

Developing a Conceptual Framework for Examining the Effect of Logistics Management Practices on Agri-Food Firm Performance

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Abstract

In the contemporary global market characterized by intense competition, firms are experiencing heightened pressures to establish novel strategies for value creation and its provision to their consumers. There is an increasing awareness that effective logistics management across the organization and supply chain can greatly contribute to achieving objectives related to cost reduction and service improvement. With a growing focus on logistics processes, research on logistics management practices (LMPs) is gaining prominence. However, in the logistics management literature, LMP's role in enabling operational performance, along with additional performance outcomes of the agri-food industry, is still nascent. Thus, this research proposes a conceptual framework to investigate the relationships between logistics management practice and firm performance in the agri-food industry. Resource-based theory and system theory are used as an underpinning theoretical framework for this research. The conceptual model would lead to various managerial and theoretical implications in this scope in future empirical research.

Keywords

Agri-food industry, firm performance, logistics management practices, resource-based theory.

1. Introduction

In the existing environment of a fast-evolving and intensely competitive business landscape, firms are confronted with ongoing pressure to uncover and apply innovative strategies that will substantially improve their value proposition to their customers. A critical element that enhances this fundamental process is the adoption of proficient logistics management, which plays an essential role in not only reducing operational expenditures but also markedly elevating the effectiveness and quality of service provision to customers.

“Logistics is concerned with managing two key flows: material flow of the physical goods from suppliers through the distribution centres to stores and for the online business through to the end-customer; information flow of demand data from the end-customer back to purchasing and to suppliers, and supply data from suppliers to the retailer, so that material flow can be planned and controlled accurately” (Sople, 2010).

The food chain is particularly complex because it connects different sectors of the economy (agriculture, food processing industry, and distribution sector) in a market dominated by rapidly changing customer preferences (Beske

et al., 2014). Good practice in LM is therefore extremely complex due to the high degree of unpredictability in demand and costs, the fragile nature of food, and the increasingly diverse needs of consumers. Finally, many companies in the FSC are small and medium-sized enterprises (SMEs) that may have difficulty managing logistics operations effectively (Ghadge et al., 2017).

According to Oxford Economics, Vietnam's agri-food sector was responsible for making a contribution to GDP worth USD 86 billion in 2019, equivalent to one quarter of the domestic economy (in 2020 prices). A total of 27.5 million people were employed in this economic footprint, representing more than half of all jobs in the country. In general, Vietnam has successfully attained competitive advantages in agricultural production on a global scale, particularly in certain agri-food products like black pepper, cashew nuts, coffee, coconut, rice, and rubber. Due to many limitations in logistics infrastructure, the logistics service along the agricultural value chain, the average logistics cost for agricultural exports accounts for about 20-25%, quite high compared to other countries in the region (such as Thailand, logistics costs of agricultural exports account for only about 10-15 %. Therefore, this study is significantly important to provide a better understanding of logistics management at the firm level in agriculture and food sector in Vietnam.

The article addresses two gaps in LMPs' research. The first gap is that logistics research in certain industries is underexplored, necessitating additional theory-driven and empirical evidence research. The second gap is a lack of studies on the impacts of various LMPs on financial performance and the mediation effects of operational performance. As a result, this article seeks to explore what and how LMPs are structured by agri-food companies to gain a competitive edge and improve performance.

The remainder of this paper is organized as follows. In Section 2, the literature review will be discussed, especially about the concepts that will be used in the framework and the previous studies followed by the research objective and methodology. Section 3 presents the conceptual framework of LMP by a discussion on LMPs framework and practice in Vietnam agri-food sector. We conclude this paper in Section 4 with a discussion on research implications and further research directions.

2. Literature review

In this section, the literature review of previous studies on LMPs, and firm competitive performance are presented.

2.1 Logistics management practices

"Logistics is the process of planning, implementing and controlling procedures for the efficient and effective transportation and storage of goods including services and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements, and it includes inbound, outbound, internal and external movements" (Lambert et al., 1998).

In this connection, "Logistics management activities typically include inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfillment, logistics network design, inventory management, supply/demand planning, and management of third party logistics services providers. To varying degrees, the logistics function also includes sourcing and procurement, production planning and scheduling, packaging and assembly, and customer service. It is involved in all levels of planning and execution – strategic, operational, and tactical. Logistics management is an integrating function which coordinates and optimizes all logistics activities, as well as integrates logistics activities with other functions, including marketing, sales, manufacturing, finance, and information technology." (Logistics Management, council of Supply Chain Management Professionals CSCMP, 2004).

Logistics management practices, a subset of supply chain management practices, involves planning, executing, and controlling the flow and storage of products, services, and information from origin to consumption to meet customer needs (Amin & Shahwan, 2020). Logistics management enables businesses to decrease costs while improving customer service. (Esper et al., 2007; Fugate et al., 2010).

2.2 Firm performance

According to the the majority of the research, business performance is measured using multivariate effectiveness measures and divided into financial and non-financial measuring variables. There are several financial metrics that may be used to evaluate the performance of a business. Revenue, return on equity, return on assets, profit margin, sales

growth are a few examples of popular financial metrics. Certain financial ratios will have greater significance than others, depending on the sector in which the business engages.

Some of the common non-financial or operational performance measures are market share, product quality, new product innovation, marketing effectiveness, added value process, and other non-financial metrics. In general, scholars established two types of organizational performance measures including operational performance and financial performance (Venkatraman, 1991). (Carter & Narasimhan, 1996). (Chen & Paulraj, 2004) (Gunasekaran et al., 2017).

Maintaining and improving performance is one of the most difficult challenges for businesses in today's competitive business environment. Superior corporate performance benefits not only their clients, but also their internal organization. Firms are required to be diligent in satisfying client expectations due to the demands of changing and growing customer demand and greater competition in the market. The study of business performance has drawn considerable interest, having origins in subjects as diverse as economics, sociology, and organizational behaviour. Several studies have tried to explain why certain organizations function better than others (Githinji & Wachiuri, 2023; Hailu, 2022; Rutto & Omwenga, 2024).

2.3 Empirical related research

Logistics is basically an information-based process of optimizing material flow in an enterprise from suppliers to the manufacturing plant and finally to the customers through a physical distribution system. It spans three functional areas of the business enterprise, viz. procurement, manufacturing, and distribution. Logistics management is used as a means to maintain and improve the profitability of a manufacturing enterprise. It has been acknowledged that management of material flow and information-flow management are highly connected to company performance.

Logistics management practices significantly influence firm performance by enhancing operational efficiency, customer satisfaction, and competitive advantage. Effective logistics practices, such as material handling, inventory management, and transport management, are crucial for optimizing supply chain operations. Research indicates that firms implementing robust logistics strategies experience improved responsiveness and reduced costs, leading to better overall performance (Githinji & Wachiuri, 2023).

Logistics management practices can be divided into inbound logistics practices and outbound logistics practice. The practices of inbound logistics is an important source of competitive advantage (Umar & Muazu, 2020; Ayantoyinbo et al., 2018). However, it has been argued that the outbound logistics can be considered insignificant effect in the linkage with firm performance (Umar & Muazu, 2020).

In the context of Vietnam, although several studies have indicated that there is a significant and positive correlation between logistics activities and firm performance, there has been limited research conducted on the impact of LMPs on firm performance in a specific sector. Ngoc (2022) indicated that logistics activities positively impact the business performance of enterprises in Vietnam's dairy industry. The order of influence level from high to low is as follows: (1) Transportation, warehousing, information systems, and reserves; (2) Customer service activities; (3) Procurement activities of goods and input materials; (4) Recovery logistics. Another previous studies mainly focused on specific factors or aspects of quality of logistics activities popularly, such as inbound logistics practices, outbound logistics practice, in-process logistics practices and supporting logistics practices (Thanh et al., 2023).

To sum up, scholars have proposed various forms to reflect competitive advantages related to logistics and supply chain management. However, based on examination of several dimensions used in previous studies, it can be seen that several LMP needed for supporting the performance and competitive advantages in the organizations including: inventory management, warehousing, purchasing, transportation, quality control, physical distribution, handling and packaging, and logistics information systems (LIS). Several studies have been explored; however, this area needs further investigation for the LMP in different aspects.

3. Conceptual framework

LMP has gained significant attention in the literature on logistics and supply chain management. Research has shown that organizations with efficient LMP tend to have better performance, higher customer satisfaction, and improved financial performance. Developing and leveraging logistics operations can help organizations gain a competitive advantage in the marketplace.

Although numerous research have examined how logistics management meets consumer needs and lead to efficient performance (Truong et al., 2017; Fugate et al., 2010; Idowu & Faarouq, 2024), the discipline is still in its infancy, and several academics emphasize that additional research is required in this area (Amin & Shahwan, 2020).

This study develops a framework by investigating the relationship between LMPs and the performance of businesses. The results will be able for improvement in the implementation of LMPs and for the selection of practices that managers need to consider when implementing LMPs in an effort to enhance competitiveness.

Theoretical foundation and hypotheses development will be developed to investigating the nexus between LMP and the performance of manufacturing companies in Agri-food industry. The theoretical model was developed based on expert feedback and a review of logistics management literature. The conceptual framework consists of items which were selected via a review of relevant literature. Structural equation modeling (SEM) was used to analyze the model's and hypotheses' significance. The SEM procedure consisted of three phases. First, the collected questionnaire-based survey data was screened and factor validation were performed. The second step was to create a measurement model, often known as confirmatory factor analysis (CFA), and the third was to perform structural modelling.

The Resource-Based View (RBV) theory has been applied to various areas of logistics research. RBV suggests that specific resources can lead to competitive advantage. The theory posits resources which consist of valuable, rare, imperfectly imitable, and non-substitutable play a pivotal role in determining a firm's performance. It has been proposed that RBV can be used to explain why some companies outperform others over time (Stank et al., 2005; Mentzer et al., 2004).

By highlighting the importance of different logistics management techniques, the Resource-Based View (RBV) theory significantly contributes to improving the effectiveness of logistics operations. Research has indicated that LMPs have a favorable impact on operational, financial, and customer service performance. Furthermore, the use of System Theory to logistics research helps academics and professionals in comprehending how certain elements and procedures related logistics throughout the entire organization might eventually generate a competitive edge and lead to higher performance.

Based on an extensive literature review, a conceptual model is proposed to intentionally achieve the main objectives of this study, as shown in Figure 1. This research assumes that effective logistics management, including inventory management, warehousing, transportation, handling and packaging, and logistics information management, plays a crucial role in enhancing organizational competitiveness. Additionally, the strategic alignment of purchasing, the logistics information management including IT infrastructure and information management practices will be explored in this research. These disciplines are still not covered in extant research on LMPs.

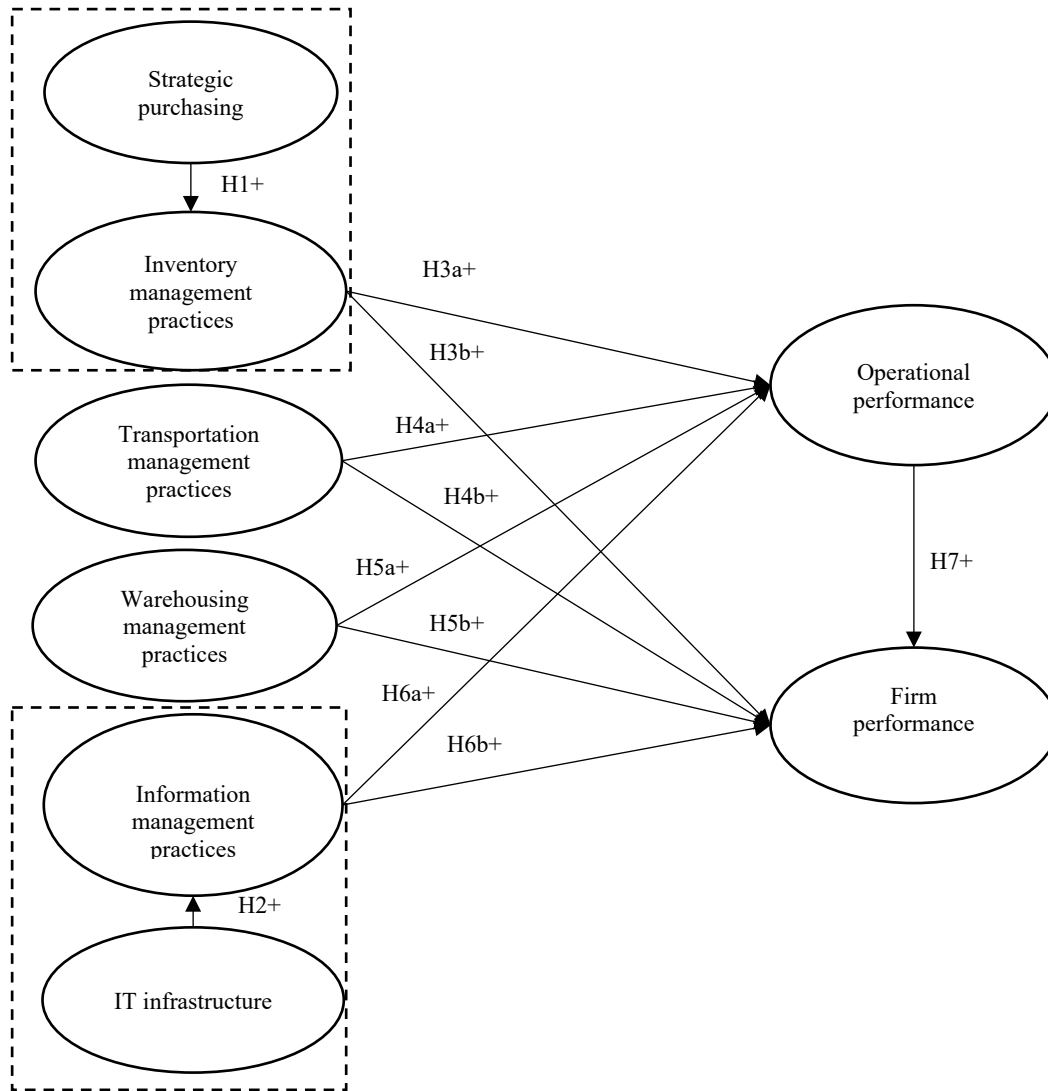


Figure 1. Proposed conceptual model

In fact, strategic alignment recognizes the purchasing function's work and gives greater provision for its development. In other words, the purchasing department will be able to raise a greater amount to adopt more advanced procedures. Strategic alignment of the purchasing function appears to be linked to increased development of this function, which is demonstrated by the application of advanced practices such as inventory management and purchasing (Rodríguez-Escobar, J. A., & González-Benito, J., 2017)

Furthermore, inventory management is the process of keeping adequate inventory on hand to satisfy consumer demands while keeping the carrying cost as low as possible. Basically, it is an exercise in establishing a balance between customer service and the expense of meeting that demand. Because of its high carrying cost, inventory is the most costly component of a company's whole supply chain, eroding profits indirectly. Furthermore, it includes the costs of financing inventory, insurance, storage, losses, damages, and pilferages. In addition, inventory management

practices plays a vital role in enhancing the performance of the organization, and its strategic significance has grown (Siman et al., 2024; Atnafu & Balda, 2018; Mawonde et al., 2024)

Building upon this, management of inventory is critical for improving business performance. According to Atnafu and Balda (2018), increased inventory control can boost organizational performance. They advocate that businesses should offer their employees the appropriate training to promote inventory management/control practices, which will result in improved organisational performance. The above arguments lead to the hypothesis:

H1: Strategic alignment of purchasing is positively related to inventory management practice.

H3a: Inventory management practices are positively related to operational performance.

H3b: Inventory management practices are positively related to firm performance.

Importantly, transportation is the most fundamental and vital logistics component since it allows items to be moved from the supplier to the customer. When an order is placed, the transaction is not completed until the products are physically delivered to the customer's location. The physical movement of goods occurs via a variety of transportation techniques. Transportation costs account for 20% of the product cost for low-unit-value items. Logistics expenses range from 65 to 70 percent for mass-consumed, very low-unit-priced items. Additionally, transportation management practices significantly influence firm efficiency and customer satisfaction by optimizing logistics operations and enhancing service delivery. Effective transportation management encompasses various strategies, including cost reduction, service reliability, and the integration of technology, which collectively improve operational performance and customer experiences (Assouman, 2022; Ristovska et al., 2017). The above arguments lead to the hypothesis:

H4a: Transportation management practices are positively related to operational performance.

H4b: Transportation management practices are positively related to firm performance.

Moreover, warehousing refers to the storing of finished goods until they are sold. It plays a vital role in logistics operations of a firm. Additionally, the effectiveness of an organization's marketing depends on the appropriate decision regarding warehousing (Idowu & Faarouq, 2024; Omoush, 2022). Furthermore, today, warehouses are viewed more as switching facilities rather than places to store goods. Additionally, logistical or industrial packaging constitutes a pivotal component in the tangible distribution of a product, thereby impacting the overall efficacy of the logistical framework. Logistical packaging plays an important role in damage protection, ease in material handling, and storage space economy for food and agricultural products (Rutto & Omwenga, 2024). Finally, they are a significant expense center, and poor warehouse management is a direct cause of many customer-side issues. The above arguments lead to the hypothesis:

H5a: Warehousing management practices are positively related to operational performance.

H5b: Warehousing management practices is positively related to firm performance

Certainly, information is a highly valuable asset for any organization, and effective information management is essential for achieving desired organizational outcomes (Steventon et al., 2012). The advancements in information technology (IT) have expanded the possibilities of information management, leading to extensive research on these technologies and their impact on performance. The significant economic importance of IT has generated significant interest from both academia and businesses, resulting in investigations and comprehension of the role played by IT in processes such as change, economic efficiency, and organizational performance (Piccoli & Ives, 2005; Idowu & Faarouq, 2024; Siman et al., 2024). Due to the complex nature of studying information as a resource and the remarkable growth of IT, many studies have utilized IT as a substitute for organizational information resources and have unconditionally assumed that IT contributes to competitive success and improvements in firm outcomes (Dewett & Gareth R., 2001); (Jepchumba et al., 2022). The above arguments lead to the hypothesis:

H2: IT infrastructure is positively related to information management practices.

H6a: Information management practices are positively related to operational performance.

H6b: Information management practices are positively related to firm performance.

Significantly, operational performance is a critical measure of an organization's efficiency and effectiveness in executing its core activities. It encompasses various aspects such as productivity, quality, cost management, and timely delivery, which collectively determine the overall health and competitiveness of a business (Adelwini et al., 2023; Rutto & Omwenga, 2024; Umar & Muazu, 2020). A high level of operational performance indicates that resources are being utilized optimally, processes are streamlined, and customer demands are being met consistently. Continuous

improvement in operational performance not only enhances profitability but also strengthens an organization's ability to adapt to changing market conditions and maintain a competitive edge.

Overall, operational performance focuses on the effectiveness of day-to-day activities, such as production processes, quality control, and cost management, which directly impact a company's ability to deliver value to customers. When operational performance is optimized, it often leads to improved financial results, higher customer satisfaction, and increased competitiveness. Conversely, firm performance encompasses broader indicators such as profitability, market share, and long-term growth, all of which are influenced by the efficiency and effectiveness of operational practices. Enhancing operational performance thus plays a crucial role in driving overall firm performance, ensuring sustained success and strategic growth in a competitive environment. The above arguments lead to the hypothesis:

H7: There is a positive relationship between operational performance and firm performance

4. Conclusions

It is commonly acknowledged that agri-food business is facing problems in commercial operations as a result of technical advancements and rising societal expectations for agricultural products in terms of safety and quality (Leitão et al., 2024). Furthermore, logistical performance in Vietnam's agri-food industry has a substantial impact on agricultural trade growth, with institutional quality also playing an important role in improving its competitiveness.

Filling the gap of knowledge by investigate the potential role of logistics management to enhance customer-focus performance and better financial performance. The study attempts to provide theoretical on the relationship between some vital related LMPs and performance. Moreover, the result of this study will also be of value to practitioners to have a better understanding of logistics operations and the firm's performance. This will offer practical guidance for the managers to develop logistics management practices to enhance the performance of Agri-food industry. However, further research is required to further refine and elaborate upon the proposed conceptual framework.

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*Proceedings of the 16th International Conference on Industrial Engineering and Operations Management
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