

# Manufacturing in India: Shifting skill sets, global impacts, and future prospects

The Indian manufacturing sector is currently undergoing significant changes due to various factors such as evolving skill requirements, government policies, technological advancements, and global trends. This analysis explores the evolving skill needs, the impact of international companies, and India's potential to become a significant manufacturing force by embracing technological disruptions. The manufacturing industry holds great importance regarding a country's GDP and employment opportunities. For instance, in 2021, manufacturing contributed around 12% to the GDP of the United States, while in China, it accounted for approximately 27%. Additionally, manufacturing sectors create a substantial number of jobs, with the United States supporting around 12 million jobs and China providing employment to millions. Furthermore, manufacturing plays a vital role in driving exports. In 2022, the United States emerged as the second-largest exporter globally, with an export value exceeding two trillion U.S. dollars. China, on the other hand, dominated the global export market, with exports reaching nearly 3.6 trillion U.S. dollars.

The automotive industry, represented by companies like Maruti Suzuki, played a pivotal role in India's manufacturing landscape. It has set new manufacturing standards in India by introducing advanced mass production techniques, local manufacturing, skill development, and adopting cutting-edge technologies. Maruti Suzuki's pioneering efforts in advanced mass production, localisation, skill development, technology adoption, and supply chain establishment have had a transformative impact on India's manufacturing sector, influencing industry practices and creating numerous employment opportunities.

Skill development in manufacturing is crucial for job creation and holds immense significance for the younger generation. Skill development programs empower young individuals to excel in the manufacturing sector by acquiring expertise in mechatronics,

software engineering, and advanced manufacturing techniques. By prioritising skill development, India can achieve its goal of manufacturing, contributing to 25% of the country's GDP while generating ample job opportunities.

Many multinational companies have adopted the "Plus One" strategy to diversify production and supply chain operations, reducing reliance on manufacturing solely in one country or geography. Companies embrace this strategy to mitigate risks associated with overdependence on a single country, lower labour and production costs, access local markets more effectively, and enhance resilience and agility in response to market dynamics and disruptions. India's manufacturing potential stems from advantages such as a sizeable trainable workforce, digital infrastructure facilitating efficient operations, investments in logistics infrastructure, proximity to various countries for supply chain diversification, strategic location for accessing emerging markets, and cost advantages in low-cost and frugal manufacturing, supported by robust legal infrastructure and patent protection mechanisms. These factors make India an attractive destination for manufacturing, fostering innovation and research and development investment.

India's manufacturing prowess has captured the interest and investments of leading multinational corporations in the recent past. General Electric (GE) has invested approximately US\$ 3 billion in India, ranging from supplier development programs to new, large infrastructure projects and manufacturing facilities. Likewise, Foxconn, a leading electronics manufacturer, had announced plans to invest \$5 billion in a state-of-the-art manufacturing park in Maharashtra. Apple, a globally recognised brand, has expanded its manufacturing operations within India. In 2020 the company started producing the iPhone 11 in Chennai, followed by the iPhone SE (2020) model in 2021. The investments made by these multinational powerhouses reaffirm India's standing as a compelling manufacturing destination.

The potential for growth in India's manufacturing sector is vast due to several factors, such as efficient supply chains, cost-effectiveness, design-oriented approaches, and technological advancements. With its advantageous location, large labour force, and focus on innovation, India is in a favourable position to take advantage of emerging global

prospects. Embracing and investing in digital technologies like the Internet of Things (IoT), artificial intelligence (AI), blockchain and advanced manufacturing technologies is crucial for optimising operations and efficiency.

Renowned author Tony Seba highlights the transformative power of disruptive technologies like AI, robotics, renewable energy, and electric vehicles in manufacturing. These technologies have the potential to revolutionise traditional manufacturing practices, leading to substantial cost reductions, enhanced efficiency, improved accessibility, and sustainable solutions. Seba envisions a future where renewable energy sources dominate energy generation, electric and autonomous transportation becomes pervasive, and traditional industries undergo radical transformations. To remain competitive and stimulate economic growth, businesses and policymakers in the manufacturing sector must embrace these disruptive technologies to improve their operations, minimise environmental impact, and establish themselves at the forefront of the industry's transformation.

In conclusion, India's manufacturing sector is experiencing significant changes driven by shifting skill sets, global impacts, and promising prospects. The sector's growth potential lies in its contributions to GDP, employment generation, and export performance. India should prioritise supply chain efficiency, cost-effectiveness, design-led approaches, and technological advancements to seize emerging opportunities. Innovation, fueled by research and development, skill development, design-led manufacturing, and semiconductor fabrication, are crucial drivers of progress in the sector. By nurturing skills, embracing advanced technologies, and leveraging its strengths, India has the potential to become a manufacturing superpower and shape the future of global manufacturing.