

Essay: The impact of Robotics on developing countries

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Abstract

This essay discussed the potential impact of robotics in developing countries. Firstly, this essay introduced the relevant background of machine technology. Then, this essay discussed some industrial viewpoints on the effects of robots and artificial intelligence on developing countries. Then, this essay studied some views of academia and quoted some data at the same time. Finally, this essay combined the aspects of industry and academia made a summary of the impact of machine technology on developing countries and gave forward my views.

Keywords: Robotics, Artificial Intelligence, Developing Countries

1. Background

At present, in developing countries, agriculture and manufacturing are undergoing a continuous robotic transformation. Workers will continue to pour into the service industry, reducing wages, leading to employment expansion and wage stagnation in the service industry, rather than large-scale unemployment, at least in the short and medium term.

The dilemma is that developing countries need robotic technology to enhance their competitiveness, but also face enormous social pressure. This poses a severe test for business and politicians in developing countries. Although the industry and government have adopted some subsidy policies, this may not be a long-term plan.

2. Industry Viewpoints

In industry, robots will combine with AI and play an important role in redefining future work. The wide application of robots in industry will have a tremendous impact on economic and social morphology.

At present, the focus of industry, especially the advanced manufacturing industry, is more reflected in developed countries. At the same time, developed countries have invested more funds and researchers in robotics technology. Robotics can obviously bring more benefits to developed countries, because it has higher labor costs and higher mechanization and productivity in manufacturing industry. However, developing countries will not only be affected by the trend of automation in high-income countries, but will also strive to catch up with developed countries in the field of automation.¹

Robotics may affect the development of developing countries to high-income countries in different ways. In particular, the recent combination of robotic technology and artificial intelligence technology has brought the possibility of large-scale replacement of labor factories in developing countries. The more common types of work in developing countries, such as day-to-day agriculture, are more susceptible to robots than the service industries in developed countries.² Industrial robots can be automatically controlled, reprogrammed, and can handle many tasks. For example, they are programmed to have machine learning algorithms to perform tasks involving various complexities. Industrial robots are an important part of the Fourth Industrial Revolution, because they have achieved autonomous production methods. With the tremendous impact of robotics technology on developing countries, industry should not only consider the cost of production, but also make more humane choices in the light of law and society.

In industry, wage declines in developing countries require more attention than unemployment.

At present, faced with the threat of competition between robots and artificial intelligence, the short-term and medium-term impact on workers is not large-scale unemployment, but more likely is the low real wage growth rate of low-tech and medium-tech jobs. This will not only hinder the road to poverty reduction, increase unfair pressure on the country, and weaken the power of growth to reduce poverty.³ What is more serious is that in developing countries, robots will lead to more serious social inequalities and even violent conflicts.

4. Academic Viewpoints

Academia generally believes that for developing countries, investment in labor-intensive industries, such as infrastructure, tourism and social services, can effectively reduce the destructive impact of robots.⁴ Although this requires a lot of public investment, it is not a long-term strategy to support economic development. Moreover, in the long run, it is not conducive to the economic growth of developing countries. Therefore, developing countries should adapt to the impact of robots and artificial intelligence through policy changes. Ultimately, developing countries should balance local workers and robots to achieve long-term economic growth and social stability.

As shown in Figure 1, countries wishing to benefit from robots must deploy more robots than other robots.⁴ According to the International Federation of Robots, industrial robots recently deployed in developing countries are concentrated in China. This is to cope with the decline in the working-age population and the rise in labor costs. However, this has eroded the advantage of cheap labor in China.

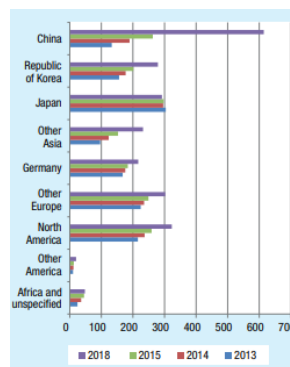


Figure 1. Estimated year-end operational stock of industrial robots, selected countries and regions, 2013–2018⁴

At present, the academia thinks that robotics technology only poses a threat to workers in a limited field. As shown in Figure 2, the global deployment of industrial robots is mainly concentrated in the automotive, electrical and electronic industries.⁴ Developing countries engaged in export activities in these two sectors, particularly Mexico and many Asian countries, are most likely to be affected by the manufacturing reflux. In contrast, other labor-intensive industries, such as garment production, have not yet been applied to large-scale automated production. However, with the progress of technology, especially the artificial intelligence, robotics technology may threaten the jobs of more developing countries.

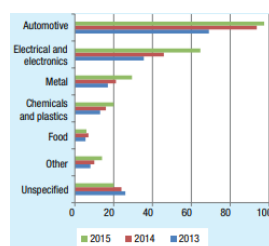


Figure 2. Estimated worldwide year-end annual supply of industrial robots, by main industry, 2013–2015⁴

4. Discussion and Conclusions

From the information as above, I found industry and academia generally agree that robots will have more serious and far-reaching impacts on developing countries, including both positive and negative impacts. Because the economic structure of developing countries is more fragile and at the same time more dependent on cheap labor.

I argue that robotics has both positive and negative impacts on developing countries. Because, I think it is more important for developing countries to have clear current and long-term goals, make rational use of robotics technology and maintain social balance.

I believe that robots have a greater positive impact in developed countries. Although at present, most of the discussions about the economic impact of robots, whether in academia or industry, are focused on developed countries. However, the positive impact of robotics in developing countries should not be ignored. Because the rational development and introduction of robotics technology may be the key factor for the economic growth of developing countries. Robots can also reduce the labor intensity of developing international workers and improve their happiness. At the same time, robotics can solve the problem of declining productivity in developing countries.

I argue that robots also have many negative impacts, especially in developing countries. With the combination of robotics and artificial intelligence, this may lead to a decline in manufacturing jobs. What is important is that the gap between rich and poor in developing countries is wider and that society is more unstable. Therefore, in the long run, I think that developing countries should make reasonable plans to gradually increase the use of robotics technology, while considering the transfer of workers.

From the knowledge learned in ICT4D course, I think the introduction of robotics technology may bring better development to Mali. For example, Mali's agriculture is in a state of low-level processing, and there is no basic basis for agricultural processing at all. After introducing robotic technology, robots can help Mali's agricultural products bring more added value, thereby increasing farmers income and government tax revenue. The government can also use these taxes to train local farmers and workers to bring about long-term economic growth.

In the short term, I think these two situations coexist. But at least we can see that robots and AI processes contribute to productivity growth. But for many low-skilled workers in developing countries, robots are more likely to become powerful competitors. In the future, it will even cause many unemployment problems for workers in developing countries. However, I believe that if governments in developing countries make reasonable plans, they will find a balance point in robotics technology. For example, developing countries can train current workers ahead of time in the field of robotic control. Moreover, I think the government can also guide many workers from developing countries to enter the service industry or learn about programming and other related knowledge.

References:

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⁴ UNCTAD Policy Brief: Robots and industrialization: https://unctad.org/en/PublicationsLibrary/presspb2016d6_en.pdf