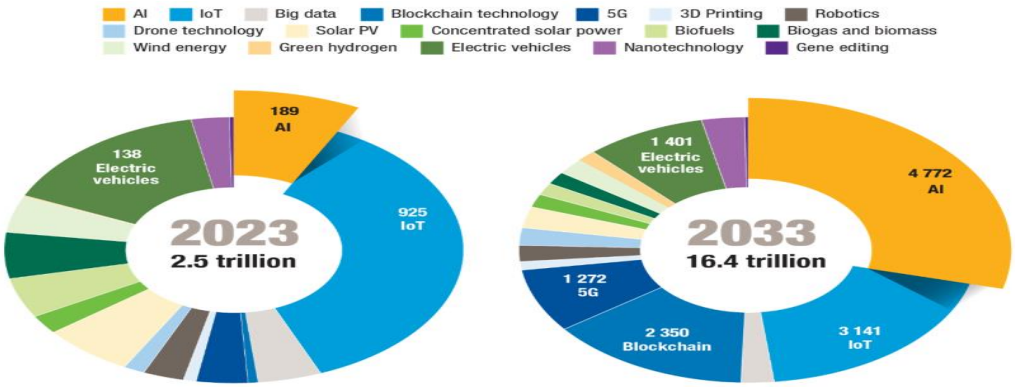
1. The Theoretical Framework of Artificial Intelligence and Financial Technology (Fintech)

Artificial intelligence represents an intellectual and technological revolution that requires the world to understand its capabilities and prepare to keep pace with it. It is now used in various fields, including the financial services sector, which has witnessed radical transformations due to this technological development. AI has contributed to improving the operational efficiencies of financial transactions and enabling financial institutions to make decisions with high accuracy and speed, in addition to many advanced options that go beyond routine tasks. In this context, there is a need to study this artificial intelligence and its effects on financial services.

1.1. Artificial Intelligence in Financial Services, Concepts and Applications.

- **Definition Artificial intelligence**

Artificial intelligence is a subfield of computer science that includes the development of intelligent hardware and software, aiming to provide the capability to perform functions such



as thinking, planning, learning, and perception. It also aims to enhance human capabilities by creating connections through complex applications between humans, computers, knowledge, and the physical environment (Muayad Younus, Najeeb Zaidan, & shakir Mahmood, 2022, p. 113)

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Figure(1): The market size of artificial intelligence in 2023 and its growth forecast until 2033.

Source: (UNCTAD, 2025).

The previous figure shows the market size of artificial intelligence for the year 2023, along with forecasts for the development of this market size by 2033. It is noted that the market size in 2023 represents 2.5 trillion US dollars, and it is expected that the market size of artificial intelligence will reach 4.8 trillion US dollars by 2033. However, the infrastructure and expertise in the field of artificial intelligence are actually concentrated in a few economies, represented by only 100 companies.

- **Artificial intelligence techniques used in financial services:** Artificial intelligence has become the cornerstone of many innovations that have changed the way humans interact with the world.

✓ **Machine learning:** is a subset of artificial intelligence that focuses on building computer systems that can automatically improve through experience and identify certain inherent characteristics in all learning systems. Machine learning attempts to give computers the ability to learn and change without being explicitly programmed. It uses algorithms that improve automatically with varying degrees of human interaction, meaning they are adaptable. Machine learning systems aim to identify relationships among variables or recognize patterns in large datasets (Tierno, 2024)

✓ **Chatbots**: are AI-powered tools that facilitate digital dialogue, enabling users to conduct natural text and voice conversations effectively on specific topics or domains. They can be used in various fields and can simulate human conversations through text chat, voice commands, or both (Saleh Alwazzan, 2024, p. 574)

Chatbots are commonly used in financial services to enhance customer support and engagement. They can also assist users with financial planning and provide personalized advice. Moreover, they enable users to perform various account management tasks and transactions through conversational interfaces. Additionally, chatbots analyze user preferences and transaction histories to offer customized product recommendations and many other tasks (Charan Modak, Mahawar, Mukherjee, & Chaube, 2023, p. tasks (Charan Modak, Mahawar, Mukherjee, & Chaube, 2023, p. 121)).

✓ **Natural Language Processing (NLP)**: is a subfield of computer science and artificial intelligence (AI) that uses machine learning to enable computers to understand and communicate with human language. This technology allows computers and digital devices to recognize, understand, and generate text and speech by combining computational linguistics — rule-based modeling of human language — with statistical modeling, machine learning, and deep learning (Stryker & Jim Holdsworth, 2024)

✓ **Natural Language**: Processing in financial services broadly includes company data, financial news and announcements, public financial disclosures, social media data, and any other form of textual data that can affect financial markets and decision-making. It aims to

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understand, interpret, and extract information from textual data in the financial domain (Du, Zhao, Mao, Xing, & Cambria, 2025, p. 3)

✓ **Deep learning**: is a technique used in machine learning that operates on the principle of feature extraction from raw data using multiple layers to identify different aspects relevant to the input data (Kumar Mishra, Sandesh Reddy, & Pathak, 2021, p. 1). In the financial services sector, both structured and unstructured data are handled, including documents and texts. Deep learning enables financial institutions to convert unstructured data into structured, machine-readable formats. Additionally, deep learning models in finance assess creditworthiness by utilizing traditional and alternative data sources, thereby improving inclusion and accuracy in lending decisions. To dynamically optimize investment portfolios, deep learning evaluates market conditions, risk tolerance, investment goals, among many other tasks (Dilmegani, 2025)

✓ **Computer vision technology:** has significantly improved the speed and accuracy of document verification. It uses automated processing and advanced algorithms to quickly analyze large volumes of documents and verify them, thereby reducing human errors and enhancing overall efficiency. The application of computer vision in document verification can be divided into two main parts: image processing and image analysis. Advanced image processing algorithms are used for preprocessing document images, resulting in improved image clarity and contrast for further analysis. These techniques greatly enhance the accuracy and speed of document verification (Chen , 2024, p. 60)

1.1.1 Robotic Process Automation (RPA) refers to software technology that enables robots to simulate human behavior and actions to accomplish tasks. RPA can work alongside legacy systems, as well as web and desktop applications, to carry out business processes (**solvexia, 2024)**. The importance of this technology lies in the need to manually handle routine processes such as data entry, document verification, and transaction processing, which speeds up task completion, reduces processing time and the risk of delays, thereby improving operational efficiency. Additionally, these systems can generate comprehensive reports simplifying compliance processes and reducing the risk of regulatory penalties (Mistry, 2024)

1.2 Financial Technology

The development of financial technology has witnessed a remarkable evolution over the years, beginning with the use of computers in the financial sector in the 1960s. However, the late 20th century experienced a rapid growth in this field, attributed to the widespread adoption of smartphones and the internet, along with advancements in artificial intelligence and big data analytics.

- **Definition of Financial Technology**

It is defined as any technological invention employed in financial services. These innovations have been used in the industry and have developed new technologies that compete with traditional financial markets. Startups have played a significant role in the process of creating these new technologies (Saber, 2021, p. 98)

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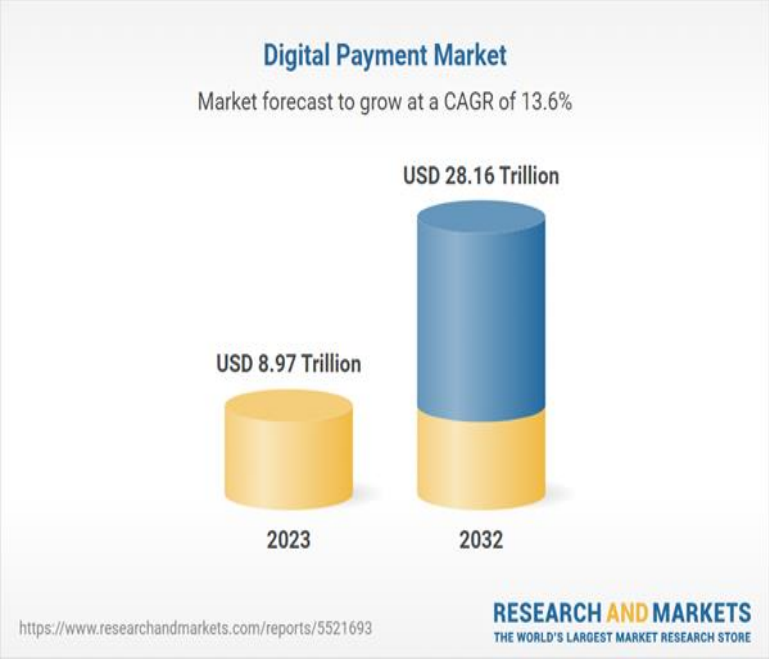
- **Types of Financial Technology**: Financial technology has many types that serve both individuals and companies, including:
  - ✓ **Digital Payments** : It is defined as a payment service that uses information and communication technology such as integrated circuit cards, encryption, wired and wireless communication networks, and mobile payment systems as an electronic payment method (Guechi, Digital Payments in Algeria: Requirements for Modernization After the Covid-19 Pandemic, 2022, p. 440)

Figure (2): The expected development of digital payments globally
The following figure illustrates the expected development of digital payments globally:



Source :(Digital Payment Market Report, Forecast by Type, Offering, End User, Countries and Company Analysis, 2024-2032, 2024)

The figure above illustrates the development of the digital payments market at a compound annual growth rate (CAGR) of 13.6%. By the year 2032, growth is expected to reach approximately 28.6 trillion US dollars. This is attributed to the increased use of smartphones, which makes it easier for individuals to carry out digital payments.

Online Lending: It refers to the use of online platforms by borrowers to increase their overall borrowing capacity. Lending platforms operate at much lower costs compared to traditional banks on one hand, and on the other hand, give lenders in the financial technology sector the advantage of screening high-risk borrowers.

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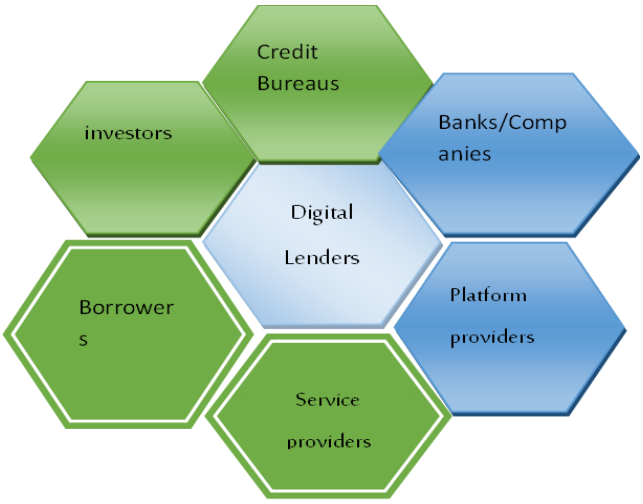
Figure (3): The actors in the digital lending process.



Source: (PRAXIS, 2023, p. 10)

The above figure illustrates the actors in the digital lending process (online lending), which include:

- Investors: These are individuals and companies that invest their money in digital lending platforms with the aim of earning a return;
- Digital Lenders: They are the operators of lending platforms, and their role includes evaluating loan applications, setting interest rates, and managing payment collection;
- Credit Bureaus: These are institutions that collect information on the credit history of individuals and companies. Digital lending platforms use this information to assess lending-related risks;
- Banks/Non-Banking Financial Institutions: This category participates in the lending process by providing funding to digital lenders, or by collaborating with them to offer digital lending services to their customers;
- Service Providers: These are technology companies that offer software or consulting services to digital lending platforms.
- Borrowers: Whether individuals or companies, they need loans and wish to obtain them through digital lending platforms;
- Platform Providers: These are companies that operate and develop the technical infrastructure for digital lending platforms, including websites and applications.

Digital insurance: refers to the provision and operation of insurance services and related financial services through digital solutions. It involves using artificial intelligence to automate processes, enhance the accuracy of risk assessment, and customize products and

(Nicoletti, 2016, p. 6). services to meet the specific needs of customers and individuals

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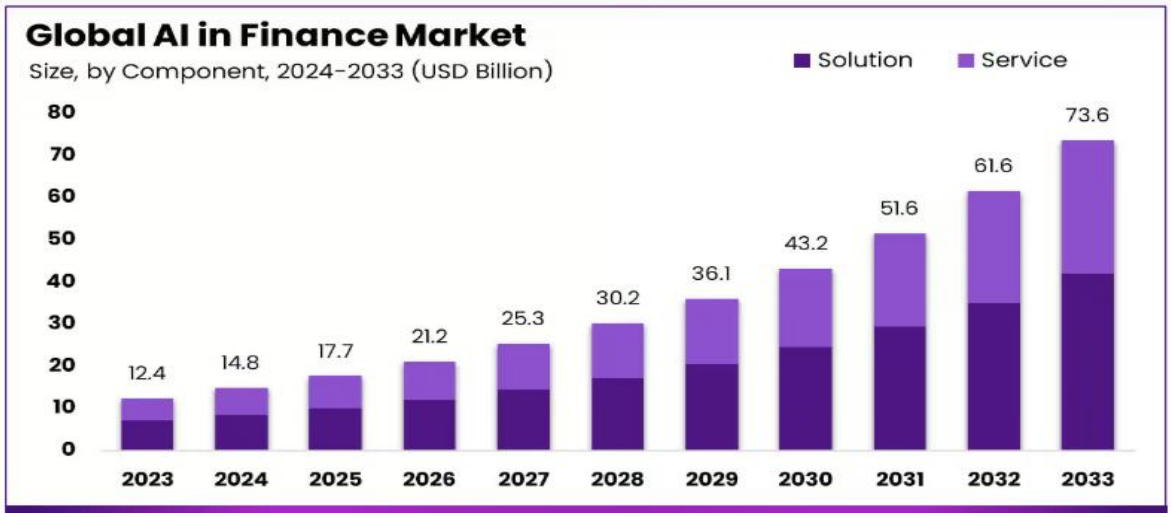
1.3 Developments in the Artificial Intelligence Market in Fintech

The intersection of Artificial Intelligence (AI) and Financial Technology (Fintech) represents one of the most transformative shifts in the modern financial ecosystem. This partnership is no longer theoretical; it is driven by an escalating global demand for automated services, enhanced security, and data-driven financial decisions. To grasp the scale of this integration, it is essential to analyze the market dynamics and financial investments shaping this industry. As a prime indicator of this global trend, the following figure provides a comprehensive look at the accelerating growth and future projections of the Al-Fintech market**.**

Figure 3: Developments in the Artificial Intelligence Market in Fintech in theAsia-Pacific Region (2020-2030)



Source : (Market.Us, 2024)

The previous figure illustrates the development of investment volume in artificial intelligence within the financial services market, covering both services and solutions, and forecasts the growth of this investment up to the year 2033. It is observed from the figure that the period from 2023 to 2025 witnessed a significant increase in investment volume, rising from 12.4 billion dollars to 17.7 billion dollars by 2025, for both services and solutions.

As for the growth projections from 2026 to 2033, a remarkable increase is expected during this period in AI investment volume for financial services, rising from approximately 21 billion dollars to around 73.6 billion dollars. It is worth noting that the largest share of this growth will be attributed to solutions rather than services. This indicates that the AI market in the financial services sector will be very prosperous and oriented towards developing new technologies

- **Challenges of Implementing the Partnership between Artificial Intelligence and Financial Technology**

The convergent partnership between Artificial Intelligence (AI) and Financial Technology (Fintech) constitutes a fundamental driver shaping the future of the modern

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financial ecosystem and reinventing its operational mechanisms. However, the sustainability of this accelerated digital transformation remains contingent upon the ability to maintain a strategic balance between promising investment opportunities and complex structural challenges. Accordingly, the most prominent of these challenges and future prospects can be generally outlined and deconstructed through the following pivotal elements

- **The challenges that hinder the continuity of the partnership between artificial intelligence and fintech include:**

Fraud (Cybersecurity): With the increasing reliance on fintech and artificial intelligence, the volume of sensitive data being stored and processed grows, making it an easy target for cybercriminals. On the other hand, artificial intelligence depends on vast amounts of data, including customers' personal and financial information. Data breaches may lead to the theft of sensitive information, exposing customers to the risks of fraud and identity theft (Board., 2024, p. 24).

lgorithmic Challenges: Algorithmic trading uses a computer program that follows a specific set of instructions (an algorithm) to execute a transaction. This technology combines computer programming and financial markets to carry out transactions within fractions of a second. It aims to remove emotions from trading; however, algorithms can reflect biases present in the data they are trained on, leading to unfair outcomes. For example, an algorithm used in recruitment may favor candidates from a certain group, or an algorithm employed in the criminal justice system may predict that individuals from a particular background are more likely to commit crimes (RAKHROUR, 2024)

Integration and implementation: Integrating AI systems with financial systems can be complex and costly because financial institutions rely on legacy and diverse systems. Successful AI implementation requires significant investments in infrastructure, technology, and technical expertise. On the other hand, developing AI models takes a long time and high expertise, necessitating training employees to use them in the future .(Al-Tuwayti, 2024)

- **The prospects of the partnership between Financial Technology and Artificial Intelligence.**

The partnership between financial technology (fintech) and artificial intelligence (AI) is heading toward broad and exciting prospects, expected to revolutionize the financial sector by providing innovative solutions to complex financial challenges. Some of the key prospects of this partnership include:

Data-driven strategic planning: The ability of artificial intelligence to comprehensively analyze data is crucial for long-term strategic planning in fintech companies. By aggregating and analyzing data from diverse sources, AI can extract insightful perspectives on market trends, operational shortcomings, and customer preferences, contributing to strategic decisions that enhance growth and innovation. This data-driven approach enables companies to adapt more quickly to market changes, improve operations, and deliver exceptional value to customers and stakeholders.

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Virtual assistants: AI-powered chatbots and virtual assistants represent the new face of customer service, providing 24/7 support and handling inquiries with remarkable accuracy. These intelligent systems understand natural language and learn from each interaction, continuously improving their ability to serve customers better. They contribute to delivering seamless, personalized, and efficient services (CHETENI PRIVILEDGE, 2024)

Reporting: Artificial intelligence (AI) plays a pivotal role in automating financial services. Within the lending sector, AI-powered algorithms evaluate applicants' creditworthiness with superior accuracy and efficiency compared to traditional methods, analyzing data points such as financial history, employment records, and social media activity to provide a comprehensive risk assessment decisions (Y.S.LAM, 2025, p. 2).Concurrently, AI models automate financial reporting for fintech companies by collecting and analyzing vast datasets to generate on-demand documents. This supports timely decision-making, uncovers latent market trends, mitigates manual computational errors, and allows for the customization of financial metrics to meet the specific needs of various stakeholders (MARCIN, 2025).

Risk Management: Risk management is one of the areas where artificial intelligence can make a significant contribution. By analysing vast amounts of data, AI can identify patterns and trends that may indicate potential risks. For example, AI can help identify customers who are more likely to default on loans, enabling fintech companies to make better decisions and reduce risks more effectively (HU.CHALOTTE, 2024, p. 4152).

Predictive analytics for market trends: Artificial intelligence enables advanced analysis of financial data, detecting trends and forecasting imminent market changes in real time. Using this capability, financial institutions can make better decisions by leveraging updated and relevant data to develop adaptive strategies (CHIKRI HASSAN, 2024) .

2. A comparative study on AI adoption at Visa and Mastercard

This section delineates the empirical framework established to validate the theoretical hypotheses. Adopting a deductive approach, the study transitioned from general theories to fieldwork specificities using three integrated tools: the descriptive tool to diagnose the phenomenon, the analytical tool to examine correlations and underlying causes, and the comparative tool to contrast cases or time periods to identify commonalities and key differences.

2.1 **AI applications at the two companies, Mastercard and Visa**

This section examines how Visa and Mastercard have each leveraged artificial intelligence technologies to enhance the efficiency of their financial services, through the development of a suite of AI-driven intelligent solutions. Particular attention will be given to the most significant and impactful of these innovations.

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2.1.1 Visa, the Financial technologie compagnie

Visa has launched a robust suite of AI-powered services that transform its operational capabilities into revenue-generating solutions for its clients. Below is an overview of the principal AI-driven services offered by Visa.

Table (1).: Financial Services in Which Artificial Intelligence is Integrated at Visa Company

Service	Technology Employed	Primary Function	Operational Mechanism	Realized Benefits
Visa Protect	Deep Learning and Artificial Intelligence	Protection of instant payments, inter-account transfers, and digital wallets	Real-time transaction analysis and risk-level assessment prior to transaction execution	Fraud mitigation, prevention of suspicious transactions, and strengthened confidence in instant payment systems
Visa Advanced Authorization (VAA)	Predictive Analytics and Artificial Intelligence	Detection of fraudulent transactions during the authorization process	Assignment of a risk score ranging from 1 to 99 for each transaction, based on fraud patterns and customer behavior	Early-stage fraud detection and reduction of financial losses
Visa Deep Authorization (VDA)	Deep Learning and Neural Networks	Enhancement of fraud detection in electronic commerce	Long-term analysis of cardholder and merchant behavioral patterns and identification of anomalous activities	Improved accuracy in risk assessment and reduction of e-commerce fraud incidents
Decision Manager (DM)	Machine Learning	Fraud management and automated decision-making	Analysis of hundreds of variables derived from VisaNet network data, with assignment of a risk score	Accelerated decision-making processes and enhanced efficiency in risk management

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ISSN: 1678-2127
Volume 26 *Issue 1,* 2026
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			from 0 to 99 per transaction	
Visa Account Attack Intelligence (VAAI)	Artificial Intelligence and Pattern Analysis	Detection of brute-force attacks and testing of stolen card data	Monitoring of repeated low-value attempts and analysis of abnormal behavioral patterns	Account protection and reduction of payment data theft
Visa Intelligent Commerce	Agentic Artificial Intelligence and Intelligent APIs	Facilitation of commerce and payments through intelligent agents	Integration of merchants and agent developers with the Visa platform to enable secure payments and identity verification	Enhanced user experience and expanded deployment of artificial intelligence in digital commerce
VisaNet +AI	Operational Artificial Intelligence and Advanced Analytics	Transformation of Visa network data into proactive services for clients	Utilization of big data derived from the Visa network to deliver operational insights and financial forecasts	Improved account and settlement management with heightened operational efficiency
Visa Value-Added Services Ecosystem	Artificial Intelligence and Data Analytics	Support for financial institutions and commercial enterprises	Comprises more than 200 services distributed across protection, issuance, acceptance, consulting, and open banking domains	Strengthened innovation, improved financial service quality, and enhanced customer experience

Source: Prepared by the researcher, based on: (Kitishian, 2025), (Febos, 2026), (Munn, n.d.), (Mejia, 2019), (visa, 2024).

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2.1.2 Types of Financial Services in Which Artificial Intelligence is Integrated at Mastercard

Mastercard has invested approximately USD 11 billion in cybersecurity and artificial intelligence innovations since 2018, underscoring the depth of its commitment. This financial outlay is matched by a substantial investment in human capital, with a dedicated team of more than 2,000 data scientists, engineers, and consultants focused on data and AI initiatives. The scale of this effort is reflected in its applications: AI is used to secure and analyze over 159 billion transactions annually (Kitishian, klover.ai, 2025). Below we will examine the most important financial services supported by artificial intelligence.

Table (2).: Summary of the Most Significant Artificial Intelligence Use Cases at Mastercard

Use Case / Platform Name	Strategic Pillar	Core AI Technology	Primary Business Objective	Quantifiable Impact / Key Metric
Decision Intelligence (DI) & DI Pro	Safer	Recurrent Neural Networks (RNN), Generative AI, Transformer Models	Real-time transaction fraud scoring and approval optimization	Boosts fraud detection rates by an average of 20%, up to 300%
Predictive Card Compromise Detection	Safer	Generative AI, Graph Technology	Proactively identifying and blocking compromised cards before fraudulent use	Doubles the detection rate of compromised cards
Safety Net	Safer	Machine Learning, Real-time Network-Level Monitoring	Defense against large-scale, systemic fraud attacks (e.g., BIN attacks)	Stopped $20 billion in potential fraud in a single year
Recorded Future Integration	Safer	Predictive AI, Large-Scale Data Analysis	Proactive, enterprise-grade cybersecurity threat intelligence	Doubled compromised card detection rate in pre-acquisition collaboration

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Dynamic Yield & Personalization Blueprint	Personal	Machine Learning, Real-time Behavioral & Contextual Analytics	Delivering hyper-personalized digital experiences for merchants and banks	Drives increased customer engagement and revenue for enterprise clients
AI-Powered Business & Market Intelligence	Smarter	Advanced Analytics, Graph Neural Networks (GNNs), Machine Learning	Intelligence-as-a-Service, monetizing transaction data insights	Positions Mastercard as a strategic advisor, creating new revenue streams
Account Intelligence Reissuance	Smarter	AI-driven Risk Assessment and Recommendations	Optimizing credit portfolio risk and managing reissuance costs for banks	Streamlines operations and reduces fraud losses for issuing partners
Mastercard Agent Pay	Next Horizon	Agentic AI, Secure Tokenization	Pioneering secure payments for autonomous AI agents	Establishes infrastructure for the future agentic economy

Source: (Kitishian, klover.ai, 2025)

2.2 Indicators of Artificial Intelligence Utilization and Its Impact on Performance

Artificial intelligence has substantially contributed to the advancement of electronic payments by enhancing efficiency, security, and transaction processing speed. These technologies have enabled fintech institutions to analyze vast volumes of data in real time to detect fraud, and have facilitated the automation of risk assessment and credit-decision processes with greater accuracy and speed. Moreover, AI solutions have improved customer experience by delivering personalized services and recommendations aligned with users' financial needs and behaviors. Below, we present key statistics that demonstrate AI's contribution to financial services.

Table (3): **Statistics on the Use of Artificial Intelligence in Enhancing the Security of Electronic Payments at Visa**

Metric	**Value**
Total Volume	More than $10 billion
Payments Volume	$40 billion
Processed Transactions	80 million transactions
Payment Credentials	$122 million

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Metric	60.7 billion transactions
Total Volume	9%
Payments Volume	More than 400 features

Source: Prepared by the researcher, based on: (Zacks Investment Research, 2025)
The preceding table presents statistics on the use of artificial intelligence to enhance the security of electronic payments at Visa. The table highlights the key statistical indicators pertaining to AI-enabled financial services implemented by the company.

Table (4): Growth in the Volume of Transactions Processed by Visa for the Period (2022–2024)

Metric	Fiscal Year 2022	Fiscal Year 2023	Fiscal Year 2024	YoY Growth (2023-2024)
Total Volume	$14.1 Trillion	$14.8 Trillion	$15.7 Trillion	+6.1%
Payments Volume	$11.6 Trillion	$12.3 Trillion	$13.2 Trillion	+7.3%
Processed Transactions	192.5 Billion	212.6 Billion	233.8 Billion	+10.0%
Payment Credentials	4.0 Billion	4.3 Billion	4.6 Billion	+7.0%

Source : (Kitishian, klover.ai, 2025)

The preceding table illustrates the growth in the volume of transactions processed by Visa during the period 2022–2024. It demonstrates sustained growth across various operational activity indicators: total transaction volume increased from $14.1 trillion to $15.7 trillion, while payment volume rose from $11.6 trillion to $13.2 trillion. The number of processed transactions recorded the highest growth rate of 10% in 2024, reflecting the increasing reliance on digital payments and the efficiency of the company's technical infrastructure. Furthermore, the number of registered payment instruments increased to 4.6 billion, indicating the expansion of the customer base and the growing global dissemination of the company's services.

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Volume 26 *Issue 1,* 2026
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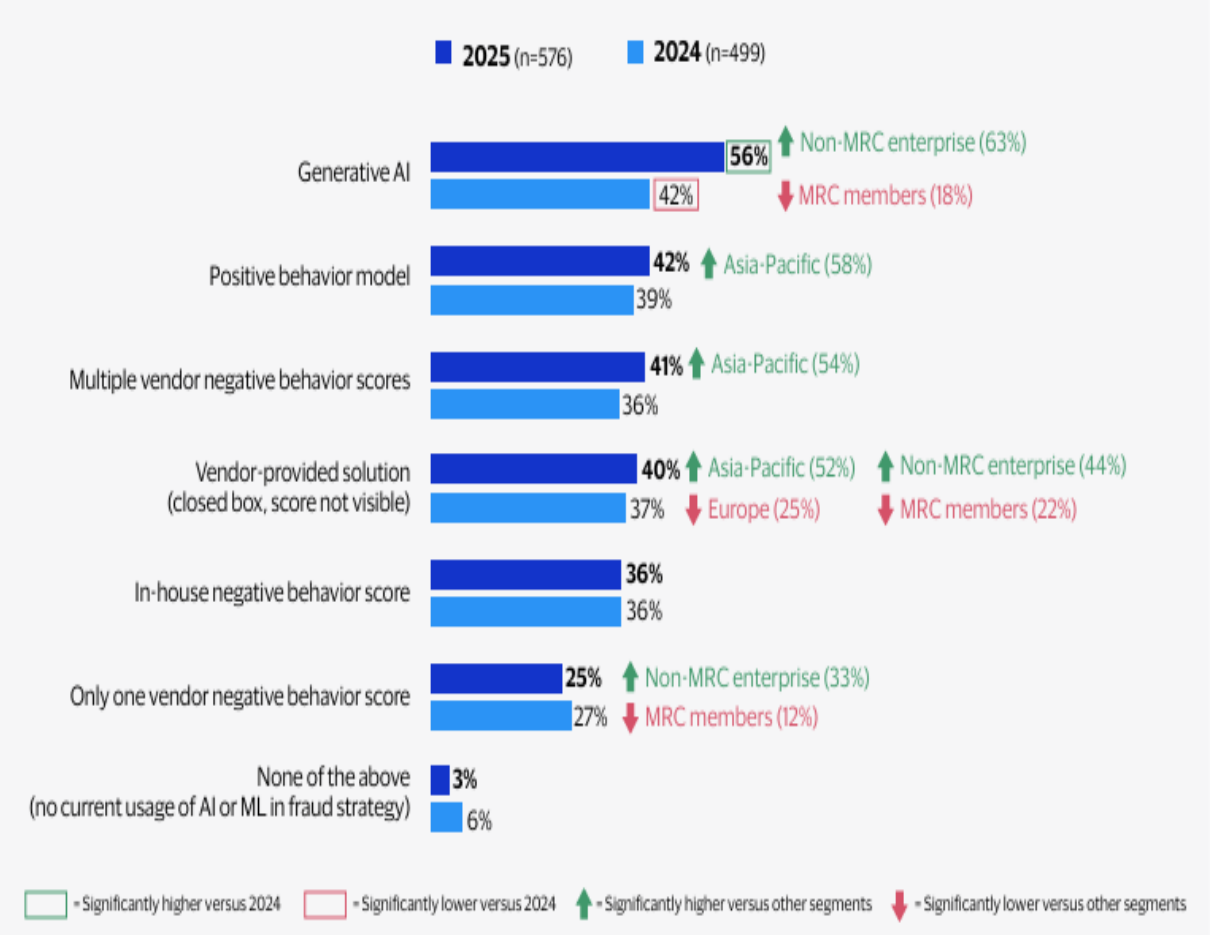
Figure (4): Utilization of Artificial Intelligence/Machine Learning-Based Fraud



Management Tools (2024–2025).

Source : (Visa Acceptance Solutions, 2025, p. 39)

The preceding figure illustrates the utilization of artificial intelligence and machine learning-based fraud management tools for the years 2024 and 2025. It is evident from the figure that 2025 witnessed a marked expansion in the adoption of artificial intelligence and machine learning technologies for fraud combating, with generative artificial intelligence emerging as the fastest-growing tool, as usage increased from 42% in 2024 to 56% in 2025. Furthermore, there has been an increase in the number of institutions that have adopted artificial intelligence and machine learning solutions for fraud prevention. In addition, it is observable that there is heightened reliance on analyzing customers' natural behavioral patterns to detect suspicious activities. Moreover, institutions are increasingly trending toward utilizing multiple data sources and models rather than depending on a single provider, which enhances fraud detection accuracy and mitigates risks.

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Volume 26 *Issue 1,* 2026
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Figure (4): Financial Savings (in US Dollars) Derived from the Use of Artificial Intelligence in Fraud Prevention During the Period (2023–2024)

Source: (Mastercard, 2025, p. 10)

The figure represents the financial savings for the years 2023 and 2024 resulting from the use of artificial intelligence in fraud prevention, with the results analyzed by sector and by organizational revenue.

First: Analysis by Sector Card-issuing entities are the most significant beneficiaries of artificial intelligence in achieving substantial financial savings. Most institutions achieve moderate savings through the application of artificial intelligence in fraud combating, as the savings in most other sectors are concentrated between $100,000 and $1 million.

Second: Analysis by Organizational Revenue A clear inverse relationship exists between the size of organizational revenue and the magnitude of savings derived from using artificial intelligence; as organizational revenue increases, the institution's capacity to achieve substantial savings from artificial intelligence-based fraud detection systems increases. Large institutions (with revenues exceeding $5 billion) are the primary beneficiaries, with 60% of them achieving savings exceeding $5 million.

The results of the figure demonstrate that artificial intelligence achieves clear financial savings in fraud combating across all financial technology sectors, although the magnitude of these savings varies according to sector and organizational size. Card-issuing entities and high-revenue institutions emerge as the categories benefiting to the greatest extent, indicating that the economic return of artificial intelligence escalates with the expansion of operational volume and the number of financial transactions.

2.3 A Comparative Study of Visa and Mastercard

Visa and Mastercard follow similar strategic approaches to artificial intelligence, both aiming to seize future opportunities while pursuing different objectives. This will create a

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competitive battle between these two giants in the AI-powered electronic payments sector as they strive to exploit this technology optimally and extract maximum benefit from it. Below, we outline the main differences that distinguish each institution from the other in their uses of artificial intelligence in financial services.

Table (5): **A Comparative Analysis of Data Asset Volume and Payment Processing Between Visa and Mastercard**

twork	Annual Switched/Processed Transactions	Annual Transaction Value	Global Reach (Countries)
Mastercard	~159 billion (2024)	$9.757 trillion (2024)	200+
Visa	Not specified, but processed $40B in fraudulent value	Payment volumes grew 14.2% in H1 2025	200+

Source: (Kitishian, klover.ai, 2025)

The preceding table, which presents a comparative analytical study of data asset volume and payment processing between Visa and Mastercard, demonstrates that both companies possess extensive global coverage spanning more than 200 countries and territories, reflecting their prominent leadership in the electronic payments sector. However, they differ in performance indicators: **Mastercard** processed approximately **159 billion transactions** in 2024, with a total value of **$9.757 trillion**, reflecting a substantial volume of financial operations and a high capacity for managing international electronic payments. In contrast, **Visa** demonstrated robust operational growth, with payment volumes increasing by **14.2%** during the first half of 2025, and successfully processed and prevented fraudulent transactions worth **$40 billion**, indicating the efficiency of its security systems supported by modern technologies and artificial intelligence in safeguarding financial transactions.

Accordingly, **Mastercard** excels in providing precise data regarding the annual number and value of transactions, whereas **Visa** stands out through its high growth indicators and advanced capabilities in fraud detection and risk management. This reflects the strength of each company in distinct dimensions of the electronic payments industry.

Table (6): Artificial Intelligence Strategies Between Visa and Mastercard

Feature/Strategy	**Visa**	**Mastercard**
Agentic Commerc Vision	Visa Intelligent Commerce: A comprehensive framework with APIs to enable AI agents to securely find, shop, and buy.	Mastercard Agent Pay: A pioneering agentic payments technology designed to power commerce in the age of AI.

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Volume 26 *Issue 1,* 2026
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Core Risk AI Engine	Visa Advanced Authorization (VAA) & Visa Deep Authorization (VDA): Mature, deep-learning-based risk scoring for all transactions, including card-not-present (CNP).	Decision Intelligence: An AI-powered transaction risk monitoring solution to prevent fraud and approve genuine transactions in real time.
Personalization Service	Visa Agent APIs: Provides 85+ unique, consent-based personalization signals from spend behavior to power recommendations.	Dynamic Yield: A hyper-personalization engine using advanced AI to create real-time recommendations for consumers.
Key AI/Tech Partners	OpenAI, Microsoft, Anthropic, Stripe, Klarna, Samsung, Perplexity, IBM, Mistral AI, Featurespace (Acquired).	Microsoft, Databricks, Recorded Future (Acquired)
Stated Data Scale	Processed 233.8 billion transactions and $15.7 trillion in total volume in FY24. Processing capability cited at 65,000 transactions/sec.	Switched 159 billion transactions in 2024. Processing capability cited at 5,000 transactions/sec.

Source: (Kitishian, klover.ai, 2025)

The table illustrates the similarities and differences between Visa and Mastercard in the deployment of artificial intelligence technologies within their financial services. The data reveal a fundamental disparity in operational scale, as Visa consistently processes a substantially larger volume of transactions and total payments compared to Mastercard. Given that the volume and diversity of training data constitute critical factors in the performance of artificial intelligence models, Visa focuses on building an integrated digital ecosystem that relies on open APIs (Application Programming Interfaces) and advanced artificial intelligence technologies. In contrast, Mastercard tends to utilize artificial intelligence more extensively for enhancing operational and marketing decisions within its system.

Consequently, it can be concluded that both Visa and Mastercard regard artificial intelligence as a strategic element for enhancing competitiveness and achieving sustainable growth. However, Mastercard places greater emphasis on artificial intelligence as a tool for risk management and real-time decision-making, whereas Visa adopts a more comprehensive approach centered on constructing an integrated technological ecosystem that enables innovation and expansion in digital services. This renders artificial intelligence a pivotal

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factor in the success of both companies and their leadership in the global financial technology sector.

Rustle:

- Visa's transaction volume advantage: Indicators show a substantial divergence in Favor of Visa. In fiscal year 2024 Visa processed 233.8 billion transactions totalling $15.7 trillion, with a peak processing capacity of 65,000 transactions per second.
- Mastercard's operational scope: By contrast, Mastercard processed 150 billion transactions in 2024, with an execution capacity of 5,000 transactions per second.
- Statistical data accuracy: Mastercard distinguished itself by providing highly precise and granular statistical data regarding its annual transaction counts and aggregate transaction value.
- Visa's orientation (open ecosystem): Visa's strategy emphasizes the construction of an integrated digital ecosystem grounded in open application programming interfaces (Open APIs). It leverages the scale and diversity of its extensive training data to develop advanced artificial intelligence models.
- Mastercard's orientation (decision support): Mastercard's strategy tends toward the intensive deployment of artificial intelligence to enhance the efficiency and quality of operational and marketing decision-making within its own ecosystem.
- Visa's digital growth and security: Visa achieved robust operational growth of 14.2% in the first half of 2025. Its systems, supported by deep learning technologies (such as VAA and VDA), succeeded in preventing approximately $40 billion in fraudulent transactions, reflecting the effectiveness of its risk-management and payment-protection capabilities, particularly for card-not-present (CNP) transactions.
- Mastercard's risk-monitoring solutions: Mastercard relies on a Decision Intelligence system to monitor operational risks in real time, enabling immediate prevention of fraudulent activity while allowing legitimate transactions to proceed.
- Based on the data presented in the table and the accompanying analysis, the first hypothesis (H1), which posits the existence of statistically significant differences between Visa and Mastercard in terms of AI-driven operational security, was accepted. The findings revealed variation in the intelligent security systems employed by the two companies. While Visa leads operational security through deep learning technologies (VAA & VDA), which have enabled it to prevent fraud amounting to $40 billion, Mastercard relies on its Decision Intelligence system for risk monitoring. This reflects differences in the dimensions of operational and security strengths between the two companies within the financial technology industry

Conclusion:

This study has delineated a clear and forward-looking roadmap for the strategic partnership between artificial intelligence (AI) and financial technology (Fintech). The structural analysis across the three dimensions demonstrates that this integration is no longer merely an

evolutionary option, but rather an imperative pillar reshaping the outputs of the global financial industry. Market forecasts strongly reinforce this trajectory, with the digital payment market projected to expand at a Compound Annual Growth Rate (CAGR) of 13.6%, surging from USD 8.97 trillion in 2023 to an estimated USD 28.16 trillion by 2032, thereby underscoring the vast investment horizons driven by this technological synergy.

On an empirical level, the comparative analysis between the two payment titans, Visa and Mastercard, revealed distinct data-driven and AI-backed strategies. Mastercard's operational indicators demonstrate immense transactional efficiency, processing approximately 159 billion transactions annually with a total transaction value of USD 9.757 trillion in 2024 across more than 200 countries. Conversely, Visa has heavily steered its AI capabilities toward enhancing financial security and countering cyber threats, effectively preventing and securing a staggering USD 40 billion in fraudulent value, while simultaneously driving its payment volumes up by 14.2% in the first half of 2025.

Ultimately, the study concludes that the AI-Fintech partnership propels the industry toward three core benchmarks: maximizing real-time processing efficiency, fortifying operational security against fraud, and achieving absolute customer-centricity. Consequently, the study recommends that financial institutions continuously upgrade their digital infrastructure to leverage data assets as sovereign capabilities, ensuring sustained competitive advantages in a highly dynamic global payment ecosystem.

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