The Mediating Role of Transportation Practices during COVID-19 Crisis on Sustainable Supply Chain Performance of Thailand Logistics Service Providers

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Abstract

This study aims to study the influence of organizational driving forces on transportation practices during COVID-19 crisis and the effect on the sustainability supply chain performance of Thailand logistics service providers. The study used mixed method research technique. The sample included 250 logistics service providers in Thailand. Purposive sampling was used to select the sample. The focus group discussion was conducted with three logistics experts and seven logistics service provider's top executives, totaling ten key informants. The data gathered was analyzed using structural equation modeling to perform confirmatory factor analysis (CFA) and path analysis. The results found that organizational driving forces and transportation practices during COVID-19 pandemics typically affect sustainability supply chain performance. In addition, the mediation effects of transportation practices during COVID-19 unveiled the partial mediation in the presence of a direct effect. The qualitative study was found consistent with the quantitative method findings from the industry-specific contexts. Thailand logistics service providers can use the results to plan the supply chain management works, outline strategy of the organization, and develop the business to be more competitive. Academician, moreover, can use research results to advance new knowledge on sustainability supply chain performance as there are limited studies available and the concept can be applied to further research in the similar dimensions to create new knowledge in other industries by adjusting sample and the model in terms of other variables that affect the sustainability supply chain performance in the future.

Keywords: Sustainability Supply Chain Performance, Organizational Driving Forces, Transportation Practices, COVID-19

Introduction

Logistics industry is one of the main industries that are growing and generating income continuously in the Thailand, such as Thai Post Office with the revenue of 30,000 million baht and Kerry Express with the revenue of 7,000 million baht (Thailand Industrial Today, 2019). The industry is supported by the government with the objective of pushing to promote Thailand as an ASEAN hub for production and export market, including service business, automotive industry, and quality decorative accessories in the world market since Thailand has high potential in terms of location and has modern production technology with international standards. In addition, there is a suitable location for transportation of products. Nowadays, it is very necessary that all sectors in Thailand must turn to consider the importance of sustainable supply chain management among logistics service providers (LSPs) in order to generate massive income into the country (Office of the National Economic and Social Development Board, 2019).

However, during the crisis, the spread of Coronavirus or COVID-19 has disrupted industry growth. Logistics companies are facing tremendous challenges to reorganize to successfully deliver the goods on time to customers due to the difficulty in supply chain (Freeman, 2020). The automotive industry has been affected by the procurement of auto parts due to the widespread outbreak of COVID-19 in China. The crisis has occurred rapidly in recent years and has leaded to the closure of cities and countries. Moreover, the COVID-19 Epidemic in Europe and America is happening rapidly. So it affects the international shipping business both by boat and air require longer transit times or cannot transport products across the country. As a result, the number of fleet has been reduced or and the flight has been canceled continuously to sustain the business from the impact of the COVID-19 epidemic. In addition, cross-border transportation between neighboring countries is also affected by the border closure in some provinces. As for the border which is still open, there are strict screening measures, resulting in an increase in the time required for transportation of goods. The social distancing measures adopted by Thailand has evidently implicated LSPs in Thailand with delay in delivery-times of approximately 0.2 days (Freeman, 2020). Such epidemic negatively now affects Thailand LSPs momentously (Department of Disease Control, 2020).

Therefore, this research aims to study the causal relationship of the organizational driving forces (ODF) which have a positive effect on transportation practices during COVID-19 crisis (TPC) and affect the sustainability supply chain performance (SSCP) of Thailand LSPs. The paper is organised with a literature review on the sustainable supply chain performance,

transportation practices during COVID-19 Crisis and organizational driving forces after the introduction section. This is followed by the methods, which are further elaborated using explanatory-sequential mixed method. In the subsequent section, the findings are presented, with the conclusion and implications are discussed in the last section of the paper.

Literature Review

Sustainable Supply Chain Performance

Sustainable supply chain is the interaction between sustainability and supply chain which is an important step from the latest operational and environmental audits and operational sustainability (Carter & Rogers, 2008). SSCP dimensions comprise economic performance, environmental performance, social performance, and institutional performance (Seuring & Müller, 2008).

First, economic performance (ECP) is the most important incentive to implement sustainable supply chain scholars (North, 1994; Mantzavinos, North & Shariq, 2004). Sustainable jobs may not generate positive profits and short-term sales due to very high initial costs. However, these guidelines will help companies improve their long-term performance by continuously improving their ability to manage environmental risks and improve environmental and social performance (Zhu & Sarkis, 2004). In this study, there are two aspects of economic performance which are the marketing and financially operational results. Performance refers to the extent to which companies improve costs, quality, delivery and flexibility (Devaraj, Krajewski & Wei, 2007; Kristal, Huang & Roth, 2010). Work accomplishment relates to the company's competitiveness, meaning the actual or accepted competitiveness of the manufacturer as compared to the main competitors in the target market (Rosenzweig, Roth & Dean, 2003). In sustainable development era, the performance is less important when compared to other indicators (Mason Jones, Naylor & Towill, 2000; Rosenzweig et al., 2003).

Second, environmental performance (ENP) is an executive's concern because it is a requirement related to compliance and regulatory necessities under public awareness, including desires for organizational competitive advantage (Zhu & Sarkis, 2004). For example, reducing energy can improve environmental performance (Matos & Hall, 2007). ENP is also known as the achievement of an organization regarding performance related to pollution control and efficient use of resources (Kleindorfer, Singhal & Van Wassenhove, 2005). With increasing demand for environmental and social performance, organizations do not only have to consider efficiency - costs, delivery, quality, and flexibility - but also the environment

and social performance. Environmental and social efficiencies are very important. The organization's goal is to gain a sustainable competitive advantage (Pullman, Malon & Carter, 2009).

Third, social performance (SOP) consists of three parts which are social responsibility, social issues, and philosophy of social response. Performance in social sustainability consists of 5 indicators, including human rights, employment problems, supplier relationship, community initiative, and public relations for corporate social responsibility (Boonnual, Panmanee & Prasertsri, 2017). The development of balanced scorecards to be in line with the environment and society and organizational performance in stakeholder view is a difficult task and has the nature of the complexity of social practices (Dias-Sardinha & Reijnders, 2005).

Forth, institutional performance (INP) is another important factor that supports the sustainable development, in addition to economic, social, and environmental performances. For the Integration and importance to environmental protection, economic, social and ecological sustainability are organized together by institutional sustainability as driving factor. This is a practical framework for assessing sustainability (Corbett & Kleindorfer, 2001)

Transportation Practices during COVID-19 Crisis

Logistics and supply chain practices (LSCPs) is the practices relating to an organization system, people, technology, activities, information and resources involved in moving products or services from suppliers to customers. Excellent LSCPs, especially transportation as a part of logistics, lead the companies to sustainability higher profitability (Clift, 2006). Particularly, transportation practices during COVID-19 crisis are very important to multinational companies. The efficient TPC can make the companies survived and recovered quickly during or after COVID-19 outbreak. The firms need to increase resilience and agility and focus on cost saving. The companies, besides, should forecasts customer demand accurately. They, moreover, should adapt new technologies and digitalization trends to the traditional logistics strategies during COVID-19 crisis (Seifert, 2020).

Although there are various past studies on the dimensions on transportation practices as reviewed by Meixell and Norbis (2008), the study focus on the strategies the transportation companies adapt to COVID-19 crisis in Thailand. TPC, therefore, consists of outsourcing, warehousing, and partnership, as identified by Thailand Environment Institute (2020). Outsourcing refers to job done for a company by other companies. In the case of

COVID-19 adaption, transportation companies hire more outsourcing carrier to deal with the problems of delay since the higher numbers of online transaction during COVID-19 crisis.

Moreover, warehousing used to describe the merchandise storage which will be distributed later. Location-distributed warehousing is the strategy transportation companies use to reduce the negative impact when the government limits the period of transportation during COVID-19 crisis. Finally, partnership is defined as a relationship of two or more firms doing business for joint advantage. During COVID-19 crisis, transportation companies initially find their partners, especially international partners as they have the technology supported to express delivery.

Research Methodology

The explanatory-sequential mixed method research design was used in the study. In this approach, the study utilized the quantitative data, which was clarified by the subsequent interpretation from the qualitative data (Edmonds & Kennedy, 2019). The researchers collected data by using questionnaires with executives of the LSPs in Thailand to attain broad information. In addition, qualitative method by focus group was used to confirm the results (Yurarach, 2016). The sample was 250 LSPs in Thailand. The sample size was adequate based on 10 times the number of parameters in the research model, by which equivalent to the minimum of 230 LSPs based on 23 parameters used in this study, as suggested by Hair et al. (2013). In addition, a test using G*Power software version 3.1.9.2 with the power of a statistical test of 0.95 (Cohen, 1988) and maximum of three predictors pointing at a construct anywhere in the PLS path model signified that a sample size of minimum of 119, of which 250 samples were sufficient sampling size for the study (Hair et al., 2017). In addition, purposive sampling was used to select the sample. After the data were completely gathered and analyzed, the focus group was conducted with 3 logistics experts and 7 LSPs' top executives, totaling 10 key informants. The data gathered was analyzed using structural equation modeling to perform confirmatory factor analysis (CFA) and path analysis.

Result

The purpose of this study was to assess the influence of Organizational Driving Forces construct, which has been conceptualized through the top management, organizational cultures, and employee motivation, on Transportation Practices during COVID-19, which was corresponded by the outsourcing, warehousing, and partnership, and Sustainable Supply

Chain Performance which was measured through the economic performance, environmental performance, social performance, and institutional performance. This study has utilized the contingency theory, to determine the LSP's in Thailand the best way to conduct the Transportation Practices during COVID-19 pandemics in order to continue to sustain the business during this difficult times.

Conclusion

The findings on causal relationship model of the results found that LSP's Sustainable Supply Chain Performance should be focused on economic performance, environmental performance, social performance, and institutional performance, respectively. Furthermore, Organizational Driving Forces and Transportation Practices during COVID-19 typically affect LSP's Sustainable Supply Chain Performance should be focused on economic performance, environmental performance, social performance. Moreover, the qualitative study was consistent with the quantitative method by focus group which was found that the key informants agree with the variables offered since LSPs have some industry-specific contexts. However nowadays, most of them have overall supply chain management, similar to the context of other industries which might have some variables that cannot apply to the transportation context. To achieve Sustainable Supply Chain Performance should be focused on economic performance, environmental performance, social performance, LSPs should start within their own organization, by which from the top management until to stakeholders must have clear planning and guidelines, including continuous follow up to drive that the organization towards the sustainability in supply chain.

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