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Artificial intelligence and its role in the labor market and financial sector itself: US point of view

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Abstract: The article examines the role and impact of artificial intelligence (AI) in the financial sector to determine its impact on the future workforce and the US's pivotal role in shaping technology trends around the world. Drawing from labor economics and sociology, it analyzes how AI adoption affects job roles, skills demanded, and employment patterns in the financial industry. The work analyzes the current state of the use of AI in finance, examines its impact on changes in labor markets and employment structure, and identifies key factors shaping the development of the financial sector under the influence of technological innovation.

Keywords: Artificial Intelligence, innovation, labor market effects.

1. Introduction

Innovation looks different to everyone. Innovation means doing something new in one place, but it might be seen as normal in another place. Modern finance teams want to try new and advanced technologies like digital assistants, artificial intelligence, and natural language processing. But there are also many benefits to using older innovations from the past few years. Artificial Intelligence has brought new ways for banks and finance companies to meet customers' needs for smarter, safer, and more convenient ways to access, spend, save, and invest money.

Artificial intelligence is being used more and more in finance for things like managing assets, trading using algorithms, evaluating credit, and using blockchain for finance. This is possible because there is a lot of data available and computers are now cheaper. Machine learning models use a lot of data to learn and get better at predicting things on their own, without humans having to tell them what to do.

Using AI in finance will help financial companies do better than their competitors. It will make them work faster and cheaper, and improve the services they offer to customers. This also means that these advantages can help people who use financial services by giving them better products, using information to make smarter investments, and helping more people access financial services by looking at their credit history. Small businesses can use a thin file to apply for loans.

For years it was a common misconception that Artificial Intelligence would remove the human aspect from the business. But, in reality, AI is an opportunity to deepen those already-strong member relationships and say "yes" a lot more. Artificial Intelligence can automate and improve services delivered to members while improving the bottom line.

The purpose of the article is to determine the role of artificial intelligence in the financial sector and its impact on future jobs, as well as to identify the key role of US influence on AI technologies and the mood of the world.

2. Theoretical framework of the research

While AI offers many benefits, there are significant challenges for its implementation in the financial industry. These include data privacy concerns, lack of understanding and trust in AI systems, high costs associated with AI implementation and maintenance, and regulatory compliance concerns. Additionally, the technology requires a cultural shift within organizations to fully embrace its potential.

Drawing from labor economics and sociology, labor market effect perspective examines how AI adoption in the financial sector affects employment patterns, job roles, and skills demanded. It explores whether AI leads to job displacement, job polarization, or new job creation. Additionally, it considers the potential for skill upskilling or reskilling among financial sector employees to adapt to AI-driven changes.The need for such a framework stems not only from the importance of understanding how and when automation will transform the labor market, but also from the fact that similar claims have been made, but have not always come true, about previous waves of new technologies [1].

Nowadays, as mechanical robots, computerized innovations, computer-controlled machines, and fake insights supplant labor, we are once more seeing the rise of unused assignments extending from building and programming capacities to those performed by audio-visual pros, information chairmen and investigators, assembly organizers, and social specialists.

The Labor Market Effects theoretical framework analyzes how the selection of Artificial Intelligence (AI) within the money related division impacts business elements, work parts, and the expertise prerequisites of workers. AI selection may lead to more prominent labor advertised adaptability as representatives adjust to changing work parts and ability prerequisites. Specialists who are uprooted may move to modern businesses or occupations exterior the budgetary division. Arrangements that back labor showcase portability, such as work preparing programs, career counseling, and unemployment benefits, can offer assistance, encourage moves and moderate the negative results of AI-driven work uprooting.

By analyzing these labor showcase impacts, analysts can better understand how AI appropriation reshapes work designs, work structures, and the labor advertisement flow of the money related division. This framework makes a difference policymakers, managers, and specialists expect and react to the openings and challenges postured by AI-driven automation.

3. Research methodology

Research into the impact of artificial intelligence (AI) on the financial sector and its employees is an important area of research in the modern world. With the advancement of AI technologies such as machine learning, neural networks and deep learning algorithms, there is a need to understand how these technologies will change traditional workflows in the financial sector. In particular, one issue that is attracting the attention of researchers and practitioners is whether AI can completely or partially replace financiers in their current responsibilities.

The impact of automation and intelligent technologies on human work as one of the most important issues in contemporary societies was fully represented and studied by Tom Davenport [2]. Twenty-nine cases completed studies of people doing their everyday work with AI-enabled smart

machines. Twenty-three of these examples were from North America, mostly in the US. Six were from Southeast Asia, mostly in Singapore. In this essay, he compared findings on job and workplace impacts to those reported in the MIT Task Force on the Work of the Future report, which he considers to be the most comprehensive recent study on this topic.

The relationship between AI and people and their cooperation were established by academics Thomas H. Davenport and Nick Polson. Their study makes several common AI concepts more sticky and real by:

1. Explaining the math behind the concept with easy to understand examples.
2. Tying the concepts to interesting historical characters and AI anecdotes.
3. Linking back to current advances and examples in AI.

There is a wide range of literature on the impact of AI on the financial sector. However, despite a large amount of research, many uncertainties remain regarding the prospects for the replacement of financiers by AI and the possible consequences of this process for the labor market and the economy as a whole.

However, in an era of rapidly evolving digital technologies Daron Acemoglu and Pascual Restrepo (2018) examined the concerns that new technologies will render labor redundant in a framework in which tasks previously performed by labor can be automated and new versions of existing tasks, in which labor has a comparative advantage, can be created. In a static version where capital is fixed and technology is exogenous, automation reduces employment and the labor share, and may even reduce wages, while the creation of new tasks has the opposite effects. Their full model endogenizes capital accumulation and the direction of research toward automation and the creation of new tasks. If the long-run rental rate of capital relative to the wage is sufficiently low, the long-run equilibrium involves automation of all tasks.

In light of this, researchers have become increasingly interested in the specific effects of AI and James Barrat, author of Our Final Invention: Artificial Intelligence and the End of the Human Era shared insights into his book after interviewed a variety of experts from various technology fields including AI researcher Eliezer Yudkowsky and noted technology futurist Ray Kurzweil. His sources included a wide list of big names, and what's most notable is that each of them had something incredibly different to say about AI technology and what a future with AI might look like.

This research methodology outlines a systematic approach to conducting a literature review on the impact of AI on the financial sector and its employees from the US point of view, identifying current trends, challenges and prospects in this area. By employing rigorous data collection and analysis procedures, the study aims to provide valuable insights into current trends, challenges, and opportunities in this rapidly evolving domain.

4. Analysis of research results

Main key is to define the best ways for using AI in our own business, starting from small businesses and mainly corporations all over the world. As there are many known and implemented innovation tools in the financial market it is crucial to pay attention to the latest of those.

AI made huge changes not only in the financial sector but in everyday life as well. Starting with the simplest steps on the personal level it is much easier to implement it in business and improve the work schedule, reducing the time spended for tasks that could be automated. The question is whether it is possible to control it and whose responsibility it would be.

The concept of artificial intelligence (AI) has been around for decades, but it's challenging to pinpoint the first company to use AI since the development of AI has been a gradual process with contributions from various researchers and organizations. However, one of the earliest companies to heavily invest in AI research and development was IBM [3].

While IBM is often associated with early AI efforts, it's essential to recognize that AI research and development involved contributions from many researchers and institutions over the years. The

field has evolved significantly, with numerous companies incorporating AI technologies into their products and services today.

Comparing the market and companies using AI it would be difficult to find a well-known corporation not using AI for its own business purposes. The top AI companies are leading the way in developing and deploying cutting-edge artificial intelligence applications across nearly every sector, from healthcare and finance to e-commerce, cybersecurity, and manufacturing.

These AI companies are shaping the future of these diverse industries by demonstrating how AI can solve real-world problems and generate positive impact through various applications, such as diagnosing diseases and detecting fraud, optimizing supply chains, and personalizing customer experiences. IBM is an American company and has essentially shifted the world market towards new technologies and opportunities, and one of its tasks is to determine the distribution of the world's top companies. Figure 1 shows the top 100 AI companies taking into account their business center based on the summary of Kezia Grace Jungco [4].

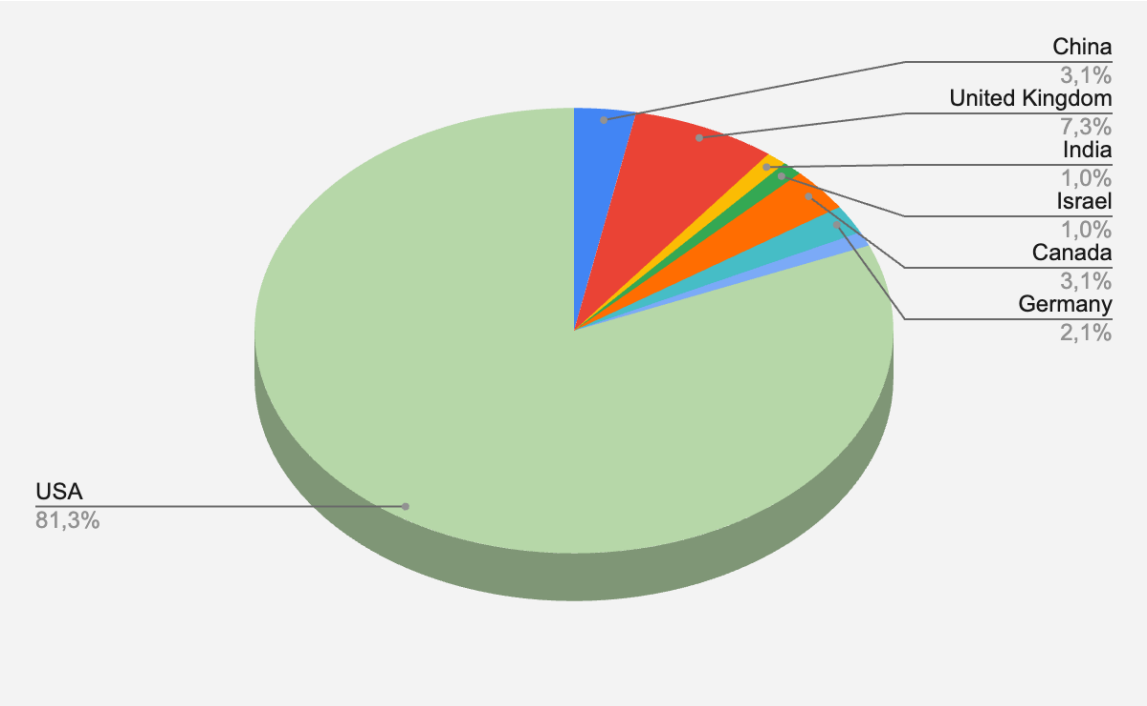

Figure 1. Top 100 AI Companies Trendsetting in 2024.

As we can see, the USA is the leader in this industry and most of the most famous companies are located or were created there. Just like the entire global community, it is important to find out how Americans differ from other people with regard to the impact of AI on professional activities, be it the financial sector or any other.

Artificial intelligence can help machines do tasks on their own, make decisions, and improve how services are given. For instance, AI can assist a company that processes payments in making their computer system more secure by always watching and studying the data that moves through the network. Or, it may make a bank's customer service better by creating more unique and convenient digital banking options that help customers faster and more safely.

AI can help financial companies avoid mistakes when processing data, documents, and customer interactions by using automation and algorithms that follow the same steps every time. It also can understand a lot of information really fast and can find patterns and connections in data that people might not notice. This means we can get information more quickly to help us make decisions, communicate with others, plan for risks, follow rules, and do other important tasks. Being able to look at a lot of information fast can help create new and different products and services that are better than what other companies have.

As for the financial market it is mainly hard to define whether companies are using AI for business purposes and they are not obliged to share information whether they use it or not. Unless it is a company performance and marketing purpose, either way helps to see the market itself and changes in it. The structure of the rating of AI companies in the field of finance is different from the general one, but at the same time it is only a rating of the best companies, and not all of them as a whole. The primacy still prevails and the majority of American companies on the list and this has its own logic. In Figure 2 the distribution of the top 22 global financial AI companies can be seen, where the best are mostly represented in India, the UK and the USA [5].

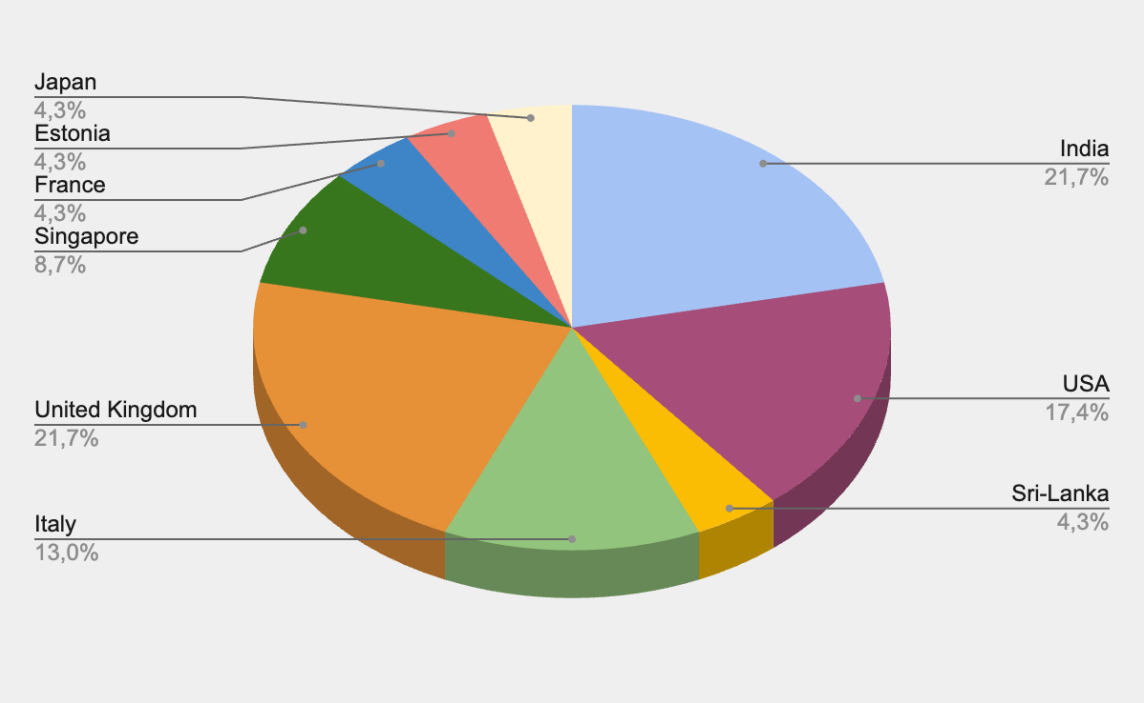

Figure 2. Essential 22 AI Companies in Financial Services.

Since the number of companies is only growing and the market is expected to develop more rapidly in the future, it is important to pay attention to public opinion and attitudes towards replacing some or all jobs with robots and AI.

The proliferation of artificial intelligence (AI) applications in various domains has escalated, necessitating imminent regulatory frameworks to govern its utilization. The intrinsic challenge with AI lies in the inherent difficulty of controlling its adoption and implementation. According to Barrat [6] the potential of AI to address pressing global issues, such as climate change mitigation and advancements in medicine, thereby revolutionizing societal outcomes. However, a paramount concern is the risk of AI falling into malicious hands, precipitating detrimental consequences contingent upon the wielder's intentions or the entity attaining breakthroughs first.

Drawing parallels with historical instances, Barrat [6] likens the trajectory of AI to nuclear fission, initially hailed for its positive potential but eventually yielding perilous weaponry in the hands of certain governments. He underscores the concept of enforced transparency as a deterrent against malevolent actors exploiting AI, yet cautions against unintended repercussions whereby malefactors could exploit disclosed information for nefarious purposes. Consequently, the discourse surrounding AI is nuanced, characterized by an apprehension of its dual nature, predicated on the assumption of benign intent among stakeholders.

Historical precedents underscore the inadequacy of controlling malevolent actors' utilization of technological tools. While dystopian scenarios of AI subjugating humanity remain speculative, the prospect of other hazardous outcomes looms large. Barrat postulates potential dangers if criminal elements, corporate entities, or rogue governments harness AI breakthroughs to exert control over AI

systems. The unparalleled scale and permanence of AI technology render conventional regulatory measures insufficient, akin to the infeasibility of dismantling the Internet. Despite the formidable challenges posed by AI's burgeoning growth and widespread interest, the author contends that instituting regulatory constraints is imperative to safeguard its responsible development and adoption.

Nevertheless, in 1900, 41 percent of the US workforce was employed in agriculture; by 2000, that share had fallen to 2 percent [7], mostly due to a wide range of technologies including automated machinery. The mass-produced automobile drastically reduced demand for many equestrian occupations, including blacksmiths and stable hands. Successive waves of earth-moving equipment and powered tools displaced manual labor from construction. In more recent years, when a computer processes a company’s payroll, alphabetizes a list of names, or tabulates the age distribution of residents in each Census enumeration district, it is replacing a task that a human would have done in a previous era.

Figure 3 illustrates this pattern for the United States by plotting percentage point changes in employment by decade for the years 1979–2012 for ten major occupational groups encompassing all of US nonagricultural employment [8].

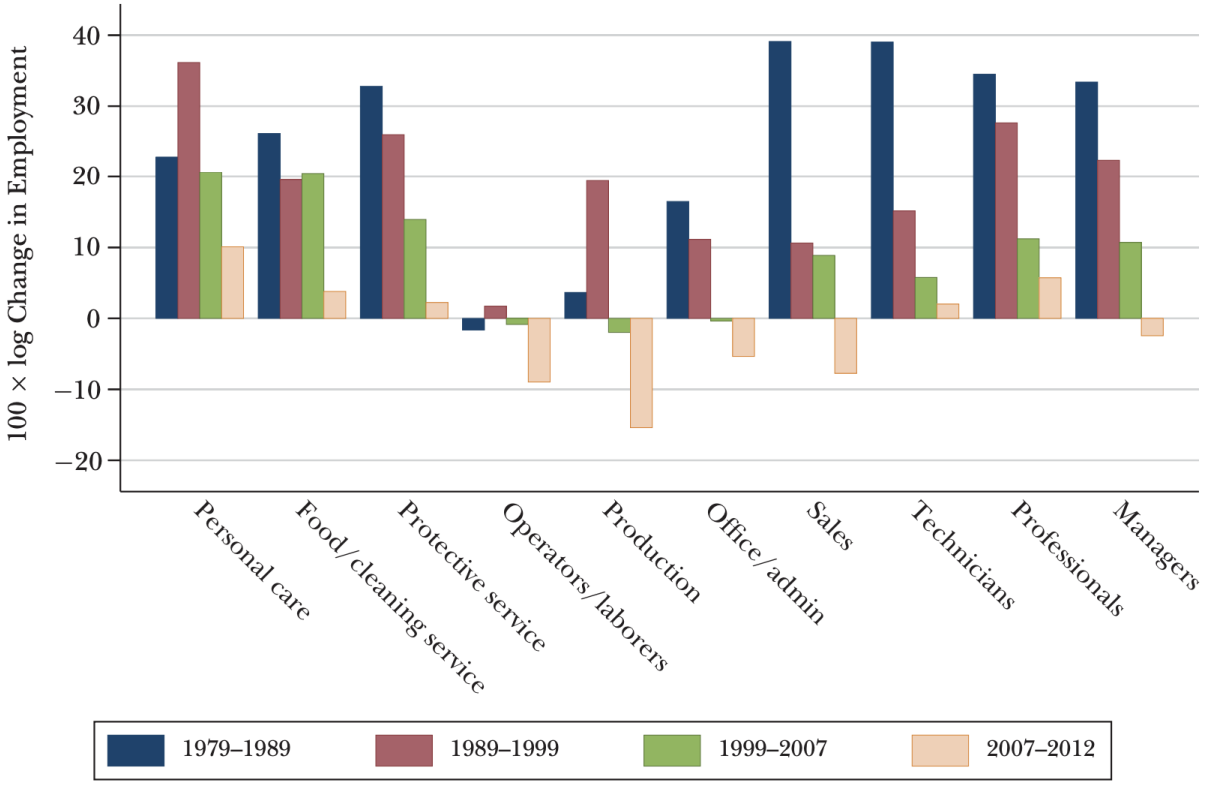

Figure 3. Change in Employment by Major Occupational Category, 1979–2012.

This graph does not include the last decade, since it is important to show the decline in employment precisely before the massive spread of AI in the world and to show that the decline occurred long before that. Concerns about a decrease in the number of jobs are not unfounded, but you need to understand that such a decrease has always happened and now has simply taken a different form in people's minds.

Recently, many have been prophesying that machines will completely replace human labor. But one important point that is usually overlooked is that if such automation does occur, then our main economic problem will not be scarcity, but the distribution of wealth. In modern market economies, the basic system of income distribution is based on labor scarcity; citizens possess (or acquire) a package of valuable “human capital” that, due to its scarcity, provides a stream of income over the course of a career. If machines truly make human labor redundant, we will have enormous wealth

overall, but the big problem is who will own it and how to distribute it. One might assume that with such an abundance of wealth, distribution would be relatively simple. But history shows that this is never the case. There are always perceived shortages and constant conflicts over distribution, and I don't think this problem will become any less serious with the rise of automation.

Although nowadays, technological innovation, especially in the field of artificial intelligence (AI), is playing an increasingly important role in determining the future of the labor market. Tom Davenport's work, AI and the Future of work: What we know today, examines the implications of AI in the world of work and offers some key insights into how technology will change the way we live and work.

One of the main conclusions of Davenport [2] is that AI is not just automating work processes, but also influencing a shift in the required competencies. Instead of mass layoffs, as many might assume, AI is leading to changes in workers' skills and tasks. This means that the future will value competencies that are difficult or impossible to automate, such as creativity, strategic thinking and interpersonal skills.

Another important aspect highlighted in the article is the uncertainty in predicting future changes in the labor market due to the rapid development of technology and social factors. Rather than trying to predict specific scenarios, the book encourages flexibility and adaptation for both organizations and workers. This includes constantly learning new skills, retraining, and being prepared to change in your professional field.

Finally, it`s emphasizes the importance of understanding and embracing the challenges posed by AI development. This includes not only the technical aspects of technology adoption, but also social, ethical and legal issues.As AI becomes more integrated into our lives and work, it is important that we consider it in the context of its impact on society as a whole.

Overall, Davenport's research provides valuable analysis on how AI will change the future of work. It challenges us to think about how we can adapt to these changes to make our future more sustainable and positive for everyone and the main insights are listed in Table 1 below.

Table 1. Ways to adapt to AI implementation

AI and employment	The adoption of AI in an organization brings changes to work processes and functions. However, this will not necessarily lead to mass layoffs but to changes in the skills and tasks of workers.
Changes in competencies	As a result of automation and the use of AI, the required competencies for work will change. It is important to develop skills that are not subject to automation, such as creativity, strategic thinking and interpersonal skills.
Forecasting the future	Predicting exactly how AI will impact the labor market is difficult due to uncertainty in technological developments and social factors. However, it is necessary to take into account potential changes and prepare for them.
Flexibility and adaptation	Organizations and workers must be flexible and adaptive to the changes brought about by the introduction of AI. This includes learning new skills, retraining and refocusing.

Although talking about key roles and main advantages of AI in the financial sector, it would be important to note that whatever it brings must be understood with responsibility and locked with professional knowledge. As for today, AI provides a promotion for automatized functions mainly. As for the math formulas and numbers itself, if something was under automatised formulas in the internal

system or any other widely used all over the sphere it could be useful to move it to AI and let the financiers focus on planning tactics and strategic goals of the company [9].

AI is creative itself but whatever is given by it was given with the human resources and sources of information. AI using the experience and knowledge that were existent and processing it into new ways and methodologies.

Considering the research of scientists on the topic of using AI in various areas of life, it is important to conclude what awaits the financial sector and what to expect. One of the key aspects is that innovative tools are significantly changing the approach to financial modeling. Traditional methods and approaches that were used previously are becoming obsolete, and financial professionals must adapt to new realities.

One such tool is machine learning, which allows you to analyze large amounts of data and identify hidden patterns. This makes forecasts more accurate and predictable. In addition, the article mentions the use of blockchain technology, which provides transparency and security in financial transactions, which also affects financial modeling.

An important aspect is the need to train and develop new skills among financial specialists. As technology advances, standard skills are no longer as effective as they once were, and professionals need to be able to work with new tools and technologies. This includes the complexity of introducing new technologies into conservative financial institutions, as well as the need to ensure data security and protection from cyber attacks.

5. Conclusions

A study of the role of artificial intelligence (AI) in the financial sector has revealed a number of important aspects that determine current trends and development prospects for this industry. First of all, the introduction of AI in banking and financial activities opens up new opportunities for increasing the efficiency and security of financial services, as well as improving customer service. The use of machine learning and data analysis algorithms allows you to automate decision-making processes, optimize asset and risk management, and prevent fraud.

However, despite the potential benefits, AI adoption also poses significant challenges. These include data privacy issues, lack of trust in AI systems, high costs of implementing and maintaining technology, and regulatory aspects. In addition, the use of AI may impact the job structure and skill requirements of employees in the financial sector, requiring appropriate training and reskilling of staff.

In the context of global trends in the development of AI, special attention is paid to issues of social responsibility and ethical use of technology. Effective regulatory mechanisms must be developed to ensure the ethical and responsible use of AI in the financial sector, as well as support and training for employees to successfully adapt to new technologies.

Overall, the development of artificial intelligence represents an important step in the evolution of the financial industry, opening up new opportunities to improve operations and customer service. However, to realize the full potential of AI, the social, ethical and regulatory aspects of its application must be taken into account, striking a balance between innovation and responsibility.

By focusing on human-computer groups - superminds - we can move away from thinking of AI as a tool for replacing humans by automating tasks, to thinking of AI as a tool for augmenting humans by collaborating with them more effectively. As we've just seen, AI systems are better than humans at some tasks such as crunching numbers, finding patterns, and remembering information. Humans are better than AI systems at tasks that require general intelligence - including non-routine reasoning and defining abstractions—and interpersonal and physical skills that machines haven't yet mastered. By working together, AI systems and humans can augment and complement each other's skills.

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