

COMPANY PREPAREDNESS TO ENHANCE SCM PERFORMANCE BY ADOPTING THE INDUSTRY 4.0 TECHNOLOGIES

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ABSTRACT

Industry 4.0 is an industrial uprising, by bringing new innovation in the manufacturing industry. The core of the I4.0 phenomenon is to use the resources effectively while enhancing the product customization, quality and quantity. Industry 4.0 is the amalgamation of internet with manufacturing first introduced in Germany in 2011. Result of this amalgamation has helped growing of smart industrial unit which are extremely dynamic in terms of utilization of resources.

Implementation of Industry 4.0 by leading companies globally have shown that the phenomenon has immense potential to create intelligent industrial world, where even minimal intervention of human will be enough to run the system effectively and efficiently. This has laid down a strong foundation to the intelligent machine technology which are able to take care of themselves and remain operational for long time uninterrupted. But unfortunately, this is not the scene everywhere. Most of the companies are still on the crossroad and stuck by different challenges. The company like Toyota being the trend setter as usual, have adopted the Industry 4.0 technology in almost all the aspects of the business. The Toyota Supply Chain Management is a unique and one of the most impressive usage of the I4.0 innovations.

Inspired by this the research article is an attempt to assess and analyses the company preparedness to enhance SCM performance by adopting the Industry 4.0 technologies. The outcomes of the research will guide to enhance the performance in the services delivery, reliability and creating customer value.

Keywords: innovation, Industry 4.0, amalgamation, intelligent machine technology, SCM performance, company preparedness

INTRODUCTION

Industry 4.0 is the amalgamation of internet with manufacturing first introduced in 2011 by the German's (Adolph et al., 2016). Result of this amalgamation has help growing of "smart" industrial unit which are extremely efficient in terms of utilization of resources. They adjust easily in current industrial context which helps in achieving management goals (Wittenberg, 2016). Cyber-physical system (CPS), the Internet of Things (IoT), and cloud computing is the information technology part which is consist by Industry 4.0. As per (Wang 2015, Ivanov 2016) the factory becomes adaptable by the CPS. According to (Monostori, 2014, Karakose and Yetis, 2017;) CPS is formed by the merger of the tangible systems; in manufacturing, equipment like grinder, mill, lathe or CNC to a handling unit such as computer. Supply chain concept has gone through significant transformation from the moment it was shaped, the meaning of supply chain has evolved constantly and the way of thinking has change significantly (Holweg, Christopher, 2011). When referring to the old-fashioned method of supply chain it meant lean manufacturing concept, where supply chains are planned in harmony to the norms of lean (Towill, Christopher, 2000; Witkowski 2010). In Industry 4.0 resource managing is the amalgamation of traditional resource management with the internet, connections of networks where data is being collected in servers. By ending with sales, beginning with extraction to production, in a simulated space this is process organization. Upon receiving a purchase order from customer the customer order is automatically concluded. The smart warehouse knows the exact amount of stock, knows the amount of goods to be delivered and the place. Supports from technology advancement as automatic identification of Cargo-Auto ID as well as the tracing of product flow and location RFID, the Industry 4.0 has really undefined capabilities (Whang 2009). The supply chain links with access to information regarding all product of the stock shelf, or bookcase of storeroom as all is noted in the system and afterward put in storage on cloud. The device sends relevant information regarding critical stock level and the supply is launched. Industry 4.0 is helping in stock management in the virtual world thanks to it is preventing of shortage of raw materials, materials and products.

Vertical, end-to-end digital, and horizontal integration are the essential structures needed to implement the Industry 4.0. Amalgamation of several technologically advance industrial units through significance systems, either within a smart industrial unit or across different plant is referred to horizontal integration. End-to-end integration can be enable by implementing horizontal and vertical integration across the whole significant series (Stock and Seligar, 2016).

Achieving complex supply chains and products, realizing great processes and flexibility in production system can be achieved through the assimilation of Industry 4.0 in lean manufacturing suggested by Mrugalska and Wyrwicka (2017).

SOCIAL RESEARCH

Base on McKinsey (navigation of digitization, Industry 4.0 2015), interviews were carried out with above 300 professionals working in service and product companies in Germany, USA and Japan. All of them operating in wide variety of fields like health care, consumer goods, chemicals, logistics, transport, semi-conductors, industrial automation, etc. Research was carried out regarding Industry 4.0 to gain the opinion of these experts, how will it revolutionize the supply chain functions in the future, and what are the threats and opportunities associated with it.

Table 1: Results of industry experts. **Source:** Natalia Szozda Industry 4.0 (scientific Journal of Logistics)

Efficiency will by 26% and in income will increase by 23 %.

Shorter order life cycle.

Quality of product and service delivered will be highly improved.

Cost of labor will be reduced.

80% of companies expect their business model will have an impact and they are not feeling prepared for the Fourth Industrial Revolution.

48% of industrialists believes they are ready for new technologies.

At 83% Americans are most confident. At 57% Germans at second position, and finally on Japanese companies 37% are ready to venture in Industry 4.0.

Large databases, cloud technologies, touch interfaces and work automation will be technologies leading throughout the

Major obstacles in implementation of 4.0 Industry are: uniform standard for data transmission data security, process control, wireless networks connection of all process participants.

Global Presence, Value of Industry 4.0

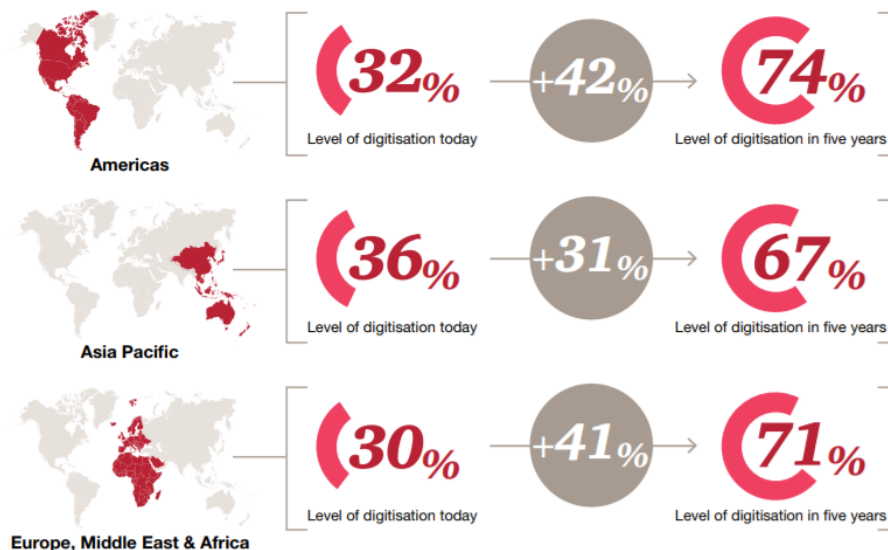


Figure 1: Adoption of Digitalization by Global Companies.

Source: <https://www.pwc.com/id/en/CIPS/assets/industry-4.0-building-your-digital-enterprise.pdf>

Germans and Japanese companies are the more ever ready in adoption of internal digitalization of operations and horizontal value chain partnering. By 2020, the average cost reductions, increase digital revenues is expected by Chinese industrial companies as they stand out in all aspects of digitalization. Strongest adoption by Asia Pacific regions. 80% of digitalization level already reached by Germans and Japanese companies.

CHALLENGERS OF IMPLEMENTING INDUSTRY 4.0 IN SCM.

According to (Mertes, H. 2017) Fourth Industrial revolution technologies can lead to some difficulties like: long and expensive implementation programs, additional requirement for employees and data lacking. (Moeuf, A. et al., 2018) suggest that a major challenge for any company is to process large quantities of data.

- Risk investing in new business model- new strategy definition
- Reconsidering of new processes to maximization of outcomes and the organization itself.
- Leading of successful pilots.
- New talent recruitment and training.

CONCLUSION

Supply chain management can be extremely challenging organisms, and amalgamating it with industry 4.0 could be infinite. There is no such a company who can says that they are completely digital as this process is infinite in terms of upgrades. And it's obvious not all required applications has been widely used. In the next five to ten years, with different industries, sector, organizations implementing digitalization things will change radically at varying speeds.

Those first companies that has already invested, or are investing into industry 4.0 will be far advanced in terms of competitive edge which be very difficult to challenge and they will be regarded as technical standards, or at least be influence as in their specific industry. By no means be limited to superior efficacies will be the advantages. Many new revenue streams and business models will be open up by the digital supply chain which will be the real goal.

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