Research on the impact of artificial intelligence on financial security in the context of modern technological challenges

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Abstract: The ambiguous nature of the consequences of introducing artificial intelligence necessitates the investigation of its benefits and risks in the context of financial security. This study aimed to assess the existing prospects and risks of introducing artificial intelligence in the financial security of companies and institutions and to develop mechanisms to mitigate the identified problems. The study employed the statistical method, the predictive method, the descriptive method, the methods of analysis and synthesis, and the qualitative method. The study identified the main promising areas for introducing artificial intelligence, including detecting anomalies, improving payment procedures, authenticating documents, minimizing errors, and providing advice on making the best investment decisions. The principal disadvantages identified included risks to the security of information and personal data, the risk of bias, injustice and discrimination, job displacement, and the loss of people's working skills. However, of particular concern are the long-term global consequences of artificial intelligence's impact on society as a whole and doubts about its ability to control it. To mitigate the identified risks, the study proposed to use the Senior Managers and Certification Regime (SM&CR) tool, which makes it possible to hold employees accountable for their behavior and competence. The need was also emphasized for the company's management to be fully aware of all aspects of artificial intelligence implementation, including its type, associated risks, opportunities, and impact on all stakeholders. The findings of this study can be helpful in the practice of companies and institutions planning to implement artificial intelligence to raise awareness of the benefits, risks, and their minimization.

Keywords: Innovation, Global trends, Machine learning, Risks, Information security, Bias.

Resumo: O carácter ambíguo das consequências da introdução da inteligência artificial obriga à investigação dos seus benefícios e riscos no contexto da segurança financeira. O objetivo deste estudo foi avaliar as perspetivas e os riscos existentes com a introdução da inteligência artificial na área da segurança financeira das empresas e instituições e desenvolver mecanismos de mitigação dos problemas identificados. O estudo utilizou o método estatístico, o método preditivo, o método descritivo, os métodos de análise e síntese e o método qualitativo. O estudo identificou as principais áreas promissoras para a introdução da inteligência artificial, incluindo a deteção de anomalias, a melhoria dos procedimentos de pagamento, a autenticação de documentos, a minimização de erros e o aconselhamento sobre as melhores decisões de investimento. As principais desvantagens identificadas incluem os riscos para a segurança da informação e dos dados pessoais, o risco de parcialidade, injustiça e discriminação, a deslocação de postos de trabalho e a perda de competências profissionais. Mas são particularmente preocupantes as consequências globais a longo prazo do impacto da inteligência artificial na sociedade em geral e as dúvidas sobre a capacidade de a controlar. Para atenuar os riscos identificados, o estudo propôs a utilização da ferramenta Senior Managers and Certification Regime (SM&CR), que permite responsabilizar os trabalhadores pelo seu comportamento e competência. Foi também salientada a necessidade de a direção da empresa estar plenamente consciente de todos os aspetos da implementação da inteligência artificial, incluindo o seu tipo, os riscos associados, as oportunidades e o impacto em todas as partes interessadas. As conclusões deste estudo podem ser úteis na prática das empresas e instituições que planeiam implementar a inteligência artificial para aumentar a sensibilização para os benefícios, os riscos e a sua minimização.

Palavras-Chave: Inovação, Tendências globais, Aprendizagem automática, Riscos, Segurança da informação, Preconceitos.

1. Introduction

In the most general sense, artificial intelligence (AI) is a data-driven technology that can mimic the functions of the human brain. Therefore, AI can perform specific tasks many times faster, cheaper, and more efficiently than humans. This explains the rapidly growing popularity of AI in all spheres of human life and activity and the critical concerns about this technology.

The future of AI is uncertain, and the risks known to date relate to such serious issues as data security and privacy, the possibility of bias, discrimination, injustice in decision-making, job displacement, loss of human skills, and the possibility of suboptimal decisions [1-3]. At the same time, AI cannot completely replace humans because AI loses out on matters requiring intuition, creativity, and life experience. The financial sector is one where creativity and experience play a substantial role. These characteristics are vital for successful financial managers and analysts; therefore, AI cannot entirely replace these professions. However, it performs well in a range of routine tasks, including those aimed at ensuring financial security. AI can calculate credit

risks, assess financial standing, build forecasts, detect anomalies and fraud, and verify documents.

Many scientific papers have covered the benefits, existing and potential risks of AI. Cao [4] classifies the challenges posed by using AI into several groups related to the following aspects: innovation, business complexity, organizational and operational complexity, human and social complexity, environmental complexity, regional and global challenges, data complexity, dynamic and integration complexity. Turchin and Denkenberger [5] classified global AI risks that could lead to catastrophic consequences and created several scenarios of a global disaster caused by AI. Global catastrophic disruptions can occur at any stage of AI development: before it starts to improve itself, during its rise, when it can use various tools to avoid being imprisoned, and after it spreads across the world and begins to implement its goal system. McLean et al. [6] share analogous opinions. Scientists have identified considerable existential risks of AI, including the possibility of getting out of control, developing dangerous goals, and developing dangerous AI with inappropriate ethics, values, and morality.

At the same time, a range of studies also point to the vast possibilities of AI. Specifically, Azarbekov [7] noted the capabilities of AI in processing large amounts of data, which allows for more informed decision-making, specifically in the field of economics. Sayakbayeva et al. [8] noted the substantial significance of technology in the development of the banking sector, which will ultimately contribute to economic growth and reduce the digital divide. Z. Abdrasulova and S. Abdrasulova [9] also noted the benefits for the banking sector, including convenience, practicality, variety of services, and cost savings. Seitova and Tynychkyzy [10] pointed out the importance of automation in improving the risk management of banking institutions. Khubieva and Yugai [11] emphasized the impact of introducing innovative technologies, such as reducing the number of employees, as this positively impacts the state budget, accelerating the rendering of services, and improving access to services. Azimov and Ismailova [12] noted the need to develop new financial institutions and instruments. The emergence of new types of financial investments is vital in the context of the introduction of digital technologies, including AI.

This suggests that AI does, admittedly, bring substantial benefits to companies and the economy as a whole, but its implementation should be approached with caution, given the potential risks. This study aimed to analyze the existing opportunities and risks of AI in the context of ensuring the financial security of institutions and organizations and to formulate proposals for minimizing risks based on the findings obtained. The objectives of the study to fulfill this purpose were as follows:

- to investigate current trends and areas of AI application in the financial sector, specifically in the context of ensuring the financial security of institutions and organizations;

- to identify the risks posed by AI to the financial security of institutions and organizations;

- to propose mechanisms to minimize the identified risks.

2. Materials and Methods

A comprehensive system of scientific methods was used to complete the objectives of this study. The method of statistical analysis combined with the forecasting technique helped improve the representativeness and visibility of the results. Using these methods, the study covered the current trends in the implementation of AI and provides forecasts of its further spread. Statistical analysis and forecasting methods were used to investigate the following indicators:

- the size of the Global Artificial Intelligence market (hardware, software, and services) [13];

- Global Generative AI in Financial Services Market (solutions and services) in USD million for 2022-2032 [14];

- the forecasted employment decline caused by the spread of AI, de-globalization, and sustainable development in the next five years (in percentage of employment and in million jobs) [15].

Separately, the statistical method was used to reflect the structure and trends of such indicators as British concerns about the growing role of AI (by the share of citizens expressing concern about specific problems of AI implementation, in percentage); AI implementation in the financial sector by area (by the share of companies that have implemented the relevant area, in percentage) in 2023; research and development (R&D) spending for five FinTech giants in billions of dollars for 2020-2012.

The study used the qualitative analysis of texts, specifically the text of documents published by the Bank of England, the Prudential Regulatory Authority (PRA), and the Financial Conduct Authority (FCA). This method helped collect and evaluate qualitative data, such as feedback and suggestions in the documents. These documents are DP5/22 [16] and FS2/23 [17].

The descriptive method played a significant role in the study. This method was used to characterize the existing possibilities for using AI and the risks it generates for financial security. The descriptive method helped to create a wealth of information on AI opportunities and risks, identify the key aspects, and properly interpret the results. This improved the understanding of the area under study and enabled the focus on the main elements in the context of financial security, separating irrelevant or less significant information.

The analysis and synthesis methods helped to formulate proposals for minimizing the identified risks to ensure financial security in the context of growing AI threats. The analysis helped

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identify the key elements of the problem under study and revealed the regularities of the phenomena. The synthesis method helped to formulate solutions to the issues identified and get a holistic view of the scale of the necessary actions.

3. Results

3.1. Assessment of AI capabilities in the field of financial security

AI is closely related to human intelligence's ability to learn and improve. It is a model of cognitive brain functions that uses computational algorithms to process information from the external environment or generated by the internal AI environment [18]. AI is increasingly penetrating all spheres of life, as it has a range of undeniable advantages, and failure to use it can lead to a competitive disadvantage for companies. The demand for AI can be confirmed by analyzing forecast data that indicates further growth of the global AI market (Figure 1).

Figure 1: Global Artificial Intelligence Market (hardware, services, software), billion USD
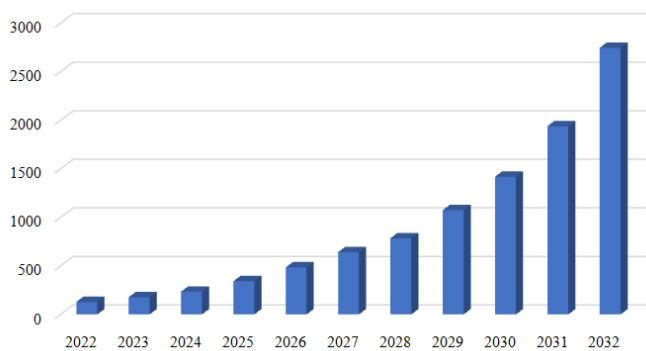
Source: compiled by the authors of this study based on Global Artificial Intelligence market by solution (hardware, software, and services), by technology (deep learning, machine learning, NLP), by end-use (manufacturing, healthcare, law, BFSI, advertising & media, retail, agriculture, automotive & transportation, other end-uses), by region and key companies – Industry segment outlook, market assessment, competition scenario, trends and forecast 2023-2032 (2024).

The financial sector is one of the areas where AI is being implemented at the fastest pace and has numerous applications. In financial services markets alone, expenditures on generative AI are projected to grow more than 11 times (in 2032 compared to 2022) (Figure 2).

Figure 2: Global Generative AI in Financial Services Market (solutions and services), billion USD
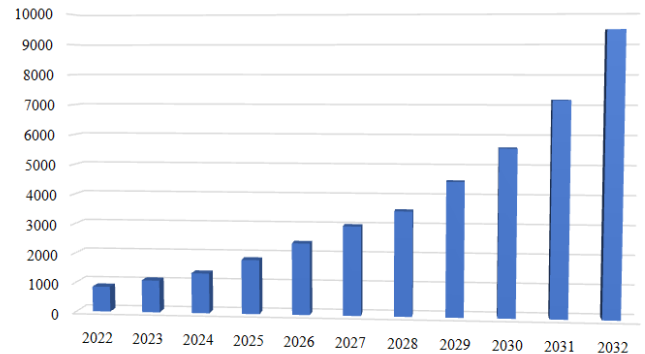
Source: compiled by the authors of this study based on Generative AI in financial services market revenue to be USD 9,475.2 Mn in 2032. North America dominates with 40 % of the market share (2023).

Generative AI is used to generate content, e.g., it can be used to create chatbots and virtual assistants for round-the-clock user support, which is widely implemented in the banking industry. However, generative AI is only one area of AI. In practice, AI in finance has a much more comprehensive range of tasks, including improving the quality of service, reducing the time required to perform routine processes through automation, assisting in decision-making, and risk analysis. Specifically, in 2022, AI was introduced in the financial sector in the following areas (Figure 3).

Figure 3: Implementation of AI in the financial sector in the following areas, percentage (%)
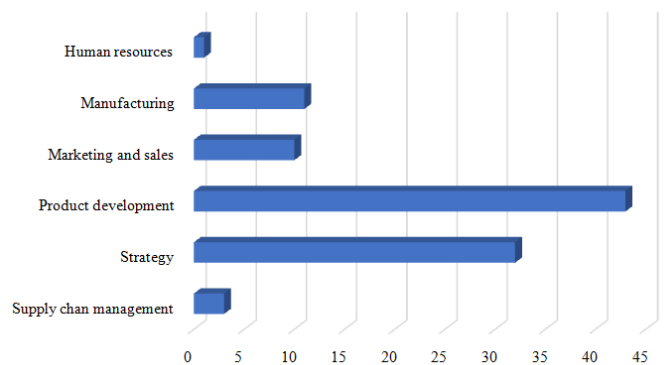
Source: compiled by the authors of this study based on Trenker et al. [19].

Among other things, AI can be used to ensure financial security and minimize risks. Ensuring financial security using AI involves machine learning (ML), which can be described as a subset of AI that allows obtaining a large amount of information and studying ways to implement specific tasks on its basis. The financial security ML may be aimed at solving one or more of the following tasks, such as anomaly detection. Anomalies can occur both due to certain accidents and as a result of illegal actions, including unauthorized account access or network intrusion, various forms of fraud, and money laundering. ML can detect

such anomalies due to its ability to obtain large amounts of information and compare variables. This allows for analyzing customer behavior and identifying inconsistencies in real-time:

1. Payment procedures. Besides improving routing, MLs can improve security during payment processing, such as determining whether two-step verification is required during a transaction.

2. Verification of documents. ML can recognize forged documents, distinguishing them from genuine ones based on the information available to it and its image recognition capabilities. It also substantially accelerates the processing and marking of documents.

3. Minimization of errors. AI can help avoid mistakes even skilled professionals can make, e.g., when entering information. In addition, ML is used to correct mistakes in trade settlements.

4. Providing consultations. Robot advisors can provide financial advice and offer portfolio management services. This can reduce investment risks if a potential investor lacks knowledge and their services are cheaper than those of specialists. Chatbots improve customer experience by providing high-quality feedback. They help with certain operations, accelerate information processing, and can record information provided by the client, including fraud attempts.

The opportunities offered by AI to ensure the financial security of banking institutions deserve special attention. Apart from the general tasks listed above, AI is widely used in this area for credit scoring, which enables an objective assessment of a client's solvency and the probability that they will be able to repay the loan [20]. AI can also perform a more in-depth check of customers – underwriting – to determine whether they are eligible for a loan or insurance services. Furthermore, once assessed, AI enables personalized offers, such as tailored loans, which can increase customer loyalty and protect the institution from losing customers.

AI substantially simplifies the investment valuation process, which usually requires complex calculations and the involvement of several teams of specialists and experts responsible for different aspects of the business. AI can handle false positives, i.e., when financial institutions mistakenly reject requests for legitimate financial transactions. This may be due to suspicion of misconduct that is not really occurring and leads to unjustified loss of revenue for financial institutions. AI is an effective tool in risk management that provides forecasts and quick alerts to certain changes and difficulties in real-time.

3.2. Analysing the risks associated with the use of AI

AI also carries considerable risks that affect the financial security sector along with a range of benefits. Since AI relies on information, the risks of its use are primarily concentrated around data privacy. This necessitates enhanced measures in cybersecurity and personal information protection. Another data-related risk is the reliability of the underlying data supporting AI. Bias and errors are a danger of making poor forecasts and decisions. Among other things, inadequate data can lead to ethical issues, such as discrimination and unfair results. Ethical issues can be compounded by legal ones, e.g., concerning the copyright of the result. It is also worth considering the probability of technical failures inherent in technology in general.

The loss of jobs is often identified in scientific studies as a problem with using AI. At the same time, AI, on the one hand, cannot completely replace humans in practice, and on the other hand, it creates new jobs. For instance, its capabilities are limited when conducting complex financial analyses requiring life experience and intuitive decisions. However, according to the forecasts set out in the World Economic Forum [15], 69 million jobs will be created over the next five years, while 83 million will be eliminated (based on data for 45 countries). That is, there will be a staff reduction of 14 million (2.0 % of employment), driven by AI and other global trends (de-globalisation, sustainable development).

Another problem is that specialists using AI may lose their skills by relying on automation. This can influence decision-making, which may not always be optimal. Notably, AI has no emotional intelligence, no moral convictions of its own, and its creativity is limited. Its reliance on the data it has been trained on can lead to inaccurate results when new problems arise. Therefore, employees should use this technology in a balanced and moderate way. These and other problems are reflected in a survey conducted among the British [21]. Citizens were asked to share their main concerns about the growing role of AI (Figure 4).

Figure 4: British concerns about the growing role of AI
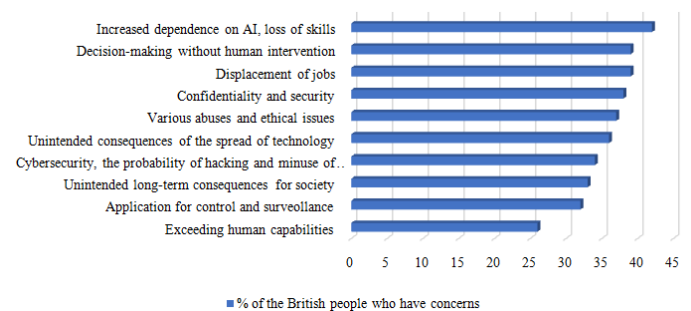
Source: compiled by the authors of this study based on Pratt [21].

The identified risks may directly or indirectly affect the financial security of institutions and organizations. Besides direct dependence (e.g., if AI makes a poor forecast or conducts an

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incomplete financial analysis), AI also indirectly affects financial security. Ethical issues can lead to the loss of customers or a deterioration in the company's reputation, which can cause losses. At the same time, introducing AI is an integral trend in financial systems, and competitiveness depends on it. This is evidenced, among other things, by the trend of global giants spending on AI. Figure 5 shows the expenditures of five globally renowned FinTech companies on AI R&D.

Figure 5: R&D spending, billion USD
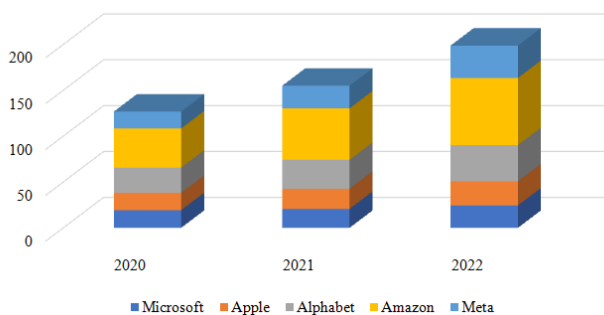
Source: Compiled by the authors of this study based on Trenker et al. [19].

Thus, the impact of AI on financial security can be direct and indirect, but the risks it generates are substantial. These risks are difficult to avoid because even if a company refuses to implement AI in-house, it may need to use third-party AI. By actively implementing AI, giant companies are setting the trend for the entire industry, leading to the search for appropriate solutions to help them survive in the competition. Considering the above, there is a need to develop proper mechanisms to protect against potential AI threats.

3.3. Suggestions for improving mechanisms to protect against potential threats

Turning to the UK experience, it is worth noting the discussion paper published by the Bank of England jointly with the PRA and FCA [16]. The document requested feedback on what opportunities regulators have to ensure the safe implementation of AI in the financial sector. Feedback from the PRA and FCA was provided by FS2/23 [17]. The report contained the following discussion points:

- AI regulation is overly complex and fragmented, requiring coordinated action by both national and international regulators;

- the solution to the problems of bias and potential injustice lies in the introduction of appropriate uniformity;

- consumer outcomes are of paramount importance, including in matters of ethics and fairness;

- existing governance structures, including regulatory frameworks, such as the Senior Managers and Certification Regime (SM&CR), may be sufficient to address the risks posed by AI.

The SM&CR tool mentioned above aims to reduce harm to users and ensure market integrity by making staff more accountable for their behavior and competence. This implies that companies and regulators use specific mechanisms to enable accountability. Using SM&CR encourages employees to improve their behavior at all levels and provides a clear understanding of tasks and opportunities to demonstrate their work.

Another essential way to counteract AI risks is for companies to be fully aware of the type of AI, its functions, potential risks, and its impact on customers, counterparties, the company, and the market as a whole. This involves identifying those responsible for implementing, using, and updating AI, setting restrictions on its use, and ensuring proper control and compliance with legal regulations [22]. Furthermore, it is necessary to work out how to handle various errors and failure types. These tasks may require the assistance of experts. In addition, the gradual introduction of AI and its testing on limited amounts of information may be safer.

Ensuring data security is the clearest and most critical task, which can lead to insufficient attention to ethical issues. Therefore, the issue of compliance with the diversity, equity, and inclusion (DEI) principles is becoming increasingly significant. An example of AI bias is the algorithm used by Amazon to select employees for positions. The database on which this algorithm was trained was dominated by men, and therefore, the AI concluded that they were more suitable for the selection, thus discriminating against women. Eventually, the company abandoned the algorithm. A possible way to counteract such risks is to carefully select and diversify the data on which AI learns. However, this does not entirely exclude the possibility of bias, and therefore, it is also necessary to conduct ongoing monitoring and assess the social impact.

5. Discussion

The study showed that the further spread of AI, specifically in the financial sector, is driven by the objective of survival in the competitive struggle. This is explained by AI's substantial benefits to companies and banks: it is a valuable tool that accelerates routine processes many times over, considerably increases customer loyalty, saves money, optimizes decision-making, and performs various data operations. AI is widely used to enhance financial security through its ability to detect anomalies, improve and strengthen the security of payment procedures, verify documents, minimize errors, and provide advice. At the same time, the use of AI is associated with substantial financial security risks, including data security and privacy risks, possible bias, discrimination, injustice, over-reliance on AI by professionals, loss of job skills, and uncertainty about future consequences.

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The proposed mechanisms for overcoming AI risks to financial security include the use of the SM&CR tool, ensuring that companies are fully aware of the introduction and use of AI, including risks and ways to overcome them, and protecting AI from possible bias by selecting and diversifying information for its training and continuous monitoring.

A comparison of the results obtained with the proposals of other researchers helped confirm the feasibility of the proposals made and increased the value of this study by identifying unexplored aspects. First, in many studies, introducing AI is considered an absolute advantage and a prospect for the future. Truby [23] and Galaz et al. [24] revealed the connection and opportunities of AI in achieving the Sustainable Development Goals (SDGs). Shanmuganathan [25] covered the benefits of AI directly in the financial sector; specifically, the researcher noted the role of robo-advisors and their capabilities in optimizing investment decisions. Dowling and Lucey [26] concluded that the popular AI-based ChatGPT technology can be effectively applied to financial research. Mhlanga [27] noted the role of AI in increasing financial inclusion through improved credit risk assessment. Bao et al. [28] and Al-Hashedi and Magalingam [29] emphasized the role of AI in combating fraud, specifically financial fraud. The present study notes these and other advantages above. At the same time, the role of AI, in the author's opinion, is fully revealed only due to the risks of its implementation, both current and potential.

In terms of the role of AI in competition, which is repeatedly mentioned in the author's study, A. Ashta and H. Herrmann [30] show that the proliferation of AI has prompted some financial service providers to mergers and acquisitions. They were forced to do so to withstand the uncertainty of its consequences and ambiguity. According to scientists, the main advantages of AI are cost reduction and increased differentiation. The key sources of risks are unrepresentative data, the possibility of bias inherent in representative data, and subjective human views interpreted by AI. To minimize such risks, researchers believe that a careful distribution of tasks between humans and AI is effective. This idea is reflected in the present study in the part that discusses the risk of over-reliance on automation and the risk of losing job skills.

When reviewing the study by El Hajj and Hammoud [31], the list of obstacles and risks associated with AI identified in the present study can be supplemented by such barriers as high implementation costs, limited data, infrastructure imperfections, and regulatory compliance. In line with the identified risks, the researchers reveal some mechanisms to minimize them. Thus, while recognizing regulatory provisions as critical determinants in AI, scientists have noted that these provisions should be constantly adapted according to technological scenarios. Furthermore, the study considered the ethical and social issues generated by AI. The researchers also noted the risk of jobs being displaced by AI but assumed, as in the present study, that AI would create new jobs. Financial professionals must constantly adapt their skills and recognize the need for lifelong learning to keep up with the ever-changing environment. The author of the present study believes this view is worthy of special attention since the rapid development of technology necessitates continuous improvement, which cannot be achieved by limiting oneself to the programs of educational institutions. At the same time, Krause [32] considered updating the curriculum for future financial analysts to include information on AI. Such programs should develop the skills to follow ethical standards, make sound decisions in the field of AI, and develop innovations in finance. The researcher proposed to solve the problem of the need to adapt to rapid changes and constant development of technologies by introducing courses aimed at fostering a type of thinking that perceives lifelong learning as an integral part of life. The author of the present study believes that this approach partially solves the problem of job losses due to AI and some ethical issues.

Dwivedi et al. [33] covered the enormous impact of AI on a range of industries – finance, manufacturing, medicine, supply chains, logistics, and retail, among other sectors. The researchers were wary of the future consequences of AI implementation, raising crucial questions that are still unanswered. Specifically, is the concept of promoting workers to high-skilled jobs with the introduction of AI universal for all countries? How will regulators control AI? What are the cultural and societal implications? Will AI be able to navigate the uncertainty inherent in human relationships? Will technology be used to improve people's lives and bring about justice? The researchers' thesis was especially urgent regarding the risk that a part of society may be deprived of the right to use AI technologies in the future. The researchers' conclusions confirmed the author's position on the need for the most thorough assessment of the risks of AI implementation, including determining its impact on all aspects of people's lives and activities.

The possibilities of applying AI in the banking sector have been demonstrated in many studies; Königstorfer and Thalmann [34] concluded that AI can be implemented in all major areas of banking. AI is used to create forecasts, more accurate credit risk models, improve service, combat fraud, forecast cash demand, and improve risk management. While the author of the present study agrees that AI brings undoubted benefits to the financial sector, he does not share excessive optimism about its rapid implementation in all areas of activity. Major decisions, such as automating certain activities with AI, should be carefully considered and will likely require a gradual rollout.

Some studies reveal concrete areas of AI implementation by financial institutions. Mhlanga [35] focuses on credit risk assessment, where AI can play a role in addressing the lack of financial inclusion. In the researcher's opinion, the problem is that people with insufficient credit ratings in emerging markets cannot access certain financial services. The solution lies in introducing AI and ML, as these technologies substantially impact credit risk assessment through alternative data sources and evaluation

of customer behavior. This solves the problem of information asymmetry and unfavorable decisions. The study recommends that banks invest more in AI. From the perspective of the author of the present study, such a recommendation is premature until a detailed analysis of the risks of AI implementation has been carried out.

Along with banking institutions, AI is widely used to assess companies' financial security. Melnychenko [36] noted that the assessment of financial security based solely on the economic performance of companies may be inaccurate due to the lack of a comprehensive approach. The calculated indicators can provide only a superficial understanding of the state of financial security or even distort the actual situation. The researcher also pointed out the limitations of expert opinion, which are subjective cognitive limitations. The researcher notes that free from such restrictions, AI could potentially impartially assess the state of financial security. However, it has a substantial drawback – AI only imitates human behavior; it cannot think and predict independently. This leads to the conclusion that AI cannot completely replace human labor. The author's study on this issue also noted that AI cannot, for instance, perform complex financial analysis. Therefore, in the author's opinion, technology can act as an assistant to a specialist, i.e., it is necessary to carefully distribute the tasks performed by AI and those that should be left to the discretion of a human.

Conclusions

The spread of AI is a hot topic in scientific and technological discourse. The main controversy stems from the uncertainty of AI's impact, especially in the long term, as the technology brings benefits and risks. Moreover, both the benefits and dangers of AI can have profound global consequences for society.

Optimistic expectations about the benefits of AI in the financial sector are understandable in the context of this technology's undeniable advantages. Specifically, to ensure the financial security of institutions and organizations, AI can be useful for detecting anomalies, optimizing and enhancing the security of payment procedures, verifying documents and detecting counterfeits, minimizing errors of various kinds, providing advice for making less risky investments and other decisions, conducting financial analysis and making forecasts. Critics of the technology cite the increased danger to data security and private information, the risk of abuse, the high likelihood of bias, injustice, discrimination, the possibility of job displacement, and the loss of people's working skills. More serious concerns about the risks of AI relate to the possibility of its use for surveillance and control, AI surpassing human capabilities, and, ultimately, AI getting out of human control.

The present study proposed some solutions to mitigate the potential risks of AI. Namely, the study considered the SM&CR tool, which allows employees to be held accountable for their behavior and competence. This is a possible solution to the

ethical issues that may arise during AI development and use. The proposed tool can help solve the problem of compliance with the DEI principles. Experts should be responsible for choosing the information on which AI learns, carefully monitoring, and evaluating its social impact.

An essential recommendation for companies implementing AI is to ensure they are fully aware of the opportunities and risks of the concrete technology they want to use. The information that must be known before implementing AI relates to its type, functions, and impact on customers, counterparties, the company, and the market. The introduction of AI should be accompanied by identifying responsible persons at all levels, establishing restrictions (for instance, a clear delineation of functions performed by AI and those conducted by humans), and compliance with legal requirements. It is vital to develop scenarios for handling failures of various origins. Often, an effective risk mitigation measure is the gradual introduction of AI, which will allow it to be tested on a limited amount of information. Further research should focus on developing a model for gradually introducing AI into a company's operations, including defining goals, relevant stages, responsible individuals, and risk assessment.

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