

Industry 5.0 Post Pandemic Transformation: A Study of Challenges to Inclusive Work Environment



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Abstract: *The concept of Industry 5.0 gives a distinctive center and highlights the significance of inquiring about and advancement to back the industry in its long-term benefit to humankind inside planetary boundaries. The concept of industry 5.0 was given by the Japan. They emphasized on advanced technological advancement in each sector for more production and economic upliftment. Industry 5.0 needs to come to hold with the guarantees of progressed digitalization, huge information, and counterfeit insights, whereas accentuating the part these innovations can play to address modern, new prerequisites within the mechanical, societal and natural scene. Unused technologies have the potential to form work environments more comprehensive and more secure for specialists, as well as increment their work fulfillment. Many have lost their job during the pandemic. A large section of our society is not able to cope with innovative techniques. The study will highlight the challenges to inclusive work environments in MNCs in India and suggest measures to face these challenges through empirical research.*

Keywords: *Industry 5.0, Pandemic, Inclusive Work Environment, Digitalization, Transformation.*

I. INTRODUCTION

Digital transformation is a computer-based change that is changing the way commerce is conducted over each segment of the economy. The computerized change has made a requirement for savvy manufacturing plants for the real-time utilization of generation shop floor information and a basic proficient network with IT frameworks. Industry 4.0 has been practiced in almost all types of industries and enterprises. The covid-19 situation has also emphasized the use of technological advancement in every sector. Work from home is possible only by the use of these advanced technologies. To maintain the economy and increase production at the same pace, industry 4.0 helped a lot. All the information and proper work environment have been made possible by the use of industry 4.0

Industry 5.0 is the use of robot technology for human actions. The robot technology is being used for repetitive tasks and for timely attending to patients for their needs in the hospitals and some other organizations.

It is now possible to keep records and track the record of the patients related to disease, health reports, checkups, tests for further study, and research. Industry 5.0 technologies provide more time to the employees and experts in the organization for further research and to take non-program decisions.

It has been helping in keeping social distancing and helps the employees, experts, professionals in their health-related safety. It has been leading to innovation and technological advancement in the work environment of the organizations. Industry 5.0 technologies provide 3600 imaging and virtual reality to handle numerous issues at the workplace.

The collaboration of human beings and robot technology has been resulting inefficient utilization of time and energy. For the proper utilization of industry 5.0 technology, there is a need to upgrade the technological awareness and knowledge of the employees in the organization. The employees and the work culture of the organization have to adapt themselves according to the new technological environment. Robots, and AI, will offer assistance to individuals who perform their errands superior, not take their employments. It'll lead to by and large proficiency and will make modern conceivable outcomes for income generation. The Robots are made to supply more correct developments, speedier conveyance in less time, and keeping up tall accuracy without compromising the execution or security of people. (Chakarboroty, 2020) [3]

A. Features of Industry 5.0

- i. Use of robot technology in a collaborative manner
- ii. Use of advanced technological methods to solve human error
- iii. Automation of repetitive tasks in the organization by the use of robot technology
- iv. Increase in efficiency and effectiveness of the organization during the pandemic period
- v. Effective use of large data for fruitful decision and strategic planning in the organization
- vi. Bring innovation in the methods of working in the organization

B. Advantages of the Industry 5.0

- i. The organization have been progressing for initiation of more innovative ideas and techniques
- ii. The fear of health risk has been lowering among the employees in the health organizations.
- iii. The automation of some dangerous tasks has been relieving employees from mental tension and has been creating a healthy environment in the organization.
- iv. It has been becoming

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possible for the employees and professionals to concentrate more on further research and innovations.

- v. The economic and financial burdens on the owners have been decreasing in the organization as automation of dangerous tasks has been saving time and energy for the employees.
- vi. Industry 5.0 technologies are more suitable to handle the complex problems of the customers.

C. Disadvantages of the Industry 5.0

- i. The cost of automation and robot technology is high. every organization can't utilize this technology
- ii. The organizations have been trying to replace employees with robots in the organization which has been creating a sense of insecurity of job among the employees.
- iii. The physical, social, and emotional gap between the employees in the organization has been increasing as all the employees are not able to train themselves according to the advanced technologies.
- iv. The utilization of robot technologies in the organization has also been creating a big gap in the salary structure of the employees which is a danger for the inclusive work environment in the organization.
- v. All the organizations have not been economically and financially viable to support their employees for the training and for arranging training for their employees.
- vi. Industry 5.0 technologies have been creating a big gap between the organizations

The collaboration between robots and employees in the organization is facilitated by the industry

5.0 technologies to increase the output, to perform hazardous tasks timely. Industry 5.0 technologies are preventing the deadlock in the organization, provide dynamic and smooth functioning of the organization, providing continuous services to the customers. (Industry 5.0: An Industry that is based on the Utilize of Collaborative Robots, 2020) [5].

II. REVIEW OF LITERATURE

(Zengin, 2021) [10] It is difficult for the employees to follow industry 5.0 technology and they still want to utilize the outdated technologies in Turkey [9].

(Faruqi, 2019) [4] for the betterment of human life and upliftment of the living standard of society, it is important to utilize industry 5.0 technology [11]. The use of industry 5.0 technology after industry

4.0 is easy and beneficial for the employees in the organization.

(Alvarez-Aros, 2021) [1] For the economic development and progress of the nation, it is important to utilize technological advancement in each sector. Technological innovation, computational developments, smart devices are shaping the new industrial revolutions. It is important to provide proper training, make a proper strategy for the implementation of industry 5.0 [12].

(Aslam, 2020) [2] industry 5.0 and the internet of things have changed the work environment in the organization at

the global level. Many organizations are facing practical problems in implementing these technologies. Providing training related to software technologies requires time and finance. All the organizations are not equally competent to provide training related to these advanced technologies to their employees. The robot system can perform only the designed thinking and routine tasks.

(Javaid, 2020) [6] industry 5.0 helps in the repetitive task and saving the physical energy of employees. Machine learning and artificial learning technologies are being used for bigger data analysis. it increases efficiency, accuracy, critical thinking and provides a quick solution to the problem.

(Javaid M. H., 2020) [7] industry 5.0 technologies are being utilized in the health sector to provide great help to doctors as well as to the patients. It helps in providing therapy and treatment to each covid patient. It is also helping in keeping details of the patients and helps doctors in further research related to covid treatment.

(Nahavandi, 2019) [8] There is a need to increase productivity in the organization with the proper utilization of human resources. The employees should not be removed from the job and it is hoped that industry 5.0 will increase and create more jobs in the future.

III. OBJECTIVES OF THE STUDY

- To study the impact of industry 5.0 on the work environment in the organizations
- To study the challenges posed by industry 5.0 to the inclusive work environment in the organization.

IV. RESEARCH METHODOLOGY

The data is collected through a structured questionnaire from a sample of 50 employees of 5 industries. The data were analyzed using exploratory factor analysis with the SPSS program, confirmatory factor analysis with AMOS, and structural equation modeling with Smart PLS. Factors of industry 5.0 which are affecting the work environment

- A. Pairing of robots and human beings
- B. Support of robots to human beings
- C. Replacement of human beings in the organization with robots
- D. Lack of human feeling and critical thinking in robots
- E. Need of higher knowledge and skill among employees
- F. Change in the work environment
- G. Encouragement to employees for creative thinking
- H. Tense work environment, fear of loss of job
- I. Need of training for employees

A. Findings

- A. The employees are not facing any discrimination based on knowledge and skill but they are not able to cooperate with fellow employees having higher competitive skills.
- B. The employees are facing change in the work environment in the post-pandemic period of industry 5.0 and they are feeling that this change is positive for the organization and them.
- C. Only a few employees are feeling that this change is negative for the



organization and them.

- D. The employees are feeling that the work environment encourages them to learn and be creative in their work. The work environment is not tense than earlier. They are feeling that the work environment is safer for their health.
- E. Most of the younger employees feel that there is not any fear of loss of job as they will learn more to develop new tools and types of equipment for automation.
- F. Very few employees are feeling that there is a fear of loss of job among them. The organization has made arrangements and encouraged employees to learn new technologies for the improvement of the skill.
- G. The employees are thinking that there is a need to modify behavior, according to the needs of industry 5.0.
- H. 80 percent of employees are ready to learn and upgrade their skills.
- I. Industry 5.0 technologies have been creating more difficulties for the employees at the lower level of the organization. They are not able to cooperate and adapt their behavior according to the need for advanced technologies. It is also difficult for the customers to change their behavior according to the advanced technologies. All the respondent employees agree that industry 5.0 technologies, robot system is proving helpful for their safety and timely response.

B. Challenges to the Inclusive Work Environment

- i. Coordination and cooperation between the employees: robots have been taking the place of employees at lower levels to perform repetitive and physical work. The relationship at the workplace among employees has been changing. the robots perform the work without test, timely and in the same manner every time. There is a lack of emotional feeling in the working method of robots. It is a big challenge to maintain coordination and cooperation between the employees in the organization as many employees are now being replaced with robots.
- ii. Lack of skill among all employees in an organization: all the employees in the organization are not highly and equally professional, trained to work with robots. Only a few employees, those who know the working methods of robots, have the technological knowledge to operate robots, can work with robots in the organization. Any error in human action can lead to errors in the work of robots. The operations of robots also need coordination with human actions in the organization. The financial investment in robots is more as compared to the salaries of the employees performing the work at that level.
- iii. Psychological and economical pressure on employees: the employees in the organization are bound to each other psychologically, emotionally, and socially. The robots perform routine tasks in the organization without human feelings. The loss of jobs and mechanized way of working in the organization leads to the development of machine man which can increase the efficiency, production,

output, and growth of the organization but not to the development of employees and organization. The industrial revolutions in the same way lead to increased production and mechanization, exploitation of the employees, and capitalism. The loss of job of employees due to replacement by robot lead to psychological and economical pressure on the employees in the organization.

- iv. Lack of arrangement of proper training programs for all employees in the organization: the robot technologies are financed intensive, the cost of robot technologies are high and the maintenance of robots in the organization, is also costly. The training program for the employees to understand and acquire this technology also needs a large amount of investment from the management side. Sometimes the management is not able to provide proper training facilities to the employees at the proper time. This may lead to mismanagement and non-cooperation among employees. Any human error due to lack of timely training to the employees may lead to mishandling of robots.
- v. Lack of social support and proper strategy for collaboration with the robot system. Due to pandemics and total lockdown, the online training programs are not enough for collaboration with robots in the organizations. There is a need for social support and a proper strategy for collaboration with the robot system. All the employees in the organization and customers of the organization should be ready to collaborate with the robot system. There should be a proper
- vi. strategy to initiate a robot system to replace hazardous tasks in the organization for the safety of the employees.
- vii. Risk of leaking personal data of employees. The use of industry 5.0 technologies generates a large amount of data which is needed to be stored and utilized properly for strategic, innovative, and efficient decision-making in the organization. The large amount of data so generated is not possible for the unprepared organizations to store. There is the possibility of misuse, leakage of personal data of the employees and customers by the third party for financial benefits.
- viii. Critical and innovative thinking: critical and innovative thinking is possible only by the employees of the organization the employees can solve the critical and non-programmed situations also. The robot system can solve routine problems and can store the data in an impersonal way. Human relations in the organization are more significant in the organization. The progress and development of the organization depend upon the sound human relations between the management and employees.

V. SUGGESTIONS

Based on the study, these suggestions are being provided

- A. There is a need to



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encourage all the employees to upgrade their skills at the proper time. Incentives and social support are needed to be provided to the employees for an inclusive work environment in the organization.

- B. The employees should be given equal importance with automation in an inclusive work environment as human feelings, emotions are also important for the completion of tasks in the organization.
- C. Employees should be encouraged for more research and innovation in the organization by implementing proper policy for research and innovation.
- D. Employees in the medium and small enterprises and private universities also need to be motivated and encouraged by the state government for research and innovation to cope with industry 5.0. Training programs should be arranged at concessional rates for the people of the weaker sections.
- E. There is a need for strategic planning and autonomy in the organization for industry 5.0 to meet the demands of the post-pandemic situation and increase the efficiency, output, production, and effectiveness of the organization.

VI. CONCLUSION

Industry 5.0 is being utilized with more noteworthy viability to meet the greatly personalized requests and to construct a virtual environment, progressed computers, and data innovations. Industry 5.0 is the acknowledgment of the ideal integration of huge information, Manufactured Insights, web of things (IoT), cloud computing, COBOTS, advancement, and inventiveness. Industry 5.0 is anticipated to form a higher-value business with bigger flexibility for plan considering and imagination. It makes a difference to make strides in the efficiency of work and more prominent opportunities for customization to clients. On the flip side, due to profoundly robotized fabricating frameworks, skill development for the workforce may be a humongous errand. There's an expanded cybersecurity risk in basic mechanical frameworks and fabricating lines at industry 5.0 due to its expanded network and utilization of standard communications conventions. Indeed, even though industry 5.0 gives more noteworthy independence to robots, imperative and ethical-based choice-making is vested with people. In general, industry 5.0 is anticipated to revolutionize the generation frameworks and prepare by permitting bigger collaboration between people and robots in giving custom-fitted items to clients. India is yearning to get to be a fabricating center through activities such as Make in India, and Start-up India. Industry 5.0 has incredible potential to coordinate with these programs and activities in making India the harbinger in collaborative fabricating systems.

DECLARATION STATEMENT

I must verify the accuracy of the following information as the article's author.

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