

MANAGEMENT AND INFORMATION TECHNOLOGY PRACTICES IN THE ERA OF INDUSTRY 4.0

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ABSTRACT

Complete digital transformation or Smart Factory is the other name of Industry 4.0. It starts with modernization of the supply chain system. In next step it Interconnects with the backend systems like Enterprise resource Planning also. This is an Irreversible system to visualise and control in unique and unprecedented manner. World Economic Forum has also given enough weightage to this concept worldwide and to compete in this globalised environment application of modern techniques is an important issue. This paper is to study the viability of this concept and how this can be applied in an efficient way in a country like India. Country which has a mixed economy. Black economy also try to rule out the white Economy. Some conclusions with suggestions are also drawn in favour of the same. As this wont be feasible to keep the country on a back foot with respect to other nations when we have plenty of human resources of all categories including skilled, semiskilled and unskilled. Continent which is rich in natural resources as well deserves to be in the front row of the growing globalised market.

Keywords: Digital Transformation, Mixed Economy, Globalised Market, Black Economy, Natural Resources.

Introduction

The Rise of industrial technology in Manufacturing Sector digitally means big transformations alongside using machines and equipments in a completely revised and highly productive manner. Industry 4.0 word which is the reference name of fourth revolution in Industrial sector. Use of Automation, cloud computing, artificial intelligence, analysing supply chains by the help of modern and smart technology. Artificial Intelligence aka robotics is a new sound being heard everywhere in manufacturing industries now a days.

An increasing interconnectivity between corporates, industries and countries has brought up a radical change in the working pattern and atmosphere of industries in particular as well as at social levels also. Smart automation is the buzzword of this fourth industrial revolution. Difference between Physical and digital world is narrowing day by day. Technologies like gene editing, advanced robotics, artificial intelligence etc are joining hands with human resource. Without human interventions things can be finalised in this revolutionary stage which has its pros and cons both.

Abbreviations:

Enterprise resource planning (ERP), (IIOT) Industrial Internet of Things, M2M (Machine to Machine), IOT (Internet of things)

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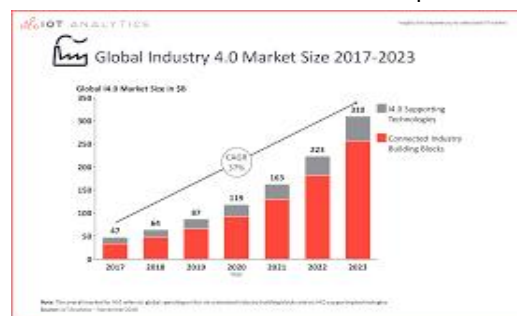
Historical Preview and Industrial Revolutions

- **Industrial revolution One worldwide** : A transition from hand production methods to machines through the use of steam power and water power. The implementation of new technologies took a long time, so the period which this refers to was between 1760 and 1820, or 1840 in Europe and the United States. Affected British and other Industries as well.
- **Industrial Revolution Two or the Technological Revolution:** Between 1871 and 1914, Period of extensive economic growth which increased productivity world wide but a rapid increase in unemployment due to the use of machines in place of Man power. Installations of extensive railroad and telegraph networks, which allowed for faster transfer of people and ideas, as well as electricity. Increasing electrification allowed for factories to develop the modern production line.
- **Third Industrial Revolution or Digital revolution** : Time period of late 20th century, after the end of the two world wars, from a slowdown of industrialization and technological advancement compared to previous periods. The production of Z1 computer, Boolean Logics, a decade later, was the beginning of more advanced digital developments. The next significant development in communication technologies was Super Computer, with extensive use of computer and communication technologies in the production process; machinery began to abrogate the need for human power.
- **Fourth Industrial revolution:** Time of Automation, Cloud Computing, Artificial Intelligence and Cyber Systems etc. This is the current time period which is known as the time of Imagination. People are investing in virtual lands .Same is responsible for the beginning of the concept of Industry 4.0 about which we are discussing through this topic

Research Methodology

Above the discussion of four industrial revolutions is explained in brief. Now the question arise that if this new revolution in Industrial sector is worth. And If it is worth then upto what extent its different features can be accepted worldwide and In Indian Perspective. Some of the taken up key features are:

- This revolution is powered through IIOT or called Industrial Internet of Things.
- smart and automatic systems working on autonomous basis .Now algorithms with computer basis are the tools to physical audit of Machines, vehicles, furniture, workers, their ability and efficiency to work, project completion ,hiring and retrenchment etc.
- making the complete supply chain smart is the target of third fourth industrial revolution.
- Warehousing and logistics are also smarter as work is done by robots .
- Advance methods to check stocks in warehouses are the present talk of towns.



Worldwide Application

A shift in Industrial capitalism is noticed due to Industry 4.0 revolution. There is a great change in efficiency outcome rather than improvements only. We are entered into an amplified social reality. Our experiences are changing rapidly and every other day we are coming across with a new technological advancement.

- **Australia:** has a Digital Transformation Agency (est. 2015) and the Prime Minister's Industry 4.0 Taskforce (est. 2016), which promotes collaboration with industry groups in Germany and the USA.

- **Germany:** The term "Industry 4.0", shortened to I4.0 or simply I4, originated in 2011 from a project in the high-tech strategy of the German government and specifically relates to that project policy, rather than a wider notion of a Fourth Industrial Revolution of 4IR, which promotes the computerization of manufacturing.
- **Indonesia:** Another example is Making Indonesia which is focusing on industrial performance revolutions.
- **South Africa:** Country has appointed a Presidential Commission on the Fourth Industrial Revolution in 2019, consisting of about 30 stakeholders with a background in academia, industry and government and also established an Interministerial Committee on Industry 4.0.
- **South Korea:** The Republic of Korea has had a Presidential Committee on the Fourth Industrial Revolution since 2017, focusing on new growth engines that include Artificial intelligence, drones and autonomous cars, in line with the government's innovation-driven economic policy.
- **Uganda:** has adopted its own National 4IR Strategy in October 2020 with emphasis on e-governance, urban management (smart cities), health care, education, agriculture and the digital economy; to support local businesses, the government was contemplating introducing a local start-ups bill in 2020 which would require all accounting officers to exhaust the local market prior to procuring digital solutions from abroad.
- **United Kingdom:** outlined the need to evolve current regulatory models to remain competitive in evolving technological and social settings.

Major Challenges

This adopted technology is not doubt very challenging like other new concepts those are initiated for bringing dynamic changes.

- M2M technology is one of them, this has appeared as a big challenge among industries specially having majority of human work forces.
- Use of IOT is again a big challenge in a country like Indian. Where people are still not well skilled technology wise.
- Gene adding is in itself a controversial issue from social aspect too.
- Use of Advanced robotics is raising a question against future unpredictability of the usability of human resource.
- Block Chain Technology on which crypto currency is trying to rule out the world economy is a separate topic of debate among economists.
- Cloud Computing which is called a safest technological tool is helping out in providing a secured environment to online platforms. But can it keep itself error free is again an issue.

Conclusion

A major shift from digital age of nineteenth century is seen in the form of social, political and economic changes. Here we are shifting ourselves from the natural senses to technological advancements, High economic costs, New business model adaptations. Some Unclear Economic benefits with excessive Investments. From political behaviour Lack of regulation, standards and in forms of certifications is noticed in India and abroad as well. Unclear legal issues and data security Privacy concerns are also the talk of town. Social aspects are also unavoidable as Surveillance and distrust, General reluctance to change by stakeholders, Threat of redundancy of the corporate IT department, Loss of many jobs to automatic processes and IT-controlled processes, especially for blue collar workers and an Increased risk of gender inequalities in professions with job roles are among the most susceptible one.

For Industrial advancements Organisational behaviour need rapid changes. Then only matters like IT security issues, which are greatly aggravated by the inherent need to open up previously closed production shops can be taken up. As Reliability and stability are among some most sought phenomenon's for critical machine-to-machine communication (M2M), including very short and stable latency times. Some other Needs as to maintain the integrity of production processes, Need to avoid any IT snags, as those would cause expensive production outages, Need to protect industrial know-how (contained also in the control files for the industrial automation gear), Lack of adequate skill-sets to expedite the transition towards a fourth industrial revolution, Low top management commitments, Insufficient qualification of employees etc some are the noticed and to be adopted criterias for the effective implementation of this dynamic change in the name of Industry4.

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