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INFLUENCE OF DISTRIBUTION NETWORK SYSTEMS ON SUPPLY CHAIN PERFORMANCE IN PRINT MEDIA INDUSTRY IN KENYA: A CASE OF THE NATION MEDIA GROUP

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Abstract

Purpose: The global publishing industry is going through difficulty times as a broadband penetration rises and new devices for delivering news and content arrive on the scene. Distribution in the printing industry addresses not only outbound distribution but also inbound distribution. This study sought to assess the extent to which warehousing influences supply chain performance in media industry, to determine the influence of Transportation on supply chain performance in media industry, to find out how technology affect supply chain performance in media industry and to determine the influence of distribution channels on supply chain performance in media industry. The study was carried out at Nation Media Limited in Nairobi County.

Methodology: The study adopted a descriptive research design. The total population of the study was all the employees working at Nation Media Group, print media section. The study sampled 222 respondents who participated in the study. The research used the simple random sampling method because it gave every member of the population equal chances of being selected. Structure questionnaire were used to collect the primary data from the sample size. The raw data from the respondent was analyzed using statistical package for social science (SPSS) analysis software and findings presented using descriptive statistical tools like graphs and tables.

Results: The study established a positive relationship between the independent variables and the dependent variable. Transportation was identified as very critical component of ensuring that the overall costs of operations are significantly reduced. The study indicated that the organizations need to put in place the cost control measures which will eventually result to cost reduction in the entire supply chain. The study established a positive relationship between warehousing and supply chain performance in Print media industry in Kenya. The location of warehouses in places accessible by all partners in the chain of distribution is very important in ensuring on time delivery of the product to ultimate consumers. The study has established a positive relationship between the application of information technology and supply chain performance in Print media industry in Kenya. Application of information

technology has been identified as a very critical aspect that facilitates reduction of operation costs, on time delivery and customer satisfaction along the supply chain.

Conclusion and policy recommendation: The study concluded that efficient distribution network system has the capability of enhancing, products quality, delivery time, customer satisfactions and reduced lead time in the supply chain.

Key words: *warehousing, transportation, information technology, distribution structure*

1.1 Background of the study

Supply chain has become an important issue for every organization and organizations are working hard to optimize on opportunities available in supply chain while eliminating all inefficiencies (Hakansson & Persson, 2008). Individual businesses and organizations no longer compete as independent and autonomous entities, but are obliged to form supply chains, and networks of multiple businesses and complex inter-relationships, in order to assure their smooth operation and flow of inputs and outputs (Graeml, & Peinado 2011).

Managing the supply chain in today's competitive marketplace poses significant challenges which stems from internal operations and the environment as a whole (Blanchard, 2010). The organizations are been faced which a challenge of making a tradeoff between organizational needs and the needs of the customers while still remaining profitable. The Every business that manufactures or moves tangible products from place to place faces a similar set of demands from customers, suppliers, investors and industry analysts: to deliver products faster, reduce inventory, lower operating costs, and deal with increasingly complex orders. The requirements often conflict with each other, creating trade off and opportunity costs throughout the supply chain.

The modern customers are willing to pay premium prices provided there is shorter lead-time, flawless quality and product variety. This has greatly affected the operations of logistics since the focus is more on the final customer than cost savings. From a strategic perspective, this indicates that the dimensions of cost, flexibility, quality and delivery are not to be traded-off against one another but need to be simultaneously prioritized (Hakansson, &Persson 2004).

Distribution of printed materials involves the movement of products from production to an internal location or external location (Paulraj & Chen 2007). Marketers define distribution as getting the right product to the right customer in the right place at the right time (Blanchard, 2010). Distribution involves planning, implementing, and controlling the physical flow of goods, services, and other related information from the point of origin to its intended target market. Distribution in the printing industry addresses not only outbound distribution (getting products out of the plant), but also inbound (ordering raw materials and supplies) this involves logistics strategies; involving the physical movement of printed materials, as well as the electronic distribution of files.

The major distribution functions include shipping or delivery, mailing, warehousing, and inventory management. Some printed products leave the plant in final form and take a direct route through the postal system to the consumer mailbox. Others are routed to manufacturing facilities where they are combined with other product components and are shipped through a third-party distribution system (Hulthen, 2007). In either case, there are critical timing and coordination issues that arise from distribution functions. The distribution of printed products must also often be coordinated with the timing of broadcast events (Keebler & Plank, 2009)

The Nation Media Group (NMG) founded in 1959 by His Highness the Aga Khan, is now the largest independent media company in East and Central Africa. It is also the leading multimedia business in Eastern Africa, producing not only print media but also publishing electronically and on the Internet, all of which attracts a regular readership quite unparalleled within the region. In addition to the flagship newspaper The Daily Nation, the group owns newspapers, magazines and radio and TV stations in Kenya, Uganda, Tanzania and Rwanda.

According to Koech (2016) the Nation Media Group is the largest and most influential media company in the East and Central Africa, and one of the largest publicly listed information providers in Africa. Nation Media Group's local and regional presence is well established, its current market leadership in the print media segment is likely to be maintained in the foreseeable future. Its contribution in the last financial year was about 85% of the company's revenue. The company's expansion policy, on the print and electronic media, to new markets: a move that is set to sustain the earnings growth momentum.

1.2 Statement of the Problem

The global publishing industry has radically changed due to the increase in broadband penetration and innovation on new devices for delivering news and content. Internet has taken over information or news dissemination to the extent that media industry hard copy production and circulation vibrancy has been threatened (Frazelle, 2011). The purchase of a hard copy has been affected because consumers are increasingly becoming sensitive on what they buy on daily or weekly basis, this has forced some to switch from buying hard copies to internet usage, radio listening and television watching. These kind of developments calls for much innovation on the distribution of hard copy news content in order for the organizations to survive the turbulent environment and to achieve improved performance (Mwaura,2016).

According to Koech (2016) there has been a widespread concern that newspapers face an uncertain future due to low distribution which is resulting from inefficiencies in the entire supply chain system. Many newspaper organizations fear a long-term decline due to inability to distribute as many newspapers as possible therefore leading to decline in sales. Kirchhoff (2010,) points out that distribution remains an important factor in many newspaper companies to ensure that the product reaches the desired customer at the desired time and therefore prevent extinction of the newspaper industry. Time is critical aspect in supply chain management while has a direct impact on the overall organizational performance. Koech (2016) points out that organizations need to invest on distribution system so as to ensure the there is adequate distribution of newspapers and therefore be able to compete effectively with the digital platforms.

According to Ndana (2012) Nation media group has faces stiff competition and the print media is under a threat by the digital media as its market share is shrinking. This trend indicate need for physical distribution logistics strategies to shift focus from building a customer base to adoption of strategies that provide a clear path to growth and profitability. According to Kinyanjui (2014), 49% of Kenyan population does not access the print media and this can be attributed to physical distribution inefficiencies. It is against this background that study sought to assess the Transportation of distribution network systems on supply chain performance in print media industry in Kenya.

1.3 Objectives of the Study

1. To assess the influence of warehousing on supply chain performance in print media industry
2. To determine the influence of transportation on supply chain performance in print media industry
3. To examine the influence of information technology on supply chain performance in print media industry
4. To determine the influence of distribution structure on supply chain performance in print media industry

2.0 LITERATURE REVIEW

2.1.1 Theory of Constraints

Rahman, (2013) describes the Theory of constraints (TOC) as a philosophy that is used to implement significant improvement in management through focusing on a constraint that prevents a system from achieving a higher level of performance. The Theory of Constraints views the undertaken situation as a system with sub activities and tasks where the aim is not to solve single activities or task but to find solutions to improve the whole system.

Constraints are identified as activities that cause undesirable effects to occur in the system and are not caused by other activities. Undesirable effects are effects that prevent the system from performing at its best. The typical conflict in distribution that blocks the maximization of supply chain performance is a trade-off relation between ensuring the availability of products to the end consumer while simultaneously reducing the logistics costs of these distribution systems (Goldratt, 2007).

According to Marasco (2008) the supply chain is constrained by many factors which would negatively affects its operations and efficiency. Distribution function is constrained especially on the management of transportation due to the involvement of many supply chain partners which render the logistics management to be complex. This theory helps to explain the variable of Transportation and points out that all transport constraints must be evaluated so as to ensure there is efficiency in the transportation of goods. Organizations have to make a tradeoff between the lead time and costs since to achieve the shortest lead time the organization is likely to incur high costs.

2.1.2 Transaction cost theory

Transaction cost theory grew out of the theory of the firm, and recently it has been used to explain the interaction in organizations and how they should observe value for money in supply chain (Bartle and Korosec, 2007). Transaction costs are the price that market participants have to pay in order to reach an agreement, develop rules to implement this agreement, and establish the appropriate delivery system as part of the agreement. It explains why all the organization should work hard enough to enhance efficiency which in the supply chain. The distribution of product is usually a cost-intensive activity that requires thorough management in order to ensure unnecessary costs are not incurred.

Transaction costs are one part of the total cost of ownership (TCO) of a purchased good. In general, the TCO consist of the purchase price, costs for transport and logistics, transaction

costs, costs of capital lockup and depreciations, and risk costs (Carter & Hodgson,2006). Risks in terms of supply chain management relate to unpredictable outcomes of performance indicators and occur with certain probabilities. According to Paulraj and Chen (2007), the uncertainties in the supply chain can be eliminated or reduced to a significant level by application of information technology which eventually results to reduced transaction costs. Therefore organizations need to analyze all their cost in the supply chain in order to ensure they are managed effectively and to apply relevant technology to ensure cost efficiency in its operations.

This theory explains the variable of technology and it advocates for implementation of modern technology to reduce the transaction costs. Implementation of fleet management system therefore has an effect on the transaction costs. Potential savings could be achieved by implementing modern information systems (Grover, 2003).

2.1.3 Queue theory

According to Kendra (2015) queue theory is the mathematical study of waiting lines, or queues. Queue theory deals with the phenomena and processes that are permanent having the character of large scale and with the creation servicing requirements and operating time are exposed to random influences. Queue models can be used to determine the density of the terminal networks, the size and capacity of the warehouses, determine the types of handling equipment and others. By application of queue theory the process can be addressed and realized in the warehouse management, such as activities in the central warehouse, which deals with assembling of shipments from multiple suppliers and then distributing them according to a combination of specific customer requirements (Mesak, 2015).

This theory has been used to explain the variable of warehousing and how it affects the supply chain performance. In optimization of store management, organizations need to consider also synchronizing of technological, transport, store and service operations throughout the whole process of logistic chain in such a way that a natural flow of material from provider to consumer will be achieved the shortest possible way, in the shortest possible time in requested quality and quantity and with minimum cost (Klapita,2012)

2.1.4 System theory

Helou and Caddy (2006,) discuss that there are several stages or echelons that goods follow to reach the ultimate consumer or buyer. The goods follow a distribution channel comprised of many networks, processes, functions and individuals. Each stage performs different activities that will necessitate the flow of goods effectively. The distribution network is comprised of communication and information flow as well to achieve improved supply relationship (Meldi, 2010).

This theory is used to explain the variable of distribution structure. The Nation Media Group has functions that are able to work in collaboration with each other to be able to achieve the distribution process. Theses function/departments are: sales and marketing, procurement, transportation (Nation Courier Division), accounting and finance, Human Resource Department, Research and Development among others. This theory is used to explain the variable of distribution structure since the chain of distribution is a combination of many subsystem and therefore coordination and sharing of information is of essence in order to achieve the distribution system objectives (Lutfu, 2010). Every department and intermediary

in the supply chain need to work together in order to ensure high supply chain efficiency is achieved.

2.2 Conceptual Framework

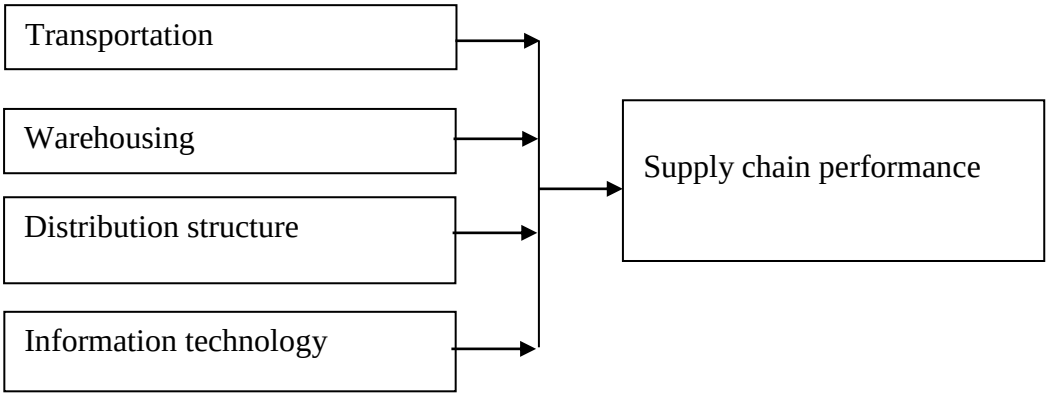

Figure: 1 Conceptual framework

3.0 RESEARCH METHODOLOGY

The study adopted a descriptive research design. The target population for the study was the five hundred (500) employees working in the print media section at Nation media Group. Simple random sampling was used to select 222 employees who participated in the study. Questionnaires were used as the main tools for collection primary data. Validity and reliability tests were also conducted. Data analysis analyzed was conducted using SPSS and findings presented using descriptive statistical tools like graphs and tables. Regression models were also used to analyze relationships and predictions among variables under the study.

4.0 DATA ANALYSIS AND INTERPRETATION

4.1 Influence of Transportation on the Supply chain performance

The study sought to assess the influence of distribution system on supply chain performance of print media industry in Kenya. This section presents findings to statements posed in this regard with responses given on a five-point likert scale (where 5 = very great extent 4 = Great extent; 3 = moderate extent; 2 = little extent; 1= very little extent). Table 1 shows the tabulated results on the influence of transportation on supply chain performance. Respondents indicated that the routing and scheduling of the vehicles is well managed with a mean of 3.8 which show majority agrees to a great extent. Respondents agreed to a great extent that the organizations have put in place proper controls to manage transportation costs with a mean of 4.09. The organization has purchased vehicles to facilitate easier delivery of products to customers with a mean of 3.02 moderately agreeing. The findings indicate that the organization has structured the Transportation in a such a way it supports the reverse logistics with a mean of 3.64. The respondents further indicate that the organization has not fully utilized the transportation systems to cover all regions of the country with a mean of 2.14.

These findings indicate the customer satisfaction along the supply chain is greatly dependent on the management of the distribution system. Having well managed routes and proper scheduling of vehicles will facilitate timely delivery. The scheduling and routing need also facilitate the reverse logistics within the supply chain. The organization further needs to invest on acquiring more transportation assets which will facilitate the organization in covering all regions in the country. The management of transportation cost is also a very important aspect which significantly affects the supply chain performance. Management of costs will result to better performance of the organizations in terms of its profitability and ensuring cost efficiency.

Table 1 Influence of transportation on supply chain performance

Transportation	Mean	Std. Dev
Route and schedules are well managed to ensure customer satisfaction	3.8	0.5682
There is enough controls to manage transportation costs	4.09	0.6134
The organization has purchased enough vehicles to facilitate distribution	3.02	1.0067
The routing is properly done to cover all regions in the country	1.93	0.5225
There is well-coordinated schedule to facilitate reverse logistics	3.64	0.5360
Transport systems covers all regions of the country	2.14	0.5678

4 2 Influence of warehousing on supply chain performance

The study sought to assess the influence of warehousing system on supply chain performance of print media industry in Kenya. This section presents findings to statements posed in this regard with responses given on a five-point likert scale (where 5 = very great extent 4 = Great extent; 3 = moderate extent; 2 = little extent; 1= very little extent).the findings are tabulated on table 2.

The respondents agree to a great extent (mean of 3.9) that warehouses have been strategically located to facilitate fast and efficient distribution operations. The location of a warehouse is very critical in ensuring that the process of distribution is effectively carried out countrywide. The findings are in agreement with Felix (2011) who considers a warehouse location as one of the main factors contributing to the success of warehouse operations. Warehouse need to be located in a place accessible by all the supply chain partners and this will enhance timely delivery as well as customer satisfaction.

Findings indicate that the receipt and dispatch of print materials have been well organized to enhance warehouse efficiency with majority agreeing to a great extent with the mean of 3.9 and 4.4 respectively. This shows the process of receipt and dispatch is likely to enhance the process of distribution and ensure timely delivery since the time taken loading and offloading is significantly reduced. The findings are in agreement with Andre & Riopel (2009)

argument that the main success factors of warehousing is managing the process of receipt and issue which results to timely satisfaction of customer orders.

Findings indicate that the warehouse is used as a value addition point where lots of activities are undertaken to improve the value of final product with a mean of 3.5 representing agreeing to 'great extent'.

Table 2 Influence of warehousing on supply chain performance

Warehousing	Mean	Standard Deviation
The warehouse is strategically located to facilitate efficient operations	3.9	0.72
The receipt process of materials from production line is well organized.	3.9	0.69
The dispatch process is easy and well-coordinated	4.4	0.79
The layout of warehouse is well designed to facilitate easy operations	2.4	0.63
The warehouse operations enhance value addition on the final products	3.5	0.76

4.3 Influence of information technology on supply chain performance

The findings indicate that the organization has embraced information technology in its distribution system to little extent (mean=1.9). This implies that the organization is still applying the manual systems in the distribution activities. This has high chances of making the organization less competitive compared to organizations that have embraced the use of information technology and automation. This is contrary to the study by Zylstra (2006) which indicated that organizations are now adapting to modern technology in distribution systems in order to reduce their overall cost of operations.

The study further indicates that the organization has enhanced automation of its processes within the organization with majority agreeing to a great extent (mean=3.9). This implies that the organization has focused on reducing the internal cost and enhancing internal efficiency. This is likely to reduce the cost of handling products, warehousing, loading and offloading. The aspect of physical distribution need to be factored in implementing new technology since it will result to cost reduction and better security of products by applying fleet management system. The finding are in agreement with Simchi (2010) who argues that Utilization of technology in the distribution system has been observed as an important competition factor since it enables unlimited location, time and even product types to the customers. Thus, the companies have had to change or improve their channel designs or structures related to the recent technological developments.

The findings further indicate that the employees have not been adequately trained on new technology and are also less appreciative of the new technology with a mean of 2.1 and 2.4 respectively. This implies that the employees are less aware of the technology and the failure to train them on its utilization is likely to result to resistance to change. The organization fails to appreciate the findings by Lutfu (2010) who indicates that the utilization of information technologies in the distribution of products has a tendency of reducing the costs by 16%. Ambrosino (2008) indicates that the training of employees on new technology is the easiest way of reducing resistance to technological change.

The findings indicate that the technology has contributed to reduction of distribution costs to a great extent with a mean of 3.5. This implies the technology is effective in ensuring efficiency in all the operations within the organization. The findings are in agreement with the findings by Lutfu (2010) who indicates that the utilization of information technologies in the distribution of products has a tendency of reducing the costs by 16%.

Table 3 Influence of information Technology on supply chain performance

Information Technology	Mean	Standard Deviation
The organization has fully embraced technology in the entire distribution chain	1.9	0.72
There is automation of operation within the organization	3.9	0.69
The employees have adequately trained on how to use the existing technology	2.1	0.79
The employees appreciate the application information technology in the organization	2.4	0.63
Technology has reduced total cost of distribution	3.5	0.76

4.5 Influence of distribution structure on supply chain performance

The findings of this study indicated that the structure of the distribution is less flexible with a mean of 1.9. This implies that the distribution structure is rigid and it's unable to facilitate fulfillment of changing demand. The cost of changing the distribution structure may be very high and this results to unsatisfied needs in the market. Findings are in agreement to Reichhart and Holweg (2007) study which considers distribution function as a function that shoulders responsibility for successful customer service while being under pressure to reduce costs and inventory. The inflexibility of the distribution structure is likely to result to unsatisfied needs while resulting to low cost of operations. But while the structure is very flexible the cost of distributions are likely to increase.

The findings further indicate that the distribution structure has defined goals and plans with a mean of 2.9 and 2.6 respectively. This indicate that the respondent moderately agree with the assertion that the organization has laid down the distribution goals and plans which act as a guide to distribution activities. The failure to have concrete and well defined goals and objectives that are understood by all employees is likely to affect the efficiency of the distribution of products since there is lack of common direction for all the employees in the

printing section. Kirchnoff (2009) indicates that with the complexity of the supply chain in modern organization there is a need for organization to lay down clear and unambiguous goals and objectives which will drive the operations of the organization.

The findings further indicate that the information flow within the distribution chain is less structured (mean=2.1) to facilitate efficient information flow in the chain. This is likely to result to bullwhip effects where the upstream demand is amplified as compared to the actual demand. Distortion of the information is likely to be more prone along the chain and this will have an adverse effect on the performance of the entire supply chain performance. The study also indicates that the top management support in the distribution process is not felt by large number of employees represented by a mean of 2.3. Therefore the lack of top management support on the distribution chain which is responsible with ensuring the customer demands are fulfilled on time is likely to impact on the performance of the entire supply chain. Heung (2008) indicates that as the supply chain becomes longer, the informational needs along the chain also increases to enhance the accuracy of demand forecasting. Accurate forecasting will result to the needs of the customers in the market being satisfied on time as well as elimination of adverse effects of bullwhip effects.

Table 4 Influence of distribution structure on supply chain performance

Distribution structure	Mean	Standard Deviation
The distribution structure is flexible	1.9	0.72
The organization has a distribution plan that guides its operation	2.9	0.69
The flow of information within the supply chain is well structured	2.1	0.79
Distribution system has well laid down goals and objectives	2.6	0.63
There is management support in achieving the distribution objectives	2.3	0.76

4.6 Correlation analysis

Pearson's product moment correlation analysis was applied in order to find the relationship between distribution systems and supply chain performance of Print Media Industry in Kenya The method was also chosen because a rating scale was used in the questionnaire. Table 5 below presents the Pearson correlations for the relationships between the procurement management variables and performance. From the findings, a positive correlation is seen between the each Distribution system variable and supply chain performance. The analysis of correlation results in Table 5 illustrates that between transportation and supply chain performance there is a positive coefficient 0.708, with p-value of 0.004. It indicates that the result is significant at α =5% and that if the Transportation increases it will have a positive impact on supply chain performance of Print Media industry. The correlation results between warehousing and supply chain performance of Print Media industry also indicates the same type of result where the correlation coefficient is 0.436 and a p-value of 0.007 which significant at α = 5%. The results also show that there is a positive association between

information technology and supply chain performance of Print Media industry where the correlation coefficient is 0.716, with a p-value of 0.002. The results further show that there is a positive association between distribution structure and supply chain performance of Print Media industry where the correlation coefficient is 0.798, with a p-value of 0.000.

Table 5: Correlation of the study variables

	Supply chain Performance	Transportation	Warehousing	Information technology	Distribution structure
Supply chain Performance	1				
Transport systems	.708**	1			
	.004				
Warehousing	.436**	.650**	1		
	.007	.000			
Information technology	.716**	.485**	.115	1	
	.002	.001	.474		
Distribution structure	.798**	.724**	.300	.692**	1
	.000	.000	.057	.000	

4.7 Multiple Regressions

To determine the relationship between the independent variables and the dependent variable and the respective strengths, the regression analysis produced coefficients of determination as presented in Table 6. As per the SPSS generated table below, the model equation would be ($Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$) becomes: where, Y=Supply Chain Performance of Print media industry; α = Constant; β_1 - β_4 = Beta coefficients; X1 = transportation; X_2 = warehousing; X_3 = information technology; X_4 = distribution structure and Є = Error term,

The established regression equation was thus:

$Y = 4.242 + 0.610\ X_1 + 0.535\ X_2 + 0.776\ X_3 + 0.832\ X_4 + 0.138$. A unit change in transportation would thus lead to a 0.610 increase in supply chain performance ceteris paribus; a unit change in distribution structure would lead to a 0.832 change in supply chain performance ceteris paribus and a unit change in warehousing would lead to a 0.535 change in supply chain performance ceteris paribus while a unit change in information technology to a 0.776 change in supply chain performance. This implies that among other factors, transportation, warehousing, information technology, and distribution structure are strong and significant determinants of supply chain performance of Print media industry. Therefore, the most significant factor was distribution structure.

Table 6 Multiple Regressions

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
(Constant)	4.242	.138		3.521	.005
Distribution structure	.832	.008	.599	4.611	.000
Information technology	.776	.005	.405	3.742	.002
Transportation	.610	.012	.353	3.011	.005
Warehousing	.535	.067	.321	2.809	.008

4.8 Coefficient of Determination

The coefficient of determination (R2) explains the extent to which changes in the dependent variable can be explained by the change in the independent variables. It shows the percentage of variation in the dependent variable and the four independent variables that were explained as represented by the R^2 With an adjusted R-squared.

Table 7 Model Goodness of Fit

R	R^2	Adjusted R^2	Std. Error of the Estimate
.865[a]	.748	.720	1.94285

The model shows that transportation, warehousing, information technology, and distribution structure collectively explain 71.6 percent of the variations in supply chain performance of Print media industry while 28.4 percent is explained by other factors not included in the model.

4.9 Analysis of Variance (ANOVA)

ANOVA statistics was conducted to determine the differences in the means of the dependent and independent variables to show whether a relationship exists between the two and has been show at table 8. According to Brymann and Cramer (2011), F-statistic test basically shows whether all the independent variables included in the model jointly influence the dependent variable. Based on the study results of the ANOVA Test or F-test in Table 8, obtained F-count (calculated) value was 141.564 greater the F-critical (table) value (2.456) with significance of 0.000. Since the significance level of 0.001< 0.05 we conclude that the set of independent variables affect the supply chain performance (Y-dependent variable) and this shows that the overall model was significant.

Table 8 Analysis of Variance (ANOVA)

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	402.892	4	100.723	141.564	.000[a]
Residual	135.888	191	.7115		
Total	538.780	195			

5.0 SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of key findings

The study sought to examine the influence of transportation on supply chain performance in Print media industry in Kenya. The study indicated that the organization has largely adopted the road transport as its primary means of transporting print materials to the customers. This is due to the accessibility of road transport and the wide coverage of the road network in the country. The study further indicated that routing and scheduling of transport activities is very important in ensuring the customer demands are met on time and eventually enhancing the supply chain performance. The study further indicated that the organization has not fully invested on the transportation assets and therefore resulting to less coverage on distribution of print materials in the country.

Further, the study sought to examine the influence of warehousing on supply chain performance in Print media industry in Kenya. The study revealed that the organization has strategically located its warehouses in order to facilitate easy and faster operations in receipt and dispatch of print materials for distribution. The study further noted that the warehouse plays a great role in value addition in the supply chain. The activities such as consolidation, bulk breaking and provision of time and place utility are very critical in ensuring value addition of the materials being delivered to the customers. The study has also indicated that the layout of the warehouse is very important in ensuring orders are fulfilled on time as well as efficient material handling.

The study sought to establish the influence of information technology on supply chain performance in Print media industry in Kenya. The study revealed that information technology has significantly resulted to enhanced supply chain performance in the organization. The study further reveals the need to adequately train its employees who have less knowledge on the application of modern technology. Technology can only be effective where the users are adequately trained on how to use the modern technology effectively.

Finally, the study sought to establish the influence of distribution structure on supply chain performance in Print media industry in Kenya. The distribution chain flexibility has been identified as a critical component that enables the fulfillment of the customer demands along the supply chain. The study further reveals that the distribution structure of the organization fails efficient management of information flow within the supply chain. This is likely to negatively affect the supply chain performance due to bull whip effects which amplifies the upstream demand and may result to excessive supply of printing materials to the market. The study further indicates that there is collaboration of distribution chain partners and therefore ensuring that the needs of customers are met on time.

5.3 Conclusions

From the foregoing findings, the study concludes that there is a positive relationship between transportation and supply chain performance in Print media industry in Kenya. It is also concluded that warehousing has a positive relationship with supply chain performance in Print media industry in Kenya. The strategic location of warehouses in places accessible by all partners in the chain of distribution is very important in ensuring on time delivery of the product to ultimate consumers. Further it is concluded that information technology and supply chain performance have a positive relationship. Application of information technology has been identified as a very critical aspect that facilitates reduction of operation costs, on

time delivery and customer satisfaction along the supply chain. Finally be deduced from the findings that distribution structure has a direct impact on the supply chain performance in Print media industry in Kenya. Efficient distribution structure has the capability of enhancing products quality, delivery time, customer satisfactions and reduced lead time in the supply chain.

5.4 Recommendations

Transportation is an important aspect in managing and enhancing supply chain efficiency. Organizations need to focus on the means of reducing the transportation cost while at same time ensuring that the products are delivered to the potential customers at the right time and at the right place. To be able to manage the transportation costs organizations need to continuously invest on having modern infrastructure and investing in modern technology in transporting the materials needed by the customers.

Warehousing has a great impact on the performance of supply chain and therefore organizations should work towards strengthening the warehousing infrastructure. The warehouse should be located in strategic locations where it facilitates easy receipt and acts as a distribution center for key print materials.

Information technology is an emerging trend which is changing the traditional ways of distributing materials from the organization to the customers. The organization should invest more resources on technological innovations which will enhance the distribution process and eventually the supply chain management. Organization should implement use of fleet management system which helps in monitoring the movement of products from the organization store to the customers.

Distribution structure for the organization should be flexible to be able to manage the demand uncertainties in the market. Very rigid system is likely to be costly for the organization in long term due to its inability to cope with changing needs of the customers. The customer needs are drastically changing every day and therefore the distribution structure should be able to handle any changing need of the customer. The organizations need to further enhance the level of collaborations between the supply chain partners.

REFERENCES

Ambrosino, D. (2008). Distribution network design: New problems and related models. *European Journal of Operational Research*, 165(3):610-624.

Andre, L. and Riopel, D., (2009) *Logistics Systems: Design and Optimization*, Springer, New York.

Bartle R. and Ma, J.(2001) , *Transaction Cost and Public Budgeting, Evolving Theories of Public Budgeting*, Amsterdam: Elsevier Science Ltd.,157-181.

Blanchard, D., 2010. *Supply chain management: best practices* (2nd ed), John Wiley & Sons, Inc., Hoboken, New Jersey.

Carter, R. and Hodgson, G. (2006), The impact of empirical tests of transaction cost economics on the debate on the nature of the firm, *Strategic Management Journal*, 27(1)461-476

Chang, Y.H. (2008) *Logistical Management*. Hwa-Tai Bookstore Ltd., Taiwan.

Cramer, D. & Howitt, D. & (2005). Introduction to Research Methods in Psychology, *Qualitative Social Research*, 9(1)

Felix T.S (2011), Improving the productivity of order picking of a manual-pick and multilevel rack distribution warehouse through the implementation of class-based storage, *Expert Systems with Applications*, 38(3): 2686–2700.

Frazelle,E . (2011), *World-class warehousing and material handling*. McGraw-Hill, New York

Goldratt, E. M., Schragenheim, E. and Ptak C. A. (2007), *Theory of constraint in supply chain*, North River Press, Croton-on-Hudson, NY-USA.

Gong Y., (2008), A polling-based dynamic order picking system for online retailers. *IIE Transactions* 40(3): 1070–1082

Graeml, A. R., & Peinado, J. (2011).Measuring Logistics Performance: the Effectiveness of Mmog/Le as Perceived by Suppliers in the Automotive Industry. *Journal of Operations and Supply Chain Management*, 4(1): 1-12

Grover, V. (2003) "Transaction cost framework in operations and supply chain management research: theory and measurement," *Journal of Operations Management*, 21(1): 457-473.

Hakansson, H. & Persson, G. (2008), Supply Chain Management: The Logic of Supply Chains and Networks, *The International Journal of Logistics Management*, 5(1): 11-26.

Helou, M., & Caddy N. (2006) Definition Problems and a General Systems Theory Perspectivein Supply Chain Management. *Problems and Perspectives in Management*. 4(4):156-173

Heung (2006), A performance evaluation model for order picking warehouse design, *Computers & Industrial Engineering*, 51(2): 335-342.

John, B. (2008) Moving Places: The Geography of Warehousing in the US, Journal of Transport Geography 16 (2): 379-387.

Keebler, J.S. & Plank, R.E. (2009).Logistics performance measurement in the supply chain: benchmarking, *International Journal of logistics* 16 (6), 785-798

Kendra, M. (2015, December) *Optimization of transport and logistics processes by simulation,* 3rd international science, technology and engineering conference, Dubai, United Arab Emirates (UAE). 21(1):886-892.

Kinyanjui, L. (2014) Coverage of information technology on print media, *unpublished MBA thesis*, University of Nairobi

Kirchhoff, S. (2010). *The U.S. Newspaper Industry in Transition Analyst in Industrial Organization and Business*, Retrieved from http://www.fas.org/sgp/crs/misc/R40700.pdf

Klapita, V. (2012) Processes solution in the warehouse by the queueing theory application. In: Horizons of railway transport, *Scientific papers*, 3(1): 64-69

Koech, J. (2016), Factors affecting low distribution of newspapers in the media industry; a case study of Nation Media Group, *European Journal of Business and Strategic Management*, 1(3):25 - 41

Krumwiede, D., (2012) A model for reverse logistics entry by third-party providers, Science Direct, 30(1):325-333.

Lutfu, S.(2010) Distribution Network and the Role of Information and Communication Technologies (ICT), *Canadian social science*, 6(4): 01-11

Marasco, A. (2008) "Third-party logistics: A literature review". *International Journal of Production Economics*, 11(3):127-147.

Meindl, P (2010). *A Supply Chain Management, strategy, planning and operation*. (4th ed), New Jersey: Pearson.

Mugenda, O.M & Mugenda, A.G (2008), *Research Methods, Quantitative and Qualitative Approaches*, Acts Press, Nairobi.

Mwaura, A.(2016) Green distribution practices and competitiveness of food manufacturing firms in Kenya, *International Journal of Economics*, Commerce and Management, 9(3):189-207

Ndana, R. (2012), Factors influencing salesforce efficiencies in media companies in Kenya , a case of Nation media group, *unpublished Thesis ,Kenyatta University*.

Paulraj, A. and Chen, I. (2007) Environmental uncertainties in strategic supply management, *journal of supply chain management*, 43(3): 29-42

Rahman, S. (2013) Theory of constraints: A review of philosophy and its applications, *international journal of operation and production management* 18(4):336-355

Simchi D., (2010). *Designing and Managing the Supply Chain*. McGraw-Hill, USA

Zylstra, K (2006). *A Lean Distribution*. New Jersey: John Wiley & Sons Inc.