

## ACE THE INDUSTRY 4.0 - FOR PACE IN GROWTH

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### Abstract

The era of Industry 4.0 has brought some opportunities and challenges to businesses. How the Internet of Things (IoT), Virtual Reality (VR), or Cloud Computing is transforming our business? Profound structure and literature research shows that most of the large companies are coming up and running investment plan. Some of them will be reviewed as part of the study and will show Industry 4.0. Investment in such companies exceeds SME sales (€ 50 million) in all cases.

Access to these technologies is extremely difficult for small businesses. The survey also identified two gaps. Current research does not cover the implementation of Industry 4.0 technology in small businesses. From a practical point of view and also some existing roadmaps for implementing the industry 4.0 does not focus on SMEs. In addition, SMEs do not have the resources to choose the right technology or you don't have the resources to develop the right strategy and fully support the consulting firm. To end this, a simple six-step roadmap has been proposed that includes the actual implementation of Industry 4.0 in a small business.

Our results show the implementation of an Industry 4.0 solution according to the proposed roadmap which helps SME choose the right technology. In addition, there are actual examples shown in this area. It shows that SME can access some Industry 4.0 technologies with a small investment.

**Keywords:** Industry 4.0; SME; roadmap; low-cost; IoT.

In 2011, the German government launched Industry 4.0 (or Manufacturing 4.0). It refers to a Fourth Industrial Revolution marked by smart factories that use robotics, autonomous operations, big data, analytics, artificial intelligence, and the convergence of IT and OT. The goal is to build manufacturing that is efficient, agile, and intelligent. Manufacturers didn't have a prescribed Industry 4.0 model to follow, so early adopters attempted a variety of ways to evaluate which worked best. Now, ten years later, we've arrived at a tipping point when Manufacturing 4.0 best practices are emerging, with big data, IoT, AI, and automation all playing key roles.

Deloitte principal and smart factory leader Stephen Laaper said, "Manufacturing 4.0 technology can deliver for our clients."

"There are four main technical capabilities that are consistently revealed across our study and implementation experience from this perspective," says the source.

## **IOT**

The internet of things, or IoT, is a network of interconnected computing devices, mechanical and digital machinery, items, animals, and people with unique identifiers (UIDs) and the ability to transfer data without requiring human-to-human or human-to-computer interaction. A person with a heart monitor implant, a farm animal with a biochip transponder, an automobile with built-in sensors to alert the driver when tyre pressure is low, or any other natural or man-made object that can be assigned an Internet Protocol (IP) address and can transfer data over a network are all examples of things in the internet of things.

Organizations across a wide range of industries are increasingly turning to IoT to improve operational efficiency, better understand customers in order to provide better customer service, improve decision-making, and boost the value of their businesses.

## **How it Works**

An IoT ecosystem is made up of web-enabled smart devices that gather, send, and act on data from their surroundings using embedded systems such as CPUs, sensors, and communication hardware. By connecting to an IoT gateway or other edge device, IoT devices can share sensor data that is either routed to the cloud for analysis or examined locally. These gadgets may occasionally communicate with one another and act on the information they receive. Although individuals can engage with the devices to set them up, give them instructions, or retrieve data, the gadgets do the majority of the work without human participation.

The connectivity, networking, and communication protocols that these web-enabled devices use are primarily determined by the IoT applications that are installed. Artificial intelligence (AI) and machine learning can also be used by IoT to make data collection processes easier and more dynamic.

## **Big Data**

Big data is defined as data that is so massive, quick, or complicated that processing it using typical methods is difficult or impossible. The practise of acquiring and storing vast amounts of data for analytics has a long history. However, in the early 2000s, when industry analyst Doug Laney articulated the now-standard definition of big data as the three V's, the concept gained traction.

### **Importance**

- In near-real time, determining the root causes of failures, difficulties, and faults.

- Detecting anomalies more quickly and precisely than the human eye.
- Improving patient outcomes by transforming medical picture data into insights as quickly as possible.
- Complete risk portfolios can be recalculated in minutes.
- Improving the ability of deep learning models to effectively categorise and respond to changing variables.
- Detecting fraudulent activity before it has a negative impact on your business.

### **What worked in this Industrial IoT implementation?**

The company focused on a very particular area of production; it only installed the IoT, AI, analytics, and automation technologies that it required; it involved employee and management stakeholders in the project from the start; and it set and met results targets.

"Regardless of the technologies used, the most effective [Industry 4.0] transformations transform employee capacities in tandem with the introduction of new technology," Laaper added. "Begin with a strategy and a clear understanding of the value you want to provide. Engage specialists with the knowledge and experience to design a solution that incorporates different technology providers as well as the necessary change management on your production floor. Then, before scaling, pilot and iterate to establish value."

India will see a content revolution and an explosion of potential as a result of digital technology during the next five years.

India is on the verge of a major transformation that will unfold over the next four to five years. The major drivers of this shift will be increased affluence (between 100 and 140 million middle-income households) as the country's annual income rises across the board. Add in a couple of factors already in play: ubiquitous connectivity with ever-improving data rates, as well as the increasing affordability of digitally connected smart devices, such as smart TVs and smartphones. These meta-trends, when combined, will result in a massive increase in content consumption. These patterns may be found in every industry, not just media and entertainment.

They are, in fact, transforming the way we communicate with one another, consume services, and complete transactions. These changes may be seen in all sectors of the economy, including public services, and you will witness substantial swings from established models to new ways of doing things in every sector.

While we've seen exponential increase in digital content consumption, we've also witnessed exponential rise in digital transactions, with India now having nearly double the number of digital payments as China. Take, for example, the adoption of cryptocurrency in our country, which has spread beyond the major cities and into smaller villages. All of these things point to a massive shift in digital technology and consumption. Businesses are making a concerted effort to understand and meet

consumer wants using digital technology today. Every day, new use cases based on rising digital technologies are released to solve challenges in education, healthcare, and commerce.

In ways we haven't seen before, digital technologies are assisting in the solution of problems. In fact, it has now established itself as a long-term trend that will fuel job growth across the economy.

### **First Principal Thinkers**

When we consider the potential spectrum and the impact of the three elements – faster connectivity, cheaper gear, and increased purchasing power – we see that it will help more than just techies and engineers. In reality, this is a fantastic opportunity for what we term "first principal thinkers," or people who can solve problems by breaking them down into smaller components. Breaking down a problem allows you to consider a variety of additional options for fixing it.

Engineers are taught to think in the first person. Professionals in the pure sciences are particularly adept at this, but other disciplines such as data scientists, statisticians, economists, and psychologists also employ first-principles thinking. In reality, first-principles thinking is an achievable approach to problem solving, and as India develops its digital pivot, there will be plenty of opportunities for people with these skills.

This is a scenario that will play out whenever a new age or rapid change emerges, and there will be a demand for people who are capable of being first-generation thinkers. Take the late 1990s, for example. The Y2K problem at the time produced a significant demand for rewriting software and a group of people who could modify code. Indian techies benefited as a result, the Indian IT revolution followed, and Indian IT behemoths arose. In the job markets, the current inflection point around digital technology will likewise create such demand supply gaps.

### **It's Content 4.0**

What we're witnessing now is a surge in content consumption, which was pushed even more by the epidemic, when individuals were forced to stay at home for extended periods of time. As more material is necessary to meet consumer demand, more jobs will be created — for content creators on the one hand, and for digital technology specialists, statisticians, data scientists, and engineers on the other.

When it comes to entertainment, the goal is to first study human behaviour and then generate content that meets viewers' enjoyment demands. We're spending a lot of money to improve our digital content teams across the country while also building a tech and innovation centre in Bengaluru, which will hire 500-700 people by the end of the year. This is the kind of mix we'll be hiring in Bangalore: software development engineers, data analysts, data scientists, and product specialists. This is the group of individuals who will develop the next generation of frictionless, highly personalised

content delivery platforms, thereby setting new norms in the country.

This is the hub from which we will pursue our goal of dominating content consumption in India and for South Asians worldwide.

The art of content creation is booming, and viewers will be offered an increasing amount of content. It won't only be non-interactive content in the classic sense. E-sports, live streaming of events, user-generated material — the meaning of 'content' has extended, from what used to be print, television, and books to a new paradigm that we may term Content 4.0. There is a significant digital premium that is expected to continue to rise. On the other hand, technology and the capacity to construct platforms to showcase this content, offer it to the correct audiences, analyze their responses, and personalize content through digital distribution media will be required to complement this content creation. The future worker will undoubtedly be greeted with a wealth of opportunities!

### **Global Industry 4.0 Market is Anticipated to Grow at a CAGR of 19.4% from 2021 to 2030; Quince Market Insights**

Pune, India (GLOBE NEWSWIRE) — December 14, 2021 (GLOBE NEWSWIRE) — The global industry 4.0 market is estimated to be worth USD 64.32 billion in 2021 and USD 317.61 billion in 2030, with a CAGR of 19.4% during the forecast period. The fourth industrial revolution, known as Industry 4.0, focuses on automation, interconnection, real-time data, and machine learning. It's also known as smart manufacturing, and it combines Internet of Things (IoT) and smart digital technology. Industry 4.0 technologies enable firms to identify and forecast any issues that may occur in their existing operations.

Accessing real-time information across partners, processes, goods, and people can be a common difficulty for several firms from various industries. As a result, industry 4.0 solutions employ machine learning and big data to create a more holistic and connected ecosystem for manufacturing-centric enterprises.

During the projected period, the market is expected to benefit from rising demand for industrial robots in the medical and pharmaceutical device manufacturing segment. In addition, the growing need for IoT and Artificial Intelligence (AI) in the manufacturing sector, as well as rising government investments in additive manufacturing and 3D printing, are likely to propel the industry 4.0 market forward.

On the other hand, market growth is expected to be limited over the projection period due to high pricing associated with industrial robots and a scarcity of skilled labor.

### **Global Industry 4.0 Market, by Technology**

IoT platforms, cloud computing, location detection technology, augmented reality, enhanced human-machine interfaces, smart sensors, big data analytics, and others are among the technology segments that make up the industry 4.0 market. In 2021, the cloud computing segment accounted for the biggest market share, and it is expected to continue to do so throughout the forecast period. Cloud computing's capacity to work remotely through configurable devices and enable stakeholders to make real-time contributions are among the factors attributed to the segment's rise. This increases the effectiveness of cloud computing development and administration for numerous elements such as providing, receiving, and incorporating feedback, which is expected to drive the segment's growth.

### **Global Industry 4.0 Market, by Application**

The industry 4.0 market is divided into three categories based on application: industrial automation, smart factory, and industrial internet of things (IIoT). In 2021, the industrial internet of things (IIoT) sector was the largest market, and it is expected to stay so throughout the projection period. Possible advantages offered by IIoT technology, such as various industrial equipment makers electing to implement IoT, are among the factors ascribed to the market's growth. Furthermore, the IIoT sector permits the use of diverse engineering approaches, as well as dynamic business to end processes, make adjustments to distribute and manufacture, and respond quickly.

### **Global Industry 4.0 Market, by End User**

Industrial manufacturing, oil & gas, construction, aerospace & military, electronics, automotive, transportation, chemical, and others are the end user segments of the industry 4.0 market. In 2021, the automobile segment will be the largest, and it is expected to remain so throughout the projected period. The automobile industry's deployment of machines and smart robots is credited with the increase. Furthermore, investments in automotive research & development are being made to improve the industry, which will drive market growth throughout the projection period.

### **Global Industry 4.0 Market, by Region**

North America, Europe, Asia Pacific, Middle East & Africa, and South America are the regions in which the industry 4.0 market is divided. In 2021, Asia Pacific was the largest market, and it is expected to stay so throughout the projection period. An increase in the acceptability of robotics in countries such as Japan, China, and South Korea is one of the important drivers driving the development of the Industry 4.0 market. Furthermore, Asia Pacific's low production costs enable manufacturers to build up manufacturing services in the region.

### **Some Recent Developments in the Global Industry 4.0 Market:**



- Sandia National Laboratories and Intel Federal LLC announced a three-year contract in October 2020. (Sandia). Sandia hopes to find the utility of neuromorphic computing for scaled-up computational challenges as part of this deal.
- February 2020: Tech Mahindra and Honeywell collaborate to develop 'Future Industries.' The companies are working together to take use of software, 5G, Industry 4.0, and digital transformation capabilities.
- Ericsson launched Ericsson Industry Connect, a new connectivity solution, in March 2019. The new approach aims to secure Industry 4.0 requirements while also providing reliable wireless communication.

### **COVID-19 Impact on Global Industry 4.0 Market**

The COVID-19 pandemic has accelerated digitalization across a broad spectrum of businesses. However, due to supply chain disruptions, the majority of enterprises have shut down their manufacturing operations. In current times, Industry 4.0 has provided various chances for significant companies to develop and implement solutions that will help them accelerate their digital transformation. With IoT and other comparable technologies, Industry 4.0 is expected to help corporations operate their businesses more efficiently.