NATIONAL BANK OF KAZAKHSTAN

The Agency of the Republic of Kazakhstan for Regulation and Development of Financial Market

AIFC

April 2024

Artificial Intelligence in Kazakhstan Financial Market

CURRENT STATE, PROSPECTS, AND ANALYSIS OF REGULATORY APPROACHES

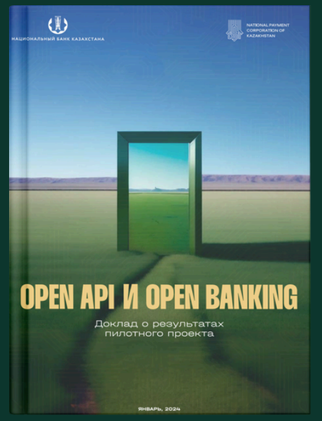
The report was developed by
JSC “National Payment Corporation of the National Bank of the Republic of Kazakhstan”

Currently, artificial intelligence (AI) is actively used in various sectors of the Kazakhstani financial market: customer interaction, risk management, analytics, financial transactions, and more. The potential for further expansion of AI usage in the financial sector is significant and can improve the efficiency of services provided. However, with the development of generative AI, new challenges and risks arise. In this regard, it is important to create appropriate conditions for the development of AI by establishing corresponding regulations.

The research includes an analysis and assessment of the application of AI in the financial market of Kazakhstan, as well as the study of various types of AI, key technologies, and development directions. Potential risks and global trends in AI regulation are analyzed. The report contains the results of surveys and opinions of financial institutions in Kazakhstan, local trends and scenarios of AI usage, and also proposes an approach to research of required regulation tools in the financial market of Kazakhstan.

We would like to express our gratitude to all who participated in our research, and we hope that its results will be useful for the further development of the financial sector in Kazakhstan.

Previous reports



January 2024

December 2023

May 2022

May 2021

94

financial institutes surveyed

10+

interviews with market experts

100+

Kazakhstani and international sources were analyzed

Research participants

Foreword

Timur Suleimenov

Governor of the
National Bank of Kazakhstan

The dynamic development of fundamental models of artificial intelligence, or AI, is now supported by expanding capacity and increasing accessibility of computing infrastructure, which forms the basis for unprecedented advancement. This is evidenced by the forecasts of the international expert community: the spread of AI could double the pace of global economic growth by 2025 and affect an average of 40% of jobs worldwide.

As artificial intelligence has become the central element of the global technology agenda, financial market in Kazakhstan has already been actively applying machine learning and advanced modeling technologies in a wide variety of application scenarios, from credit scoring to computer vision for identification.

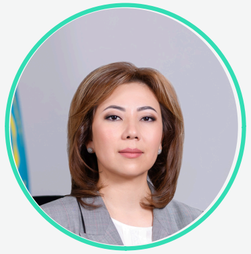
Our common task is to leverage the accumulated technological expertise and drive it towards creation of a sustainable AI ecosystem in the financial market. This ecosystem will transform the potential of AI technologies into benefits that are clear to citizens and businesses, such as user-friendly interfaces, speed, security, and reduced cost of service.

The role of the National Bank is to create favorable conditions for integration of AI into the financial system of Kazakhstan. This includes shaping the appropriate legislative environment regarding the use and protection of data to “train AI”, maintain competition incentives in AI proliferation, define regulations for cloud computing, etc. Moreover, it is essential to ensure availability and security of computing infrastructure for resource-intensive processes like fundamental model training, localization of open-source models, etc. We also see our role in supporting AI human capital initiatives in the financial market.

The focus is also on applying AI technologies in financial regulators’ own projects, including fraud prevention, secure digital identification, advanced modeling and more.

It is important to realize that there are no ready-made “formulas” or algorithms for the development of the AI ecosystem, therefore, the key success factor is the joint effort of all market participants. We will work to create such platforms and support all initiatives necessary for development.

Foreword



Madina Abylkassymova

Chairperson of the Agency of the Republic of Kazakhstan for Regulation and Revelopment of Financial Market

The integration of artificial intelligence into the financial sector opens up new horizons for innovation and enhances the quality of services provided. The Agency pays special attention to the study and implementation of AI in the field of supervisory technologies (SupTech) and regulatory technologies (RegTech), which contributes to making informed decisions promptly and monitoring systemic risks.

Harmonious development of AI in the financial industry and the creation of a favorable regulatory environment are only possible through active interaction between regulators and financial institutions.

Renat Bekturov

Governor of the Astana International Financial Centre

In a rapidly transforming global economy, the introduction of artificial intelligence (AI) into the work of financial organizations is becoming one of the most important catalysts for the efficiency and accessibility of financial services.

One of the AIFC's priorities is to promote innovation to attract investment, develop the financial market and financial services. Our work in this area has resulted in several initiatives and projects, including the FinTech Lab regulatory sandbox, a pilot project for testing cryptofiat channels, full digitalization of registration services in the AIFC and many other developments.

AI is one of the most effective tools for innovation development. It automates routine tasks, improves data analysis and forecasting of market trends, and much more.

The regulation of AI in the financial industry requires a multifaceted approach, which should include the promotion of international cooperation, the use of a flexible regulatory framework, compliance with ethical standards, transparency and accountability. Such a comprehensive strategy not only promotes the intelligent implementation of AI in the financial sector, but also promotes the financial industry towards sustainable growth and innovation, while protecting it from potential risks and ethical errors.

Summary

Potential

What is the potential of AI for the global economy and financial market? What are the main advantages and risks?

1

a. Artificial intelligence (AI) refers to technologies capable of simulating human thinking and learning based on data. They can independently extract patterns from data and adjust their parameters to make decisions.

b. In just a few years, the implementation of AI has more than doubled. In 2017, 20% of respondents from large companies reported implementing AI in at least one area of their business, while in 2022, this figure had already reached 50%.

c. AI has the potential to significantly increase productivity, support global economic growth, and contribute to income growth worldwide. According to PwC, AI's contribution to the global GDP is projected to reach $13.3 trillion by 2030.

d. According to McKinsey estimates, the implementation of generative AI could bring the global economy $2.6–4.4 trillion annually. The financial sector stands to benefit the most, with banks potentially increasing revenue by $200–340 billion per year, and insurance companies by $50–70 billion.

AI and Kazakhstan financial market

Current state and scenarios of AI utilization in the Kazakhstani financial market

2

a. 31% participants of the financial market use AI to some extent in their activities. The maximum level of AI usage is observed among second-tier banks - 60%.

b. 37% of the respondents noted that AI implementation is at an early stage, 4% at the pilot project stage, 11% at the stage of partial implementation, and 4% have fully implemented AI (3 banks and 1 microfinance organization).

c. Top 3 areas of AI application in Kazakhstani financial institutions: customer support (16%), risk management and compliance (14%), as well as marketing and sales (11%).

d. The main obstacles to further integration are significant budgetary expenditures (35%), data confidentiality and diversity (20%), insufficient volume and quality of data (19%), and hiring and retaining specialists (18%).

Perspectives

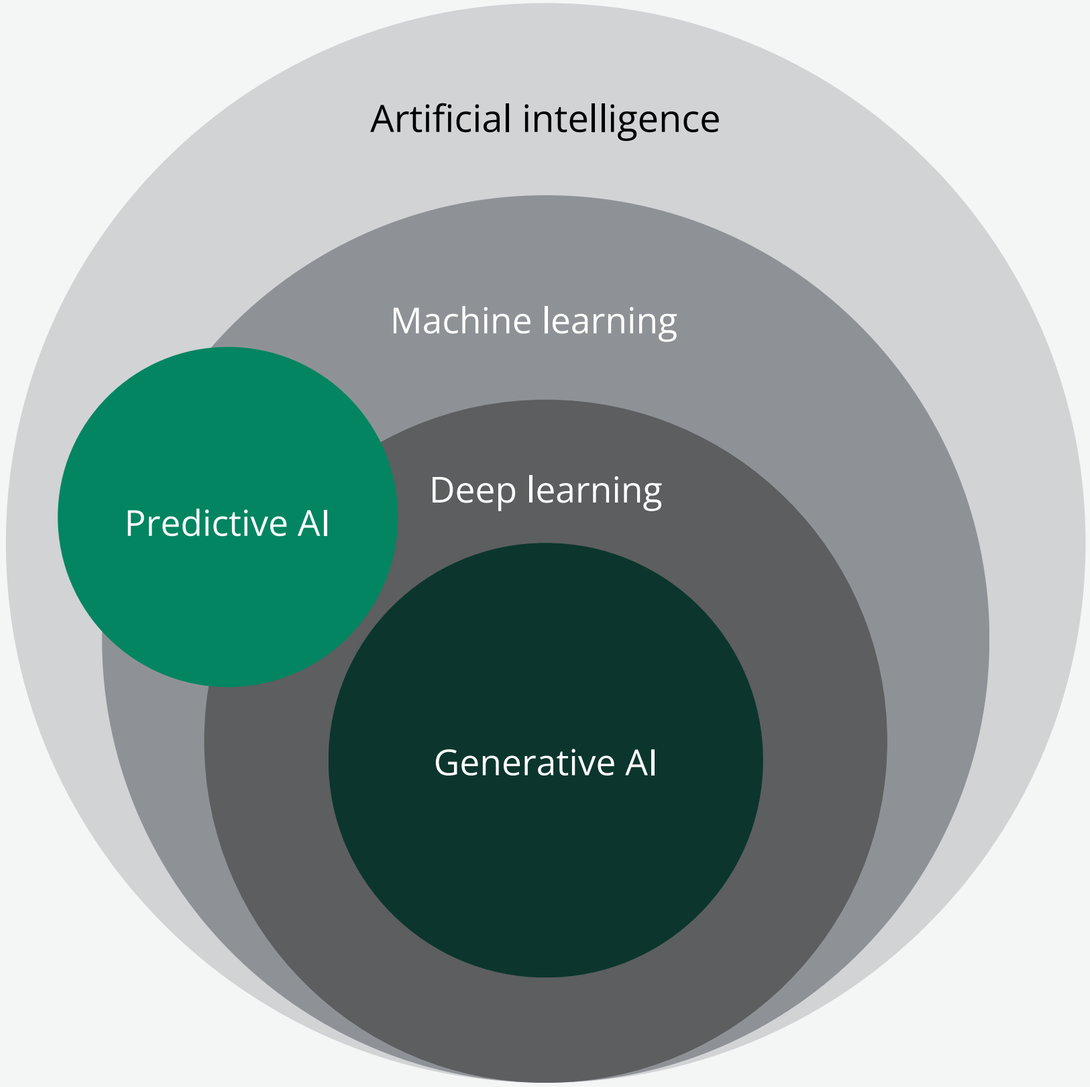
How are financial regulators planning to develop AI in Kazakhstan?

3

a. Based on global experience, Kazakhstani financial regulators should strengthen their role as catalysts for innovation and ensure the readiness of the financial market for new challenges. The main directions will be:

1. coordination of efforts with initiatives of the Government of the Republic of Kazakhstan,
2. consistent stimulating approach to regulation,
3. capacity building, development of internal competencies in the financial market,
4. experimentation and development of proprietary projects,
5. development of infrastructure to strengthen AI technology.

What do we understand as AI



Artificial intelligence — an ability of artificial intelligence systems to perform "creative" functions, traditionally considered the prerogative of humans. These tasks include speech recognition, learning, planning, problem-solving, understanding natural language, perception (through video, images, or sound), and the ability to manipulate objects.

Machine learning - a subfield of artificial intelligence algorithms that enables computer systems to extract knowledge from data and use it for decision-making and predictions without explicit programming, essentially autonomously.

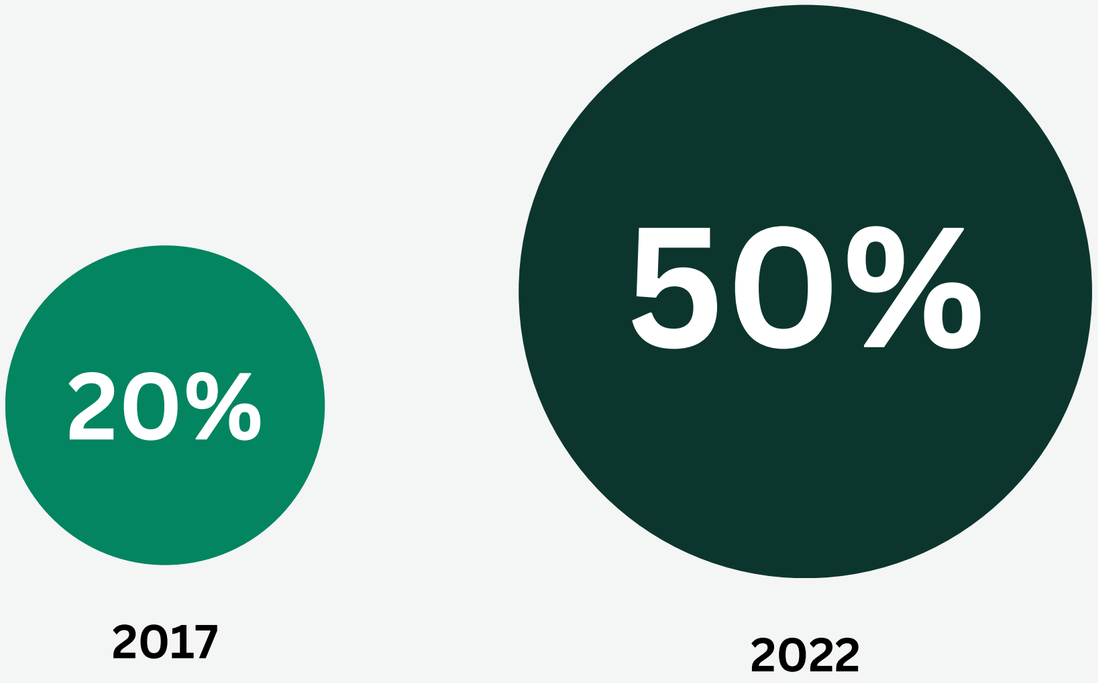
Deep learning - a subfield of machine learning that utilizes multi-layered neural networks to process data and train models in order to achieve more accurate and high-quality results.

Predictive AI - is focused on predicting future events based on the analysis of historical data using machine learning or deep learning methods. This technology forecasts trends in various fields, adapting to changing conditions.

Generative AI - a subfield of deep learning focused on generating new, realistic content (text, images, audio) from unstructured data. Generative AI expands the capabilities of automation, allowing machines not only to analyze data but also to creatively interact with information, making something entirely new and valuable.

Source: “A Generative AI Roadmap for Financial Institutions”, BCG, 2023

The number of companies implementing AI is steadily growing



Over the past few years, the implementation of AI has more than doubled. If in 2017, 20% of respondents from large companies reported implementing AI in at least one area of their business, by 2022, this figure had reached 50%.

Cristina Doros

Senior Vice President, Group Country Manager CISSEE at Visa

-How do you assess the current level of AI market development in Kazakhstan?

-At the beginning stage.

*-**Which key AI technologies and fintech-solutions are actively developed and integrated in Kazakhstan?***

-Solutions related to improvement of productivity / effectiveness, service - quality improvement.

*-**Which concrete advantages can AI integration bring to Kazakhstan's financial sector?***

-Effectivity improvement, decrease in the quantity of necessary resources, eventually leading to cardinal changes in certain areas.

*-**What risks and challenges are associated with the implementation of AI in the financial market of Kazakhstan?***

-The risks primarily lying in the development of trainable models, the absence of regulations, ethical codes for developments, and measures to ensure them - it is a global matter

Source: "The state of AI in 2022—and a half decade in review", McKinsey Global, 2022

AI is capable of significantly increasing productivity, supporting global economic growth, and contributing to income growth worldwide

$13.3 trillion

contribution of AI to the world GDP by 2030, *PwC*

~140 000

patents on AI technologies in 2021, *Econsight*

60-70%

employee's working time that generative AI is able to automate, *McKinsey*

~40%

work positions that are going to be affected by AI, *IMF*

up to $4.4 trillion

additional value that generative AI can bring yearly, *McKinsey*

~50%

of major financial companies are implementing AI (the highest indicator among industries), *IBM*

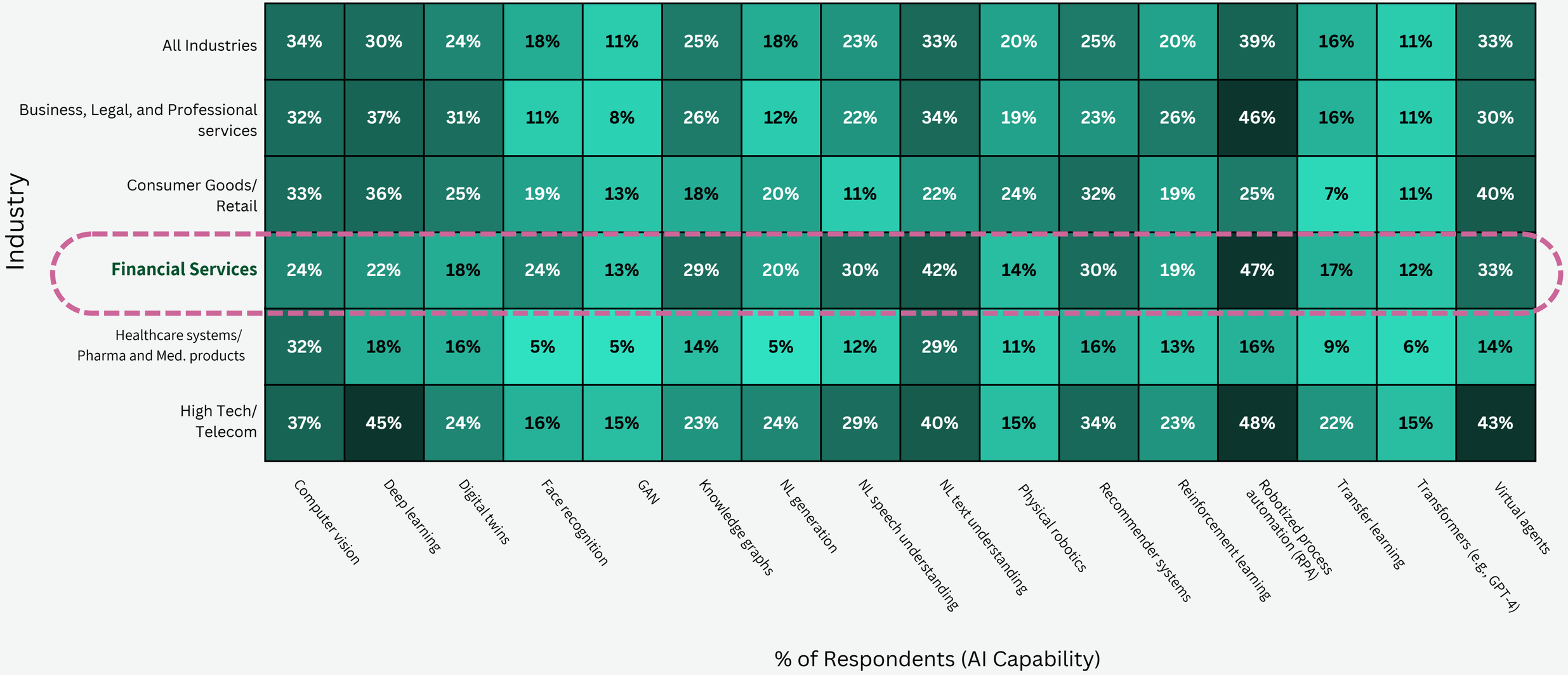
>95%

top managers think that implementing AI is necessary to retain competitive advantages in their businesses, *IBM*

~2.7x

growth of venture investments into generative AI in 2023, *PitchBook*

Use of AI in at least one business function or department



 Source: 2023 AI Index Report, Stanford Institute for Human-Centered Artificial Intelligence (HAI)

Rafal Trepka

General Manager at Mastercard
Central Asia

“The Kazakhstani market has come a long way from the complete absence of a private financial market to the digitization of banking in a very short period. It is more prepared for new trends than many traditional markets, so the appetite for innovation will not diminish.

-What risks and challenges are associated with AI implementation in Kazakhstan’s financial market?

-I would make the accent not on the risks, but on the prospects – this is an excellent definition. The use of AI optimizes routine processes and enables fast and objective decision-making. Yes, it will probably require market participants to reconsider their approach to some tasks, reassemble business processes, and become more open to innovation. However, this will pay off with the growth of a healthy business and fair competition in the market. The Kazakhstani market has come a long way from the complete absence of a private financial market to the digitization of banking in a very short period. It is more prepared for new trends than many traditional markets, so the appetite for innovation will not diminish. We see this in the active use of our AI services by many partners, and overall in the development of digital solutions implemented by banks and government agencies.”

Global corporate investments in AI have grown by 13 times over the last decade

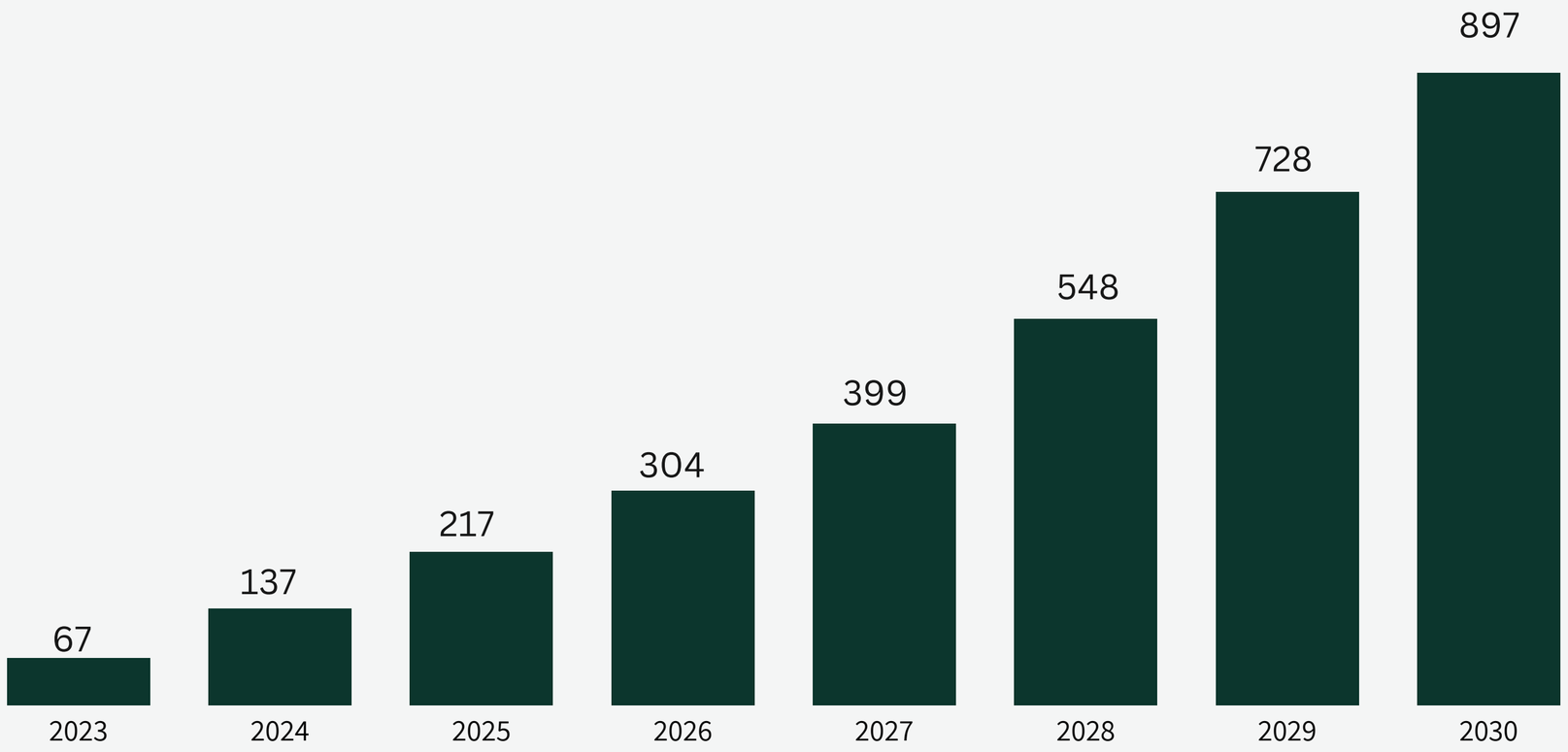
Level of investment into AI grows together with the growth of its implementation:

- Global corporate investments in AI have grown by 13 times over the last decade: from $14 billion in 2013 to $190 billion in 2022.
- According to McKinsey research, five years ago, 40% of respondents in organizations using AI reported that more than 5% of their digital budgets were allocated to AI, while in 2022, more than half of the respondents confirmed this level of investment. 63% of respondents expect an increase in investments by their organizations over the next three years.
- According to the Financial Times analysis, the capital expenditures of Alphabet, Microsoft, and Amazon for the three months from July to September 2023 reached $32 billion, which is 1.5 times more than the same figure in 2020. Bank of America forecasts that Amazon, Alphabet, and Microsoft will increase their investments by 22% in 2024, reaching $116 billion.

Source: Artificial Intelligence Index Report 2023, Stanford Institute for Human-Centered Artificial Intelligence
The state of AI in 2022—and a half decade in review, McKinsey

According to experts, generative AI will be one of the fastest growing areas of AI in the coming years

Value of the generative AI market ($ billion)



A key trend associated with the use of AI is the development and widespread adoption of generative AI, including large language models (LLMs).

Generative AI is used to create content, including text, audio, images, and videos.

According to Bloomberg Intelligence, the global market for generative AI-based solutions is estimated to grow more than 13-fold from $67 billion to $897 billion between 2023 and 2030.

Source: Bloomberg Intelligence (june 2023)

Successful cases of generative AI implementation in different sectors of the economy

Technology

~88%

of **software developers**
reported higher productivity when using generative AI code assistant

Consumer

Automated on-model **fashion image generation** resulted in

1.5X

increase in retailer conversion rate

Biopharma

Generative AI identified a **novel candidate** for the treatment of Idiopathic Pulmonary Fibrosis in

21 days

(this used to take years)

Financial Institutions

Synthetic GAN-enhanced training set for fraud detection achieved a

~98%

accuracy rate

(compared to 97% with unprocessed original data)

Entertainment

Generate novel animated motions from a single training motion sequence with

~97.2%

quality score on natural movements

(compared to 84.6% with use of traditional methods)

Insurance

InsurTech platforms leveraged generative AI to reduce up to

~30%

of customer service cost

Source: “The CEO’s Roadmap on Generative AI ”, BCG, 2023

01 The concept of AI and its potential

02 **Global AI development trends in financial markets**

03 Current state of AI in Kazakhstan and results of expert and market participant interviews

04 Prospects and planned work on the development directions of AI technology in the financial market of Kazakhstan in 2024

The financial sector is among the industries that will derive the greatest economic benefit from the implementation of generative AI

75%

of banks with assets over $100 billion have already implemented AI in their operations *(Insider Intelligence)*

Through generative AI the revenue of banks will increase

by **$200–340** billion a year

(McKinsey)

From generative AI the revenue of insurance companies will increase

by **$50–70** billion a year

(McKinsey)

According to McKinsey estimates, the economic impact of implementing generative AI across various sectors of the global economy will range from $2.6 trillion to $4.4 trillion annually.

The financial sector is among the industries poised to receive the greatest economic benefit from the implementation of generative AI. This could lead to an increase in bank revenue by $200–340 billion annually and an increase in insurance companies' revenue by $50–70 billion.

The implementation of AI can contribute to increased business efficiency, including cost reduction, process acceleration, resource optimization, and enhanced customer loyalty through more qualitative and targeted product and service offerings.

Key applications of AI in the financial market include scoring, underwriting, trading, investment advisory, risk management, marketing, customer interaction, and fraud prevention. Moreover, the scope of AI application areas continues to expand. Considering the expansion and deepening integration of AI into the business processes of financial organizations, this technology can have a significant impact on the development of the financial market.

Chronology of AI implementation in the financial sector

1987 - 2001	2011 - 2012	2016	2020	2021	2022	2023
Fraud detection systems	Credit scoring	Risk management system	Financial forecasting	Capital management platforms based on AI	Risk assessment with help of AI	Client support using AI
Algorithmic trading	Chat-bots and virtual assistants	Compliance with regulatory requirements		Improved fraud detection systems	AI for compliance with regulatory requirements and reporting	AI in credit underwriting
Client support management	Robot consultants 2.0	Personalized banking services				

Major financial market players are actively utilizing potential of AI in different spheres of their operations

Use of predictive AI

The use of AI in financial analytics and risk management has significantly transformed industry approaches to forecasting and monitoring potential threats.

Moody's

Moody's integrates AI technologies to implement early warning mechanisms for risks, enabling the enhancement of risk management strategies and timely response to threats.

Mastercard, Visa, and JP Morgan Chase are implementing AI capable of analyzing extensive sets of transactional data in real-time to detect suspicious transactions.

Goldman Sachs

Goldman Sachs applies AI for optimal resource allocation. This is achieved through the analysis of investment flows, market trends, and operational efficiency.

Use of “hybrid” AI

citibank

The use of intelligent document processing systems, as in the case of Citi, significantly speeds up the processing of large volumes of data, reduces the likelihood of errors, and increases employee efficiency.

Bank of America

Bank of America uses AI to analyze consumer habits and behaviors to identify suitable financial products and services.

citibank Wells Fargo

Citi and Wells Fargo use AI for active identifying of customer needs. AI-based systems analyze data and behavioral patterns, enabling them to not only respond to current customer requests but also predict future needs.

Use of generative AI

Goldman Sachs, Morgan Stanley, Bloomberg, and Blackrock are implementing AI to automate processes for analyzing investment and research reports.

JP Morgan and Citi use AI for generating and reviewing software code to enhance the speed and quality of software development and the efficiency of IT processes.

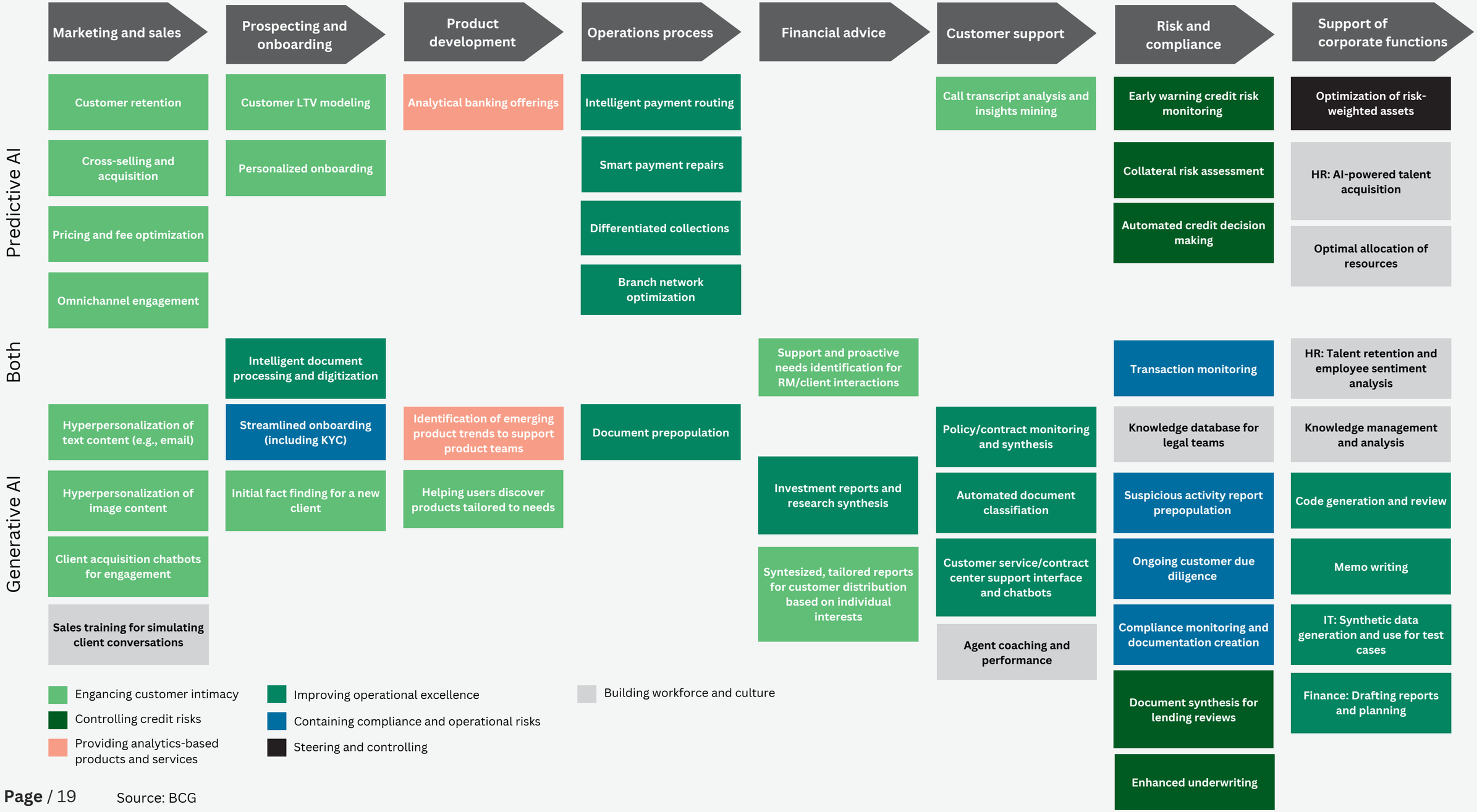
BlackRock

Blackrock implements AI for knowledge management, organizing accumulated corporate information to support strategic planning and operational decision-making.

Morgan Stanley

Morgan Stanley provides clients with personalized recommendations using AI, enhancing the quality of financial advisory services.

Use of AI by financial organizations



Source: BCG

Financial regulators have made significant progress by being among the first to use machine learning techniques for statistics, macro-analysis, payment system supervision and cash flow control

Chronology of AI implementation by financial regulators

2000

US Securities and Exchange Commission

Automated trading monitoring system

2011

US Securities and Exchange Commission

High frequency trading monitoring system

2014

Bank of England

AI for market monitoring

2017

Monetary Authority of Singapore

AI in regulatory compliance procedures (SupTech)

2019

Bank for International Settlements

Identifying and combating fraudulent activity

2019

European Central Bank

Improvement of stress tests with the help of AI

2021

De Nederlandsche Bank

Exploring the use of AI for antifraud systems

2023

European Central Bank

AI for regulatory reporting

Experts highlight a number of risks following the full-scale implementation of AI in various areas, in particular financial

Main risks for financial market

Risks of model bias

Bias can arise from incomplete or inadequate data used to train the system, as well as from the influence of human biases on AI algorithms.

Confidentiality risks

Processing large volumes of sensitive financial information requires high standards of confidentiality. This data could be part of the training sets for AI models, and leaking it could have serious consequences.

Model intrasparency and complexity

AI algorithms have a complex structure and seem like a “black box” to most users.

Robustness and reliability of AI results

Generative AI may be prone to “hallucinations”—producing erroneous or distorted data. These “hallucinations” are caused by the complexity of the system and the huge amount of data being processed.

Cybersecurity risks

AI can be used to create sophisticated phishing messages and emails. In addition, the AI models themselves may be susceptible to various attacks.

Financial stability risks

If models are not sufficiently trained to manage risk, AI may accept increased credit or market risks to maximize profits.

Ethical risks

When making decisions, AI algorithms may be based on discriminatory factors (religion, ethnicity, gender, etc.).

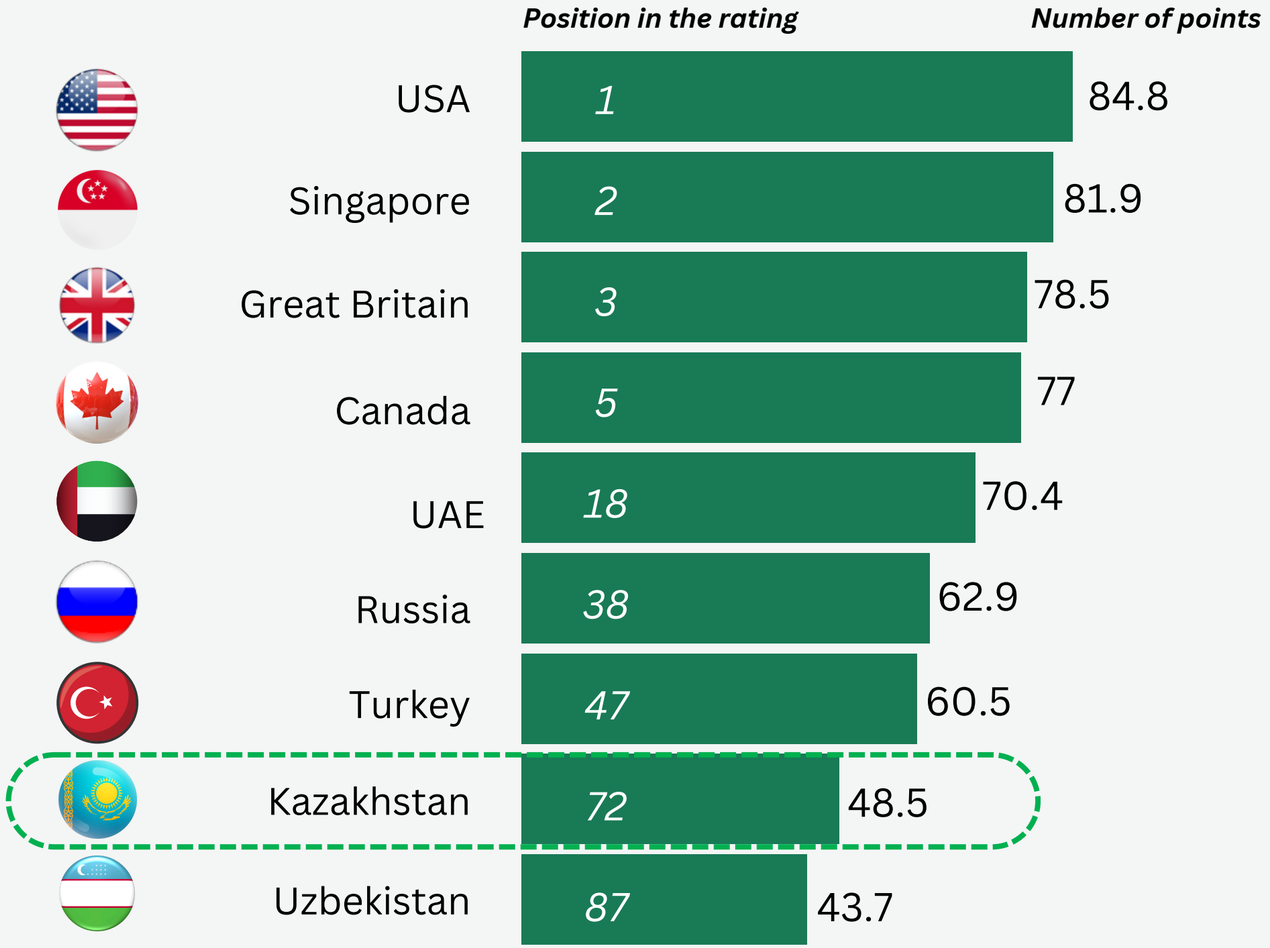
Many countries are actively considering AI regulation and data protection; 31 countries have already adopted legislation in this area, 13 countries are at the discussion stage

	EU	UK	USA	Singapore
General regulation approach	Classification of models by risk level and differentiation of regulation by class, from soft regulation to complete ban.	Fragmented regulation in various industries. Creation of a specialized institute for studying the safety of using AI technology - AI Safety Institute.	Decentralized regulation based on common principles and industry standards.	Decentralized regulation based on general principles and frameworks (regulatory frameworks).
Regulatory document	• EU Artificial Intelligence Regulation (2024) • General Data Protection Regulation (GDPR) • Digital Services Act (DSA) • Fundamentals of AI Cybersecurity (FAISP)	• Implementation of AI regulatory principles in the UK. An Initial Guide for Regulators (2024) • AI Safety Institute approach to evaluations (2024) • White Paper on AI (2023) • Equality Act(2010)	• AI Bill of Rights (2023) • Presidential Decree (14110) - Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence (2023) • AI Risk Management Framework (AI RMF, 2023)	• Model AI Governance Framework (2020) • AI Verify, an AI governance testing framework and a software toolkit by PDPC and Infocomm Media Development Authority (IMDA)
Financial regulation approach	Initiatives can come from both the European Central Bank and country institutions. A neutral approach to AI regulation.	A flexible and proactive approach consisting of careful regulation, active collaboration with market participants, openness to changes in regulatory approaches, and the use of regulatory sandboxes.	Fragmented between financial regulators. Prohibition on the use of unreasonable decisions and causing harm.	Acceptance of basic principles. Active interaction with market participants. Combining regulatory support, open standards and regulatory sandboxes. Publish joint reports to promote best practice.

	India	Australia	Japan	China
General regulation approach	Establishment of general principles, establishment of “soft” restrictions to stimulate the industry.	Established voluntary ethical principles, limits for the use of data within the framework of current laws. Classification of models by risk level and differentiation of regulation by class, from soft regulation to complete ban.	Established general principles, AI regulation by developing requirements for individual use cases, including online recommendation systems, autonomous transport control, etc.	Regulation of certain areas of AI application: DeepFake, development of recommendations, GenAI. Limits on unjustified differentiation of recommendations and labeling requirements for works created with the help of AI. Establishment of data standards’ requirements for training AI models.
Regulatory document	• National AI Strategy (2018) • Principles for the Responsible Use of AI (2021) • Implementing principles for the responsible use of AI (2021) • Digital Privacy Protection Act (2023)	• Privacy Act (1988) • Competition and Consumer Protection Act (2010) • Legislation against discrimination • A number of legislative acts aimed at protecting copyrights	• Social Principles of Human-Centered AI (2019) • AI Governance in Japan Ver. 1.1 (2021) • Guide to Managing the Implementation of AI Principles (2022) • Digital Platform Transparency Act (2020) • Personal Data Protection Law (2022)	• Administrative Regulations on Recommendation Algorithms for Internet Information Services (2022) • Regulations on the Administration of the Service for Deep Synthesis of Information on the Internet (2023) • Interim Regulations for the Management of Generative AI Services (2023)
Financial regulation approach	Actively explores the risks and necessary regulations to regulate the development of AI. Careful in approach to preserve the fintech development potential.	Exploring risks and opportunities.	Point-by-point regulation of individual cases of application.	Setting standards for organizing the use of AI systems in financial sector companies.

Kazakhstan ranks 72 out of 193 countries in the 2023 Oxford Insights Government AI Readiness Index

Oxford Insights Government AI Readiness Index 2023



The Oxford Insights Index allows you to understand the strengths and weaknesses of AI development in Kazakhstan

Strengths

- data availability

  To form a single space of data obtained from various sources, “Smart Data Ukimet” operates.

- digital potential

  In the ranking of 90 large economies on digital evolution Digital Intelligence Index, Kazakhstan took 20th place in terms of speed of digitalization development

  According to the UN, Kazakhstan ranks 28th (+1) in the “Development of Electronic Government” index and 8th in the “Online Services” index.

  Kazakhstan took 15th place in the rating of electronic participation of citizens (E-Participation Index, EPI)

- adaptability of the legal framework to digital business models

Weaknesses

- lack of modern infrastructure and sufficient computing power
- lack of technical standards for AI products
- insufficient spending on research and development work
- lack of large private technology companies
- absence of the concept of AI and AI technologies in legislation

Ministry of Digital Development, Innovations and Aerospace Industry has developed the Concept for the development of AI for 2024 - 2029

Development approaches within the Concept

Artificial intelligence economy	legal regulatory framework	ethical principles	Ccommission on AI regulation	.....
R&D	support and financing of startups	national language model	.....	
Human capital	courses with open access	hackathons, incubators, IT schools	higher education institutions	
Data	national AI platform “Smart Data Ukimet”	.....		
Infrastructure	computing power	high internet quality	.....	

Principles for the development of AI technology according to the Concept

Technology Leads, Regulation Follows. The low level of regulation provides a technological advantage. The level of regulation should be increased gradually as AI develops.

Artificial intelligence does not replace, but complements humans.

Collaborative use of data. Data must be cross-fertilized and accessible to all participants in the AI ecosystem.

Pragmatism. The technical feasibility of implementing any AI technology should be determined by economic feasibility.

Confidentiality. The development of AI should not violate privacy, personal and family secrets..

Justice. AI technologies should not discriminate against anyone because of origin, social, official and property status, gender, race, nationality, language, religion, beliefs, place of residence or any other circumstances.

Kazakhstan's financial market is actively applying and developing AI-based solutions

Liberal regulation of the use of personal data and wide **availability of government databases stimulates** the dynamic development of personalized digital services based on AI

Opening of bank account

Computer vision for biometric identification and document recognition (IDPC of the National Bank)

<3 min

Average time to open a bank account online

Digital financial services

Credit scoring based on AI, recognition of insurance claims based on computer vision, chat bots for communication

~2 min

Online mortgage/loan solution

+80%

Requests are resolved by an AI bot

Provision of financial services through financial market

Utilizing government databases for scoring, proactive public services, and disbursement of benefits/subsidies

<1hour

Average time for providing composite services online (for example, purchasing and re-registering a car)

RegTech & SupTech, supervision

Application of machine learning algorithms for supervisory procedures and identification of patterns and anomalies in the financial market

Cost reduction
granular analysis, deeper analytics

Fraud prevention

Recognition of fraud based on analysis of various sources, identification of patterns (Antifraud Center of the National Bank)

Responsiveness, increasing the effectiveness of prevention

AI ecosystem and projects in Kazakhstan

Information is not exhaustive

National and government projects

OPEN DATA .gov
Smart Bridge
Smart Data Ukimet

Incubators/ accelerators/ laboratories

astana hub
MOST Business Intelligence
Jas Ventures
NURIS Nazarbayev University Risk-taking Inspiration Synergy
Terricon Valley
ISSAI Nazarbayev University Institute of Smart Systems and Artificial Intelligence
TECH GARDEN.KZ
Almaty A.I. Lab
IICT

AI startups

The Astana Hub has 233 companies working on the application and development of products based on AI technology.

CEREBRA
ZebraEye
Verigram
BIOMETRIC
black ice
Digital ID
alaqan
Adaptive+
Higgsfield
VOICELOFT
SPEECH LAB
RPA python
solai
Gen2B

Source: Concept of AI Development for 2024 - 2029, results of an online survey of participants in the financial market of Kazakhstan, n=94, February 2024

Projects and scenarios for using AI in finance

Fraud detection (transactions/payments)

SOLVA
BNK Kazakhstan Finance
ForteBank
Halyk Bank
bcc.kz
Home Credit Bank
Kaspi.kz

Risk management

SOLVA
BNK Kazakhstan Finance
bcc.kz
Freedom Credit
Halyk Bank
Kaspi.kz
ForteBank
Freedom Bank
Bereke Bank

Cybersecurity and information protection

SOLVA
BNK Kazakhstan Finance
bcc.kz
Freedom Bank
Kaspi.kz
Halyk Bank

Customer satisfaction analysis/customer complaint analysis

SOLVA
Bereke Bank
BNK Kazakhstan Finance
Home Credit Bank
Halyk Bank
Freedom Bank
Kaspi.kz

Client support improvement

SOLVA
BNK Kazakhstan Finance
bcc.kz
Freedom Bank
Kaspi.kz
Halyk Bank
Евразия Сақтандыру компаниясы Страховая компания
CENTRAS 2.0 INSURANCE
Отбасы Банк
NOMAD insurance
АКФ Азиатский Кредитный Фонд
JUSAN
Home Credit Bank
ForteBank
Bereke Bank

Банк развития Казахстана

Project of the Development Bank of Kazakhstan to create AI to calculate the assessment of the level of adequacy for lending to large enterprises.

Первое кредитное бюро

Projects of the First Credit Bureau: HR Digital, FCB Bio F2F, FCB Bio LIVE, FCB Bio Core, FCB Decision Making (retail), FCB BML Score.

In accordance with the global trend, financial regulators in Kazakhstan are becoming active users of AI technology

National Bank projects

NATIONAL BANK OF KAZAKHSTAN

Computer Vision

in the Identification data processing center

The systems have the ability to deeply analyze clients' biometric data, comparing them with verified databases to confirm their originality.

NBK Price Tracker

consumer price monitoring system

The collected data is used to create a live proxy indicator of consumer inflation. Currently, NBK Price Tracker analyzes daily price information for approximately 6 million products from 381 online stores across the country.

Antifraud center

strengthen the effectiveness of anti-fraud measures

The National Bank of Kazakhstan is exploring the prospects for introducing AI technology within the Antifraud Center. The use of AI is expected as a means to improve the analytical capabilities of the center, allowing automation of the processes of detection and analysis of potential fraud operations.

Projects of the Agency for Regulation and Development of Financial Market

The Agency of the Republic of Kazakhstan for Regulation and Development of Financial Market

Machine learning in AQR and NST

Automation of the processes of conducting annual asset quality assessment (AQR) and supervisory stress testing (NST) of banks, supervisory risk assessment of financial organizations (SREP, RASS and SRES).

Corporate borrower rating model (ARES)

The model allows you to determine the stage of impairment, calculate the probability of default and more accurately estimate expected credit losses for borrowers. Currently, work is underway to improve tools for analyzing the solvency of individuals.

United surveilance application

The application being developed will include supervisory assessment systems for financial organizations. An important aspect of this application will be the development of machine learning models for detecting anomalous transactions, which will allow more effective identification and analysis of suspicious transactions

QAINAR informational security system

This system has been in use since 2021 and allows data on information security incidents to be processed in close to real time.

Digitalization of the citizen appeals processing operations

The project is at the research stage; and it is aimed at improving the quality and speed of responses, and at conducting a thorough analysis of the financial organizations activities for reliable consumer protection.

The Astana International Financial Center is actively exploring the prospects for integrating advanced AI technologies into its activities, seeking to increase the efficiency and innovation of the services provided. The use of AI promises to significantly enhance the regulator's capacity in registering companies, monitoring and providing technical support to clients. In addition, the possibility of introducing AI into the internal processes of companies is being considered, which will significantly improve management decision-making and promote corporate innovation. This approach aims to create a sustainable and competitive financial ecosystem, adapted to the rapidly changing requirements of the modern economy.

"AI gives a very accurate and objective picture based on the data it processes. But the main value is not even the estimated data, but the judgments and decisions that are made on their basis. This helps companies reduce costs, reduce their vulnerability to potential risks, and shape their business model, opening up new segments and opportunities."

Rafal Trepka

General Manager at Mastercard Central Asia

Binur Zhalenov

Chairman of the National payment corporation of the National Bank of Kazakhstan

“The Kazakhstani financial technology market can rightfully be considered one of the most innovative in the world. The Kazakh consumer's openness to innovation, strong entrepreneurial initiative and pro-innovation regulatory environment ensure the industry's rapid adaptation to changing conditions.

We are convinced that in this AI revolution, the Kazakh financial market should be at the forefront. In this advisory report, we analyze where the market is today, what AI solutions are already in use, and what collaborative efforts need to be made to create a sustainable AI development ecosystem in the Kazakh financial market.

We see significant synergy between the latest achievements in the field of AI and projects for the development of the National Digital Financial Infrastructure. The synergy of generative AI with the principles of open banking provides a powerful impetus for the development of “hyper-personalized” finance, in which consumers receive an even more convenient service. The use of AI to search and predict patterns of behavior of fraudsters will be one of the areas of development of the Anti-Fraud Center. Together with the Government’s AI projects (for example, the Digital Family Card), digital tenge smart contracts can significantly increase the effectiveness of government support measures through targeting and proactivity.

However, despite all the impressive capabilities of AI technologies, it is important to remember that technology itself cannot be a “panacea”. AI is a powerful tool that can multiply our efforts, but only if applied and managed correctly. Therefore, a lot depends on qualifications, that is, the development of competencies both on the side of market participants and among government bodies.

We hope that the published report will open an important discussion and become a starting point for consolidating the efforts of the state and the market in creating an artificial intelligence ecosystem for the Kazakh financial market, guaranteeing regional leadership in this agenda.”

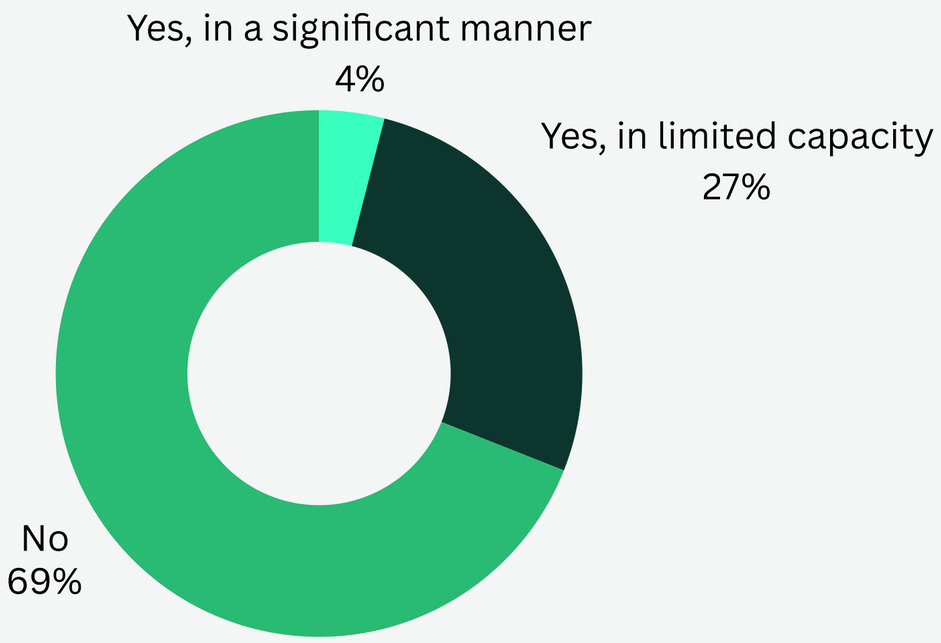
To identify the maturity of the financial market of Kazakhstan in terms of research and use of AI technology, a specialized survey was conducted.

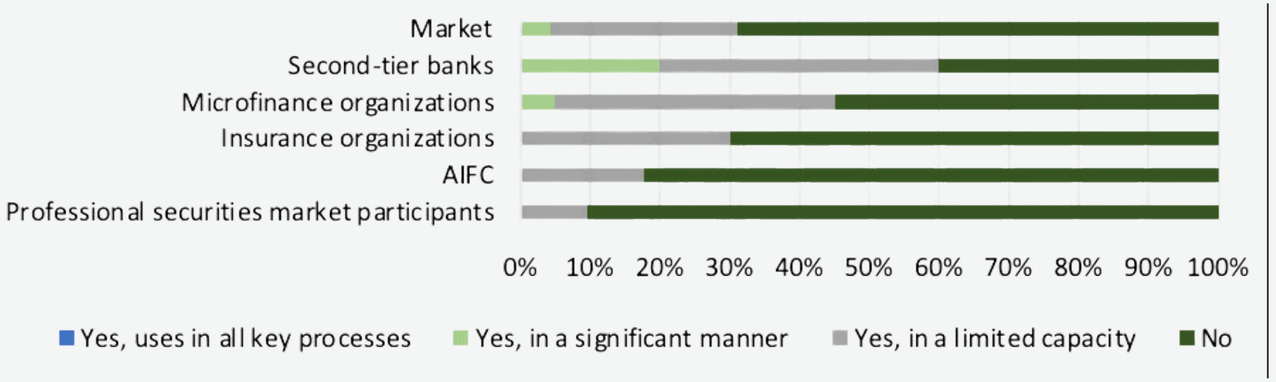
94 financial market participants took part in the survey, including:

- 15 second-tier banks (71% of the market)
- 20 microfinance organizations
- 20 insurance companies (77%)
- 21 professional securities market participants (88%)
- 18 AIFC residents

31% of financial market participants in Kazakhstan use AI, while, according to a survey by NVIDIA*, the global average level of AI use among financial institutions is 43%

Does your organization use AI in its activities?



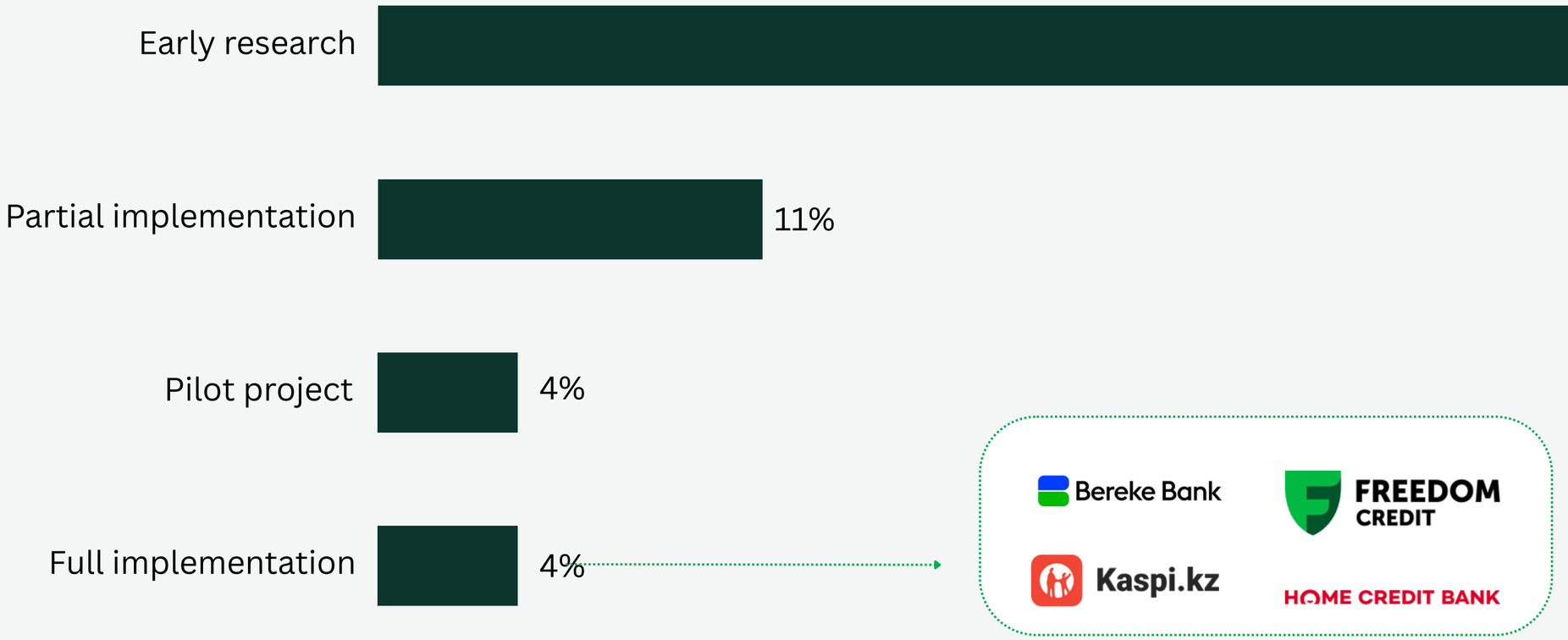


The existence of differences in the level of AI adoption between different types of financial institutions highlights that some market segments may be more ready to innovate than others. This may be due to differences in available resources, culture of innovation and customer needs.

Source: results of an online survey of participants in the financial market of Kazakhstan, n=94, February 2024
*NVIDIA survey results based on responses from 400 financial institutions worldwide.

More than a third of respondents noted that the implementation of AI is at an early stage, and only 4% of respondents have approached the full implementation of AI (3 second-tier banks and 1 MFO)

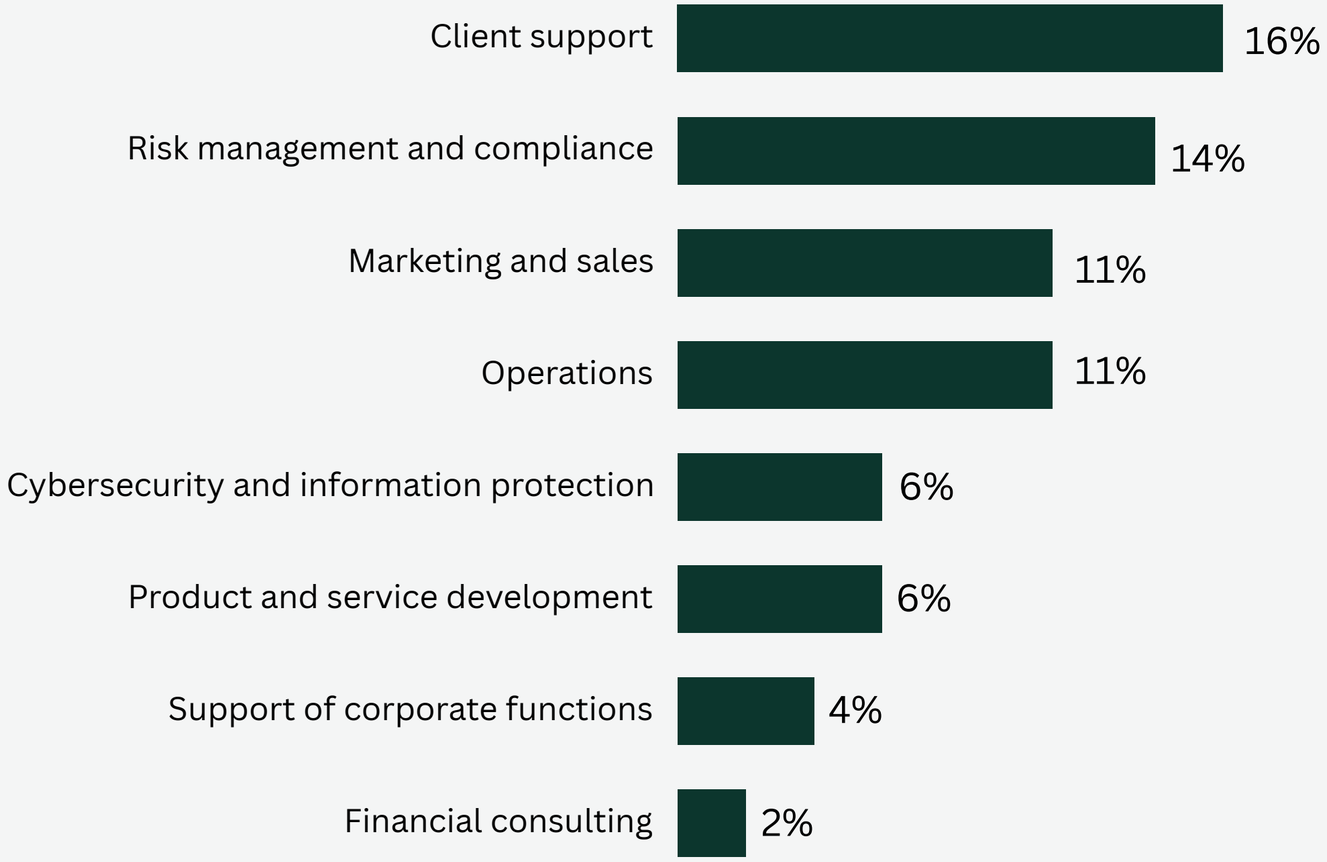
What stage is your organization's AI adoption at?



Source: results of an online survey of participants in the financial market of Kazakhstan, n=94, February 2024

Top 3 areas of application of AI in Kazakh financial institutions: customer support (16%), risk management and compliance (14%), as well as marketing (11%) and operations (11%)

Which of the following areas is your organization currently using AI solutions in?*



According to the NVIDIA survey, global players note that the use of AI

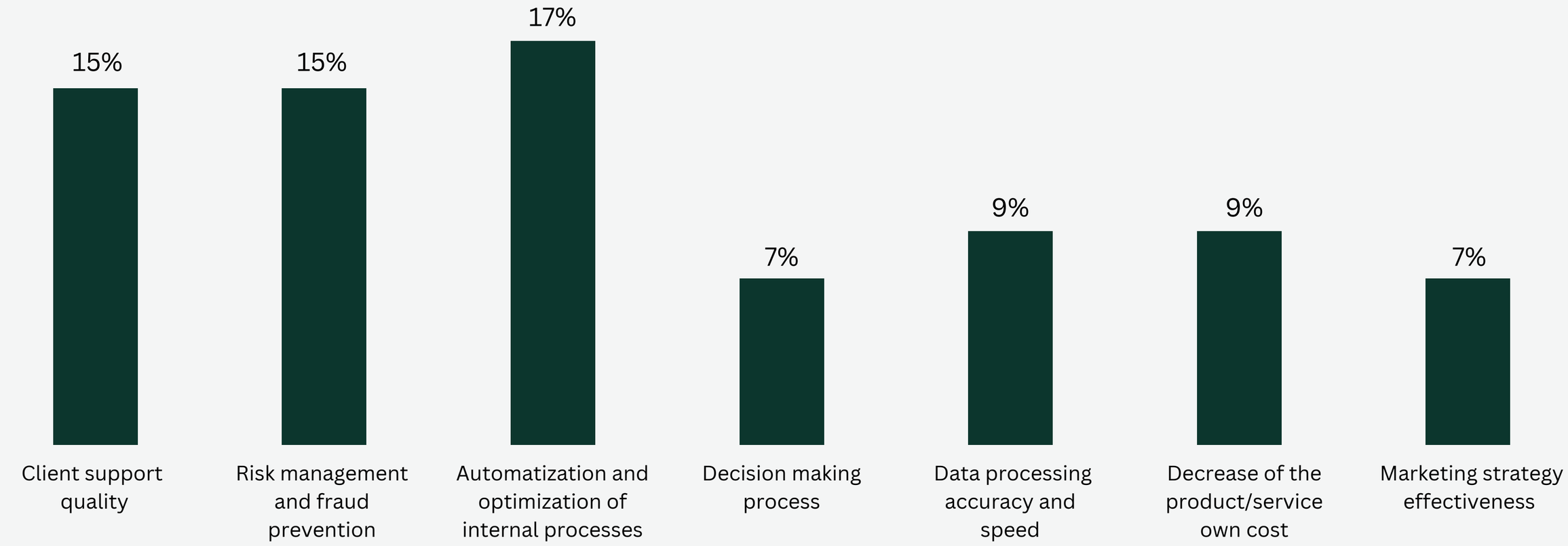
1. raised operational effectiveness – 43%
2. created advantages – 42%
3. improved user experience – 27%
4. created new business opportunities – 23%

Source: NVIDIA, 2024 State of AI in Financial Service

Source: results of an online survey of participants in the financial market of Kazakhstan, n=94, February 2024
*The chart shows the most popular applications, respondents could choose more than one answer option at a time

Market participants are already seeing results from the implementation of AI, the main ones: automation of internal processes (17%), improving the quality of customer service (15%), improving risk and fraud management (15%)

How has AI improved your organization's operations?*



Source: results of an online survey of participants in the financial market of Kazakhstan, n=94, February 2024

*The chart shows the most popular applications, respondents could choose more than one answer option at a time

Can you give examples of how the implementation of AI has improved operational efficiency?

> ***Speech recognition* for conversation transcription and analysis. AI helps automate a number of banking processes, such as *document scanning and recognition, identity verification, credit risk analysis,* etc. This reduces the time required to process customer requests and increases the efficiency of service.**

Financial market participant

> *The implemented biometrics and liveness technologies have made it possible to significantly reduce cases of fraud, namely the issuance of loans to figureheads.*

Financial market participant

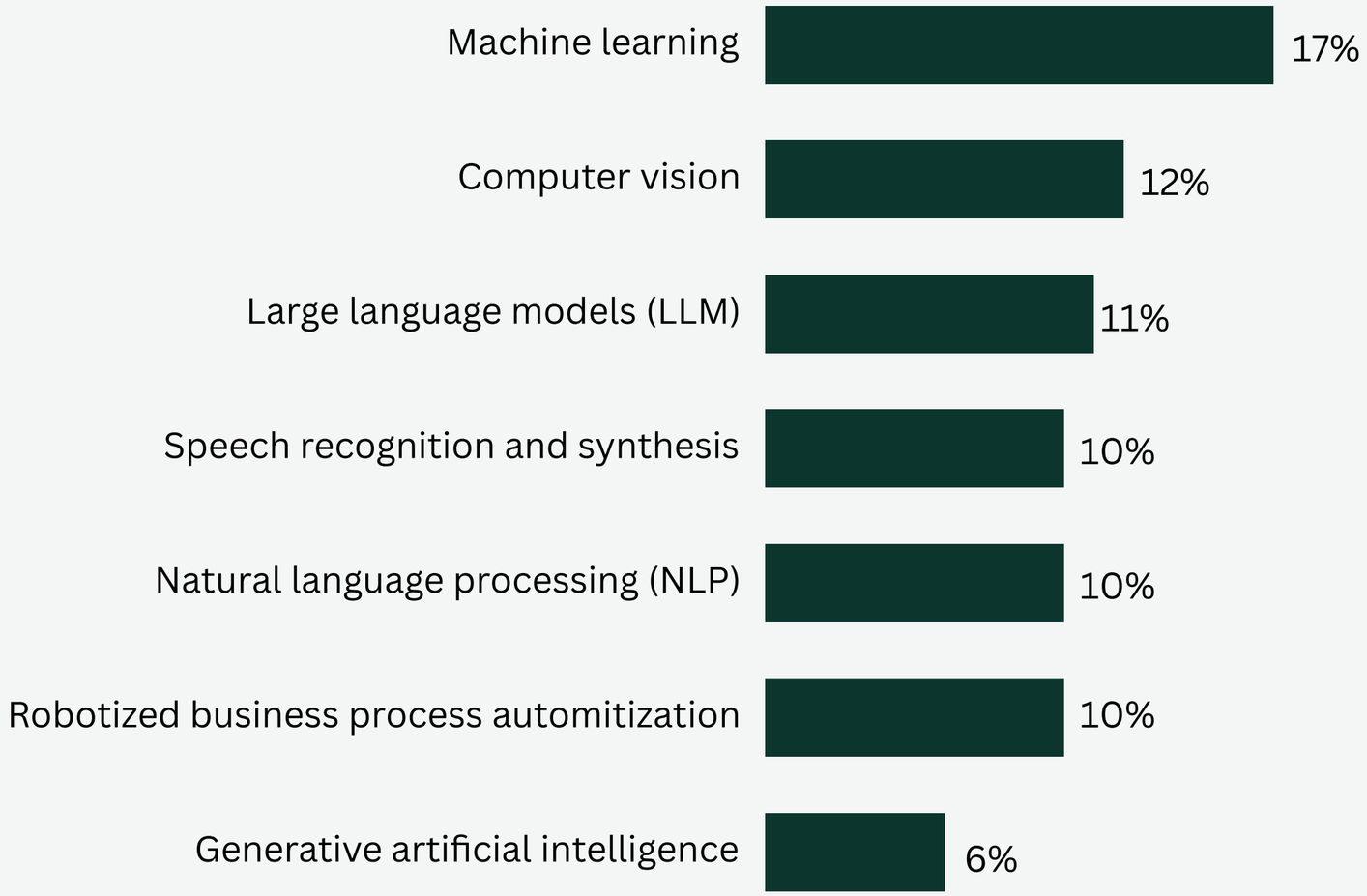
> *Reducing the amount of time for assessing collateral housing (replacing the manual assessment process) in the pilot version of the model.*

Financial market participant

> - *Improved code development productivity in some areas by 15%.*
> - *Reducing decision-making time, improving the quality of lending decisions, increasing profitability.*
> - *Improving the quality of marketing campaigns by increasing the number of active clients, increasing retention metrics, reactivation and attraction of clients, increasing the number of products per client, etc.*
> - *Improvement in the quality of decision-making models by 10%.*

Financial market participant

What AI technologies does your company use today?*



The most popular AI technology in the Kazakh financial market is machine learning – 17%, computer vision – 12% and large language models – 11%.

Global players use data analytics - 69%, data processing - 57%, natural language processing - 47%, large language models - 47% and generative AI - 43%.**

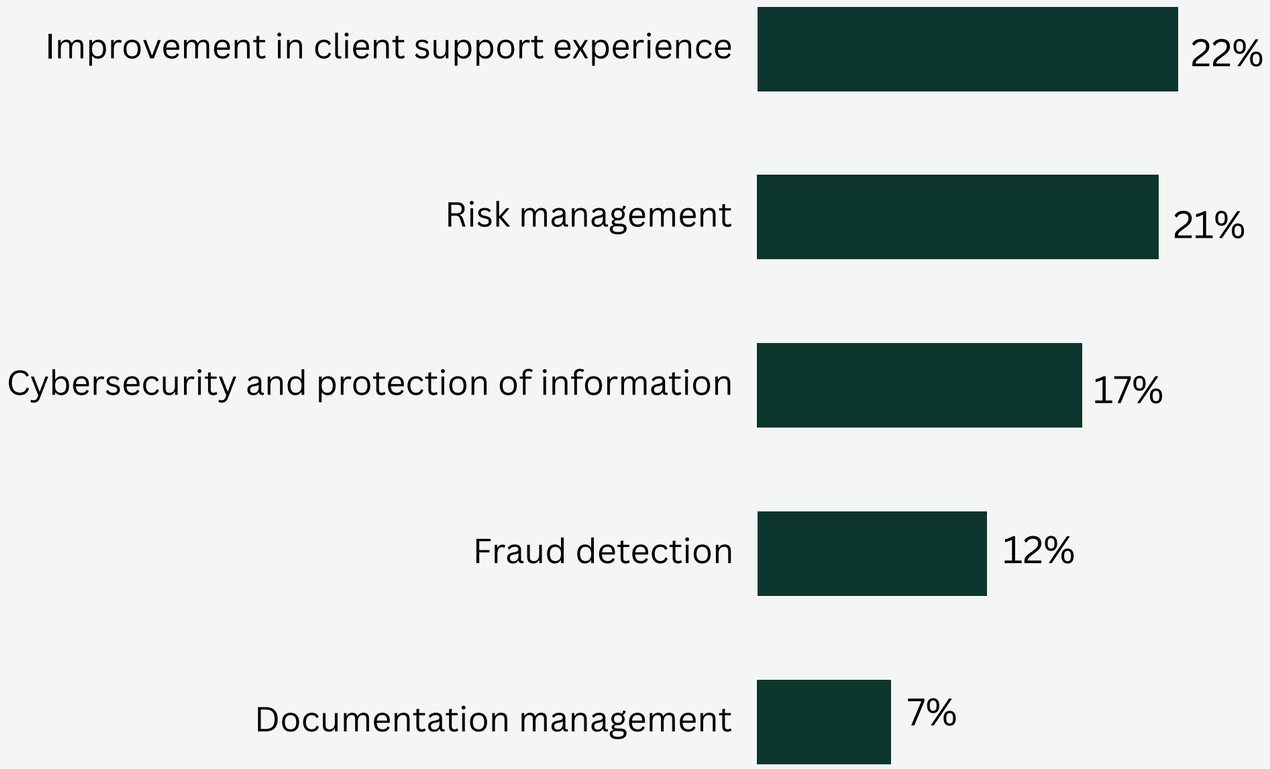
Despite the similar distribution of used AI technologies to global practice, in Kazakhstan, on average, AI is used less frequently, which may be due to different stages of technology adoption.

Source: results of an online survey of participants in the financial market of Kazakhstan, n=94, February 2024

*The chart shows the most popular applications, respondents could choose more than one answer option at a time

***NVIDIA, 2024 State of AI in Financial Service*

What areas of AI is your organization investing in today? (Top 5)*



Top 5 areas of AI use in which international financial institutions are investing today:

1. Risk management
2. Portfolio optimization
3. Fraud detection
4. Algorithmic trading
5. Customer satisfaction analysis/customer complaint analysis

Source: NVIDIA, 2024 State of AI in Financial Service

Source: results of an online survey of participants in the financial market of Kazakhstan, n=94, February 2024

*Respondents could choose more than one answer option at a time

Are you considering using AI in 2024?

45% of respondents noted that they plan to use AI technologies in 2024. In general, it can be noted that plans for the development of AI in 2024 are directly related to the current level of use of this technology. Thus, existing experience in implementing AI strengthens organizations' intentions to continue investing in this technology.

Source: results of an online survey of participants in the financial market of Kazakhstan, n=94, February 2024

What goals do you set for yourself in the field of AI for the next 5 years?

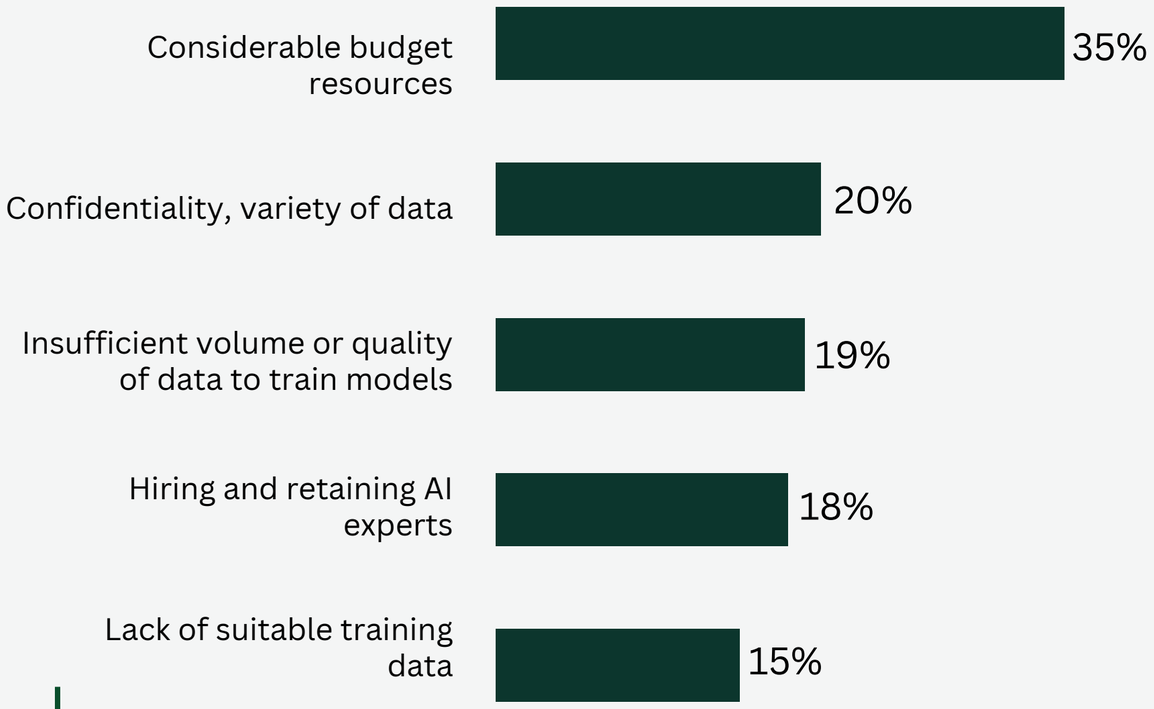
Training and introducing the maximum number of bank employees from various areas of banking to the skills of using AI. Increasing the level of use of AI in the bank's business processes and providing services to clients. Improving the performance of bank processes in all areas where it will be possible to use AI.

Financial market participant

1. *Optimization of customer service processes (AI-based chatbots).*
2. *Personal recommendations - AI algorithms for generating personal recommendations when promoting products and services.*
3. *Analyze huge amounts of data in real time to quickly identify suspicious transactions.*
4. *Used for marketing purposes, developing new products and attracting customers.*

Financial market participant

What internal barriers are there to achieving your organization's AI goals?*



Large international financial companies highlight confidentiality and heterogeneity of data as the main problem (38%), and the problem of significant budget costs is noted by 28%.

NVIDIA, 2024 State of AI in Financial Service

Source: results of an online survey of participants in the financial market of Kazakhstan, n=94, February 2024

*The chart shows the most popular applications, respondents could choose more than one answer option at a time

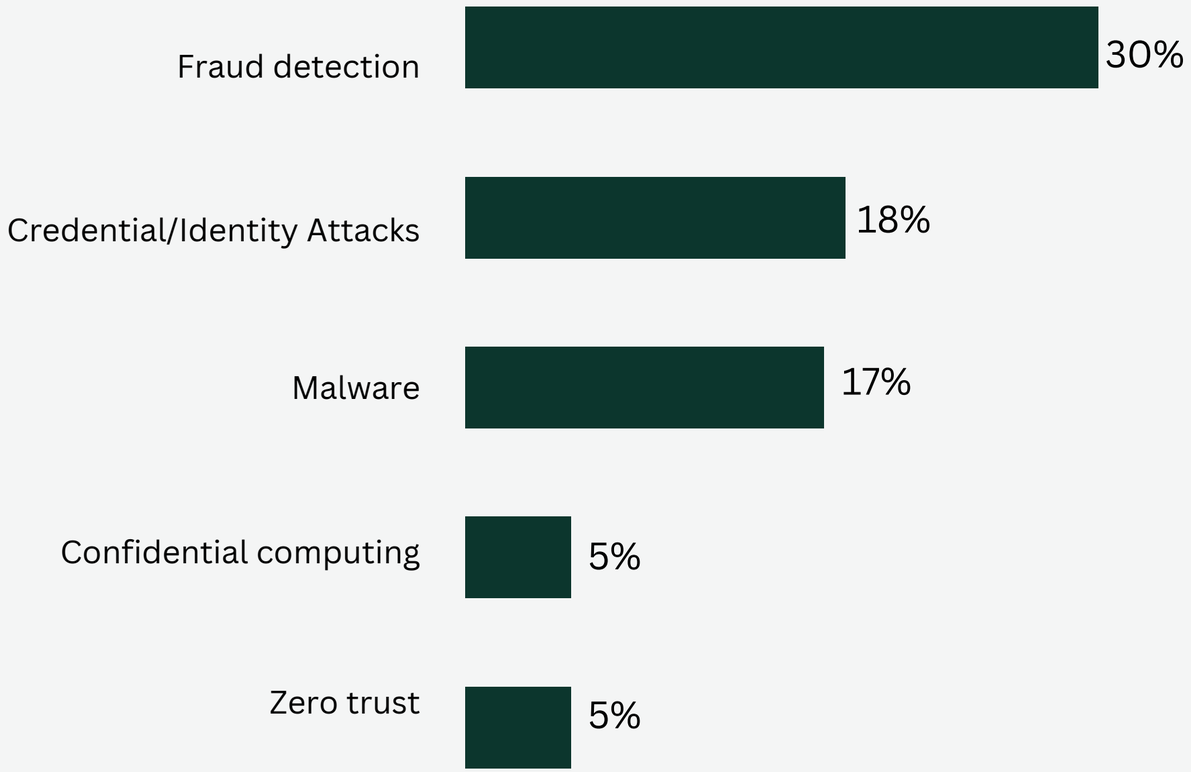
What risks do you see in the use of AI and how do you plan to mitigate them?

> *There is a risk of document falsification and its use when processing AI data. Risk of information leakage used to train AI.*
>
> **Financial market participant**

> *The risk of insufficient information security and, as a consequence, the possibility of clients' personal data leakage . In this case, it is important to develop and implement a security policy (state regulator).*
>
> **Financial market participant**

> *The risk of major players monopolizing AI technologies is growing, since their development requires significant investments in both computing power and data processing infrastructure, which are often not available to less resourceful companies.*
>
> **Financial market participant**

What cybersecurity problems are being solved by AI in your organization?*



Source: results of an online survey of participants in the financial market of Kazakhstan, n=94, February 2024

*The chart shows the most popular applications, respondents could choose more than one answer option at a time

How do you plan to develop the competencies and skills of your employees in the field of AI?

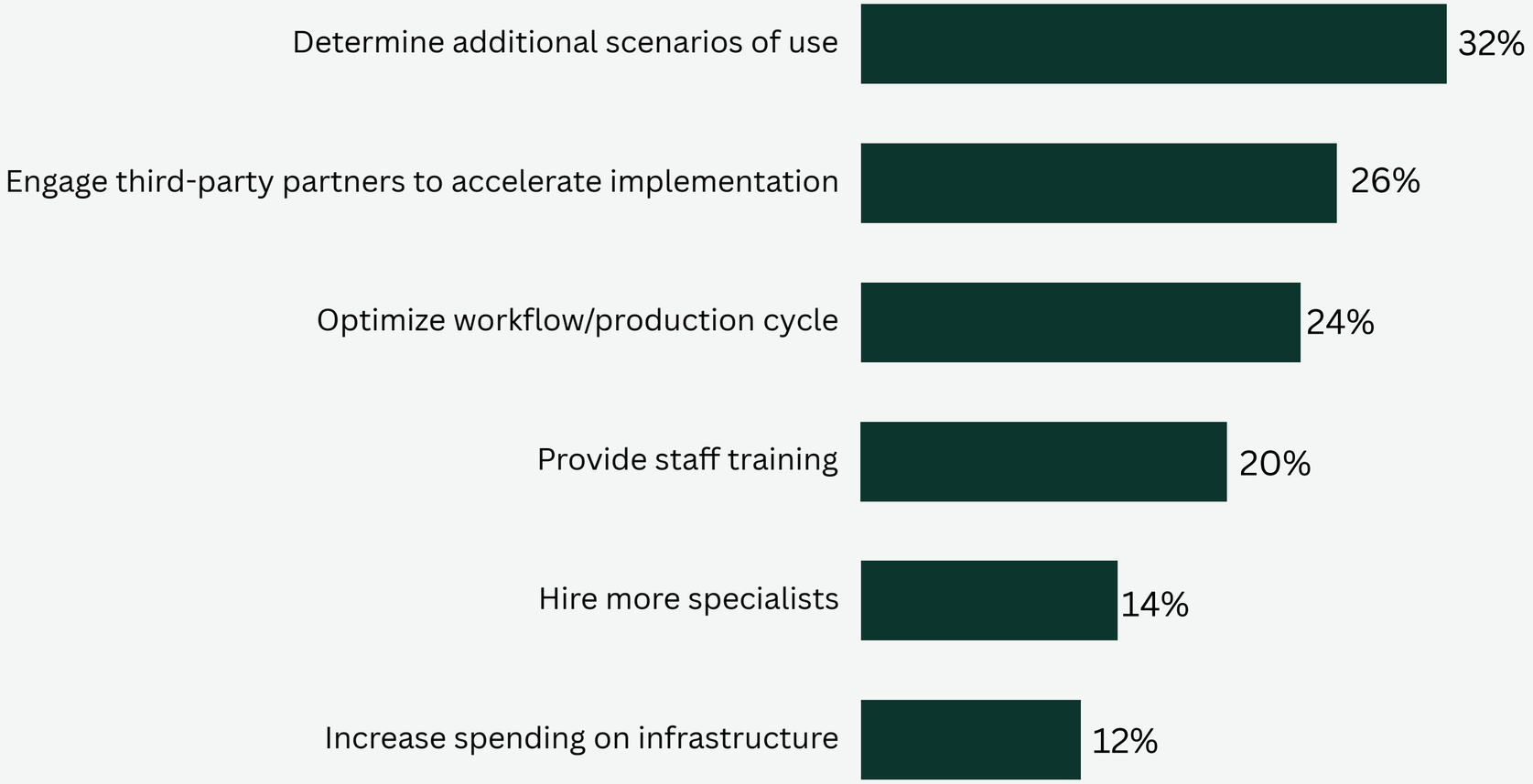
- *Launch internship programs for students to identify talent and future AI professionals.*
- *Conduct workshops and training seminars for bank employees.*
- *Create conditions for self-training and self-development of employees in the field of AI.*

Financial market participant

There is a shortage of specialists in this industry. How will we cope? – Develop internal competencies.

Financial market participant

How do you plan to invest in AI technologies in the future?*



Source: results of an online survey of participants in the financial market of Kazakhstan, n=94, February

*The chart shows the most popular applications, respondents could choose more than one answer option at a time

How international financial institutions plan to invest in AI technologies in the future

1. Identify additional AI use cases
2. Optimize workflow/production cycle
3. Increase spending on infrastructure
4. Engage third-party partners to accelerate implementation
5. Provide staff training

Source: NVIDIA, 2024 State of AI in Financial Service

01 Concept of AI and its potential

02 Global trends of AI development in financial markets

03 Current state of AI in Kazakhstan and results of interviews with experts and financial market participants

04 Prospects and planned work on the development directions of AI technology in the financial market of Kazakhstan in 2024

Based on global experience, Kazakh financial regulators should strengthen their role as a catalyst for innovation and ensure that the financial market is prepared for new challenges associated with the introduction of AI technology, both at the level of regulation and at the level of providing the development of technology with the necessary resources

The main directions of development of AI technology, which will give a multiplier network effect on the entire market

- Coordination of efforts with initiatives of the Government of the Republic of Kazakhstan
- A consistent incentive approach to regulation
- Capacity building, development of internal competencies in the financial market
- Experimentation and development of own projects
- Developing Infrastructure to strengthen AI technology

International examples





Planned work in the areas of development of AI technology in the financial market of Kazakhstan in 2024 (1/3)

Studying regulatory approaches

Studying scenarios for the application of AI technology that require the use of regulatory sandboxes.

- Definition of AI technology use cases for piloting in regulatory sandboxes by conducting surveys among participants of the financial market and technology companies.
- Collecting applications for piloting services in regulatory sandboxes according to selected scenarios.

Studying scenarios of AI technology usage conducted by market participants.

- Studying the priority AI technology use cases by regulators with the involvement of market participants.
- Creating a list of proposals for joint projects with market participants, selecting priority projects for implementation in 2025-2027.
- Developing further steps for studying the regulation of AI technology in the financial market.

Capacity building

- Creation of a program and retraining of financial regulators' staff, establishment of an AI user community within financial regulators.
- Discussion of results and potential educational programs for financial organizations.
- Holding working meetings with universities on the development of competencies in AI technology in the financial market of Kazakhstan.

Planned work in the areas of development of AI technology in the financial market of Kazakhstan in 2024 (2/3)

Applied projects of financial regulators

- Definition of new projects of financial regulators using AI technology for the year 2024.
- Work on existing and new projects using AI technology.
- Identification of projects for implementation in 2025.

Interaction and exchange of experience among financial regulators

- Organization of a series of meetings among financial regulators of Kazakhstan on the current use of AI and its prospects.
- Determination of joint projects among financial regulators using AI technology.

Infrastructure development

- Establishment of AI laboratories within financial regulatory structures.
- Implementation of a prototype of target data architecture (data factories) in a limited functional domain.

Planned work in the areas of development of AI technology in the financial market of Kazakhstan in 2024 (3/3)

Research support

- Supporting scientific research according to a defined list of priority topics for scientific work to develop AI in the financial market.

Interaction with the Government of Kazakhstan

- Conducting joint meetings for knowledge sharing purpose

Open Banking

- Defining the development of necessary standards for synthetic data transmission.
- Defining limitations on the use of Open Banking data for training AI models.

Ruslan Vladimirov

Chairman of the Management Board, JSC Bank CenterCredit

-How do you assess the current level of development of the AI market in Kazakhstan?

-Advanced level, for example, at the moment, BCC has implemented a wide range of AI applications. Since 2020, the use of machine learning models, including neural networks, to assess creditworthiness has made it possible to provide customers with personalized credit offers and contribute to portfolio growth. Generative artificial intelligence is used to prevent fraud and collections, helping the Bank realize its mission as a socially responsible institution, and makes a significant contribution to streamlining processes, improving customer experience and significant growth in the Bank's financial results. Constant work is being done to scale the successful experience of implementing AI into banking business processes.

-What key AI technologies and fintech solutions are being actively developed and implemented in Kazakhstan?

-Big data processing algorithms, machine learning, computer vision, speech recognition and synthesis, robotic business process automation, MLOps, AutoML.

-In which segments of the financial market of Kazakhstan is AI most actively used?

-Operations, risk management, customer support, collection, anti-fraud, verification, working with a loyal base.

-What specific benefits can the introduction of AI bring to the financial sector of Kazakhstan?

-Improving the accuracy and speed of data processing, optimizing the decision-making process, improving risk and fraud management, automating and optimizing internal processes, optimizing the process of collecting overdue debts, developing the most popular personalized customer offers.

-What, in your opinion, are the limitations for the development and use of AI in the financial market of Kazakhstan?

-The main risks facing organizations using AI are regulatory restrictions on working with personal data and confidential information.

-What technical and infrastructure limitations affect the development of AI?

-Lack of technology sandboxes to provide infrastructure to small and medium-sized enterprises wishing to engage in AI development.

-What do you think the government and market players need to do to further develop AI?

-Creation of a cloud computing infrastructure operating within the framework of current regulatory rules with a service payment model (for example, the Function as a Service model) and the allocation of subsidies from the state for the use of the created computing infrastructure as part of programs for the development of AI technologies in the financial sector of the Republic of Kazakhstan. Creation of educational departments at universities based on interaction with large potential employers.

What aspects of current legislation do you think are hindering the progress of AI in the financial sector, and what measures do you think are appropriate to improve this situation?

> ***Lack of specialized legislation. Uncertainty in the legal regulation of AI can make it difficult to implement new technologies, as it is difficult to foresee the legal consequences of their use. It is important to develop and implement laws that will be aimed at addressing the use of artificial intelligence. This will help eliminate legal uncertainty and create an enabling environment for innovation.***

> *There is a need for strict legislative regulation of areas of the banking sector related to artificial intelligence and the* ***introduction of clear ethical standards.***

What support and regulation measures in the field of AI do you expect from financial market regulators?

More open data for modeling applications.

Legislative support for the use of AI in the financial sector.

Government support for AI research and AI projects, including funding, tax incentives and the creation of innovation clusters, as well as free AI training courses for financial sector professionals.

Cybersecurity regulation, implementation of the law on liability for the use of AI and liability for the use of data generated by AI. Additionally the support and motivation in the use of modern technologies.

Clear, transparent mechanisms/regulations/models for regulating the field of AI for second-tier banks, built on the risk-based principle of regulation.

Formation of approaches to the distribution of responsibility between the developer of AI technology and the user bank for harm caused as a result of the use of AI.

Measures to support the development and implementation of large generative models and technological solutions in the field of AI, applicable in the banking sector. Strategies, roadmaps for the development of AI, standardization of the AI field, as well as subsidies and grants for both developers and banks involved in the development of AI programs.

Acknowledgments

We would like to express our gratitude to representatives of the corporate sector and industry experts for their contribution to the preparation of this study (participation in interviews and provision of information).

Rafal Trepka

General Manager at Mastercard Central Asia

Cristina Doros

Senior Vice President, Group Country Manager CISSEE at Visa

Ruslan Vladimirov

Chairman of the Management Board, JSC Bank CenterCredit

Research made with participation of

RISE
research

NATIONAL BANK OF KAZAKHSTAN

The Agency of the Republic of Kazakhstan for Regulation and Development of Financial Market

AIFC