RESEARCH ARTICLE

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Impact of Robotics on different sectors

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Abstract

Robotics and automation industries are a new technological change. It is affected human employment opportunities directly. The research paper is based on impact of Robots on employment. Although using robotics technology positively impacts quality production, it has some negative drawbacks, which must be studied. The positive and negative aspect of this technology gives us wider view to understand better implementation of this technology. The objectives of the research are to check real and ground-level reality of robotics technology effects. The study is exploratory research which is based on secondary sources like books, online sources, analyze of industries prior and post-employment data from different websites of concerned public departments, journals, research papers, websites of concerned industries and service sector, magazines and newspapers etc. Before doing research, understand the robotics and automation industry's working style and functions. After understanding basics of this industry's pro and cons, check its impacts on human resources, production quality, and process. The conclusion of research shows replacing employees with robots is good and sometimes it is necessary for some organizations in current challenging environments. Robotics technology has improved the motivation of employees in the industrial sector.

Keywords: Robotics and Automation Industries, Technology, Employment & Opportunities.

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Introduction

Definition of Robotic and Automation

Robotics is software which is useful in completing particular task in simple and easy way. Automation makes the work occur on its own and is used in a variety of industries and business. RPA means Robotics Process automation. In RPA, many languages are included like NLP (Natural Language Processing), ML (Machine learning), software's regarding image and character recognition extra.

Robotics is related with robots and computers. Robotics and automation is used to speed up process of working. RPA (Robotics Process Automation) is good and useful for large industries. RPA is a part of BPA (Business Process Automation). With the help of this technology, humans are interacting with digital systems. Website scraping is example of RPA. Robotics is a part of industrial automation. Robot is a set of sensors and processors useful to accomplish industrial tasks. RPA is also known as software robots and workstation. Robots or automation do works virtually instead of physical ones.

Automation has two types –

- Software automation
- Industrial automation

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Software automation is a software program which humans perform with the help of computer applications. This automation is useful when work is repetitious nature. While in Industrial automation, only controlling and maintaining physical processes is the focused.

Impact of Robotics on Employment in different sectors of the Indian Economy

Robotics and Health Sector

India is 2nd largest population of the world. In India, the health sector's condition is not very good. Hospital is already overcrowded with patients. Medicines, Equipment, Doctors, services etc fells in high pressures. In this condition, using robots and automation in this industry will give great support to this sector. This

technology is giving strength to the health sector and reducing pressure on this sector. RPA is good for increasing effectiveness and within reach of available resources. This technique is also good for health sector. Thus after using Robotics and Automation, the health services are not remaining costly and it is affordable for everyone. Artificial Intelligence is using to enhance the productivity and availability of physicians. AI-powered Robots are being used in operational activities. Robots are assisting Doctors in surgical procedures. AI is useful in early identification of potential pandemics and tracking diseases. In Indian health sector, Medical robots are surgical, modular, and autonomous mobile robots.

Medical robots support minimally invasive procedures, customized and frequent monitoring for patients with chronic diseases, intelligent therapeutics and social engagement for elderly patients. Currently, 66 Robotic Surgery centers are working where 71 robotic systems are already installed. Approx 500 Doctors are trained to use robotic technology for surgical procedures. These robots are working as assistants of these doctors. Robots are designed to converse with patients, reminding them to take medicine and do basic checkups of patients.

List of top robotic surgery Hospitals in Indian is given below

- Apollo Hospitals, Delhi.
- Hinduja Hospital, Mumbai.
- Global Hospitals Group India.
- Fortis Hospital, Delhi.
- Max Hospital, New Delhi.
- Medanta Hospital, Gurgaon.

Advantages of Robotic Surgery

In health sector, Robots are used in surgery too. There are many benefits like less infection chances, less pain and blood loss, quick recovery, higher successful operation rates extra.

Robotics and Agribusiness

In India, Agriculture provides highest employment. Approx 50% population is working in agriculture and its related sector, fisheries and forestry. In the financial year 2021, approx 152 million people are employed in the sector. India GDP from agriculture is 14% only. Low productivity, uncertainty, subsistence farming, the dominance of food grain crops, traditional agriculture, labor dominance, small land holding, depend on monsoon etc the characteristics of Indian agriculture sector. These characteristics of Indian agriculture create many problems, which can be reduced by using AI. Using AI techniques, a farmer is able to produce more crops with less effort, use techniques for smarter storage, distribution and consumption of agro products. AI is useful for keeping data of crops, fertilizers, chemicals, crop health and diseases, monitor health of his animals and use new machines and techniques in agriculture so he is able to harvest more production per hectare. With the help of AI system, the farmer can produce more crop with less efforts and lower wastage.

Robotics and Banking Sector

Nowadays the financial sector is transforming speedily. In this sector, AI and Robotics has vast scope. Indian Banking and financial sector is in the process of joining with AI and Robotics related companies to use this system in their work. AI and Robotics systems increase customer services. Robot adviser gives personalized financial planning which is very useful in the sector. AI system is using to find fraud detection and money laundering. ATM mechanism, Debit Card and Credit Card payment system, UPI payment, RTGC, NEFT, IMPS extra are examples of AI system which makes large payment smooth and flawless. Robotics Automation and AI is useful to improve process efficiency, productivity, eliminate manual intervention, save man hours, enhance service availability, and reduce risk, inconsistency, and inaccuracy. Robotics Automation has now graduated from the realm of a buzzword to a high-priority strategy for banks. If industry reports are anything to go by, the global Robotics Automation market is expected to reach USD 25.66 billion by 2027, expanding at a CAGR of 40.6% over the forecast period.

Robotics and Education Sector

Education sector is one of the important sectors of an economy. Quality education and learning is necessary to create good future generation. Robotics Automation and AI has a great impact on the Education system. Researchers are researching to apply computer intelligence to improve the education system in the future. AI is used to perform numerous day-to-day work at school and college levels like curriculum changes, administrative tasks, etc. Robotics and AI system is changing the education sector via AI tutor, advanced education software, automation of routine activities, AI for student selection. In 1980s, the intelligent tutoring system has started. Several applications have been developed for smooth running of an intelligent tutoring system. Natural language processing is the best example among other applications. Some companies use AI in education like Duolingo, kidsense, Roybi Robot, Cognii,

Thinkster math, etc. The Young mind uses robotics, which helps them ignite creativity and invigorate critical thinking. Learning Robotics and AI, students are getting into world of unending career opportunities. The National Education Policy 2020 lays extreme emphasis on introducing robotics and coding which will generate an empowered education environment of innovation, scientific temperament and creativity amongst Indian students. For this, ATLs (Atal Tinkering Labs) has been established in many Indian educational institutions. In the education system, robotics has many advantages like creating an exciting learning environment, quick decision-making ability and wide range of career opportunities etc.

Robotics and Manufacturing Sector

Indian manufacturing sector is one of the leading sectors which provide huge employment opportunities. These days, robots are used in many functions in the manufacturing sector, simplifying the process. So Robotics transforming Indian manufacturing sector in many ways. Robotics is useful to increase productivity, handle raw materials, increase efficiency, 24 hours manufacturing, promote environmentally friendly techniques, minimize labor costs, etc. It is also generating employment opportunities in the manufacturing sector like product design and engineering. With the use of robots, the production process is completely transformed. Robotics has made critical task very easy. Robotics has positive impacts on both large firms and SMEs. The Robotics market is classified in many types like Articulated Robots, Cylindrical Robots, linear Robots, Parallel Robots, Scara Robots and others. These different types of robots are useful in different industries like painting, textile, die casting, welding, packaging, and machine tending. In Indian industries, approx 4564 units of robots were used in 2018 and it is growing day by day with 13.3% per year. In Indian industries, Articulated Robots are mostly used because of its high speed, log reached and longer working envelopes. Articulated robots are good in pick and place tasks, thread festering, soldering, handling jobs, and other tasks requiring fast and precise automation.

Impact of Robotics and AI on Indian Industry

In Indian industry, Robotics and AI has made a great impact. Robotics is used in painting, packaging, welding, palletizing, labeling, product inspection and testing. AI, ML and robotics are very useful in health sector, Fintech, customer services and Education etc. In India, there are some key players who are operating Indian Robotics Market like YASKAWA Electric, KUKA Robotics, FANUC India, EPSON, Hyundai, ABB, Kawasaki, Wittmann, Star Automation, Grey Orange, PARI, Systemantics, Hi-Tech Robotic Systemz, Gridbots, Sastra Robotics, DiFACTO Robotics extra. Pandemic has impacted sales revenue of market leaders, market followers. Automation is increasing product supply and domestic manufacturing. In India, robotics technology is adopted by that industry which is suffering from shortage of skilled workforce and high labour cost. In 2018, 4771 new units had been installed which are using robotics. In Indian every year many robotics companies are registered. Thus according to yearly installations, India is on 11th rank in worldwide. The Indian government also supports this industry. Many private and public units have been set up to promote robotics and AI. Genrobotics already joined hand with kerala state government to use a spider-shaped robot named Bandicoot. This robot will useful in cleaning seers and manholes in the city (2018). Three indian start-ups had signed MOUs with Lockheed Martin. These start-ups' names are NoPo Nanotechnologies, Mobility and Terrero Sastra. The start-ups will incorporate with Lockheed Martin's supply chain and donate to the evolution of both the Indian and worldwide aerospace and defense industry. India is the largest supplier of online labor, accounting for 24% of the global supply (The iLabour Project 2017). The online labor economy is based on such platform economies (Tandem Research 2018).

Current Overview on Indian Automation Market

In 2021, the automation market of Indian industry was 10.72 billion US Dollar and it will reach by 23.09 billion US Dollar by 2027, at a CAGR of 14.26% over the period.

- In Indian manufacturing sector, a rapid change is going on. Automation system has increased optimum performance of the industry. With the help of automation and robotics, industries can focus on zero waste production and shorter product delivery time.
- Internet makes working of industries easier. Machinery and devices are connected via internet which has made smart factory automation.
- Indian government wants to develop an ecosystem for manufacturing and exporting electronics goods for this work electronics and computer software export promotion council has been established.
- E-commerce is very famous in India these days; thus the demand for warehouses is increased. For managing demand, robotics-enabled automation

systems is used. This system manages the regular availability of warehouses so that the industry flourishes without interruption.

- Using AI, ML, 5G and 3D printing, etc. provide more significant market growth opportunities. Electric vehicle is the best example of digital transformation in India.
- After the pandemic, automation software companies increases sharply with 95-98% rates. Before covid, India was fast growing robotic process automation industry.

Conclusion

Although Robotics and AI has increased efficiency and productivity, it also negatively impacts employment. Automation is not good for mid-skill labor or non-skill labor. During Covid 19 pandemic, millions of Indian people lost their jobs. The ongoing health crisis, boosts the demand for automation. Firm can use automation but workers should be trained to work with AI and ML too, means future ready workforce should be created. A research report on robotics and employment of WB reveals the bitter truth that by 2033, in US 47%, in China 77% and in India 69% job will be takeover by automation. This estimate is related with direct jobs only. Real effect will be more than it. In India, mainly IT sector will suffer from this. According to NASSCOM, approximately 20 to 25% job will be shorted in the next three years. Other sectors will too affect badly. We will see serious impact on service sectors, from e-commerce to manufacturing, securities services, banking and agriculture.

Only one solution is available for this problem: modernization of labor and delivering skill for future. World Economic Forum's report titled, "The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution", of the 7.1 million jobs that will be displaced by 2020, only 2.1 million will be created. Everyone should become literate in the use of technology. Make a new mechanism that makes job transitions smoother. Tax Structure should be changed. Government should use that tax structure which is helpful in growing of labor centric industries. Tax fund is used to create employment or social security and welfare activities.

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