

Chapter 11

Digitization of Information Sharing to Minimize the Impact of COVID-19 in the Food Supply Chain

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ABSTRACT

In this COVID-19 pandemic, the production, distribution, and demand fulfillment of perishable food products emerged as a foremost challenge for the supply chain due to the unavailability of timely and accurate information sharing. This study aims to test the relationships between the different types of information sharing, cost-saving performance, and supply chain relationships. In doing so, a survey study was carried out involving food supply chain practitioners, and proposed research claims were tested using a structural equation modeling approach. The results confirmed the positive impact of day-to-day information and periodic information on cost-saving performance and supply chain relationships. However, the impact of day-to-day information was significantly higher on cost-saving performance and supply chain relationships than the impact of periodic information. The study findings may support supply chain practitioners in understanding the different types of information that need to be shared in networks and their related impact on the overall profitability of the supply chain.

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INTRODUCTION

In today's digitally globalized world, where the firms face fierce competition, the accurate, timely, and complete information flow, are of utmost importance to attain a sustainable competitive edge over opponents (Ertz et al., 2018; Avinadav et al., 2019; Mehrjerdi and Shafiee, 2021). Consequently, effective information collection and sharing in the supply chain (SC) has become a subject of debate in all industries (Baah et al., 2020; Baah et al., 2021). Even this issue is more sensitive in context to farm products food SC due to their perishable nature. Therefore, the SC partners require a variety of information to preserve the quality and value of such products. In this line, many digital technologies (e.g., blockchain, internet-of-things, radio-frequency-technologies) enable firms in the consistent flow of information within the SC networks to facilitate the flow of the operation (Ertz and Boily, 2019, Shashi et al., 2020; Nandi et al., 2021).

More recently, the COVID-19 pandemic has challenged the integrity of food SC firms were unable to distribute perishable food products to end consumers (Barman et al., 2021). The poor information flow between the SC networks, inaccurate demand forecasting, and the bullwhip effect (distortion of information from one point to another) were mainly blamed for this failure (Ali et al., 2021; Coluccia et al., 2021). This has arisen the need to build resilience capacity through fostering the information flow and sharing using digital technologies to mitigate the effects of SC disruptions. As the farm product SC system incorporates various intermediates (e.g., farmers, suppliers, processors, distributors, retailers, and customers), the SC profitability depends upon how the partners utilize the available and shared information (Lusiantoro et al., 2018). Meanwhile, lack of information hinders food firms' efforts to grab the market opportunities through exact arrangements of inventories and fast adaptation to customer's demand. Herein, the greater challenges are the absence of coordination, trust, understanding, and seriousness among partners, which trim the whole SC performance (Beamon, 1999; Chen, 2003; Partanen et al., 2020). Besides, companies mainly focus on sharing operational information using traditional channels and ignore integrated information-sharing systems (Pham et al., 2019). Likewise, technical capability, security risks, trust, and rules and policies are crucial factors impacting information sharing practices. The literature shows that accurate and timely information can cut down the SC cycle time, cost, bullwhip effect as well as improve profitability (Tran et al., 2016).

Due to the imperative role of information sharing, both practices and theories have been developed to enrich the state of the art by conducting qualitative and quantitative studies. For example, Partanen et al. (2020) validated that strategic flow of information can strengthen the relationship between SC ambidexterity (an ability to simultaneously develop exploitation of their current knowledge competencies and exploration of new knowledge opportunities) and performance. Research further found the significant positive impact of big data analytics capability on both internal and external SC integration (Wu et al., 2020). Besides, the information's value is subject to contextual SC parameters and changes as per the information's distinctiveness (e.g., accurateness, timeliness, and completeness) (Viet et al., 2018). Therefore, the SCs should deliver information using Electronic Data Interchange (EDI) and the Internet in general (Pedroso and Nakano, 2009). Furthermore, Ben Saad and Choura (2022) emphasized that interactivity and virtual agents/discussion forums can improve transactions and exchange on digital platforms. Ignorance of this will be consequent as poor decision making and SC outcomes (Wijewickrama et al., 2020).

Further, operational factors impact information sharing; thus, information structures should be cautiously designed to attain paramount performance (Dominguez et al., 2018). Collaborative networks are

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