



PROCUREMENT 4.0: TOWARDS SMARTER MANUFACTURING

Abstract

Successive waves of technology-led transformation have brought the manufacturing industry to the cusp of the next stage in its evolutionary journey: Industry 4.0. This paper outlines why the procurement function needs to keep pace with the prime enablers of smart manufacturing — the Internet of Things and 5G networking.

Waves of manufacturing change

Over the years, the manufacturing industry has undergone an incredible evolution. The first wave of change came in the eighteenth century, when machines took over manual labor and launched what was popularly known as the industrial revolution. The next century saw the introduction of assembly line production which triggered the second wave, and we have been living through the third wave where digital technologies have overtaken machines in driving production processes. Today, we stand on the cusp of the next wave with the Internet of things (IoT)

slated to be the next big game changer.

IoT, through networking the devices and systems that are essential to the manufacturing industry today — such as sensors, industrial robots, cameras, and distributed control systems — is rapidly transforming manufacturing as we know it. This ongoing transformation is being made possible by the advances in 5G communication technology which address the network constraint issues that thus far plagued the efficiencies of real-time data-driven applications.

Smarter manufacturing with Industry 4.0

Over recent years, IoT has become a core tool for the manufacturing industry to keep pace with the constantly changing economic and technology landscape. In fact, 90% of surveyed manufacturers¹ believe digital technologies such as big data, analytical solutions, or work

augmentation offer more long-term benefits than risks. Thus, the IoT and 5G driven interconnections between the hardware, software, cloud platforms, communication protocols, and channels are making manifest the new paradigm of smart manufacturing - Industry 4.0.

Industry 4.0, coupled with the supply of materials through automated factories, is already changing the dynamics of the industry supply chains – enhancing speed, reducing cost, mitigating risk, and introducing end-to-end transparency.

The catalyzing role of 5G

Communication is vital for smart manufacturing to keep processes coordinated, in motion, and at speed. For example, for communication within the plant, managers may be virtually anywhere leveraging smartphones, tablets, laptops, and apps. Another example is IoT devices communicating when there is a problem, predicting an imminent malfunction, or directing spare parts to be on hand for quick replacement. For all these real-time communications to work together, speed and quality are critical to maintain optimal production performance, and mitigate the risk of downtime and production loss.

All this while, smart manufacturing faced many challenges with 4G wireless technology in the context of the reliability, high speed, and wide coverage necessary for its increased inter-device communication needs. With technology advances in smart manufacturing outpacing those in 4G wireless technology, the industry experienced painful glitches and gaps in coordination. However, the advent of 5G wireless technology promises to support Industry 4.0 strategies with better connectivity, networking, and integration capabilities.

5G has the potential to generate \$13.2

trillion in sales enablement by 2035 while supporting 22.3 million jobs, as predicted by Qualcomm Technologies². Already, the latest symbiosis of IoT with 5G has empowered smart manufacturing in areas like real-time monitoring, remote equipment management, downtime alerts, quality analysis, and reduction of shared costs. The benefits that include enhanced flexibility, reduced costs, shorter lead times, and easy layout alterations, are being further amplified through Artificial Intelligence (AI), augmented reality, and edge computing implementations amongst others.

¹ <https://www.pwc.de/de/digitale-transformation/digital-factories-2020-shaping-the-future-of-manufacturing.pdf>

² <https://www.qualcomm.com/news/releases/2019/11/07/5g-economy-generate-132-trillion-sales-enablement-2035>

Procurement's changing role

The developments in smart manufacturing have accentuated the changing roles and responsibilities of procurement functions. Historically for manufacturing firms, IT departments have handled the sourcing and procurement of technology hardware, software, and services. However, with smart manufacturing gaining ground, the industry is increasingly adopting a wide variety of technologies at a rapid pace, including sensors, communicators, and related software and control systems. In this context, procurement plays a critical role in designing the right strategies, acquiring material, and ramping up product. Procurement teams need to familiarize themselves with the latest tools, technologies, and their associated

platforms to have informed discussions with both internal stakeholders as well as incumbent and potential new suppliers.

It is also imperative to remember that no device or automation system in smart manufacturing works in isolation. Thus, procuring 5G-enabled IoT enabled devices requires at least some level of technical knowledge of the associated software, services, and controls, and understanding of their integration paradigms. From a security standpoint too, it is essential to have the knowledge of threats such as cyberattacks and of the software or services that may be needed to prevent compromising of interconnected systems and processes.

In sum, it would be important for category managers and buyers to work closely with the stakeholders to get all the technical and functional requirements to source and qualify vendors and suppliers, and make sure that all the pieces fit together to cover the broad spectrum of reach and impact on business. Also, it has always been a principal challenge for procurement teams to strike the balance between quality and reliability in relation to cost, and procurements leaders have wide experience in procuring basis specifications or price. However, in the case of smart manufacturing, more emphasis needs to be directed towards factors such as total cost of ownership and return on investment modeling.



Towards procurement 4.0 and beyond

The evolution in manufacturing towards Industry 4.0 demands that sourcing and procurement too pushes itself and upgrades to Procurement 4.0. Yet, the evolution never stops. Innovative technology developments, such as creating parts and hardware using 3D printing can soon even pave the way for Industry 5.0, which will potentially mitigate the need for external sourcing through make vs. buy decision-making. This is already

happening today with some factories deliberating on becoming self-supporting and manufacturing their own sensors and parts versus going to the market.

This growing trend implies that it is imperative for buyers and category managers in technology, facilities, and manufacturing domains to expand their understanding to include 3D printers, materials, machine parts, sensors, software,

and communication systems as well. Becoming conversant with the changing requirements will help them work better with incumbent or potential suppliers to bring about aligned and unified partnerships. It is through bringing in this next level of business value that will help ensure the function remains relevant through the waves of change and pave the road towards Industry 4.0 and beyond.

About the Author



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Ian has over 20 years of experience in sourcing & procurement across global blue-chip organizations. He has led Sourcing & Procurement organizations across industries such as Consulting, Telecom, Power Generation, Retail, and Automotive.

He also spearheaded procurement transformation projects for many clients across multiple engagements, including - process optimization, platform harmonization, procurement systems implementation, category management establishment, and tail spend management.

Ian holds a Bachelor's Degree in Science (Psychology) and is a Member of Chartered Institute of Purchasing & Supply.



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Derek is a Senior Global Strategic Sourcing & Procurement Leader based out of Pittsburgh, Pennsylvania with over 20 years of combined experience across client side management, consulting, and business process outsourcing, engaging with many Fortune 500 and startup companies.

Derek is responsible for driving activities such as analyzing, managing, and optimizing indirect contract spend portfolios with a core domain emphasis on technology hardware, software, and services spend sub-categories. In addition, he also is the Global IT Category Lead for the Infosys S&P IT Category Council under the Center of Excellence which consists of several regional IT category leads and client IT Category Managers embedded with client operations. He also has significant depth and breadth of experience in managing and developing client stakeholder relationships, category sourcing delivery teams, and category managers across various spend domains.

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