

Impact of Industry 4.0 on Sme's Digitalization in India

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ABSTRACT

Industry 4.0 is the start line for implementation comes as a low-risk entry into Associate in Nursing custom-made digitization strategy. In larger corporations, comprehensive digitisation initiatives area unit already integrated into the central company strategy, whereas smaller corporations usually have issues golf shot the trade 4.0 paradigms into follow. because the backbone of the economy, small- and medium-sized enterprises (SMEs) have a colossal leverage impact, that is why it's crucial to develop specific ideas for smaller corporations. Not with standing the scale of an organization, a digital transformation strategy offers opportunities for growth and property fight.

Key Wards: Industry 4.0, digitization, Small and Medium Enterprise, National talent Development Corporation (NSDC).....etc.

I. INTRODUCTION:

Industry 4.0 refers to a replacement innovate the commercial Revolution that focuses heavily on interconnectivity, automation, machine learning, and time period knowledge. Industry 4.0, additionally typically observed as IIoT or sensible producing, marries physical production and operations with sensible digital technology, machine learning, and large knowledge to make a additional holistic and higher connected scheme for corporations that specialise in producing and provide chain management. whereas each company and organization in operation these days is completely different, all of them face a standard challenge—the want for connectedness and access to time period insights across processes, partners, products, and people.

Advanced concept of Industry 4.0

Industry 4.0 may be a mix of advanced analytics, Big Data, artificial intelligence & Automation, AI, web of Things (IoT) and method conversion across the business price chain.

Evolution of Industry from 1.0 to 4.0

Before creating by removal an excessive amount of deeper into the what, why, and the way of business 4.0, it's useful to initial perceive however precisely producing has evolved since the 1800s. There are four distinct industrial revolutions that the planet either has fully fledged or continues to expertise nowadays.

The First technological revolution

The first technological revolution happened between the late 1700s and early 1800s. throughout this era of your time, producing evolved from specializing in toil performed by folks and assisted by work animals to a additional optimized kind of labor performed by folks through the utilization of water and powered engines and alternative sorts of machine tools.

The Second technological revolution

In the early a part of the twentieth century, the planet entered a second technological revolution with the introduction of steel and use of electricity in factories. The introduction of electricity enabled makers to extend potency and helped build manufactory machinery additional mobile. it absolutely was throughout this section that production ideas just like the mechanical system were introduced as the simplest way to spice up productivity.

The Third technological revolution

Starting within the late Nineteen Fifties, a 3rd technological revolution slowly began to emerge, as makers began incorporating additional electronic—and eventually computer—technology into their factories. throughout this era, makers began experiencing a shift that place less stress on analog and mechanical technology and additional on digital technology and automation code.

The Fourth technological revolution or business 4.0

In the past few decades, a fourth technological revolution has emerged, referred to as business 4.0. Industry 4.0 takes the stress on digital technology from recent decades to a full new level with the assistance of interconnectivity through the web of Things (IoT), access to period information, and therefore the introduction of cyber-physical systems. Industry 4.0 offers a additional comprehensive, interlinked, and holistic approach to producing. It connects physical with digital, and permits for higher collaboration and access across departments, partners, vendors, product, and people. Industry 4.0 empowers business homeowners to raised management and perceive each facet of their operation, and permits them to leverage instant information to spice up productivity, improve processes, and drive growth.

The Role of SMEs within the World

According to international organisation calculations supported UN agency Enterprise Surveys covering over 25,000 SMEs in developing countries, direct exports represent simply seven.6% of total sales of SMEs within the producing sector, compared to 14.1% for giant producing enterprises. Among developing regions, Africa has very cheap export share at 3rd, compared to 8.7% for developing Asia. Participation by SMEs indirect exports of services in developing countries is negligible, representing solely 0.9% of total services sales compared to thirty one.9% for giant enterprises .

In several countries, and above all Organization for Economic Cooperation and Development (OECD) countries, SMEs are key players within the economy and therefore the wider eco-systems of companies. With in the OECD space, SMEs are the predominant kind of enterprise, accounting for roughly ninety nine of all companies. they supply the most supply of employment, accounting for regarding seventieth of jobs on the average, and are major contributors to price creation, generating between fifty and hr useful another on the average. In rising economies, SMEs contribute up to forty fifth of total employment and thirty third of GDP. Once taking the contribution of informal businesses under consideration, SMEs contribute to over half employment and GDP in most countries no matter financial gain levels. Additionally, SME development will contribute to economic diversification and resilience and so to a additional property economy. This is often particularly relevant for resource-rich countries that are notably prone to goods worth fluctuations

The Role of SMEs in Asia

SMEs represent a major proportion of enterprises, particularly in developing countries, as several Asian countries are . SMEs also are the backbone of the Asian economy. they create up over ninety six of all Asian businesses, providing 2 out of 3 private-sector jobs on the continent. Therefore, it's very important for Asian economies' economic success that they need totally functioning support measures for SMEs

In the Association of Southeast Asian Nations (ASEAN) countries—Singapore, Brunei, Malaysia, Thailand, Philippines, Indonesia, Vietnam, Laos, Cambodia, Myanmar—micro, SMEs represent around 97–99% of the enterprise population. The SME sector tends to be dominated by small enterprises, which usually account for 85–99% of enterprises (where information are available). there's a comparatively low share of medium-sized enterprises across the region as a full, which can be indicative of a “missing middle” within the region’s productive structure. In most Association of Southeast Asian Nations countries, SMEs are preponderantly found in labour-intensive and low added sectors of the economy, notably retail, trade, and agricultural activities. As such, they still account for a high share of employment however an occasional share of gross price another in most countries. within the Association of Southeast Asian Nations region, SMEs account for around 78.4% of employment (based on the median) and 48.9% of gross price another (OECD/ERIA 2020).

Objectives of SME’s Digitalisation in Asian nation

Despite the high potential of business 4.0 in SMEs, the most limitation lies in a very lack of concrete models for its implementation and application in little and medium-sized enterprises. So the scientific research aims at closing and overcoming this gap through the creation of a global and knowledge base research network.

The 3 main objectives of the study (and the precise analysis queries for every of them) are:

1. Distinguishing the requirement and enablers for business 4.0 applications and implementation in SME producing and Logistics;
 - What are actual best-known ideas and technologies of business 4.0
 - What are the most opportunities/risks for the utilization of those ideas in SMEs
 - How appropriate are the various ideas for application in SMEs (assessment of SME suitability)

- What are SME-specific purposeful necessities for the difference of the foremost promising ideas and technologies
- 2. Making SME-specific ideas and techniques for good and intelligent SME producing and Logistics;
 - What square measure attainable forms or migration levels for realizing good and intelligent producing Systems for X-to-order and Mass Customization Production
 - How will Automation, Advanced producing Technologies, ICT and Hz improve productivity in SME producing and Logistics
 - What square measure appropriate models for good and lean offer chains in SME Logistics
- 3. Developing specific organization and management models for good SMEs
 - What square measure innovative and promising new business models for good SMEs
 - What square measure best implementation methods for the introduction of trade 4.0 in SMEs
 - What square measure ideal structure models for good SMEs or SME networks

Further general objectives of the research in respect to the Community are:

- Ensure the transfer of trade 4.0 to SMEs through tailored templet models
- Maintain and develop the competitive level of European SMEs
- Accelerate the transition of trade 4.0 from analysis to apply
- Maintain the prosperity of the population by securing jobs
- Development and career progress of European specialists and qualified young scientists in SME-research for trade 4.0.

The relevance of results is ensured through a detailed collaboration with a ecr little and medium size enterprise (non-academic partner) from mass customization trade.

Why ought to India adopt Industry 4.0

- Advanced analytics would facilitate to reinforce production capability and its quality. The model would shift towards prediction and interference of defects through information analytics.
- The adoption of AI & automation would shorten production cycle, scale back time-to-market and produce inefficient use of resources.
- The digitization of varied business processes would cause cost-saving and a more robust expertise for client and workers.

- IoT and property of machine to individuals and machine to a machine would tighten offer chain and scale back lead times.

How is India making ready for Industry 4.0

Entrepreneurship-3.0¹ focuses on business model innovation to support pre- and early stage start-ups with setting up a new business model. It is a managerial process of creating and managing innovation and characterized by digitization of the business, disruptive and frugal innovations.

Entrepreneurship - 4.0 has a distinct eclectic flavor making India a fertile habitat by infusing entrepreneurial spirit and inculcating entrepreneurial culture. It is a method that demands practice and as a process that identifies an opportunity, develops innovative solutions, mobilizing and mapping of resources, the willingness to take risks and an aptitude for fast decision-making and bold leadership. Entrepreneurship 4.0 is a Vive La Revolution from Super-Man to Microbe that engulfs groundswell of entrepreneurial energy in the arena of design thinking, synergizes finance modeling with boot strapping, crowd funding, Software as a Service (SaaS) and Infrastructure as a Service (IaaS).

Make-In-India - The Impact Analysis

In South Asian and South-East Asian Economies, India shall become the epicenter of an economic structure that is significantly larger than its own economy. The narrative of India is gradually changing. At a time when the global economies are facing headwinds in recent years, India's Economy will grow on a higher economic growth trajectory i.e., 7.2% in 2017-18, the fiscal, inflation and external conditions remain stable and a gradual GDP Growth rise to 7.7% in 2019-20. Rebalancing of growth drivers towards investment will support the sustainability of GDP and household income growth, albeit with heightened uncertainty.

- India is keen on adopting business 4.0 and has taken many initiatives. in line with IBEF, the govt of India plans to extend the contribution of producing sector to twenty fifth of Gross Domestic Product (GDP) by 2025, from this level of 16 PF. is additionally ready to face world competition by endeavor the create in India programme. It's equipped to steer the planet with good producing.
- The significant industries and public enterprises ministry are facilitating the

- institution four centres within the country to assist SMEs implement Industry 4.0
- India's 1st good works is being found out at Bengaluru. This good works steam-powered by information exchange in producing and also the net of Things (IoT). This good works is being developed at the Indian Institute of Science's (IISc) Centre for Product style and producing (CPDM) with funding from The Boeing Company.

- Andhra Pradesh government aims to show the state into an online of Things (IoT) hub by 2020. The regime plans to line up ten IoT hubs with the participation of the non-public sector which is able to produce 50,000 direct employment in varied IoT verticals. Reports state that the good works business is poised to the touch \$215 billion by 2025 and most of the main economies within the world are adopting it.

The State of Andhra Pradesh - The Sectoral Ranking Profile

State Innovation Index	35.4
Factors of Production	43.9
a) Land and Labour	65.3
b) Capital	32.1
c) Physical and Technological Infrastructure	50.5
d) Human Capital	27.6
Demand Conditions	33.8
i) Market Size	42.2
ii) Market Sophistication and Growth	25.5
Industries, Innovation and Entrepreneurship	28.0
a) R&D, Firms and New Firms Creation	22.1
b) Industrial Clusters and New Knowledge Creation	33.9
Social and Political Institutions	36.0
(i) Health Care and Educational Institutions	47.0
(ii) Financial and Administrative Institutions	25.1

Source: State Innovation Index ., Institute for Competitiveness, Gurgaon, p.24.
Sectors in India that have adopted Industry 4.0

FMCG: The Indian FMCG sector has started deploying Cobot or cooperative Robots in their producing method. Cobots are industrial robots that job aboard staff in a very works and need nominal oversight. Factories with weaker infrastructure and restricted personnel will leverage Cobots to scale back time interval and do optimum use of capability.

Telecom: Vodafone Business Services provides good IoT solutions for property across the vary of

verticals like industrial producing, automotive, healthcare, smart city, and utility management.

Healthcare: Diabetacare's good glucometers may be a classic example to demonstrate however patients will manage their polygenic disorder higher victimization IoT within the health care sector. IoT is creating its presence felt in health care by connecting devices. This helps patients to stay track of their blood glucose, force per unit area etc.

Table - 1: India - The State Innovation Index

S. No.	Name of the State	State Innovation Index
1	Andhra Pradesh	35.43

2	Arunachal Pradesh	28.30
3	Assam	23.49
4	Bihar	24.27
5	Chattisgarh	23.69
6	Delhi	40.55
7	Goa	39.67
8	Gujarat	37.70
9	Haryana	30.05
10	Himachal Pradesh	33.35
11	Jammu & Kashmir	26.97
12	Jharkhand	21.42
13	Karnataka	40.35
14	Kerala	37.40
15	Madhya Pradesh	26.98
16	Maharastra	49.32
17	Manipur	27.40
18	Meghalaya	22.86
19	Mizoram	32.47
20	Nagaland	22.75
21	Odisha	26.26
22	Punjab	33.94
23	Rajasthan	28.18
24	Sikkim	33.04
25	Tamilnadu	45.62
26	Tripura	27.15
27	Uttar Pradesh	37.91
28	Uttara Khand	30.73
29	West Bengal	33.01

Source: State Innovation Index, Institute for Competitiveness, Gurgaon, p.23

India ought to adopt smarter ways for good producing

To leverage the most effective that technology has got to supply United States of America, India should embrace business Industry 4.0. Industry 4.0 has simply started creating inroads in Indian producing and different sectors. empiric deciding is additionally being adopted across industries. whereas bound steps have already been taken there's heaps a lot of that continues to be to be done. There must a shift in attitude before there's a shift incapacity. rather than simply endeavor a lot of cost, the main focus ought to get on enhancing existing plus base. Adopting good producing,

analytics and IoT can provides a new lease of life to industry in India. Aside from policy implementation hurdles, one major bottleneck is lack of practiced labour or worry of job losses because of AI & Automation. a sensible strategy to counter this can be to upskill staff and millennials in these fields and make a lot of jobs.

Digitalisation of SME'S in technological revolution 4.0

The wave of Fourth technological revolution (4IR) – the Digital Revolution is sweeping the planet economies with a force and impact a lot of stronger than the previous ones and it's evolution multi dimensionally at a hot pace. 4IR

is LED by the fusion of technologies that's blurring the lines among physical, digital and biological spheres, like computing, Robotics, 3D Printing, engineering, Autonomous vehicles etc.

Akin to all world economies, the Indian economy too contains a vital contribution returning in from the MSMEs. The MSME sector contributed thirtieth of value in FY 2019-20. It's however a natural corollary that SMEs have to be compelled to take best advantage of the 4IR, to extend their fight, so ultimately the country reaps the foremost advantages out of it. The Indian economy has quick come back to terms with matters, with the JAM trinity, Demonitisation and GST, fast the inclusion, systematization and medical care among the MSMEs. a lot of significantly, the Digital India Programme is delivery in an exceedingly brighter business surroundings. the govt has projected that the Indian digital economy can become USD one trillion by 2022 from around USD 450 billion at the present.

While on the topic of SMEs within the age of digital revolution, some valuable inputs could also be drawn from the Report SME fight Outlook 2020, printed by the International Trade Centre (ITC), supported the theme of Business Ecosystems within the Digital Age. The Report identifies a number of facultative factors that square measure needed to confirm a eminent future for the SMEs within the digital age.

Supporting SMEs through meaningful massive knowledge analytics: -

The digital revolution in its wake, is gap flood gates to knowledge. the assorted databases being created within the method ought to be known and therefore the power of knowledge has to be controlled in myriad ways in which, for the SMEs to reap the advantages of medical care. From the attitude of Trade, the Report suggests that Organisations promoting trade should have interaction in massive knowledge analytics to satisfy the info desires of the enterprises. trade associations may additionally dig in to produce analytics-based knowledge on demand-supply and match-make between patrons & sellers. There also are some scattered moves within the direction of a number of e-tailors making an attempt to produce business analytics to their MSME vendors except for IT begin ups providing bespoke knowledge analytics-based inputs to individual enterprises. Such moves can be scaled up for a bigger impact and lower value for the MSMEs.

From a lenders perspective additionally, pooling in of relevant knowledge points from numerous massive knowledge sources and analytics would cut back data imbalance, that is

presently a significant constraint to credit flow to the MSME sector. GSTN knowledge is being seen because the future supply of huge knowledge which might serve multiple functions – from recipient validation to facultative money flow-based disposition. Credit Bureaus like CIBIL square measure another supply of knowledge that eases up borrower-level due diligence whereas additionally providing macro level credit trends & patterns for policy direction. The Fintech revolution sweeping the planet and growing at an intense pace in India is additionally an initiative that is investment on the digital revolution by accessing / analysing knowledge from numerous pools, thereby resulting in parametrised and agency credit choices. The Fintech platforms would themselves become an outsized and dependable set of enterprise level knowledge in days to return. e-invoice discounting platforms, the new avatar of Trade Finance would additionally offer their own information, in sight of the sheer volumes that the platforms square measure expected to handle.

Education, talent and coaching, to support SMEs by manner of capability building

SMEs would face the challenges of the digital age, from each the leader facet and therefore the worker facet, in terms of increased digital skills. the present gap in digital skills is met in an exceedingly giant manner if the thought education system keeps pace with the dynamical desires. Some multi-sector partnerships may work well, just like the initiative of National talent Development Corporation (NSDC) and Facebook to empower youth and entrepreneurs with digital skills in India. Through an institutionalised try at IT skilling, the country will reap the demographic dividend and provide quality men to the MSME sector.

• Digital infrastructure be to given to the SMEs

SMEs should have access to quality IT infrastructure whereas there has been substantial improvement in property and connections within the past few years, there still exists an outsized gap during this space that must be crammed. The problems of privacy and knowledge security have to be compelled to be self-addressed, if SMEs are to maneuver in sharply. The digital revolution should parallelly work on removing the digital divide that will exist presently therein the web usage tilts a lot of in favour of urban and male users. The digital divide is additionally visible in terms of the ITC Report that says that, supported a survey in Asian country, the usage of e-mail and presence of web site is much lower in

respect of tiny enterprises as compared to Medium & giant industries. At SME level, price blessings may be reaped by the enterprises through larger usage of cloud services that desires the proper push and support.

Most of the potential advantages of changes within the scheme are inaccessible if SMEs don't seem to be connected to digital infrastructure except for physical infrastructure.

II. CONCLUSION

Analyzing the content of the known scientific reasons concerning business 4.0 in SMEs, the subsequent hypotheses may be derived:

- Several works are coping with innovative and digital business models, conjointly golf shot SMEs in a very position to require advantage of business 4.0 as a business model.
- Researchers propose that digital platforms are attention-grabbing opportunities for SMEs to extend their business, however there are not any relevant implementations of such SME platforms up to currently.
- Several researchers are functioning on readiness, assessment, or maturity models to assist SMEs perceive their actual standing.
- There could be a rising variety of works on frameworks, tool sets further as roadmaps to guide SMEs within the implementation of business 4.0.
- It appears that business 4.0 is a lot of and a lot of interest for different industries instead of producing (construction, textile, agriculture).
- Although there's still very little analysis concerning computer science in producing normally, there are initial tries to introduce low price and simple approaches conjointly in SMEs.
- Sustainability (in the sense of ecological further as social sustainability) is gaining attention.

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