



A STUDY ON IMPACT OF INDUSTRY 4.0 IN THE INDIAN COMPANIES

Deepan Edward Dasan M¹, Dr. TR. Kalai Lakshmi ²

¹Student, School of Management Studies, Sathyabama, Institute of Science and Technology, Chennai-119

³Associate Professor, School of Management Studies, Sathyabama Institute of Science and Technology, Chennai-119

ABSTRACT:

This study aims to assess the impact of industry 4.0 on the Indian Companies in the India. The main purpose of this study is to understand the potential drivers, and barriers faced by Indian Companies while practicing of industry 4.0. Hence this study is concerned with a survey conducted to recommends a learning opportunity for workers to know about what technology has been used in their company. Adequate amount of training to overcome insufficient technical skills and more man power to handle data and cyber security.

INTRODUCTION

The industry 4.0 is bringing about the convergence of Information Technology (IT) and Operational Technology (OT) creating interconnectivity between autonomous manufacturing equipment and product computer systems. Regardless of a rapid growth industry 4.0, studies associated with the identification and analysis of its elements, potential drivers, barriers, and benefits are lacking in order to fill that gap this study helps in the analysis of these elements and provide a overview about how Indian companies have adopted and practicing industry 4.0. The Fourth Industrial Revolution is a practice focused on automation and data exchange in production technologies and processes that include cyber-physical (CPS) systems, IoT, industrial internet, cloud computing, cognitive computing, and artificial intelligence . The Fourth Industrial Revolution marks the beginning of the Age of Thinking. Some companies as emerging technologies in fields such as robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, the internet of things, the industrial internet of things, decentralized consensus, fifth-generation wireless technologies, 3D printing, and fully autonomous vehicles have implemented Industry 4.0 but yet to be advanced and some have to implement for its better future.

REVIEW OF LITERATURE

Devendra A. Patil (2020) Advanced machine learning helps predict the need for different products with high accuracy, **Ghadge A (2020)**, The Internet of Things plays an important role in industry 4.0 and is also called the Internet of Things industry. The new wave of consumer shopping coupled with urbanization and paradigm fluctuations in demographic and psychographic dynamics has made consumers more likely to use a retail website to search for product details and buy products.. **Zeng J., Huang J., Pan L (2020)**, Industrial 4.0 Industries have machines supported by wireless communication and sensors. These sensors are connected to a system that can visualize and monitor the entire production line and can even make its own decisions. Industrial 4.0 utilizes intelligent production processes for waste disposal products to meet the shortage of the COVID-19 epidemic. **Kerin and Pham, (2019)** Industry 4.0 contains a variety of technologies such as Internet of Things (IoT), cloud computing, additional production, cyber security with blockchain, the unpopular reality of taxpayers we see with artificial intelligence (AI), big data, system integration, simulation and independent robots. **Luthra and Mangla, (2018)**, Industry 4.0 and sustainability are relatively recent emerging technological and organizational trends that are influenced by or influence improving productivity and sustainable production. **Gibson (2014)**, Industry 4.0 technologies may be grouped into physical and digital technologies. Physical technologies mainly refer to manufacturing technologies such as additive manufacturing.

RESEARCH METHODOLOGY

The researcher has conducted the study in India and has considered many different types of companies like manufacturing, Software, finance, agriculture, healthcare, FMCG, Education, Textiles, Logistics owners, managers to collect the data samples. The primary objective of the study is To analyze the impact of industry 4.0 elements and their benefits. The secondary objective of the study is To understand the potential drivers, and barriers faced by Indian Companies while practicing of industry 4.0 To determine the key Technology majorly used by industries. Descriptive research design is adopted by the researcher. The sample size considered for the study is 55. Data is collected from retail store owners and managers in different companies. Respondents have been chosen for study from the study area according to the convenience of the researcher, convenience sampling and Non parametric- Direct interview method is adopted to take the survey from 55 owners and managers. The researcher has used table and charts to present the data and has used SPSS software to analyze the data .Chi-square, and ANOVA WAS USED statistical tool was used to analyse the data and understand the impact of Industry 4.0 in Indian Companies

DATA ANALYSIS AND FINDINGS

Table 1 showing Job positions of the respondents

Job Position	No of respondents	Percentage
Owner	13	23%
Senior level Manager	11	20%
Mid level Manager	15	28%
Low level Manager	16	29%
	55	100%

Findings :

From the above table it is interpreted that the number of respondents were, 29% is Low level Managers , 15% is Mid level managers, 13% is owners and 11% is Senior level Managers.

Table 2 showing Strategy For the industry 4.0

Strategy For the industry 4.0	No. of Respondents	Percentage
Implemented and Continuously updated	13	23%
Implemented	22	40%
In planning	12	22%
No specific strategy	8	15%
	55	100%

Findings

From the above table it is interpreted that the 40% is Implemented, 23% is Implemented and Continuously updated, 22% is In planning and 15% is No specific strategy.

Table 3 showing Impact of Industry 4.0 in companies

Factor	V L	%	L	%	N	%	H	%	VH	%
Productivity & Efficiency	2	3	2	3	1 2	22	24	4 3	15	27
Profitability	1	2	4	7	2 1	38	20	3 6	9	16
Employment	1	2	8	1 4	1 7	31	21	3 8	8	14
Quality	2	3	3	5	1 6	29	23	4 1	11	20
Revenue growth	2	3	5	9	1 6	29	19	3 4	13	24

Findings and interpretations

From the above table it is interpreted • Majority (43%) are considered industry 4.0 has high impact on Productivity & Efficiency. Majority (38%) are considered industry 4.0 has neutral impact on profitability. Majority (38%) are considered industry 4.0 has high impact on employment. Majority (41%) are considered industry 4.0 has high impact on Quality. Majority (34%) are considered industry 4.0 has high impact on Revenue growth.

Table 5 showing Benefits by implementing Industry 4.0 in companies

Benefits	V H	%	H	%	N	%	L	%	V L	%
Business competitiveness	21	38	25	45	7	13	1	2	1	2
Productivity and revenue	24	43	21	38	9	16	0	0	1	2
Technology development	22	40	25	45	7	13	0	0	1	2
Resource efficiency	22	40	24	43	8	14	0	0	1	2
Real-time data	23	41	24	43	7	13	1	2	0	0
Customer satisfaction	22	40	24	43	8	14	1	2	0	0
Process transparency	23	41	25	45	6	11	1	2	0	0

Findings

From the table it is interpreted that Majority (45%) of respondents are realized high benefits as Business competitiveness. Majority (43%) of respondents are realized very high benefits as Productivity and revenue Majority (45%) of respondents are realized high benefits as Technology development Majority (43%) respondents are realized high benefits as Resource efficiency. Majority (43%) of respondents are realized high benefits as Real-time data. Majority (45%) of respondents are realized high benefits as Process transparency Majority (45%) of respondents are realized high benefits as Process transparency.

Table 5 showing the association between the No of years of existence and Implementation of industry 4.0.

Null Hypothesis (H0) – There is no association between the years of existence and Implementation of industry 4.0.

Alternative Hypothesis (H1) – There is association between the years of existence and Implementation of industry 4.0.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	22.931 ^a	12	.028
Likelihood Ratio	27.283	12	.007
Linear-by-Linear Association	8.743	1	.003
N of Valid Cases	55		

19 cells (95.0%) have expected count less than 5. The minimum expected count is 1.02.

Since p-value 0.028 is Lesser than 0.05, we accept the alternative hypothesis (H1) and reject the null hypothesis (H0). Therefore, there is an association between years of existence and Implementation of industry 4.0.

Table 6 showing The significant difference between the size of the company and the impact of industry 4.0 in productivity and efficiency

Null Hypothesis (H0) – There is no statistically significant difference between the size of the company and the impact of industry 4.0 in productivity and efficiency.

Alternative Hypothesis (H1) – There is statistically significant difference between the size of the company and the impact of industry 4.0 in productivity and efficiency.

ANOVA					
Size of the company					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	13.409	4	3.352	3.765	.009
Within Groups	44.518	50	.890		
Total	57.927	54			

Significance level 0.009, which is below 0.05 therefore, There is a significant difference between the between the size of the company and the impact of industry 4.0 in productivity and efficiency.

CONCLUSION

Regardless of the fast-growing 4.0 industry, this study is associated with the identification and analysis of its components, potential causes, barriers, benefits and challenges as a result many companies know about industry 4.0 and want to explore more of its potential. In their companies and potential drivers 4.0 market opportunities, market needs and competitive pressures, high resilience and better working conditions, most companies use industry 4.0 strategically and some plan to believe that all aspects of industry 4.0 are very important to their companies depending on their sectors. Excellent in Manufacturing, profitability, employment and quality and have equal benefits and challenges in terms of their fields and concludes by overcoming the security threats to investment companies. More on online security in the company and discover new technologies at any cost, Industrial 4.0 as a powerful means of social and economic development — has great potential to manage problems and requires the most important practical implementation. The COVID-19 epidemic and the catastrophe of 2020 unveiled important new directions for the development of Industry 4.0: social media control, digital poverty alleviation, social support management, and

prudent management of health care to increase its resilience to future epidemics and pandemics.

REFERENCES

- *Bhatia et al. (2020); Frank et al. (2019); Kerin and Pham (2019); Thakur and Mangla (2019); Chauhan et al. (2019); Bag and Pretorius (2020)*
- *Frank et al. (2019); Zhou et al. (2020); Ghobakhloo (2020); Yadav et al. (2020); Cezarino et al. (2019); Pacaux-Lemoine and Trentesaux (2019) Yadav et al. (2020)*
- *Ford and Despeisse (2016); Bhatia et al. (2020); Thakur and Mangla (2019)*
- *Frank et al. (2019); Horváth and Szabó (2019); Thakur and Mangla (2019); Bag et al. (2020a); Dubey et al. (2020); Pacaux-Lemoine and Trentesaux (2019)*
- *Masood and Egger (2019); Ghobakhloo (2020); Yadav et al. (2020); Guarnieri and Trojan (2019)*
- *Pater and Gils (2003); Lass and Gronau (2020); Schleinkofer et al. (2019); Alcacer and Cruz-Machlado (2019); Bag et al. (2020d)*
- *Alcacer and Cruz-Machlado (2019); Ghobakhloo (2020); Yadav et al. (2020); Guarnieri and Trojan (2019)*
- *Rüßmann, M., Michael, Lorenz, M., Gerbert, P., Waldner, M., Justus, J., Engel, P., Harnisch, M.: Industry 4.0: The future of productivity and growth in manufacturing industries. Boston Consult. Group. 9, (2015).*
- *Zuehlke, D.: SmartFactory—Towards a factory-of-things. Annu. Rev. Control. 34, 129–138 (2010).*

