

Business Based Smart Operations and Digital Supply Chain Performance

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Abstract—This study examines the relationship between business based smart operations and digital supply chain performance. The mediating role of Industry 4.0 related technological capability has been included in the research model. Data were collected from the manufacturing industry in Indonesia. The PLS-SEM was utilized to test the proposed hypotheses. The results found that business based smart operations have opened the opportunity to improve productivity and effective coordination among supply chain networks. The automation in the business operation to support production and logistics activities needs a capable workforce and sufficient infrastructure. The manufacturing industry needs to connect the smart business operation with cyber-physical systems, the Internet of things and cloud computing.

Keywords— *e-business; smart operations; Industry 4.0; supply chain management; technological capability.*

I. INTRODUCTION

Business based smart operations have been recognized to have a positive impact on organizational outcomes. It is not only can improve productivity but can create more skilful workers in the most efficient ways. Smart technology that the company utilized has driven the collaborative efficiencies in the supply chain. It can create better coordination and decision making. The electronic connectivity across boundaries that connect resources and activities among supply chain network members has a significant economic return [1]. Therefore, the companies need to optimize the coordination of global supply chain networks. The adoption of smart technology has its challenges like the availability of funding, human resources, infrastructure and knowledge know-how. However, the business-based smart operation needs sufficient top management support to drive the digital transformation for better outcomes.

Today, supply chain performance has been examined on how the business can observe the digital platform to achieve the two main outcomes: flexibility-supply chain performance and agility-supply chain performance. According to Büyüközkan and Göçer [2], the digital supply chain can be defined as a bundle of interconnected activities, including the digital/smart technologies that have been used to leverage the process between suppliers and customers. The coordination

among supply chain networks in real-time is critical to serving better customers. The customers wish to get better product quality and excellent service at an affordable price.

Smart business operations can use advanced analytics, sensors, robots, and various technologies to enhance organizational performance. Smart operations refer to optimising day-to-day inter-operation using digital platforms and integrating it among supply chain networks. In addition, the smart operation needs to be conducted in a cost-efficient manner. Business based smart operations need to be examined to understand the current practices and extend the literature on digital supply chains.

Nasiri et al. [3] argued that companies need to be equipped with smart technologies to improve their performance. However, it is hard to depend only on digital transformation. Since smart business operations need to be integrated with e-business technologies, the companies need to invest in the digital transformation from semi-automation systems to fully automated systems. Unfortunately, it is not enough evidence in the literature on how the smart related technologies can be deployed successfully to drive the positive outcome of the digital-related outcomes of supply chain performance.

Fernando et al. [4] argued that the industry needs more exposure to digital transformation. It is time to evaluate the current practice and technical know-how for the success of Industry 4.0 adoption. Gui et al. [5] found that cloud computing based on Industry 4.0 was not established in micro, small and medium enterprises (MSMEs). Studies on a response to the readiness of Industry 4.0 and demand uncertainty are essential to managing the global demand [6].

Scanty literature was available to conceptualize how the smart business operation can improve the digitalization of business outcomes. It is also not clear how the manufacturing firms currently adopted the Industry 4.0 technology. What factors drive the successful adoption and its challenges. This paper argued that further study is needed to investigate how collaboration among supply chain networks can use and share the resources to improve the digital-related outcome of supply chain performance. Zhu et al. [1] argued that scholars need to examine how the inter-firm resources and capabilities in the supply chain can create business value. This study investigates