

# The Impacts of AI on Manufacturing, Trade and Labor Market

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## Abstract

Artificial intelligence is becoming increasingly significant in our lives and economy, and it is already affecting our environment in a variety of ways. The race to enjoy its benefits is hot around the world, and global leaders — the United States and Asia — have emerged. Many people consider AI as a source of increased productivity and economic progress. By analyzing enormous amounts of data, it can improve the efficiency with which things are done and dramatically improve the decision-making process. It can also result in the development of new products, services, markets, and industries, increasing customer demand and providing new revenue streams. However, AI has the potential to be extremely disruptive to the economy and society. Some fear that it would lead to the formation of super corporations — wealth and knowledge centres — which will harm the economy as a whole. It may also exacerbate the gap between developed and developing countries, as well as increase the demand for individuals with specific talents while displacing others; the latter tendency could have far-reaching implications for the labor market. Experts also warn that it has the potential to widen inequality, lower wages, and reduce the tax base. While these worries are legitimate, there is no agreement on whether or not the associated hazards will materialize. They aren't certain, and a well-crafted policy might encourage AI research while limiting its negative consequences.

## Introduction

Artificial intelligence (AI) tools and approaches are a hot topic in business and the global economy. This is unsurprising, given that AI has the potential to bring about radical—and maybe unprecedented—changes in how people live and work. The AI revolution is far from over, but the majority of its economic impact has yet to be realized.

The McKinsey Global Institute has released new study that seeks to simulate the impact of AI on the global economy. First, it develops a bottom-up vision of how to accept and absorb AI technology based on an understanding of company behavior and the dynamics of diverse industries. Second, it considers the potential disruptions that countries, businesses, and people will face as they transition to AI. During this



transition time, there will very certainly be costs, which must be considered into any estimate. The study looks at how economic advantages and losses are expected to be allocated among enterprises, people, and countries, and how this distribution could obstruct AI benefits being realized. Third, the study looks at the dynamics of AI across a wide range of countries, categorizing them into groups with comparable features in order to provide a more global perspective (Intelligence, 2016).

## Page | 2 Artificial Intelligence

Before moving on to the economic implications of AI, it's vital to define what AI is. More precisely, that there is a significant distinction between narrow AI, such as translation services, chatbots, and self-driving cars, and general AI, which includes “self-learning systems that can learn from experience with humanlike breadth and outperform human performance on all tasks.” General AI poses greater existential challenges, such as how to align such a system's aims with human own to avoid disastrous outcomes, yet it is still a technology that will be developed in the future (Wilson, Paschen and Pitt, 2021) (Shaheen, 2021c) (Shaheen, 2021a) (Shaheen, 2021b).

It's also crucial to explore the basic components of narrow AI for trading in order to grasp its potential significance. Narrow AI, in particular, is built on machine learning, which makes increasingly accurate predictions about the future by combining enormous amounts of data and strong algorithms. Machine learning data can be supervised (data with related information, such as labels) or unsupervised (raw data that requires pattern recognition without prior prompting). This includes reinforcement learning, which involves machine-learning algorithms actively selecting and even creating their own training data (Wilts *et al.*, 2021).

The Deep Neural Network is another important development in narrow AI (DNN). DNNs are made up of layers of nonlinear transformation node functions, with each layer's output serving as an input to the next layer. Each layer is very modular, allowing you to mix a layer suited for one sort of data (say, photos) with other levels designed for different types of data (e.g., text). Deep Neural Networks combine several machine learning tasks to create GPML, which allows AI to effectively live on top of the forms of chaotic input that humans can absorb, such as video, audio, and text.

## Impact of Artificial Intelligence on the economy

### Impact on manufacturing

One of the cornerstones of the expanding digitization of industry ('Industry 4.0') is artificial intelligence (AI). IoT, 5G, cloud computing, big data analytics, smart sensors, augmented reality, 3D printing, and robotics are among the technologies that will likely convert manufacturing into an unified cyber-physical system in which digital technology, the internet, and production are all fused into one. Future smart factories will integrate manufacturing processes, and AI solutions will be critical in connecting machines, interfaces, and components (using, for example, visual recognition) (Somjai, Jermstiparsert and Chankoson, 2020). Large volumes of data would be gathered and sent into AI devices, which would then optimize the manufacturing process. According to the OECD, AI can be used in a variety of industries, from optimizing multi-machine systems to increasing industrial research. Due to the advancement of automated learning processes, AI deployment in production is projected to increase over time. Fundamentally, it is anticipated to improve the industrial sector's competitiveness by enabling efficiency and productivity increases through data analysis, and supply chains would be built around these benefits (Ghoreishi and Happonen, 2020). AI would also help with automation, product and process quality control, and preventive machinery diagnostics, as well as timely maintenance, near-zero downtime, and fewer errors and defective products. Because their products would be more customized, diversified, and of greater quality, manufacturers would



be able to access new markets. Despite the fact that the building blocks are currently in place, Industry 4.0 may not be realized until the middle of the next decade, as it necessitates the integration of multiple technologies, which some predict may take 20-30 years to become popular. According to the OECD, AI could lead to scientific discoveries and possibly the creation of totally new, unanticipated industries in the long run (Ghoreishi and Happonen, 2020).

### Page | 3 **The impact of ai on economic growth and international trade**

AI's advancement will have a lot of implications for international trade. One is the macroeconomic repercussions of AI, as well as the trade implications. For example, if AI increases productivity growth, it will boost economic growth and open up new markets for international trade. Global productivity growth is now low, and numerous reasons have been proposed. One explanation for sluggish productivity growth, which is particularly pertinent to understanding the potential link with AI, is that it takes time for an economy to assimilate and make efficient use of new technologies, especially complicated ones with broad economic implications like AI (Chidepatil *et al.*, 2020). This includes time to establish a large enough capital stock to have an aggregate effect, as well as complementary expenditures such as access to competent people and business practices, that are required to fully benefit from AI investments.

AI will have an impact on the type and quality of economic growth, as well as international trade. For example, AI is anticipated to hasten the transition to a service-based economy. This is a corollary to concerns about AI's influence on jobs, as AI is anticipated to spread automation and accelerate job losses for low-skilled, blue-collar workers in manufacturing. Parallel to this, as AI is utilized to add value to production and products, it will place a greater emphasis on specific worker talents. This should lead to an increase in the proportion of services in both manufacturing and international trade (Malik, Budhwar and Srikanth, 2020).

#### **Impact of AI on labour markets**

If AI, robots, and automation are widely deployed across the economy, job creation (as a consequence of demand in sectors that emerge or flourish as a result of this deployment) and job destruction (as a result of employment destruction) will occur (replacement of humans by technology). There is no unanimity among experts, according to a 2018 metastudy of data, with projections ranging "from hopeful to devastating, varied by tens of millions of jobs even when comparing identical time spans." According to a report by the research tank Bruegel, as much as 54 percent of occupations in the EU will be computerized in the next 20 years. The impact will most certainly be nuanced, with analysts agreeing that there will be considerable workforce movements across sectors of the economy, as well as changes in the structure and substance of occupations that would necessitate reskilling. Furthermore, employment polarization is likely: lower-paid jobs that often require routine manual and cognitive abilities are most vulnerable to AI and automation, whereas well-paid skilled jobs that typically require non-routine cognitive skills will be in higher demand. Job destruction will be stronger in the short and potentially medium term, while job creation will win out in the long run, according to earlier industrial revolution trends. However, with more frequent job changes and an increase in insecure work, self-employment, and contract work, labor relations may shift, potentially weakening employees' rights and the function of trade unions (Malik, Budhwar and Srikanth, 2020).

Wages, income distribution, and economic inequality may all be affected by AI's disruptive consequences. Demand for high-skilled individuals who can use AI is expected to rise, while many others may face wage cuts or perhaps unemployment. This could affect even mid-skilled workers, whose wages may be pushed down by the fact that high-skill workers are not only more productive than them, but also capable of completing more tasks, owing to AI (Sion, 2018). As a result, changes in labor demand may exacerbate overall income distribution by influencing total wages. Much will be determined by the rate of change, with



faster change likely to result in greater negative consequences due to market imperfections. Theoretically, the more ordinary labor is replaced by AI solutions, the higher productivity and overall income growth will be, and the greater the gap between rich and poor will widen. This might lead to a 'paradox of plenty,' in which society as a whole would be substantially richer, yet technological development would exacerbate disparities for many individuals, communities, and regions (Chen *et al.*, 2020). There are legitimate concerns that AI would worsen present trends of moving national income distribution away from labor, resulting in more inequality and wealth concentration in "superstar" enterprises and industries. Many economists, on the other hand, are optimistic, claiming that AI will struggle to replace the 'sensor-motor abilities' required in non-standard and non-routine tasks like security, cleaning, gardening, and cooking. Others argue that automation has a muddled impact on inequality: low-skill automation always increases wage disparity, whereas high-skill automation always decreases it (Rust and Huang, 2021). To summarize, it is unlikely that the growth in inequality caused by AI automation would be considerable, at least in the near to medium future.

### Conclusion

While it is evident that AI's increasing ability to solve complex problems autonomously has the potential to radically alter our economies and societies, the impact AI will have on a wide range of challenges will remain unknown for many years. Even when answers appear to be on the horizon, AI is like an amoeba in perpetual transformation, constantly altering its shape and adapting to its surroundings. While the effects of the AI revolution on global order are still being considered, it is not difficult to envision a future in which power, resources, and technology are much more concentrated than they are now. Future conflicts may not only be fought over land, natural resources, and populations, but they may also determine the human race's fate. An AI-dominated future could well result in the biggest concentration of resources and power the world has ever experienced, rather than working to flatten the degree of global equality.

The world cannot afford to just let nature take its course, or for governments and corporations around the world to handle crucial concerns related to AI governance, legislation, and rule of law when it is convenient for them. The multilateral system has a critical role to play in guiding the new global economy's future direction. Multilateral institutions must therefore address how to best build and regulate our collective AI future through more debate, funding allocation, and action.

Artificial intelligence has a lot of promise to help the global economy. To reap the benefits, however, rising differences between countries, corporations, and people will need to be handled.

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