

Logistics Management Practices and Performance of Agricultural Processing Firms in Laikipia County, Kenya.

Authors: ¹ Johana Gitahi Githinji; ² Dr. Elizabeth Wangu Wachiuri, PhD



DOI: [10.61108/ijsshr.v1i1.57](https://doi.org/10.61108/ijsshr.v1i1.57)

¹Student: Jomo Kenyatta University of Agriculture and Technology, Kenya

²Lecturer: Jomo Kenyatta University of Agriculture and Technology, Kenya

ABSTRACT: The general objective of this project was to establish the effect of logistic practices and performance of agricultural processing firms. The study was guided by the following specific objectives; material handling, inventory management, transport management, and logistics communication. The study adopted resource based view theory, game theory, firm theory and the theory of constraints. The study used descriptive design because it enhances systematic description that is as accurate, valid, and reliable as possible regarding the responses. The study was limited to agricultural processing firms in Laikipia County, Kenya. The researcher used questionnaires and secondary data as the research instrument to gather the relevant information needed relating to the study. The study involved the use of professionals and experts to test the validity of the questionnaire by trying to assess what concept the instrument was trying to measure and the accuracy of the representation of the concept under research. The quantitative data was analysed using descriptive statistics. In addition; the study used multiple regression analysis to analyse the data. This study provided evidence that material handling significantly and positively influences the performance of agricultural processing firms in Laikipia County, Kenya. Concerning inventory management; the study established a significant positive relationship between inventory management and firm performance. This study also provided evidence that transport management significantly and positively influences the performance of agricultural processing firms in Laikipia County, Kenya. Finally, information flow management was found to have a positive significant influence on the performance of agricultural processing firms in Laikipia County, Kenya. The study recommends that agricultural processing firms must have adequate storage facilities with modern materials handling equipment. The study also recommends the inclusion of inventory management in the strategic plans of the agricultural processing firms in Laikipia County, Kenya. The study further recommends the inclusion of inventory management in the strategic plans of the agricultural processing firms in Laikipia County, Kenya. Finally, the study recommends that internal structures and systems that allow a free and timely flow of information between individuals and departments should be put in place. This will allow real-time flow of information between the organization and key stakeholders.

Keywords: Material Handling, Inventory Management, Transport Management, Logistics Communication, Performance

1.0 INTRODUCTION

1.1 Background of the Study

Long-term, sustainable superior performance is the ultimate goal of organizations. Such higher performance now depends on the ability of agricultural processing firms to be fully integrated partners within a supply chain framework. Today organizations have focused on delivering customer value through logistics as a measure of remaining superior (Daud et al, 2016). This has been embraced by the globalization of markets and operations begetting new perspectives of various managerial functions within the organization environments which are characterized by supply chain and physically distributed global processes (Hajiesmaeili, Rahim, & Amir, 2016).

All these have been compounded by dynamics in the global demands of today's customers such as better prices, more convenient customer services, and a legion of options at their disposal. In this regard, organizations must focus resources and attention directly on supply chain operations such as



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logistics to strengthen their global competitiveness (Elly, 2018). Failure in the performance of a firm's supply chain courtesy of inefficient logistics activities results in competitive losses and can ultimately lead to collapse (Graham et al, 2018). According to Grant, (2017) logistics play a significant role in pursuing supply chain excellence which will lead to upgraded organizational performance. As agricultural processing firms work to improve the logistics processes, they support their organization's supply chain strategy resulting in improved performance for the overall supply chain and eventually their organization.

Logistics is the responsibility to design and administer systems to control the movement and positioning of raw materials, work-in-process and finished inventories at the minimum total cost. According to the Supply Chain Management Professionals, (2017), logistics management is defined as that part of Supply Chain Management that plans, implements and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information from the point of origin and the point of consumption to meet customers' demands. The fact is that logistics is a unifying link intra-organizationally between the production and marketing function and inter-organizationally between suppliers.

Guersola et al, 2018 defined logistics as part of the supply chain process that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption to meet customers' requirements. The logistics system is made up of logistics services, information systems, and infrastructure/resources. Logistics services are made up of activities such as warehousing and transportation that support the movement of materials and products from the point of origin to the point of consumption and vice versa. Information systems include modelling and management of decision-making, and more important issues are tracking and tracing. On the other hand, infrastructure comprises human resources, financial resources, packaging materials, warehouses, transport, and communications (Khan et al, 2017).

Logistics, previously viewed as a classical function, which involves adversarial relationships among suppliers, customers, and transportation providers, is emerging as a key source of competitive advantage and a leading reason for strategic alliance relationships between companies and their logistics providers (Khor et al, 2016). A logistical system is made up of a large number of stakeholders. They include the suppliers, processors, wholesalers or distributors, and retailers who have to be managed strategically to deliver final products in the right quantities at the desired time and quality to the right place within a reasonable cost to the final consumers. Logistics strategy has three main objectives; cost reduction, capital reduction, and service improvement.

In the last two decades, product flow has been greatly improved due to better technology in communication and transportation. Increased variety of goods, globalization of marketing, and seasonal variations are among the major challenges of the logistics system which leads to the necessity of developing effective logistics strategies in the agricultural sector. Fresh agricultural product logistics requires a robust, fast, sensitive, and reliable logistics management information network and market supply and demand information (Kirui & Nondi, 2017)

1.2 Statement of the problem

The Kenya Vision 2030 expects the manufacturing sector to grow at a rate of 10 percent annually and contribute 30 percent to the GDP. The contribution to GDP has stagnated at 10 percent and 3 percent for the manufacturing sector and the agro-processing industry respectively over the years and an annual growth rate averaging 3.16 percent (KIPPRA, 2021). Kenya is a net exporter of primary products due to the extremely low proportion of fresh agricultural products processed by the agro-processing industry. Only 20% of Kenya's exported agricultural goods are processed, despite accounting for 65% of the country's total exports (Maataet al., 2018)

According to Agango & Achuora (2018), agricultural processing firms, have estimated losses of between 10% and 18% in revenue due to inventory hiccups. Despite their management effort to improve the procurement system, they are still marred by shoddy work due to a lack of commitment. Low-quality data, unpaid invoices for processed agricultural products, long processing times for orders, and a prevalence of low-quality processed agricultural products have weakened the procurement processes. Nevertheless, most agricultural processing firms in the country operate at a technical procurement efficiency of about 59 percent compared to their counterparts in Malaysia that average of about 74 percent ((Achuora, Guyo, Arasa, Odhiambo, 2015)) raising doubts about the sector's capacity to meet the goals of Vision 2030 (RoK, 2007).

Most of the related studies on the relationship between logistics practices and performance of agricultural processing firms have covered developed economies, whereas much fewer studies covered developing economies such as Kenya's economy. Though some studies were conducted in the Kenyan context, they were however designed to focus on the general performance of agricultural processing firms thus bringing out the gap in the study. Given the passage of time and the limitations of case studies as far as the generalization of results to the population is concerned, there is a need for the present study to be conducted. The study posed the following research question: what was the effect of logistics practices and performance of agricultural processing firms in Laikipia County, Kenya?

1.3 Objectives of the Study

1.3.1 General Objectives of the Study

To determine effect of logistics practices and performance of agricultural processing firms in Laikipia County, Kenya.

1.3.2 Objectives of the Study

- i. To find out effect of material handling on performance of agricultural processing firms in Laikipia County, Kenya.
- ii. To explore effect of inventory management on performance of agricultural processing firms in Laikipia County, Kenya.
- iii. To determine effect of transport management on performance of agricultural processing firms in Laikipia County, Kenya.
- iv. To establish effect of logistics communications on performance of agricultural processing firms in Laikipia County, Kenya

1.4 Research Questions of the Study

- i. What is effect of material handling on performance of agricultural processing firms in Laikipia County, Kenya?



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- ii. What is effect of inventory management on performance of agricultural processing firms in Laikipia County, Kenya?
- iii. What is effect of transport management on performance of agricultural processing firms in Laikipia County, Kenya?
- iv. What is effect of logistics communications on performance of agricultural processing firms in Laikipia County, Kenya?

1.5 Scope of the Study

The study focused on agricultural processing firms in Laikipia County, Kenya. It was limited to evaluating the effects of logistics management and performance of agricultural processing firms in Laikipia County, Kenya. The study was limited to agricultural processing firms because other sectors like banking, and energy among other sectors in the country have been covered before in the context of the subject matter. The study considered only four core aspects of logistics practices which included: material handling, inventory management, transport management and Logistics Communication. These variables were most favourable to use because according to Ballou (2004), logistics management activities are classified into two, core and supporting. The core activities take place in every logistics chain of a firm while supporting activities vary from company to company (Njambi & Katuse, 2013). In essence, these functions combine to create a system solution for integrated logistics. The respondents of the study were top and middle managers in the selected agricultural processing firms in Laikipia County, Kenya. They included the supplies chain officers, transport managers, ICT officers/managers, maintenance department managers and health and safety managers making a total of 5 in the 20 targeted firms which gave a total population of 100 respondents.

2.0 LITERATURE REVIEW

2.1 Theoretical Framework

2.1.1 Resource-Based View Theory

Resource-based view aspired to explain the internal sources of a firm's sustained competitive advantage (Kraaijenbrink, Spender, & Groen, 2010). The Resource-Based View (RBV) of the firm postulated that resources internal to the firm were sources of competitive advantage (Tukamuhabwa, Eyaa, & Derek, 2011). Such assets were significant, uncommon, interesting and hard to substitute. Assets accepted to be important were those that were equipped for encouraging the origination or usage of systems that improved exhibitions, abused market openings or killed approaching dangers (Mangla et al, 2016).

The two assumptions for RBV theory were, assets and capacities were heterogeneously disseminated among firms; and that assets and abilities were incompletely versatile, which made firms' contrasts stay stable after some time (Markman & Krause, 2016). Each firm was extraordinary (heterogeneous) from different firms regarding the assets and capacities a firm has or gets to. These distinctions separated one firm from another and an association's prosperity was because of its firm-explicit (particular) asses (Mathivathanan et al, 2018). Accordingly, individual resources, competencies and capabilities of the organization were a bundle of the firm's resources or the essence of the resource-based views. For example, in coordination business, an asset is portrayed as a fundamental component or an essential for the advancement and activity of coordination; and it is required for working up an association's capacities (Mbovu & Mburu, 2018).

The resource-based view (RBV) of firms accentuated their inward qualities and shortcomings, as opposed to modern association financial aspects which concentrated on firms' outer chances and



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dangers, because when the external environment is unstable, a firm's resources and capabilities may be easier to control (Mejías et al, 2016). The resource-focused perspective contends that a firm was a collection of tangible and intangible resources. This accumulation was exceptional to each firm, so each firm could be viewed as various (heterogeneous) from one another, inside a similar industry for example no two organizations have similar encounters or had gained similar resources or abilities or constructed the equivalent hierarchical culture. A differential endowment of resources among firms was the ultimate determinant of strategic decisions (Mwangangi, 2016).

According to Pålsson & Hellström, (2016), coordination, adaptability and productivity were viewed as a wellspring of the upper hand for innovative firms. Responsibility for explicit resources empowered an organization to build up an upper hand. They additionally discovered that an organization's upper hand was gotten from the organization's capacity to collect and adventure a suitable mix of assets. In their study, Prajogo et al, (2016), confirmed that RBV concentrated on the possibility of expensive to-duplicate traits of the firm as wellsprings of business returns and the way to accomplish prevalent execution and the upper hand.

The RBV had been used in the strategic literature for the analysis of business performance. It was important to highlight that the RBV had recently been employed in logistics management studies to examine the logistics resources and capabilities on logistics performance (Raut et al, 2017). Samir (2017) from logistics literature argued that the RBV theory was an appropriate theory for supply chain and logistics management research. These studies found logistics resources and capabilities to be significantly positively related to firm performance. Some literature used RBV theory to examine the impact of information flow on 3PL provider's competitive advantage while others examined the effects of logistics capabilities on firm performance (Schögl et al, 2016)

2.1.2 Game Theory

Game theory is the formal study of decision-making where several players must make choices that potentially affect the interests of the other players; it is an official study of conflict and cooperation (Xu, Pan & Ballot, 2013). Game theoretic concepts apply whenever the actions of several agents are interdependent (Dai & Chen, 2012). These specialists might be people, gatherings, firms, or any mix of these. The ideas of game hypothesis give a language to plan structure, break down, and comprehend vital situations (Dai & Chen, 2012).

According to (Xu, *et al.*, 2013) game theory is divided into two main approaches: non-cooperative and cooperative game theory. The cooperative game theory can be applied to the case where players can achieve more benefits by cooperating than by staying alone (Xu, *et al.* 2013). The increase sharing issue was seriously explored in the agreeable game hypothesis; consequently, we embraced helpful game-theoretic methodologies in developing the speculation on the transport of the executives and firm execution. Today participation is ending up increasingly urgent to improve the worldwide exhibition of coordination (Drechsel & Kimms, 2010).

As a supplement to customary vertical participation, another collaboration model, flat participation was demonstrated effective to decrease worldwide expenses and improve the administration rate in coordination (Drechsel & Kimms, 2010). In game theory, horizontal cooperation in logistics proved efficient to reduce global costs and improve the performance level (Crujssens, Cools, & Dullaert, 2007; Pan, Ballot, Fontane & Hakimi, 2012).

However, despite these advantages, horizontal cooperation is not considerably employed in logistics (Muir, 2010). One main obstacle in the implementation of horizontal cooperation is the absence of an appropriate cooperation decision-making model (Xu, *etal.* 2013). In this study, the cooperative-game-



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theoretic approach was used to facilitate the decision-making in measuring logistics efficiency on transportation and the influence it created on firm performance. The cooperative game theory investigated how players interacted with each other in a cooperative relationship and provided many approaches to fair profit allocation and stable coalition formation, which were important components in the cooperation model (Dror, Hartman & Chang, 2012). This form of cooperation took place between companies operating at the same level of market and it requested them to share private information and resources in logistics (Drechsel & Kimms, 2010).

The aim was to improve the efficiency in logistics; for example, reduce logistics costs (Cruijssen, *et al.*, 2007) or reduce the environmental impact caused by transportation activities (Pan *et al.*, 2011). The theory focuses on the transportation cost aspect. It was proved in the literature that horizontal cooperation in logistics could result in a 10% or higher percentage of cost reduction in transportation (Groothedde, *et al.*, 2005; Ergun *et al.*, 2007; Pan *et al.*, 2011). Considering the size of the manufacturing industry in Kenya, it was a huge stake.

2.1.3 Firm Theory

Theories of the firm were originally developed to identify why firms existed hence, earlier theories of the firm were rooted in deductive economics and had their foundation in transaction cost theory (Mentzer, Min, & Bobbitt, 2004). According to Mentzer, *et al.*, (2004), the introduction of the concept of transaction costs as the factor was to determine whether a firm or market contract existed for the coordination of production or not. Firm existence was based on differences between the transaction costs of market contracts versus those of a firm (Mentzer, *et al.*, 2004). If market contracts were characterized by low transaction costs, it meant that all factors of firm production both intra and inter had low transaction costs as well hence logistics could have influenced such a situation in the market when handled rightly by the firms (Fugate, *et al.*, 2010).

According to the transaction cost framework, the organization's form that was developed was the one that most efficiently completed transactions and minimized production costs (Mentzer, *et al.*, 2004). Transaction costs were those costs associated with the exchange, while production costs were associated with the coordination of various production activities in-house (Mentzer, *et al.*, 2004). A firm that managed logistics activities efficiently created a situation where both transaction costs and production costs were minimized (Fugate, *et al.*, 2010).

Mentzer, *et al.*, (2004) identified three characteristics of transactions; asset specificity, uncertainty, and the number of input sources: that determined when firms or markets prevailed. Market contracting was more efficient when assets were non-specific to any particular transaction. Similarly, when small numbers of sources and imperfect information were not significant, market contracts dominated over firms (Mentzer, *et al.*, 2004). In their study, Mentzer, *et al.*, (2004), revealed that, the greater the asset specificity, uncertainty (imperfect information), and the likelihood of a few input sources, the greater the rationale for the disorganization of the firms. Uncertainty in the context of logistics and more specifically in manufacturing was caused by supply uncertainty, demand uncertainty, new product development uncertainty, and technology uncertainty (Das & Teng, 2000). When firms practised logistics efficiency, effectiveness and flexibility in their transactions and operations, the achievement of their goals became realizable at a lower cost. The goals of the firm drove firm activities, as well as directed the behaviour of management and other stakeholders of the firm. The goals of the firm could also be influenced by external factors such as competitors, stockholders, suppliers, customers, and industry structure. Defining the goals of the firm became more complex as these groups placed different demands on the firm.



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Research into various functional business areas, including logistics, was therefore advanced through the theories of the firm by understanding how the goals and resources of the organization drove the firm's behaviour. As well based on insights from the theories of the firm, the researcher understood better the strategic role of logistics (Das & Teng, 2000).

2.1.4 The Theory of Constraints

The theory of constraints (TOC) had been widely known as a management philosophy coined by Goldratt, (Cyplik, Hadaś, & Domański, 2009) that planned to start and execute leap forward progress by concentrating on a requirement that kept a framework from accomplishing a more significant level of execution. The TOC worldview expressed that each firm ought to have at any rate one requirement (Simatupang, Wright, & Sridharan, 2004). As pointed out by Simatupang, et al. (2004), teaming up firms imparted obligations and advantages to their upstream and downstream accomplices to make an upper hand. At the point when all the store network's (SC's) accomplices were incorporated and go about as a homogenous element, benefit and execution were upgraded all through the (SC), as a mix of the organic market (Santos, Marins, Alves and Moellmann, 2010). Flores & Primo (2008) certified that, with the bow necessity of the market, the calculated procedure turned out to be increasingly mind-boggling and with a lot more elevated levels of requests, particularly when identified with accomplishing an upper hand (Santos, et al., 2010).

By then, the competition was not among companies but among the SCs, which belonged (Santos, et al., 2010). The primary objective of the SCM was hence to arrive at an answer with streamlined benefit for every one of SC's accomplices; this must be acknowledged with the assistance of coordination's the board since there was frequently an extraordinary divergence between potential advantages and the training (Simatupang, et al., 2004). The circumstance happened because there were a few troubles concerning coordination which should have been fathomed by proficient coordination's the executives. A portion of these troubles were: long lead times, a huge number of unfulfilled requests as well as they were executed with a lot of additional exertion (extra amounts of time), a significant level of superfluous inventories as well as an absence of applicable inventories, wrong materials orders, an enormous number of crisis requests and endeavour levels, elevated levels of devolution, absence of key clients commitment, visit changes or potentially nonappearance of control identified with need orders, which inferred on calendar clashes of the assets, among numerous others (Santos, et al., 2010). The proprietor of a framework was accepted to build up its objective. The major objective of most business substances was to profit at that point and later on (Simatupang, et al., 2004). Different partners may have created essential conditions that ought to have been met to enable the framework to keep working. The TOC accordingly energized managers to distinguish what was keeping them from moving towards their objectives just as important conditions and discover answers for conquering the impediment (Cyplik, et al., 2009). Despite the recognizable overall execution improvement of the coordination, the fundamental issue watched was that logistics activities had not been accomplishing better outcomes identified with gainfulness and productivity because more often than not, every last one of them simply thought about its neighbourhood imperatives (possess issues) when they ought to have been thinking about all abilities requirements identified with coordination's all in all (Santos, et al., 2010). The design and analysis of the logistics as a whole were critical to developing efficient logistics management (Santos, et al., 2010).

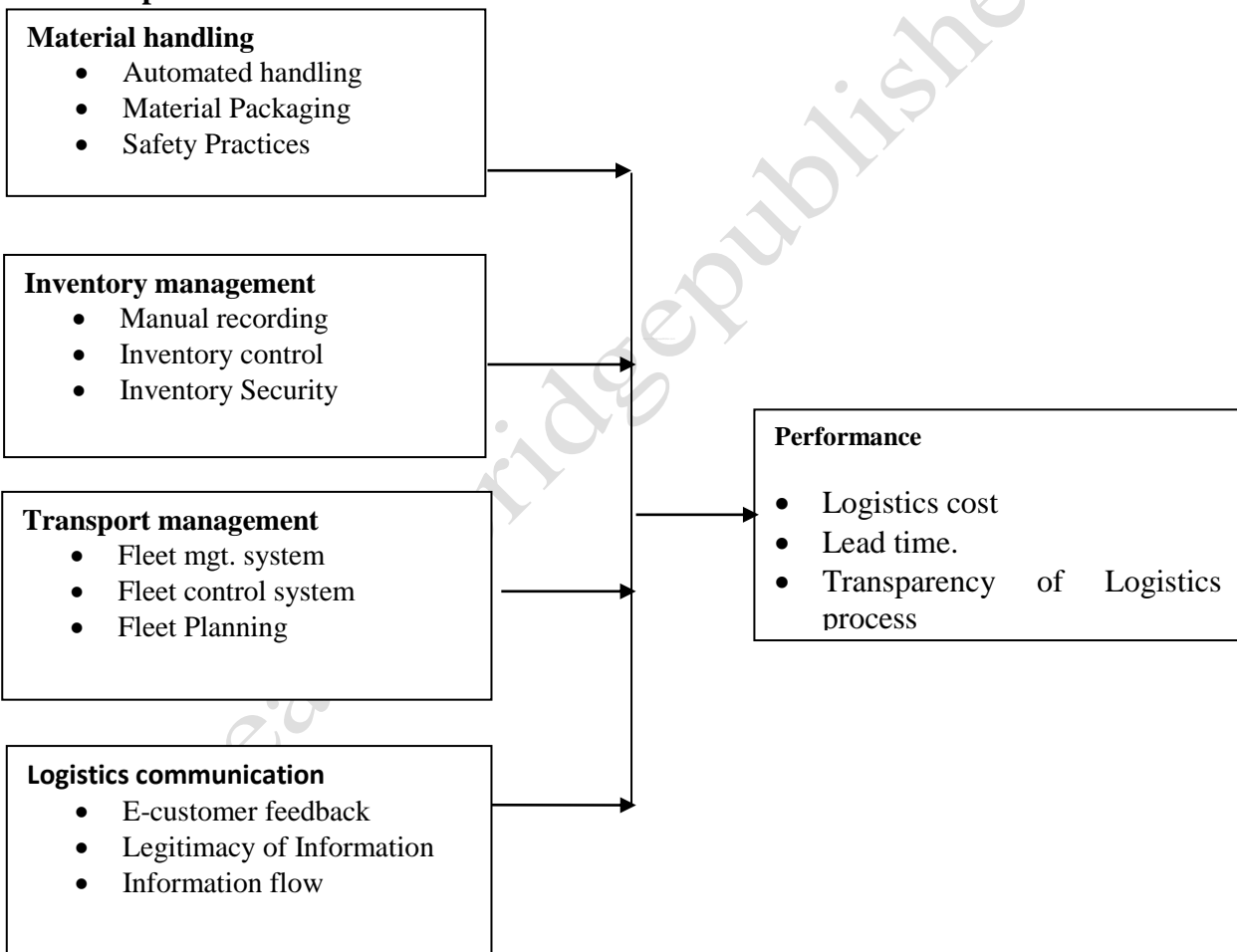
In this study, the theory of constraints (TOC) is used to help firms in stock, transport the board and request handling. By TOC philosophy, coordination was examined by methods for a comprehensive view, as such, it was characterized as a gathering of ward components and, in this way,



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coordination's execution was subject to the endeavour of these centre components (transportation, stock, request handling and data stream). Each framework probably had in any event one limitation, and this was clarified by the way that if there were nothing to restrict the framework's presentation, it would have been interminable (Santos, *et al.*, 2010). Cyplik, *et al.*, (2009 also recognized that the TOC approach could be used to guide a single firm to concentrate on exploiting resources based on different logistics costs along the supply chain. Simatupang, *et al.*, (2004) applied the TOC thinking procedure to distinguish issues in the clothing coordination's the board and portrayed the uniting of chiefs from various firms to collaborate in improving the general firm benefit(Simatupang, *et al.*, 2004; Cyplik, *et al.*, 2009), proposed an applied model of finding the time support at various places of taking an interested individual to shield real deals from interest and supply vulnerability.Goldratt, *et al.*, (2000) conceptualized performance measures to maintain trust amongst the participating member

2.2 Conceptual Framework



Independent variables

Dependent variable

Figure 2.1: Conceptual Framework

2.3 Empirical Literature Review

Liu & Luo, (2008) examined the effect of logistics capabilities on the manufacturing firm's performance in China. They classified logistics capabilities as customer-focused capabilities and information-focused capabilities. The study indicated that customer-focused capabilities and information-focused capabilities respectively significantly affected firm performance directly and indirectly.

In their study, Vijayaraghavan and Raju, (2008), examined the relationship existing among logistics capabilities, logistics performance and firm financial performance in India. The results were positive that, both logistics capability and performance had a direct influence on the financial performance.

Zhang, Zhang, and Lim, (2005), examined the impact of logistics flexibility on a manufacturing firm's customer satisfaction. This was done through a survey of 273 manufacturing firms in the USA and the results indicated that logistics flexibility had a significant, positive and direct impact on customer satisfaction. This confirmed that firms could achieve customer satisfaction by developing logistics flexibility which enabled quick replenishment of incoming materials and rapid delivery of finished products to customers (Zhang, *et al*, 2005).

Sa'nchez, and Pe'rez, (2005), did an Empirical survey of a representative sample of 126 Spanish automotive suppliers during September and October 2003 to analyse the relationship between logistics flexibility dimensions and firm performance dimensions, and between logistics flexibility dimensions and environmental uncertainty dimensions. A multivariate analysis studied the determinants of logistics flexibility. This research found a positive relation between superior performance in flexibility capabilities and firm performance, although flexibility dimensions were not equally important for firm performance. On the other hand, the results showed that companies enhanced more the basic flexibility capabilities (at the shop floor level) than aggregate flexibility capabilities (at the customer-supplier level). However, aggregate flexibility capabilities were more positively related to firm performance than basic flexibility capabilities. Thus, companies could miss opportunities to improve competitiveness by underestimating customer-supplier flexibility capabilities.

(Wisner 2003; Bobbitt, 2004; Tontini&Zanchett, 2010) empirically investigated the link between logistics performance and organizational performance in the US manufacturing sector. Evidence collectively revealed that the logistics function as a whole strived to minimize the ratio of resources utilized against derived results (efficiency), accomplish pre-defined objectives (effectiveness), and gain superiority when compared to competitors (differentiation) Fugate, *et al*, (2010) and ability to meet customer satisfaction (quality). All this confirmed the influence logistics had on firm performance.

Green Jr., *et al.*, (2008) in their research on the US firms on the impact of logistics performance on organization performance in a supply chain context revealed that success of logistics performance brought about manufacturing performance, future growth and new product introduction. Therefore, the competition in the processing industry was within the radius of supply chain competence which consisted of logistics strategy.

Rosenzweig (2009) examined the operational and logistical performance in measuring manufacturing performance in US firms which included the aspect of quality, cost of production, finish goods delivery and in addition considered the inventory level of work in production goods. In his study, he related supplier selection and involvement tactics impact and manufacturing performance. As a



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 result, he confirmed that logistics performance had provided a significant influence in achieving manufacturing and business goals.

2.4 Critique of the Existing Literature

Logistics management is that part of supply chain management that plans, implements, and controls the efficient, effective forward and reverses flow and storage of goods, services and related information between the point of origin and the point of consumption to meet customers' requirements. Its activities include inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfilment, logistics network design, inventory management, supply/demand planning, and management of third-party logistics services providers (Cousins et al, 2019). In looking at the effect of logistics on firm performance, the available literature was skewed and limited in its focus on the capability of logistics ignoring the management factor of which without it the influence on firm performance could be minimal.

There also seemed to be minimal logistics management models or theories around the various agricultural processing firms' networks or any tangible literature on the associated performance which were fundamental drivers of their performance assessment. It was also evident that most studies had focused on the performance indicators of supply chain management irrespective of the mutual relationship between the logistics and supply chain networks hence the reason for adopting the game and constraint theories in this study which provided an ideal platform to offer a holistic approach to firm performance evaluation in the manufacturing sector.

In their study on logistics and firm performance, Zhao, *et al.*, (2001), concluded that logistics capabilities customer-focused and information-focused were the main factors that affected firm performance directly and indirectly. Their study was skewed towards capabilities and not taking into account other factors in logistics which may influence the firm like efficiency and effectiveness which are considered important in measuring firm performance. Furthermore, the relationship between logistics flexibility and firm performance dimensions also remains unaddressed. With this study, the researcher presents an exploratory characterization of logistics efficiency, effectiveness and flexibility and tested hypotheses that link aspects of logistics management with firm performance (Charles, & Benson 2023).

Vijayaraghavan & Raju, (2008), examined the relationship that existed among logistics capabilities, logistics performance and firm financial performance. The results were positive that, both logistics capability and performance had a direct influence on the finance performance of a firm (Sezhiyan & Nambirajan, 2010). This study did not consider other factors in firm performance measurements including growth, market share and customer satisfaction. Ignoring to put into account those variables could not provide the correct results on firm performance measurements. The Michigan State University study (GLRT at Michigan State University 1995), revealed how firms used logistics management to achieve competitive superiority by consistently meeting customer expectations. This study was done almost 20 years ago and many things in logistics must have changed then hence becoming very difficult to agree to these findings.

2.5 Research gap of literature review

The empirical review had evident that research in the area of logistics management had been done but not in a comprehensive approach in the developing world. The literature review available indicated that studies had focused more on the developed world like the European Union, the United States and advanced Asia and not taking into account developing countries such as Africa and parts of South America (Kaufmann & Carter 2006). In their study, Zhang, *et al.*, (2005) examined the impact



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of logistics flexibility on manufacturing firms' customer requests to respond to their needs in the United States and the results were found to be positive. Moesh and Clinton did their study on firm performance and logistics/supply chain management in the USA, Australia, Japan and Korea. They found a positive relationship when the firms practised logistics efficiency.

Our empirical review also confirmed (Abrahamsson & Rehme, 2010; Schrammklein & Morschett, 2006; Kihlen, 2007; Fugate, *et al.*, 2010; Shang & Marlow 2005); Bowersox, *et al.*, (2010); Graeml, and Peinado, (2011); Nevo and Wade, (2010); Tsai, (2004); Keller *et al.*, (2002); Zhao, *et al.*, (2001), had all studied on the influence of logistics on firm performance in developed countries. However, the first world such as Europe, America and part of Asia had more developed infrastructure in sea, air and road modes of transport, information technology and communication as well as business structures that could easily support the implementation of logistics as opposed to developing countries (Kaufmann & Carter 2006).

While all the previous studies had tended to focus more on the developed world McKinnon, Edwards, Piecyk and Palmer, (2009); Sanchez-Rodrigues, Cowburn, Potter, Naim and Whiteing, (2009), there was limited literature on developing countries. In Kenya, Njumbi and Katuse (2013) and Kilasi, *et al.*, (2013); Wambui, (2010); Magutu, *et al.*, (2012); Kangaru, (2011); Bosire, (2011) had all done studies on third-party logistics (3PL) that are logistics outsourcing, however, little had been written about the logistics management in Africa and more specifically there was very little research done on logistic management in Kenya.

In their studies, Miguel and Brito (2011) and Kaufmann & Carter (2006) revealed large evidence that the cultural, social, economic and environmental aspects of each country did influence the link between logistics management and performance. Furthermore, the first world such as Europe, America and part of Asia have more developed infrastructure and business structures that easily supported the implementation of logistics as opposed to developing countries. Keebler & Plank, (2009) agreed that the findings of US firms could not represent the universe of US companies nor could findings be generalized to other countries hence needed to re-examine the studies on logistics management influence on firm performance.

2.6 Summary of Literature Reviewed

The study looked at the literature perspective of the study. The main theories that the chapters covered are Resource Based View Theory, Game theory, Firm Theory and The theory of constraints. The chapters concentrated on four factors of logistic practices on the performance of agricultural processing firms in Laikipia County. The chapter concluded by looking at the research gaps and it has identified various gaps that are related to this study which need to be filled. For instance, the study will fill the knowledge gap by conducting on the effect of logistic practices on the performance of agricultural processing firms in Laikipia County.

3.0 Research Methodology

The research design used in this study was a descriptive research design. The agricultural processing firms that were included in this study consist of those that are located within Laikipia County, Kenya and are strictly agricultural processing firms. Thus only 20 agricultural processing firms made the target population of which 5 respondents from each firm responded to the questions bringing to a total of 100 respondents. They included the Supplies Chain officers, Transport managers, ICT officers/Managers, Maintenance department Managers and Health and Safety managers. The researcher used questionnaires and secondary data as the research instrument to gather relevant information needed relating to the study. For this research, both primary and secondary data-



Research Bridge Publisher, International Journal of Social Science and Humanities Research ,_Vol. 1, Issue 1, pp: (718-735), Month: June - December 2023, Available at: <https://researchbridgepublisher.com/> collecting methods were used. Primary data was collected through administration of questionnaires to senior management Agriculture farm employees. The researcher carried out a pilot test to test validity and reliability of the questionnaires in gathering the data required for the study. The information gathered from the respondents was of a qualitative and quantitative nature. The data was summarized and then analysed by the use of descriptive statistics comprising tables and percentages. The SPSS version 24 was used to analyse the collected information. This is because SPSS version 24 provides a simplified analysis that is easy to interpret and present.

4.0 Findings and Discussion

4.1 Correlation Analysis of the Study

The study sought to establish the strength of the relationship between material handling, inventory management, transport management and finally logistic communication on performance of agricultural processing firms. To achieve this, Pearson's correlation was carried out since both independent and dependent variables were in ratio scale. According to Kothari (2004), product moment correlation should be carried out if and only if both dependent and independent variables were in either ratio or interval scale. If the correlation coefficient is -1 then there is an inverse relationship and an increase in the dependent variable is associated with a decrease in the independent variable and +1 there is a perfect positive significant relationship and an increase in the dependent variable was associated with an increase in the independent variable (Kothari, 2011; Oso & Onen, 2009). The study findings depicted in Table 4.1 indicated that there was a significant positive relationship between material handling and increases in performance of agricultural processing firms ($\rho=0.6530$, $p\text{-value} < 0.05$). This implies that a unit change in material handling increased organizational performance by 65.3%. Secondly, there was a positive significant relationship between inventory management and increase in performance of agricultural processing firms ($\rho=0.608$, $P\text{ value} < 0.05$). This implied that a unit change in the role of inventory management and control practices increased organizational performance by 60.8%. Thirdly, there was a positive and significant relationship between transport management and increase in performance of agricultural processing firms ($\rho = 0.514$, $p\text{ value} < 0.05$). This implied that a unit change in transport management increased performance of agricultural processing firms by 51.4%. Finally, there was a positive and significant relationship between logistic communication and organizational performance of agricultural processing firms ($\rho = 0.521$, $p\text{-value} < 0.05$). This implied that a unit change in logistic communication increased performance of agricultural processing firms by 52.1%.

Table 4. 1: Overall Correlation Analysis

	Performance	Material Handling	Inventory management	Transport management	Logistic communication
Performance	1				
Material Handling	.653**	1			
Inventory management	.608**	0.441	1		
Transport management	.514**	0.403	-0.508	1	
Logistic communication	.521**	0.303	0.305	0.280	1

** Correlation is significant at the 0.01 level (2-tailed).



Results in Table 4.1 shown that there was no variable which was omitted from the model because the p-value was less than 0.05.

4.2 Analysis of the Overall Regression Model

In this section, the findings were discussed focusing on the main objectives of this study which sought to examine the relationship between logistics practices and performance of agricultural processing firms in Laikipia County, Kenya. To achieve this, four logistic practices were majorly focused, namely material handling, inventory management, transport management and finally logistic communication against performance of agricultural processing firms in Laikipia County, Kenya. Overall, it was found that the role of logistic practices had a significant positive relationship with the performance measures. To prove this a multiple linear regression model was adopted for testing the significance of the influence of the independent variables on the dependent variable.

Therefore, the overall model for the study was: -

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where Y was the dependent variable, (performance) β_0 was the regression coefficient while β_1 , β_2 , β_3 , and β_4 , will be the slopes of the regression equation.

X_1 was the independent variable (material handling)

X_2 was the independent variable (inventory management)

X_3 was the independent variable (transport management)

X_4 was the independent variable (logistic communication)

ϵ was an error term distributed about a mean of 0 and for purposes of computation, is assumed to be 0.

The error term was the part of the statistical equation that indicated what remained unexplained by the independent variable.

4.2.1. Inferential Analysis of the Overall Model

Sekaran (2003) argued that if the study seeks to analyse the data beyond means and standard deviations for example, if there was a need to examine the relationship between variables then bivariate analysis such as correlation and regression analysis was the most appropriate. Thus, the researcher applied Pearson correlation analysis to examine the strength of the relationship between the performances of agricultural processing firms in Laikipia County, Kenya. Moreover, regression analysis was used to examine the nature of the relationship as well as test the research questions of the study. The level of significance was tested at 5% and according to Oso and Onen (2009) with this significance level the researcher has a 95% chance of making the correct decision that there existed a significant relationship between the dependent and independent variables.

The overall model shown that 66.3% of the variation in performance could be jointly explained by material handling, inventory management, transport management and finally logistic communication. The remaining percentage could be explained by other factors which were excluded from the model. The summary was shown in Table 4.2.

Table 4. 2: Model Summary for the Overall Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.814a	0.663	0.639	0.845	2.259
a. Predictors: (Constant), material handling, inventory management, transport management and logistic communication b. Dependent Variable: performances of agricultural processing firms in Laikipia County, Kenya.					

The ANOVA results in Table 4.3 showed that material handling, inventory management, transport management and finally logistic communication all jointly had a significant role in performance of agricultural processing firms in Kenya and at least one of the slope coefficient was none zero.

Table 4. 3: ANOVA table

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	905.087	4	226.272	27.959	.026 ^b
	Residual	2516.922	74	8.093		
	Total	3422.009	78			
a. Dependent Variable: performances of agricultural processing firms in Laikipia County, Kenya,						
b. Predictors: (Constant), material handling, inventory management, transport management and logistic communication.						

Results in Table 4.3 shown that there was a positive and significant relationship between material handling and performance ($\beta = 1.06$, p-value < 0.05). This implied that a unit change in material handling increases performance by 1.02 units.

Secondly, there was a positive and significant relationship between inventory management and performance ($\beta = 1.06$, p-value < 0.05). This implies that a unit change in inventory management increases performance by 1.06 units. Inventory management thus impacted positively on the overall performance of the firm Christopher, (2010) and reduces time wasted during the firm manufacturing program, improves lead time and increases the profitability of a firm by minimizing waste throughout the transformation process thus impacting significantly on the performance of firms.

Thirdly, there was a positive and significant relationship between transport management and performance ($\beta = 0.41$, p-value < 0.05). This implied that a unit change in transport management increases performance by 0.41 units. This implied that transport management was a key element in logistics management, which joins the separated activities and it influenced performance of firms hugely.

Finally, there was a positive and significant relationship between logistic communication and performance ($\beta = 0.71$, p-value < 0.05). This implied that a unit change in logistic communication increased performance by 0.71 units. The explicit use of logistic communication provided information to customers on logistics within the concept of supply chain across the firms surveyed which could be an indication that firms had recognized that product life cycle had reduced

Research Bridge Publisher, International Journal of Social Science and Humanities Research , Vol. 1, Issue 1, pp: (718-735), Month: June - December 2023, Available at: <https://researchbridgepublisher.com/> tremendously and due to this user demand kept on changing within short notice.

Table 4. 4: Regression Coefficients for the Overall Model

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.418	0.16		30.39	0.00
	Material Handling	1.06	0.16	0.32	6.60	0.00
	Inventory management	1.02	0.16	0.31	6.35	0.00
	Transport management	0.41	0.18	0.11	2.28	0.01
	Logistics communication	0.71	0.16	0.22	4.42	0.00

5.0 Conclusion of the Study

This study provided evidence that material handling significantly and positively influences the performance of agricultural processing firms in Laikipia County, Kenya. Concerning inventory management, the study also established a significant positive relationship between inventory management and firm performance. This study further provided evidence that transport management significantly and positively influenced performance of agricultural processing firms in Laikipia County, Kenya. Finally, information flow management was found to have a positive significant influence to the performance of agricultural processing firms in Laikipia County, Kenya.

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