



INFLUENCE OF THIRD-PARTY LOGISTICS ON PERFORMANCE OF CEMENT MANUFACTURING FIRMS IN KENYA

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ABSTRACT

Organizations in the modern business world are increasingly making use of third-party logistics providers to outsource logistics functions that are not core activities. These third-party companies have specialized in logistics and often perform transportation and Warehousing Activities services with superior outcomes at relatively lower costs. However, before choosing whether to use them, it is prudent for contracting organizations to understand what they gain from engaging in this kind of set-up. As such, this study sought to determine the influence of Third-Party Logistics outsourcing on the performance of cement manufacturing firms in Kenya. To achieve this, the study assessed transport management, distribution management, Warehousing management, and inventory management as the key four variables on the performance of the cement manufacturing firms. The study used a descriptive research design to conduct the study since this technique allows for participants to be observed in a natural and unchanged environment, making it easier for the researcher to collect real-time information. Given that there were only six leading cement manufacturing companies that had adopted the use of third-party logistics, the study involved 103 employees in the respective organizations. All of the respondents were involved through use of questionnaires, which was the main data collection tool. Data obtained was analysed with the help of SPSS software and it mainly involved an analysis of the demographic characteristics which were presented in tables and graphs. A regression analysis was fitted to determine the effect of the identified demographic statistics. The results obtained thereof were used to make conclusions about the influence of third-party logistics on the performance of cement manufacturing companies. In conclusion, four main factors were mentioned as the rationale for outsourcing logistics services to 3PL providers. Like in many other studies, cutting down costs was cited as the most important reason for 3PL followed by operational flexibility which entails, among other things, other justifications mentioned by respondents were saving management time so that they could focus in core activities and spreading logistics/supply chain risks.

Key Words: *Transport Management, Distribution Management, Warehousing Management, Inventory Management*

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INTRODUCTION

This study sought to investigate the influence of third party logistic (3PL) companies on cement manufacturing firms that outsource them. This chapter provides an overview of the Third-party logistics industry and explains its effect on companies around the world. The chapter further analyzes the main factors that concerns organizations in as far as 3PL contracting is concerned. The study will outline facts about the cement manufacturing industry in Kenya, identify the statement of the problem and outline the research questions and objectives that will be sought. The significance of this study to various stakeholders as well as the scope is outlined in this chapter.

The history of 3PL can be traced to the 70's and 80's as companies outsourced more and more logistics services to 3rd parties. Over time these 3rd party logistics service providers (3PLs) expanded their services to cover specific geographies, commodities, modes of transport and integrated their existing warehousing and transportation services, becoming what we now know today as a "3PL" (Murphy and Poist, 2000). Legally, 3PL was defined through the passing of HR 4040-Consumer Product Safety Improvement Act of 2008. However, the term was registered by Accenture as a trademark and defined as "A supply chain integrator that assembles and manages the resources, capabilities, and Manufacturing Technology of its own organization with those of complementary service providers to deliver a comprehensive supply chain solution." Robson (2018).

Cement manufacturing firms have to be competitive through dexterity and innovations to remain relevant in the highly competitive globalized markets. Among other things, the firms adopt various techniques and strategies to cut down operational costs and ensure full customer satisfaction. The firms mostly have exhausted the conventional cost-cutting techniques such as overhead reduction and rationalization of staff Maku and Iravo (2013). Outsourcing is now one of

the leading cost-cutting methods firms use today. According to Muthoni and Nyakagwa (2014), outsourcing gives a company an opportunity to concentrate on core business functions. Moreover, the external provider carries out business functions previously performed within the organization. Different companies could come into agreements and conduct exchanged services following contractual arrangements, and outsourcing is among the chief business activities performed in such organizations Magutu, Chirchir and Mulama (2013).

Firm performance is among the fundamental activities that need to be carried out. It is a comparison of the organization's outputs to its objectives and the goals. Cement manufacturing companies just like any other firms have goals and objectives outlined and planned to be achieved within a specified period. At the end of the period, the firms will compare what it has attained with what it intended to accomplish as stated in its goals. It is a concept involving all the stakeholders in the organization, each department playing a critical role. Collectively, the performance of each department combines to bring the performance of the entire organization. Consequently, each department is required to perform its best for the greater good of the whole organization Nyauncho & Chirchir (2016).

Cement manufacturing performance in Kenya has undergone improvement in the past few decades. Several factors have contributed to the development of these recent developments. The factors include technological changes such as the use of Nano-technology, increased population, and most importantly, the demand for tailored products by Kenyan consumers. Consequently, companies need to adopt third-party sourcing Nyasimi & Gitau (2016). The recent growth of Kenya's commercial and construction industries has resulted in increased foreign investment government funding on mega infrastructure. The demand for cement generally has heightened. There is the need to construct roads, buildings and other structures in

most parts of the country and this requires the adoption of proper cement manufacturing technique, to meet the risen and the continually rising demand for cement.

There is a need for the adoption of a better management system that would enable the companies to produce cement, store them, and transport them to the consumers throughout the region. To ensure this is fully achieved, there is the need to utilize proper sourcing techniques to ensure that the consumers are satisfied, and the companies remain profitable. Moreover, there are regions where cement raw material is available, but the closest cement manufacturing industry is located many kilometers away. It is, therefore, necessary for cement companies to establish their industries in such areas to ensure effective utilization of resources and to serve the region with cement. Consequently, companies need to utilize third-party logistics in its transportation, storage, and in carrying out other inventory services. Moreover, report by the Kenya Association of Manufacturers (KAM) indicates that most cement manufacturing firms in Kenya are ISO certified and follow strictly the professional set standards and regulations on the issues of quality. Therefore, among other things, the companies focus on ensuring that customers are fully satisfied all the time. Moreover, the Standard Investment Bank (2013) reports that Kenya, Uganda, and Tanzania contributed up to 0.24 % of the world's total cement production.

Statement of the problem

According to Shi, Zhang, Arthanari, Liu & Cheng (2016), most modern cement manufacturing firms choose to use of third-party service providers to outsource elements of distribution and fulfillment services. However, in order to determine its success, managers of these companies are faced with the problem of assessing activities such as warehousing, transportation and distribution. Being able to assess the effectiveness of these three factors allows the companies to evaluate the influence of the third-party organization to its

success. Therefore, there is no doubt that companies such as those in the cement production industry need to understand whether they are now able to improve quality, reduce costs and achieve competitive advantage by outsourcing for their logistical services to 3PL companies.

According to (Muthoni&Nyakagwa, 2014) the main problem that drives Cement manufacturing firms towards third party logistics is that logistics has the potential to be a distraction from the main business of a company. This is not only because it requires a significant amount of resources and effort to organize but because its success is so critical to the company that failure to achieve it may as well cripple the organization. Ideally, choosing to outsource services should leverage a stronger resource network, free-up valuable time and capital and continuously improve and optimize the supply chain. However, the reality is that most companies still struggle to accrue minimal advantages such as benefiting from professional supply chain expertise. Therefore it is against this background that this study sought to establish the influence of Third-party logistics on performance of cement manufacturing firms in Kenya.

Objectives of the Study

The general objective of this study was to determine the influence of third-party logistics companies on performance of cement manufacturing firms in Kenya. The specific objectives were;

- To examine the influence of transport management on firm performance of cement manufacturing companies
- To determine the influence of distribution management on firm performance of Cement manufacturing firms in Kenya.
- To establish the influence of warehousing management on the performance of Cement manufacturing firms in Kenya.
- To assess the influence of inventory management on the performance cement manufacturing firms in Kenya.

LITERATURE REVIEW

Theory of Transaction Cost Economics

The Theory of transaction cost economics was driven by the objective of profit maximization in the cement manufacturing firms. The basic assumption underlying the theory suggests that outsourcing of transport management services by cement manufacturing firms to third-party logistics providers lower operational costs and facilitate investment in relation-specific asset (Williamson, 2014). This makes reference to the relative cost of using markets as opposed to firm controlled resources for determining the resource allocation decisions. In the context of sourcing decisions, the firms source externally to minimize costs.

This will prevent the supplier from taking for granted on the buyer side. On the other hand, if the third party logistics provider can produce a lower cost compared to doing the process internally, then the buyer should choose for external sourcing (Hsu et al 2010). However, transaction costs do not depend duly on the quantity or variety of the products but also the third-party logistics providers ability in fulfilling the buyer expectations (Hsu et al., 2010). It is found that opportunism will not be a concern over highly specific assets if there is mutual beneficial relationship between the buyer and suppliers (Irwin et al., 2010)

The transaction cost theory underpins transport management variable in the present study. In an effort to minimize costs associated with potential delays and inadequate logistical arrangements, cement manufacturing firms will be keen to settle for suppliers that have all its logistics well factored to avoid any unplanned expenditure or, losses.

Lean Theory

Lean theory is an extension of ideas of just in time. (Kros, Falasca, & Nadler, 2006), elaborate just in time as a pull-based system designed to align the distribution management, production and business processes throughout the supply chain in the cement manufacturing firms. (Green & Inman, 2005), assessed the impact of lean theory on

distribution management. The term lean thinking was coined by James P. Womack and Daniel T. Jones They say that theory may eliminate buffer stock or inventory and minimize waste in production process in the cement manufacturing firms. (Eroglu & Hofer, 2011), found that leanness positively affects profitability of a cement manufacturing firm. They argue that inventory leanness is the best inventory control tool.

The theory elaborates on how businesses gain flexibility in their ordering decisions, reduce the stocks of inventory held on site and lower operational costs when they outsource distribution management services to third party logistics firms. Feinberg and Keane (2006), discuss their findings of distribution management at firm level. They go on saying that at the aggregate level, the empirical strength of the lean explanation lies both in the timing and the magnitude of the adoption. The aim of lean thinking is to create a lean enterprise, one that sustains growth by aligning customer satisfaction with employee satisfaction, and that offers innovative products or services profitably while minimizing unnecessary over-costs to customers, suppliers and the environment.

Theory of Inventory and Production

The theory of inventory and production is the sub-specialty within operations research and operations management that is concerned with the design of production/warehouse management systems to minimize costs: it studies the decisions faced by cement manufacturing firms in connection with, warehousing management, manufacturing, supply chains, spare part allocation and so on and provides the mathematical foundation for logistics.

The inventory control problem is the problem faced by a cement manufacturing firms that must decide how much to order in each time period to meet demand for its products. The problem can be modelled using mathematical techniques of optimal control, dynamic programming and network optimization. The study of such models is part of warehousing theory.

Resource-Based Theory

The Resource-Based View (RBV) theory centers on the factors that give rise to a sustainable competitive advantage for cement manufacturing firms. According to Shibin *et al.* (2017), resource-based view theory of the firm considers the business to be a package of resources. An efficient package therefore is necessary for the performance of the operations to improve. RBV clarifies the conditions needed for the cement manufacturing firms to attain a sustained competitive advantage. Shibin *et al.* (2017) pointed out that the key pillars

to accomplishing competitive advantage are innovations and ownership of incomparable assets including inventory. Here, the resources include transportation, Warehousing Activities, management of inventory, processing of orders, customer care services among other resources (Montgomery, 2011). These resources influence outsourcing logistics either directly or indirectly. Literature use RBV theory to strategically analyze the performance of a business. It probes the cement manufacturing firms abilities to implement outsourcing inventory management services.

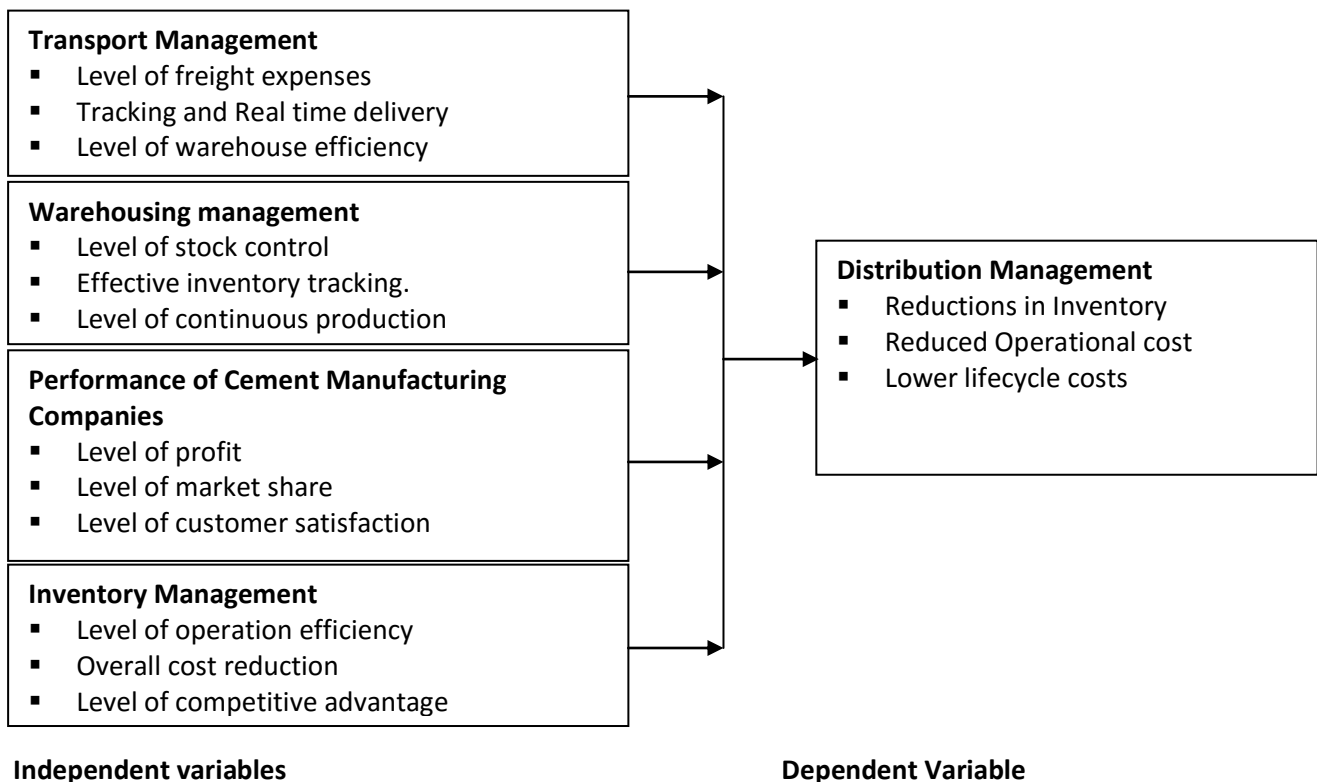


Figure 1: Conceptual Framework

Empirical Review

According to (Ulubeyli, 2013), cement manufacturing firms are always working hard to understand the trends in the construction styles, the newer transport management and tools in the application and the possible future needs in the construction industry for them to cope and avoid the possibility of becoming irrelevant. For instance, cement manufacturing firms require to manufacture cement that is capable of enduring extreme conditions of structures such as those constructed underwater, those that are extremely

tall and those whose designs and architecture is complex such as the Oracle building in Nairobi. The newer technologies such as the application of nanotechnology in many fields of science and engineering have resulted in the development of better facilities and tools that have tremendously changed the lives of people (Cha & Kim, 2018). They have improved the quality of many products. Cement manufacturing firms adopted the use of nanotechnology in the production of cement to meet newer markets and demands (Cullen, 2018). Therefore, advancement in technology has

provoked cement manufacturing firms to produce higher quality cement to meet different requirements and applications. Many firms have adopted newer technologies in cement manufacturing to improve the transportation of their product and to ensure that consumers remain satisfied.

Moreover, Kenya cement manufacturing firms are in major towns and cities. The demand for cement and cement product is in every part of the country. The devolution of governance of Kenya resulted in the need for many parts of the country to grow and develop. Construction of roads, buildings, bridges, and other structures occurs throughout the nation. Location of consumers is many miles from the manufacturers forcing the firms to incur tremendous costs in transporting the finished products to the consumers. Poor road networks in some regions make it even difficult for the finished product to reach the consumers on time. The government imposes heavy taxes on many business organizations in Kenya. Cement manufacturing firms are no exception. The government of Kenya levies cement manufacturers taxes on every cement product they manufacture. Moreover, during transportation, different county governments impose duties and levies on the cargoes being transported. The increasing price of oil has raised the cost of energy in the entire country making the cement manufacturing industry to incur more on the use of energy and during transportation of finished products to the consumers (Mutune, 2014).

The companies carry out benchmarking by visiting a well-performing business organization located in different parts of the globe. They visit the companies stay there for a while noting down the best practices the company uses to ensure customer get quality services all the time. They carry out simple studies using questionnaires and interviews to find out the best ways the host companies guarantee the quality of their customers (Karatzas, Daskalakis, Dimitrov & Godsell, 2016). The benchmarkers then return to their companies and train their fellow employees on the practices

they learned during the benchmarking and the organization adopt it in its business culture. The Kenyan cement manufacturing firms further follow the standards set by bodies such as the Kenya Bureau of Standards to warrant they offer the best quality of services to their consumers. Such standards are accepted all over the country. Moreover, many consumer protection agencies train their employees on the standards set by KBS and the ISO. Organizations that follow these standards, therefore, obtain the largest number of customers in the market, thereby making them more profitable and relevant in the market (Keinan, & Karugu, 2018).

Quality of service demands an organizational culture that is committed to consumers well-being through constant refinement of business practices. According to Barako and Gatere, (2015), improving inventory management practices is among the way's organizations can improve the performance of their operations. Most Kenyan cement manufacturing companies have business cultures that focus on continuous improvement of its practices to ensure customers are fully satisfied and remain competitive and relevant in the market. Though the companies adopt different cultures, their principals center on the same policies and their implementation result in prominent markets, more profits, and reduced costs of production (Njagi & Ogotu (2014).

Outsourcing inventory management has emerged as a strategic approach to managing their inventory and is a crucial process to the success of logistics in any organization. It involves the process in which multiple enterprises within a shared market cooperatively plan, implement and manage the flow of goods, services and information from a point of origin to a point of consumption. Organizations rely heavily on efficient supply chains to provide a high level of customer service, while meeting sales and profit targets. Information technologies, including enterprise resource planning systems, are at the core of integrated operations. There are several advantages associated with integrating operations.

METHODOLOGY

This study used descriptive research design. This is because participants were observed in a natural and unchanged environment, making it easier for the researcher to collect real-time information. This study's population included all the 6 cement manufacturing companies in Kenya (KNBS, 2016) namely ARM Cement (Athi River Mining Ltd) – Head Office Branch Rhino Hse, Chiromo Rd, National Cement-Mombasa Road, Opposite Lukenya RD., Lafarge Cement – Corporate Office Nairobi Branch, Off Ragati Road, UpperHill, East African Portland Cement Co Ltd, Athi River, Mombasa Cement Limited – Vipingo Branch and Savannah Cement Ltd. The unit/observation of measurement was employees in these manufacturing firms including the top, middle and lower level management. All staff from the three main management levels were targeted. The study used simple random sampling technique. The study used questionnaires to collect primary data. The study used the following model;

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4$$

Where Y= Performance of Manufacturing Firms

X₁=Transport management

X₂= Distribution Management

X₃= Warehousing management

X₄= inventory management

β₀ –Constant Value

β₁₋₄ - coefficients

ε- Error term

RESULTS

Reliability and validity analysis

For all the variables, the Covariance values were above the minimum acceptable reliability coefficient of 0.70 and the right consistency, as shown in Table 1. This implied that the instruments were sufficiently reliable for measurement. Because of the results of the analysis, all items in the scale were accepted and considered for the study.

Table 1: Cronbach Alpha value Reliability Test Results

S/No	Construct	Variable	Number of Items	Covariance	Comment
1.	Transport management	Independent	5	0.929	Accepted
2.	Distribution management	Independent	5	0.958	Accepted
3.	Warehousing management	Independent	5	0.831	Accepted
4.	Inventory management	independent	5	0.814	Accepted

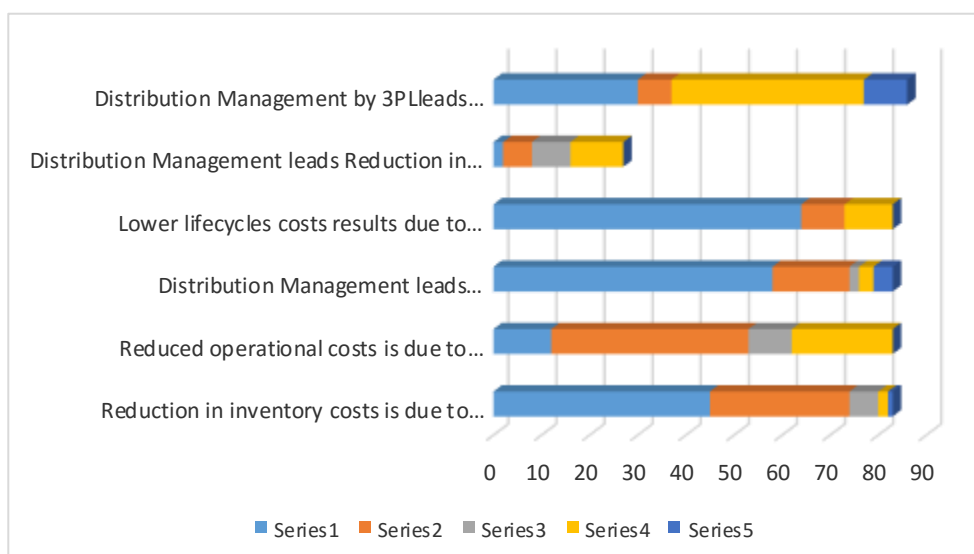


Figure 2: Descriptive statistics for transport management

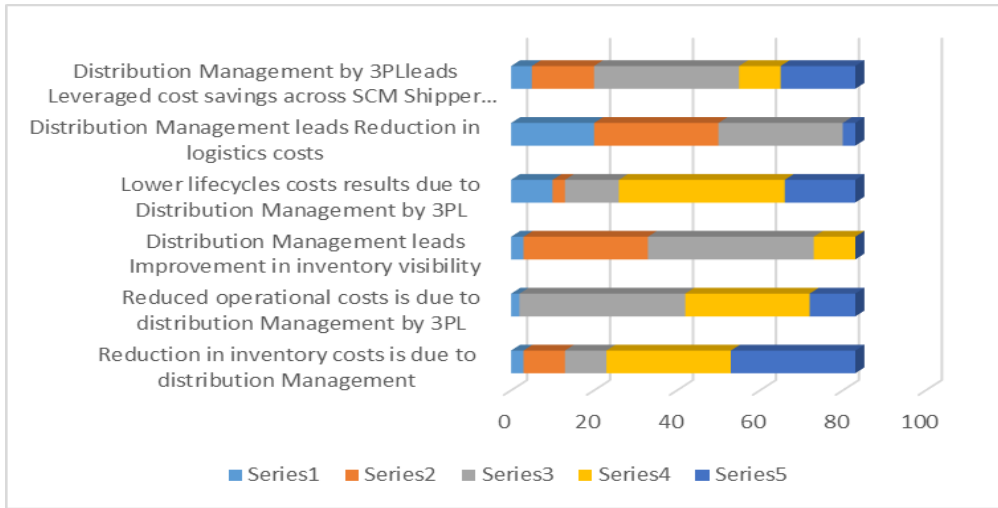


Figure 3: Descriptive statistics for distribution management

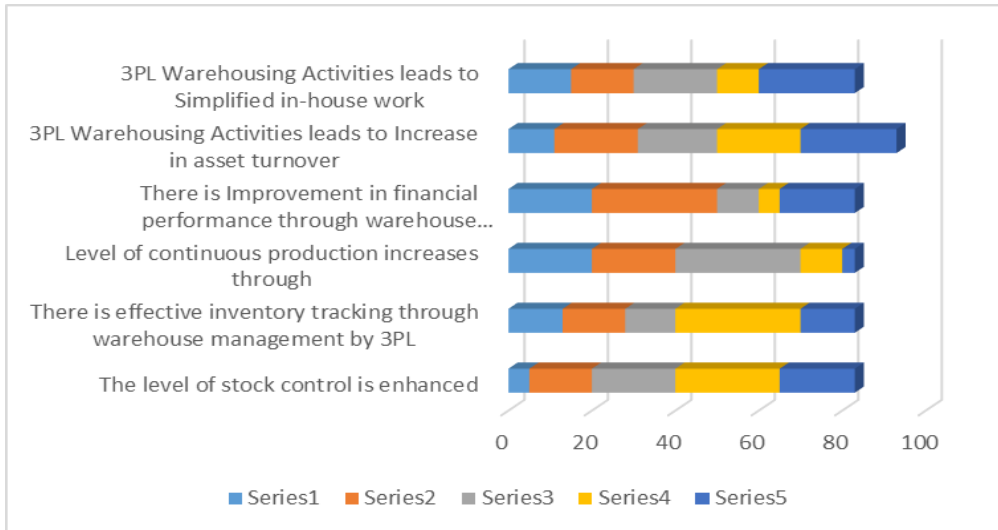


Figure 4: Descriptive statistics for warehouse management

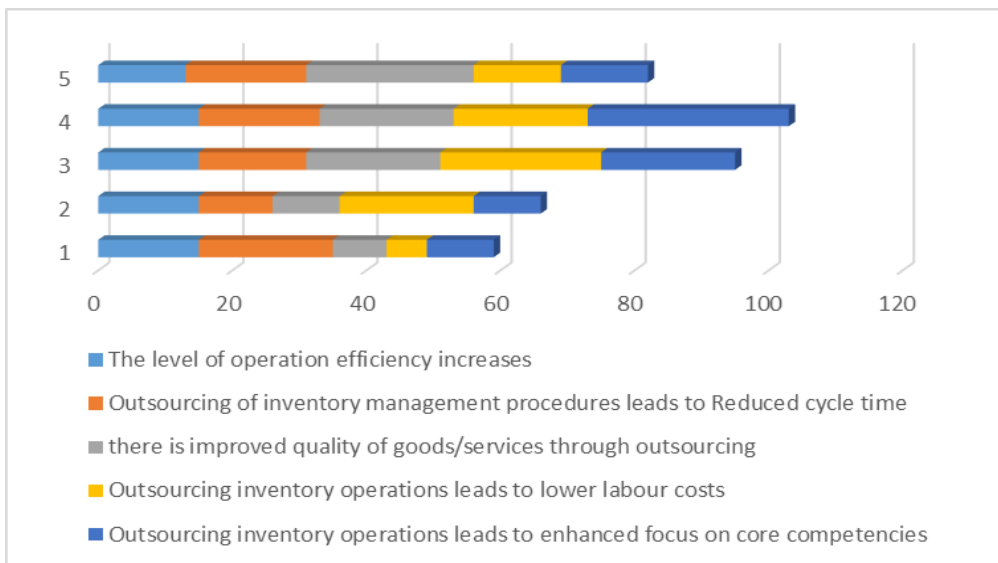


Figure 5: Descriptive statistics for inventory management

Diagnostic Tests

The data collected for the study were subjected to various tests without any bias. The nature of data collected for the study, being cross-sectional data only required diagnostics tests for a multivariate regression model. multicollinearity and normality were carried out to determine that the variables under investigation meet the minimum standard.

Multicollinearity Test

Tolerance and Variance Inflation Factor (VIF) was used to find out the extent of collinearity among the IVs. Garson (2012) surmise that multicollinearity occurs when there is an unacceptably high level of inter-correlation among IVs to the extent that the effects of IVs cannot be isolated. The percentage of variance in the predictors that cannot be explained by other IVs is known as tolerance, and the VIF is the inverse of tolerance, and it is calculated by using $VIF = 1/(1-R^2)$. The general rule of thumb, if $VIF > 4.0$, there is a problem of multicollinearity (Garson, 2012), however, some scholars put the threshold to $VIF > 5.0$ (Waweru, 2018). Previously, it has been

argued VIF of 10 or higher automatically calls for treatment of multicollinearity (O'brien, 2007). He premised his argument on the need to first take into consideration the factors that influence the variance of the regression coefficient.

This study adopted a benchmark of $VIF=4.0$. Tolerance values ranged from .747 and .924 while the VIF ranged between 1.082 and 2.367. Transport management had a VIF of 1.082, distribution management 1.205, warehousing management had a VIF 1.272 and inventory management had a VIF of 2.367. All these results were presented in Table 2, which indicated that all the predictors' VIF value passed the test because they were less than the acceptable benchmark of 4.0. Since tolerance values were above 0.1 and VIF below 4, it is safe to conclude that there is no problem of multicollinearity with the data. Consequently, upon this result, and since the assumption of regression analysis was not violated, the study used linear regression model.

Table 2: Multicollinearity Test

Independent Variable	Tolerance	VIF
Transport management	.924	1.082
Distribution management	.830	1.205
Warehousing management	.786	1.272
Inventory management	.422	2.367

Normality Test

Another assumption of classical linear regression model is that data should be normally distributed. This study used the Kolmogorov-Smirnov test, also known as the K-S test, to determine whether the data collected on transport management, distribution management, warehousing management and inventory management in firms are normally distributed or not. The K-S test is mostly used to assess the assumption of univariate normality by comparing the observed cumulative distribution of scores to the theoretical cumulative

distribution for a normally distributed variable (Wameru, 2018). It has been suggested that graphically methods such as Q-Q plot and histogram can be used along with the K-S test for robustness. The hypotheses for the K-S test are:

Ho: The data is usually distributed

H1: The data is not normally distributed

The p-value determines the critical region. If the p-value > 0.05 , the null hypothesis is accepted, otherwise it was rejected.

From the results obtained, the p-value (0.061) is higher than the $\alpha=0.05$ level of significance; hence, the null hypothesis is accepted. The study, therefore, concluded that the data is normally distributed and thus fit for linear regression analysis.

Correlation Analysis

Pearson product-moment correlation was used to analyze the relationships between variables as well as the p-value of the significance of the relationship.

Correlation Analysis between Construct transport management and performance of cement manufacturing firms

The study sought to find out the relationship between transport management and performance of the firms and to know whether or not there is a statistically significant relationship between the two variables at 95% confidence level. The Pearson Correlation results revealed that there is a meaningful positive relationship between transport management and performance in this study with $R = 0.828$ and p-value of .000 (which is less than $\alpha=0.05$ level of significance). The result indicated that the relationship between transport management and performance of firms was very strong. The association was also found to be significant at 5% level of significance.

With these results, it implied that there is a significant linear relationship between the transport management and performance of the firms. Therefore, an improvement in transport management affects performance positively.

Correlation Analysis between Construct transport management and performance

This section sought to determine whether or not there is a statistical relationship between distribution management and performance of the cement manufacturing firms. Pearson's correlation coefficient between the distribution management and performance being was that .744, $p<0.05$, two-tailed, tested at 95% confidence level. The results showed a positive and significant relationship between distribution management and

performance of firms. This indicated that the performance of firms is influenced by distribution management. The implication of the findings of the study concurred with the findings of Tangthong, Trimetsoontorn and Rojniruttikul (2015), Shin, Jeong and Bae (2016) and that of Jani and Balyan (2016).

With these results, it implied that there is a positive and significant relationship between distribution management and performance of firms. This showed that the performance of firms is affected distribution management. Therefore, an improvement in distribution management will positively affect performance of firms.

Correlation Analysis between Construct warehousing management and performance of firms

Pearson's correlation was checked to ascertain whether or not there is a statistical relationship between warehousing management and performance of firms. Pearson's correlation coefficient between warehousing management and performance of firms being .5, $p<0.05$, two-tailed, tested at 95% confidence level. The results showed that there is a positive and significant relationship between warehousing management and performance of firms. This indicated that warehousing management positively affects performance of firms.

With these results, it implied that there is a positive and significant relationship between warehousing management and performance of firms. Therefore, an improvement in warehousing management will affect performance of firms positively. The finding of this study agreed with some previous studies (Ahmed, Ahmad & Joarder, 2016; Jani & Balyan, 2016); however, the findings of this study failed to support the findings of Shah and Beh (2016).

Overall Pearson Correlation Matrix

The first objective of the study was to establish the influence of transport management on performance of firms. Regression analysis was conducted to empirically determine whether or not

warehousing management affects performance of firms. The results showed a relationship $R = .828$, which indicated a positive association between transport management and performance of firms. The relationship was significant, as supported by a probability value of 0.000 ($p < 0.05$). This implies that the model applied could statistically and significantly predict the outcome variable. The study, therefore, rejected the null hypothesis, H_{o1} at a 95% confidence interval and concluded that transport management significantly affects performance of firms.

The second objective of the study was to establish the influence of distribution management on performance of firms. Regression analysis was conducted to empirically determine whether or not distribution management significantly determines the performance of firms. The results showed a relationship $R = .517$, which indicated a positive association between distribution management and performance of firms. The relationship was significant, as supported by a probability value of

0.000 ($p < 0.05$). This implies that the model applied could statistically and significantly predict the outcome variable. The study, therefore, rejected the null hypothesis, H_{o2} at a 95% confidence interval and concluded that distribution management positively impacts performance of firms.

The third objective of the study was to establish the role of warehousing management on performance of firms. Correlation analysis was conducted to determine if warehousing management significantly determines performance of firms empirically. The results showed a relationship $R = .744$, which indicated a positive association between warehousing management and performance of firms. The relationship was significant, as supported by a probability value of 0.000 ($p < 0.05$). This implied that the model applied could statistically and significantly predict the outcome variable. The study, therefore, rejected the null hypothesis, H_{o3} at a 95% confidence interval and concluded that warehousing management has a significant influence on the performance of firms.

Table 3: Regression results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	1.143	.458		2.497	.015
Transport management	.859	.125	.558	6.865	.000
Distribution management	.280	.147	.123	1.901	.041
Warehousing management	.224	.058	.305	3.856	.000

The model equation was stated as $y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \epsilon$

The fitted model was therefore

$$y = 1.143 + 0.859x_1 + 0.280x_2 + 0.224x_3$$

The regression analysis was performed to discover the amount of contribution of each of the independent variables and their significance. The results showed that an improvement in transport management by 0.859 would lead to an improvement in performance of firms by 1 unit ($\beta = 0.859, t = 6.865, P = 0.000 < 0.05$).

Transport management had a t-test statistic of

6.865 with a corresponding P-value of $0.000 < 0.05$, and therefore, it was significant.

An improvement in distribution management by 0.280 would lead to an improvement in performance of the cement firms by 1 unit ($\beta = 0.280, t = 1.901, P = 0.041 < 0.05$).

Distribution management had a t-test statistic of 1.901 with a corresponding P-value of $0.041 < 0.05$, and therefore it was significant.

An improvement in warehousing management by 0.224 would lead to an improvement in performance by 1 unit ($\beta = 0.224, t = 3.856, P = 0.000 < 0.05$).

Warehousing management had a t-test statistic of 3.856 with a corresponding P-value of $0.000 < 0.05$, and therefore, it was significant.

CONCLUSIONS AND RECOMMENDATIONS

This chapter is intended to provide a summary of our findings in chapter four and again, set a stage for further studies and again develop few recommendations for the cement industry. This entire project was intended to answer our four main research questions, various other issues were expounded and these helped to increase our understanding of how 3PL is practiced in the cement industry. As a conclusion, Third party logistics (3PL) in Kenya was yet to reach the advanced and organized stages like in other regions. However, companies including cement manufacturers and suppliers outsourced some of their logistics activities and through this study it was found that the outsourcing firms had already started to see the benefits.

Four main factors were mentioned as the rationale for outsourcing logistics services to 3PL providers. Like in many other studies, cutting down costs was cited as the most important reason for 3PL followed by operational flexibility which entails, among other things, other justifications mentioned by respondents are saving management time that they can focus in core activities and spreading logistics/supply chain risks.

In identification of the logistic providers with the necessary capabilities, most companies used the regular procurement procedures and policy. Information on 3PL providers was obtained through the request for information (RFI) and Request for Quotation (RFQ). Upon receiving this information the client company would evaluate the most responsive applicants using Analytical Hierarchy Process (AHP) which was mainly used for analyzing

and selecting long term partners in this industry. This was based on spreadsheet and it defined the objective to achieve, the key criteria, and available option or choices.

Collaboration with 3PL providers is a very powerful strategy to achieve effective outcome of outsourcing option. This is because of the opportunities to learn from each other and the possibility to run the contract in a win-win situation. To achieve and maintain a collaborative relation with their 3PL providers, manufacturers mention few strategies that are used in the industry. These include the use of the following: Elaborate contracts, Provider development, Joint review meetings and Long term contracts.

Furthermore, to ensure that the goal of 3pl is reached, various performance measurements should be developed and then integrated in the agreements as key performance indicators (KPI). These include the distance covered by drivers without accidents, number of fatalities in a period and Quantity of cement hauled in a month.

The relationships also experience some difficulties sometimes but respondents consider these are solvable problems. Some of the pointed out challenges include: Misrepresentation of actual 3PL capabilities, lowering service level to the current client while serving other new customers, Renegotiation of contracts for instance when fuel prices increase.

On the impact of 3PL on logistic performances, the industry in general appreciates contribution of 3PL in decreasing the general distribution cost and increased flexibility in logistics. Being in its inception stage, 3PL still faces lot of challenges in Kenya. However, cement companies still have strong faith in its future success in the region because of the experienced and other potential benefits.

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