



An empirical study on benefits of Industry 4.0 automation in the changing pattern of industries.

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Abstract: The fourth industrial revolution has an impact on the entire company, so it is very important to understand how the various elements of it are able to exploit the opportunities offered by digitization. With the updating of technologies, the dimensions of Industry 4.0 also keep on updating. Hence, keeping all these discussion in mind, this research paper focuses on studying the advantages of the Industry 4.0. It is found during the research that, Industry 4.0 carries lots of advantages like it helps in reduction of cost, provides flexibility, increases efficiency, increases productivity, creates innovation opportunities, generates more revenue and hence increases the profitability of the organisation.

Keywords: Industry 4.0, automation, advantages, etc.

1.1 Introduction: Industry 4.0 was initiated in 2011 in Germany and has been strongly promoted by the governments of industrialized countries around the world, and leaders in some industries have already implemented pilot cybernetic production systems (production of equipment: household appliances, cars, machinery and equipment). The changes initiated in the 21st century will take place over decades in enterprises, as the creation of new cyber-production solutions will require many investments [1].

The Industry 4.0 concept includes areas that include numerous technologies and associated paradigms. The main elements that are closely related to the idea of Industry 4.0 include: industrial internet of things, production based on the cloud, intelligent factories, cyber physical systems or social product development. In this concept, the production process will continue to be an orderly series of actions thanks to which the customer (user) has the

opportunity to obtain a product. It must be designed and organized for set purposes (which may change). It has a dynamic character, which is conditioned by the volatility of quantitative and qualitative characteristics, material, energy and information subsidies. It should be used to maximize corporate profit and customer satisfaction [2,3].

1.2 Rationale behind the study:

The fourth industrial revolution has an impact on the entire company, so it is very important to understand how the various elements of it are able to exploit the opportunities offered by digitization. For a structured presentation of this, there was a need for a theory by which the core process of the company is customer value creation, as this industrial revolution affects first and foremost the various elements of value creation, and—at least initially—affects production most of all. However, we should not forget the corporate activities that support value creation and how these activities can benefit from the achievements of Industry 4.0.

In addition to the impact on the company's internal business areas, we cannot ignore the impact of the fourth industrial revolution on business relations. With the updating of technologies, the dimensions of Industry 4.0 also keeps on changing. Hence, keeping all these discussion in mind, this research paper focuses on studying the advantages of the Industry 4.0.

2.1 Literature Review:

According to Industry 4.0 has been considered a new industrial stage in which several emerging technologies are converging to provide digital solutions. However, there is a lack of understanding of how companies implement these technologies. Thus, the researchers aim to understand the adoption patterns of Industry 4.0 technologies in manufacturing firms. Researchers propose a conceptual framework for these technologies, which we divided into front-end and base technologies. Front-end technologies consider four dimensions: Smart Manufacturing, Smart Products, Smart Supply Chain and Smart Working, while base technologies consider four elements: internet of things, cloud services, big data and analytics. Researchers performed a survey in 92 manufacturing companies to study the implementation of these technologies. Their findings show that Industry 4.0 is related to a systemic adoption of the front-end technologies, in which Smart Manufacturing plays a central role. Their results also show that the implementation of the base technologies is challenging companies, since big data and analytics are still low implemented in the sample

studied. They propose a structure of Industry 4.0 technology layers and the researchers show levels of adoption of these technologies and their implication for manufacturing companies [4].

Over the last few years, the Industry 4.0 concept (called the Fourth Industrial Revolution) has attracted attention among both academics and practitioners. Industry 4.0 is a very broad domain including production processes, efficiency, data management, relationship with consumers, competitiveness, and much more. There-fore, the aim of the paper is to present new factory archetypes. The manuscript uses a synthesis of literature (scientific studies and industrial reports). Based on the results obtained, the archetypes of factories of Industry 4.0 are described. The presented manuscript contributes to the development of literature on the concept of Industry 4.0. The results obtained from the analysis of the literature not only summarize the existing knowledge about Smart Factories, but also indicate the directions of potential research [5].

3. Research Methodology:

3.1 Research Objectives:

1. To understand the process of implementation of Industry 4.0 in changing pattern of Industry
2. To examine the advantages of Industry 4.0 automation
3. To identify the perception of industry towards Industry 4.0

3.2 Research Design: For the purpose of this research, descriptive research design has been used to describe the advantages of Industry 4.0 automation and also to describe the perception of industry towards Industry 4.0

3.3 Data Collection: For the purpose of primary data collection, semi structured interview technique has been used. The secondary data has been collected from internet, official websites, journals and magazines.

3.4 Sampling Technique and Sample Size: For the purpose of this research, convenient sampling technique has been used to collect the sample of 100 respondents from industry.

4.1 Benefits of Industry 4.0:

There are numerous benefits of Industry 4.0 automation to industry, customers and to its stakeholders, this research tries to identify some of the benefits from the point of view of industry by large.

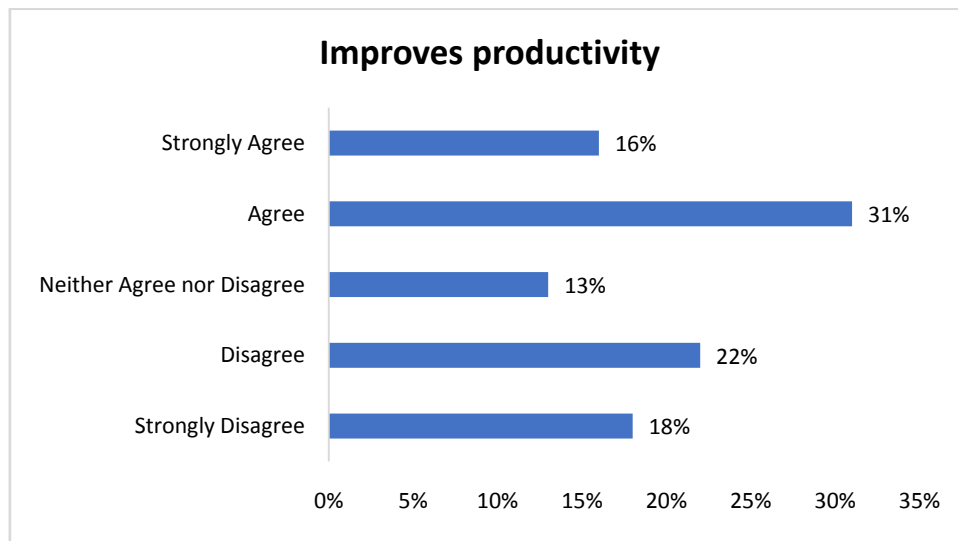


Fig. 1 Improves Productivity

Interpretation:

The first advantage of industry 4.0 is it helps in increasing the productivity of the organisation, majority i.e. 31% of the industrialists agree to this, which is supported by 16% of industrialists who strongly agree to this. 13% of industrialists neither agree nor disagree to this. However, 22% of the industrialists still disagree to this and feel that industry 4.0 does not help in increasing productivity, remaining 18% strongly disagree to this.

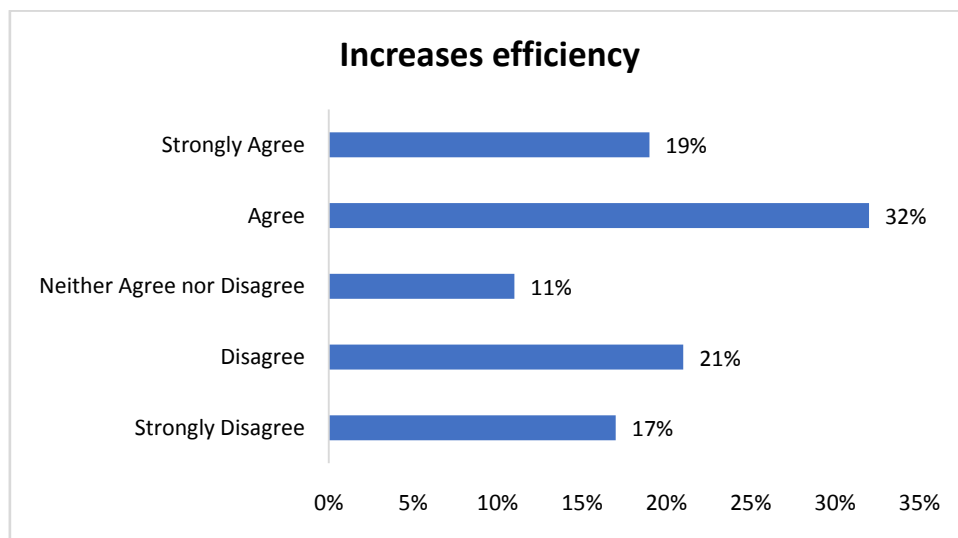


Fig. 2 Increases efficiency

Interpretation:

Industry 4.0 helps in making the multiple areas of production line more efficient, hence productivity is directly associated with it. During the survey, it is found that majority i.e. 32% of the industrialists agree to this, which is supported by 19% of industrialists who strongly agree to this. 11% of industrialists neither agree nor disagree to this. However, 21% of the industrialists still disagree to this and feel that industry 4.0 does not help in increasing efficiency, remaining 17% strongly disagree to this.

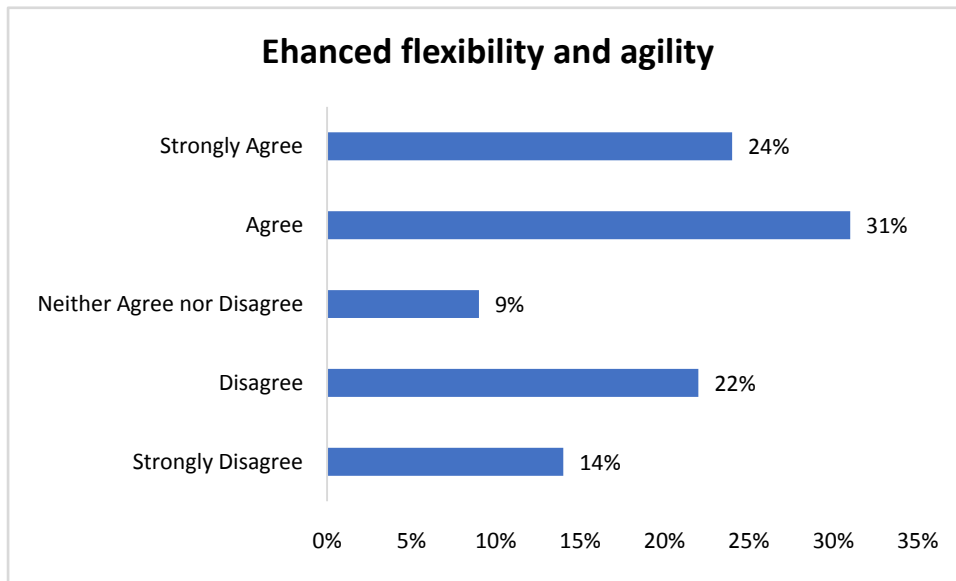


Fig. 3 enhanced flexibility and agility

Interpretation:

It is easier for the industry to introduce new products to the production line, new production opportunities are created, high mix manufacturing is also possible due to Industry 4.0. During the survey, it is found that majority i.e. 31% of industrialists agree that Industry 4.0 enhances flexibility and agility in production, which is supported by 24% of industrialists who strongly agree to this. 9% of industrialists neither agree nor disagree to this. However, 22% of the industrialists still disagree to this and feel that industry 4.0 does not help in increasing flexibility, remaining 14% strongly disagree to this.

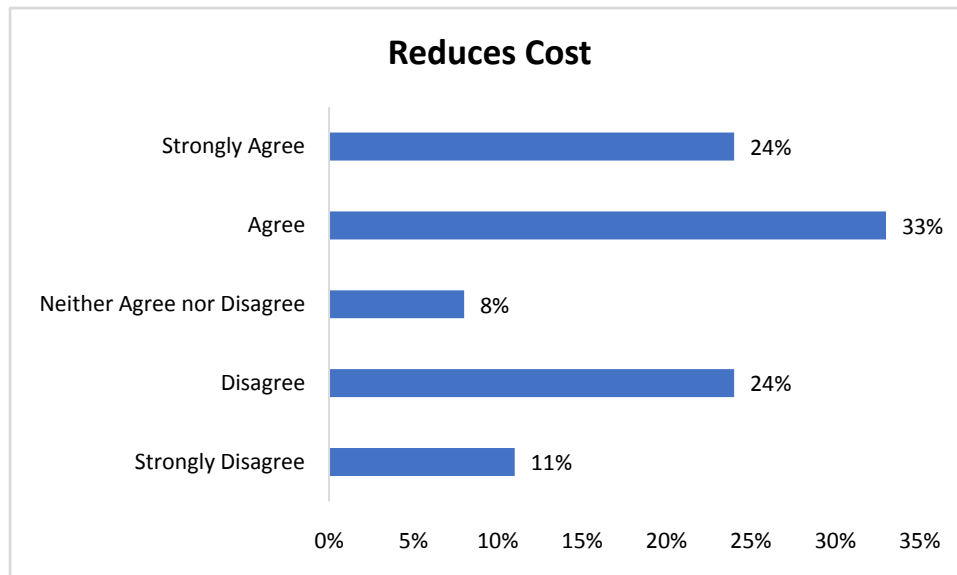


Fig. 4 Reduction in Cost

Interpretation:

Another important advantage of Industry 4.0 automation is that it helps in reducing the overall production cost in the industry. It is found during the survey that majority i.e. 33% of the industrialists agree to this, which is supported by 24% of industrialists who strongly agree to this. 8% of industrialists neither agree nor disagree to this. However, 24% of the industrialists still disagree to this and feel that industry 4.0 does not help in reducing cost, remaining 11% strongly disagree to this.

5. Conclusion:

Based on the findings of the interviews, it is concluded that Industry 4.0 automation is the need of the hour. The changing business practices and market situations are such that the need for utilisation and application of Industry 4.0 can not be ignored. Industry 4.0 carries lots of advantages like it helps in reduction of cost, provides flexibility, increases efficiency, increases productivity, creates innovation opportunities, generates more revenue and hence increases the profitability of the organisation.

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