Macrothink Institute™

Business Management and Strategy
ISSN 2157-6068
2022, Vol. 13, No. 1

Mediating effect of Supply Chain Integration on the Relationship between Continuous Improvement and Innovation and Operational Performance in the Ghana Cocoa Supply Chain

Isaac Opoku-Fofie

Putra Business School, University Putra Malaysia, Serdang, Selangor Darul Ehsan, Malaysia

Takoradi Technical University, Box 256, Takoradi, Western Region, Ghana

Email: pbs19104106@grad.putrabs.edu.my

Devika Nadarajah

Putra Business School, University Putra Malaysia, Serdang, Selangor Darul Ehsan, Malaysia

Email: devika@putrabs.edu.my

Ida Md Yasin

Putra Business School, University Putra Malaysia, Serdang, Selangor Darul Ehsan, Malaysia

Email: ida@putrabs.edu.my

Received: March 1, 2022 Accepted: June 5, 2022 Published: June 7, 2022

doi:10.5296/bms.v13i1.19943 URL: https://doi.org/10.5296/bms.v13i1.19943

Abstract

Although the importance of continuous improvement and innovation as an antecedent of supply chain management practices (SCMPs) has been recognized, how it affects the operational performance in the Ghana cocoa industry remains unclear. This paper aims to establish the mediating effect of supply chain integration on the relationship between continuous improvement and innovation and operational performance in Ghana's cocoa supply chain. This conceptual paper recommends an inclusive model that incorporates continuous improvement and innovation, supply chain integration as well as operational performance, underpinned by resourced based view theory. The proposed model is to establish the direct and indirect effects of continuous improvement and innovation as an

antecedent of supply chain management practices on operational performance through the influence of supply chain integration in the cocoa context, leading to improvement in the business operational performance. This study will contribute to the literature by empirically examining the interface between continuous improvement and innovation, supply chain integration and operational performance, with supply chain integration serving as a predictive variable.

Keywords: continuous improvement and innovation, supply chain integration, operational performance

1. Introduction

Cocoa cultivation has been a dominant cash crop for over a decade of years in Ghana. It has been the mainstay of the country's economy accounting for 20% of global production and 30% of total export earnings (Bangmarigu & Qineti, 2018). The agricultural sector is said to have contributed about 45% of the country's gross domestic product (GDP), with cocoa alone producing 25% of this total amount (Ahoa et al., 2021). Because of the massive expansion of the cultivation of cocoa in the various regions in the country more than 30% of the country's population depends on the product for livelihood and sustainability (Verite, 2018). Ghana's cocoa industry contributes substantially to the global cocoa market. In addition, over 60% of the world cocoa production comes from Cote D'Ivoire and Ghana (International Cocoa Organization, 2018).

The country is the second-largest producer in the world, with Cote D'Ivoire taking the first position. Ghana's cocoa supply chain is made up of several stakeholders or actors that join forces to complete the activities needed to produce quality products for exports. They include Chemical input suppliers, Farmers, Licensed Buying Companies (LBCs) (and their clerks who engage in purchases at cocoa buying centres), Haulages and Transportation Companies, and Processing Companies (both local and international), Cocoa Waste Companies and finally consumers (both local and international). These stakeholders contribute substantially to the production, transportation and marketing of cocoa products. The cocoa sector is the main pillar of the country's economy, and therefore any probable threat to the sector will bring a downturn to social and economic development.

However, the sector is challenged with several issues among them is the practices of continuous improvement and innovation, lack of information sharing and poorly integrated database to improve operational performance by various firms in the industry is underestimated and has been a myriad (Ahoa et al., 2021). Also, little is known about the adoption and implementation of continuous improvement and innovation practices in the Ghana cocoa supply chain. This has resulted in the decline and fluctuation of production of cocoa beans in the country, reducing the efficiency and effectiveness of the industry. This makes it difficult for stakeholders in the industry to make informed decisions in their business activities. Supply chain integration is regarded as an effective phenomenon in promoting collaboration and partnership in the supply chain. It develops better relationships and boots

integration between continuous improvement and innovation and operational performance leading to overall business performance (Kwamega et al. 2019). This conceptual paper looks at how operational performance could be enhanced through Supply chain integration. Supply chain integration continues to receive tremendous attention and is regarded as a potential source of competitive advantage in the supply chain (Flynn et al. 2010; Huo et al. 2015)

The greatest challenge of any enterprise in this era of immense competition is to achieve predominance in the market through the effective adoption of continuous improvement and innovation practices. It identifies how resources and capabilities can be utilized to gain a competitive advantage. But little attention has been given to this practice in the cocoa sector. This paper aims to contribute to addressing this situation by proposing a framework that guides and supports the implementation of continuous improvement and innovation to improve operational performance in Ghana's cocoa supply chain.

2. Literature Review

2.1 Theoretical Model

Resource-based View

Shibin et al. (2020) stated that the resource-based view (RBV) emphasized that an organization can create superior performance and gain a competitive advantage through the investment of resources and capabilities that are valuable, rare, difficult to imitate and non-substitutable by the rival firms in the supply chain. This can yield a sustained competitive advantage. From Barney (1991) resources may be categorized into physical and non-physical assets of the organization. They may also be classified as tangible and non-tangible assets such as infrastructure, information or knowledge sharing. Resources serve as an important tool for producing goods and services and they form the basis for organizations to increase their profitability. Capabilities also refer to an organization's capacity to deploy resources in a changing business environment. Since organizations are heterogeneous in terms of their resource base, their unique features lead to sustained competitive advantage.

Resources based view supported the application of supply chain integration as a resource for promoting and facilitating the adoption of continuous improvement and innovation to enhance operational performance in the cocoa sector. The theory was of immense contribution in determining the adoption of supply chain integration and the necessary skills needed by firms in running and deploying resources by ensuring effective and efficient supply chains

2.2 Effects of Continuous Improvement and Innovation on Operational Performance

Performance measurement is responsible for the synchronization of strategic goals and implementation of its goals in an organization. An organization’s goals and objectives must be related to the performance achieved through these activities. Das (2018) stated that

operational performance is the extent to which an organization improves its activities through continuous reduction of cost along the entire supply chain. Flynn et al. (2010) on the other hand argued that operational performance is a way that firms can quickly modify their products and services as well as lunch new products onto the market to meet customer needs. Operational performance is the achievement by organizations in the supply chain and it can be identified by the results of its operations. It is a way used by firms to measure their performance using financial and non-financial benefits (Ya'kob & Jusoh, 2016; Ramakrishnan et al., 2015). Operational performance can be measured in an organization through financial and market performance. The approach is to follow such widely-used measures of operational performance using cost, quality, delivery and flexibility (Al-Sa'di et al. 2017).

The adoption of continuous improvement and innovation strategies has been stimulated and widely deployed due to its importance to the competitiveness of the organizations, being a subject of interest in several disciplines. Innovation is a creative and interactive process that will develop something new to compete. However, there is very little research on the relationship between continuous improvement and innovation and operational performance. The relationship most examined in literature is between innovation and total quality management (Lee & Ooi, 2015; Bernardo, 2014), lean (Abdallah et al., 2019) and lean six-sigma (Lee & Seo, 2018; He et al., 2017). Several studies have identified that continuous improvement and innovation have been studied in other sectors to improve operational performance, but little is known in the cocoa sector especially Ghana's cocoa supply chain, serving as the key ingredient of supply chain management (Duong & Pache, 2017).

In a study to examine the relationship between innovation and operational performance, Tarigan (2018) confirmed a strong positive significant relationship between them. Lizarelli et al. (2019) also examined the relationship between continuous improvement and innovation and organizational performance and revealed a positive and statistically significant relationship. Besides the use of continuous improvement and innovation is more relevant to operational as well as organizational performance. Xie et al. (2018) examined the relationship between continuous improvement and innovation and financial performance. The results demonstrated a positive significant relationship between them. It was again recommended that managers and government entities must effectively implement continuous improvement and innovation to enhance their operational performance.

Additionally, regarding the relationship between market orientation and continuous improvement and innovation and business performance, Udriyah et al. (2019) confirmed significant effects on the relationship of textile SMEs. Centobelli et al. (2019) confirmed a positive significant relationship between leanness and continuous improvement and innovation and financial performance of Indian SMEs. Chege et al. (2019) investigated the relationship between technology innovation and firm performance and revealed that technology innovation positively influences firm performance in Kenya. In a related development, Abdallah et al. (2016) examined the relationship between continuous

improvement and innovation and operational performance and identified a significant relationship between them. Again, they argued that both technological and managerial innovations have direct and indirect effects through operational performance on customer satisfaction in the manufacturing industries. Tarigan, (2018) confirmed a significant relationship between process and product innovation and operational performance in a study conducted on shoe firms and subsequently improves operational performance. However, the relationship turns out to be weak which calls for further studies to be conducted to thoroughly ascertain the relationship in a different context, especially in the cocoa sector. The effects of continuous improvement and innovation on operational performance are deficient in Ghana's cocoa supply chain. This article intends to fill this gap on the significant value of continuous improvement and innovation and its results on operational performance in the cocoa sector.

2.3 Supply Chain Integration and Its Effects on Operational Performance

There is a growing body of research on the theory and practices of supply chain integration by academicians and scholars in the field of supply chain management. The majority of existing studies have generally concluded that supply chain integration leads to enhanced operational performance (Munir et al., 2020; Syakibe et al. 2017; Kumar et al. 2018; Tsehaye, 2018; Veera et al., 2016; Annan et al. 2016), however, a considerable body of research has also reported negative or mixed results (Wong et al., 2021; Shou et al., 2018; Flynn et al., 2010). The inconsistencies arise due to the varying methodology adopted and different measurement scales. Kim et al. (2020) stated that supply chain integration is regarded as a powerful tool an organization can use to gain a competitive advantage and increase operational performance. It is a concept of the flow of goods and services and information systems that have a significant influence on operational performance.

In a related development, Khan & Wisner (2019), investigated the relationship between supply chain integration, learning, agility and firm performance in publicly owned companies in Pakistan and found an insignificant relationship between supply chain integration and firm performance and supply chain agility. Whilse, Ataseven & Nair (2017) demonstrated an insignificant relationship between supply chain integration and operational and financial performance, Chang et al. (2016) confirmed a positive significant influence between supply chain integration and firm financial performance. Ding, (2016) also examined the relationship between supply chain integration and operational performance in automotive supply chains in China. The results identify an insignificant relationship between them. Saunila, (2017) emphasized that sharing information with stakeholders through continuous improvement and innovation in the cocoa industry is the most important tool to enhance operational performance. This signifies effective utilization and leveraging of supply chain integration by companies in the supply chain. The idea of supply chain integration adds additional value to companies and organizations to enhance operational performance. However, this calls for effective and efficient utilization and coordination of supply chain integration strategies to improve operational performance which has not been extensively dealt with in the previous research.

2.4 Mediating Effects of Supply Chain Integration on Continuous Improvement and Innovation and Operational Performance Link

This article focuses mainly on the mediating role of supply chain integration in influencing the relationship between continuous improvement and innovation and operational performance. The discussions between continuous improvement and innovation and operational performance suggest that the latter affects operational performance through their capacities in supply chain integration. Thus, firms in the cocoa sector can adopt continuous improvement and innovation to enhance operational performance through the integrated efforts of supply chain integration serving as a mediation role in the relationship. This suggests that the effect of continuous improvement and innovation and operational performance relationship might not be direct and universal but rather based on the integrative capabilities of supply chain integration within the cocoa supply chain. The study, therefore, argues that supply chain integration plays a mediation role in the relationship between continuous improvement and innovation and operational performance to strengthen the relationship.

Few studies extend to cover the model on the mediation effect of supply chain integration between continuous improvement and innovation and operational performance, especially in the cocoa sector. This conceptual paper, therefore, seeks to contribute to this direction by looking at the mediation effects on the relationship. Amoako et al. (2020) confirmed the mediation role of external integration in the relationship between internal integration and SMEs performance contributing to supply chain integration and the availability of ICT literature. Sundram et al. (2016) confirmed the mediation effects of supply chain integration between supply chain management practices and supply chain performance in the Malaysian electronic sector. Erboz et al. (2021) confirmed partial mediation effects of supply chain integration between industry 4.0 and supply chain performance in manufacturing companies. The results emphasized the importance of industry 4.0 and supply chain integration to enhance supply chain performance. Ahmadi, (2021) also demonstrated a mediation role of supply chain integration in the relationship between information technology and firm performance among companies in Iran. Additionally, Migdadi et al. (2018) also confirmed the mediation effects of supply chain integration in the relationship between collaborative knowledge management practices and organizational performance in manufacturing companies in Jordan. Sundram et al. (2018) also demonstrated the mediation role of supply chain integration in the supply chain information management and supply chain information system infrastructure relationship on the manufacturing firms in Malaysia. This shows that manufacturing firms could improve their performance in the long run. Boer & Boer, (2018) again demonstrated a partial mediation effect of supply chain integration in the relationship between design-for-variety practices and operational performance in manufacturing companies in twenty-two countries, allowing manufacturing companies to create some design rules that can be communicated within organizational boundaries.

Very little research has been conducted on the mediational role of supply chain integration

(Pati et al. 2016; Alfalla-Luque et al., 2015; Sundram et al., 2018). This situation has led to further studies to address this research gap by considering the mediating effect of supply chain integration in the relationship between continuous improvement and innovation and operational performance, especially in the cocoa sector.

3. Discussions

There is clear evidence of the significance of supply chain integration serving as a mediation role in the relationship between continuous improvement and innovation and operational performance from previous literature (Ahmadi, 2021; Migdadi et al. 2018; Sundram et al. 2018; Boer & Boer, 2018). The empirical findings from the previous literature identify the relationship between continuous improvement and innovation and operational performance is non-linear and this will require some intervening variable to amplify the necessary impact. This calls for further research to warrant the situation that exists on the relationship between continuous improvement and innovation and operational performance. The study also draws inspiration from the previous literature by the afore-mentioned researchers and introduces supply chain integration as a mediator to accentuate the power of continuous improvement and innovation to correctly predict operational performance. The introduction of mediating variable goes a long way to generate implications for researchers, academicians and professionals in the supply chains in respect of their decisions on continuous improvement and innovations implementation in the cocoa sector. The intervening variable again is regarded as a novel attempts in supply chain literature and is expected to serve as a roadmap for successful implementation of continuous improvement and innovation to enhance operational performance, especially in the cocoa sector.

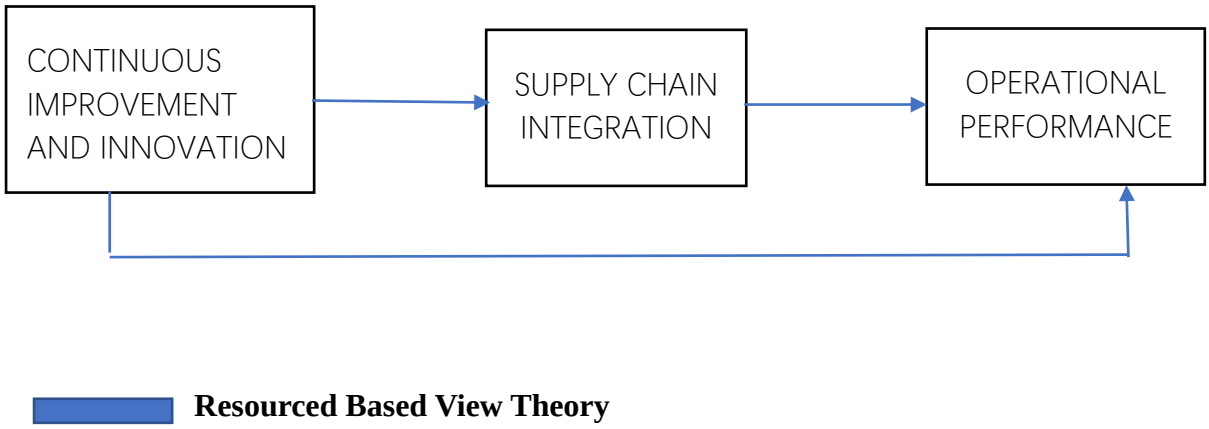

Figure 1. Theoretical model

4. Conclusion

Even though studies into continuous improvement and innovation as an antecedent of supply chain management practices are on the increase (Boer et al., 2017; Siagian et al., 2021; Abdallah et al., 2021) much attention is focused on the manufacturing and service sector. However, very little research has been conducted in the cocoa sector where studies have not

been found in the perspective of continuous improvement and innovation in enhancing operational performance. The impact of resourced based view theory on the mediating effects of supply chain integration and operational performance can only be validated through empirical settings. Anchoring the findings from Pati et al. (2016) and Ahmadi, (2021) confirmed that, the mediating effect of supply chain integration in the continuous improvement and innovation relationship will enhance operational performance in the cocoa sector. The researcher was of the view that the interrelationships between continuous improvement and innovation, supply chain integration and operational performance as well as the resource-based view can only be validated through empirical testing. In line with this paper, a study is currently ongoing to explain the aforementioned relationship with data drawn from selected transport and haulages companies registered with Ghana Cocoa Board (COCOBOD). The empirical findings are expected to offer significant lessons to supply chain professionals and academicians that will serve as a useful direction for future research.

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