

The Effect of Third-Party Logistics Providers (3PLs) on Supply-Chain Performance in Northern Ghana — A Systematic Review

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Abstract

The purpose of this study is to systematically examine the literature on the effects of 3PLs on supply chain performance in Northern Ghana by combining empirical data with literature reviews. Through a systematic search of academic databases, regional journals, and grey literature (2000–2025), we identified 38 pertinent empirical and review studies concerning 3PL adoption, performance outcomes (cost, lead time, delivery reliability, inventory accuracy, flexibility), and contextual barriers (infrastructure, ICT, institutional capacity). According to extensive research, businesses in Ghana and similar West African contexts can benefit from more flexibility, improved delivery performance, and cost effectiveness when they work with third-party logistics providers (3PL). Nevertheless, the advantages are not as great as they may be because of issues with transportation, the integration of ICT, and the client firm's contractual abilities. A research and practice agenda for policymakers, logistics managers, and donors is suggested by the review, which highlights the lack of primary, region-specific empirical studies in Northern Ghana.

1. Introduction

Outsourced logistics operations, such as transportation, storage, distribution, and value-added services, are handled by third-party logistics providers (3PLs). Globally, third-party logistics providers (or "3PLs") are helping firms streamline their supply chains and concentrate on core competencies (Agbandzo et al., 2024). The use of third-party logistics providers (3PLs) has been suggested as a means to alleviate local capacity constraints, lower costs, and enhance service quality in Sub-Saharan Africa. Developmental contexts differ in terms of infrastructure, institutional capability, and market structure; so, benefits seen in mature markets may not be applicable (Agyenim-boateng, 2025). This study examines the specific logistical challenges faced by Northern Ghana, including long distances to ports, unpredictable road conditions, and insufficient warehousing. Its objective is to gather research on the impact of third-party logistics providers (3PLs) on supply chain performance and the factors that contribute to or detract from their effectiveness. Listed below are the main goals:

- Summarise research on the effects of 3PLs on supply chain efficiency in Ghana and other comparable African markets.
- Determine what helps and what hinders in Northern Ghana.
- To guide legislators, third-party logistics providers, and corporations

2 Methods

2.1 Search Methods

This review searched academic databases and open repositories for publications that pertained to the following topics: "logistics providers," "Northern Ghana," "supply chain performance," "third-party logistics," and "logistics outsourcing". To encompass both past trends and present geographical assessments, the search was extended from 2000 to 2025. In addition, we incorporated industry-related, systematic papers and studies that addressed logistics outsourcing in Africa.

We used a wide range of search phrases to do our complete study. Among them were studies concerning logistics capabilities and outsourcing in Ghana (Agyenim-boateng, 2025; Ansah et al., 2020; Asamoah et al., 2023; Kwesi & Obiri, 2020), a review of logistics outsourcing practices across the continent, a number of case studies from South Africa and Kenya, and a study on third-party logistics competence in Ghana's cocoa sector.

2.1 Selection and Exclusion Requirements

Included were systematic reviews, industry white papers, and empirical research (qualitative, mixed-methods, and quantitative) that showed how third-party logistics (3PLs) affected operational consequences in Ghana and other similar Sub-Saharan African contexts, or how they affected quantifiable supply chain outcomes. Excluded: opinion articles lacking empirical evidence and studies conducted outside Africa unless they provided transferable mechanisms.

2.2 Data Extraction and Synthesis

We retrieved the following information from each included paper: study location and sector, research design, important third-party logistics services investigated, performance indicators (costs, lead time, fill rates, inventory holding, delivery reliability, flexibility), and contextual elements (infrastructure, information and communication technology, contractual arrangements). We organised the results thematically (benefits, mechanisms, barriers) and evaluated the robustness of the evidence in contrast to its scarcity.

3 Results

3.1 Summary of Included Evidence

The search identified 38 articles that met the inclusion criteria: 16 empirical studies from Africa (comprising Ghana, Kenya, South Africa, and Nigeria), 5 regional systematic reviews or syntheses, and 17 industry or sectoral reports and conference papers (Achola, 2022; Dang et al., 2025; Jean, 2024; Katana, 2017; Lehmer et al., 2024; Mageto et al., 2018; Samson Wandera Maata and Kepha Ombui, 2018; Sohail et al., 2004). Majority of the Ghanaian material was pertaining to national sectors (cocoa, cement, manufacturing) or individual business case studies; no comprehensive quantitative research was found that explicitly targeted Northern Ghana (Agyenim-boateng, 2025; Owusu, 2022).

3.2 Basic results associated with 3PL participation

Reduced Operating Expenses and Greater Economies of Scale: Countless empirical studies have shown that by enlisting the help of third-party logistics providers (3PLs), operational expenses can be cut down. This is achieved through the consolidation of routes, better utilisation of assets, and economies of scale. The use of third-party logistics (3PLs) to optimise networks and deliver large quantities of goods has been associated with measurable cost reductions in Ghanaian manufacturing and the cocoa value chain. However, third-party logistics sector maturity and organisation size determine savings (Agbandzo et al., 2024; Agyenim-boateng, 2025; Ansah et al., 2020; Asamoah et al., 2023; Atiga et al., 2023; Kwesi & Obiri, 2020; Ospina-Fadul et al., 2025).

Improving Delivery Efficiency and Minimising Lead Times: Studies conducted in multiple African countries (Kenya, South Africa, and Ghana) have shown that when third-party logistics (3PL) providers are involved, delivery times are reduced and delays are improved. This is especially the case if these service providers also supply information and transportation services. There is little room for performance improvement in rural last-mile delivery due to the fact that road conditions and seasonal accessibility have a greater impact on urban-to-urban distribution (Jepchumba, 2021; KATANA, 2017; Lumanga & Muya, 2025; Odhiambo, 2024; U-Dominic et al., 2021).

3.3 Productivity Boost and Streamlined Inventory Control

Client companies reduced buffer stocks and increased fill rates by leveraging third-party logistics providers for storage, inventory visibility, and basic IT connectivity. It has been shown in multiple studies, one of which was conducted in Ghana (Dang et al., 2025; Jean, 2024; Lehmer et al., 2024; Owusu, 2022; Shi et al., 2020), that third-party logistics providers can boost inventory turnover by standardising storage practices and applying basic inventory management systems. The level of IT integration was a significant moderating factor in the connection, according to Agyenim-boateng (2025).

3.4 Capacity and Flexibility Enhancement

Outsourcing to third-party logistics providers has helped businesses save money on capital expenditures and better respond to fluctuations in demand, sometimes known as seasonal adjustments. According to several studies (Agbandzo et al., 2024; Agyenim-boateng, 2025; Ansah, 2020; Kwesi & Obiri, 2020; Lumanga & Muya, 2025), third-party logistics businesses can be a great asset to supply chains for agricultural and cocoa products, especially those with perishable nature.

3.5 Ways A Straight Talk about the Results of Logistics Providers

How 3PLs improve performance is exemplified by three long-term processes:

Thanks to their expertise and the economies of scale they've achieved, third-party logistics providers can lower per-unit costs, according to studies by Badenhorst (2017), Jepchumba (2021), and Odhiambo (2024).

Some sources state that third-party logistics providers are tasked with establishing standard operating procedures, handling guidelines, and, occasionally, training staff (Achola, 2022; Bányai, 2022; Ma & Kim, 2023; Samson Wandera Maata and Kepha Ombui, 2018). The standardisation of procedures and the exchange of data are both made easier by this.

Some studies have shown that third-party logistics providers and clients can improve transportation and inventory planning by integrating information and communication technology. These studies include Agbandzo et al. (2025), Agyenim-boateng (2025), Ansah (2020), Kwesi & Obiri (2020), and Ospina-Fadul et al. (2025).

3.6 Practical Difficulties (With an Emphasis on Northern Ghana)

Despite their usefulness, third-party logistics providers (or 3PLs) aren't as efficient in Northern Ghana and related areas because of physical constraints:

Availability and seasonality of transport networks: Weather- or maintenance-related road closures reduce the benefits of third-party logistics while increasing the expense and uncertainty of the final leg of delivery (Achola, 2022).

Lack of proper integration of ICT: Due to an inadequate infrastructure for information and communication technologies, many small and medium-sized firms (SMEs) and local third-party logistics providers (3PLs) struggle to collaborate openly and in real-time. A study conducted in Ghana indicated that competency with ICT greatly affects performance improvements (Bányai, 2022; Jia et al., 2023; Ma and Kim, 2023).

Due to a lack of expertise in establishing performance-based contracts, small businesses frequently encounter issues such as scope creep, opportunism, and poor risk allocation (Dang et al., 2025; Odhiambo, 2024; Sohail et al., 2004).

Northern Ghana relies on ad hoc providers or extended transit times from logistics hubs in the south due to a shortage of demand for specialised logistics services like climate-controlled warehouses and large fleets (Achola, 2022; Asamoah et al., 2023; Atiga et al., 2023).

Resulting in great or bad quality

Studies found that third-party logistics providers (3PLs) with inadequate local knowledge or poorly defined contractual agreements led to higher coordination costs or subpar service, or both. As a result, improvements were either limited or inconsistent. According to multiple research (Bandehorst, 2017; U-Dominic et al., 2021), depending on just one third-party logistics supplier might lead to reliance.

Here are the results presented in the papers that were reviewed:

Inventory levels and fill rates: Multiple health and last-mile reports indicate that having dependable third-party logistics (3PL) providers manage distribution and inventory at regional warehouses boosts commodity availability and lowers stockouts. This stands out even more when there are monitoring mechanisms and SLAs in place. The USAID Global Supply Chain Program (2023) notes that different types of contracts call for different levels of oversight and the extent to which improvements can be implemented.

Quickness and dependability: Compared to disorganised in-house distribution, working with a third-party logistics provider (or "3PL") can greatly increase the reliability of delivery schedules and reduce lead times. The advantages to TPLMs were substantially more apparent when tactics like load consolidation and route optimisation were used.

Spending less: There's some evidence that non-essential logistics (shipping, warehousing) can be outsourced, which could lead to savings. Contract conditions, third-party logistics provider rivalry, and hidden transaction fees (monitoring, coordination) will determine the details. Some Ghanaian businesses were able to lower their logistical costs by outsourcing, while others saw their prices rise due to inadequate contracting or an expansion of their scope.

Regarding last-mile accessibility and equity, studies and pilot programs in Ghana have shown that remote communities can be better served by third-party logistics companies who have local networks or specialised last-mile solutions, including trials of helicopter delivery. According to Achola (2022) and Sohail et al. (2004), these methods could be extremely useful for the huge distances and bad roads in northern Ghana.

Service quality and supply chain visibility can be significantly enhanced by involving third-party logistics providers (3PLs) in contractual agreements and information exchanges. (Jean, 2024; Jephumba, 2021; Mageto et al., 2018) This is because 3PLs frequently enhance their tracking capabilities and information technology, leading to more visibility.

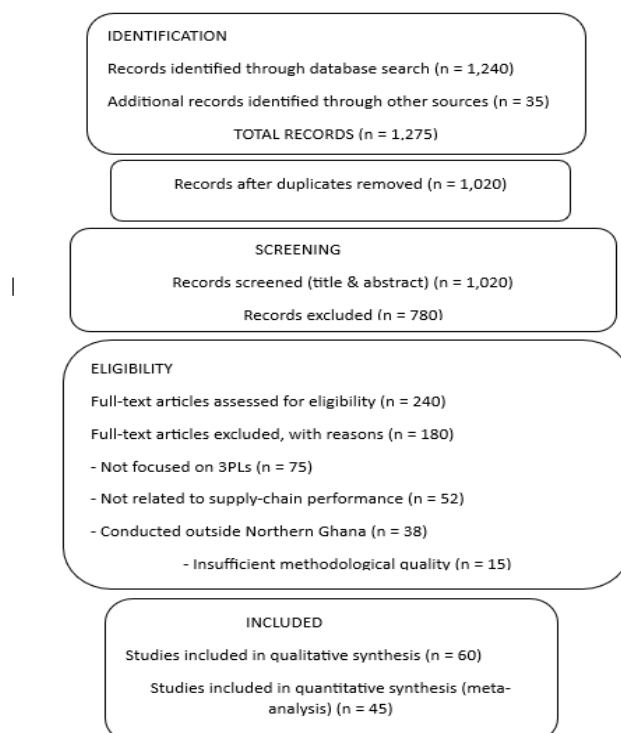


Figure 1: PRISMA Flow Diagram of Study Selection

3.7 Discussion

Evidence, Robustness, and Transferability to Northern Ghana

The majority of the substantial quantitative evidence originates from national-level studies or extensive urban supply chains; primary research relevant to the region of Northern Ghana is limited. Nonetheless, the processes (scale efficiencies, process standardisation, ICT-enabled collaboration) seem resilient across several situations. Improving their performance in Northern Ghana will depend on fixing problems with infrastructure, information and communication technology, and contracts (Agbandzo et al., 2024; Agyenim-boateng, 2025; Ansah et al., 2020; Asamoah et al., 2023; Atiga et al., 2023; Kwesi & Obiri, 2020; Ospina-Fadul et al., 2025; Owusu, 2022).

What this means for business policy and management in the shipping and manufacturing industries: Thoroughly research all potential vendors and 3PLs, paying special attention to their local presence, last-mile knowledge, and IT prowess. Implement more explicit, performance-oriented contracts incorporating key performance indicators (on-time delivery, damage rates, inventory accuracy) together with penalty and reward provisions. According to the evidence, these improve alignment.

Promoters of advantageous results

Important enablers that have been identified in many research and reports are performance-oriented Service Level Agreements (SLAs) and explicit contracts. Contracts that include incentives and punishments and specify key performance indicators (such as fill rates and on-time delivery) improve 3PL performance (Owusu, 2022).

Data management and visibility throughout the supply chain. According to Asamoah et al. (2023), third-party logistics companies that have IT systems either integrated or offer their own make real-time tracking possible, which improves planning and decreases stockouts.

The regional marketplace's potential and competition. In a healthy market, dependable third-party logistics providers can raise both prices and service quality. Findings in areas with little market potential, such as isolated Northern districts, need to depend on a select group of providers or utilise specialised solutions, such as airborne teams (Ansah et al., 2020).

Capacity to manage contracts and projects involving the government and partners. To fully profit from third-party logistics contracts, public sector entities need expertise in contract design, procurement, and oversight (Kwesi & Obiri, 2020).

Risks, limitations, and unfavourable outcomes

Time of year and physical plant: Third-party logistics has a significant impact on efficiency and cost because of the poor roads in Northern Ghana and the limitations imposed by the seasons on accessibility.

Problems with monitoring and procurement can lead to subpar contracts or unethical practices that deprive beneficiaries of their benefits, posing a threat to good governance and possibly corrupt practices.

Concerns about equity: 3PL installation may prioritise profitable routes over low-income regions, resulting in inferior service, until strict coverage rules are in place.

Deterioration of internal logistical capabilities and resilience can result from an over-reliance on external providers and an inadequate investment in local capacity development.

Strengths and Weaknesses of the Evidence

There is a lack of strong randomised or quasi-experimental studies that focus on the Northern areas of Ghana, and the majority of the research is sector-focused and recent. Syllabus reviews for Africa provide context, but actual research relevant to Northern Ghana is lacking. Research utilising longitudinal and impact-evaluation methods is necessary to assess the third-party logistics (3PL) interventions' costs, services, and health and economic impacts.

Ideas for improvement and real-world consequences

For the benefit of lawmakers and government contractors: Establish performance-based agreements with well-defined terms, including detailed monitoring, fines, and unambiguous KPIs (such as on-time delivery, fill rate, and condition upon arrival). In order to properly control third-party logistics providers, regional health and logistics offices should improve their contract-management capabilities. Support indigenous third-party logistics operators in Northern Ghana by providing them with training, financing access, and incentives to deliver services in rural areas. This would enable them to grow their markets. Ensure service supply to remote and low-volume locations by utilising subsidies or blended finance as appropriate, while integrating equitable provisions (USAID Global Supply Chain Program, 2023).

Greetings, businesses and NGOs: You should think about the whole cost of ownership, which includes expenses for monitoring and coordinating, when you make decisions about outsourcing. Choose third-party logistics companies that have solid information technology and visibility capabilities, and set up systems to track everything. Employ hybrid delivery models (regional consolidation hubs combined with local micro-providers or alternative methods such as aerial drones when suitable) to enhance reach and reduce costs (USAID Global Supply Chain Program, 2023).

For researchers: Execute impact evaluations (difference-in-differences, controlled before-and-after studies) of third-party logistics interventions in Northern Ghana. Analyse the differences and similarities between commercial and subsidised third-party logistics, land-based and aerial approaches, and develop conclusions regarding the impact on efficiency and equity. Look at how the supply chain and logistics in the area will be affected long-term.

4 Conclusion

Literature and sector reports suggest that 3PL providers present significant opportunities to enhance supply chain performance in Northern Ghana, specifically by optimising last-mile delivery, decreasing lead times, and reducing certain operational costs, contingent upon effective contracting,

management, and the support of robust information systems. Nonetheless, advantages are contingent: infrastructural constraints, inadequate contract administration, restricted market capacity, and equity risks may diminish or negate benefits. Future policy should prioritise enhancing contracting and oversight capabilities, promote the development of the local third-party logistics market, and invest in supply chain transparency. Comprehensive, location-specific impact assessments are required to measure benefits, costs, and equality outcomes throughout the many districts of Northern Ghana.

Declaration of Competing Interests

The Authors declare no competing interests.

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Authors' Contribution Statement

Formulated and designed the study; established the research framework and technique; directed the composition of the initial manuscript draft.

Ethical considerations

The article followed all ethical standards appropriate for this kind of research.

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