

Logistics Financing Strategies and Economic Growth in Kenya: A conceptual Framework

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Abstract:

Logistics financing is a critical component of economic growth, particularly in Kenya, where the sector faces numerous challenges, including poor credit management, limited financial resources, and high operational costs. This paper explores innovative logistics financing strategies and their potential to improve the financial performance and competitiveness of logistics firms in Kenya, especially in Mombasa County. The research highlights the importance of effective credit management, the role of machine learning models in mitigating credit risks, and innovative financing mechanisms such as third-party logistics and digital credit. Additionally, it discusses the broader economic implications of logistics on key sectors like agriculture, floriculture, and tourism. By reviewing empirical studies and theoretical frameworks, this paper proposes a conceptual model illustrating the relationship between logistics financing strategies and economic growth. The findings suggest that innovative financial solutions, including value innovation and working capital management, are essential for fostering an efficient logistics sector that contributes to Kenya's economic development.

Keywords: Logistics financing, credit management, economic growth, innovative financing, Financing Strategies

1. Introduction

Logistics financing in Kenya is a complex and evolving field that plays a crucial role in enhancing the financial performance and efficiency of logistics firms. The logistics sector, especially in Mombasa County, faces significant challenges in credit management, which adversely affects the financial health of these firms. Effective credit management, including strong credit control mechanisms and sound credit policies, is essential for improving financial performance (Omune & Abuga, 2023). The study emphasizes the

importance of client appraisal processes, credit risk control, and collection policies as vital factors for improving the financial outcomes of logistics firms (Omune & Abuga, 2023).

To address these challenges, innovative financing models, such as logistics finance systems and third-party logistics, are being explored to improve efficiency and competitiveness in the sector. Machine learning-based models are also being developed to integrate logistics enterprises, financial companies, and financing institutions, aiming to mitigate credit risks and enhance the economic value of logistics processes (Wang, 2022). Techniques such as neural network algorithms and feature selection methods are being used to optimize logistics efficiency and financial outcomes (Wang, 2022).

The logistics industry is intricately linked to Kenya's economic growth, facilitating the smooth flow of goods and services across the country and beyond. As Kenya's agricultural sector continues to thrive and contribute significantly to the country's gross domestic product and export earnings, the need for effective logistics financing strategies has become more pressing (Ngichabe, 2002). The growth of export-oriented industries, such as the floriculture sector, which employs over 100,000 people, predominantly women, highlights the growing importance of efficient logistics management (Ickes et al., 2021). Similarly, the tourism industry, which provides millions of jobs, particularly for women in the hospitality sector, relies heavily on effective logistics to meet the needs of its diverse clientele (Ickes et al., 2021).

Recognizing the critical role of logistics in economic development, policymakers in Kenya have been working to create a more conducive environment for the adoption of innovative financing strategies. These strategies aim to enhance the accessibility and availability of capital for logistics-related enterprises, ultimately strengthening the sector's capacity to support the country's broader economic objectives. One such approach, highlighted in the research, is the concept of "value innovation," which focuses on developing novel financing methods that can significantly improve the financial performance of manufacturing firms, an essential component of the logistics ecosystem (Wanjugu et al., 2020). Innovative financing models, including logistics finance systems and machine learning-based models, are being explored to mitigate credit risks and enhance efficiency. The logistics sector is crucial to Kenya's economic growth, especially in agriculture, floriculture, and tourism. Policymakers are fostering an environment for innovative financing strategies, such as "value innovation," to improve capital access for logistics firms and support broader economic development.

2. Literature Review

2.1 Theoretical framework

Transportation Model: The Transportation Model developed by [Frank L. Hitchcock in 1941](#) is a mathematical optimization model used to determine the most cost-efficient way to transport goods from multiple sources (supply points) to multiple destinations (demand points) while minimizing the total transportation cost. The transportation model can be applied to optimize the distribution of goods across regions, such as moving agricultural produce from rural areas to urban markets. Logistics financing strategies that integrate transportation optimization can reduce costs and improve economic efficiency, contributing to economic growth. For example, the model could inform decisions on where to allocate resources for developing transport infrastructure like roads, railways, or ports to maximize cost efficiency and accessibility.

2.2 Empirical Literature

Logistics financing plays a pivotal role in enhancing the efficiency and financial performance of small and medium-sized enterprises (SMEs). Effective cashflow management is essential for SMEs to sustain their operations and achieve financial stability. [Nasimiyu \(2024\)](#) emphasizes the significance of robust fund management strategies in addressing cashflow challenges, while [Abuga et al. \(2023\)](#) highlights the adverse effects of poor credit management practices on logistics firms in Mombasa County. Abuga further stresses the need for effective client appraisal, credit risk control, and collection policies to mitigate financial risks and improve performance.

Innovative financing solutions have emerged as a response to these challenges. [Ruheni \(2022\)](#) recommends the development of simplified mobile applications and IT-based packages to enhance logistics management systems for SMEs in Kenya. Similarly, [Wang \(2022\)](#) explores machine learning-based models that integrate logistics enterprises, financial companies, and financing institutions. These models employ neural network algorithms to optimize logistics efficiency and minimize credit risks, offering significant potential for application within the Kenyan logistics sector.

Key logistics finance models have also been identified as crucial to addressing the financial needs of logistics firms. According to [Wang \(2022\)](#), logistics settlement finance, logistics warehouse receipt finance, and logistics credit finance provide practical solutions for financing challenges, with logistics settlement finance standing out as particularly impactful. [Wu \(2024\)](#) supports this view by advocating for logistics financial strategies tailored to the unique operational characteristics of SMEs, emphasizing the importance of adapting financial solutions to meet diverse needs.

Despite these advancements, SMEs in Kenya continue to face substantial barriers to accessing logistics financing. Studies by [Kinyua and Jagong'o \(2022\)](#) and [Nabawanda \(2018\)](#) reveal that limited financial documentation, inadequate knowledge, and weak third-party relationships hinder access to credit and invoice factoring financing. These findings highlight the critical need for capacity-building initiatives and training programs to empower SMEs and improve their ability to secure financing.

Logistics outsourcing has also been explored as a viable cost-reduction strategy that complements financing efforts. [Mageto et al. \(2018\)](#) note that SMEs in Nairobi have adopted logistics outsourcing to enhance operational efficiency and reduce costs. This approach aligns with broader efforts to improve financial performance by enabling firms to allocate resources more effectively. Broader financial strategies, such as debt financing and structured payment schedules, have also shown potential in supporting SME growth. [Githaigo and Kabiru \(2015\)](#) highlight the positive impact of long-term and short-term loans when utilized effectively, though these strategies require further adaptation to address the specific needs of logistics SMEs.

[Saidi et al. \(2020\)](#) explored the relationship between transport, logistics, FDI, and economic growth in 46 developing countries across three sub-regional panels (ECA, MENA-SSA, EAPSA) from 2000–2016. Using Generalized Method of Moments (GMM) estimators, the study found that these variables exhibit mutual influence in the long run, although the causal relationships and significance levels vary across regions. The findings emphasize the critical role of transport and logistics infrastructure in enhancing FDI attractiveness and fostering sustainable economic growth. Policymakers are encouraged to develop modern, technologically interlinked transportation systems as a strategy for sustainable development and increased FDI inflows.

[Chakamera and Pisa \(2021\)](#) examined the association between logistics performance and economic growth in 32 African countries between 2007 and 2018. Their study revealed that logistics performance indicators, including competence and quality of logistics, have a relatively weak but positive effect on economic growth, with coefficients ranging from 0.01 to 0.03. Notably, the "competence and quality of logistics" indicator exhibited the highest growth potential. The study underscores the importance of targeted investments in logistics efficiency to bolster long-term growth and development in Africa. These findings provide actionable insights for policymakers to focus on specific logistics areas for maximum economic impact.

[Kuteyi and Winkler \(2022\)](#) analyzed the role of digitalization in logistics and its implications for economic growth in Sub-Saharan Africa (SSA). Their study, based on a systematic review of 287 articles and semi-structured interviews with logistics service

providers, identified significant challenges, including inadequate infrastructure, policy deficits, and trade barriers, which undermine supply chain efficiency. Despite these challenges, the study highlights the potential for SSA to leapfrog traditional supply chain practices by adopting digital technologies such as AI, automation, and digitized information flows. Key enablers include human capital training, improved infrastructure, and enhanced regulatory and institutional frameworks. The findings point to digitalization as a transformative force capable of addressing logistical bottlenecks and driving growth in SSA.

Chasha et al. (2024) provide insights into the critical role of working capital management (WCM) in ensuring liquidity and profitability, particularly for small and medium enterprises (SMEs). Effective WCM is integral to logistics finance, as it ensures the smooth operation of supply chains by managing short-term assets and liabilities. For logistics companies, inadequate working capital can disrupt operations, such as delays in fuel procurement or payrolls for drivers, ultimately affecting profitability. Liquidity, firm size, and leverage—key components of WCM—are directly tied to the financial sustainability of logistics operations. For instance, larger logistics firms with better leverage ratios might access cheaper financing options, while smaller players may rely more on high-cost digital credit systems.

Wang et al. (2021) emphasize the importance of logistics infrastructure as a driver of economic growth, with evidence from China showing that maritime logistics infrastructure significantly contributes to economic development. The causal link between logistics infrastructure and economic growth is crucial for logistics finance, as robust infrastructure reduces operational costs and enhances the efficiency of supply chains.

3. Proposed Conceptual Framework

Economic growth is influenced by several critical factors, one of which is the effective management and implementation of logistics strategies. After the review of literature. The study proposes a framework as illustrated in Figure 1. The figure presented outlines a conceptual framework that connects key financing strategies and effective logistics management to economic growth. The framework identifies how different forms of financing can contribute to the development of logistics systems, which, in turn, have a direct impact on the broader economy. The figure 1 is a conceptual framework illustrating the relationship between various factors that contribute to economic growth, specifically focusing on the role of logistics strategies.

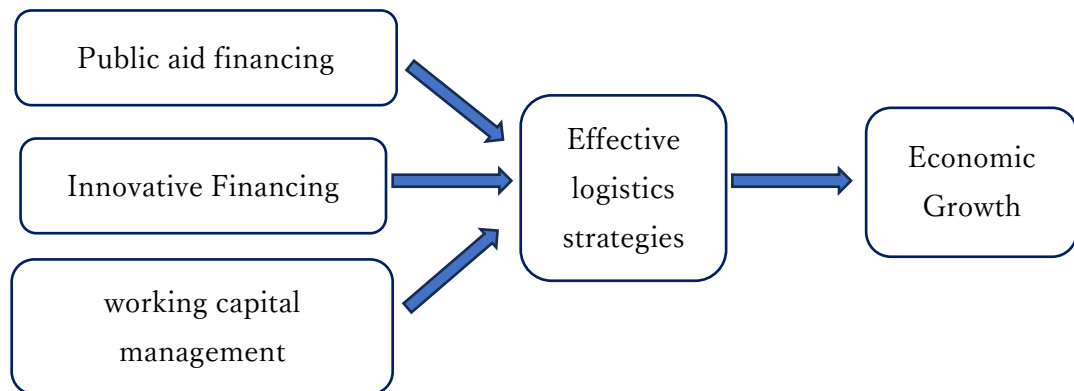


Figure 1: Conceptual Framework

The figure presents a conceptual framework that highlights the relationship between various financing strategies and economic growth, with a focus on the role of effective logistics strategies. It demonstrates how different forms of financing can directly influence the development of logistics systems, which in turn contribute to economic growth. The framework includes three primary sources of financing that feed into the central component of "Effective Logistics Strategies." These include public aid financing, which refers to financial support from government bodies or international organizations, innovative financing, which encompasses alternative financial mechanisms like crowdfunding or impact investing, and working capital management, which ensures the efficient allocation of funds for day-to-day operations in logistics. All three factors converge to enhance logistics strategies, which are crucial for improving supply chains, boosting trade, and increasing productivity. Ultimately, the effective management of logistics, as influenced by these financing strategies, leads to broader economic growth. This framework underscores the importance of efficient financial management in fostering the development of logistics systems that are essential for driving economic progress.

4. Discussion

Logistics financing in Kenya plays a pivotal role in enhancing the efficiency and competitiveness of logistics firms, particularly in Mombasa County, where challenges such as poor credit management and limited access to capital are prevalent. Effective credit management, as highlighted by [Omune and Abuga \(2023\)](#), is crucial for improving the financial outcomes of logistics firms. Inadequate credit risk control and weak collection policies contribute to the financial difficulties faced by logistics enterprises in the region.

Thus, developing robust credit control mechanisms and adopting sound credit policies are key to mitigating these challenges and improving financial performance.

The emergence of innovative financing models has been essential in addressing these issues. Machine learning-based models, for example, offer promising solutions by integrating logistics enterprises, financial institutions, and financing companies to optimize financial management and minimize credit risks (Wang, 2022). By leveraging advanced algorithms such as neural networks, logistics firms can improve their financial decision-making processes, enhancing both operational efficiency and financial outcomes. These technologies offer significant potential in streamlining logistics finance and mitigating the financial risks that typically plague firms in the sector.

In addition to technological innovations, logistics financing strategies such as third-party logistics and outsourcing have also proven beneficial, especially for small and medium-sized enterprises (SMEs). SMEs in Kenya face significant financial constraints, but by outsourcing logistics functions, they can reduce operational costs and enhance efficiency (Mageto et al., 2018). Moreover, the use of digital credit has become an innovative financing mechanism, providing SMEs with the immediate capital needed to meet operational demands such as vehicle maintenance, fuel costs, and inventory management (Kamau, 2021). While digital credit offers a much-needed solution, the high interest rates associated with such loans raise concerns about the affordability and scalability of this model, particularly for small-scale logistics operators.

Furthermore, the importance of logistics in driving Kenya's economic growth cannot be overstated. The logistics sector directly supports key industries such as agriculture, floriculture, and tourism, all of which are vital contributors to the nation's GDP. As Ngichabe (2002) notes, the agricultural sector is central to Kenya's economy, and efficient logistics systems are critical for facilitating the movement of goods to both local and international markets. Similarly, the floriculture sector, which provides employment to thousands, especially women, underscores the need for effective logistics management to maintain competitiveness in the global market (Ickes et al., 2021). The tourism sector, employing millions in Kenya, similarly depends on efficient logistics to cater to the diverse needs of tourists, further emphasizing the sector's broader economic importance.

Policymakers in Kenya have recognized the significance of logistics in fostering economic growth and are working to create an enabling environment for the adoption of innovative financing strategies. These strategies aim to improve the accessibility and availability of capital for logistics firms, thereby strengthening the sector's capacity to support the country's broader economic goals. Value innovation, as discussed by Wanjugu et al. (2020), offers a novel approach to financing, focusing on the development of financial

solutions that enhance the financial performance of firms, particularly in manufacturing and logistics.

5. Conclusions and recommendations

In conclusion, logistics financing in Kenya is integral to the economic development of the country. The challenges faced by logistics firms, especially in Mombasa County, are compounded by poor credit management and limited access to capital. However, innovative financing models, such as machine learning-based systems, digital credit, and third-party logistics, offer promising solutions to these challenges. The integration of these models can improve financial performance, operational efficiency, and competitiveness in the logistics sector. Furthermore, the logistics sector's critical role in supporting key industries like agriculture, floriculture, and tourism underscores the need for effective financial strategies to drive economic growth. Policymakers must continue to foster an environment conducive to innovative logistics financing strategies to enhance the sector's contribution to Kenya's economic aspirations. As highlighted by various studies, the development of tailored financial solutions and the adoption of advanced technologies will be crucial for the continued growth of the logistics industry and its broader impact on the economy.

Recommendations and Future research

To address the challenges faced by logistics firms in Kenya, particularly in Mombasa County, it is crucial to develop and implement innovative financing strategies. One key recommendation is the promotion of digital credit systems tailored to the logistics sector. These systems can provide more accessible and flexible financing options, especially for small and medium-sized enterprises (SMEs) that often struggle to secure traditional bank loans. By leveraging technology, financial institutions can offer faster, more efficient credit services, reducing the barriers to accessing capital for logistics businesses.

Additionally, the adoption of machine learning-based financing models can help logistics firms improve credit management. These systems can analyze large volumes of data to assess creditworthiness more accurately, thereby reducing the risk of defaults and enabling better decision-making. Incorporating predictive analytics into financing models will allow logistics firms to make informed financial decisions and manage cash flow effectively, contributing to their long-term sustainability.

Furthermore, the logistics sector should embrace third-party logistics (3PL) partnerships as a means of improving operational efficiency and competitiveness. By outsourcing certain logistical functions to specialized firms, businesses can focus on their

core activities while benefiting from the expertise and resources of 3PL providers. These partnerships can also facilitate cost reduction, enhance service delivery, and allow for more flexible financing structures.

Policymakers must also play an active role in creating a conducive environment for innovative financing solutions. This can be achieved by streamlining regulations, reducing bureaucratic obstacles, and incentivizing the development and adoption of new financial technologies within the logistics sector. Additionally, efforts should be made to enhance access to financial education for logistics firms, especially in understanding digital financing tools and machine learning-based systems.

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