INDUSTRY 4.0: MANAGERIAL ROLES AND CHALLENGES

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ABSTRACT:
The Fourth Industrial Revolution is abruptly changing the business processes and the way of doing business in the world. Competition is going to be fierce and there will not be any geographical advantage to local manufacturing units as the world is going to connect with IoT. With all these challenges, managerial roles are going to change. Managers have to play a pivotal role in industry 4.0 as there will be the challenge to convert the present workforce in to smart workers whilst adapting to technological advancements that is already creeping in. Managers not only need to prepare themselves for the challenge but also to train their workforce to deal with the technological revolution. This paper discusses the managerial challenges within industry 4.0.
KEYWORDS: Industry 4.0, Managerial Roles, Managerial Challenges, etc.

INTRODUCTION:
Internet and IoT is becoming a part of our everyday lives. It has already started with the smartphone controlled AC's and other household equipment. In the manufacturing sector, after automation, IoT is going to cause disruptive changes, as the role of humans is going to change from an operator to an observer and analyser of automated machines.

Cultural and geographical boundaries will virtually vanish with industry revolution 4.0. Managerial processes are going to change with the implementation of IoT and interconnected physical systems through the internet [1]. Networking of the industries across the globe and their assimilation is an integral segment of industry 4.0. Present managerial strategies are going to change within the implementation of planning. It also deals with innovation in business models [2, 3].

Digital techniques enable precision in the manufacturing of products. Many industries will find the scope for their extension as they get connected to the world [4, 5]. Managers also need to understand and include cyber security systems within their workplace as it is going to be of foremost concern when all processes will be automated [6]. The complete setup will be dependent on the microcontroller based systems using sensors and machines in integration [7].

The involvement of women in this process becomes an important aspect as women are contributing actively in key management positions in various sector industries [8]. Managing the workforce and turning them in to smart resources can make the revolution easily adaptable by industries [9].

The Fourth Industrial Revolution is an incessant process which continues to develop industrial performances. Every industry will pass through the phase where it has to adapt to the technological change or disappear. The opportunity the revolution brings always comes with challenges.

CHRONOLOGY OF INDUSTRY REVOLUTION:
The revolution of industry started in 18th century with the steam and hydro power evolution. It was an important phase when mechanical infrastructure had just begun to be developed for industrial processes. After this, industries moved toward mass production where the assembly line came in the picture with the support of electrical supply.

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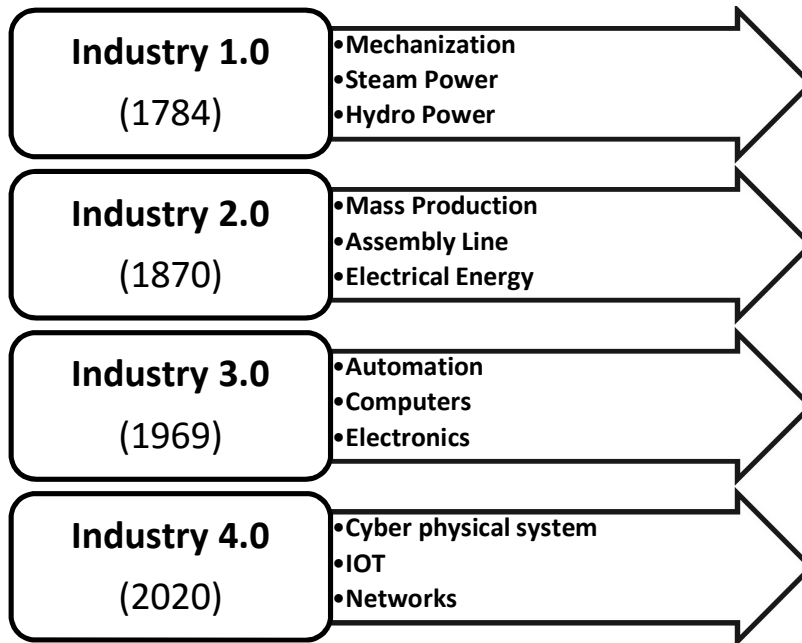| Industry 1.0 (1784) | • Mechanization
 • Steam Power
 • Hydro Power |
Industry 2.0 (1870)	• Mass Production • Assembly Line • Electrical Energy
Industry 3.0 (1969)	• Automation • Computers • Electronics
Industry 4.0 (2020)	• Cyber physical system • IOT • Networks

Fig.1: Chronology of Industry Revolution

Around 1965 to 1975, the developments in electronics and computers have made it possible to enable automation in the industries and it is still developing with better solutions arising daily. Presently, we are looking forward to the fourth phase i.e. industry 4.0. IoT has made it very easy to develop solutions with physics systems connected to the internet.

Managerial Challenges of Industry 4.0:

Fig.2: Managerial Challenges in Industry 4.0

Managers are the key role players in industries. Behind the success of any company, managers work with

dedication and taking on enormous responsibilities on their shoulders. Authors have identified the challenges faced by managers with a survey conducted using Google forms. The questionnaire was circulated amongst researchers and the industry personnel globally with the help of LinkedIn and emails. The result of the survey over a sample size of more than a 1000 is presented below. The questionnaire sought to indicate the opinion at which of a given point is going to be the most challenging with industry 4.0 for a manager. The overall results of the questionnaire consisting of 30 questions are presented below.
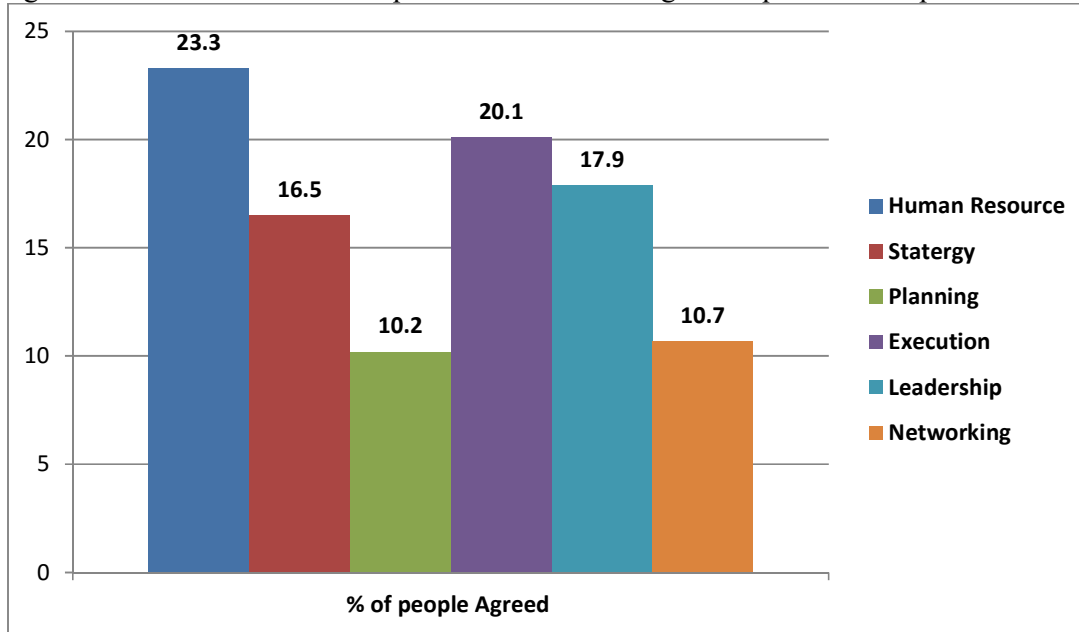

Fig.3: Opinion on Challenges to be faced by Managers during Implementation of Industry 4.0

CONCLUSION:
It is observed that 23.3% of the respondents agree that human resources is going to be most challenging, as finding workers with the right skills and developing the skills of present employees both are challenging jobs. Execution of planning comes in next, as the challenges managers would face is to deal with the dynamic nature of the future of work with new automated systems replacing human labour. Robust leadership is going to be an integral component as well, as leaders would have to deal with the non-comfort of their subordinates to new technology being introduced and the mind-set of their workers to embrace such change. Improvised strategies of businesses to adapt to the technological advancements in industry 4.0 will contribute to the success of their business and it shares, as was postulated by 16.5% of the respondents in the survey administered to managers across the globe.

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