Digital Consumption and Manufacturing Insights with Reference to Indian Economy

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Abstract

This Paper states that Digital Consumption and Manufacturing insights which are the necessity of today's consumption and manufacturing scenario. This approach reduces the wastage of raw material and remains of production and production costs. It fulfills the demand of consumers rapidly and also improves the production process and services. Various Industries such as chemicals, infrastructure, oil and gas, Mining metal & mineral, Engineering and Communication Transportation get modernization and MSME can improve its production services and satisfy the customers digitally. All the three sectors of Indian economy get benefitted and compete with the rest of world Economy. It also explores the threats which are being faced by the digital Consumption and Manufacturing industries.

Key Words: Big data analysis, Nanotechnology, Digital Marketing, SMME (Indian small and medium discrete manufacturing establishments, DX (Digital transformation))

Introduction

The digital transformation consumption and manufacturing bring lots of opportunity for comprehensive production and consumer market. It gives the strength to gear up the new startup and make in India campaign. As per European Commission, Indian Economy has the fastest pace in the field of Digitalisation transformation. Volume and value of digital consumption and manufacturing have been increased 1052 crores in 2023(As per RBI report)

Review Literature

1. Digital transformation priorities of India's discrete manufacturing SMEs-a

conceptual study in perspective of Industry 4.0 on research gate research paper has been written G Dutta, R. Kumar R .Sindhwani gives information that Manufacturing excellence is critical to our nation's economy. Indian Government's National Manufacturing Policy, drafted in 2011, is being revamped to include the aspects of Industry 4.0. Initiatives, both led and assisted by government and industries, are being launched to catalyse and transform India's manufacturing competencies. This paper aims to study the functional areas which can potentially leverage Industry 4.0 technologies and help India's manufacturing establishments to transform. It does so in context of the aspirations of India's small and medium discrete manufacturing establishments (SMME) towards adopting digital technologies for the identified functional areas. The study draws its context from the relevant literature review intended to examine the academic articles published until the end of September 2018, followed by a maturity assessment survey of Indian SMMEs to establish priority areas. The study reveals that the digital consumption and manufacturing is increased in India across the world swiftly.

2. Digital transformation in manufacturing industry-A comprehensive insight K Duraivelu-Materials Today: Proceedings, 2022 – Elsevier on research gate: - The research paper discussed about the Digital consumption its disruption and rapid growth. Industry 4.0 has witnessed many opportunities from the advanced technologies to enhance efficiency in the existing manufacturing processes through automation, artificial intelligence and machine learning approaches. This article states the necessity of digital transformation (DX) in the manufacturing industry for improving quality and efficiency, reducing waste and cost reduction, adapting quickly to changes in the customer demands and market, and creating services and innovative products. The two most common types of DX in the manufacturing industry are process DX – digitizing the existing processes to improve the operational efficiency; product and service DX – creating new experiences and digital services for customers to improve customer satisfaction. This article also sets out to explore the challenges being faced by the manufacturing industry during the course of DX. The success factors of DX in the manufacturing industry could be associated with one of the three dimensions: organization, environment, and technology. The major steps for effective implementation of DX that a manufacturing company should consider are also discussed. This article states that the scope of digital consumption and manufacturing in India is so wide that change the entire atmosphere of India economy.

3. Impact of emerging technologies on digital manufacturing: Insights from literature review: -P Agarwal S Navgotri, P Nagesh - Materials Today: Proceedings, 2023 – Elsevier Over the past decade, rapid development of

new technologies and smart gadgets has digitized the world. The high penetration of smart phones, internet, social media and online shopping in our day-to-day life have significantly changed the shopping habits of buyers and ultimately the demand patterns, imposing huge pressure on organizations to transform their business model. Today, manufacturing companies are trying to switch from mass production to mass customization by adopting emerging technologies owing to the reason that modern customer's expectations are very high. Adopting emerging technologies such as artificial intelligence (AI), 3D printing (3DP), Internet of things (IoT), etc. in production system can be a viable solution to overcome these challenges. This article aims at exploring the impact and benefits of emerging digital technologies of industry 4.0 in manufacturing. The research is based on literature review which unfolds the advantages of emerging technologies and challenges to their adoption. The digital technologies discussed in this paper having revolutionary impact on industrial manufacturing are 3D printing, Robotics, Sensors, IoT, Big data analytics (BDA), AI, Nanotechnology and social technologies. This study is an attempt to present insights toward utilization of these technologies in production systems which will enable digital manufacturing. This reviewed Literature states about the increasing applications of digital manufacturing and consumption

4. How digital tranfromation will help India accelerate its growth in the coming years book written by K.D.Shrivastava states that between 2011 and 2019 Digitalization in India grew neck to neck with China at 11%. Digtialization in India has been progressing steadily and speedily it is spreading first in urban areas followed by smaller urban areas and rural areas. The study reveals that the digital consumption and manufacturing has great scope in India.

Research Methodology

Descriptive, qualitative methods and secondary data are used to examine the current status of digitization and its impact on manufacturing and supply chain, a brief literature review is conducted. In this study, following data bases have been explored such as Scopus, science direct, research gate, google scholar, Wiley, etc. to identify appropriate literature. The keywords that were used during the search are 'impact of digitization on manufacturing', 'digital transformation of supply chain', and 'present status of digitization in supply chain'.

Objectives

- To get the scope of Digital growth in Indian Economy.
- To analysed the significant role in digital economy growth.

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- To evaluate the Digital consumption and Manufacturing insights.

Findings

The digital consumption can be analysed as per the RBI, the share of India's core digital economy increased from 5.4% of GVA in 2014 to 8.5% in 2019. In US dollar terms, India's digital economy exhibited a growth rate of 15.6% over the period 2014 to 2019, which was 2.4 times the growth of the Indian economy. Further, the share of digitally dependent economy (digitally enabled sectors) is estimated at 22.4% in 2019.

RBI has also decomposed the overall output multiplier into digital and non-digital output multipliers. The output multiplier is defined as capturing the direct and indirect impact of a unit change in final demand covering digital and non-digital sectors on the economy's total output. The RBI then estimated separately the digital and non-digital output multipliers for 2014 and 2019. It is shown that while the non-digital output multiplier fell from 1.68 to 1.57 during this period, the digital multiplier increased from 1.34 to 1.50.

A recent study by MeiTY (2019) has estimated the size of India's digital economy at US$200 billion in 2019, which is expected to rise to US$500 billion by 2025 in their 'business as usual' scenario. However, they also point out that potentially, the size of India's digital economy can be increased up to US$1 trillion by following a set of policy initiatives covering 30 digital themes under 9 national goals: (1) 21st-century IT infrastructure and software capabilities, (2) E-governance of the future, (3) Healthcare for all, (4) Quality education for all, (5) Energy for all, (6) Next-generation financial services, (7) Doubling farmers' income, (8) Make in digital India, make for India, make for the world and (9) Jobs and skills of the future.

In manufacturing areas the maturity survey undertaken throws up several insights – Indian SMME community's self-assessment indicates operational measurements followed by manufacturing and design interventions as the aspired transformation cycle. The survey indicates that manufacturers would like to make changes to their design and manufacturing strategies based on performance metrics; therefore, they need to first capture real-time machine data, analyse and then incorporate the resulting improvements in manufacturing and design decisions in that order.

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Table 1: Pace of digitalization (% CAGR in the ICT Sector)

Name of the country	Years		
	2001-2010	2011-2019	2001-2019
China	18.00	11.00	14.70
India	11.20	10.60	10.80
South Korea	6.10	2.50	4.70
Taiwan	5.70	3.30	4.40
Brazil	9.70	-2.10	4.30
Germany	2.00	4.10	3.10
EU	2.60	3.20	2.80
France	1.80	3.00	2.20
United States	-3.30	6.80	1.20
United Kingdom	-1.30	3.90	1.20
Japan	-0.70	-0.30	-0.40

Source (Basic Data): Predicted Data Base by EU Commission.

The above table shows the growth about the digital consumption and digital manufacturing .Where earlier stages of industrialization replaced human labor with machines to increase output, Industry 4.0 promises to create new jobs and products while boosting productivity. The complex array of processes that make this possible – including 3D printing, computer-aided design, data analytics, artificial intelligence, simulation, virtual reality, sophisticated process management and more – are collectively known as Digital Manufacturing Multiple government schemes like Make in India, Start-up India and Digital India, initiated in 2014, had seen a limited response. But 2020 saw a surge of digitisation, intra-company and in start-ups. According to Nasscom,6 the software industry association, 1,600 new start-ups were added in 2020, and 12 new unicorns are now added to the total of 38 unicorns. Indian states have invigorated and updated their own start-up policies, in order to reach grassroots talent. They have begun to compete with each other, each offering start-up challenges, incubation and acceleration programmes, and venture funding.

Table 2: Industrial Automation Products from Schneider Electric

Hardware	**Controllers**	**Accessories**	**Software**
• Human Machine Interfaces (HMI) • Safety and control relays • Instrumentation	• Motion control and robotics • Programmable Logic • Controller (PLC)	• oxes • Cabling • Enclosures • Push Buttons • Switches	• Industrial communication software • Radio Frequency Identification

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• Motor starters and protection components • Power supplies • Power protection • Transformers • Signaling devices • Variable speed drives and soft starters	Programmable • Automation • Controller (PAC) Dedicated Controllers • Telemetry systems	• Pilot lights • Joysticks	(RFID) system • Energy management software • Industrial automation software

On the basis of study, it has been founded that Digital consumption and manufacturing insights in Indian economy has huge scope that transform the Indian Economy widely across the world.

Conclusion

Digitalization is expected to foster lean and therefore support sustainability initiatives. Digitalization is expected to help create new, alternative sources of employment which are more relevant to emerging times and foster unlearning the past and relearning of new skills. This emerging diversity of engineering applications resulting from digitalization is expected to also support the larger and poorer agricultural community of India and help the sector to become more efficient and productive, which in turn will reduce economic alienation of a large section of Indian society

DX and effective mechanisms of management can certainly provide for successful modernization of industry and for innovations. DX becomes an essential task inside any manufacturing company in today's exponential change towards digital technologies. Digital technologies, social networking, and cloud computing provide opportunities for integrating systems in manufacturing. This study has made remarkable contributions in the form of analysing key SFs in effective implementation of DX in the manufacturing sector

This study is an attempt to explore the criticality of digital transformation in this global competitive market. The paper aimed to deepen the understanding regarding the importance of the emerging digital technologies in digitization of manufacturing industry. The study identified the technologies which are significant to digital manufacturing through conducting a survey and brief literature review. 3D Printing, IoT, big data analytics, advanced robotics and AI, social media technologies, and manufacturing sectors.

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