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EXPLORING THE OPPORTUNITIES AND CH ALLENGES OF INDUSTRY 4.0 FOR ENTREPRENEURSHIP DEVELOPMENT IN INDIA

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Abstract

The advanced technological development in the era of forth industrial revolution causes enormous changes in the model of entrepreneurship in India and in the world. The forth industrial revolution brought augmented technological advancements like robotics, auto machine, and artificial intelligence accelerating the growth of different entrepreneurship models and global economies. There are abundant opportunities in India for the growth of entrepreneurships, which is dire need of Indian society where there is high unemployment rate prevailing. In this context, this paper is an attempt to examine what are the new opportunities and challenges of revolution 4.0 in the development of entrepreneurship in India, further to investigate the implication of emerging technologies on the way how the new entrepreneurship models are evolving. The researcher pin down some of the challenges of entrepreneurs in the era of forth industrialization to avail advanced opportunities and also tries to offer some suggestions to overcome these challenges and explores the further direction for research.

Keywords: entrepreneurship, forth industrial revolution, artificial intelligence, future opportunities

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Introduction

Every industrial revolution brought with it benefits and challenges to the socioeconomic status of the countries that have engaged in such transformation. For instance, Great Britain led the first industrial revolution with the invention of the commercial steam engine, which revolutionized communication and transportation and led to many other industrial developments. In the second industrial revolution, the United States was primarily in the lead, with the telephone revolutionizing communication this time. In the third industrial revolution, the Internet was the key factor and succeeded because it was conceived as a public infrastructure technology rather a proprietary technology (Carr, 2003). The Internet has transformed the world economic landscape, and this transformation is expected to continue with the Internet of things (IoT). (Rifkin, 2014), confirms this trend in his concept of zero marginal cost, which emphasizes connectivity in his anticipation of a collaborative economy that will replace the capital system in its current form – with the IoT as the main driver. Industry 4.0 is not an exception to the previous eras of industries, but it is expected to bring immense benefits and many challenges. However, the main challenge that most stakeholders are concerned with is the cyber security risk given that the IoT is the backbone of Industry 4.0, which has the potential to enlarge the level risk exponentially from where we are today. Moreover, the rate of the technological development in Industry 4.0 is exponential and, therefore, anticipating the challenges and even the benefits is much more difficult than what the world experienced in the previous industrial revolutions

India is a fertile soil and second largest population country in the world, where one can find enormous opportunities for starting new enterprise. Entrepreneurship is arguably the most fundamental driver of economic value creation, whether it manifests in the form of a new startup, or as a regenerating force within an established company. The Fourth Industrial Revolution represents a fundamental change in the way we live, we work, and we do different activities. It is advancing new models of entrepreneurship like, social-driven entrepreneurship, innovative driven entrepreneurship, corporate entrepreneurship, emerging market entrepreneurship and many more. The young aspirants in India are facing some of the challenges in availing the fruits of fourth industrial revolution.

Review of literature

The term "Industry 4.0" was originated in 2011 at the Hanover Fair in Germany as a strategy to mitigate the growing competition from abroad and to differentiate German and European Union industries from other global markets (Pascall, 2017). Also, the German government sought to use intelligent monitoring in production processes in order to aid decision making and machine maintenance to reduce costs and increase the competitiveness of German industries. In order to understand what is meant by Industry 4.0, (PWC, 2017) proposed a framework, which also was adopted by the Flemish Government. The idea of the framework arose by asking leading companies to determine their priorities among a group of concepts. Smart systems, humans in Industry 4.0, smart production, and people skills were identified as the highest priorities.

(Schmitt, 2013), established five reasons why Industry 4.0 is important and is seen to be revolutionary in the era of information technology and open market operations. First, Industry 4.0 mitigates the burden of current challenges for manufactures in order to make the companies more flexible and responsive to business trends. Second, Industry 4.0 enables the transformation of modern economies to become more innovative and hence increase productivity. It is expected that the use of modern technologies such as digital chains, smart systems, and the industrial Internet will speed up innovations as new business models can be implemented much faster. Third, 4.0 highlight the role of consumer as a co-producer and put them in the centre of all activities. Fourth, Industry 4.0 puts humans in the centre of production. Workers will be assigned where help is needed, hence there will be higher demands in the workforce for skills in managing complex projects, yet more flexible work will also become available. Finally, Industry 4.0 will facilitate sustainable prosperity through the use of modern technologies to find solutions to the challenges related to energy, resources, environment, and social and economic impacts.

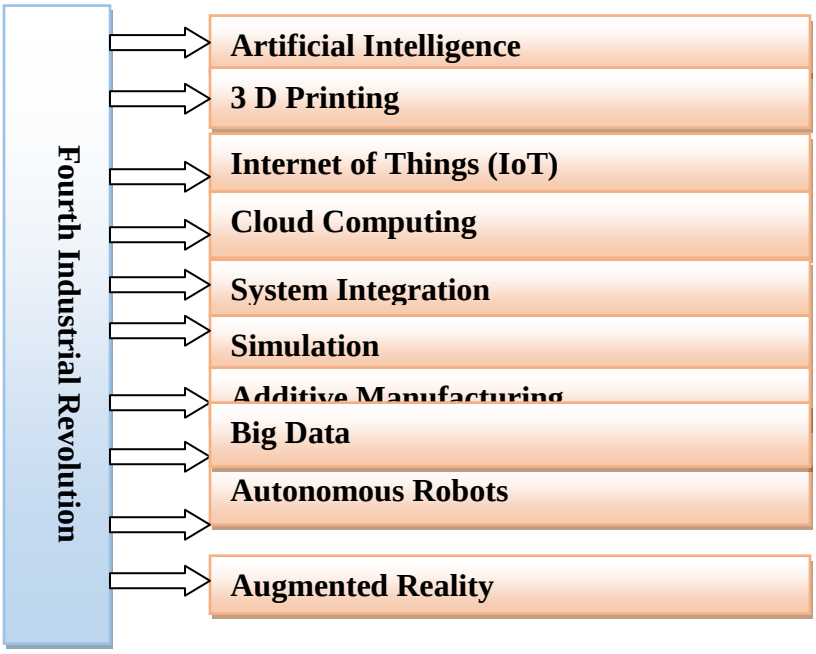
(Berna, 1960). Studied the occupational and socio- economic back ground of the entrepreneurs, the origin and growth of their firms, problems faced by them and their mobility. He concluded that in explaining entrepreneurial activity, economic factors such as access to capital, possession of business experience and technical knowledge were more important than sociological factors such as caste, attachment to traditional activities and approval or disapproval of the social group to which a potential entrepreneur belongs. (Bhanushali., 1987) analyzed the

merits secured by entrepreneur according to 6 criteria viz organizational set up, Personnel Management, Production Management, Entrepreneurial Success index, Marketing Management and entrepreneur criterion. Entrepreneurship in a broader sense can be described as a creative and innovative response to the environment. (Moore:, 1964) described entrepreneurs as too restless, too independent and too creative. (Nandy, 1973) Of entrepreneurs and non-entrepreneurs revealed that in an enterprising community, entrepreneurial exposures themselves contributed substantially to entrepreneurship and identified such a phenomenon as an important determinant of entry and survival in business. Motivation is one of the driving factors and healthy means for Achievement. The motivation to achieve an unexpected result is the basic mental drive that is required in present day entrepreneurship. (Timmons, 1973) Found in their study that achievement motivation was closely associated with entrepreneurial success. (R.A.Sharma, "Entrepreneurial Change in Indian Industry", 1980). Found that strong desire to do something independently in life, technical knowledge and/or manufacturing experience, financial assistance from institutional sources, business experience in the same or related lines, accommodation in industrial estates and heavy demand were the factors that induced the new and small entrepreneurial class. To get entrepreneurial success the technical education and training is important it has been significantly proved by the studies conducted by (C. Thangamuthu., 1992).

Objectives of the study

- To study what is fourth industrialization
- To identify the impact of industry 4.0 on entrepreneurship development
- To explore the opportunities and challenges of industry 4.0
- To examine how Indian young entrepreneurs using the latest technology to venture the new enterprise

Facets of Fourth Industrial Revolution



Industry 4.0 Means

Industry 4.0 is related to what is called the "smart factory" (Dutton, 2014)In a smart factory, a virtual copy of the physical world and decentralized decision making can be developed. (Buhr, 2015)Also, physical systems can cooperate and communicate with each other and with humans in real time, all enabled by the IoT and related services. With more than 50% of its population under the age of 27, India's role is also going to be essential in shaping the global Fourth Industrial Revolution schema in a responsible, scalable and inclusive manner**.** The Fourth Industrial Revolution holds a lot of promise for India. As Prime Minister Narendra Modi has articulated, artificial intelligence (AI) can be used effectively to reduce poverty, improve the lives of farmers and make the lives of the differently abled simpler. AI has vast applications across sectors – ranging from medicine to criminal justice, to manufacturing, to finance.

The Fourth Industrial Revolution Benefits: Source, (Cartier, 2018)

Smart IIoT

- Benefit: Increase reliability and efficiency
- Industry Investment: $933.6B by 2025 in global IIoT market expenditures for creating connected enterprises

Vehicle-as-a-Service

- Benefit: Evolve mobility of goods and people
- Industry Investment: $96.4 billion by 2022 in the global connected car market for navigation, telematics and infotainment

Insurance Telematics – Measuring Driver Behaviour and Improving Crash Management

- Benefit: Reduce coverage costs, optimize claims process and expedite repairs
- Industry Investment: $2.2 billion by 2020 in global insurance telematics market to reduce infrastructure and maintenance costs while offering better customer and fleet services

Responsive Supply Chains

- Benefit: Generate real-time insights to protect sensitive cargo and improve agility
- Industry Investment: $19 billion by 2021 in total supply chain SaaS expenditures

Other Benefits

- Increased Employee Productivity
- Increased process Automation
- Uncovering New Insights

Projected AI Expenditure By 2021

Sector	**Expected Investment**
All Industries	USD 57.6 Billion
Banking, Financial services and Insurance	USD 12 Billion
Manufacturing	USD 9.5 Billion
Retail	USD 9.3 Billion
Public Sector	USD 8.9 Billion
Health Care	USD 5.3 Billion

Source: (Conklin, 2017)

Challenges of Fourth Industrial Revolution

According to (Conklin, 2017) the following are the challenges

1. Shortage of Data Scientists or AI Specialists
2. Overwhelming Effort Needed in Data Preparation and Exploration

3. Generation of Meaningful Insights require Convergence of Data Science and Domain Expertise.
4. High Cost of Solutions
5. Lack of Skill set
6. Challenges with Stockholders

Conclusion

The world is on the brink of a new, all-encompassing revolution moving at exponential speed. We are witnessing the emergence of innovative technological trends such as artificial intelligence, the internet of things, robotics, 3D printing, nanotechnology, and others with applications as diverse as the technologies themselves. The combination of these technological breakthroughs is the Fourth Industrial Revolution. Each revolution brings systemic implications and this one is no different. What is different is the extensiveness of its scope and the vitality of its impact on our existing interaction, distribution, production and consumption systems – and even on our identities. But the impact of the technological revolution on economies and society is not preordained and can be shaped by policies at the local, national and global levels. In order to optimally leverage the Fourth Industrial Revolution for our collective progress and prosperity, we need governance frameworks, protocols and policy systems that ensure inclusive and equitable benefits. Most importantly, we need to embrace the fact that technological evolution exists in a social context and not just as a business case. In order to achieve this, we need to design normative and regulatory approaches to ensure that it is human-led and human-centred.

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