



THE CHALLENGES AND OPPORTUNITIES OF INDUSTRY 4.0-A REVIEW

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Abstract

The Fourth Industrial Revolution, most encouraging industrial wave puts remarkable challenges and opportunities for organizations from the industrial, managerial and operational viewpoint. The achievement of the most recent innovations of Industry 4.0 and the change of creation methodology includes surprising challenges and opportunities in the ground of work and future manufacturing procedures require novel capabilities (Horváth, and Szabó, 2019). Sometimes the organizations face tremendous difficulties to identify the challenges as well as the opportunities of Industry 4.0. Hence, the challenges and opportunities of Industry 4.0 should be recognized appropriately, assessed precisely and afterward should be executed consequently. With the expectation of understanding the aspects of challenges and opportunities of Industry 4.0 as a disruptive industrial issue and to contribute the existing literature an arranged review strategy was executed to assemble the literature.

Research Highlights

The fourth industrial revolution evolves rapid transformation that comprises smart manufacturing, networked connectivity, automated technologies; and numerous appropriate substances (K. Zhou, T. Liu, and L. Zhou, 2016).

The most recent and creative advancements of industry 4.0 impact on product and production channels; in this way, the organizations can adopt the latest technologies that direct them to achieve proficiency and profitability (R. Schmidt, M. Möhring, R.-C. Härting, C. Reichstein, P. Neumaier, and P. Jozinović, 2015).

Research Objectives

This review plans to investigate how organizations perceive the idea of Industry 4.0, the challenges in executing the latest technologies and the opportunities to Industry 4.0. Moreover, future research suggestions offered in the study would be encouraging for the researchers aiming to conduct research in this field and to summarize the challenges and success factors of Industry 4.0.





Methodology

For the purpose of preparing a review the authors cited the most relevant and proper articles that were obtained from Google Scholar. The keywords applied for the search purpose are very definite i.e. ‘Challenges of Industry 4.0’ or ‘Challenges of Smart Manufacturing’ or ‘Challenges of Smart Factory’ and ‘Opportunities for Industry 4.0’ or ‘Opportunities for Smart Manufacturing’ or ‘Opportunities for Smart Factory’.

The articles that published in the time period of July 2013 to December 2018 were selected and gathered from different journals considering the relevance of the research topic. Additionally, some literature was gathered from some proceedings and conference paper with the observation of having suitability for the study. Finally, the total number of selected articles, proceedings and conference papers were 39 for the study. Each of the selected papers was describing the dimensions of challenges and opportunities of Industry 4.0 and the most frequent dimensions were reviewed for the current study purpose.

Results

Shortage of skilled talents (Adolph et al., 2014) and high financial investment (Müller and Voigt, 2018) are the major challenges for the implementation of Industry 4.0. On the other hand, data security (Cimini et al., 2017) and lack of leadership skills can hinder the execution of the latest technologies (Basl, 2017). Moreover, conflict in the organization (Kiel et al. 2017b) and the risk of new product and services (Pereira, & Romero, 2017) are other major challenges.

As Industry 4.0 allows organizations to create innovative and quality product, thus they can achieve competitive advantage (Bauer et al., 2015) while the product life cycle is decreased and customer needs and demand is increased (Adolph et al. (2014). Additionally, the latest technologies help organizations in waste reduction (Paritala et al.) and resource efficiency (Lins and Oliveira, 2017). The eco-based technologies facilitate to gain environmentally-sustainability manufacturing (de Sousa Jabbour et al., 2018) and boost sales with huge cost savings (Kiel et al., 2017b). In Industry 4.0, organizations can go for speedy decision making with the real-time data (Cimini et al., 2017) as it enables to control production arrangement, competency utilization and energy savings.





Findings

The findings of the paper may help organizations to identify the instant challenges as well as the opportunities that can support them to implement Industry 4.0 properly. Both the literature and this review demonstrates that the concept of Industry 4.0 evolves a set of common challenges and opportunities for the organizations.

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Author's Biography



Dr Sreenivasan Jayashree, Associate Professor, Multimedia University, Cyberjaya, Malaysia has widely published in many international journals and has secured many grants. She has supervised many students. Her areas of interest are environmental management, strategic management, Industry 4.0, waste management, consumer studies.



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