A STUDY OF IMPACT OF INDUSTRY 4.0 ON FINDING THE SKILLED WORKFORCE FOR INDIAN COMPANIES

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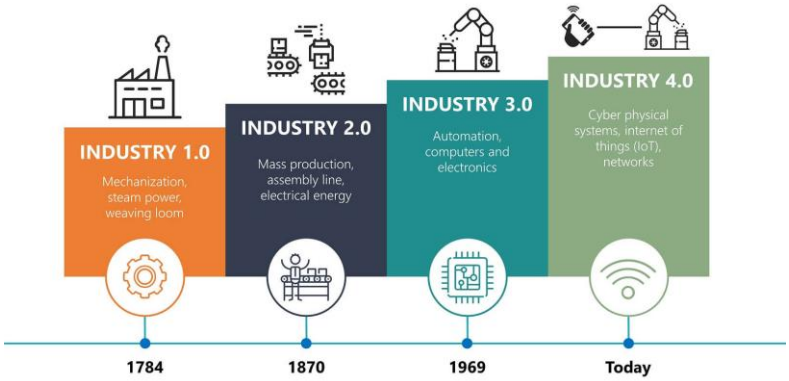
Abstract

The 4th Industrial Revolution, Industry 4.0, will bring higher level of automation, interconnectivity and technological advancements in the manufacturing processes. The tools, technologies and machines to be used would be different from what is present today. Smart service robots will collaborate with workers on assembly line, smart machines themselves will coordinate manufacturing processes and smart transport systems will transfer goods from one place to another efficiently and effectively. Since Industry 4.0's prime requirement is AI and IoT driven technologies and other industrial processes, Industry 4.0 has more capacity to impact our systems and thus Cyber-Physical Production Systems. Also, industrial robots have become affordable to Indian Manufacturing businesses now in recent years and have become much more user friendly to operate as well. Global and even Indian Manufacturers are turning to automation due to increasing shortage of skilled workers in the manufacturing sector. Especially in developed countries, Robot density is expected to increase in response to this skill gap. This paper focuses on impact on Indian Businesses in finding the skilled workforce due to Industry 4.0 requirements.

Keywords: Industrial Revolution, Industrial Revolution, Artificial Intelligence, Augmented Reality and Virtual Reality, Factories of Future, Cyber-Physical System, Automation.

INTRODUCTION:

As we know, the First Industrial Revolution started with the invention of Steam Engine in 1784, followed subsequently by Second Industrial Revolution in 1870 by the introduction of Assembly line for mass production and then in 1969 with the invention of Computers and Automation led to Third Industrial Revolution.



The Industrial Revolution 4.0 mainly concentrates on efficiency, productivity, increasing qualitative capacity. Advanced machinery used for this purpose will reduce the production damage, time consumption and human power to a greater extent.

The extent of job loss is expected to vary with country, industry and employed levels of automation. The experts believe that the use of industry 4.0 technologies will not result in job loss, if not an increase in employment. The basis behind this is the fact that Industry 4.0 will result in the quality of the products manufactured and in an increase in labor productivity. There is no doubt that low-skilled jobs will be eliminated. However, it is expected that an increase in capacity will have a positive effect on the creation of jobs, requiring higher levels of skills. Employees who were rendered jobless due to elimination of low-skilled jobs need to be re-skilled or up-skilled to make them ready for the new requirements. All in all, the creation of new high skilled jobs will compensate, to a large extent, for the elimination of low skilled jobs.

NEED FOR THE STUDY

Industry 4.0 is expected to have its effect on the employment in Developed and Developing Countries. Industry 4.0 is changing the current scenario which is resulting in increased use of automation and robots in the shop floor. These robots will be capable of performing tasks

multiple times with high levels of accuracy and within shorter time duration than that of by any human. Robots will be an efficient replacement for labor. For example, an employee whose job is to fix a specific part while assembling an engine will be replaced by a robot which will carry out the same job accurately and in lesser time and without any fatigue. Hence, there is an ardent need to study this impact of Industry 4.0 on the current work force and in finding new skilled work force as per Industry 4.0 requirements.

RESEARCH HYPOTHESIS:

H0: There are no challenges faced by Indian Companies in finding the skilled workforce in Industry 4.0 era.

H1: There are a lot of challenges for Indian Companies in finding the skilled workforce in Industry 4.0 era.

RESEARCH PLAN:

The study is conducted in Nashik, Pune and Mumbai to understand the challenges faced by Indian Companies in these cities in finding the suitable skilled workforce required for fulfilling the demands of Industry 4.0.

TABLE - RESEARCH PLAN

Sr. No.	Particulars	Details
1.	Type of research	Exploratory
2.	Sampling frame	Nashik, Pune and Mumbai Cities
3.	Sampling technique	Multistage sampling where stratum and quotas and simple random sampling at various levels of research was applied.
4.	Type of data: a).Primary data	Primary data was collected with the help of sources such as: CEOS, HR Managers of the Companies in these cities.

	b).Secondary data	Secondary data was collected with the help of following source: Books ,Internet/ websites, Magazines, Research Journals & periodicals
5.	Data collection tools	Discussion in person and over phone, Questionnaire, unstructured Interview observations
6.	Sample size	103 respondents from 52 Indian Companies in Nashik, Pune and Mumbai cities

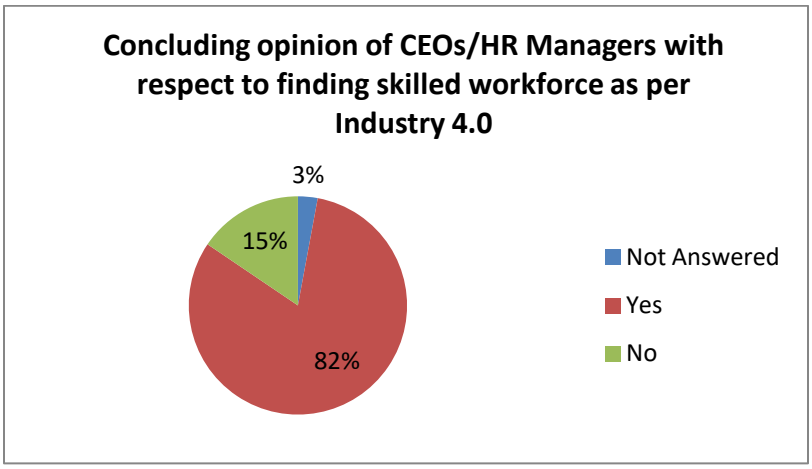
DATA ANALYSIS & INTERPRETATION OF STUDY CONDUCTED

Concluding opinion of CEOs/HR Managers with respect to finding skilled workforce as per Industry 4.0

Yes: They are facing challenges in finding the skilled workforce as per Industry 4.0 requirements.

No: They are not facing any challenges in finding the skilled workforce as per Industry 4.0 requirements.

Remarks by CEOs/HR Managers		**Frequency**	**Percent**	**Valid Percent**
Valid	Not Answered	3	2.9	2.9
	Yes	84	81.6	81.6
	No	16	15.5	15.5
	Total	103	100.0	100.0



Interpretation- Industry 4.0 needs implementation of the latest technology which in turn needs the skilled workforce to understand these latest technological advancements like Internet of Things (IoT), Smart Factories, , Artificial Intelligence, Augmented Reality and Virtual Reality for successful implementation of Industrial advancements in day to day practice. It is seen that 82% of respondents' opinion is that they are facing challenges in finding the skilled workforce as per Industry 4.0 requirements, while only 15% respondents admit that they are not facing challenges in finding the skilled workforce as per Industry 4.0 requirements. So, we can safely conclude here that Hypothesis Ho has been rejected. This indicates that Indian companies are facing challenges in finding the skilled workforce as per the requirements of Industry 4.0.

The success of any Indian industry depends not only on the machines deployed for manufacturing the products but also on the work force employed. It is very important the employees must have the required skill sets to operate machines efficiently. This will also endure that the processes are running as per standard operating procedures defined as per the requirements of Industry 4.0. Education is going to play an important role in ensuring skill-readiness of the labor force. Vocational Education along with General education will play a critical role to play in making labor force industry 4.0 ready. In most of the BRICS nations like India, vocational education is introduced at secondary education level. In terms of basic ability to read and write, India has a low literacy rate amongst the people with more than 15 years of age and can be considered not to have reached universal literacy to a great extent. India has a literacy rate of 72.2% as compared to more than 92% of other BRICS nations. Introduction of Industry 4.0 will require high level of skills from the Indian workforce if they want to be competitive on

Quality and Quantity front. Even though the primary focus of skills required in Industry 4.0 will be on applied and technical skills like basic knowledge of IT, data analytics etc, it would be important for the labor force to have basic skills on equipment operation and troubleshooting to be able to adapt and learn the new skills.

As per a survey conducted by Manpower Group, companies across the world are facing challenges in finding skilled workforce due to the gap in current skill levels with skills required for the jobs in Industry 4.0. Technology is evolving faster than ever before and the talent pool through which employers have to select workers is shrinking due to declining workforce. The survey also indicates that globally 38% of the employers face some kind of difficulty in filling the job vacancies. In order to overcome the above mentioned difficulties, companies have been resorting to tapping into labor pools of different countries, developing capabilities of their existing workforce and also developing new recruitment channels. With increase in adoption of advanced manufacturing technologies in Industry 4.0, the problem is becoming more prominent. Due to lack of manpower with the desired skill sets, employers will have to make higher capital investment in re-skilling or up-skilling their existing workforce to fulfill their requirements.

There are major initiatives taken by Government of India in recent times to formulate a National Policy on Skill Development with an objective to create a workforce empowered with improved skills, knowledge and internationally recognized qualification to gain access to decent employment and ensure India's competitiveness in Industry 4.0 era. In line with the policy, the National Skills Development Corporation (NSDC) was established as a one of its kind public private partnership in India to fulfill the growing needs for skilled manpower across the sectors and to narrow the existing gap between demand and supply of skills by focusing on expansion of the vocational education network. It promotes the creation of large, quality, for-profit training institutions. Indian Government provides funding to these institutions in the form of equity, debt and grants. Since its inception, NSDC has partnered with more than 270 training providers to set up 6,952 training institutes. These training institutes have trained approximately 8 million people and have got placement offers for close to 3 million people. India has also launched the National Employability Enhancement Mission (NEEM) whose objective is to offer on-the-job training to enhance employability of a person pursuing his or her graduation / diploma in any technical and

non-technical stream. These trainings are also provided to a person who has discontinued studies of degrees or diploma course.

On the positive side, due to Industry 4.0 practices, the organization structure of the future manufacturing plants will become more flexible, flat and decentralized. Increased focus on using IT is going to improve the chances of job rotation and enrichment. Skilled workforce will have the greater opportunity to take part in greater task variety and will no longer be associated with only one particular job. There will be a significant reduction in monotonous and challenging jobs. Employees will share the space with intelligent robots.

AI will enable collaboration between humans and machines. And the interaction will not only be limited to pressing or touching buttons but also their interaction by voice and gesture. Workers will be sharing Automated Production Assembly lines to be equipped with robots and humanoids. Systems will support work significantly but the final decisions will have to be made by skilled employees only.

CONCLUSION:

The Fourth Industrial Revolution i.e. Industry 4.0 can transform the way we live and work in this world. It will help us with both opportunities and challenges. With the change in work environment and tasks expected to be carried out by workers, the skill required will also change. The new skills will be required in addition to the skills that are important in current scenario.

Government of India (GoI) has initiated the efforts as well in the form of NSDC and other Institutions to motivate youth to pursue vocational education and to champion skills and learning for work required for Industry 4.0. Though it is just a start, GoI & Indian Companies need to focus on training their existing workforce as per the requirements of Industry 4.0 to grow together even faster.

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