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ENHANCING SUPPLY CHAIN PERFORMANCE THROUGH LOGISTICS INTEGRATION AND THIRD-PARTY LOGISTICS (3PL) COMPETENCE: A RELATIONAL AND DYNAMIC CAPABILITY PERSPECTIVE IN GHANA'S COCOA INDUSTRY

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Abstract:
The study examines the relationship between logistics integration, third-party logistics (3PL) competence, and organisational performance in Ghana's cocoa industry, using the Relational View (RV) and Dynamic Capability Theory (DCT) as theoretical frameworks. It investigates how inter-firm relationships and adaptive capabilities influence logistics outcomes. A quantitative approach was employed, with data collected from 989 respondents across Licensed Buying Companies, haulage providers, and warehousing firms. Analysis using descriptive statistics, confirmatory factor analysis (CFA), and structural equation modelling (SEM) revealed significant positive relationships between internal and external logistics integration factors—such as information sharing and IT capabilities—and 3PL competence. Internal and external IT capabilities had the strongest impacts, while transportation sharing showed no significant relationship. Warehousing and distribution sharing positively influenced 3PL competence. The study concludes that logistics integration, supported by competent 3PL providers, enhances organisational performance by improving supply chain efficiency, reducing costs, and increasing customer satisfaction. The integration of RV and DCT provides a comprehensive understanding of how relational mechanisms and dynamic capabilities drive superior logistics outcomes. Future research should explore sector-specific variations, emerging technologies, and long-term impacts of logistics integration in diverse contexts. This study contributes to supply chain management literature by offering insights into logistics integration and 3PL competence, benefiting both researchers and practitioners.

Keywords: Third-Party Logistics (3PL), 3PL Competence Supply Chain Performance, Ghana, Cocoa Industry.

INTRODUCTION

In today's complex global economy, effective integration of supply chain management (SCM) with logistics has become essential for businesses. SCM integrates various organisations and incorporates both strategic and operational dimensions to create value propositions for clients (Jaradat et al., 2017). This integration spans crucial business processes, including demand management, supplier relationship management, and customer relationship management, which are pivotal to the successful execution of supply chain activities (Azmi et al., 2017). The collaboration between logistics and SCM fosters agility, resilience, and responsiveness, ultimately improving operational efficiency across industries (Islam et al., 2023). By aligning logistics and SCM, businesses can enhance customer satisfaction, build a competitive advantage, and adapt more effectively to market fluctuations. The coordination of these functions promotes cost-efficient fulfillment, supporting innovation, growth, and sustainability in the global business environment (Islam et al., 2023). This emerging approach represents a more complex system compared to traditional logistics models, emphasizing the efficient coordination of goods and resources, from raw material

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procurement to final production, with a focus on reducing time and production costs. Logistics systems characterized early supply chain models focused on the efficient movement and storage of raw materials, in-process inventory, and finished goods, which are critical for meeting customer requirements and optimizing supply chains (Joshi, 2018; Vasanthy, 2023). Geographic Information Systems (GIS) have further enhanced the management of supply chains and logistics networks (Sarkar, 2007).

Over the past two decades, the logistics and supply chain systems have undergone a significant transformation, moving toward a more integrated and efficient model. Zhou (2023) argues for the need to evolve logistics management practices to enhance market competitiveness and promote sustainable development. Alicke (2017) explores this shift, emphasizing the adoption of advanced planning processes and end-to-end integration. Demeter (2006) and Miles (2007) underscore the growing importance of logistics management in response to globalization and dynamic market changes, focusing on decision-making and the extension of supply chains across various industries. Collectively, this study illustrates the substantial changes and challenges the logistics system has encountered over the last two decades. This transformation has profoundly impacted resource management, making it a key strategy for companies aiming to create a sustainable competitive advantage (Mate, 2022). The increasing complexity of logistics and supply chains necessitates agility and resilience, especially in the context of globalization (Yan-ku, 2012). It is critical to consider both internal and external forces driving these changes and to map business drivers to the attributes of transformation (Chakravarty, 2014). To sustain a competitive advantage, companies must carefully implement logistics management strategies, including forming strategic partnerships, building trust and relationships with suppliers, and embracing technological innovation (Putra, 2012). This study collectively further highlights the significant influence that integrated logistics systems have had on resource management and the evolving competence of 3PLs.

The role of 3PL providers in supply chain performance has long been established. Lieb and Bentz (2005) define a 3PL provider as a firm offering various logistics services, including transportation, warehousing, inventory management, packaging, and distribution. Zsidisin and Ritchie (2009) highlight that partnering with 3PL firms allows businesses to manage risks such as freight damage, loss, or delays. Given the growing internationalization of 3PLs, their role has become even more critical in mitigating risks and uncertainties faced by businesses (Marasco, 2008). Numerous studies emphasise the value of 3PLs in enhancing organisational performance and logistics integration (Ellram & Cooper, 1993). However, the competence of 3PL providers is a key determinant of their success. Competent 3PL providers excel in transportation, warehousing, and inventory management, ensuring successful logistics operations for their clients (Zsidisin & Ritchie, 2009).

The ability of 3PL providers to improve delivery efficiency and competitive advantage is especially relevant to developing countries. Govindan et al. (2016) identify technological capabilities, financial stability, and on-time delivery performance as critical factors in selecting 3PL providers. In South Africa, the top criteria include cost, pricing structure, service delivery, and the relationship with the 3PL provider (Karrapan et al., 2017). Successful 3PL providers must balance efficiency and innovation, with certain providers excelling in both domains (Marchet et al., 2017). For businesses in emerging economies, adopting the 3PL system can substantially reduce costs and improve quality (Aktan et al., 2016). These findings underscore the role of 3PL providers in enhancing supply chain competitiveness in developing nations.

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Recent research highlights the importance of innovation competence in 3PL firms, emphasizing the industry's potential for growth. Wasielewska-Marszałkowska (2021) notes that 3PL providers are increasingly adopting advanced technologies to expand their service offerings and remain competitive in the global market. Quality management practices significantly impact the integration competence of 3PL firms, particularly in process management, human resource management, and strategic planning (Shaiq et al., 2020).

In the African context, particularly within agricultural supply chains, 3PL providers face a unique set of challenges, including poor infrastructure, insufficient storage, and ineffective supply chain management (Owusu et al., 2017). These issues often result in post-harvest losses, reduced product quality, and increased costs. Selecting the right 3PL provider is crucial for mitigating these challenges (Yadav et al., 2020). In Ghana, the 3PL industry, mostly comprising micro-enterprises, faces several obstacles, including a lack of technological adoption and professional training (Peprah, 2019). Despite these challenges, 3PL providers are essential for improving supply chain efficiency in Ghana's agricultural sector, particularly in the logistics of food products.

The competencies of 3PL providers are vital for overcoming challenges in the agricultural food chain logistics of Ghana and other African countries. Research by Kusi-Sarpong et al. (2016) suggests that the competence of 3PL providers can be evaluated based on their ability to deliver accurate and timely information, respond to customer needs, adapt to changing circumstances, and manage risks. These competencies are essential for driving innovation and improving supply chain efficiency.

Recent studies have provided ample evidence of the growing significance of logistics integration in improving supply chain performance. Achieving competitive advantages requires integrated logistics and global sourcing, which yield advantages like lower costs, better access to technologies, and stronger supplier relationships (Negi, 2024). Effective supply chain management requires the integration of logistics operations with strategic business processes such as supplier and customer relationship management (Azmi et al., 2017). Trust, Satisfaction, and Commitment positively impact logistics integration between manufacturers and logistics service providers, which eventually improves business and operational performance (Kim et al., 2020). In competitive business situations, supply chain integration—which entails network ties between an organisation and its business partners—is essential to improving firm performance and supply chain performance (Asnordin et al., 2021). Despite all these studies highlighting how important logistics integration is to contemporary supply chain management, the relationship between logistics integration, 3PL competence, and organisational performance is not fully understood. Since third-party logistics (3PL) providers' competence is critical to organisational performance in terms of service quality, relationship management, and organisational effectiveness, this study investigates the mediating role of 3PL competence in the relationship between logistics integration and organisational performance (Demir & Güzel, 2024). 3PL business success is strongly predicted by strategic management and dynamic skills, with environmental benevolence serving as a key mediating factor (Arun & Ozmutlu, 2021). 3PL businesses rank cost of service as the most crucial component, followed by quality of service and enduring partnerships (KirstienPaola et al., 2022). Both local businesses and multinational enterprises prioritise logistics capability, making managerial skills crucial for 3PL providers. Although the significance of management and commercial competencies differs between multinational corporations and local suppliers, they are nonetheless stressed (Sangka et al., 2019). The aforementioned results underscore the complexity of 3PL competence and its importance in promoting organisational effectiveness.

Supply Chain Integration. Supply chain integration, encompassing physical, informational, financial, and actor integration, is crucial for improving supply chain performance (Fouda, 2012). In

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the Industry 4.0 era, this integration is further enhanced through collaborative networks and real-time data processing (Arias et al., 2022). The integration is particularly important in today's competitive environment, where supply chains are fragmented, and value creation is distributed across multiple companies (Döpgen & Göpfert, 2018). The concept of integration also plays a key role in overcoming intra- and inter-organisational boundaries (Romano & Roden, 2015). Supply chain integration can increase a company's complexity, particularly in the presence of high supply complexity (Gimenez et al., 2012). This complexity is further influenced by the dimensions of supply chain complexity, including upstream, internal, and downstream complexity (Mohamed & Hassan, 2019). However, this complexity can negatively impact cost performance (Gimenez et al, 2012) and manufacturing plant performance (Bozarth et al., 2009). Despite these negative effects, supply chain complexity can also have a positive impact on innovation and financial performance (Ateş et al, 2021).

Supply Chain Integration Performance. In a systematic analysis of supply chain integration, researchers highlight the impact of close partnerships with key customers and suppliers in enhancing lead times and overall performance across various industries (Singh, 2000; Vereecke & Muylle, 2005; Stank, 2001; Hanafiah et al., 2019). Central to these improvements is extensive information exchange, structured coordination, and long-term collaboration, leading to reduced costs, enhanced quality, timely delivery, increased flexibility, and improved customer service (Bratton et al., 2000). Collaborative mechanisms such as planning, forecasting, and replenishment facilitate more precise planning and demand anticipation, which significantly benefits performance outcomes. The integration across supply chain tiers is essential for effective information sharing and utilization, where collaborative forecasting, a pivotal aspect of supply chain management, further optimizes demand by fostering a shift from independent to interdependent forecasting (Helms et al., 2000; Singhry & Abd Rahman, 2018).

Logistics Integration. Several scholars have noted the variability in how logistics integration is defined across different contexts and industries. While some definitions emphasise the alignment of logistics activities within an organisation, others focus on integrating logistics processes across the supply chain. This variability underscores the complexity of the concept and the need for a nuanced understanding. Logistics integration, a fundamental concept in supply chain management (SCM), encompasses the seamless coordination of various logistics functions and activities within and across its supply chain partners. Logistics integration is "the close coupling of the different logistics tasks within an organisation and among enterprises within the supply chain," according to Mentzer et al. (2001). This concept underscores the significance of cooperation among supply chain stakeholders by stressing the interdependence of logistics operations on the internal and external fronts. The process of strategically uniting the functions of transportation, inventory control, warehousing, materials handling, order processing, and information systems to ensure the smooth flow of goods and services through the supply chain, is how Lambert and Cooper (2000) define logistics integration, thus, elaborating on the multifaceted nature of the integration. This concept emphasises the strategic alignment of processes and systems to maximise supply chain performance, underscoring the holistic approach necessary for seamless collaboration across various logistics operations. Christopher (2016) emphasises the strategic significance of logistics integration in strategic management by defining it as the process of aligning the logistics requirements of the market with the capabilities of the supply chain. This definition highlights the dynamic nature of logistics integration, emphasising its role in aligning supply chain capabilities with evolving market demands to enhance competitiveness and customer satisfaction. Moreover, Cooper et al. (1997) introduced the concept of extended enterprise integration, which extends the scope of logistics

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integration beyond organisational boundaries to encompass external partners such as suppliers, distributors, and customers. They define extended enterprise integration as the coordination and integration of business processes and information across an extended network of trading partners to create value for customers.

Integrating Logistics within the Supply Chain Management. According to Flynn et al. (2010), client firms strategically engage with their logistics and supply chain providers to manage their operations inside and outside the organisation's logistics and SCM settings. Stock et al. (2000) argue that organisations give logistics integration a high strategic priority, similar to a network-based business environment. Chang and Ku (2009) assert that logistics integration now includes additional departments beyond the operations/production department, the logistics department, and the information technology department. Prajogo and Olhager (2012) state that a dynamic link between internal and external corporate activities is necessary for highly integrated logistics. Initially, the logistics integration component was a hazy idea employed in companies. By the 1970s, businesses with little capacity for differentiation had consolidated their logistics operations. Organisations then started outsourcing their logistics functions to logistics service providers (third parties) to help their clients' supply chain activities, such as buying, inventory management, storage, and transportation (Sinkovics & Anthony, 2004).

Dimensions of Logistics Integration. The concept of logistics integration encompasses both internal and external aspects, with the former focusing on the coordination and improvement of operations within a company and the latter on the establishment of relationships to respond to market demand. This integration is crucial for the competitiveness of logistics firms and the effectiveness of supply chains (Soosay, 2007). Data integration is a key challenge in this process, and a service-oriented approach has been proposed to address this issue (Hans et al., 2007). The importance of integrated logistics is underscored, with the administration of material resources and the use of management styles such as DDP, MRP, and JIT being highlighted (Chira & Musetescu, 2017). The essence of modern logistics is seen in its integration with market operations and the rational allocation of resources (Jian-xin, 2004).

Internal Integration. In organisational management literature, internal integration emerges as a fundamental concept, involving the alignment and coordination of various functional units and departments within an organisation (Chung, 2013). This integration encompasses core logistics functions such as transportation, warehousing, and inventory management, ensuring a cohesive operational structure that supports efficiency and performance (Fawcett & Magnan, 2015; Liu & Liu, 2019). Internal integration, as noted by Hitt et al. (2019), requires a seamless flow of information, resources, and activities throughout the organisation, enhancing operational effectiveness. Chung (2013) posits that internal integration involves aligning functions, departments, and processes to achieve unified organisational objectives. This alignment is facilitated by breaking down traditional silos, promoting collaboration across departments and hierarchical levels (Lambert et al., 2005), which optimizes communication, reduces redundancies, and ultimately improves organisational performance (Daft & Marcic, 2016). Additionally, this process empowers organisations to optimize resource allocation, improve decision-making, and react more agilely to changing market conditions (Stevens, 1989; Frohlich & Westbrook, 2001).

Internal Information Sharing. Effective internal information sharing is crucial for organisational success, and the organisational culture heavily influences it. Barua et al. (1997) emphasise the role of organisational culture in promoting information exchange, particularly through values of permanence, trust, teamwork, and credibility. This is supported by Islam et al. (2011), who found that trust, communication, and leadership are positively related to knowledge

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sharing. Ling et al. (2009) and Nya (2009) further highlight the importance of trust in fostering a knowledge-sharing culture, which is essential for efficient internal information sharing. Enterprise resource planning (ERP) systems, intranets, and extranets are crucial for internal information sharing, providing a centralized platform for data storage and exchange (Chung & Lee, 2014; Kumar & Reinartz, 2015). However, the success of these systems depends on factors such as organisational enablers, information management capabilities, and the potential for organisational change (Barua et al., 2007; Hall, 2002). ERP systems, in particular, are seen as a necessary step towards supply chain management, but their implementation requires careful management (Trunick, 1999).

External Integration. External integration, through collaboration with supply chain partners, is a key factor in enhancing supply chain performance (Stank et al., 2001; Lambert & Enz, 2017). It is influenced by strategic buyer-supplier relationships and information technology, which in turn affect a firm's agility performance (Paulraj & Chen, 2007). As a means of working and coordinating with supply chain partners, including suppliers, manufacturers, distributors, and customers (Lambert & Enz, 2017), external integration requires promoting and sharing information, resources, and capabilities to achieve common goals and enhance overall supply chain performance (Attaran & Elahi, 2018). It further broadens the organisation's borders and creates a networked ecosystem where information, materials, and resources may flow freely across organisational boundaries (Chopra & Meindl, 2020)

External Information Sharing. Research suggests that organisations that engage in effective external information sharing are better positioned to mitigate risks, improve customer satisfaction, and achieve supply chain agility (Zhang et al., 2018). External Information Sharing refers to exchanging information between organisations through various channels such as Electronic Data Interchange (EDI), extranets, or collaboration platforms. This dimension is crucial for effective communication, coordination, and collaboration between supply chain or business network organisations. The benefits of External Information Sharing include improved visibility into business processes, reduced transaction costs, enhanced flexibility, and increased efficiency (Chen & Lee, 2009). Sharing information with external partners, including distributors, suppliers, and customers, entails establishing communication channels, sharing forecasts, and collaborating on demand planning and inventory management, which entails exchanging data, insights, and knowledge. (Wang et al., 2016; Attaran & Elahi, 2018). However, it also poses challenges related to data security, privacy concerns, and the need for standardised data formats (Buyens et al., 2007). Organisations may increase supply chain visibility and responsiveness, shorten lead times, and foster confidence by exchanging external information. External information exchange makes demand forecasting, inventory optimisation, and risk management more accessible, which gives access to current market data and consumer input (Fani & Fani, 2020; Katzenberg & Ruamsook, 2020).

Effects of External Integration on Performance. Extensive studies have shown the major advantages of external integration for operational performance. The supply chain is more efficient and under control when integrated outside. Close collaboration between suppliers and organisations can result in shorter lead times, higher-quality products, and improved customer service (Cox & Alter, 2003). Toyota, for example, has greatly increased its operational excellence through the use of a successful supplier integration approach, as demonstrated by its just-in-time (JIT) production system (Womack & Jones, 2003). External integration also increases client loyalty and happiness. Companies may set themselves apart from rivals and cater to specific client demands by implementing customer-oriented tactics like personalisation and customisation (Porter & Kramer, 2001). For instance, one of the key components of Dell's success in the cutthroat PC industry

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has been its direct sales approach, which enables consumers to customise their PCs to their requirements and get them in a few days (Dell Inc., n.d.). External integration encourages creativity and knowledge exchange may obtain new technology, ideas, and best practices through collaboration with suppliers, customers, and even rival companies, which helps them remain competitive (Birkinshaw & Molloy, 1997). Several significant product inventions resulted from Procter & Gamble's Connect and Develop approach, which entails collaborating with outside organisations for research and development (Ritter & Gemünden, 2014).

Process Integration. With the development of global supply chains, process integration—the synchronisation and unification of logistics processes inside an organisation and across its partners—has grown in significance. Process integration enhances the operational effectiveness of 3PL providers by streamlining operations such as shipping, storage, and customer service. With a focus on how process integration impacts 3PL performance in terms of lead time, cost-effectiveness, service quality, and customer satisfaction, this review of the literature provides a comprehensive analysis of earlier research. The report also highlights common techniques, key theoretical foundations, and substantial research needs in this field. In the context of logistics, process integration often refers to the methodical synchronisation of procedures both within an organisation and with outside partners to attain efficient operations and peak performance. Integration in third-party logistics might take the form of synchronised transportation, coordinated storage, and unified information systems that connect supplier and client activities. According to studies, 3PLs that are well-integrated may greatly increase supply chain agility and cost control, giving client companies more value (Wang et al., 2021; Lee & Song, 2022).

Process Integration Effects of External Integration. Numerous industries and geographical contexts have been the subject of studies on the effects of external logistics integration on organisational performance outcomes. These studies consistently show that integration has a positive impact on key performance indicators like cost-effectiveness, operational efficiency, innovation, and agility. Common methodological limitations, such as small sample sizes and a sectoral or regional focus, emphasise the necessity of cautious interpretation and more thorough investigation. The study's findings closely relate to its emphasis and offer important insights into how external collaborations might improve supply chain operations. The study's conclusions highlight the value of cooperation and the proficiency of 3PL providers, underscoring the necessity of tackling contextual issues and further exploring the mediating function of 3PL providers in diverse and growing economies, like Ghana's cocoa industry.

Exploring Process Integration Dimensions. The concept of process integration is a complex, multidimensional problem, as highlighted by Karcanias and Stupples (2010) and Hessami and Karcanias (2011). It encompasses overall process operations, system design, information, data, and software, as well as verification, validation, and assurance. The role of process-based performance measurement systems in enabling integration is emphasised by Beretta (2004), particularly in addressing cognitive and managerial dimensions. Gilles et al. (1996) further explore the challenges of integrated process operation, including the integration of unit operations and the handling of complex dynamics.

Transportation Sharing. Transportation sharing involves collaborating with other businesses or partners to enhance logistics operations while reducing costs to share transportation infrastructure, services, or assets. This practice occurs when supply chain partners join forces to utilise transportation resources, routes, or networks (Zhang et al., 2018; Katzenberg & Ruamsook, 2020). Transportation sharing, also known as transportation pooling or collaborative transportation, aims to optimize transportation capacity among multiple shippers, thereby minimizing empty miles

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and improving overall efficiency (Chowdhury et al., 2019). Freight consolidation, backhauling, and collaborative transportation planning are employed to reduce empty miles and mitigate transportation costs (Attaran, 2016; Liu & Liu, 2019). By implementing transportation pooling, organisations can mitigate transportation risks, maximise fleet utilisation, and enhance delivery performance (Zhang et al., 2018). This can be achieved through various collaborative arrangements, including dedicated contract carriage, intermodal transportation, or partnering with third-party logistics providers (Chang, 2017). By consolidating freight volumes and optimising transportation routes, transportation-sharing initiatives contribute to cost reduction, improved delivery times, and enhanced sustainability (Chowdhury et al., 2019). For example, substituting rail transport for long-haul shipments instead of relying solely on trucking can result in significant fuel savings and emissions reductions (Bowersox & Closs, 2018). Research indicates that transportation-sharing initiatives yield cost savings, enhanced service levels, and reduced environmental impact (Attaran & Elahi, 2018; Fani & Fani, 2020). Transportation sharing represents a strategic approach to logistics management, enabling organisations to achieve operational efficiencies while contributing to sustainability goals.

Warehouse/Distribution Sharing. Warehouse and distribution sharing, often referred to as co-location logistics, encompasses the collaborative use of warehouse space and distribution resources among multiple companies, enabling efficient, resource-shared logistics solutions (Chang, 2017). This arrangement can occur through public warehouses or within private warehouse networks managed by third-party logistics providers (3PLs) or consortia of shippers (Bowersox & Closs, 2018). The consolidation of inventory and order processing within a shared facility allows companies to benefit from economies of scale in storage and handling costs, reducing lead times and enhancing responsiveness to customer demands (Chang, 2017). For example, a retailer may collaborate with a manufacturer by sharing a distribution centre and optimizing supply chain operations through the mutual use of resources.

Logistics Integration: A Mechanism for Third-party Logistics Provider Integration. A range of studies have explored the concept of logistics integration as a mechanism for third-party logistics provider (3PL) integration. Chu (2010) found that trust, commitment, and dependence are key factors in logistics integration, positively impacting performance. Choy (2006) proposed the Integrated Logistics Information Management System (ILIMS) to integrate 3PL operations and information flow, leading to improved performance. Yan (2006) focused on business process integration in e-commerce, suggesting a logistics management information system as a solution. Shang (2009) further emphasised the importance of integration and organisational learning capability in 3PLs, which positively impact service and financial performance.

Cocoa Logistics and Supply Chain in Ghana. Nearly 80% of cocoa produced is exported, but Ghana's cocoa processing increased by roughly 69% between 2012 and 2017, to reach 225,000 tonnes. Ghana is the world's second-largest producer of cocoa beans after Côte d'Ivoire. Between 2019 and 2021, Ghana accounted for 15% of global production and 16% of the value of global exports, on average. According to Abbadi et al. (2019), the cocoa industry contributed around 30% of Ghana's export profits and approximately 2.1% of the country's GDP in 2014. In addition, the sector is expected to provide USD 2.71 billion in government revenues in 2017 (Vigneri and Kolavalli, 2018). In total, the cocoa industry supports the livelihoods of approximately 30% of the population and accounts for 10% of the agricultural GDP, with about 850,000 farm families earning a living from the crop (AsokoInsight, 2022; World Bank, 2013; Peprah, 2015; Ahoa et al., 2020; Vigneri & Kolavalli, 2018).

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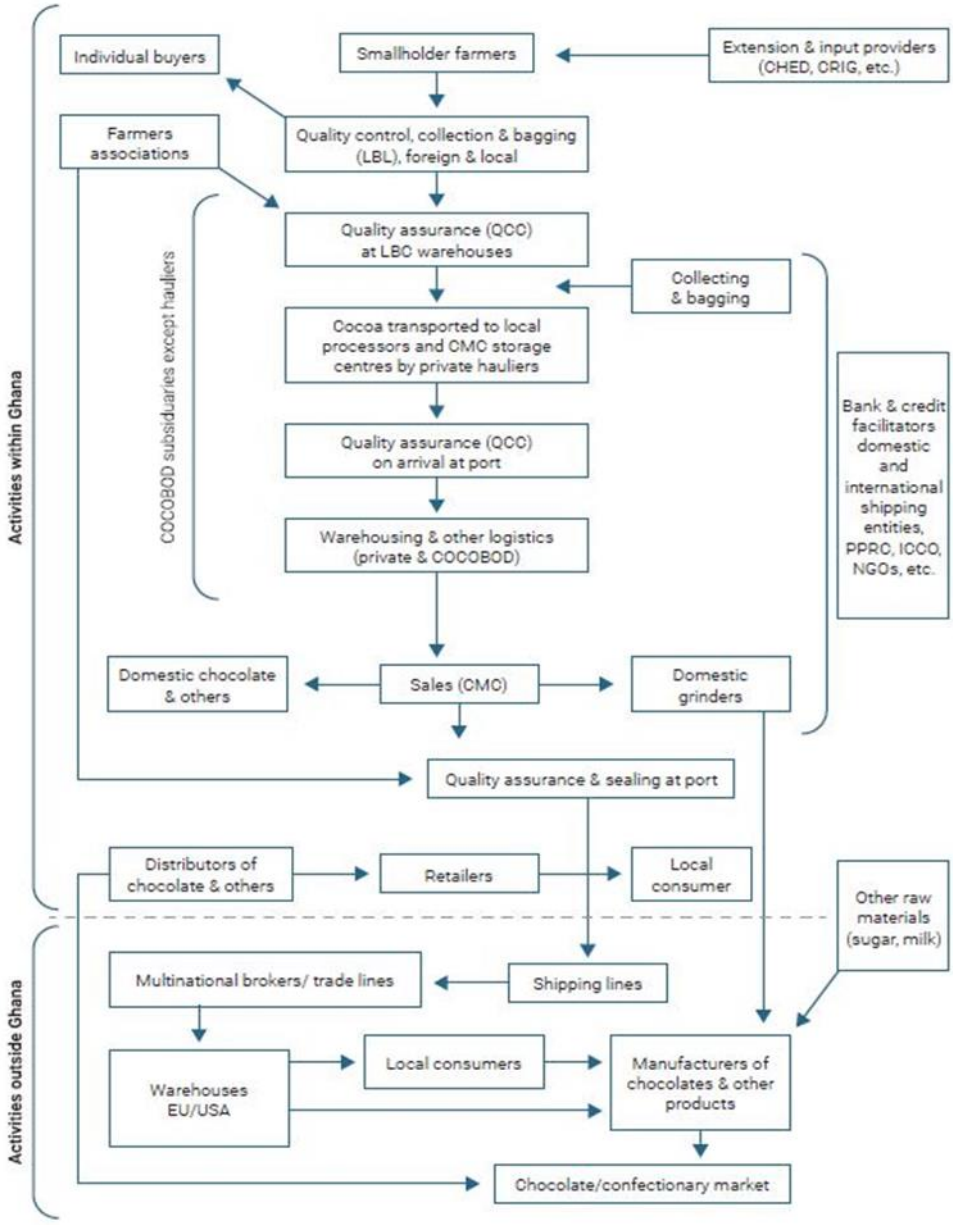

Source: GCB 2022

Figure 1. The Cocoa Logistics and Supply Chain in Ghana

Theoretical Foundations of Study. Ghana's cocoa business offers a distinct combination of possibilities and difficulties for logistics and supply chain dynamics, which require a thorough grasp of relational and adaptable methods. Through the prisms of RV and DCT, the research "Logistics Integration and Organisational Performance: The Mediating Role of Third-Party Logistics Competence" examines these dynamics. In the context of Ghana's vital cocoa industry, both theories offer crucial insights into how businesses may efficiently use both internal and external resources to improve logistics integration and achieve better organisational performance. The theoretical frameworks from RV and DCT enhance the study of logistics integration and organisational performance within Ghana's cocoa sector, with an emphasis on the mediating function of third-party logistics competence. RV emphasises the importance of relationships between firms and the worth

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of relational capital in improving organisational performance through improved logistics competence. However, dynamic capability theory emphasises that to successfully navigate the challenges of logistics in a volatile global market, one must be flexible, innovative, and able to reconfigure resources. When combined, these theories provide a thorough framework for comprehending how logistics integration might lead to improved organisational performance in Ghana's crucial cocoa sector.

Relational View Theory (RV). Inter-firm interactions are crucial for establishing and maintaining competitive advantage, according to Dyer and Singh's (1998) introduction of Relational View Theory. As per RV, a company's capacity to surpass its rivals is largely dependent on the distinct advantages that arise from cooperative partnerships, which are referred to as relational rents. The hypothesis emphasises the crucial role that solid relationships play across the supply chain when it comes to Ghana's cocoa logistics. 3PL providers, exporters, transporters, and cocoa producers comprise a complex network of players in Ghana's cocoa sector. Ensuring the effectiveness of logistics operations is contingent upon the quality and depth of interactions that exist among these organisations.

Relational View Theory (RV) and Logistic Integration. Research on supply chain and logistics management has made RV a prominent theoretical framework in strategic management, as first introduced by Dyer and Singh (1998). To improve supply chain performance, it highlights the significance of inter-organisational interactions and practices. Research has demonstrated the beneficial effects of relational abilities on supply chain resilience and customer value, including collaboration and communication (Wieland & Wallenburg, 2013). Improvements in dyadic relational performance and overall supply chain performance have been observed with the growth of relational embeddedness among logistics service providers, suppliers, and consumers in transitive triads (Świerczek, 2022). Supply chain performance is further enhanced by inter-organisational information systems visibility, which is impacted by trust and asset specificity (Lee et al., 2014). Expanding upon these ideas, the Practice-Based View has been extended with the proposal of the Supply Chain Practice View (SCPV) that focuses on inter-organisational practices and how they affect individual and relational performance in supply chains (Carter et al., 2017).

Dynamic Capability Theory (DCT). Teece et al. (1997) developed the Dynamic Capability Theory, which emphasises how companies may adapt to changing conditions by integrating, constructing, and rearranging their internal and external competencies. Because cocoa businesses always need to adjust to the volatile and frequently unpredictable character of global commodity markets, this theory is especially pertinent to logistics integration in the cocoa sector. Logistics operations in the cocoa business must be very adaptive due to external constraints such as shifting laws, environmental concerns, and fluctuating worldwide cocoa prices. Businesses may adapt their logistics strategy to these developments by utilising dynamic capabilities. For example, a company with significant dynamic capabilities might quickly reorganise its logistics network to conform to new export laws or adapt to changes in demand throughout the world. This flexibility is essential to sustaining effective logistics processes and guaranteeing that cocoa beans reach overseas markets on time, all of which have a direct impact on the success of organisations.

Complementary Effect of Relational View and Dynamic Capability Theory. Integrating RV and DCT may greatly improve the relationship between logistics integration, organisational performance, and 3PL competency. This conceptual underpinning clarifies how these frameworks function in tandem to enhance our comprehension of how 3PLs may achieve better performance through efficient logistics integration.

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Hypothesis Development. To address supply chain costs, quality services and satisfactory delivery, improving the third-party logistics provider's competence is regarded as a part of responsiveness (Martin & Denis 2001). For instance, if a delivery location changes, a prompt response to the customer's requirement may minimize the delivery delay (Christopher & Lee, 2004). Short lead times might reduce supply chain delays (Christopher 1998). Customer satisfaction increases with good customer service (Ho et al. 2012). Reduced uncertainty and the risk of delay may result from service flexibility that satisfies client demands (McKinnon & Ge 2004). Practical operational competencies also include people's knowledge and abilities, or the calibre of the workforce, which might increase customer satisfaction (Ho et al. 2012). A flexible transit plan may boost fuel economy and reduce delays (McKinnon & Ge 2004).

Given the discussions and in the context of logistics integration, these are the proposed hypotheses for the research:

- H1a: Internal information sharing has a positive and significant relationship with third-party logistics competence.
- H1b: Internal IT capabilities have a positive and significant relationship with third-party logistics competence.
- H2a: External information sharing has a positive and significant relationship with third-party logistics competence.
- H2b: External IT capabilities have a positive and significant relationship with third-party logistics competence.
- H3a: Transportation sharing has a positive and significant relationship with third-party logistics competence.
- H3b: Warehousing and distribution sharing have a positive and significant relationship with third-party logistics competence.

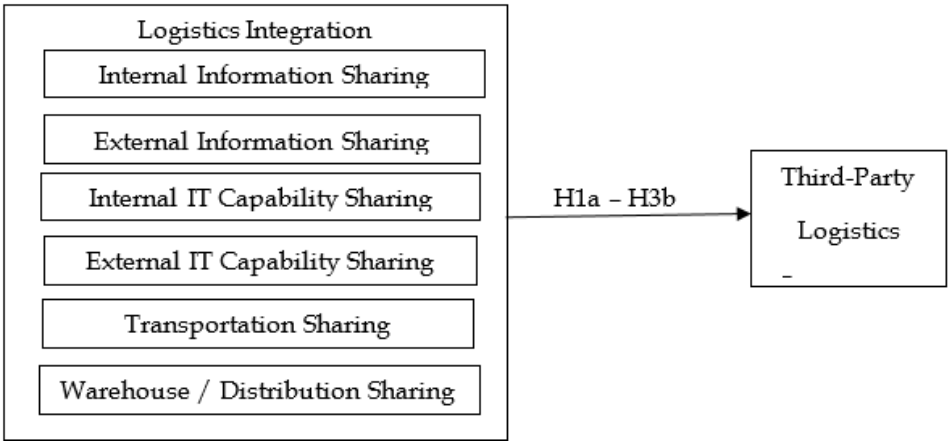

Figure 2. Logistics Integration

METHODS

This study employed a quantitative research methodology, rooted in positivistic and post-positivistic paradigms, to systematically investigate the logistics activities within Ghana's cocoa supply chain. Quantitative methods were chosen for their ability to test hypotheses, generalize findings, and provide a rigorous framework for data collection and analysis (Jennings, 2005; Smith, 2010; Johnson & Lee, 2018). The organizational or firm level served as the analytical unit, with each agency sampled treated as an entity. While data were collected from individual managers or

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supervisors, the focus remained on organizational-level dynamics, as this was deemed the most appropriate level to address the research questions.

The study population comprised all actors within Ghana's cocoa logistics supply chain, with a specific focus on post-harvest activities, including the purchase, storage, and transportation of dried cocoa beans to ports or processing facilities. The cocoa supply chain in Ghana is complex, involving both domestic and international stakeholders. Key domestic players included Licensed Buying Companies (LBCs), haulage providers, and warehousing firms.

A mixed sampling design, combining probability and non-probability methods, was employed to ensure a representative and diverse sample. Simple random sampling was used to give each LBC an equal chance of inclusion. However, due to constraints such as limited time, resources, and survey response rates, non-probability methods—specifically purposive and snowball sampling—were also utilized. Purposive sampling targeted respondents with expertise in logistics, warehousing, and transportation, while snowball sampling facilitated access to hard-to-reach groups by leveraging referrals from initial respondents (Bryman & Bell, 2007; Grinnell & Unrau, 2011; Walter, 2013). The sample included key stakeholders such as:

- Licensed Buying Companies (LBCs): PBC Limited, Adwumapa Buyers, Kuapa Kokoo Limited, Armajaro (Gh) Limited, Olam (Ghana) Ltd, Federated Commodities, Transroyal (Gh) Limited, Cocoa Merchants (Ghana) Limited, Akuafo Adamfo Marketing Limited, Kumankoma Company Limited, and Brossaman Company Ltd.
- Haulage Providers: Global Haulage Company Ltd, Gelloq Limited, Antrak Ghana Ltd, Vehrad Transport & Haulage Co. Ltd., ROM Logistics Limited, and Trans-Royal Ghana Limited.
- Warehousing Firms: Tarzan Enterprises, Cocoa Marketing Company Ltd., and Global Haulage Company Ltd.

The study focused on three regions in Ghana—Western, Ashanti, and Brong-Ahafo—selected based on their significant contributions to cocoa production and logistics activities. The Western Region, accounting for 43% of total cocoa purchases in the 2019/2020 crop year, was included due to its dominant role in the cocoa supply chain. The Ashanti Region, representing 22% of purchases, provided insights into another major market segment. The Brong-Ahafo Region, though contributing 12% of purchases, was included for its logistical convenience, as the researcher is based in this region, enabling efficient data collection and leveraging local knowledge.

This regional sampling strategy ensured a balanced representation of high, medium, and moderately lower cocoa-purchasing regions, enhancing the generalizability of the findings across different contexts within Ghana.

A total of 1,200 questionnaires were administered to managers and supervising officers across LBCs, haulage providers, and warehousing firms in the selected regions. Of these, 989 usable responses were obtained, representing an 89.1% response rate—significantly higher than the average survey response rate of 61% (Cummings et al., 2001; Creavin et al., 2011). The high response rate underscores the effectiveness of the study's data collection approach. The distribution of responses across organizational types was as follows:

- LBCs: 458 responses (46.3%)
- Warehousing Firms: 267 responses (27.0%)
- Haulage Providers: 264 responses (26.7%)

The data collected were analyzed to address the research questions, with a focus on organizational-level dynamics in cocoa logistics. The high response rate and diverse sample ensured

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the validity and generalizability of the findings, providing robust insights into the challenges and opportunities within Ghana's cocoa supply chain.

RESULT AND DISCUSSION

The research examines the relationship between logistics integration and third-party logistics (3PL) competence, focusing on how internal and external integration factors influence 3PL competence. The findings are based on statistical analyses, including descriptive statistics, confirmatory factor analysis (CFA), and structural equation modelling (SEM), to provide a clear and detailed explanation of the data analysis, interpretation, and findings, supported by statistical evidence and theoretical frameworks.

Demographic Profile of Respondents. The study involved 989 respondents, with 58.3% male and 41.7% female participants. The majority of respondents were aged 21-30 (43.4%), followed by the 31-40 age group (33.4%). Most respondents had tertiary education (55.3%), and 49.8% were single. The respondents were primarily from Licensed Buying Companies (LBCs) (46.3%), warehousing (27.0%), and transport/haulage (26.7%). Most respondents had 6-15 years of organisational experience (55.1%) and 16-20 years of industry experience (47.6%). These demographics highlight the experience and expertise of the respondents, which is crucial for understanding their perspectives on logistics integration and 3PL competence.

Descriptive statistics and normality tests were conducted to assess the distribution of the data. The Shapiro-Wilk test confirmed that the data were normally distributed, with skewness and kurtosis values within acceptable ranges (-2 to +2). The mean values for internal and external information sharing, IT capabilities, transportation, and distribution ranged from 4.08 to 4.77, indicating a strong agreement among respondents on the importance of these factors. The normality test results confirmed that the data were suitable for parametric statistical analyses, such as regression and ANOVA.

A factor analysis was conducted to assess common method bias (CMB). The first component explained 42.236% of the variance, suggesting potential CMB. However, further analysis indicated that the first component was likely linked to substantive constructs rather than CMB. The remaining components accounted for smaller proportions of variance, confirming that the data were not significantly affected by CMB.

Multicollinearity was assessed using tolerance and variance inflation factor (VIF) values. All tolerance values were above 0.2, and VIF values were below 5.0, indicating no significant multicollinearity among the independent variables. This confirms that the regression model is stable and reliable.

CFA was conducted to validate the measurement model. The results showed high factor loadings (ranging from 0.778 to 0.915) and Cronbach's alpha values (ranging from 0.902 to 0.945), indicating strong reliability and validity of the constructs. The constructs included internal and external information sharing, IT capabilities, transportation, distribution, logistics integration, and 3PL competence. The CFA results confirmed that the measurement model fit the data well, with goodness-of-fit indices (GFI = 0.850, CFI = 0.943, RMSEA = 0.053) within acceptable ranges.

The structural model examined the relationships between logistics integration, 3PL competence, and organisational performance. The results supported most hypotheses:

- Internal Information Sharing and 3PL Competence (H1a): A significant positive relationship was found ($\beta = 0.084$, $p < 0.001$), indicating that effective internal information sharing enhances 3PL competence.

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- Internal IT Capabilities and 3PL Competence (H1b): A strong positive relationship was observed ($\beta = 0.176$, $p < 0.001$), highlighting the importance of IT capabilities in improving 3PL competence.
- External Information Sharing and 3PL Competence (H2a): A significant positive relationship was confirmed ($\beta = 0.217$, $p < 0.001$), demonstrating that external information sharing strengthens 3PL competence.
- External IT Capabilities and 3PL Competence (H2b): The strongest positive relationship was found ($\beta = 0.245$, $p < 0.001$), emphasizing the role of advanced IT systems in enhancing 3PL competence.
- Transportation Sharing and 3PL Competence (H3a): No significant relationship was observed ($\beta = 0.018$, $p = 0.356$), suggesting that transportation sharing does not directly impact 3PL competence.
- Warehousing and Distribution Sharing and 3PL Competence (H3b): A significant positive relationship was confirmed ($\beta = 0.108$, $p < 0.001$), indicating that shared distribution and warehousing improve 3PL competence.

Incremental Goodness-of-Fit Indicators. The structural model demonstrated excellent fit, with incremental goodness-of-fit indices within acceptable ranges (CFI = 0.942, TLI = 0.937, RMSEA = 0.053). These results confirm that the theoretical model accurately represents the observed data, supporting the validity of the findings.

Discussion of Objectives. Logistics Integration and Performance: The study found a significant positive relationship between logistics integration and performance ($\beta = 0.112$, $p < 0.001$), consistent with previous research emphasizing the importance of integration in enhancing operational efficiency and customer satisfaction.

Logistics Integration Variables and 3PL Competence: Internal and external information sharing, IT capabilities, and distribution sharing significantly improved 3PL competence, while transportation sharing had no significant impact.

The study provides valuable insights into the relationships between logistics integration, 3PL competence, and organisational performance within the cocoa industry in Ghana. The findings confirm that internal and external integration factors, particularly information sharing and IT capabilities, significantly enhance 3PL competence. These results have practical implications for organisations seeking to optimize their logistics operations and achieve superior performance outcomes.

CONCLUSION

The study on logistics integration and third-party logistics (3PL) competence within the cocoa industry in Ghana provides valuable insights into the dynamics of supply chain management and organisational performance. The research underscores the importance of logistics integration—both internal and external—in enhancing 3PL competence, which in turn positively influences organisational outcomes. By examining the interplay between these factors, the study offers a comprehensive understanding of how firms in the cocoa industry can optimise their logistics operations to achieve superior performance.

One of the key findings of the study is the strong positive relationship between logistics integration and 3PL competence. Higher levels of logistics integration, facilitated by internal and external information sharing and IT capabilities, lead to greater 3PL competence. This competence acts as a critical mediator between logistics integration and organisational performance, highlighting its pivotal role in achieving superior supply chain outcomes. Specifically, internal integration factors

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such as internal information sharing and IT capabilities significantly enhance 3PL competence, as do external integration factors like external information sharing and IT capabilities. Additionally, transportation, warehousing, and distribution sharing further strengthen 3PL competence, demonstrating the multifaceted nature of logistics integration.

The study also makes significant theoretical contributions by integrating the Relational View (RV) and Dynamic Capability Theory (DCT). These frameworks explain how relational mechanisms, such as trust and collaboration, and dynamic capabilities, such as adaptability and innovation, enhance 3PL competence and organisational performance. The findings emphasise the importance of contextual factors, including industry-specific dynamics and environmental conditions, in shaping the effectiveness of logistics integration and 3PL competence. This integration of theories provides a holistic framework for understanding supply chain phenomena and offers valuable insights for both academics and practitioners.

From a practical perspective, the study highlights the importance of prioritising logistics integration and partnering with highly competent 3PL providers to achieve better performance outcomes. Firms in the cocoa industry should focus on improving both internal and external logistics integration through better information sharing and IT capabilities. Additionally, investments in advanced technologies such as IoT, blockchain, and AI can further enhance logistics integration and 3PL competence by improving data sharing, visibility, and communication across supply chains. Building strong relationships with 3PL providers is also crucial, as it fosters trust, coordination, and innovation in logistics operations.

The study also sheds light on the role of logistics outsourcing in enhancing supply chain and organisational performance. When supported by competent 3PL providers, logistics outsourcing positively impacts performance outcomes, including customer satisfaction. This is particularly evident in areas such as reliability and responsiveness, where 3PL competence plays a significant role. These findings underscore the importance of selecting 3PL providers with demonstrated competence in integrating their services with the firm's logistics operations.

Based on the findings, several recommendations are proposed for stakeholders in the cocoa industry and future research. For practitioners, enhancing logistics integration should be a priority. This can be achieved through better information sharing, IT capabilities, and the adoption of advanced technologies. Selecting competent 3PL providers and fostering collaborative relationships with them are also critical steps towards improving supply chain performance. For policymakers, investing in infrastructure development and creating supportive regulatory frameworks can further enhance logistics integration and 3PL competence in the cocoa industry. Capacity-building initiatives, such as training and resources for local firms and 3PL providers, can also improve their competitiveness in the global market.

For future research, there is a need to explore sector-specific variations in logistics integration and 3PL competence. Investigating these factors in other industries can help identify industry-specific best practices and tailor strategies to optimise logistics operations. Additionally, the role of emerging technologies such as AI, IoT, and blockchain in enhancing logistics integration and 3PL competence warrants further exploration. Longitudinal studies are also recommended to understand how logistics integration and 3PL competence evolve and their sustained impact on organisational performance. Extending the research to other emerging economies can provide comparative insights and contribute to a more comprehensive understanding of logistics practices globally.

Another important area for future research is the criteria and processes for selecting 3PL partners. A deeper understanding of these factors can provide valuable insights into how firms can

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optimise their 3PL partnerships to enhance logistics performance. Additionally, examining the role of organisational flexibility and dynamic capabilities in the relationship between logistics integration, 3PL competence, and performance can offer new perspectives on how firms can remain competitive in dynamic and unstable market environments. Incorporating perspectives from different stakeholders, such as suppliers, customers, and policymakers, can also provide a more holistic understanding of the impact of logistics integration and 3PL competence on the broader supply chain ecosystem.

Finally, assessing the impact of policy changes and regulatory frameworks on logistics integration and 3PL competence is crucial. Policies play a significant role in shaping logistics practices and industry standards, and understanding how changes in legislation influence these factors can provide valuable insights for policymakers and industry leaders.

In conclusion, the study highlights the critical role of logistics integration and 3PL competence in enhancing organisational performance within the cocoa industry in Ghana. By focusing on internal and external integration factors, leveraging advanced technologies, and fostering strong relationships with competent 3PL providers, firms can achieve significant improvements in supply chain efficiency and overall performance. Future research should build on these findings to explore additional dimensions and contexts, contributing to the advancement of logistics management theory and practice globally. These efforts will not only enhance academic understanding but also provide practical guidance for firms seeking to improve their logistics operations and overall performance.

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