



Leveraging Industry 4.0 for Digital Transformation of Value Chain



Dr. Chandan Chowdhury
Associate Dean and Professor
(Operations Management
& Information System), ISB

In an increasingly global and competitive environment it has become imperative to transform the way we look at our value chain. Organizations today are experiencing fundamental changes that include shifts from:

- Mass Production to Mass Customization
- Make-to-Stock to Make-to-Order
- Simple 'product delivery' to 'personalized experience and services,' where the products are often bundled with 'value-add' services and unique experiences.

The competitiveness of companies becomes dependent on the overall effectiveness of their value chain. However, there is a pressure on the value chain to be redesigned and reengineered, keeping in view the frequent changes in market and customer demand. There is also a pressure to make the

factories, business processes and business models more agile. Many organizations today have broad geographical spreads, and are not only multi-site but multi-country and continent, and often see a high degree of variation in specific customer requirements across geographies and regions. All these aspects have put new demands on the way value chains are designed and managed.

Renaissance in Manufacturing

There is a global movement in accelerating the manufacturing activities in various parts of the world and countries have initiated their drives, be it the 'Make in India' initiative, Industry 4.0 in Germany or the 'Made in China by 2025',

The 4th Industrial Revolution (or Industry 4.0), the term synonymous with smart manufacturing methods and initiatives is expected to transform the entire value chain by leveraging state-of-the-art digital technologies like Internet of Things (IoT) and Industrial Internet, robotics, Artificial Intelligence, machine learning, cognitive solutions, cloud-based platforms, additive manufacturing, integration of renewable energy to the factory, virtual and augmented reality, cyber security, vertical and horizontal integration of plant and big data analytics. The degree of collaboration at enterprise level will reach new heights through machine-to-machine, robot-to-robot, machine-to-human, and overall two-way communication between the customer (or end-consumer) and the factory.



The objective of such a digital transformation is to make manufacturing and other business processes and often business models agile to meet the changing needs of customers and adapt to their demand for personalized product and services. Organisations will start to build real-time digital- or virtual-twins to experiment and optimise on business benefits across the value chain. In addition to optimising the value chain, these real-time digital twins will also promote sustainable manufacturing processes including quantifying a value chain's carbon footprint in real-time (right from where input materials or raw materials are sourced, to the point where products and services are delivered), and identifying weak links in the value-chain.

Industry 4.0 and Make in India

The government aspires to increase the manufacturing sector's contribution from the current 16% (in 2015-16) to 25% by 2022. A similar plan was drawn in 2011 under the 'National Manufacturing Policy' to increase the manufacturing sector's contribution from 15 to 25% by 2022. The vision of the policy was to create 100 million additional jobs.

In recent years, the country's 'Make in India' initiative has given a new momentum to the manufacturing sector, both in terms of job creation and growth in GDP. This will enable organisations to design and produce world-class, high-quality 'zero-defect', environmental friendly goods and services at globally competitive prices.

Indian companies are no longer isolated and need to take cognizance of the world-wide wave of the 4th Industrial Revolution and the benefits of smart technologies.

IDC forecasts that by 2019, 75% of industrial enterprises worldwide will transform their value chain through digitally networked processes and objects. Many plants will adopt shop floor networking through sensors, actuators and cyber physical system, resulting into transparency and control over their production processes and optimise business processes by converting data into insight and improve margin. Often such new technologies would enable them to conceive new business models.

The Government of India too is likely to integrate Industry 4.0 with its new industrial policies. At a national level deployment of Industry 4.0 will have dual implications, (1) quantum increase in productivity and customer-centricity and (2) new job creation.

India's 63% population is likely to be in the working age by 2022 and the rate of new job creation needs to significantly increase. Industry 4.0 will facilitate creation of new roles and demand for new skills. Companies also must drive new re-skilling initiatives, and re-deploy manpower in areas where there are shortages.

Deployment in organized and unorganized sectors

In India, the unorganized sector contributes 50% to our GDP and employs 86% of our workforce. The unorganized sector differs significantly from the organised sector on levels of automation and maturity of business processes. As we move towards Industry 4.0, we must recognise that our approach to deploying Industry 4.0 in the organized and unorganized sectors needs to be different. For instance, for the unorganized sector, the focus should be on increasing productivity through various intervention strategies and cluster-based

technology (deployed by the government or public private participation) enablement initiatives that will support modern management practices and increase the sector's global competitiveness.

On the other hand, the organised sector while deploying Industry 4.0 should consider the following:

1. critically analysing and mapping its value chain,
2. leveraging digital technologies to transform business processes and people to make the organisation more customer-centric, agile and productive,
3. quantifying business benefits,
4. assessing the need for re-skilling, and
5. estimating likely job losses and opportunities to train employees on new skills.

Conclusions

The 4th industrial revolution has enormous potential to increase customer centricity, agility and productivity and India cannot afford to miss being part of it. At the same time, we need to understand that implementing Industry 4.0 is likely to result in massive job loss and create challenges in employment creation across many traditional sectors. But by carefully identifying new and emerging roles in the 4th industrial revolution era, and re-training our workforce, we can create new job opportunities both in India and overseas. The government should create cluster-based innovation platforms through a public private partnership model that can be leveraged by the unorganized sector to scale up their operations, adopt modern management practices, improve design processes, manufacturing, marketing and branding ■



Get Your Copy Now!

Price: Rs 849.00 (US \$ 75.00)

Number of pages: 73

Publisher: Confederation of Indian Industry (November 2017)
(Special rates and discounts on bulk purchases)

Powerful case studies with distillation of key components, key learnings & winning formula of a Smart Factory.

Insights on a company's journey towards smart manufacturing, challenges faced, implications for a firm and the benefits that accrued

For more details please contact:

Mr Ravi Bhushan

Email: ravi.bhushan@cii.in

Tel: +91 11 2465 3219