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A Study on Development of MSME based on Technology to deal with the Industrial Revolution 4.O

Anita N. Halamata
Assistant Professor of Commerce,
Karnatak University Post Graduation Centre
Haveri-

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ABSTRACT
The fourth industrial revolution has attracted more and more attentions all around the world. The adoption of automation would reduce the production cycle.The aim of this paper is to put overview on the obstacles faced by MSME units in India to implement Industry 4.0 and the development of MSMEs. And discussion carried on the financial assistance provided by the Indian Government to overcome these obstacles.This study is based on secondary data. Systematic literature review was carried out to analyse the research article.s and it is concluded that even though government provided financial assistance to MSME it is not so easy them to upgrade Industry 4.0

Keywords; Industry 4.0; IOP, CPSU, QMS, QTT1.

I. INTRODUCTION

MSME stands for Micro Small and Medium Enterprises. MSME sector is considered as the backbone of Indian Economy that has contributed substantially in the socio economic development of the nation. It creates an employment opportunities and works in the development of backward and rural areas.

According to the report by Harvard Kennedy within a prosperous country, small and medium enterprises represent the biggest partif ind ustries followed by large enterprises and micro ent erprises where as they represent the bottom share of industries within the low income countries where the share of micro enterpri ses is largest followed by a large enterprise last by SMEs.
Industry 4.0 is the new Industrial Revolution focussing on a digitalization and integration of the value chain (D.I Bojan-2019). An Industrial automation and the production of highly mechanised products are among the expectations for the future of the Industry 4.0 revolution(Ali-2018).

The most important effects of Industry 4.0 are the use of technology and production of big data architecture and analysis of this data using information technologies in the production and service and small and medium sized enterprises will have a significant impact on the orders received (Ali, 2018). By using this technology in the production and a services, it creates competition in the market.

Industry 4.0
Industry 4.0 is the blend of advanced analytical big data, Robotics and an Automation, Artificial intelligence, an Interment of things and a process Digitalisation across the business value chain.

Why Industry 4.0
Advanced analytics would help to enhance the production capacity and its quality the model would shift towards the prediction and the prevention of defects through data analytics.
The adoption of automation would reduce the production cycle. The digitalisation of various business processes would load to cost savings(Engineering.com.2019).

II. LITERATURE OF REVIEW

Pillai Lalith Srinivasam(2018) [1]A Study is based on secondary data. Authors analysed the significance of MSME all over the Indian economy, the study found that, India is still in Industry

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2.0 stage with respect to technology. This Study also reveals that, even though many steps have been taken by the government, MSMEs still have a long way to go in order to reap benefits. Authors concluded the study by stating that, industry 4.0 technologies are capital intensive and beyond the reach of most of the MSMEs.

DI BojanJovanovski(2019) [2]This research work presents potential opportunities for implendts impact of Industry 4.0 on MSMEs study analysed the benefits from and obstacles for implementation of Industry 4.0. Authors also found that, the impact that Industry4.0 has over the competitiveness of industry through productivit y flexibility and efficiency is changing its position of revolutionary reform into the essential concept.

KalyanaPandir(2020)[3] This study is exploratory in nature and based on secondary data.Study reveals that Industry 4.0 is feasible to create prolonged ecosystem with qualified employees and to bear on India's edge in manufactures. It is also found that localisation of production should be promoted and start-ups should be given enough freedom and there should be increased in technical literacy among MSMEs.

Akshay.G(2020)[4] This study analysed the barriers involved in implementing Industrial 4.0 for sustainable production. It considers eight barriers to implement Industry 4.0 for sustainable production. This study shows the relation between barriers. The prime contribution of this study is to not only find the influencing barriers but also to mitigate them by allocating scarce organizational resources. Technological up gradation lack of policy frame work are the main two barriers that found by this study

Kamble S.S(2020)[5] This study is based on combin ation of exploratory and empirical research design. The study reveals that, an Industry 4.0 enables smart manufacturing syste m offers more competitive benefits compared to traditional manufacturing system.

HelmlaAditFltra(2020)[6] This study aims to examine the impact of Industry 4.0 on the development of MSMEs. For this study the authors used quantitative approach and conducted a regression analysis to discover which aspect affected Industry 4.0. It is also revealed that only two components are affected industry 4.0 that is of sales component and marketing and human resource components.

Research Gap

From the above review of literature, it can be understood that many research works conducted in the area of MSME's development, but a limited study was done in the Implementation of Industry 4.0 in MSMEs.

Statement of the Problem

Generally, MSMEs are not in a position to adopt smart manufacturing systems immediately.
It is necessary to study the root level problems of the MSMEs in implementing I4.0. Even though the government of India has framed many policies for digitalising the manufacturing systems in MSMEs. There is a lack of technological uses in the MSMEs. The area of concern is the re-examination of factors affecting on adopting the Industry 4.0 in MSMEs. Hence, it is the time to study a development of MSMEs based on the Technology to deal with the Industrial Revolution 4.0

Need for the Study

Many MSMEs are from rural areas and lack of technological literacy. The purpose of the study is finding out what are the actual basic problems of MSMEs in adopting I4.0 and it's development.

Objectives of the study

1. To identify the challenges faced by the MSMEs in implementing Industry 4.0

2. To know steps taken by the Indian government for MSMEs to implement the Industry 4.0

Research Methodology

The proposed study is based on the secondary data. The purpose of secondary data, itis referred different books periodicals, research thesis,

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journals, and annual reports of the sample MSMEs.

Challenges faced by the MSME in implementing Industry 4.0

Present Challenges of MSMEs

One of the aspects holding down the MSME sector is their age-old inefficient methods of operating the business and their inertia to adopt the technology(Smith, 2019). A Lack of awareness about modern technologies, Lack of the capital to buy the necessary technological Instruments, Lack of technological experts in the MSME language is also one of the primary concerns to adopting a digital solution.

Production of diversified products with lower cost

Industry 4.0 promises there should be more versatility in production with a lower cost of manufacture. Companies may search manufacturing options through an online platform and implement those manufacturing steps in reality. For this manufacturers need other external partners' assistance like internet, free machine capacity. The value of industry 4.0 grows with each new partner. Large manufacturing units can opt for new technology to adopt industry 4.0 but SME's gradually change these manufacturing technologies in order to make their production process more network. For this SME's need to overcome a number of obstacles.

Technologies and Creation of a wide network

It is necessary to adopt a new IT solution to create a network. This can be done with significant improvement in hardware processors and an increase in memory capacity and fast internet services SMEs need to take advantage of these advanced technologies and rapid internet services. The creation of their facilities a cost-benefit analysis of suitable technology and a lack of data security are the most significant obstacle that SMEs faces in the adoption of Industry 4.0.

Scarcity of Resources and lack of Digital knowledge

The manufacturing process is based on software design material related capacity planning, order processing. All activities are working on a digital basis The IT Innovation readiness Index which has been issued yearly demonstrates that the networking of production is viewed with some trepidation by the manufacturing of SMEs.

Entrepreneurship Work Organization and Structuring

Human-machine interfaces, task and activity hierarchies, and overall enterprise organization will all be influenced by CPS-based production systems. Humans still map out the intelligence of technical systems, and they will never be able to replace humans' ability to adapt flexibly and creatively to unforeseen situations (Fraunhofer IAO 2013: 125) Rather, it will be the practical expertise or know-how of production workers, as well as their reflective and adaptable capacities, that will make Industry 4.0 successful when combined with machine precision and speed.• The goal is to design intuitive and robust interfaces that give human labor with effective support and tailor-made information to deal with challenges as they arise. • If such help systems are not developed and implemented, there is a risk that networking will lead to more complex procedures and work will cause worry, stress, or a sensation of overload as a result of the implementation of CPS technologies (Acatech 2012: 109). Networking outside of the organization would necessitate soft skills.

Steps were taken by the Indian Government for implementation of Industry 4.0Financial Support to MSMEs in ZED Certification Scheme

The objectives of the scheme include inculcating Zero Defect & Zero Effect practices in manufacturing processes, ensure continuous improvement and supporting the Make in India initiative.

The ZED Certification scheme is an extensive drive to create proper awareness in MSMEs about ZED manufacturing and motivate them for assessment of their enterprise for ZED and support them. After ZED assessment, MSMEs can reduce wastage substantially, increase productivity, expand their market as IOPs, become vendors to CPSUs, have more IPRs, develop new products and processes etc.

The scheme envisages promotion of Zero Defect and Zero Effect (ZED) manufacturing amongst MSMEs and ZED Assessment for their certification so as to:

Develop an Ecosystem for Zero Defect Manufacturing in MSMEs.

Promote adaptation of Quality tools/systems and Energy Efficient manufacturing.

Enable MSMEs for manufacturing of quality products.

Encourage MSMEs to constantly upgrade their quality standards in products and processes.

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Drive manufacturing with adoption of Zero Defect production processes and without iimpacting the environment.
Support 'Make in India' campaign.
Develop professionals in the area of ZED manufacturing and certification. Assessment & Rating/Re-rating/Gap analysis/Hand holding

Nature of Assistance
The subsidy provided by the Government of India for Micro, Small & Medium Enterprises will be 80%, 60% and 50% respectively. There shall be an additional subsidy of 5% for MSMEs owned SC/ST/women and MSMEs located in NER and J&K for assessment & rating/re-rating/gap analysis/hand holding:
a) Assessment/Rating by empanelled Credit Rating Agencies/other Agencies valid for 4 years (Ministry of MSME will subsidize* 80% of Micro, 60% of Small, 50% of Medium Enterprises' Certification Fee: average 70% of Fee) (Assessment Fee Rs. 10,000/-& Rs 80,000/- per enterprise respectively for Desktop Assessment and ZED rating Complete Assessment).
b) Additional rating for Defence angle i.e. Defence ZED by empanelled Credit Rating Agencies/other Agencies valid for 4 years (Ministry of MSME will subsidize* 80% of Micro, 60% of Small, 50% of Medium Enterprises' Certification Fee: average 70% of Fee) (Assessment Fee Rs. 40,000/- per enterprise.)
c) Gap Analysis, Handholding, Consultancy for improving rating of MSMEs by Consultants through QCI/NPC, Field formations of O/o DC-MSME viz. MSME-DI, MSME-TC including its autonomous bodies, BEE etc. (Ministry of MSME will subsidize* 80% of Micro, 60% of Small, 50% of Medium Enterprises' Consultancy charges: average 70% of Fee) (Hand holding charges Rs. 1.9 Lakh per enterprise whereas in case of MSMEs owned by SC/ST entrepreneurs additional support of Rs 10,000/- will be provided.)
d) Re-Assessment/Re-Rating by Credit Rating Agencies & Other Agencies (Ministry of MSME will subsidize* 80% of Micro, 60% of Small, 50% of Medium Enterprises' Certification Fee: average 70% of Fee) (Assessment Fee Rs. 40000/- per enterprise.).**(Source: Ministry of Micro, Small and Medium Enterprises).**

National Manufacturing Competitiveness Programme (NMCP)

Credit Linked Capital Subsidy for Technology Upgradation (CLCSS)

CLCSS provides 15% subsidy for additional investment up to Rs 1 cr for technology upgradation by MSEs. Technology upgradation would ordinarily mean induction of state-of-the-art or near state-of-the- art technology. In the varying mosaic of technology covering more than 7,500 products in the Indian small scale sector,Units looking to replace existing equipment/technology with the same equipment/technology will not qualify for subsidy under this scheme. Similarly, units upgrading with used machinery would not be eligible under this scheme.

The revised scheme aims at facilitating technology up gradation by providing 15% up front capital subsidy to MSEs, including tiny, khadi, village and coir industrial units, on institutional finance availed by them for induction of well established and improved technologies in specified sub-sectors/products approved under the scheme.**(Source: Ministry of Micro, Small and Medium Enterprises).**

Technology and Quality Upgradation Support to MSMEs

Capacity building of MSME clusters for energy efficiency/clean development and related technologies. Funding support of up to 75% for awareness programmes, subject to maximum of Rs 75,000 per programme;
Implementation of energy efficient technologies in MSME units 75% of actual expenditure for cluster level energy audit and preparation of model DPR;
Setting up of Carbon Credit Aggregation Centres. 50% of actual expenditure subject to maximum Rs 1.5 lakh per DPR towards preparation of subsequent detailed project reports for individual MSMEs on EET projects;
Encouraging MSMEs to acquire product certification / licenses from National / International bodies. 75% of the actual expenditure, subject to a maximum Rs 15;
25% of the project cost as subsidy by Government of India, balance amount to be funded through loan from SIDBI/banks/ financial Institutions. MSMEs are required to make the minimum contribution as required by the funding agency;
75% subsidy towards licensing of products to national/ international standards; ceiling Rs 1.5 lakh for obtaining product licensing/marking to National standards and, Rs 2 lakhs for International standards.**(Source: Ministry of Micro, Small and Medium Enterprises).**

Enabling Manufacturing Sector to be Competitive through QMS&QTT

The scheme endeavors to sensitize and encourage MSEs to understand and adopt latest Quality

Management Standards (QMS) and Quality Technology Tools (QTT).
Funding support for introduction of appropriate course modules in technical institutions through expert organizations.
Funding support up to Rs 79,000/- per programme for conducting QMS/QTT awareness campaign for MSEs through expert organization.
Funding support up to Rs 2.5 lakh per uniform implementation of QMS and QTT in selected MSMEs through expert organization.
Funding support for conducting C-watch study for product having threat from foreign goods.**(Source: Ministry of Micro, Small and Medium Enterprises).**

III. CONCLUSION

From the literature review, it is found that MSMEs are facing many obstacles to implementing Industry 4.0. Many MSMEs are situated in rural areas in India where they are unable to connect to internet facilities. Industry 4.0 concept is purely based on speed internet connectivity. One of the main difficulties that MSMEs facing a lack of technological knowledge and availability of infrastructure. It is a bit difficult for them to immediately adapt to industry 4.0. Even though the government is providing any financial assistance for technological up-gradation, and speedy and quality manufacturing process, most of the MSMEs is not able to upgrade their manufacturing process.

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