THE *FIFTH* INDUSTRIAL REVOLUTION

The term 'fourth industrial revolution' was coined by Klaus Schwab in 2016 and, as he pointed out, one of its unique characteristics compared to the three industrial revolutions that had preceded it was that it was progressing at an exponential rate. It is no surprise, therefore, that we are now talking about the 'fifth industrial revolution'. What follows is an article by TWI (www.twi-global.com), one of the world's leading independent research and technology organisations.

"Industry 5.0, also known as the Fifth Industrial Revolution, is a new and emerging phase of industrialisation that sees humans working alongside advanced technology and A.I.-powered robots to enhance workplace processes. This is coupled with a more human-centric focus as well as increased resilience and an improved focus on sustainability. Encompassing more than just manufacturing, this new phase builds upon the fourth industrial revolution (Industry 4.0) and is enabled by developments in I.T. that include facets such as artificial intelligence, automation, big data analytics, the Internet of Things (IoT), machine learning, robotics, smart systems, and virtualisation.

Broadening the concepts of Industry 4.0, this new industrial revolution is described by the European Union as providing "a vision of industry that aims beyond efficiency and productivity as the sole goals, and reinforces the role and the contribution of industry to society." This is an important distinction from the approach of Industry 4.0, as described by the EU, since "it places the wellbeing of the worker at the centre of the production process and uses new technologies to provide prosperity beyond jobs and growth while respecting the production limits of the planet."

This is a shift away from a focus on economic value towards a broader concept of societal value and wellbeing. While this concept has been touched upon in the past, through Corporate Social Responsibility for example, the notion of putting people and the planet before profits creates a new focus for industry. However, the idea of Industry 5.0 goes beyond industry to encompass all organisations and business strategies to create a broader perspective than seen with Industry 4.0. So, how did we reach Industry 5.0?

Evolution of the Industrial Revolution (Industry 1.0 to 5.0)

The First Industrial Revolution began back in the 18th Century, moving through five iterations as technologies and processes developed over the ensuing centuries. Beginning in around 1780, this first revolution focused on industrial production based on machines that were powered by steam and water. Some 100 years later, in 1870, the second industrial revolution was based on electrification and took place with mass production through assembly lines.

Stepping forward another 100 years, to 1970, Industry 3.0 saw automation through the use of computers and electronics. This was enhanced by globalisation involving offshoring of production to low-cost economies. We are currently living in the fourth industrial revolution, which is based around the concept of digitalisation and includes automation, artificial intelligence (AI), connected devices, data analytics, cyber-physical systems, digital transformation, and more.

We are now entering the fifth industrial revolution with a focus on man and machines working together. Based upon personalisation and the use of collaborative robots, workers are free to deliver value-added tasks for customers. This latest iteration goes beyond manufacturing processes to include increased resilience, a human-centric approach, and a focus on sustainability, which we explore in more detail below.

Industry 5.0 Advantages and Disadvantages

Advantages

The main advantage of Industry 5.0 is the creation of higher value jobs that afford greater personalisation for customers and improved design freedom for workers. By allowing manufacturing processes to be handled through automation, human workers are able to focus more of their time on delivering improved, bespoke services and products.

This was already beginning with Industry 4.0, but Industry 5.0 pushes this further through improved automation and feedback to create a service-based model where humans are able to focus on adding value for end-users. Meanwhile the increased focus on sustainability and resilience means that businesses become more agile and flexible while also having a positive impact on society – rather than simply mitigating any negative effects.

Disadvantages

It is difficult to see the disadvantages of Industry 5.0, but the challenge will lie in how organisations are able to adapt to embrace this new concept. Those that are able to become more human-centric, resilient and sustainable will likely spearhead future solutions, while those who fail to keep up will fall behind. To understand this better it is worth looking in more detail at the three underpinning strategies of Industry 5.0.

Industry 5.0 Strategies

Human-Centric

Industry 5.0 includes a strategy that moves people from being seen as resources to being genuine assets. In effect, this means that rather than people serving organisations, organisations will serve people. So,

instead of talent simply being used to create a competitive advantage and value for customers, Industry 5.0 refocuses to also create added value for workers in order to attract and keep the best employees.

Resilience

As the world has become more joined-up over the years we have seen the widespread impact of global matters such as the Covid-19 pandemic and international supply shortages. Whereas many businesses look to improving efficiencies and optimising profits, these factors do not improve resilience. In fact, there is a belief that a concentration on agility and flexibility can make companies less resilient, not more. Rather than focussing on growth, profit and efficiency, more resilient organisations would look to anticipate and react to any crisis to ensure stability through challenging times.

Sustainability

Industry 5.0 extends sustainability from simply reducing, minimising or mitigating against climate damage to actively pursuing efforts to create a positive change. Sometimes referred to as 'Net Positive,' this goal aims to make the world a better place with companies becoming part of the solution rather than being a problem or simply paying lip-service to sustainability goals through 'greenwashing.'

Industry 5.0 Applications and Examples

While robots have performed dangerous, monotonous or physically exhausting work in manufacturing plants and other workplaces, Industry 5.0 extends this to allow them to work collaboratively with human workers. For example, instead of being fenced off for safety, a new generation of 'Cobots' that are able to work safely alongside people is creating new opportunities for businesses. Human and machine workers operating side-by-side allow people to focus on value-adding processes to take personalisation of products to a new level.

One example is the medical profession which could use this joined-up, cooperative approach to create devices that are tailored for an individual, such as a diabetes app that is able to track your lifestyle and inform the manufacture of a device to suit your individual needs.

Tailoring products to suit individual needs can be extended to other industries, including electronics, automotive and more, adding a personal, human touch to extend the offerings created through Industry 4.0.

Conclusion

Industry 5.0 refers to robots and smart machines working alongside people with added resilience and sustainability goals included. Where Industry 4.0 focused on technologies such as the Internet of Things and big data, Industry 5.0 seeks to add human, environmental and social aspects back into the equation. In this regard, Industry 5.0 can be seen as complementing the advances made in Industry 4.0 to support rather than supersede humans. This allows humans to intervene where required and moves away from excessive automation to incorporate critical thinking and adaptability, while still taking advantage of the precision and repeatability of machines."

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