



What CEOs Care About DIGITAL MANUFACTURING TRANSFORMATION WAVE?

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What Ceos Care About Digital Manufacturing Transformation Wave?

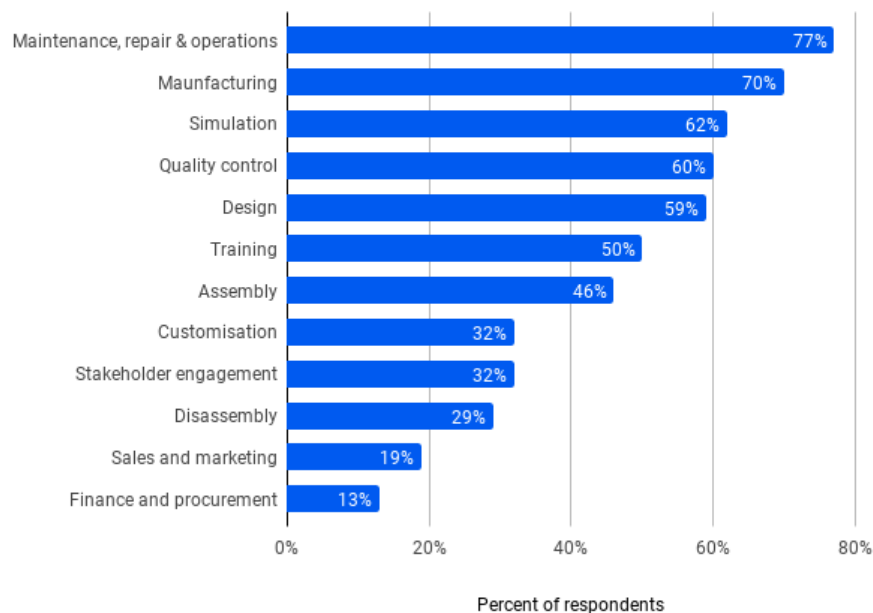
In the digital manufacturing era, there is an urgent need for businesses to be smoothly transitioned into the future manufacturing arena. This transition could be achieved through the recognition and adoption of new application technologies contributing to their survival and the increase of market share. Emerging challenges on this framework are the following¹:

- Continuous innovation through automating manufacturing processes and adopting advanced tools for the efficient control of an organization's assets.
- Trying to be a step ahead from the average competition by recognition of state-of-the-art trends and technologies.
- Basic Operations unification into single platforms could give benefits on the acquisition of large data amounts with high impacts on company's productivity and operations flexibility. The Industrial Internet of Things (IIoT) represents the convergence of operational technology (OT) and IT systems, with obvious improvement in the asset management and operational visibility. IIoT software platforms need to enable these benefits and interface with enterprise systems, ensuring safety.
- The standard approach of making the engaged costs even lower is of paramount importance. This could be achieved with detailed focus on long-term strategies and investments.

The necessary manufacturing innovation affects all the aspects of a modern manufacturing organization including design, R&D, production, supply chain, sales and more. The implemented innovation will clearly establish a data-driven factory with distributed operations for being able to respond quickly and effectively on every new smart product and service.

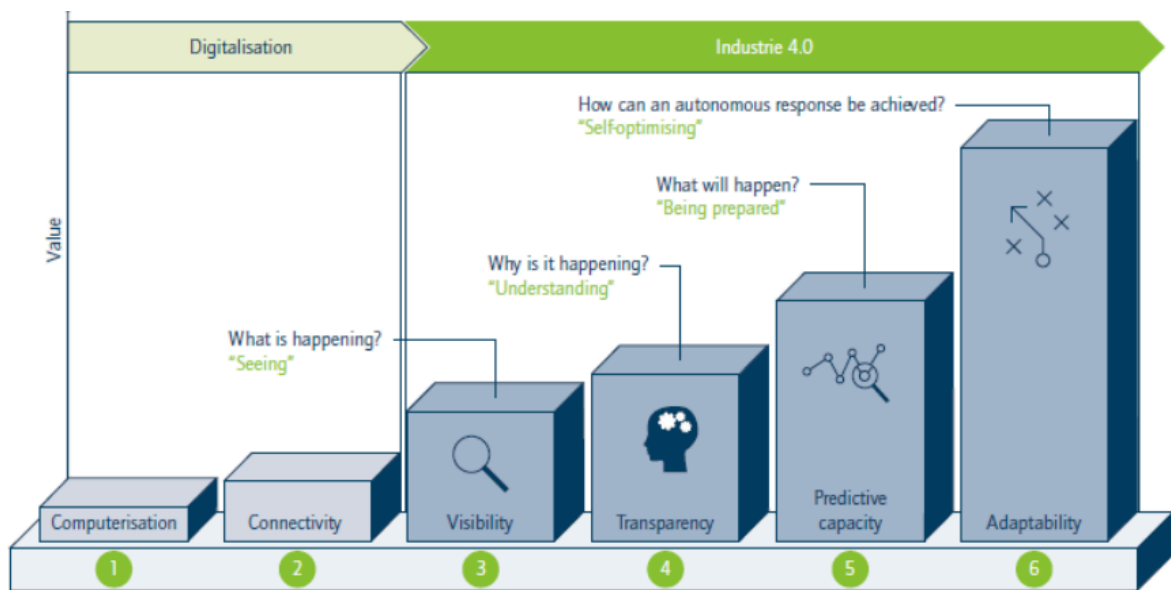
The current key technologies engaged on this direction are widely grouped into Additive Manufacturing, Automation and Robotics, Advanced Materials, Sensors-based data Analytics and Augmented (AR), Virtual (VR) and Mixed Reality (MR) settings. Another emerging trend, which will disrupt the current manufacturing landscape among others, is Digital Twins technology which can be defined as a virtual representation of a physical asset. In a survey conducted by Catapult to 150 engineers, it is stated that the value creation to certain operations through digital twins is more than clear in manufacturing shop floors and its supporting environment. Currently, there are very few complete and accessible projects of a digital twin system, so further development of potential plans for a company would help to demonstrate both the challenges and opportunities available for future manufacturing systems.

In which stages of the product life cycle do you see the digital twin offering greatest value?



Source: Catapult Centers

Industry 4.0 is viewed as a highly promising framework, if the engaged digitalization's contribution is early recognizable. Technology development and digitalization create great chances for a company to increase customer value by innovative processes, pioneering quality, and the creation of new revenue styles reducing production costs.



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ADDITIONAL APPLICATIONS OF MACHINE LEARNING IN MANUFACTURING COULD LIMIT MACHINERY DOWNTIME EVENTS WHICH RAISE COSTS OF AROUND US 50 BILLION PER YEAR ON AVERAGE FOR MANUFACTURERS.

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Additional applications of machine learning in manufacturing could limit machinery downtime events which raise costs of around US 50 billion per year on average for manufacturers. Equipment failures are the main cause for 42% of those outages.

The industry players also adopt IoT as a way to enable advanced quality control at all stages of the product cycle. With the help of big data analytics, manufacturing industries can estimate when product malfunctions emerge. Sensors can collect data about the state of raw materials in a manufacturing process, the temperature of the final and intermediary products and even the impact of transportation in storage facilities. Embedding sensors to final products could also be a way to gather information about current consumer trends. The main challenge of this practice is the systematic approach a manufacturing company needs to be digitalized with leadership change, and a new mind-set in the production chain. A driving force motivating the adoption of greater manufacturing and process automation globally is the realization that pursuing low labor rates is no longer a winning strategy. Being competitive and flexible needs further accomplishments by leveraging the latest technologies, with automation being at the core of this transition.

In short, main benefits of the adoption of state-of-the-art solutions in a manufacturing industry are the enterprise-wide connectivity, the data-supported speed of operations, the enhanced accessibility to workforce, and the general creation of better and better practices for value-added services and products.

The manufacturing industry is currently on the move towards a great digital transformation stream. Early adopters will find realizable ROI from their investment. A modern manufacturing business needs to be deeply aware of the new technologies and existing use cases which disclose the most value for entering the new era of innovation and evolution.

REFERENCES

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