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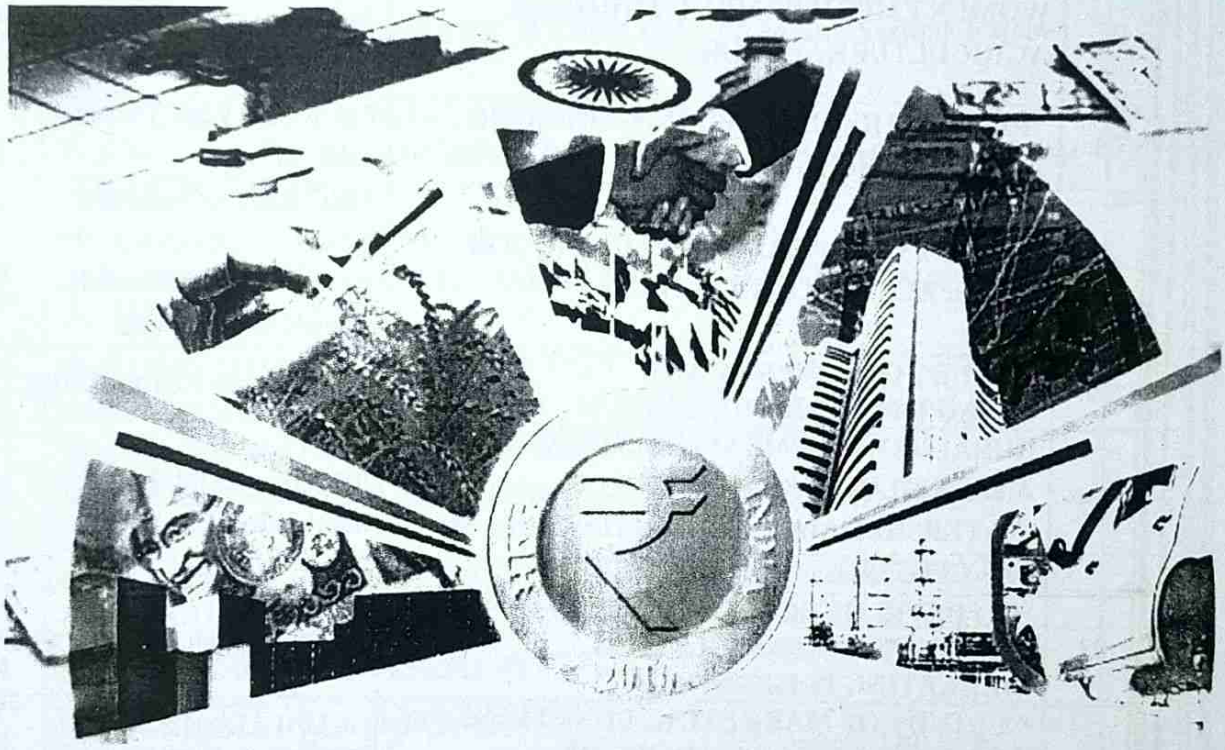

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INDUSTRY 4.0 AND INDIA : OPPORTUNITY AND CHALLENGES

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ABSTRACT: -

The Industrial Revolution led to the invention of new devices. From about 1784, steam-powered automatic machines began to be used for production. This was the first stage of the Industrial Revolution. About 90 years later, electricity was invented and machines were made to run on electricity. From about 1870, electric automatic machines began to be used for production. It was the second stage of the Industrial Revolution. After this the production technique began to change radically. Computer systems and information technology began to be used for production. Production of various high-qualityequipment's and commodities was started. This innovative change has beentaking place in the industrial sector since 1969. This came to be called the Third Industrial Revolution. Since 2016 there have been incredible changes in production techniques and quality. Automation came in robotic technology, artificial intelligence, machine learning, nanotechnology and manufacturing. The whole human life became subject to machines. It is considered the fourth stage of the Industrial Revolution. In this fourth phase, India has a chance to lead. India has the highest number of highly educated youth in the world. India is the second largest English-speaking country in the world, with India having the second highest number of Internet users in the world. This has provided a great opportunity to India during the Fourth Industrial Revolution.

KEYWORDS: -

Industrial Revaluation, Opportunities, Challenges, Steamenergy, electricity, Artificial intelligence, Machine learning etc.

INTRODUCTION: -

The wheel was invented in mechanics and human life became faster. The year 1700 AD has become very important in the economic history of the world. In this century, humans have tried and succeeded in inventing new things. Labour incentive techniques were improved and human labor was mechanized. This came to be known as industrialization. After 1750, competition for the use of machinery for the manufacture of consumer utilities goods in Europe. And it was from this competition that steam-powered automated machines were created. The steam engine was used for production in 1784. With the help of steam-powered automated machines, new things began to be created for consumer goods. This was a very important and revolutionary change of industrialization. Man is an intelligent creature. Man, constantly strives to create new things. It is human nature to constantly improve production techniques. This led to the invention of electricity in the late 18th century, in 1870, and the subsequent development of electrically powered devices. This led to a radical change in production techniques. That is, after the invention of electricity, new consumer utilities goods and new equipment began to be created using electricity. This gradual industrial development was called the 'Industrial Revolution'. At the time of the First Industrial Revolution of 1784 and the Second Industrial Revolution of 1870, India (British India) was dependent on British government. So, the British kept India away from the Industrial Revolution. After India's independence in August 1947, the responsibility for India's overall economic development fell on the Indian rulers. The role of industrialization in the overall development of the country was made

clear by the industrial development of the western countries. The Industrial Policy of India was promulgated in 1948 with the objective of achieving industrial development. For the first time since independence, a policy decision was taken at the government level to bring about industrialization in India.

After India's independence, a revised and comprehensive new industrial policy was adopted in 1952 to boost industrial development. 'The 1952 industrial policy was based on the P.C.Mahalanobis model' [1]. The government itself took the initiative to create basic industries in India. The government tried to start business in India by entering into agreements with foreign governments. Steel project started in India with the help of Russia. Initially, India did not have a conducive environment for industrial development. Capital scarcity was the main problem due to technical backwardness and lack of industrial training facilities in the country. Therefore, industrial development could not take place even with the initiative of the government. In the Western world, however, the 1950s and 1960s saw major changes in industrial production and quality. Automated new equipment was created. The world was on the brink of a computer revolution. In India, however, there were incidents that hindered industrial development. 'The China-Indian war broke out in 1962, the Indo-Pakistani war broke out in 1965' [2] the Indian rupee depreciated against the US dollar in 1966, and India suffered a severe drought in 1966-68. Due to such adverse conditions, India had to bear huge economic losses. 'This prevented India from launching the Fourth Five Year Plan on time. As a result, India had to adopt annual plans from 1966 to 1969' [3]. In 1977, the Government of India announced a new industrial policy aimed at focusing on rural development. In order to increase employment generation, encouragement was given by the government for creation of small-scale industries. However, due to political instability, a new industrial policy was announced in 1980. The 1952 policy was reintroduced. The third industrial revolution, based on cutting-edge technology, took place in the Western world and in the United States in 1969-70. In India, however, the traditional industrial policy was being followed. India lags behind in industrial development due to inconsistency of Indian industrial policy with global industrial development. However, in 1991, the integration of the Indian economy with the world economy changed the outlook for industrial development. Industrial development gained momentum. Globally, the fourth industrial revolution is said to have started since 2016. This dissertation seeks to illustrate the development opportunities and challenges created in India by the Fourth Industrial Revolution.

OBJECTIVES: -

1. To study the concept of Industrial Revolution.
2. To study the Industrial Revolution in India.
3. To study the opportunities and challenges in India during the Industry 4.0.

RESEARCH METHODOLOGY: -

This research article explains the details of the Industrial Revolution in India. This research article mainly highlights the opportunities and challenges in India for the Fourth (Industry 4.0) Industrial Revolution. Secondary data has been collected for this purpose. It collects information on various books, reference books, articles published in various journals and websites, mainly related to the Industrial Revolution. Essay analysis techniques are used to clarify the data collected.

INDUSTRIAL REVALUATION: -

1. 'The Industrial Revolution is a transition from handicrafts to mechanical products'[4]
2. The industrial revolution is the sequence improvement in production techniques.

The Industrial Revolution first occurred in England. Then came the Industrial Revolution in Western Europe. The Industrial Revolution spread rapidly in North America as well. The Industrial Revolution led to the discovery of new techniques of production. Mechanization began to improve the quality and quantity of products. The first industrialization in Asia was in Japan. There are four main stages in the evolution of the Industrial Revolution. The following table helps to understand the stages of the Industrial Revolution.

Sr.No.	Industrial revaluation	The beginning	Technical changes
01	1.0	1784	Steam engine
02	2.0	1870	Electric engine
03	3.0	1969	Automation with the help of electronics, computers and information technology
04	4.0	2016	Robotics Technology, Artificial intelligence, Machine learning, Block chain, Nanotechnology, Internet of things, 3D Printings, autonomous vehicles etc.

The table above gives an insight into the various stages of the Industrial Revolution and the technological improvements and technologies that took place during this stage.

INDUSTRY 4.0 AND OPPORTUNITIES IN INDIA: -

The Indian economy is the sixth largest in the world. So India offers potential 'huge market access' There is a very attractive 'demographic dividend' in terms of Indian population. In which Indian youth will represent approximately 20% of the global workforce by 2020. More than 50% of India's population is between the ages of 18 to 40. India can play an important role in this on the strength of youth. The conditions for the Fourth Industrial Revolution in India are very conducive and inspiring. India has a growing middle class. The role of this class could be significant for the Industrial Revolution 4.0. Strategic decisions are being taken at the government level for the qualitative development of the middle-class population. The benefit of this will be useful in inculcating the industrial revolution 4.0 in India.

India is accepted to become the fifth largest consumer market in two decades. Within the context, any form of consumption, entrepreneurship, startup or industry, can be viewed as a scaling opportunity. India has taken steps to become an e-government. For example, the government has made efforts to register its citizens in the national database. Aadhaar is the largest biometric database in the world. So far, 1.2 billion Indians have been registered. This could easily facilitate modernization in India. India also has a great opportunity to become an artificial intelligence as the government has announced a national program based on artificial intelligence to promote the development of technology related to artificial intelligence in India. At the same time, India is one of the youngest working forces in the world. A large technical approach, the second largest number of Internet users on mobile devices and the English-speaking population is second. As a result, India is in a good position to increase its global leadership during the Industrial Revolution 4.0. With the right combination of accelerators with regulatory frameworks, educational ecosystems and government incentives in India, India can lead the fourth industrial reassessment, while enhancing

quality, equality and sustainability and developing results. Thus, there is an opportunity for the fourth industrial revolution in India. And given this opportunity, India will move forward in terms of world superpower.

INDUSTRY 4.0:INDIA (IMPROVEMENT AND IMPORTANCE): -

1. 'India has become the fourth country in the world where 'WorldEconomicForum' (WEF) has opened its center for 4th industrial revaluation. India is thus, preparing for a massive digital and technological transformation' (4)
2. The centre for 4th industrial revaluation works as a network that includes USA, China and Japan. It will work in collaboration with'NitiAayog' in India to code sign new policies and protocols for emerging Technologies.
3. Initial focus of India will be on artificial intelligence, Blockchain and drones.
4. Schemes like Skill India, Startup India, Atal invention mission and Digital India are developing youth to use new technologies, India's diversity, demographic potential, fast growing market size and digital infrastructure have the potential to make India a global hub for research and development.
5. Industrial revaluation 4.0 can help in transforming India by – A) Alleviating poverty B) Better and low cost healthcare C) Enhancing formers income- 1. Providing new technology and equipment to farmers 2. Strengthening infrastructure improving connectivity 3. Improve ease of living and ease of doing business.

INDUSTRY 4.0 : CHALLENGES IN INDIA: -

The youth of India have many opportunities of Industrial Revolution 4.0, but also the challenges of Indians. India needs to take effective measures to successfully meet the challenges of the Fourth Industrial Revolution. The Indian economy faces the following challenges for Industrial Revolution 4.0.

1. Creating high quality basic facilities.
2. Creating quality technical and professional education facilities.
3. Increasing inflation in control.
4. To strengthen the Indian rupee more than the US dollar.
5. Use of natural resources in the country with efficient and efficient.
6. Increasing India's share in international trade.
7. Getting Permanent Membership of UN.
8. To be self-reliant in the protection.
9. Dualism in the community to reduce.
10. Having a regional balance.
11. Bilateral and multilateral agreement with the global economy.
12. To make financial institutions more efficient.
13. Creating quality digital infrastructure.
14. To promote entrepreneurship and professionalism among the youth.
15. To make more use of biofuels to become self reliant in energy sector.

CONCLUSION: -

India has the opportunity to lead the Fourth Industrial Revolution. India is a country of highly educated youth. The IT sector in India is very advanced. Developed countries feel that India has been an 'innovation power house' for the last three decades. During the First and Second Industrial Revolution, India was in a state of stagnation. India gained independence in the third phase of the

Industrial Revolution, but private business could not be started in India as the role of government was crucial for the creation of industrial sector. Therefore. India did not benefit from the Third Industrial Revolution as expected. While the process of privatization was going on in the world, the public sector was being given more importance in India. As a result, the industrial sector did not develop as expected. After 1991, there was a radical change in industrial policy in India. India's industrial sector was opened up to private investment. After that, however, industrial development gained momentum. Hi-tech foreign investors are ready to invest in India. Indian entrepreneurs also competed globally. The fourth phase of the Industrial Revolution, which began in 2016, saw a shift in government strategy to enable India to lead the world. Government initiatives like Start Up India, Skill India, Make in India motivate the youth. India faces challenges even in the Fourth Industrial Revolution. To control rising fuel prices, adopt biofuels, control inflation and strengthen the Indian currency against the US dollar, increase India's share in international trade, gain permanent membership in the United Nations, alleviate poverty of 21% of the country's population, create international transport systemand fight corruption. To curb, improve the quality of telecommunications, increase agricultural income and increase the income of farmers by improving the marketing system. Etc., the challenges are to be met successfully. The Fourth Industrial Revolution is an opportunity for these challenges. Only then can India lead the world in the Fourth Industrial Revolution.

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