Future
Finance
Poland

Data & AI in Finance – Maturity Assessment

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It is with great satisfaction that I present a report prepared as part of the Data & AI Specialization of Future Finance Poland (FFP). A comprehensive analysis of the condition of the Polish financial sector in data and artificial intelligence innovation, competitiveness and maturity, it also indicates possible courses of action for further development of the country's entire financial ecosystem.

The work on the report addressed a broad context of global challenges. On the one hand, we are observing appeals and attempts to start the process of easing EU regulations. On the other hand, we are carefully monitoring dynamic Asian solutions, including China's DeepSeek model. We are also closely following new initiatives in the field of armaments and security, such as the idea of establishing a European version of the DARPA agency, whose innovations may make a significant contribution to the technological sovereignty of our part of the world. Finally, it is impossible not to mention the current geopolitical situation, which brings a lot of uncertainty.

Poland has all the assets to play a significant role in building a new architecture of financial services and solutions based on data-driven innovation. These include, among others, two crucial models – PLUUM (co-financed from public funds) and Bielik, which shows nationwide determination, a kind of 'mass mobilisation' to strengthen the position of the Polish financial sector. In this way, we want to draw attention to the potential of Polish entrepreneurs, scientists and institutions ready to cooperate and build innovative solutions on a global scale.

I sincerely hope that a thorough examination of the report will inspire financial institutions, regulators and all market stakeholders by supporting the process of setting simultaneously ambitious and necessary courses of action. I am expecting the synergy of ideas and resources – including our artificial intelligence specialists – to help us work together on further solidifying Poland's standing on the global map of financial centers of the future.

Paweł Widawski
President, Future Finance Poland Foundation

CHAPTER 1

Introduction

Strategic comment

Dariusz Standerski, PhD | Secretary of State, Ministry of Digital Affairs

The Polish Presidency of the Council of the European Union navigates unprecedentedly dynamic global relations in terms of new technologies. High-speed AI development and implementation is accompanied by rapid geopolitical changes. Under these circumstances, the European Union needs more investments and simplified regulations. We make all efforts to steer EU institutions in this direction.

The announcement of the Stargate joint venture backed by U.S. government is certainly impressive. It intends to invest $500 billion, which is twice the annual budget of the Polish government. Similarly, Mario Draghi's report argues that Europe needs €800 billion in additional investment per year to close an innovation gap. However, when compared with EU's total GDP ($19.5 trillion) or even with the Recovery Fund (€807 billion), these amounts no longer seem that huge. Ursula von der Leyen, President of the European Commission, launched the InvestAI initiative to mobilise €200 billion. As the combination of public and private capital may generate similar programmes in the future, the European Union does not have to lag behind competitors in the global race.

However, an investment race is not enough – we also need competences and effective implementation. This is why we believe that AI factories should promote AI solutions adapted to different sectors of the economy, using European strong points, such as:

robotics,

finance,

cybersecurity,

space technologies,

energy,

public administration,

Every AI factory should focus on key strategic sectors and make its powerful resources available to the ecosystem. The AI factory in Poznań will perform a similar function.

At the same time, training sessions are launched on basic tools and instruments supporting companies in AI implementation. Research conducted by the Ministry of Digital Affairs shows that over 600,000 Polish companies plan to implement cloud and AI solutions – the only thing they need is support in using these tools. By achieving this objective, we will generate unprecedented demand and opportunities for the introduction of new products and services. The discussed movement will determine the productivity growth rate of many sectors of the Polish economy.

600 000   polish companies plan to implement cloud and AI solutions

| unprecedented demand | introduction of new products and services |
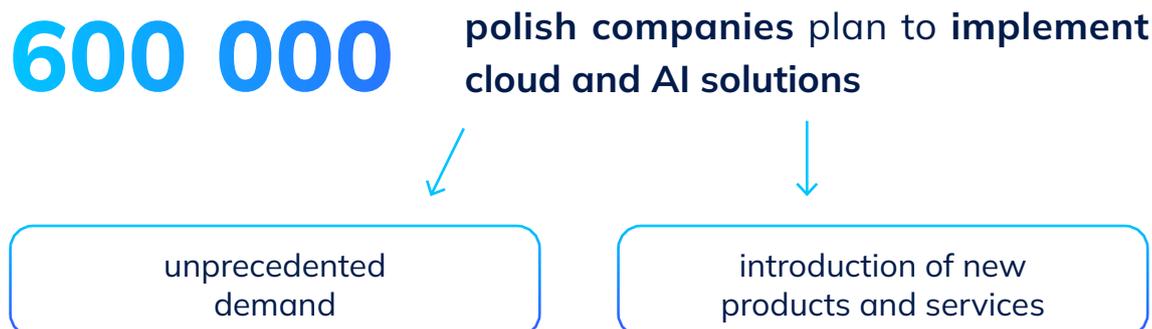
Increasing productivity comes not only from investments, but also from simplifying procedures. It is amazing that in the era of AI agents our procedures continue to be quite archaic. This is why we are accelerating the adoption of the European Digital Identity Wallet as a single point of contact to replace traditional means of identification. Process automation will ensure that correct data will be shared with requesting authorities and, most of all, will enable government offices to work on data already at their disposal – there will be no need to repeatedly share the same identifying information. A debate with all EU member states about their local implementation of AI in public administration revealed a very rich and diverse landscape that we were unaware of.

Public administration across the EU already has almost 100 different AI tools! Smart scaling will lead to **a revolution in reporting and administrative processes**. The real barrier is not technology – it is the attitude. We are stepping up to the challenge.

Revolution unlike any other

Marcin Ledworowski | AI Leader & Senior Advisor, Accenture in Poland

Generative artificial intelligence (GenAI) in the financial sector has the potential to considerably transform the labour market. It can automate routine tasks and create new roles related to the management and development of technology. As a result, many roles in finance will undergo a change, with some disappearing and others evolving into advanced data analysis, AI governance and creative consulting. Technical and interpersonal skills will become crucial, as AI will require human supervision, interpretation and customer interaction.

Unlocking the GenAI potential in the financial industry through a people-centric strategy is synonymous with the technology's rapid and holistic implementation that takes into account the key role of people — senior management and employees. The first step — proactivity — consists of creating a strategy enabling a company to comprehensively analyse the options of employing GenAI in its organisation, understanding the potential of return on these investments. This requires moving away from focus on cost-cutting. Instead, technology should be used to search for new business development opportunities in every area of activity. To get started, it is worth reducing risk related to not having regulations and implement your own principles of responsible and safe GenAI use (responsible AI) by taking care of aspects such as data management, explainability, privacy, honesty, safety and transparency in the process of using GenAI models. These procedures will give a sense of security to the company and its employees. Communication is also important — ensuring employees stay up to date about changes guarantees their peace of mind. Positive experiences will boost their motivation and loyalty.

Forecast for Poland:
By 2035, the number of employees will decrease by **2 million 100 thousand** (PIE data on the demographic gap). Maintaining the pace of Poland's economic development and the pace of productivity will be possible mainly thanks to automation AI (PLN **775 billion of GDP growth by 2028**).

The next step is inclusivity that assumes focus on people. Employees need to be well prepared for new challenges and changes. In many cases, this will require their reskilling or transitioning into new roles. Training should preferably be adapted to the needs of your staff, depending on the attitude of given individuals towards GenAI. The third and last step is pace. A modern digital core will ensure that a company is technologically prepared to efficiently implement new GenAI-based solutions. In this context, good data governance strategy and implementation of cloud computing are essential. All the evidence thus suggests that rumours about GenAI replacing humans are exaggerated. On the contrary, humans can navigate and play a leading role in the change. By placing them at the centre of the revolution, it will become possible to unleash the GenAI potential so that it will support the smart development of organisations and employees. The way in which companies will engage and support employees will to a large degree impact their situation and position in the GenAI era. Furthermore, this approach will bring tangible benefits to the entire economy. There are more and more positive examples of such actions. However, we are still at the beginning of the road so everyone has a chance to keep up with the changes and become their leader. Let us get to work and implement GenAI smartly and responsibility, without losing sight of the people who have been, are, and will continue to be the most important actors in every revolution.

Innovative approach to AI development in Poland

Prof. Piotr Sankowski | CEO, The IDEAS Research Institute

Headed by Prof. Piotr Sankowski, a recognised world-class AI expert, the IDEAS Research Institute (Instytut Badawczy IDEAS) was established by the Polish government in February 2025 as a response to the growing importance of artificial intelligence (AI) in various sectors of the economy and public administration.

The main goals of the Institute are as follows:

1

Advanced artificial intelligence research. The Institute focuses on the exploration of new AI algorithms, methods and tools, aiming to expand knowledge and develop innovative technological solutions.

2

Application of AI in key sectors:

- **health care:** development of systems supporting diagnostics, personalised medicine and medical data management;

- **defence:** creation of tools for threat analysis, strategic support and automation of defense processes;

- **public administration:** implementation of AI solutions to improve public services, data analytics and citizen interaction.

3

Supporting the development of smart cities.
The Institute's engagement in projects aimed at integrating AI technologies into urban infrastructure is intended to improve the quality of life of residents through transport optimisation, energy management and public safety.

4

Education and development of scientific personnel.
IDEAS offers training programmes, internships and cooperation with institutions of higher learning to educate a new generation of artificial intelligence specialists

5

International cooperation.
The Institute will make efforts to establish partnership with leading research centers in the world by participating in prestigious networks such as the European Laboratory for Learning and Intelligent Systems (ELLIS). This will facilitate the exchange of knowledge and experiences and raise the international prestige of Polish science.

By achieving hese goals, the IDEAS Research Institute has the potential to become a leading AI research center, contributing to the development of innovative technological solutions and strengthening Poland's position in the global AI ecosystem.

The IDEAS Research Institute is supervised by the Ministry of Digital Affairs and the Ministry of National Defence. Joint supervision enables synergy in areas such as data protection, countering hybrid threats and the development of dual-use AI systems (civilian and military). This supervisory structure aims to effectively implement state priorities in the field of modern technologies.

Poland against the backdrop of global changes

Piotr Malinowski | Finance Data Control Lead, Head of Poland Finance & Data, NatWest Group

and

Krzysztof Skajewski | Data & Analytics Manager, Data Product & Governance Lead, NatWest Group

Two recent breakthrough events focused on the issue of data centers and the development of data & AI in Poland. In early January, the U.S. administration announced a restriction on the export of U.S. semiconductors to Poland. This decision has been perceived as unequivocally negative and potentially having significant consequences for the development of artificial intelligence and advanced technologies in the country, even slowing down the long-term development of the domestic HPC infrastructure. Under these regulations, Poland was classified as a tier 2 country permitted to import 50,000 high-end AI chips (GPUs) (which can increase to 100,000). This was related to the new policy of a global strategy of controlling the export of advanced technologies for national security reasons.[1].

This decision surprised Polish experts and government representatives whose reaction was highly critical. They emphasised that restrictions could undermine Poland's ambitions in AI development and pointed out that in the long-term non-tier 1 countries would not remain competitive in the area of most advanced technologies. There was a concern that the U.S. administration's decision could negatively affect investments in the technology and innovation sector. The new regulations were also criticized by U.S. companies, which raised the issue of their effects during the World Economic Forum in Davos.

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[1] See. Limit on chips from the US. We've been placed in a worse category of countries. Poland has already responded.

Representatives of tech giants such as IBM and Amazon evaluated the restrictions as unfavorable to global cooperation and innovation development. Importantly, the regulations in question do not apply to companies with the Universal Verified End User (UVEU) authorisation, including U.S. hyperscalers. This status, to some extent, exempts these companies from complying with restrictions imposed on the country hosting their data center[2]

The Ministry of Digital Affairs has begun analysing the impact of the U.S. decision and has taken steps to change this policy. During a meeting of the Sejm Committee on Digitisation, Innovation and Modern Technologies, Deputy Minister Dariusz Standerski assured that the current limits will not affect the government's current plans to double computing power. Still, he pointed out that the U.S. decision may affect Poland's long-term ambitions in developing supercomputers and advanced language models such as Bielik[3].

The second event took place in February and could not be more different. Tech giants such as Google and Microsoft announced multi-billion investments in cloud infrastructure, artificial intelligence, skilling and cybersecurity in Poland. According to the official announcement, Microsoft "(...) by the end of June this year intends to spend PLN 2.8 billion to expand its hyperscale cloud and artificial intelligence (AI) infrastructure in Poland (...). The investment will support the growth of the existing datacentre campuses, bringing an expanding set of Azure services to meet the demand of customers in the region. The investment is designed to accelerate the adoption of artificial intelligence and cloud technologies, and increase the country's economic competitiveness by stimulating the development and adoption of digital technology, equipping Polish citizens with skills to put AI to use, and creating new jobs in the country's growing digital sector"[4].

PLN 2,8 billion

→ Microsoft intends to spend o**n expanding hyperscale cloud infrastructure and artificial intelligence (AI) in Poland.**

[2] See. AI, tech and the intelligent age at Davos 2025: What to know.

[3] See. Poland to Limit Chips. The US Can't Justify the Decision.

[4] See. Microsoft announces PLN 2.8 billion investment in cloud infrastructure, artificial intelligence, skills, and cybersecurity in Poland.

In turn, Google committed to investing $5 million to train citizens in artificial intelligence[5]. In addition, another U.S. tech giant – Oracle – announced an increase in its investments in artificial intelligence (AI), cloud infrastructure and data centres in Poland[6].

$5 million →

Google intends to invest in **training citizens in artificial intelligence in Poland**

In conclusion, despite initial concerns related to the U.S. administration's announcement, **Poland continues to attract investor interest** due to its:

expected economic growth,

importance in the region,

the quantity and quality of talent available on the market

[5] See. Poland's strategic partnership with Google in AI.

[6] See. Oracle launches a separate European instance of its own cloud platform.

The chicken-or-the-egg dilemma

The chicken-or-the-egg dilemma

Jacek Stryczyński | Director of Innovation Projects, PKO Bank Polski

Data is the foundation of every AI project, providing the essential fuel powering AI capabilities. In the context of the Polish market and development strategy, we need to emphasise the importance of data as a key factor impacting the country's positioning on the global AI map. High-quality, diverse and comprehensive datasets enable the training of robust AI models, supporting innovation and increasing the accuracy and reliability of AI solutions. Solving the chicken-or-the-egg dilemma, the correct answer is that data and AI development are interdependent: AI development is impossible without good-quality data, while the potential of generating and analysing data is limited without advanced AI. This is why the strategy of Poland should focus on creating a comprehensive data ecosystem, promoting data sharing and ensuring its quality and safety. As a result, Poland can accelerate its AI progress, develop international cooperation and, ultimately, strengthen its position as a leader of the global scene of artificial intelligence advancement.

Poland is making significant progress in AI and data governance, building competitive global positioning. The national AI strategy, impressive talent pool and presence of key global tech players all contribute to Poland's growing significance in the AI sector. However, the country must meet challenges such as data privacy, technological debt and investments in modern IT infrastructure.

Data is a key resource in financial institutions that often remains untapped because of quality, governance and availability issues. Cooperation at all organisational levels between AI and data leaders is essential for transforming data into valuable information. According to market analysis, the improvement of data quality increases the accuracy of AI/ML models by 20%[7].

[7] See. Predictions 2024: Data And Analytics (forrester.com).

The chicken-or-the-egg dilemma in the context of availability and quality of data and AI solutions is a common challenge in the financial sector. It refers to determining whether high-quality data is needed to build effective AI solutions or if the latter are essential for improving data quality and availability. By adopting an interactive approach to AI and data quality, we can solve this dilemma and positively impact the competitiveness of a given financial institution. These are the basic steps to be taken:

1

Start with existing data.

Start by using data already at your disposal, even if it is not perfect. Initial AI models can be trained on such data to acquire their in-depth understanding and identify patterns[8].

2

Use AI to clean data.

Implement AI tools that can help clean and organize data and improve its quality. For example, machine learning algorithms can identify and correct inconsistencies, fill in the missing values and standardise data formats.

3

Feedback loop

Build a feedback loop in which AI models continuously learn from new data and improve over time. As AI solutions become more advanced, they can handle more complex data and provide more accurate forecasts.

[8] See. Data Quality And AI Business Value: Iteratively Solving A Chicken-And-Egg Problem.

4

Gradual improvements.

Gradually improve data collection processes to ensure higher quality and more comprehensive datasets. This can involve integrating data from various sources, using IoT devices and encouraging clients to consent to data sharing.

5

Central data management.

Define a central data management system to ensure data consistency and availability across an entire organisation. This will help maintain data integrity and support the scalability of AI solutions.

By adopting this iterative approach, financial institutions can successfully solve the chicken-or-the-egg dilemma, while simultaneously ensuring improved data quality and AI capabilities. **This will not only make the institutions more competitive, but also power the innovation and development of the financial sector**

Open data initiatives[9] play a crucial role in raising Poland's competitiveness by driving economic growth, supporting innovations and promoting transparency. In addition, they facilitate international cooperation and provide research and development with valuable resources. Although the initiatives in question are mostly connected with public administration data, the financial sector should also consider developing the open data concept. We need synthetic data to train and validate AI solutions developed by financial institutions or the FinTech industry. By creating data sources simulating real-life data, we can accelerate the development and testing of models.

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[9] See. Open Data Maturity Report 2022: Countries' perspectives on their open data policy.

While simultaneously complying with restrictive regulations often perceived as hampering the technology's dynamic development in the European Union.

In the financial sector, AI will revolutionise areas such as detecting anomalies and fraud, customer service, risk management, automated trading and regulatory compliance.

The list of markets leading UI adoption includes the United States, the Asia-Pacific region and Europe, which allocate significant funding to investments in research and development, talent management, public-private partnership and data availability.

An AI ethical framework and regulatory compliance are essential in balancing the demands of privacy and innovation. AI ethics councils launched in individual organisations play an essential role in ensuring responsible AI development by supervision, promoting transparency and facilitating appropriate image-building by the institutions in question.

For Poland to solidify its position on the global AI map, it must focus on creating a comprehensive data ecosystem, promoting data sharing and ensuring its quality and safety. Addressing challenges in the financial sector, such as data privacy, talent shortage and regulatory hurdles, will be key to achieving competitive advantage and creating innovation.

According to forecasts, AI is a crucial factor that in the future will have an impact on raising the productivity of all employees. As a result, to bridge the gap related to prompt engineering skills, financial institutions will have to invest in educational programmes dedicated to data and AI. Importantly, it is recommended not to leave the development of such competencies to learning and development alone. Through an appropriately established AI governance framework, financial institutions need to work out guidelines related to the concept of BYOAI (Bring Your Own AI) and learning programmes intended to help employees make the most of AI capabilities AI in a consistent and secure manner. By taking advantage of the strategies outlined in the introduction and meeting challenges, Poland can strengthen its position on the global AI scene, supporting innovation and economic growth, while simultaneously maintaining ethical standards and public trust. This will be a key factor in raising Poland's importance as a financial centre of the future.

Data and artificial intelligence in banking

Jarosław Łach | Tribe Leader of Data Tribe, BNP Paribas

In BNP Paribas we understand the issue of data and artificial intelligence is just like the chicken-or-the-egg dilemma. At a time when the AI technology is gaining in prominence, data is becoming an essential resource. It constitutes a foundation of advanced analytics and artificial intelligence — data quality impacts the value of the model based on it. Data quality thus cannot be overestimated, and its importance has increased even more due to AI-based solutions that are now within the reach of hand.

Importance of data for artificial intelligence in banking

Data is the foundation on which we build our artificial intelligence models. We recognise that the quality, consistency and integrity of data have a direct impact on the effectiveness and accuracy of our AI models. This is especially important in banking where every decision needs to be based of reliable information – we cannot afford to compromise on data quality.

Data governance and data quality processes – comprehensive governance of data and its quality – are thus a crucial component ensuring that our data and models are not only of high quality, but also fully safe and compliant with regulations. We believe that in the AI boom era data has become even more important. The latest algorithms we implement require enormous amounts of data, which underlines the need to acknowledge their importance at every organisational level.

Working with data and AI – modern alchemy?

Working with data, similarly to working with AI models, often involves iterative search for answers to posed questions, identifying patterns and solving business problems in interdisciplinary teams. In our opinion, it can be compared to the work of present-day alchemists. By combining different perspectives, we reach remarkably intriguing conclusions. Even though alchemists eventually never managed to turn lead or other materials into gold, in Bank BNP Paribas we are already able to transform scattered data into useful information and knowledge. This has a direct impact on what and how we offer our clients and how we support our employees on a daily basis. Thanks to AI and GenAI, our employees and clients can tangibly experience the power of data and analytics in the context of our products and banking services. Examples include precisely personalised offers, virtual advisors available 24/7 and increasingly effective cybersecurity systems.

Finding value in data and AI

Finding and quantifying value generated by data is becoming increasingly important. Even though no one has ever doubted that data is valuable, there has been little focus on its quantification. AI encourages us to calculate value from artificial intelligence use cases, and thus to calculate value also from data. This is a brand-new step that impacts data perception, in which data is becoming even easier to understand and measure.

Data and artificial intelligence in Bank BNP Paribas are closely correlated. Data governance, data quality, its integrity and awareness of its importance are crucial to the success of AI. AI promises a lot and we want to maintain the enthusiasm that currently accompanies the implementation of new technologies. Working with data and AI is an area in which we turn data into helpful knowledge, creating a value that transforms our services and products, bringing tangible benefits to both our clients and employees.

Market data sources

Mariusz Śliwiński | Market Data Manager, TFI PZU S.A.

In the digital economy era, data is of crucial importance. It is estimated that in 2010, 2 zettabytes (ZB) of new data were generated, while in 2025 this number will grow to as many as 181 zettabytes (ZB), giving an average annual increase or more than 35% (the number of new data generated doubles every two years). In the coming years, the increase in the amount of generated data is expected to be just as dynamic.

2010 r.

2

zettabytes (ZB)
new data

2025 r.

181

zettabytes (ZB)
new data

35%
average annual
GROWTH
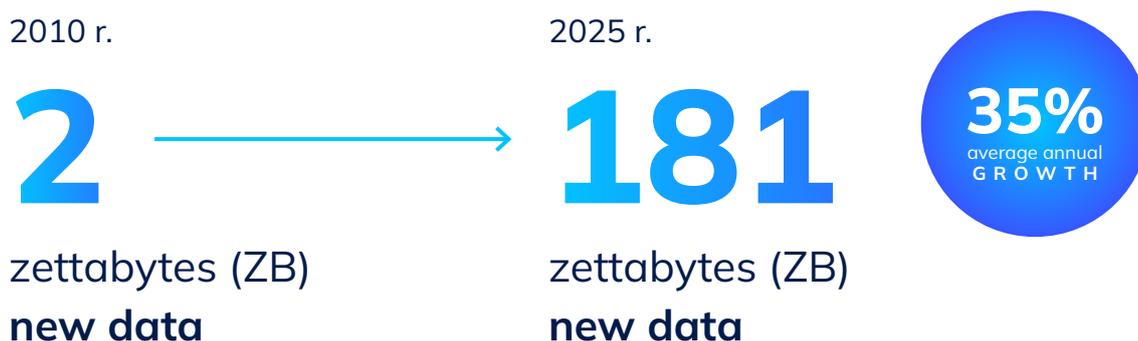
Data is strategically important for operations of the entire global economy and affects all sectors, both private and public. It also strengthens companies operating in the sector of new technologies and literally creates brand-new sectors of the economy. Therefore, it is no coincidence that data is sometimes described as the new gold.

Having always worked with data, investment companies also rely on its increasing amount, which is growing exponentially. Therefore, they find the availability and quality of data to be absolutely crucial.

Below I present the characteristics of data sources from the viewpoint of an investment company that prioritises market data for analytic purposes.

Free external market data sources

A huge amount of free data can be found online and processed at no extra charge. The data in question is published and updated — on an ongoing or cyclic basis — especially by the public sector that due to its specific character is not profit-oriented. For example, a huge amount of data of interest for investment companies, particularly in the macro area, is available in sources such as the United Nations, the International Monetary Fund, the World Bank, the Federal Reserve System, Eurostat or national statistics offices of individual countries.

Paid external market data sources

Powerful global services providing market data, such as Bloomberg, LSEG (formerly Refinitiv) or Factset, identify two categories of data access modes.

„VIEW ONLY" DATA

Available via terminals, exclusively to their users, with limited processing options. Data access in terminals is offered in the form of paid subscriptions, limited to specific applications (e.g., Bloomberg Open Terminal) or users (e.g., Bloomberg Anywhere or LSEG Workspace).

LICENSED DATA

Available for purchase through services such as Bloomberg Data Licence (BDL), provided by Bloomberg or Data Scope Select (DSS), and LSEG (based on the data warehouse concept), with an option of importing it to internal or external systems and full processing. This data category is offered by the discussed companies through their websites (e.g., Bloomberg <DATA> GO), FTP servers or cloud computing services (AWS).

Global market information providers have massive amounts of data at their disposal. For example, Bloomberg emphasises that it has been collecting market data for over 40 years. Shares of public companies can be defined by several thousand 'data points', and time series models go several decades back.

The platforms in question also provide access to near real-time data processing. Every minute they generate and store successive millions of data records in the databases of providers. Global providers more and more often implement AI to support processing the data at their disposal and help users navigate the increasingly complex data systems.

It should be emphasised that platforms such as the above-mentioned Bloomberg, LSEG or Factset are mostly data distributors. Data is produced by, for example, stock exchanges, rating agencies and other entities that expect additional data fees, especially when accessing real-time data (stock exchanges).

Local market data providers are worth mentioning here. In Poland, one of the most important market entities is the Analizy Online S.A. company that has been operating for more than 20 years and often offers tailor-made deliveries of processed and structured data in the segment of investment funds.

External market data processing systems

In addition to data sources, investment companies also need systems for its comprehensive processing and management, such as Bloomberg AIM, Murex or Calypso Technology. As a rule, larger companies need systems that are more comprehensive and thus also more expensive. The systems in question should also be fed with both static data and, if required, real-time dynamic data. The global market data providers mentioned earlier also offer products making it possible to feed systems with data, such as the abovementioned BDL or DSS (for static data) and TREP (offered by LSEG) and Bloomberg's B-PIPE (for real-time data).

Summary

Access to high-quality data in large amounts is essential for every major investment company. Collected data makes it possible to build increasingly advanced AI models supporting investment decisions made by portfolio managers.

It is crucial to implement the best investment decisions as they determine the rates of return on managed investment funds and thus enable to multiply the money of fund investors.

With continued exponential growth of the number of data, progressing digitization and the dynamic development of artificial intelligence and ML models, investment companies will need access to data and increasingly advanced systems for its processing. They will also need to expand the competencies of their employees in the areas of data science or big data.

Data as the foundation of artificial intelligence: challenges and priorities of organizations

Marek Wilczewski | Managing Director of Information, Data and Analytics Management, PZU Group

Why is the topic of data and its quality inextricably linked with AI? Although we are now entering an era of new opportunities for using artificial intelligence, the issue of proper data governance is by no means any less relevant – on the contrary, it is becoming even more crucial.

Should an organisation first deal with data or AI? Should it start by building comprehensive principles of responsibility and governance of data and its quality? Or should it rather implement AI/ML analytics solutions as soon as possible? Can the latter be implemented in a seemingly independent way? Answers to all these fundamental questions are highly intuitive.

The age-old chicken-or-the-egg dilemma also applies to data and AI.

The answer to this question depends on many factors, such as:

organisational maturity,

availability of resources,

organisational culture,

specific business goals.

Nevertheless, here are the key arguments for prioritising data and data governance principles before fully implementing advanced AI/ML solutions.

Why should we focus on data and data governance first?

1

Data quality is the basis of effective AI/ML solutions.

Machine learning and artificial intelligence to a large degree depend on the quality of available data. If data is of low quality, incomplete or inadequately managed, AI models will generate erroneous or misleading results. Implementing AI/ML analytics without solid foundations and high-quality data can lead to ineffective results, which will be expensive to fix at a later stage.

2

Data governance and responsibility.

Today, when data privacy and safety are becoming a priority, especially in the light of regulations such as the AI Act, DORA or GDPR, organisations should have clearly defined data governance principles. Insufficient processes in the area of security, responsibility and regulatory compliance can lead to legal and reputational risk. Building data governance principles at an early stage makes it possible to use data in a safe and effective way.

3

Easier scalability and flexibility.

Solid data governance foundations, such as appropriate data models and storage, processing and governance standards, enable improved scalability of future AI/ML solutions. Organisations that first invest in building data governance systems can expect quicker and more flexible implementation of new technologies and AI algorithms as their needs grow, as well as improved scalability.

AI transparency and explainability.

Appropriate data governance also allows for accurate tracking of AI's decision-making process. Faced with developing regulations on responsible use of AI/ML, organisations will have to showcase transparency, consideration of ethics in modelling and the ability to track how data is processed and impacts AI findings.

4

Can AI/ML be implemented independently of data governance?

Theoretically, an organisation can try and implement AI/ML without first establishing comprehensive data governance principles, but such attempts carry a risk and may lead to:

- inefficiencies in AI/ML models due to poor-quality data;

- issues with repeatability of results and difficulties with verifying where the data comes from and how it was processed;

- increased risk related to data security and regulatory compliance.

Therefore, let us try to consider which organisational model is optimal and compare it with practical examples of solutions employed in one of the largest financial groups in this part of Europe – PZU Group.

Data vs. AI implementation. Which step should be first?

Faced with an increasing number of examples of AI use cases, such as recommendation systems, process automation using sound and image recognition or autonomous vehicles, organisations need to answer a fundamental question: should they focus on data governance first or rather on implementing AI solutions?

There is no clear answer, as both components are closely related and require a comprehensive approach. Since the development of AI calls for solid data governance foundations, organisations need to work out a balance between data quality and the pace of AI implementation.

Role of data quality in AI success

Data is the basis of AI – artificial intelligence simply does not work without appropriate data. As AI models learn and make decisions on **the basis of data, its quality, accuracy and integrity are crucial.**

Poor data – inaccurate, incomplete or inadequate – may lead to wrong business decisions, while AI recommendations may become outright harmful rather than helpful. As PZU Group emphasises, appropriate data governance and data quality are the foundation of AI effectiveness.

Artificial intelligence in an organisation cannot operate in a vacuum. For its implementation to bring the expected results, organisations first need to build a data governance structure that enables periodical tracking of data quality. This process needs to be strictly controlled — you need to distribute data accountability across various organisational levels, determine data ownership and business ownership of systems, and identify most important data groups. The discussed approach not only enables more effective AI use, but also strengthens its ethics and transparency.

Data Governance – fundament AI Governance

PZU Group is an example of a company that has effectively introduced data governance principles. For many years, it has been investing in data governance processes, which enabled the creation of an effective data governance model at each organisational level. PZU developed a data accountability structure, with vast majority of data-driven decisions going through appropriate control mechanisms. These principles are currently extended to encompass AI, with the established AI governance principles supporting the implementation of artificial intelligence in agreement with the best ethical and regulatory practices and business goals.

The AI governance model of PZU is a direct extension of its data governance system. Introducing an AI system without prior development of data governance principles could result in chaos and bias, which would pose a threat to operational effectiveness. In this manner, PZU identifies data governance and AI governance as closely connected elements that on their own would not bring long-term benefits.

AI and data: symbiosis in digital transformation

Organisations should first focus on data if they want to take full advantage of artificial intelligence's invaluable business transformation potential. As noted by Marek Wilczewski, Managing Director of Information, Data & Analytics Management at PZU, the organisations that consciously govern their data can effectively implement AI and deliver measurable effects in the long term, maintaining compliance with regulations, such as the AI Act, and with ethical standards.

Data governance is also becoming a key component of both data-driven and AI-driven strategies. In PZU, these principles allow transparent and ethical use of data, which is essential for AI to operate in a complex regulatory and operational ecosystem. What is more, AI teams in PZU follow the analytics governance guidelines, which additionally take into account aspects such as:

data transparency,   inclusivity,   privacy.

Can AI be implemented independently?

At first glance, it might seem that organisations could develop AI independently of data governance. This strategy, while tempting, leads to issues related to accountability, regulatory compliance and ethical use of AI. Organisations should realise that implementing AI without solid data foundation will not bring long-term benefits as the outcome of AI operations depends directly on the quality of data used to train models.

Why does data need to be first?

The first step of AI development needs to focus on data. AI requires adequate and credible data that can be correctly interpreted, so organisations need to introduce appropriate data governance principles to make full use of artificial intelligence capabilities in a consistent and secure manner. Data governance and AI governance principles should be implemented in parallel, and data must be perceived as a key business resource.

As the experience of PZU Group shows, only after ensuring appropriate data quality you can effectively implement AI solutions that in the long run will help organisations achieve a lasting competitive advantage. In the face of upcoming regulations, such as the AI Act, appropriate data governance is becoming not only an operational issue, but also a legal and ethical necessity.

Arguments in favour of parallel approach (data + AI/ML)

In some cases, if an organisation has sufficient resources, it is possible to implement AI/ML to a limited extent, while a data governance strategy is still in progress. Such a model can make sense if the goal is to quickly gain a competitive advantage by using AI in defined areas, under the condition that the organisation in question has a clearly defined data plan and can flexibly react to emerging issues.

Summary

In other words, the best approach is to build solid data governance foundations before implementing AI/ML. In the long run, this will make the AI solutions implemented by organisations more flexible, safe and effective. On the other hand, in dynamic environments the two processes can be launched in parallel, provided that there is an understanding that the quality of data will be a key factor of success in the future.
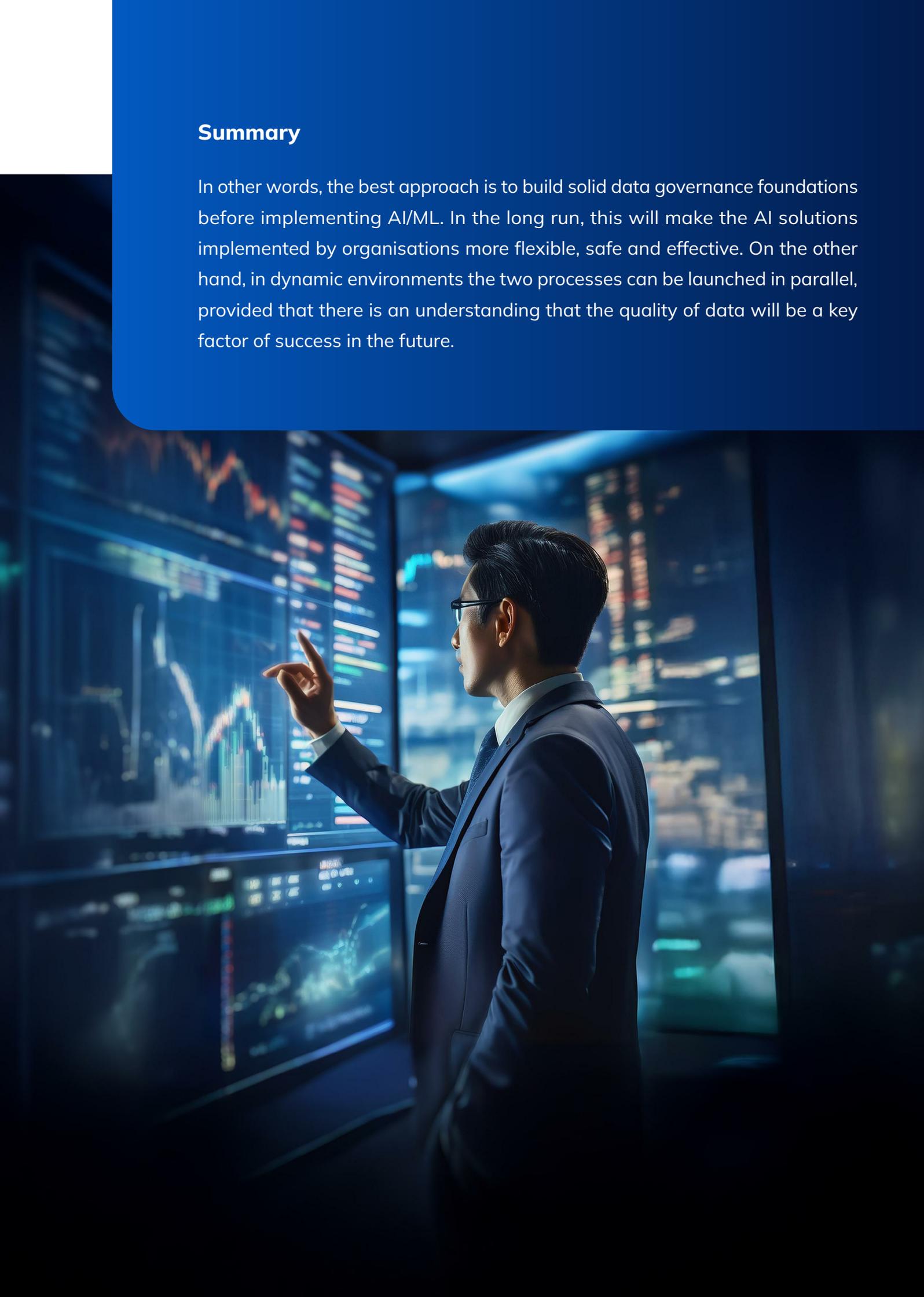
Work, workforce and labour market in the age of GenAI

Work, workforce and labour market in the age of GenAI

Dominika Bosek-Rak, PhD | Europe Payments Research Lead, Accenture in Poland

and

Marcin Ledworowski | AI Leader & Senior Advisor, Accenture in Poland

GenAI can change almost every career in the financial industry by automating numerous processes and supporting employees in their daily tasks. Three GenAI implementation scenarios dominate in Poland: aggressive, cautious and people-centric. Companies that prioritise innovation and people will gain the most, potentially generating PLN 775 billion by 2038 and adding 1 percentage point to the average annual growth rate of Poland's GDP.

Check out the full report:

[**It's GenAI Time – Will the Financial Industry Seize This Opportunity?**]

PLN 775 billion

→ **revenue by 2038** will potentially be achieved by companies that **combine innovation with investment in people**

Overview of Accenture's research methods

Research conducted by Accenture in the second half of 2024 was based on the following methods:

A) EMPLOYEE SURVEY

Survey conducted in August 2024 on a sample of 600 employees representing Poland's sectors of banking, insurance and capital markets. The sample was representative in terms of industries, company size and type, and positions held.

B) IN-DEPTH SENIOR MANAGEMENT SURVEY

Survey conducted in September 2024 on a sample of 30 senior management representatives of Poland's sectors of banking, insurance and capital markets.

C) WORKING HOURSE IMPACTED BY GENAI

We uncovered the percentage of total working hours by analysing time spent on language-based tasks across occupations and industries. Using Occupational Information Network (O*NET), U.S. Department of Labour, U.S. Bureau of Labor Statistics and other national statistical institutes as sources (including Statistics Poland and the BAEL research findings), we identified work tasks related to language, which were linked to industries by calculating their share in each occupation and the occupations' employment level.

AI's impact on particular industries

GenAI will impact almost every industry, although in some cases the transformation will be more groundbreaking and lead to a complete metamorphosis. For example, the financial sector is globally most affected by the GenAI revolution, which can automate or significantly support almost three-quarter of the working hours of capital markets, banking and insurance workforce.

Figure 1. Working time transformed by GenAI by industry[10]

	Capital Markets	Software & Platforms	Banking	Insurance	Comms. & Media	Retail	Public Service	High Tech	Life Sciences	Travel	Energy	Health	Automotive	Aerospace & Defence	Chemicals	Utilities	Industrial	Natural Resources	Consumer Goods		Financial sector
Total	72%	68%	67%	65%	51%	50%	42%	42%	41%	40%	39%	39%	39%	38%	31%	31%	30%	28%	24%		71%
Support	42%	35%	34%	36%	26%	22%	21%	19%	19%	17%	17%	23%	15%	16%	13%	13%	12%	11%	12%		38%
Automation	30%	33%	33%	29%	25%	28%	21%	23%	22%	23%	22%	16%	24%	22%	18%	18%	18%	17%	12%		33%

Working time in the **financial sector** in Poland undergoing transformation by gen AI

■ Working hours subject **to support** by gen AI
■ Working hours subject **to automation** thanks to gen AI

Note: Estimates are based on the identification of "Human+Machine" tasks and exposure to the impact of generative artificial intelligence. Source: Accenture Research based on national statistical institutes and O*Net.

[10] See. It's GenAI Time – Will the Financial Industry Seize This Opportunity?

Accenture's research on the financial sector

DIVERGENT PERSPECTIVES DO NOT ENCOURAGE COOPERATION

While GenAI is a crucial topic for boards of financial institutions, more than half of organisations are dominated by a cautious approach to its implementation. Only 13% of the respondents declare a proactive approach, with the majority mostly recognising GenAI's cost-reducing potential. Nevertheless, the fact that managers are planning to implement GenAI to generate revenue is a reason for optimism.

13% → respondents declare a proactive approach, with the majority mostly recognising GenAI

Senior managers underestimate the automation potential of GenAI and believe that it will automate 10-20% of working hours, while the actual potential is twice as high. Leaders using GenAI are more optimistic in their predictions. Investments in GenAI are hampered by regulatory uncertainty, with the lack of regulations and recommendations obstructing the technology's implementation.

The Accenture research shows there is a disconnect between how GenAI is perceived by regular employees and leaders. Senior managers are more optimistic about GenAI's strong points, while employees feel that companies failed to provide sufficient training and do not believe that GenAI will allow them to focus on more creative tasks. On the contrary, they treat GenAI with caution; banking professionals are the most proactive group in this regard and insurance workforce — the most reluctant one.

Accenture research shows that employees who have access to high-quality GenAI training report greater job satisfaction.

We must not lose sight of people

Unlocking the potential of GenAI in the financial industry requires a people-centric strategy.

1

The first step, proactivity, consists of creating a strategy of the technology's holistic implementation in an organisation, understanding the potential of return on investment and moving away from the focus on cost-cutting. Instead, technology should be used to search for new business development opportunities, taking into account ethical aspects (responsible AI).

2

The next step is inclusivity, that assumes focus on people and preparing them for new challenges and changes. In many cases, this will require the reskilling of employees or transitioning into new roles.

3

The third step, pace, ensures that a given company is technologically prepared to efficiently implement new GenAI-based solutions, using the cloud and data governance strategy.

Generative artificial intelligence will not replace people, but rather help in smart development of organisations and employees. Engaging and supporting employees will prove beneficial for individual companies and the entire economy. Positive examples of successful implementation of GenAI are already emerging, and everyone has a chance to keep up with the changes and become their leader.

Maintaining the competitive position

Marcin Ledworowski | AI Leader & Senior Advisor, Accenture in Poland

In the coming years, implementing GenAI will be crucial for maintaining the competitive position.

Today, managers underappreciate the technology's potential. Calculated on the basis of answers to a question about the share of tasks in their company that can be fully automated in the next 3 years, the average equals 16%. On the other hand, our calculations show that in Poland's financial industry the actual automation potential is twice as much and reaches 33%.

40

Automation potential
in the **financial** sector in Poland

33%

2x

16%

Automation potential
according to
Management Staff

The real potential
of automation

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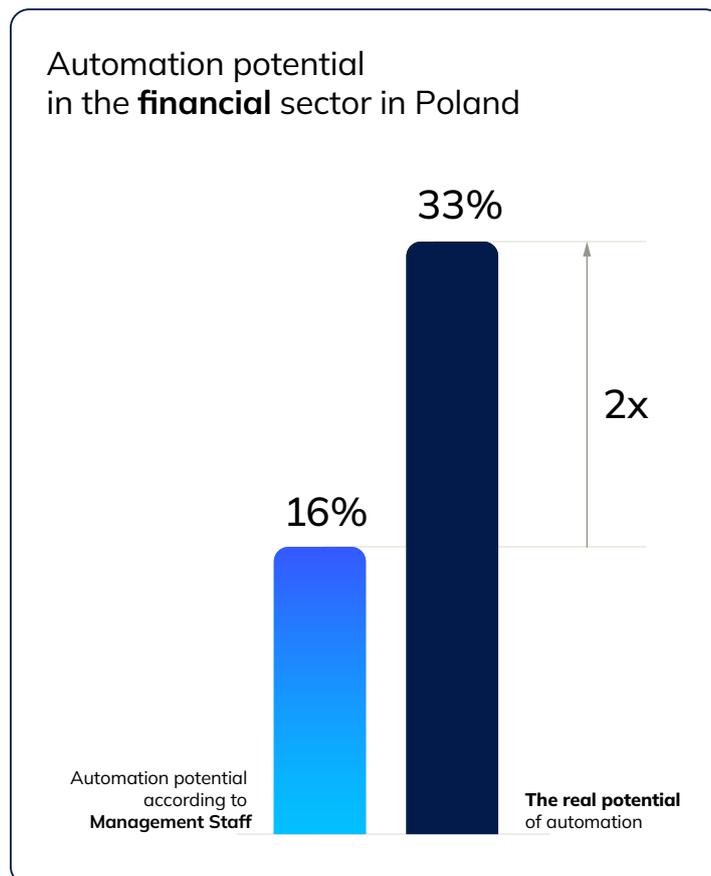
11 See. It's GenAI Time – Will the Financial Industry Seize This Opportunity?

We have identified three development scenarios[12], of implementing generative artificial intelligence and related innovations.

1

Aggressive scenario

Assumes rapid technology adoption over the next 5 years. In this scenario, organisations prioritise cost-cutting. A side effect may involve increased unemployment if workers whose tasks will be largely automated will find it difficult to successfully navigate the job market.

41

2

Cautious scenario

A solution for companies anxious about risk and distrustful of innovations. In this scenario, slowly and cautiously introduced innovations do not increase unemployment, but force some workers to switch to low-quality jobs. The complete timeline of technology adoption is 15 years, similarly to the technology innovations happening after 1985. Employee transfer takes into account both the potential of automation and supporting tasks performed by humans.

3

People-centric scenario – increasing productivity

Companies build GenAI implementation strategy, prioritising the potential of their employees and its appropriate use. Implementation of this scenario assumes supporting the competencies of current talent and workers taking on entirely new roles, which makes it possible to make full use of the technology's potential. Complete implementation timeline is 10 years.

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[12] See. It's GenAI Time – Will the Financial Industry Seize This Opportunity?

Economic growth forecast, 2023-2038[13]

Billion PLN (constant prices)

Billion PLN (constant prices)

570 billion PLN

Additional value unlocked by adopting the people-centric approach

+ 775 billion PLN

+ 583 billion PLN

+ 205 billion PLN

4600
4000
3200
2400

2023   2026   2030   2034   2038
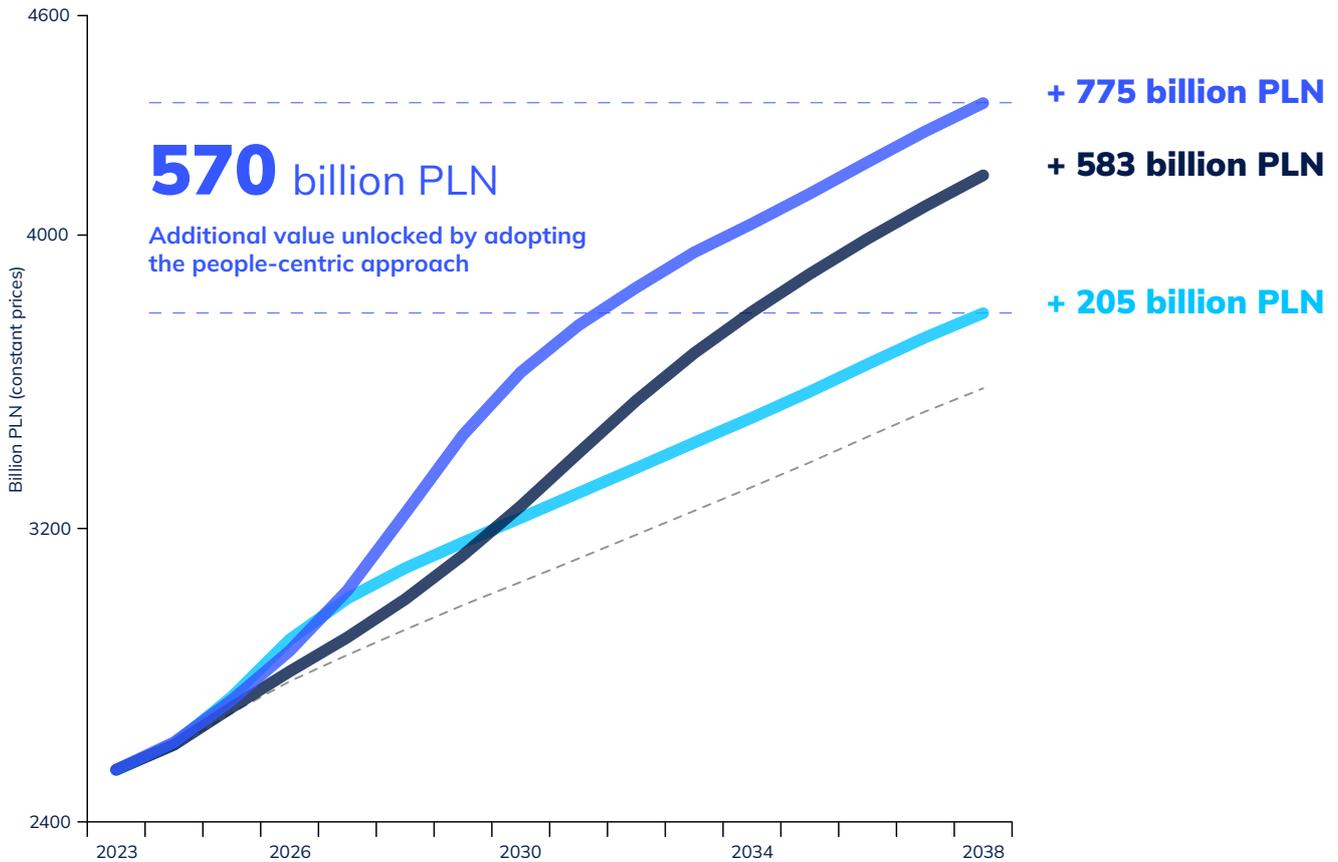
— **Aggressive scenario:**
Companies adopt quickly, placing cost-cutting at the centre.

— **Cautious scenario:**
Companies adopt slowly (complete GenAI implementation timeline is 15 years), placing risk aversion at the centre.

— **People-centric scenario:**
Companies adopt GenAI in a way that places people and innovation at the centre. The complete implementation timeline is 10 years.

-- **Baseline expected growth:**
Baseline scenario excluding GenAI.

Źródło: Accenture Research. Simulated GDP growth under three scenarios.
Baseline GDP forecast based on Oxford Economics data.

[13] See. It's GenAI Time – Will the Financial Industry Seize This Opportunity?

Hyperscalers' perspective

Data centre market as a criterion of data
& AI development in Poland.
Analysis of criteria, strategies and development plans
on the example of AWS, Google and Microsoft

Hyperscalers' perspective

Piotr Malinowski | Finance Data Control Lead, Head of Poland Finance & Data, NatWest Group

and

Krzysztof Skajewski | Data & Analytics Manager, Data Product & Governance Lead, NatWest Group

Data centre as growth driver

In the context of development of technologies based on the use of data, data centres play an increasingly important, outright strategic role. With the current trend of the number of data centres increasing worldwide, it is worth taking a look at the factors influencing decisions regarding their size, scope and, most importantly for Poland, location.

As the role of data centres is not only to store data, but also to effectively process transmitted data, the decisions about their location are related to both purely technical and business factors. Their list includes, among others: infrastructure, technical resources and the proximity of urban agglomerations and, consequently, the availability of qualified specialists and companies interested in employing the discussed services.

Telecommunications infrastructure is a noteworthy factor influencing colocation decisions. Data centre operations require adequate power supply and broadband Internet access. In this respect, availability and reliability of connection and infrastructure are essential. Completed in 2003, modernisation of the telecommunications network certainly laid a good foundation for the development of the market in question.

Still, data centres also involve external costs related to increased energy demand. In turn, the increasing energy costs pose the greatest risk for Polish data centres, where the powering of cooling systems alone consumes as much as 40% of energy. From this viewpoint, the diversification of energy sources may prove remarkably important for hyperscale centres. This is where nuclear energy will play the biggest role, perhaps to some extent accompanied by renewable energy sources. Therefore, the country's energy policy will need to take into account this new and growing demand.

There is no doubt that data centres are not only becoming a development opportunity for their target region, but also play an outright key role for economic development. As technological progress continues, the demand for processing large amounts of data in a safe, efficient and easily available way is constantly increasing. With the popularity of cloud-based technological solutions, business digitisation and AI development, companies are becoming increasingly dependent on data centres ensuring availability, fast data operations and security.

The The European market is the world's third largest after the U.S. and APAC, with capacity of over 6,200 MW (vs. 16,800 MW in the Americas and 8,820 MW in APAC). Capacities are expected to double in all regions in the coming years.

The Polish market is thriving too, and Poland has become the leader of Central and Eastern Europe. This translates into an increase in the number of local data centres. According to a PwC report, there were 140 data centres operating in 2022, with the largest number set in Warsaw (30), followed by Kraków and Poznań[14] (10 each). 65 facilities had an area of over 200 m2. This trend is confirmed by the expected change in expenditure on services provided in an external data centre.[15]

140 → **data centers in Poland** in 2022 r.

30

in Warsaw

10

in Kraków

10

in Poznań

Experts believe that Poland's market of data centre services is distinguished by considerable fragmentation. The top 10 players have more than 50% of the total available colocation space, while approx. 60% of commercial data centres have an area of less than 500 m2[16] . While domestic companies dominate, the Polish market also features global players such as Equinix, Date4, and recently also hyperscalers – Google and Microsoft[17].

[14] See. Demand for data centers.

[15] See. By 2030, the size of the data center market in Poland may exceed 500 MW.

[16] See. PMR and Atman Polish Data Centre Market Insight.

[17] See. Equinix opens $34m data center in Warsaw, Poland.

The third largest entity on the market — Amazon Web Services — is noticeably missing from the latter group. AWS has already made investments in Poland, when it launched the first AWS Local Zone in Warsaw in October 2022. The Polish Local Zone is an extension of the AWS region in Frankfurt, which enables unlimited communication and data exchange between the two locations[18].

Another factor that to some degree forces a greater demand for data centres in Poland is the National Cybersecurity System Act of 2018[19], which stipulates that operators of essential services (there may be up to 500 of them), defined as services key to maintaining critical social or economic activities, will have to take much greater care of their data security and access. In turn, this should boost interest in and further development of data centres.

In order to explore this, an analysis was conducted of the three largest companies on the global data centre market, which have recently decided to invest in data centres in Poland or consider doing so. The synthesis below presents themes and reflections on this subject matter grouped into key points.

What are the main criteria for selecting a data centre location?

When selecting the location for their data centres, hyperscalers consider a range of criteria, such as:

SAFETY:
political stability and low risk of natural hazards, such as earthquakes and floods;

INFRASTRUCTURE:
availability of reliable energy and telecommunications infrastructure, including high-speed fibre optic connections;

LEGAL REGULATIONS:
friendly data protection guidelines and low administrative barriers; data protection regulations, especially the GDPR in Europe and Poland, are crucial;

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[18] See. AWS opens AWS Local Zone in Warsaw.

[19] See. Dz. U. 2018 poz. 1560. ACT of July 5, 2018 on the national cyber security system.

COSTS:
operational costs, including energy, land and labour costs;

STAFF AND AVAILABILITY OF RESOURCES:
the need to employ qualified specialists in various fields; access to skilled workforce and technical resources; highly skilled IT and engineering specialists are a key asset;

ENVIRONMENT:
the use of renewable energy sources and energy efficiency are important to support carbon neutrality;

POLITICAL AND ECONOMIC STABILITY:
important for sustainable development of the market and investment safety;

**POTENTIAL OF THE LOCAL MARKET
AND READINESS FOR DIGITAL TRANSFORMATION:**
both are essential for future economic development;

MARKET MATURITY:
companies pay attention to market maturity defined as market being developed enough to support investments in IT infrastructure

GROWING ENTREPRENEURSHIP:
 noticeable increase in the region's entrepreneurial activity is important for future economic opportunities.

Google Warsaw Hub is worth mentioning here as the first investment of the discussed kind. Opened in Warsaw in 2021, Google's first regional data centre in Poland marked the very first time that infrastructure of a global public cloud service provider was located not only in Poland, but also anywhere in Central and Eastern Europe.

The Warsaw Hub

The 2022 investment of PLN 2.7 billion made it possible to purchase and further expand the Warsaw Hub, a state-of-the-art mixed-use complex in Warsaw downtown, which today is home to Google's largest European research and development centre focused on creating cutting-edge cloud technologies. This also initiated cooperation with various entities, from dynamic start-ups to well-established companies, supporting them in building competitive advantage[20].

Due to its economic potential, many analyses of hyperscalers recognise Poland as a remarkably attractive environment for developing and implementing innovative technological solutions.

[20] See. A Formula for Acceleration: Presenting Google Cloud Warsaw Region!

Recognisable benefits and external costs of locating a data centre in Poland

Three global players on the cloud solutions market indicated a number of benefits and costs generated by location in a given country.

BENEFITS:

ECONOMY: new jobs, development of the technological sector, increase in foreign investments

INFRASTRUCTURE: improvement of local energy and telecommunications infrastructure, including low data latency, which is important for applications requiring real-time response, such as online gaming, multimedia and entertainment content, video streaming, engineering simulation, virtual and extended reality solutions, as well as edge machine learning systems. In addition, local data centres enable compliance with local data storage regulations, which is crucial for companies from regulated industries. External costs may include the need to invest in purchasing, operating and maintaining dedicated data centres; however, AWS manages and operates the infrastructure, relieving clients from corresponding responsibilities;

TECHNOLOGY: access to latest technologies and making a destination more attractive for other investors.

COSTS:

NATURAL ENVIRONMENT increase in energy use and natural resources, possible environmental impact;

SOCIETY: possible increase in cost of living in a given region, increased pressure on local resources;

INFRASTRUCTURE: need for major investments in infrastructure, which may burden the public budget.

Expert's comment

Grzegorz Chudek | Managing Director, Financial Services, Technology & Cloud First Lead, Accenture in Poland

Poland as a financial centre in a global perspective

Due to its strategic location, high-quality specialists and a dynamically developing technological ecosystem, Poland has the potential to become one of Europe's key centres for finance and technology. Our unique combination of competencies in the sectors of IT, finance and new technologies, such as artificial intelligence and data analytics, makes it possible to build competitive solutions on a global scale. Nevertheless, to make full use of this opportunity, it is necessary to overcome barriers connected with cooperation between government administration and the commercial sector, between the scientific community and business — which will speed up the digital transformation and facilitate the implementation of innovative technologies.

Key role of the cloud and artificial intelligence

One of the foundations of the discussed transformation is cloud computing that not only enables companies to optimise processes and scale operations, but also supports the development of innovations, such as generative artificial intelligence (GenAI). These are the very technologies that are revolutionising the way in which financial institutions create value — from personalized offers to advanced data analysis and process automation. Poland has all the tools required to play a crucial role in this transformation, drawing investors and developing digital services at the highest level.

At present, many Polish companies continue to be at the initial stage of cloud implementation, which limits their ability to fully capitalise on the innovation's potential. Any delay in the transformation is an actual step backwards, and the costs of stagnation may be enormous. Accelerating digital implementation provides an opportunity not only to increase effectiveness, but also to solidify Poland's position as a leader in the region and a global financial centre.

Cooperation between science and business as an innovation catalyst

Another significant barrier is the limited cooperation between higher education institutions and the commercial sector. Discrepancy of goals – for example, emphasis on the number and quality of scientific publications vs. actual market needs– leads to mismatched competencies of graduates and slows down business innovation development.

In Accenture, we actively support the development of Polish economy, integrating global innovations with local needs. We cooperate with Polish financial institutions, helping them implement cloud-based solutions and AI technologies that make it possible not only to stay competitive in the international market, but also to provide clients with brand-new, valuable experiences.

We believe that due to its adaptability, **Poland** can become a model for other **European countries in building digital financial ecosystems.** This is the moment **when together we can create an environment conducive to innovations, economic growth and building long-term trust** in international markets.

Hyperscalers' perception of the Polish market vs. other locations

Piotr Malinowski | Finance Data Control Lead, Head of Poland Finance & Data, NatWest Group

and

Krzysztof Skajewski | Data & Analytics Manager, Data Product & Governance Lead, NatWest Group

Compared to other European locations, where major companies are already investing, Poland stands out due to several key factors, such as:

ECONOMY: thriving economy with high growth potential and stable macroeconomic foundations;

CENTRAL SETTING IN EUROPE: that facilitates access to other markets, which is beneficial for investments in IT infrastructure. The setting also streamlines logistics and distribution throughout Central and Eastern Europe. Poland can be perceived as a strategic point for expanding operations in Europe, offering unique advantages that can attract future investments;

HUMAN CAPITAL: Poland has a significant number of highly qualified IT and engineering specialists. As many as 25% of all programmers in Central and Eastern Europe are based in Poland, which underlines the country's importance as the region's technology hub. In turn, well-educated and qualified IT staff plays a key role in digital development;

POLITICAL STABILITY and business-friendly regulations;

GROWING DEMAND for new technologies;

START-UPS: Poland drawing investors and innovative technological projects due to acclaimed technical universities and innovative technological projects;

Poland's weak points:

ENERGY POLICY: Poland's still developing energy infrastructure may find it challenging to meet data centres' growing energy demand, especially in the context of sustainable development;

BUREAUCRACY: complicated administrative procedures can sometimes delay the implementation of projects;

INCREASE IN OPERATING COSTS: due to increased demand for resources;

REGULATORY RISK: related to future changes in legislation.

What is Warsaw's data centre advantage over other parts of Poland?

As the capital of Poland, Warsaw has an unquestionable advantage in the context of the development of cloud computing technology and data centres. It is not only the largest city in the country, but also a financial and business hub that attracts investments and talent from all over Poland and abroad. Due to the proximity to governmental institutions, banks and global corporations, Warsaw is a natural choice for the development of cloud infrastructure. In addition, the city features advanced telecommunications infrastructure and available energy resources, which is crucial for data centre operations. However, an analysis of the development of cloud computing in Poland identified other regions gaining in importance. Cities such as Wrocław, Kraków or Poznań are becoming new technology hubs, where a dynamic start-up community and innovative companies are developing. Moreover, the regions in question offer favourable development conditions, such as access to qualified staff, as well as lower operational costs compared to the capital.

Selected data centre services not yet available in Poland

While Poland already offers a wide range of cloud services, the development potential remains huge. This is particularly evident in the area of advanced technologies, such as edge computing and IoT, which are key to Industry 4.0. Although the first steps in this direction have been taken, it will take some time to fully adopt the discussed solutions. Digital acceleration in Poland is likely to inspire their dynamic development.

The present-day investments of hyperscalers in Poland provide highly available, scalable and secure cloud services with an option of data residency and lower latency, making the cloud accessible to clients (especially in the public and governmental sector) that otherwise would not be able to gain access due to data policy/compliance/residency requirements.

Operational risk for data centres in Poland and the region

Operations of data centres in Poland are subject to various intertwined risks. Regulatory changes, especially in the area of personal data protection, force constant investments and adaptation. Simultaneously, rising cyber threats require the implementation of advanced security measures. Both factors have a direct impact on operating costs and the reputation of companies.

The latest Microsoft Digital Defense Report ranks **Poland third in Europe and ninth globally** in terms **of vulnerability to attacks from foreign-backed hacking groups.** This is why it is critical to build cyber resilience. **Microsoft, in particular, is making huge investments in this area by:**

78 trillion
analysing 78 trillion signals per day;

Monitoring over
1500
cybercirme groups;

including
600
sponsored by hostile states;

200
involved in disinformation operations;

Employing
34 000
full-time security engineers as the largest engineering effort in the history of cybersecurity;

Applying the latest AI solutions for data protection, threat detection and response, making it possible to considerably reduce incident response time[21].

Main factors driving growing interest in cloud computing services in the near future (IoT, edge computing, AI)

The cloud is modernising Polish businesses, supported by the IoT and edge computing technologies that accelerate digitisation in many sectors. The cloud enables efficient data processing, process optimisation and improved business decisions. Edge computing makes it possible to bring computation closer to the source of data, which is essential for applications requiring low latency, such as self-driving vehicles or healthcare apps. AI drives digital transformation by automating tasks, personalising services and identifying new data patterns. Combined with the cloud, IoT and AI provide scalable and effective solutions for various economy sectors.

[21] See. https://cdn-dynmedia-1.microsoft.com/is/content/microsoftcorp/microsoft/final/en-us/microsoft-brand/documents/Microsoft%20Digital%20Defense%20Report%202024%20%281%29.pdf

Benefits and external costs of colocation of data centres in Poland

The colocation of data centres in Poland brings numerous benefits for the economy and digital infrastructure. Poland is becoming increasingly attractive for international technology investors that can employ the existing infrastructure without having to build their own facilities. In turn, this attracts foreign capital, which supports the country's technological development and increases its global competitiveness. Local companies gain easier access to advanced IT solutions, such as cloud computing or artificial intelligence.

Modern data centres play a key role in digital economy. One of the foundations of their operations involves energy efficiency achieved due to new technologies, such as precise cooling and energy management systems. This reduces operating costs and helps meet environmental goals. The colocation of data centres also provides companies with flexible and scalable IT solutions, enabling them to focus on core business. In addition, colocation impacts the labour market by creating new jobs for IT specialists and supporting knowledge and technology transfer.

On the other hand, the development of data centres also has its share of challenges, such as increased energy consumption, which requires greater involvement of renewable energy sources. The growing demand for digital services makes it necessary to continuously work on improving cybersecurity systems. Despite these challenges, data centres are important for building a modern and sustainable economy.

The launch of a cloud region in Poland responds to the growing demand for high-performance computing and fast and reliable access to cloud services. The cloud contributes to digitisation and the development of digital competencies of Polish companies, economy and society, as well as strengthens their resilience in times of economic and geopolitical uncertainty. The local infrastructure of data centres supports the development of clients and partners, enabling companies, governments and regulated industries to employ innovative cloud-based solutions and strengthening the tech ecosystem supporting the projects in question.

Competencies required to support data centres

Supporting a data centre, which is a component of global infrastructure, requires an exceptionally wide range of skills. It is not only a matter of in-depth technical knowledge, but also the ability to manage complex systems and thrive in a dynamic environment. Solid network infrastructure is the foundation of every data centre. Engineers design and implement advanced networks, while simultaneously taking care of their reliability and scalability. This is a task that calls for both technical expertise and the ability to solve problems quickly, often under time pressure.

Security is recognised as the top priority. Cybersecurity specialists design the latest solutions to protect data from all types of threats. From encryption to intrusion detection systems, each component of our infrastructure has been designed with maximum security in mind..

Energy efficiency is another key area of increased efforts. All representatives emphasised their cooperation with top experts to optimise energy consumption and minimise environmental impact. It is not only a matter of costs, but also of social responsibility.

Automation and DevOps are the driving force of modern data centres. They make it possible to speed up the implementation of new services, increase efficiency and ensure higher quality. DevOps engineers have unique skills that allow for continuous process improvement.

The development of new competencies is a necessity in the face of rapid technological growth. For example, as part of a complex investment in Poland, Microsoft trained 430,000 people between 2020 and 2023. According to the Work Trend Index 2024 report, more than half of business leaders in Poland (53%) prefer to employ colleagues familiar with artificial intelligence, while 55% would prefer to offer positions to less experienced candidates who have AI skills than to more experienced people without the discussed qualifications. To prepare candidates for labour market requirements, the Information Society Development Foundation joined forces with Microsoft to reach 50,000 people in Poland with training materials on the use of AI tools as part of the My Digital Life project[22].

[22] See. AI at Work Is Here. Now Comes the Hard Part.

Perspective of a CDO & a CAO

Perspective of a CDO & a CAO

Interviews with local representatives of global financial institutions on the potential of the Polish market

Jarosław Łach | Tribe Leader of Data Tribe, BNP Paribas

Why should we create AI strategies? Tools keep on emerging and evolving at a rapid rate, various institutions are only analysing the possible regulations. Is it not too early?

In order to effectively implement and manage innovations such as AI, it is crucial to define the AI strategy framework by determining long-term goals, selecting appropriate areas and defining ideas for using AI, as well as by ensuring its adequate scalability and safety. The lack of a clear AI strategy may result in falling behind the competition, which will offer more personalised and affordable services.

AN AI STRATEGY WILL ENABLE YOU TO:

1
define long-term goals and priorities;

2
manage risk and ensure regulatory compliance;

3
effectively use investments;

4
prepare for technological and market changes.

Has developing an AI strategy already become a standard among market leaders? What is the situation like in the banking sector?

Developing an AI strategy is becoming increasingly common among market leaders, also in the banking sector. Many financial institutions have already started their AI journey, although full implementation has not yet taken place. It is always a process.

In our bank we have been working for several years now on extracting the full potential of AI. We started our preparations early enough. Over the years we have been building internal competencies, investing in data quality and the right infrastructure. We also went through the stage of PoC experiments and implementation, verifying their usefulness and business value. Our organisation is now working on implementing a strategy of AI industrialisation and scaling.

What are the main assumptions of the AI strategy of Grupa BNP Paribas and BNP Paribas Bank Polska?

Grupa BNP Paribas has already developed its AI strategy and is heavily investing in the technology's development. The main areas include activities such as:

- **AI integration in banking processes** – the goal is to achieve 1,000 AI use cases by 2025 to increase task automation and operational efficiency[23];

- **improving data governance** – data governance encompasses ensuring its quality, security and regulatory compliance, which is crucial for AI effectiveness[24];

- **employing AI in sustainable development** – AI supports initiatives related to climate risk analysis and carbon footprint calculation[25];

- **generative AI and innovation** – BNP Paribas develops GenAI, which enables more advanced customer interaction and personalised services[26];

- **scaling AI infrastructure** – the bank invests in technological development to enable wide implementation of AI models[27].

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[23] See. BNP Paribas [24] See. BNP Paribas [25] See. BNP Paribas CIB [26] See. Global Markets [27] See. BNP Paribas

In Poland we follow the same priorities. We believe that an appropriate AI strategy is the foundation of our operating activities. We selected the goal of AI industrialisation to achieve its mature and scalable implementation. Our main assumptions are:

1 systematic measurement of AI value and usefulness;

2 ensuring a safe and stable manufacturing process;

3 focus on key types of use cases and artificial intelligence, including investing in generative AI and development of virtual assistants, building personalisation models and intelligent document processing;

4 raising the organisation's awareness of opportunities and risks associated with artificial intelligence;

5 creation of universal and reusable AI solutions for use in various areas and business units of the bank;

6 continuous investments in research and development to stay up to date with the latest IT technologies.

Importantly, our board and key decision makers are strongly committed to the development of different scenarios and defining the bank's AI-related ambitions for the coming years. As part of the AI Forum, we launched an ongoing strategic dialogue to continuously define and monitor our medium- and long-term ambitions related to the employment of artificial intelligence. It also constitutes a platform for a periodic review of current trends.

How in practice will we measure the effectiveness of AI implementation?

Already today the effectiveness of implementing an AI strategy is measured on the basis of the business value generated by every solution and the benefit-cost ratio. Let us keep in mind that the value of AI will be generated only when it becomes embedded in and absorbed by business processes. At the same time, we approach this issue from the perspective of managing an entire portfolio of AI use cases. We are aware that some use cases have already reached maturity and generate tangible value, while others are still at the concept and exploration phase. Avoiding risk at all costs is synonymous with not taking any innovative actions. As AI is rapidly evolving, we need to continue investing in research and development to stay on top of things.

The future of AI development is hard to predict — how will we react to ongoing changes in terms of the discussed strategy?

Artificial intelligence is a field that is developing at a breakneck pace. In Bank BNP Paribas we aim to maintain this momentum by identifying initiatives that support further development and keep AI in the spotlight. We ensure ongoing investments in research and development to keep up with the latest AI solutions. Moreover, we strive to continuously raise employee awareness of AI benefits and challenges. As AI remains somewhat puzzling and challenging, it is absolutely crucial to build user trust in related solutions.

We believe that transparency and responsible AI use are key to success. In addition, to continue high-level AI development and implementation it is important to prioritise educating our employees and attracting top talent in the field of AI and market analytics. The AI strategy of Bank BNP Paribas is not only about technology, but also investing in people, education and trust. As a result, we are able to meet the present-day challenges and drive further development of AI in our sector.

Expert's comment

Marek Wilczewski | Managing Director of Information, Data and Analytics Management, PZU Group

The company's overall business strategy contains elements of its strategy dedicated to AI and the use of advanced analytics. AI/ML projects are directly related to business projects and initiatives in specific areas of the company, such as sales, CRM campaign management, tariff processes, claims and benefits management, as well as insurance crime and fraud prevention systems.

We are seeing the following phenomena that constitute the basis for the development of the Information Management Strategy:

- raised awareness of data use potential;

- dynamic development of new analytical techniques and increased importance of machine learning (ML)/artificial intelligence (AI);

- gradual decentralisation of reporting and analytics, democratisation and new data type (unstructured data, IoT);

- new regulations in data and analytics (AI Act, Data Act, Data Governance Act, DORA);

- labour market situation in terms of specialists in data and advanced analytics/AI.

The abovementioned strategy defined five key pillars for generating value from data:

1

Data & analytics management & governance;

2

Data Integration;

3

Data Quality;

4

Development of analytical potential and data-driven culture;

5

Business intelligence and advanced ML/AI analytics.

Innovativeness in PZU Group is not limited to a single department, project or area. Smaller and larger changes are being constantly introduced in each aspect of the company's operations, together creating the image of one of Europe's most advanced companies in the financial sector.

The key aspect is to skilfully combine areas related to the management and provision of data with its monetization in the form of using advanced AI/ML analytics.

Expert's comment

Adrian Kurowski | General Manager, Visa in Poland

Data, available computing power and large language models (LLMs) have the potential to lead us into a new era. Generative AI can change how we work, create new products and services, and serve our clients. Opening the economy to data can unlock new opportunities to develop richer, more personalized experiences.

The technology that can provide them is already here, so what is standing in the way? Data plays a major role, as there still remains a lot to be done to simplify and launch data sharing standards, and to leave the right of choice and decision in the hands of consumers and small businesses. We believe that data democratisation, defined as the introduction of measures giving consumers control over what information they want to share, when and with whom, will build trust. A Visa survey of 12,000 European respondents found that 69% believe that companies benefit more from using their data than they do[28].

69% Europeans believe that companies benefit more from using their data than they do[29]

The development of AI may require a fundamental re-evaluation of business responsibility towards consumers. This is why building an organisation based on artificial intelligence calls for strategic commitment and scrupulous implementation of the principles of honesty, ethics, responsibility, transparency and governance. As automated tools begin the scaling process, transparency becomes essential in explaining the logic of models in a clear way to affected people. Organisations should thoroughly describe management, governance principles and the extent of responsibilities, which guide the AI model development lifecycle.

[28] "Control" and "consent" are the main factors driving consumer comfort about data sharing vs. other factors, such as brand, reputation and valued services. Visa/A.T. Kearney Data Privacy Study (U.S. N = 5,215, UK N = 5,252, Australia N = 800, Singapore N = 1,000, Hong Kong N = 1,000, Japan N = 2,500, Germany N = 1,000).

[29] Global (N= 34,600), UK (N = 2,000), France (N = 2,000), Germany (N = 2,000), Spain (N = 2,000), Italy (N = 2,000), Scandinavia (Denmark, Norway, Sweden, N = 2,000).

This shows that implementing AI-based solutions without appropriate personnel constitutes a major challenge. **Poland** is a noticeable **stand-out in this area due to the numerous highly qualified employees and the thriving IT sector**. This is precisely why it is a perfect place for securing **new talent** and **developing new solutions** and also one of the reasons why Visa chose Warsaw as the seat of its very first Technology and Product Hub in Central and Eastern Europe. Already now it employs more than 800 colleagues.

It is absolutely essential to build consumer trust in AI, new technologies and data. For three decades, Visa has been committed to sustainable innovation, creating a management strategy that prioritizes responsible data governance – the very foundation of responsible AI. Visa works to ensure that every deployment or use of data is responsible, safe, consistent and reliable across all innovation areas.

Talent pool vs. market needs

Experience of data, artificial intelligence and HR managers in real-life challenges related to the acquisition of data and AI specialists and internal competency building

Karina Daniel | Director of the Artificial Intelligence Office, Bank Pekao S.A.

together with the team of Bank Pekao S.A. and a participant of the Banking Champions

Bartosz Żukowski | Director, Office of HR Projects and Organisation Modelling
Marcin Galas | Team Leader, Office of Data Management and Big Data
**Bartosz Czapczyński** | Expert, Office of Artificial Intelligence
Katarzyna Broczkowska | Analyst, Office of Artificial Intelligence
Maksymilian Paczyński | Participant in the Banking Champions programme

Our internal observations show that the dynamic increase in the implementation and development of artificial intelligence algorithms reflects the demand for growing technological and digital competencies. Despite challenges related to AI hallucinations and potential biases that may arise when training models, market reports indicate that in the future AI will be an integral component of solving numerous complex business and engineering problems.

For many years, the financial sector has been successfully implementing new solutions based on artificial intelligence algorithms. This trend is strongly correlated with changes that can be observed in the area of science development. Since 2010 we have been seeing a systematically increasing interest in machine learning, which is reflected in the number of dedicated scientific publications increasing sevenfold between 2010 and 2022[28]. In the same period, the number of publications on classical algorithmic sciences remained relatively stable, showing a clear shift in attention towards more advanced methods. This phenomenon contributed to the global technological community cooperating more closely on the development of new technologies.

[28] See. AI Index Report 2024, Human-Centered AI Institute, Stanford University 2024, s. 32.

We are seeing that the development of previously unknown technologies, especially relatively new types of neural networks, such as the transformer network that is the basis for generative artificial intelligence (GenAI), has opened up a wide and promising field for the development of new competencies for students, engineers and scientists. The number of repositories submitted to the GitHub platform has recently reached 12.2 million[29], a more than fourfold increase year-on-year. Combined with the growing number of scientific publications on machine learning, this offers extensive opportunities in gaining knowledge and becoming an expert in rapidly developing, previously unexplored areas.

12,2 mln

which means →

over 4x

uploaded repositories
on GitHub platform

year-on-year growth
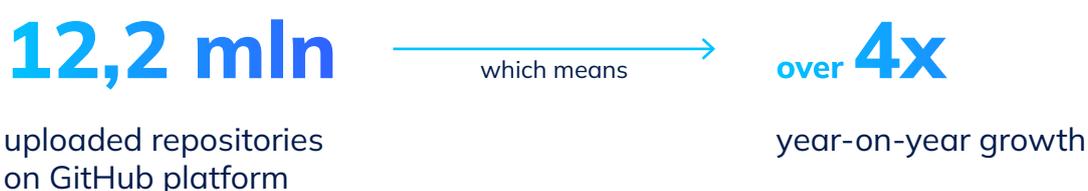
In our opinion, this will prove beneficial for both the academic community and the business sector, as proven by 2023, which turned out to be a breakthrough year for the development of generative artificial intelligence, as reflected in the growing interest in and rapid implementation of the technology in a business context. According to the results of market research conducted by McKinsey[30] in 2024, the number of companies that have implemented GenAI doubled. The introduction of large language models (LLMs) additionally expanded the horizons of implementing artificial intelligence in areas that earlier required complex data structuring, which was not only high-cost and time-consuming, but also called for a different skillset of our employees.

In the light of dynamic technological changes, the financial sector has recognised that technological development is picking up speed and encompasses more and more banking areas. As a result, requirements for competencies of data science and machine learning specialists are also evolving.

[29] See. AI Index Report 2024, Human-Centered AI Institute, Stanford University 2024, s. 71.

[30] See. McKinsey & Company, The state of AI, QuantumBlack, 2024, s. 2.

Our own internal observations show that the ability to quickly analyse and **absorb diverse information is becoming a key skill much in demand among employees.**

The projects currently implemented in our structures focus on automating and optimising operating activities in many business segments. As a highly complex financial institution with several thousand employees, we recognise the growing need to develop integrated technological solutions that support cooperation between different organisational units within our structure.

We thus anticipate that in the coming years sought-after data science and machine learning specialists will need to not only thoroughly understand algorithms and their operations, but also skilfully identify the opportunities for their implementation within complex organisational structures. We believe that this approach will considerably speed up internal and external operational processes, shortening the path between the concept of a given project and its final implementation.
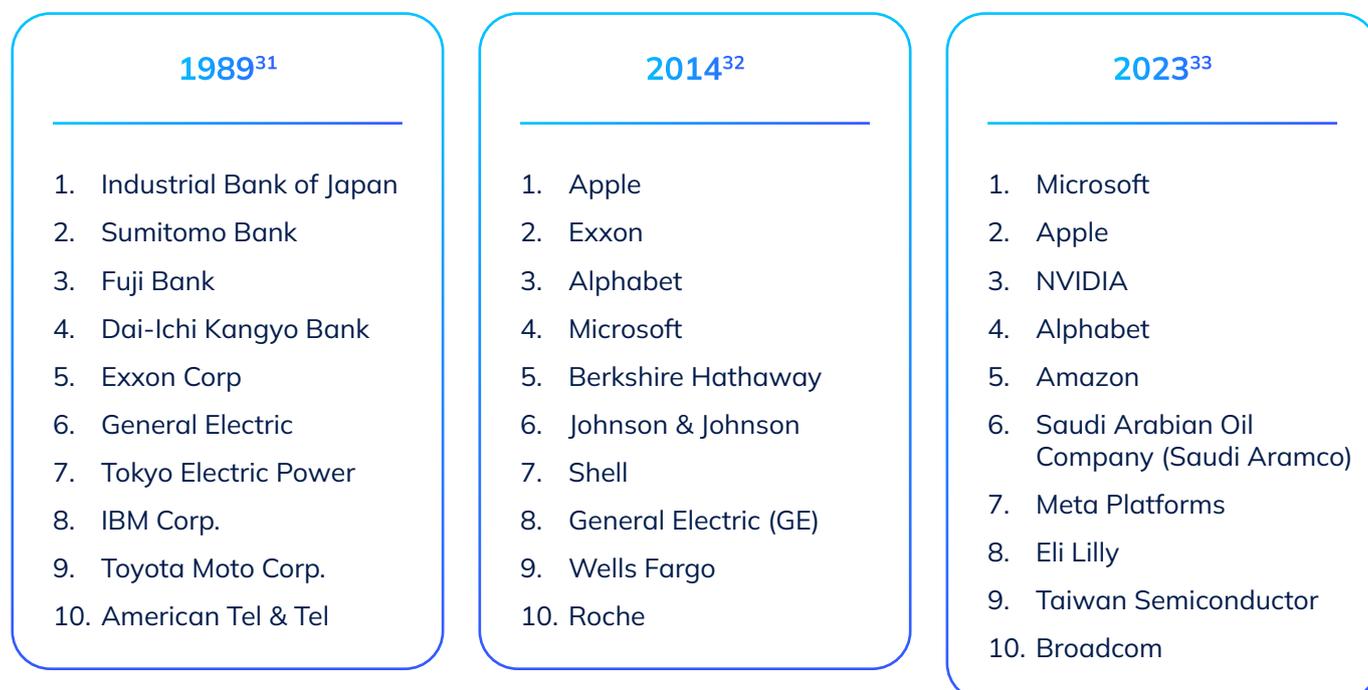
In this context, it becomes especially important to integrate departments working on implemented projects, which raises the demand for creating interdisciplinary teams. As their part, specialists with different sets of competencies can effectively collaborate, which is key to achieving success in today's dynamically changing business and engineering environment. Modern data analysis and the creation of artificial intelligence algorithms require in-depth understanding of the analysed information, and to achieve optimal results you need to fully understand the data, its sourcing methods and processing context.

As a response to these challenges, our customer behavioural data analyses connect teams not only with IT experts, but also with representatives of other fields, such as psychology or retail banking. Integrating different perspectives and knowledge, their cooperation makes it possible to achieve improved results much faster. Moreover, it creates an environment that supports knowledge transfer, significantly contributing to the personal development of our employees, helping them gain new competencies and experiences indispensable in the implementation of increasingly complex projects and initiatives.

This type of approach becomes particularly important in the face of changing macroeconomic conditions that impact the educational preferences of students and career decisions of science professionals in different industries. It is worth noting that the position of financial institutions, including banks, has undergone considerable changes over the last 35 years (see the table below). Changes also affected the catalogue and profile of companies that use their leader position to build an attractive image drawing future employees.

**Top 10 biggest companies by market capitalization in select years:**

1989[31]	2014[32]	2023[33]
1. Industrial Bank of Japan	1. Apple	1. Microsoft
2. Sumitomo Bank	2. Exxon	2. Apple
3. Fuji Bank	3. Alphabet	3. NVIDIA
4. Dai-Ichi Kangyo Bank	4. Microsoft	4. Alphabet
5. Exxon Corp	5. Berkshire Hathaway	5. Amazon
6. General Electric	6. Johnson & Johnson	6. Saudi Arabian Oil Company (Saudi Aramco)
7. Tokyo Electric Power	7. Shell	7. Meta Platforms
8. IBM Corp.	8. General Electric (GE)	8. Eli Lilly
9. Toyota Moto Corp.	9. Wells Fargo	9. Taiwan Semiconductor
10. American Tel & Tel	10. Roche	10. Broadcom

[31] See. Biggest companies in the world by market cap 1989 | Statista.

[32] See. Top Ten Companies by Market Cap over 20 Years (ercouncil.org).

[33] See. Most valuable companies 2023 | Statista.

10 companies from individual sectors among the 1**0 largest companies by market capitalization in the world**
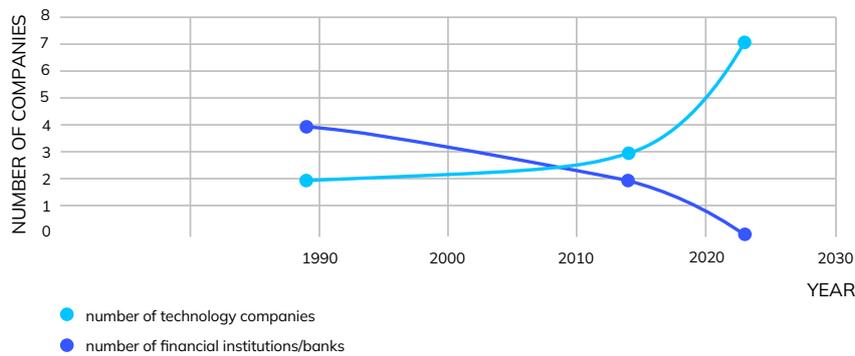
There is more to modern banking than only traditional financial services. It also involves the latest technologies that are becoming a key component of further development. We believe that effectively communicating the transformation can position banks at a level similar to that of technology companies. At the same time, we recognise banking as a key sector that can be just as innovative as the largest technology companies.

Our 95 years of experience and customer trust create a solid foundation for introducing new advanced solutions that only respond to the current needs, but also set new standards in the industry. In a significant group of companies, it is very difficult to introduce adequately effective AI-based solutions due to the lack of access to data or high costs of its provision. Meanwhile, every day millions of users log into our banking applications to search for products and services ideally matched to their individual needs. As a result, we can introduce the hyper-personalization of offers, which is made possible by teams of qualified specialists, experts in data analysis and creating machine learning algorithms.

We believe that the diverse and extensive data available in our bank structures makes it possible to create innovative technological products that can immediately provide value to millions of our clients. We especially emphasise this positive impact on customer experience when recruiting top machine learning specialists.

It is also worth paying attention to the potential of generative artificial intelligence algorithms, such as large language models (LLMs), which open up new possibilities in data analysis and automated customer support, significantly exceeding the earlier limitations. The technologies in question enable us to better understand the needs of our clients and offer them solutions matched to their expectations, which in the long run contributes to strengthening our market position. To build solutions of this kind, we will not only need training, but also search for new specialists savvy in technological areas that up to now were not employed in our internal structures.

According to a report by ManpowerGroup, as many as 72% of organisations in Poland struggle with finding new employees with desired competencies. The same problem affects 77% of organisations worldwide. Professionals with IT and data analysis competencies are the most difficult to recruit (27%). In the case of soft skills, the greatest challenge involves finding employees distinguished by resilience and adaptability (34%), critical and analytical thinking (33%) and reasoning and problem solving (27%)[34].

as many as

72%

organisations in Poland

77%

organisations worldwide

struggle with finding **new employees with desired competencies**.

The most difficult people to recruit are:

27%

with IT and data analysis
skills

34%

easily adaptable
and resistant to stress

33%

able to think critically
and analytically

27%

demonstrating insight
and willingness to learn

[34] See. Report ManpowerGroup. Talent Shortage in Poland.

High salary is no longer the only priority required when hiring new specialists. In today's reality, in addition to **salary** and related **benefits**, the **flexibility we offer in terms of place and time of work** and **professional freedom are starting to play a key role.**
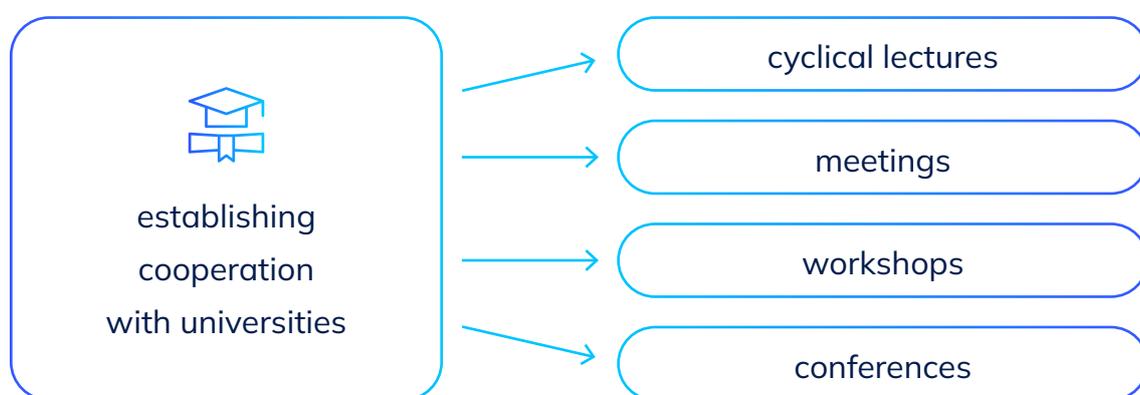
Together with the dynamic technological development, priorities of working in the banking sector are also changing. In recent years, we have witnessed a distinct change in trends of attracting top experts on the market. More and more often we notice that a high salary is no longer the only priority required when hiring new specialists. In today's reality, besides remuneration and related benefits, flexible time and space work arrangements and freedom at work also begin to play a key role. As a bank, we are leaving behind the traditional, hierarchic organisational structure that continues to be a common solution among our competitors, replacing it with a more flexible model prioritising employee needs. As part of this approach, every employee with majority consent has the opportunity to introduce changes and propose new projects and innovations within internal teams.

We believe that this approach favours the creation and development of innovation. Each employee can propose their own solutions and paths of technological development, while the final strategy is worked out together by a team responsible for a given project. This line of action builds a strong sense of employee belonging and boosts motivation by making it possible to introduce real changes regardless of the current position of a given employee.

In order to acquire experienced talent, banks must be present and, crucially, active on social media, especially the networks aimed at professionals, such as LinkedIn or Glassdoor. They should have their online profiles, manage their online image and have vibrant online brand ambassadors. In addition, you can acquire experienced talent through an internal career fair or ads on online portals dedicated to the sought-after group of specialists.

For example, it is recommended to use the Just Join It job board when looking for information technology specialists. Another way to attract experienced and talented employees is to ensure your organisation includes a talent search team and an employee referral programme.

establishing cooperation with universities → cyclical lectures

→ meetings

→ workshops

→ conferences

Banks planning to recruit specialists or conduct learning activities in the field of technologically advanced banking are also suggested to establish cooperation with higher educations institutions. Bank representatives can host regular lectures, meetings, workshops or conferences at various HEIs in Poland. In partnership with school authorities, they can create classes with bank employees demonstrating how to use theoretical knowledge in practice. This would provide students with an opportunity to gain knowledge from the experience of bank staff. Moreover, after a series of such classes that would, for example, end with a test, select students could be offered bank apprenticeship or internship. Another form of banks attracting talent may involve scholarships offered to top students in their year, faculty or field. Banks should also attend job fairs, especially the ones organised at Polish higher education institutions, in different cities, also where a given bank does not have its principal office or branch. In this way they can reach a greater number of young talent.

A long-term strategy for acquiring IT and data analysis talent should involve encouraging and educating talented young people who want to gain additional professional experience while studying. As part of this initiative, we launched the Banking Champions apprenticeship and summer internship programme that gives students an opportunity to put academic knowledge into practice by working on real-life business projects. In 2024 more than 100 young people joined our internal structures. We believe that our resources make it possible to showcase the interesting and complex character of tasks related to future work in banking, which will encourage the young talent to remain in our structures and continue this career path.

The financial sector recognises challenges related to the potential shortage of specialists, especially in the area of machine learning and data analysis, and acknowledges that a possible workaround involves hiring international employees. In our opinion, this strategy not only raises the overall level of team competencies, but also introduces diversity that translates into different perspectives. In consequence, it enables faster implementation of new products into our offer.
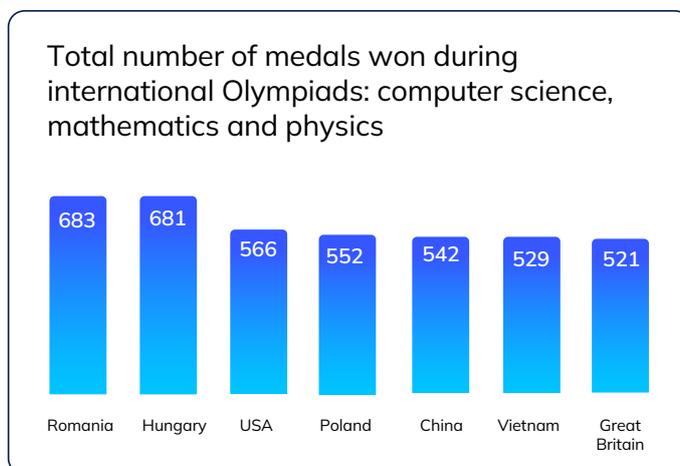
One of the key problems is the limited knowledge of Polish among foreigners, as our operating activities are focused on the Polish market and thus require effective Polish-language communication. This applies to documentation, internal meetings and meetings with clients, which are almost always held in Polish. As a result, not being fluent in Polish is a serious obstacle to hiring foreigners for many positions. Nevertheless, we consider the possibility of employing people from abroad, especially in IT where English is the main working language. In this department, fluency in Polish is not a prerequisite, which opens the way to incorporating international specialists into our teams.

We also note that the present-day opportunities offered by publicly available knowledge sources such as the Internet, analysis of publicly available repositories on popular platforms (e.g., GitHub) and participation in scientific projects in Poland and abroad are all shaping a new profile of future specialists in artificial intelligence and data analysis. More and more often, potential engineering candidates are assessed not only on the basis of professional experiences, but also private projects that they carry out to develop their competencies. This testifies to their commitment to continuous development and gaining experience in project implementation.

Our technological projects require intensive communication and cooperation with both technical and non-technical roles. This is why already at an early stage we are looking for candidates who demonstrate communication, planning and teamwork skills. We realize that young people often have limited opportunities to gain such competencies. On the other hand, we are seeing growing involvement of secondary and higher students in activities of scientific clubs, foundations and associations. At present, the market features many initiatives of organisations of this kind, where young people create projects whose impact and scope reach tens of thousands of people in Poland and abroad. From our perspective as a potential future employer, members of the discussed organisations are particularly desired, as they have gained valuable skills and experience before starting their proper career. This also confirms that these are people who are willing to enhance their competencies, which we treat as the primary value of our organisational culture.

Furthermore, we believe that a key method of acquiring AI and data science talent, besides training and creating development opportunities for current employees, is to support Poland's emerging talent and provide a development platform aimed at this group. Poles achieve outstanding international scientific success, especially in the field of subject competitions. According to our estimates, Poland is ranked fourth in the world as regards the number of medals, taking into account the International Physics Olympiad (IPhO)[35], the International Mathematical Olympiad (IMO)[36] and the International Olympiad in Informatics (IOI)[37], our country, according to our analyses, ranks fourth among all countries in the world (data as of August 16, 2024, see figure below38).[38]
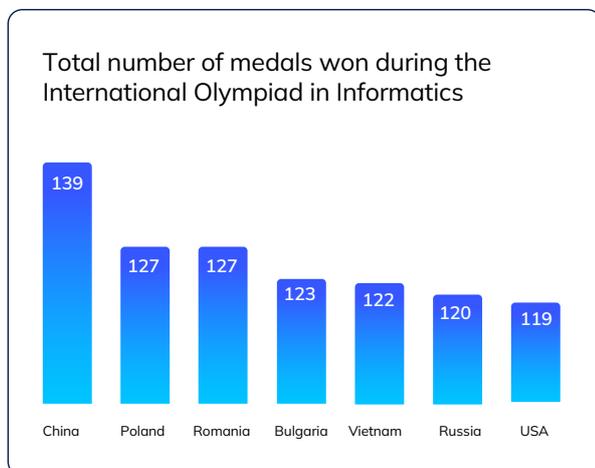
Total number of medals won during international Olympiads: computer science, mathematics and physics

Romania	Hungary	USA	Poland	China	Vietnam	Great Britain
683	681	566	552	542	529	521

[35] See. IPhO: List of Countries (ipho-unofficial.org).
[36] See List of countries by medal count at International Mathematical Olympiad, Wikipedia.
[37] See. Countries (ioinformatics.org).
[38] See. Countries (ioinformatics.org).

It is worth emphasising that our students particularly stand out in the International Olympiad in Informatics, where Poland is ranked second ex aequo with Romania, winning a total of 127 medals (data as of 16 August 2024, see the graph below)[39].

Total number of medals won during the International Olympiad in Informatics

China	Poland	Romania	Bulgaria	Vietnam	Russia	USA
139	127	127	123	122	120	119

As Bank Pekao SA we believe that supporting young people while they are still in school, especially in taking part in international science olympiads, is of key importance for shaping future experts of exact sciences. With these values in mind, we decided to partner up with the Junior Olympiad in Informatics aimed at primary school students. We believe that the key support we can offer should be targeted at the stage of adolescence and primary education, which will provide talented young people with a solid foundation for further development. We treat this initiative predominantly as a platform for improving general digital competencies in Poland and for showing that joining the digital transformation currently taking place in Poland, among other destinations, can become an intriguing challenge for young people.

[39] See. Countries (ioinformatics.org).

According to Deloitte's Digital Banking Maturity 2022 report, digitisation of the Polish banking sector is developing at a pace exceeding the global average[40]. Naturally, it should be noted that the financial sector in Poland is highly diversified. There are 29 commercial banks and almost 500 cooperative banks operating on the market. Each of them has a different strategy and operational goal. However, it is our opinion that to be a key player in the coming years, banking institutions will have to take part in a fierce technological race centred on the implementation of advanced systems based on artificial intelligence. Still, we believe that maintaining the highest safety standards will become our overriding challenge. As a result, we consider it top priority to create IT teams specialising in both AI and cybersecurity, which will have the necessary knowledge to secure the discussed applications. The COVID-19 pandemic demonstrated that it is not only possible, but also outright necessary to quickly introduce innovations in the rigorously regulated banking environment.

[40] See. Deloitte Digital Banking Maturity 2022

In search of role models and differentiators

AI in the financial sector
in the ASEAN region and Australia

Jacek Stryczyński | Director of Innovation Projects, PKO Bank Polski

Financial centres in the ASEAN region are dynamically developing, with the growth of artificial intelligence (AI) as one of the key areas building their competitive and innovative character. As a leading global financial hub, Singapore is at the forefront of this trend, offering a unique approach to regulating and supporting the AI development. At the same time, it symbolises a different approach adopted by banks and regulators operating in the region, especially when compared to the European Union.

AI support in ASEAN banking

Banks in the ASEAN region increasingly often use AI to modernize operations, automate customer service and optimise business processes. In countries such as Singapore, Malaysia and Indonesia, investments in generative AI are increasing, which makes it possible to maximise business value[41]. The areas of AI use are basically standard, but replacing restrictions and strict regulations with an openness to innovation and the development of best practices and principles of ethical AI use speeds up the process and makes the implementation scope much wider, contributing to increasing the effectiveness and safety of banking operations[42].

Singapore as a leading global financial hub

Singapore is an example of a robust financial hub, where the whole ecosystem is working on strengthening its importance both on the highly competitive Asian market and worldwide. The Monetary Authority of Singapore (MAS) plays a crucial role in promoting the responsible use of AI in the financial sector. For years MAS has been undertaking a number of initiatives, which in fact were ahead of or at least kept up with the development of technology, enabling financial institutions to experiment and implement AI solutions on their own or in cooperation with Big Tech companies and start-ups.

[41] See. How AI will fuel ASEAN's trillion-dollar digital economy
[42] See. Why AI is Southeast Asia's new engine for profitable growth

Already back in 2018, MAS published the FEAT (Fairness, Ethics, Accountability, Transparency) principles intended to ensure fair, ethical, accountable and transparent use of AI[43].

With the generative AI explosion symbolised by the recent prevalence of ChatGPT, MAS supported the establishment of the MindForge consortium, whose tasks include identifying associated opportunities and risks. These efforts produced recommendations on generative AI, which were published in May 2024 and include supervision, risk management and development and implementation standards[44].

Recently, in early December 2024, MAS published the results of a thematic review of AI (including generative AI) model risk management practices in banks. The information paper[45] sets out good practices for AI and generative AI model risk management. MAS does not mandate but encourages all financial institutions to refer to these good practices when developing and implementing AI.

Initiatives to drive AI development also include the Ignition AI Accelerator supported by Tribe, Digital Industry Singapore (DISG) and NVIDIA. The global accelerator is intended to develop technical capabilities and expand AI application boundaries for start-ups[46]. The project encompasses training workshops, technical support and expert advisory to accelerate the development of AI products. Under the existing Financial Sector Technology and Innovation Grant Scheme (FSTI 3.0), in July 2024 MAS announced an additional commitment of approx. $75 million to support the development of quantum and AI technologies. The decision follows the May 2024 announcement of the National Quantum Strategy by the Singapore government[47].

From this brief summary, it should be clear that the financial market regulator in Singapore focuses on highly comprehensive stimulation of the entire ecosystem to develop and promote best practices, rather than on introducing strict regulations.

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[43] See. Mobilising ASEAN Capital Markets for Sustainable Growth

[44] See. Project MindForge

[45] See. Artificial Intelligence (AI) Model Risk Management

[46] See. New AI Accelerator launches in Singapore with industry support from Tribe, DISG and NVIDIA

[47] See. Singapore to Inject S$100M into Quantum and AI Development for Financial Services

ASEAN region

Looking more broadly at the whole region, you can see that the approach of regulators in the ASEAN region differs from the solutions implemented by their counterparts in the European Union and United States. In the case of ASEAN, regulations focus on ensuring flexibility and adaption to the specific needs of local markets.

Adopting an even broader perspective, we need to mention Australia that, similarly to many other countries, uses artificial intelligence (AI) to dynamically develop the financial sector. Australian banks, such as Commonwealth Bank of Australia (CBA), use AI for process automation, data analysis and improving the customer experience. AI is employed to detect fraud, analyse credit risk and personalize financial services[48]. A highly intriguing example of implementing generative AI in CBA is its involvement in chatbots, which made it possible to considerably improve response times and reduce fraud rates[48].

Australian Securities and Investments Commission (ASIC) monitors and regulates the use of AI in the financial sector. ASIC emphasises the significance of appropriate governance and supervision of AI systems to ensure their safe and ethical use[49]. ASIC warns about potential governance gaps that could arise from rapid AI deployment without an appropriate regulatory framework[49].

To sum up, the support of AI development in banking in the ASEAN region and Australia demonstrates how an innovative approach to regulations and technological support can contribute to the dynamic development of the financial sector and to raising the competitiveness and international standing of financial centres. The differences in the approach adopted by the ASEAN region, the EU and United States underline the importance of matching regulations to specific needs and conditions of local markets.

The table below presents the main aspects of various approaches to AI. The table also includes the examples of China and Thailand.

[48] See. Customer safety, convenience and recognition boosted by early implementation of Gen AI

[49] See. ASIC warns governance gap could emerge in first report on AI adoption by licensees

AI banking regulations in different regions

Region	Regulatory approach	Key elements	Unique aspects
European Union	Comprehensive, risk-based	AI Act, classification of AI systems by risk levels, data protection, transparency, responsibility	High-standard data protection, uniform rules across the EU
USA	Fragmentary, diversified	Different federal and state regulations, privacy protection, preventing discrimination, risk management	No uniform approach, regulations vary depending on the state
Singapore	Flexible, promoting innovation	FEAT (Fairness, Ethics, Accountability, Transparency) principles, regulatory sandboxes, Model AI Governance Framework	Strong innovation support, regulatory sandboxes facilitating the testing of new technologies
Thailand	In development, risk-based	Draft Royal Decree on AI systems, classification of AI systems by risk levels, regulatory sandboxes	High requirements for high-risk systems, innovation support through regulatory sandboxes
Australia	No general regulations, sector-specific regulations	Consumer protection, risk management, responsibility, transparency	No specific AI regulations, regulations based on existing consumer protection
China	Centralised, based on ethics and safety	Ethical standards, data protection, transparency, risk assessment, regulatory supervision	Strong government involvement, strict ethical and security standards, centralised management of AI development

[50] Source: own study

European good practice models of coooperation and labour market

Zuzanna Krauzowicz | Senior Lawyer, Future Finance Poland

Contemporary global challenges, such as ensuring appropriate technological development, shortages of qualified experts, ageing society or maintaining an appropriate level of competitiveness in relation to other countries, require countries to implement well-thought-out and comprehensive development strategies. In the face of increasingly complex challenges, many countries opt for innovative approaches and develop solutions that can inspire others. By analysing these initiatives, we can gain valuable tips enabling the adaptation of already proven solutions to Polish conditions, in areas such as: cooperation between public administration and business and science, international cooperation or the labour market.

Cooperation with public administration

Many strategies prioritize the implementation of AI in public administration, which aims to raise the efficiency of public service provision and improve resource management and transparency of administrative processes.

In January 2025, the UK Prime Minister, Keir Starmer, announced the AI Opportunities Action Plan, which assumes the creation of a National Data Library. According to the presented plan, it was recommended to identify and make available at least five high-value public datasets and develop guidelines for sharing open government datasets. Apart from this, it was also planned to take action to strategically shape the data collected – not only sharing existing ones, but also actively encouraging scientists and industry to share private collections[51].

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[51] See. AI Opportunities Action Plan

In May 2024, Spain adopted the 2024 AI Strategy. One of its three recommendation areas is to facilitate the expansion of AI in the public sector, including the creation of an innovation incubator aimed at identifying the possibilities of applying artificial intelligence models in public administration[52], and then making solutions available to the entire public administration. The Secretariat-General for Digital Administration (Secretaría General de Administración Digital; SGAD) will create a central hub of technological services for public administration entities. The strategy also assumes the creation of a knowledge bank on administration competencies.

In Austria, the AI Service Desk (KI-Servicestelle) was established in 2024 at the Austrian Regulatory Authority for Broadcasting and Telecommunications (Rundfunk und Telekom Regulierungs-GmbH; RTR). The Service Desk serves as a contact point and information hub for the public, organisations and companies on matters related to the AI Act. Its website will publish regulatory studies and information on national and international AI initiatives. Equipped with a knowledge base, the Service Desk is ultimately intended to serve as an educational resource for market surveillance authorities designated under the AI[53].

Cooperation between science and business

A key element of AI strategies in many countries is combining the potential of the efforts of scientists and businesses, on a daily basis looking for ways of using AI in optimization, expanding product offerings or personalizing services. Some countries are introducing special funds and grants to support projects and connect startups with research institutions, creating a space for synergy between knowledge and practice.

[52] See. Estrategia Inteligencia Artificial 2024, s. 43 i 44

[53] See. AI Service Desk

In February 2025, Ursula von der Leyen, President of the European Commission, announced the launch of InvestAI, an initiative aimed at allocating EUR 200 billion for investments in artificial intelligence, including a new European fund of EUR 20 billion for AI gigafactories. According to the presented plan, the European Union's InvestAI Fund will finance 4 gigafactories, the world's largest public-private partnership in the development of artificial intelligence, specialised in training large, complex AI models. The goal is to provide companies, regardless of their size, with access to the large-scale computing power needed to create an AI-powered future[54].

UK's AI Opportunities Action Plan, announced by Prime Minister Keir Starmer in January 2025, considers the skill gap size to be the priority, followed by supporting universities in developing new courses co-created with the industry, encouraging and promoting alternative domestic pathways in AI - through further education and internships, among others - and employer-led and independent upskilling. The plan also includes launching a prestigious scholarship programme, on the scale of Rhodes, Marshall or Fulbright, for AI undergraduate and graduate students who wish to study in the UK. It also identified the need to take steps to retain current researchers in the area, as countries that attract experts are expected to play an above-average role in the future of AI. A 3-step approach has been planned:

- establishing internal headhunting capabilities for public AI labs,
- exploring how the existing immigration system can be used to attract graduates from universities producing some of the best AI talent in the world,
- creating new Turing AI Pioneer Fellowships[55]

[54] See. EU launches InvestAI initiative to mobilise €200 billion of investment in artificial intelligence.

[55] See. Turing Artificial Intelligence Fellowships.

International cooperation

Countries recognise the need for global cooperation on AI, both in research and regulation. International partnerships enable the exchange of knowledge, the development of common standards and the countering of potential threats arising from AI's unregulated development.

The EU AI Champions Initiative was announced on 10 February 2025, a coalition intended to engage in a constructive dialogue with the European Commission and EU member state governments to create a radically simplified AI regulatory framework, which is expected to help unlock Europe's full potential in AI. The initiative brings together over 60 European companies, from start-ups to major players, committed to making Europe the global leader in AI development and application. It aims to create a positive vision of Europe by mobilising talent and capital, accelerating the adoption of AI in established industries and increasing the competitiveness of European companies[56].

These initiatives show how international cooperation can contribute to creating more integrated and effective technological solutions that benefit not only the involved countries, but also the entire AI ecosystem in Europe.

[56] See. The EU AI Champions Initiative

Regulations

Establishing clear and transparent AI regulations that ensure technological safety, personal data protection, anti-discrimination measures and ethical AI use is a priority in most strategies. The legal framework also aims to create a stable environment for investment and innovation. For example, the AI Opportunities Action Plan intends to:

cooperate with regulators to accelerate AI development in priority sectors and implement pro-innovation initiatives such as regulatory sandboxes,

require all regulators to publish annual reports on their activities supporting AI-driven innovation and growth in supervised sectors. In line with the presented plan and the need to ensure accountability, these reports should contain clear indicators such as: guideline publication timelines, deadlines for making licensing decisions and information on resources assigned to AI-related work.

Regardless of good intentions, if these changes do not contribute to promoting innovation, more radical changes are planned, including authorising a central body with a mandate and higher risk tolerance to promote innovation throughout the economy. The body in question could have the expertise and statutory powers to issue pilot licenses for AI products, override sectoral regulations in specific cases and take responsibility for associated risks. As indicated, this approach could initially be tested and piloted for specific, small-scale AI applications.

Summary

Countries such as Spain, Austria, United Kingdom and initiatives at the European Union level are taking comprehensive actions that effectively support the development of artificial intelligence, create favorable conditions for innovation and build solid foundations for international cooperation.

The conclusions from the above analyses point out the need to build a more integrated strategy in Poland that would connect public administration with the scientific and business sectors, while simultaneously promoting international cooperation. **Another key element is the development of clear legal regulations that will enable safe implementation of innovative technologies, while ensuring appropriate data protection and promoting the ethical use of artificial intelligence.**

Poland should focus on adapting best practices from other countries to effectively face the challenges related to the development of the labor market, technological innovations and global competitiveness. Integrating these actions will create a favorable environment for the development of AI, increasing professional competencies and supporting innovation in various sectors of the economy.

Legal regulations and challenges related to AI implementation in the financial sector

Legal regulations and challenges related to AI implementation in the financial sector

Tomasz Zalewski | Partner, Bird & Bird

In recent years, artificial intelligence (AI) has become one of the key elements of digital transformation in various sectors of the economy, including the financial sector.

AI offers a wide range of opportunities for use in the financial industry – from increasing operational efficiency to improving the quality of services. However, the development of AI use in the financial sector is hampered by controversies related to the specific character of the discussed technology. AI systems are non-deterministic by nature, which means that the output of their operations may be different each time and that it may be impossible to explain why a specific outcome was reached.

This is the fundamental difference compared to traditional computer programmes, which predominantly translates into significantly increased risk associated with using AI systems.

In other words, if you know the rules of data processing, you do not need to use AI. In turn, AI is especially helpful in an opposite scenario – when you have the input data and answers, but do not know the data processing rules that enable you to get the answers in question. In this case, an AI system can learn the rules based on provided examples.

Traditional computer programmes are created when the source code includes rules of processing data into a result. In consequence, they operate in a predictable and deterministic manner. On the other hand, AI systems are created in an entirely different way – by collecting many examples consisting of data and the results of their processing, which are analysed as part of machine learning to identify the rules of turning data into results.

The artificial intelligence technology thus enables the development of systems making it possible to solve problems that cannot be described with algorithmic methods. At the same time, AI does not describe these issues analogously to algorithmic methods. The result of AI operations (so-called AI training) is an AI model that owing to its complexity can only be examined by observing its operations, and not by analysing its structure, the way it is done in the case of traditional software.

This specific feature of AI systems means that their use always includes an element of risk. In consequence, analysis of this risk is an inherent element of AI use, and the risk extent and weight are strictly connected with the specific way of using AI systems.

This specificity has a considerable impact on the dynamics of using AI systems in the financial sector.

The use of AI technology also involves a range of other challenges, including issues related to ethics, privacy, data security and accountability for decisions made by AI systems.

These challenges inspired worldwide development of legal regulations intended to guarantee that the development and implementation of AI will take place in a safe way compliant with values protected in a given society.

In the European Union this work culminated in the publication of a regulation on artificial intelligence[57]. Commonly known as the AI Act. The EU legislator set the goal of creating regulations for AI systems that would not only protect consumers and users, but also facilitate innovations and competitiveness in artificial intelligence.

[57] See. Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending certain regulations

Importance of AI legal regulations for the financial sector

Legal regulations in the financial sector are intended to protect consumer interests, ensure stability of the financial system and prevent abuse. As a result, the financial sector is one of the most regulated economy branches, where great emphasis is placed on business risk management and ensuring regulatory compliance.

Legal regulations in the financial sector

protection
of clients'
interests

stability
of the financial
system

prevention
of abuse

The financial sector is one of the most
regulated sectors of the economy
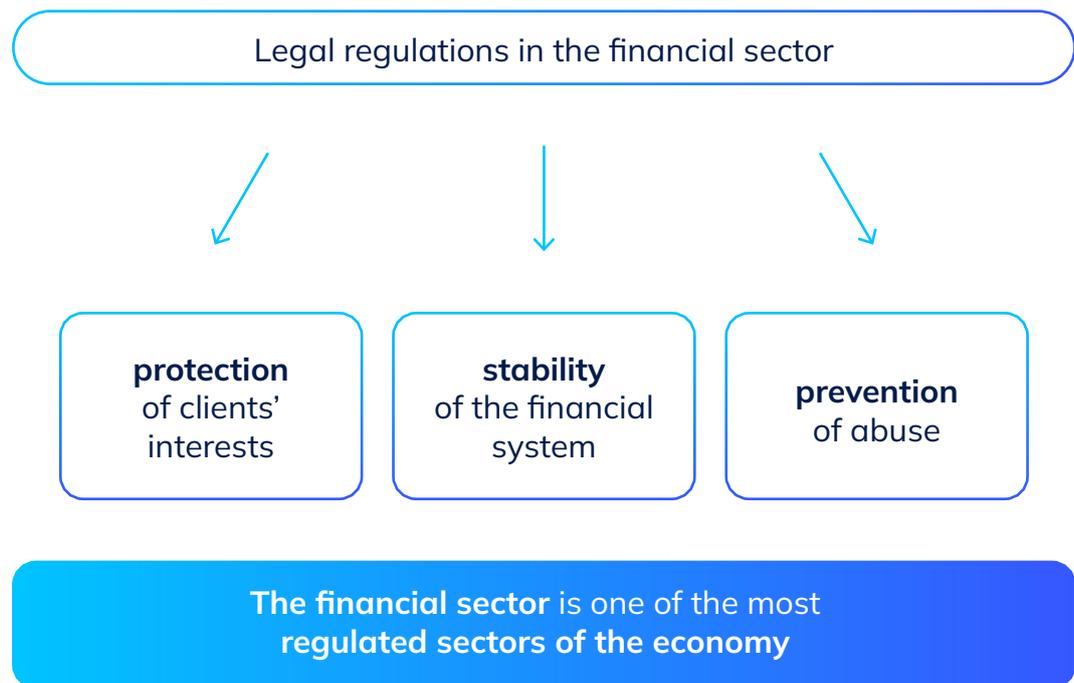
It should not come as a surprise that while financial institutions recognise the many opportunities related to AI systems, they need precise legal regulations to start employing the systems in question on a wider scale.

On the one hand, AI systems - due to the ability to derive rules from large data sets — seem to be perfectly tailored to risk analysis, fraud detection, personalization of services or optimisation of operational processes; on the other hand, the financial sector needs to be absolutely sure that the use of AI technology in these areas will comply with applicable regulations and will not lead to the emergence of new threats to financial entities.

The introduction of appropriate legal regulations on AI in the financial sector is thus a prerequisite required for widespread adoption of AI technology.

Impact of AI legal regulations on innovativeness and competitiveness

Regulations on artificial intelligence can have a considerable impact on the innovativeness and competitiveness of various economic sectors. They can both support the development of new technologies and create a challenge for companies that will have to adapt to new legal requirements.

From the perspective of the financial sector, the introduced regulations on AI systems have considerably more advantages than disadvantages. By ensuring high-level risk management, they make AI technology more reliable for both business owners and clients. As a result, the companies that follow the discussed regulations can build a responsible and reliable reputation, which creates their competitive advantage. Moreover, introduction of the AI Act as a regulation directly applicable in all EU member states facilitates cross-border activities and reduces barriers to entry into new markets.

The high compliance cost is an obvious disadvantage. Already now we know that the pace at which the AI Act was created and the scope of changes introduced during the legislative process resulted in very complex regulations that will have to be clarified though European Commission guidelines. As a result, they will represent a challenge for the financial sector that must continuously adapt its processes to legal requirements.
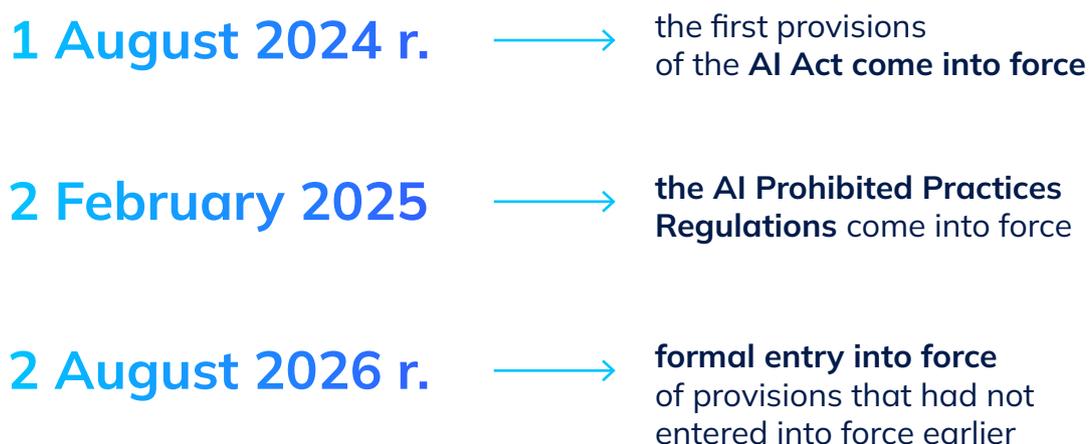
However, it is worth noting that the **AI Act** is a landmark legal act balancing the **protection of civil rights and the promotion of technology development**, which means that it may become a **global standard on artificial intelligence** and that international companies may ultimately also accept it as part of their **global strategy.**

Current legal regulations on AI in the financial sector

The AI Act is the basic legal act regulating the use of AI systems. Work is also underway on successive provisions in the form of the Artificial Intelligence Liability Directive, but the procedure is still at an early stage.

The AI Act came into force on 1 August 2024, but its provisions are coming into operation gradually — from 2 February 2025 (provisions on prohibited AI practices) to 2 August 2026 when the regulation will become fully applicable.

1 August 2024 r. ⟶ the first provisions of the **AI Act come into force**

2 February 2025 ⟶ the **AI Prohibited Practices Regulations** come into force

2 August 2026 r. ⟶ **formal entry into force** of provisions that had not entered into force earlier

The AI Act lays down harmonised rules of placing artificial intelligence on the market, putting it into service and using in the European Union. Its aim is to promote AI innovation and implementation, while simultaneously ensuring a high-level protection of health, safety and fundamental righ ts in the EU, including democracy and the rule of law.

While the AI Act is directly applicable in all EU member states, it requires local deployment in terms of creating appropriate law enforcement mechanisms, including supervisory authorities, control procedures and imposed penalties. In Poland, consultations are underway on a draft act that will implement the abovementioned principles into the Polish law.

The AI Act sets our rules for the entire life cycle of AI systems – from development to deployment. Its provisions are distinguished by a risk-based approach. In consequence, AI systems are classified by risk level and the vast majority of provisions are dedicated to high-risk systems

The AI Act defines four risk levels for AI systems.

1

Unacceptable risk:
all AI systems posing an unacceptable risk
for the EU fundamental rights and values are prohibited
under Article 5 of the AI Act.

2

High risk:
AI systems that can pose serious risk to health, safety
and fundamental rights are subject to an extensive set
of requirements and responsibilities. The systems are classified
as high-risk pursuant to Article 6 of the AI Act and annexes
I and III.

3

Transparency risk:
AI systems with limited transparency risk are subject
to transparency obligations under Article 50 of the AI Act.

4

Minimal or no risk:
AI systems classified as those with minimal or no risk
are not subject to any specific obligations. Compliance of providers
and users with codes of practices is recommended but voluntary.

While AI systems used in the banking sector can fall into any of these categories, it is expected that due to the risk level associated with various categories and the regulation's different complexity level for each system type, financial institutions will prioritize AI systems that pose minimal or no risk or transparency risk. The latter category includes, for example, the popular chatbots that support customer service and require only that affected natural persons are informed about interacting with AI systems.

Although it is difficult to picture the financial sector using prohibited AI systems that pose an unacceptable risk for the fundamental rights and values of the European Union, it is certainly necessary to eliminate such systems that could have been adopted earlier — for example, AI systems recognising emotions through voice analysis to supervise customer service centre employees (it is worth noting that the use of such systems to detect, for example, the negative emotions of customers calling the centre is not prohibited).

High-risk systems pose serious risk to health, safety and fundamental rights. The EU legislator decided that this category especially includes AI systems used to grant access to and enjoyment of essential public and private services. The list of such services includes two presently provided by the financial sector: evaluating creditworthiness and risk assessments in health and life insurance.

In consequence, the following systems meet the definition of high-risk systems:

- AI systems intended for the purposes of evaluating creditworthiness of natural persons or determining their credit scoring, except when detecting financial fraud;

- AI systems intended for use in risk assessments and pricing for natural persons in health and life insurance.

This list can change in the future as technology develops.

Challenges related to AI Act implementation

Since the AI Act is predominantly dedicated to regulations on high-risk AI systems, we can expect their implementation in the financial sector to progress slowly and be limited to situations when recognised benefits outweigh identified risks. To minimise the risk associated with the use of high-risk systems, financial institutions will first wait for the development of a full set of European Commission guidelines and good practices.

This is particularly important in relation to high-risk systems used to evaluate creditworthiness and assess risk in health and life insurance. Before a high-risk system is implemented, it will be necessary not only to meet many general requirements related to its use, but also to assess its potential impact on fundamental rights.

At present, general-purpose AI systems based on general-purpose models attract the greatest attention in the financial sector. The models in question are trained with a large amount of data using self-supervision at scale. They display significant generality and are capable of competently performing a wide range of distinct tasks regardless of the way the model was originally released on the market. They can be integrated into a variety of downstream systems or applications.

As a typical example of this category, generative artificial intelligence systems for text generation are based on large language models. It turned out that they also cope well with many business process tasks. Moreover, it was revealed that generative systems trained with a large amount of data usually perform better than systems trained with their own data (as demonstrated by the example of the BloombergGPT system[58]). Therefore, it is not necessary to invest in data engineering and build your own models if you are using ready-made models. Consequently, there is no need to collect large amounts of data the way it is done when creating your own models.

On the other hand, unlimited use of general-purpose AI systems in the banking sector is limited by a provision of Article 25 of the AI Act, which defines a high-risk AI system provider as anyone who modifies the intended purpose of an AI system, including a general-purpose AI system, in such a way that the AI system concerned becomes a high-risk AI system.

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[58] See. Are ChatGPT and GPT-4 General-Purpose Solvers for Financial Text Analytics? A Study on Several Typical Tasks

Importantly, the regulation does not make it clear if the intended purpose modification must be the result of a decision made by a given entity's board or if it is enough that its employee incidentally uses a general-purpose AI system. This means that you need to exercise great caution when using general-purpose AI systems when there can be serious risk to health, safety and fundamental rights as described in Annex III of the AI Act. As a result, it is necessary to create appropriate guidelines for the use of such systems in an organisation. An alternative is to accept the status of a high-risk AI system provider; however, this comes with many responsibilities.

One of the most important challenges for the financial sector also involves the complexity of regulations. The AI Act introduces a number of detailed requirements that can be difficult to understand and implement; in addition, the regulations will be complemented by subsequent guidelines and standards. Financial institutions will have to invest in training and development of competencies to ensure that their employees are aware of and understand the new regulations.

Approach of the financial sector

Current data from the U.S. market shows that the financial sector is rather cautious about using AI systems[59]. Banks use generative AI in more than half of declared use cases, but nearly all were internal. Client-facing tools remain the strict minority.

Half of all declared AI use cases are concentrated in two areas: customer engagement tools (e.g., chatbots that enhance user experience through personalized communisation) and knowledge access tools (e.g., rapid discovery and document summarization tools for financial analysts, access to internal regulations).

There are also many divergent opinions about how advanced business is in the use of AI. Goldman Sachs[60] estimates that only 6% of companies use AI, while according to McKinsey[61] of major companies do it.

[59] See The Brief - Data-driven insights and news on how banks are adopting AI – 4 use case trends for 2025

[60] See. Goldman Sachs sees limited AI adoption by firms

[61] See. The state of AI: How organizations are rewiring to capture value

Recommendations for the financial sector

AI systems are different from traditional IT tools in terms of their operations. Generative AI systems in particular call for a different approach, as they do not include a catalogue of predefined functionalities. This can be considered both an advantage and a disadvantage, as lack of expertise in the discussed systems and unfamiliarity with associated risk may lead to the emergence of threats.

Education is the key priority for the financial sector. Employees need to be aware of both regulations and risks and benefits associated with AI systems. Regular training and learning programmes can help build competencies indispensable for working in accordance with new regulations and for making the most of opportunities offered by the new tools.

Training and education is an obligation of all providers and deployers of AI systems (Article 4 of the AI Act). Pursuant to the regulations, these parties shall take measure to ensure, to their best extent, a sufficient level of literacy of their staff and other persons dealing with the operation and use of AI systems on their behalf, taking into account their technical knowledge, experience, education and training and the context the AI systems are to be used in, and considering the persons or groups of persons on whom the AI systems are to be used.

If a given organisation considers using AI systems to facilitate its operations, it needs to equip employees with safe AI systems (e.g., generative AI systems in a private cloud or existing infrastructure) and encourage them to experiment with AI. Employees need to know that the use of AI will not have a negative impact on their reputation and that the employer will appreciate their engagement. Access to AI systems, knowledge sharing, training and support at the highest levels of the organisation can help overcome this anxiety.

Research shows that, owing to their experience, senior managers have much greater potential to effectively use AI systems than their younger colleagues. Owing to their experience, they are better at assessing when an AI system provides valuable information and when it makes mistakes. Therefore, leaders should experience for themselves how AI systems work, instead of relying on external sources.

To respond quickly to new requirements, financial institutions must stay up to date with changes in AI regulations. This may include hiring compliance specialists or using consulting services.

They should also develop and implement advanced methods of assessing risk associated with the use of AI. The risk in question is different from that which occurs in the case of earlier technological systems[62]. This may include the creation of dedicated technological risk teams and using risk monitoring and analysis tools.

Institutions should also develop and implement internal guidelines on the use of AI that, on the one hand, will ensure compliance with the AI Act and further regulations and, on the other hand, can additionally promote responsible and fair practices (as an example, it is worth mentioning the obligation to indicate in internal communication what content was generated by an AI system and not verified by the sender).

It is also recommended to create working groups and trade associations that will act as platforms for exchanging information and jointly solving problems related to the regulation of AI systems, and for promoting good practices.

In summary, financial institutions must approach new AI regulations in a proactive and strategic way. It is key not only to comply with regulations, but also to use them as an opportunity to innovate and improve operational efficiency.

[62] An example may be the risk described in Article 14.4.b of the AI Act, which identifies the risk of potential tendency to automatically rely or over-rely on the output produced by a high-risk AI system (automation bias), in particular for high-risk AI systems used to provide information or recommendations for decisions to be taken by natural persons.

Expert's comment

Dominik Sadłakowski, PhD | Advisor, Accenture in Poland

The development of artificial intelligence is one of the key economic trends of the 21st century, encompassing an increasingly wide spectrum of industries, which leads to far-reaching market changes. The dynamic growth of the discussed technology affects both organisations and preferences of consumers who are increasingly willing to use AI-supported solutions in everyday life. AI also has a noticeable impact on the financial sector that many experts perceive as the first one to adopt technological innovations.

The market quickly recognised the business potential of employing artificial intelligence in data analysis, scoring and customer interaction. Financial institutions responded to this trend by setting up research and development teams and classifying AI technology as a pivotal component of their business strategy. Although the goal of actions related to AI development in the financial sector is clear and shared by most global market players, regulating the use of these solutions seems to be open to debate. In practice, artificial intelligence – similarly to all innovations in financial services – is subject to business and regulatory factors shaping the market environment for its development.

What measures has the European Union taken in this context? It established its actions on the foundation of developed strategies and complementary regulations. Following an adopted strategy, the EU assumes the creation of a single market based on data exchange, which is intended to boost economic innovativeness and contribute to the development of new services. In terms of applying artificial intelligence, the AI Act is a key element of the regulatory landscape. The regulation aims to ensure safe and ethical use of AI, while simultaneously promoting its adoption. It also clearly restricts full freedom of action in the use of AI by identifying so-called high-risk systems.

However, this does not change the fact that the use of artificial intelligence in the financial sector will systematically grow due to increased access to data resulting from other EU regulations. In this context, the Financial Data Access (FIDA) regulation seems to be crucial, requiring member states to create infrastructure for the exchange of consumer financial data. The complementary character of these regulations can contribute to creating an environment conducive to the development of new, advanced financial services and to optimising existing business processes. Access to huge customer datasets is a significant resource for AI models, enabling advanced analyses and scoring. The dynamic development of generative AI and natural language processing (NLP) models opens doors for new opportunities in automating customer service and financial consulting, including the employment of chatbots. This increases the ability of adapting the product offer to the individual needs of users, which enables more advanced customer interaction, along with the potential to automate back-office processes, boosting the operational effectiveness of financial institutions.

A comprehensive assessment of the observed market changes in the use of artificial intelligence means that reducing the problem of AI's market adoption to a 'regulate or deregulate' dilemma does not fully reflect its complexity. It is crucial to adopt a long-term strategy that, on the one hand, will not restrain market processes and, on the other hand, will ensure safe and standardized access to essential customer data, enabling further development of innovative solutions in the financial sector.

Regulatory trends (China – extent of regulation, United States, United Kingdom, Singapore)

accenture

Team of experts | Accenture in Poland

Lack of clear regulatory framework slows down using AI's full potential

Artificial intelligence (AI) is becoming a key factor shaping the future of the Polish financial sector. Senior managers recognise it as a tool to drive efficiency, improve customer relationships and create new value sources. This is also confirmed by Accenture research showing that 67% of respondents consider regulatory uncertainty to be an important barrier to investing in AI, and 83% of companies estimate that current regulations do not support the technology's effective implementation in the financial sector (Accenture report, 2024). Despite awareness of its potential, the lack of transparent, stable and clearly formulated regulations continues to hold back the full use of AI – as a result, only 6% of companies declare full readiness to meet the upcoming legal requirements.

Making regulatory challenges more concrete

There is more to this problem than general uncertainty. Financial institutions must meet the requirements of the explainability of AI decisions so that customers understand the criteria for granting loans or risk assessment. It is also necessary to comply with the GDPR, ensure the protection of personal data and respect the right of customers to human intervention in key decisions. Additional challenges involve the issues of assigning responsibility for mistakes made by AI systems and integrating risk management in dynamic learning models[62,63,64]. All this requires clear and flexible regulations that, on the one hand, will make implementation easier for institutions and, on the other hand, ensure consumer protection and market stability.

[62] See. Denmark FSA (2023), Guidance on the Use of AI in the Financial Sector in Denmark.

[63] See. Financial Stability Board (2024), AI in Finance: Implications for Financial Stability, FSB Report.

[64] See. European Banking Authority (2023), Report on the Use of Digital Platforms and AI in the EU Banking and Payments Sector, EBA Analysis.

Predictability and stability as a value growth catalyst

Well-balanced regulations are not only a 'safety net', but also a lever supporting the effective implementation of AI and improving return on investment. The research of global organisations, such as the International Monetary Fund (IMF) or the Bank for International Settlements (BIS), indicates that a predictable legal environment supports achieving economies of scale, more effective monetisation of implemented solutions and swifter adaptation to changing market conditions[65, 66]. Clear regulations reduce the risk of costly corrections and make it possible to treat AI as strategic capital, rather than a risky novelty.

KNF recognises the potential, but the market is waiting for specifics

Polish financial supervision institutions, including the Polish Financial Supervision Authority (Komisja Nadzoru Finansowego; KNF), increasingly often emphasise the strategic role of AI and understand that clear regulations are key to strengthening the sector's competitive character[67]. However, the lack of specific guidelines – for example, concerning standards of model explainability, risk management or responsibility assignment – gives rise to caution. Institutions are holding back on bolder initiatives, waiting for a stable and clear position.

Learning from international experience

Internationally, we can observe pro-active actions of regulators and government organisations that show that AI in the financial sector does not have to be synonymous with a conflict between safety and innovation. United States and the United Kingdom use regulatory sandboxes, allowing institutions to test AI in controlled conditions and consult stakeholders to work out optimal requirements. Thanks to FEAT principles and the Veritas initiative, Singapore developed practical methodologies helping in ethical and transparent implementation of AI, which increases trust, improves competitiveness and stabilises relationships with regulators. In turn, Canada merges strict requirements with flexibility, providing clear guidelines for responsible AI adaption, which favours investments and reduces risk[68, 69] (Veritas Case Studies).

[65] See. International Monetary Fund (2024), Fintech and Financial Stability: The Role of AI Governance, IMF Working Paper.

[66] See. Bank for International Settlements (2023), AI and the Financial System: Opportunities and Challenges, BIS Quarterly Review.

[67] See. European Central Bank (2024), Supervisory Bulletin on AI Adoption in European Financial Institutions, ECB Publication.

[68] See. Monetary Authority of Singapore (2022), Principles to Promote Fairness, Ethics, Accountability and Transparency in the Use of AI, MAS Guidelines.

[69] See. Bank of Canada & OSFI (2023), Guidance on Responsible AI Adoption in the Canadian Financial Sector, Joint Discussion Paper.

International organisations, such as OECD, FSB, IAIS or EBA, publish global standards, analyses and recommendations. Their efforts help identify key risks, define ethical practices and develop tools for implementing AI in accordance with the principles of responsible governance of data and models [70, 71, 72]. For Poland these experiences are a valuable source of readymade solutions and inspirations.

Poland as a potential leader of the CEE region

Poland has an opportunity to become the regional leader in AI regulations on the condition that it manages to use its assets — extensive technological ecosystem and growing competencies — to implement a legal framework supporting innovation and security[73, 74]. By adapting international patterns to the local reality, Poland can set standards in the region, attracting investors and building the reputation of a modern financial market.

Chances of charting a clear path

The introduction of clear, proportional and predictable regulations will enable Polish financial institutions to treat them as the foundation of a long-term value growth, rather than a barrier to innovation. AI will become a strategic element of development, supporting improved quality of services and strengthening Poland's local and international position. This will open the door to more effective implementation of new technologies and help Poland shape AI's financial sector future on its own terms.

[70] See. Financial Stability Board (2024), AI in Finance: Implications for Financial Stability, FSB Report.

[71] See. Organisation for Economic Co-operation and Development (OECD) (2023), AI Principles in Finance: Towards a Global Framework, OECD Policy Paper.

[72] See. European Banking Authority (2023), Report on the Use of Digital Platforms and AI in the EU Banking and Payments Sector, EBA Analysis. [Veritas Case Studies] Monetary Authority of Singapore (2023), FEAT Principles Assessment Case Studies, MAS Publication.

[73] See. International Monetary Fund (2024), Fintech and Financial Stability: The Role of AI Governance, IMF Working Paper.

[74] See. Bank for International Settlements (2023), AI and the Financial System: Opportunities and Challenges, BIS Quarterly Review.

Summary from the perspective of a financial institution

Agnieszka Ulanowska | Director, Internal Supervision and IT Security Division, Noble Funds TFI S.A.

The financial market is a specific market of high importance for the economy, having a significant impact on its stability and guaranteeing the security of financial resources of both institutions and individual citizens. There is no question that its operations require appropriate regulations that should ensure security and minimise excessive risk without limiting the sector's innovativeness and development potential.

In this situation, it remains a challenge how to find a balance between appropriate regulations and arising risks, while simultaneously making the market internationally competitive by enabling its further development.

Does the environment created by European and Polish regulations create such conditions for implementing new technologies?

The EU legislator issued the AI Act, the first extensive and comprehensive legal act aimed at creating a regulatory framework ensuring security, protection of fundamental rights of the citizens and promotion of AI innovations. In practice, this is synonymous with introducing regulations that will not only limit risks associated with the use of AI, but will also enable further responsible and transparent development of the technology.

The new AI regulations focus on:

the protection of civil rights (privacy, data security, prevention of discrimination, manipulation, excessive surveillance).

a diversified approach to risk (classification of systems by threats and impact on human life, for example, use in healthcare, transportation, banking, surveillance, manipulation, transparency), including approach to inacceptable risk and its appropriate management/supervision, as well as on the security and transparency of AI solutions.

security and transparency of AI solutions.

In addition to securing civil rights, the AI Act in fact imposes many responsibilities and requirements on creators of AI systems. In addition, the whole process should be appropriately managed and formalised. The creators in question bear the main burden of meeting quite strict requirements and regulatory responsibilities. Independent financial institutions implementing new AI solutions must follow existing requirements resulting from regulations directly impacting the financial market (industry regulations), which makes the whole procedure even more challenging.

In order to ease the requirements for newly established systems, the EU regulations on AI introduce special testing facilities that will let companies, especially start-ups, to test new technologies in a controlled environment under the supervision of relevant authorities. Solutions of this kind are intended to enable the development of new AI systems without the risk of irresponsible implementation. However, there is a concern that the new AI regulations may be too strict, costly and can slow down innovativeness (especially in the area of conducting analyses, risk management, creating additional testing facilities, etc.), and that the complicated certification processes can turn out to be excessively cost- and time-consuming.

On the other hand, overly moderate regulations may prove insufficient to effectively prevent threats resulting from the use of untested AI systems. In other words, it will be quite a challenge to balance the benefits, burdens and potential risks.

Every innovation evokes both enthusiasm and anxiety. In addition to generating additional risk, every change needs to be taken into account in the existing framework or solutions. The same holds true for new technologies.

It is worth keeping in mind that AI and other technological solutions (especially in the area of the financial market) are by definition a supporting mechanism/tool. Even though sometimes they may revolutionise processes, they remain tools, rather than the main process. New technologies are mostly used to optimise and improve processes. They do not change their fundamental operational rules. Financial market institutions not only have to continue fulfilling basic duties (providing customer service, carrying out product processes, adapting offers to clients, handling loan applications, making settlements, transfers and transactions, etc.), but also need to ensure compliance with law regulations, prevent money laundering, counteract sanction violations, comply with employee rights, identify risks or ensure business continuity. All these areas are strictly regulated, formalised and often require obtaining appropriate licenses. On many occasion, the rules in question result directly from EU regulations.

AI solutions are an additional layer over solutions earlier used by companies and binding standards. This is why financial institutions must adopt a broader perspective on AI implementation, which not only considers the operational angle, but also in terms of meeting many, sometimes vague, legal requirements. This is especially important as regulations from different areas often intertwine and specify each other, as well as overlap and duplicate highly similar obligations. This requires companies to have extensive experience and commitment, and to spend considerable financial outlay to accurately identify all the legal issues indispensable for AI's correct implementation (without distorting/damaging the earlier, appropriately arranged regulatory processes), as well as to successfully handle many interpretive doubts.

It is not easy to cope with a myriad of regulations and norms, when a financial institution is focused on the operational implementation of a tool supporting many different business processes. On many occasions, the implementation of even a simple AI solution calls for a broad and demanding analysis of, for example, civil law regulations on property rights and liability, commercial law, data processing (including personal data — GDPR), information security, business/trade secrets, confidential information (e.g., MAR), digital resilience/cyber security (DORA/NIS2), consumer protection (e.g., MiFID, complaints), copyrights (e.g., source code), intellectual property rights (e.g., protection of AI algorithms, data models), patent law, conflicts of interest, anti-discriminatory rules, transparency rules, risk management, sustainable development (e.g., ESG), money laundering prevention, tax law, business continuity, supervision of providers, obligations of reporting to government offices/supervisory authorities, and many others.

In addition, the main problem slowing down the financial market's development in Poland is not only the inordinate number of highly restrictive regulations, but also excessive expectations and overzealousness on the part of government offices and supervisory authorities, such as the Personal Data Protection Office, the General Inspector of Financial Information, the Office of Competition and Consumer Protection or the Polish Financial Supervision Authority.

Poland's tendency to 'overregulate' means that EU regulations are not only transferred to the national level, but often extended to include additional requirements. Government offices are often particularly scrupulous about checking details when formalising processes.

This is why financial institutions are often concerned about the reaction of government offices and supervisory authorities and the consequences of failing to comply with regulatory requirements. Fear of uncertain consequences, such as penalties or a negative supervisory evaluation, is the reason why many financial institutions prefer to stick to proven, traditional solutions instead of introducing innovative technologies. In consequence, they can lag behind their competitors, both domestic and international, which use the latest technological solutions in a more open and flexible regulatory environment.

Overly restrictive regulations and the approach of government offices create a situation in which financial institutions prioritize creating extensive documentation and meeting formal requirements, instead of taking actual actions related to the implementation of technological innovations, including artificial intelligence. As a result, instead of developing and implementing new solutions, institutions often limit themselves to minimizing penalty risk, which negatively affects the innovation dynamics of the Polish financial sector. Sometimes it may seem that supervisory authorities focus more on their own safety and avoiding accusations of lack of supervision than on a rational approach to regulations and the market. Overly detailed regulations lead to a rigid approach that makes it difficult to flexibly adapt the market to changing conditions.

In addition, government offices and supervisory bodies often issue guidelines or recommendations that they treat as binding, and in some cases apply other forms of pressure, such as the Risk Assessment Framework's supervisory assessment that impacts financial decisions, including the payment of dividends.

For the **Polish financial market to dynamically develop and compete at an international level,** it is necessary to create or, rather, review and **simplify regulations** so that they **will facilitate innovations**, while simultaneously providing institutions with adequate operating space.

The regulations in question must be flexible enough not to paralyse companies with fear of excessive supervision and possible penalties and, at the same time, ensure adequate protection of the market and consumers. Only such an environment will enable financial institutions to safely implement new technologies and make greater use of their potential.

Creating space for technology development in the financial sector is not synonymous with renouncing supervision, but rather with allowing institutions to implement innovative solutions themselves as part of general safety and responsibility principles.

To sum up, **regulations and supervision are essential** to ensure the stability and safety of the financial market. On the other hand, it is equally important that these **regulations do not impede the development of companies** and the entire market. **Supervision should play a protective role, ensuring regulatory compliance, but cannot act as a barrier preventing innovation or introduction of new technologies.**

Regulations as a business development opportunity – responsible approach to data use and analytics

Marek Wilczewski | Managing Director of Information, Data and Analytics Management, PZU Group

Artificial intelligence (AI) carries both potential benefits and challenges, such as issues related to data privacy, transparency, ethical use and safety. PZU Group approaches them in a conscious and responsible way, taking them into account for the purposes of developing and implementing solutions and extending the data governance policy to include analytics governance, including the AI Act, the Data Act and the Data Governance Act.

Today, PZU Group operates more than 300 analytical models. AI is used not only to automate and optimise internal processes, but also to improve experience of and relationships with present and potential clients. Importantly, the implemented solutions do not take full control of the process, but only act as suggestions and hints. The final decision is always made by a human – the client, employees or intermediaries.

New opportunities and new risk

Implementation of artificial intelligence (AI) on an increasingly large scale creates huge opportunities in each area of PZU Group operations. However, there are also risks associated with the use of AI systems. Some examples include:

- **black box effect** – details of the system's operations or inputs are invisible to the user;

- **complexity** – operations of the system and associated risks may be incomprehensible to the user;

- **bias (prejudice)** – the algorithm makes biased or discriminatory decisions;

- **unpredictability** – behaviour is impossible to precisely predict before running sample data;

- **autonomous behaviour** – operating independently without human intervention or supervision.

In PZU Group we build AI success in an ethical manner, relying on the four fundamental principles of the PZU Group Strategy:

1

INNOVATIVENESS
– as a market leader, we implement a wide range of AI systems from computer vision to generative AI in different business areas;

2

RESPONSIBILITY
– we are aware of and understand the negative consequences of using innovative AI systems, and we address them by adopting the responsible AI approach;

3

HONESTY
– we develop a culture of ethics and compliance by making our employees aware of the meaning of responsible governance of AI systems;

4

STABILITY
– we care about creating long-term value for Grupa PZU by maintaining the stability and quality of implemented AI systems.

Regulatory risk – management model

In August 2023, PZU SA and PZU Życie SA boards adopted the assumptions of an updated model of regulatory risk management, which addressed requirements resulting from the financial market's increasing regulation. Pursuant to the adopted model, risk owners are defined as individuals responsible for implemented AI models. Data governance coordinator carries out second-line support/leader activities, defining the framework for managing AI models.

At present, PZU Group is working on developing a uniform approach to the governance of AI systems. A working party was set up with the goal of presenting a gap analysis and a plan of adapting PZU Group to the AI Act, taking into account products, whose implementation is recommended due to a number of AI models-related benefits for PZU Group. Its scope of work includes resolving organisational and interpretation issues, introducing a register of models (including high-risk models or the context of use of AI models) and defining the processes for managing AI systems at each stage of their lifecycle.

A complete model of AI system governance includes:

1

Organisational supervision:
agreeing on roles and responsibilities necessary
to manage AI systems;

2

Principles of AI system governance:
agreeing on the rules of building and implementing AI systems
and monitoring their quality and value;

3

Ensuring compliance:
rules ensuring compliance with regulations on AI systems;

4

Organisational culture:
unification, standardisation and simplification of the AI glossary.
Improving transparency of existing systems and enabling faster
implementation of successive AI solutions in PZU Group.

Conclusions – how to be a leader

Strategic comment

Karol Mazurek | Managing Director, Financial Sector Leader, Accenture in Poland

Poland and AI – infrastructure of the future at a time of dynamic changes

The pace of changes of AI-based technologies has reached unprecedented levels. In the last 3 years, we have witnessed a sharp increase in investments in the computing infrastructure, a revolution in the architecture of models and strategic moves of biggest technology companies. Still, recent months have defined a new dynamic where the direction of AI's future development remains somewhat ambiguous. In a world where new breakthrough solutions emerge almost every few weeks, the ability to adapt and strategically plan is becoming a key success factor.

AI infrastructure and the race for computing power

The greatest challenge for the AI industry involves the availability of computing power and energy needed to power the infrastructure used for learning and running GenAI models. Tech giants are constantly competing for chip market supremacy. As a result, European economies — including Poland - are facing a strategic choice whether to stay independent in the field of AI calculations or partner up with global leaders.

Owing to its location, developed IT sector and engineering capabilities, Poland has the potential to become a key AI hub in the CEE region. Increased investment in data centres, development of AI software engineering and cooperation with international corporations can position us as a European tech hub. Still, it will be critical to create appropriate regulatory and infrastructural conditions, including support for AI start-ups, development of supercomputers and access to investment capital.

AI and productivity – new era of effectiveness?

In addition to infrastructure, a crucial aspect of AI's development involves its productivity impact. Automation of cognitive tasks, personalisation of customer interaction or implementation of autonomous decision-making systems represent only a part of the transformation redefining business operations. Already today organisations implementing GenAI are reporting effectiveness increase of 20-40%; however, the number one question is how quickly and on what scale we will be able to integrate AI with existing processes. The key factors here will be the availability of highly specialised models and their democratisation, along with the availability of experienced specialists capable of efficiently using new technologies.

20-40%

increase in efficiency
in organizations implementing GenAI

Strategic conclusions

The current moment is a **turning point in the history of AI** –the development of infrastructure and innovation pace make it necessary to **work out a long-term strategy**. Poland should prioritise the development of sovereign computing infrastructure and play an active role in the global AI ecosystem, while maximising the benefits of implementing AI in the private and public sector. In a medium-term perspective, the companies and organisations that optimally integrate AI with business process will gain the greatest competitive advantage.

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