# Effects of Robotics on the Economy

The productivity of the service sector in the United States has accelerated over the last two decades due to the IT Revolution. Development and diffusion of next-generation technologies such as robotics may affect the economy. The use of robotics has been recognized by many firms and is now adopted in many countries. In fact, by 2013 the number of robots in use was estimated to be 1.2 million. By 2015, this figure had increased to approximately 1.5 million and the robotics industry is expected to rise to $67 billion by 2025 (Sander & Wolfgang, 2014). This paper discusses the impact of adoption of robotics to the economy.

Robots have helped firms to perform tasks that would have otherwise required skilled workers. Robots are designed in such a way that they can understand people when they speak as well as their emotions. In fact, social robots represent a cultural resource that can be used in negotiating problems. The robots can be used to speak different languages and thus can be used to overcome language barriers in international business. Robots are also used to perform various functions, reducing the reliance on human labor. For instance, a hotel in Japan uses robots to set up reservations for its client, take them to their appropriate rooms, adjust lighting in the room and so on (Sander & Wolfgang, 2014). In fact, firms operating in the service sector have a positive attitude towards robotics. This means the service industry should pay more attention to these emerging technologies. Improving productivity performance is paramount in the service industry to enhance potential growth rate, thus diffusion and application of robotics will be beneficial in the service sector.

Use of robots has led to an increase in productivity. Use of robotics has lowered the prices of goods and services as well as an increase in wages leading to a higher standard of living. The use robotics demand skilled labor, and this can be achieved through better education and training of the employees. Robots are making production more efficient, and with increased efficiencies from robotics will lead to an increase in productivity growth (Autor, 2015). An increase in productivity will result in an increase in gross domestic product (GDP).

Despite the possible numerous benefits of robots, many fear that robots will throw people in poverty. A study conducted by Frey and Osborne (2013) indicated that many jobs are at risk to be replaced by computerization including Mobile Robotics (MR). The study shows approximately 47% of the total United States jobs are at risk for computerization. In fact, some experts envision that in future robots may displace a significant number of both blue- and white-collar workers, and they have expressed concern this may lead to increase in income inequality, unemployment as well as a breakdown of social order. Another study conducted by McKinsey Global Institute analysis conducted a study on 750 jobs and found that approximately two-thirds of the jobs the jobs will be automated (Manyika et al., 2017). As a result, approximately 375 million employees may be displaced by emerging technologies such as robotics by 2030. Organization for Economic Cooperation and Development (OECD) collected data from 32 countries and found 14% of the jobs that are highly automatable and 32% are at risk of automation (Arntz, Gregory & Zierahn, 2016). However, employees that are less qualified are more likely to be more affected by the automatability of their jobs than highly qualified employees.

However, some studies have indicated that automation has not led to the substitution of the workers (Autor, 2015). Autor argues that computerization and labor are complementary, especially in cases where staffs are creative and adaptable. This means that firms should focus more on the strong complementarity among the highly qualified workers. Therefore, in order to accelerate diffusion of robotics and maintain job opportunities, it is important to consider skill development of the employees. Some studies have also indicated that robotic and other related technologies will result in the creation of other goods or services creating new form of job opportunities (Mokyr et al., 2015). Although it is true that robots may replace low-skilled workers by automating the tasks they perform, operating robots also require skilled employees. For instance, in manufacturing, the use of robotics to perform some of the operations including sorting raw materials, stocking and transportation while the skilled work performs quality related tasks.

Although the issue of whether robotics will result in job losses or job creation is highly debatable, it is clear that it will result in significant job disruption. While robots may take way some job categories across all industries, firms should emphasis on educating and training their workers to fill new roles created by use of robots. The government should expand training programs that matches the need to high-tech job opportunities to reap the benefits of these emerging technologies.

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