International Conference on Advanced Research in Supply Chain Management

SupplyChain Management

December 17_19, 2021

Berlin, Germany

Effect of Steering Supply Chain Processes Outsourcing on the Performance of Manufacturing Firms in Kenya

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Abstract

This study sought to examine the effect of steering supply chain processes outsourcing on the performance of manufacturing firms in Kenya. This study adopted a cross sectional survey research design. The population for this study was all the manufacturing firms in Kenya. The target population for this study was all the manufacturing firms operating in Nairobi's Industrial Area. The sampling frame for this study was all the manufacturing firms operating in Nairobi's industrial area. Records indicate that there were 358 firms operating in this area. Simple random sampling was adopted for this study in selecting the respondents. With respect to the effect on the performance improvement of the firm planning outsourcing has the most causal effect, followed by budgeting, monitoring and finally the outsourcing of coordination has the least effect on the improvement of the performance. This study concludes that the outsourcing of steering processes has a significant effect on the improvement of supply chain performance of manufacturing firms in Kenya.

Keywords: co-ordination, budgeting, monitoring, planning, quality

1. Introduction

Forty four percent of firms globally have integrated supply chain processes outsourcing into their operations (Eurostat, 2012). Twenty years ago, outsourcing was a world comprised only of those bold early adopters. Few companies dared to venture into this new world during its naissance. Now, sourcing, which includes outsourcing, is a well-established instrument through which companies can optimize their processes. The market, both on the sell and the buy side, has matured. Discussions revolve around the right sourcing mix, with captive shared service centers, multi-vendor outsourcing, offshore, near shore and onshore, cloud computing and centers of excellence as the main ingredients.

The challenge is not only to find the right mix, but to identify one that is flexible so that changing (market) conditions can be reflected in the right sourcing mix (KPMG, 2014). In Africa supply chain processes outsourcing is on an upward trend due to the following drivers for this model include: expanding companies that require additional resources but cannot afford or are not willing to invest in their acquisition; the pursuit and attraction of new talent; the reduction of operating costs; and carbon footprint reduction. Supply chain processes outsourcing has meant that capital investments in this model are minimal. Over the past three years, there has been an increase in organisations' interest in outsourcing of operations to support various back-office functions and processes in areas such as IT, HR, and procurement. Based on KPMG (2012) observations in this market, these three functions have always been the top three in terms of outsourcing services uptake.

The Kleijn and Rorink (2012) model states that organisations try to understand changes in time to adjust products, structures, processes and goals in an effective way. There can be several reasons for this: to encourage internal entrepreneurship and flexibility, to be able to launch new profitable products on the market with a short life cycle and the will to work in a customer focused and product directed way. Kleijn and Rorink (2012) identify five categories of supply chain/business processes. These are primary processes, secondary processes, steering processes, decision processes and communication processes.

The steering/supporting processes, also called the management processes, correspond to the definition of an organization's policy and a strategy and to the steering of the actions taken to achieve the organization's goals. Management processes are the methods that aid the structuring, investigation, analysis, decision-making and communication of business issues (Lawrence 1997). The GSCF framework, which focuses mostly on the management/steering processes of the supply chain, identifies eight key processes that form the foundation for steering supply chain processes. The eight key business processes are; customer relationship management, customer service management, demand management, order fulfillment, manufacturing flow management, supplier relationship management, product development and commercialization and return management (Lambert, Cooper & Pagh, 1998). Henri Fayol defined five functions of management for the management component and these are still seen as relevant to organizations today. These five functions focus on the relationship between personnel and its management and they provide points of reference so that problems can be solved in a creative manner. Fayol broke down the management functions into: planning, organizing, staffing, controlling, directing and coordination (Van Vliet, 2011). For

purposes of this study management functions have been taken to include planning, coordination, budgeting and monitoring.

Performance crosses company boundaries since it includes basic materials, components, subassemblies and finished products, and distribution through various channels to the end customer. It also crosses traditional functional organization lines such as procurement, manufacturing, distribution, marketing & sales, and research & development. A number of performance measures are expressly designed to support and monitor performance improvements across the supply chain and illustrate the shortcomings of several common metrics exist (Hausman, 2012). Performance indicators are classified in to two clearly defined but closely interrelated categories: functional indicators and end-to-end supply chain indicators. One measures the effectiveness of the function and second measures how well these functions are coordinated. While they are measured separately, they must not be considered in isolation (Akyuz &Erman, 2010).

Manufacturing takes turns under all types of economic systems. In a free market economy, manufacturing is usually directed toward the mass production of products for sale to consumers at a profit (Friedman, 2006). In a collectivist economy, manufacturing is more frequently directed by the state to supply a centrally planned economy (Keith, 1976). In mixed market economies, manufacturing occurs under some degree of government regulation. Modern manufacturing includes all intermediate processes required for the production and integration of a product's components (Kreiger & Pierce, 2013).

1.1 Statement of the Problem

The manufacturing sector contributes 70% Kenya's GDP. Its significance to Kenya's economy and growth cannot be overlooked (KIPPRA, 2013). Despite the complexity and length of manufacturing firms' supply chains, continuous improvement (kaizen) in their performance is integral to the sustainability and overall performance of the firm in a competitive environment. However, this desired optimality in performance is seldom attained (Sillanpää & Kess, 2012). Little (2010) used the SPE index to evaluate the performance of manufacturing firms globally. With a possible maximum score of 1.750 based on the incorporation of supply chain best practices, the best firm globally scored 1.065 with an average score of all firms at 0.760, with those in the North America, Far East and Europe outperforming their compatriots in Africa and Latin America.

In the developing economy of Kenya studies have primarily on focused on the benefits of outsourcing as well as factors influencing the adoption of outsourcing (Oduk, 2013; Mogire & Gakure, 2014; Gichuru, 2012). These studies have in most cases adopted a case study approach (Maku & Iravo, 2013; Kilasi, Juma, & Mathooko, 2013) or a descriptive research design (Mukiri, 2011; Njambi & Katuse, 2013). A descriptive research design presents the possibility of error and subjectivity since questions are restricting and prescriptive (Bryman & Bell, 2011) Therefore this study sought to examine the effect of steering supply chain processes outsourcing on the performance of manufacturing firms in Kenya.

1.2 Objectives of the Study

1.2.1 General Objective

To examine the effect of steering supply chain processes outsourcing on the performance of manufacturing firms in Kenya.

1.2.2 Specific Objectives

1. To determine the effect of planning outsourcing on the performance of manufacturing firms in Kenya.
2. To establish the effect of co-ordination outsourcing on the performance of manufacturing firms in Kenya.
3. To examine the effect of budgeting outsourcing on the performance of manufacturing firms in Kenya.
4. To determine the effect of monitoring outsourcing on the performance of manufacturing firms in Kenya.

2. Theoretical Literature Review

The GSCF framework, which focuses mostly on the management/steering processes of the supply chain, identifies eight key processes that form the foundation for supply chain management The eight key business processes are; customer relationship management, customer service management, demand management, order fulfillment, manufacturing flow management, supplier relationship management, product development and commercialization and return management (Lambert, Cooper & Pagh,1998). Each process runs cross-functionally, cutting through functional silos within each organization. Functional silos are defined, for example, as marketing, research and development, finance, production, purchasing, and logistics.

Of the eight processes, customer relationship management and supplier relationship management provide a crucial link to external companies within the chain. Although the processes should be considered by all companies in each supply chain, the significance of each process may differ some companies may need to link just one key process while for other companies it is appropriate to link multiple processes (Croxton, García-Dastugue, Lambert & Rogers,2001). The main criticism of the GSCF framework is that it is broad in scope. The large span could create implementation challenges, especially as it also recommends that organizations shift from functional orientation to processes orientation/management (Vinuelas & Githens, 2010). This model is of importance to this study since the eight functions it identifies as core to SCM all require the four steering activities this study looks into. That is planning coordination, budgeting and monitoring.

2.1 Empirical Literature Review

Hou (2013) conducted a study titled an examination of facilities management service outsourcing relationships. The objective of the study was to examine the factors affecting facilities management outsourcing relationships. A qualitative research approach has been adopted for this study. Findings reveal that trust, openness, flexibility, coordination, cooperation and integration are significantly reflected in the interviews with facilities management managers. The manifestation of relationship factors is correlated with each

other. It is found that trust, openness and flexibility manifest themselves through the process of coordination, cooperation and integration.

Ogungbemi (2010) conducted a study titled growth in outsourcing facilities management services: United Kingdom and Nigeria. The main objective of the research was to identify the growth, importance and future trend of outsourcing with reference to the UK and Nigerian markets. It was found out that outsourcing is undertaken to enable them concentrate on core business. It is concluded that facilities management outsourcing leads to there is an increased interaction between sectors. Such interrelationship and dependence creates a stronger core for the economy which will promote the integration of different sectors and services leading to better delivery and economies of scale.

Maku and Iravo (2013) conducted a study titled the effects of outsourcing on organizational performance at Delmonte Kenya Limited. This research discussed the effects of outsourcing of noncore steering activities such as security on organizational performance at Delmonte Kenya limited. The target population of the study was 250 employees who are in management levels in the company. A sample size of 70 employees was used in the study. Random and systematic sampling was used in selecting the respondents. The data was analyzed using descriptive data analysis through computer based SPSS. The finding shows that outsourcing has enabled the company to have greater access to modern technology and expertise. Statistically the main findings of the study were that outsourcing has helped improve the organizations performance. The study recommends that the organizations should outsource more if not all their noncore activities to the as a major strategy of remaining competitive.

2.2 Conceptual Framework

Scholars argue that a conceptual or theoretical framework always underlies a research study (Fraenkel & Wallen, 2000). From the analysis of the literature presented in this paper the conceptual framework of this study can be presented as shown in Figure 1.

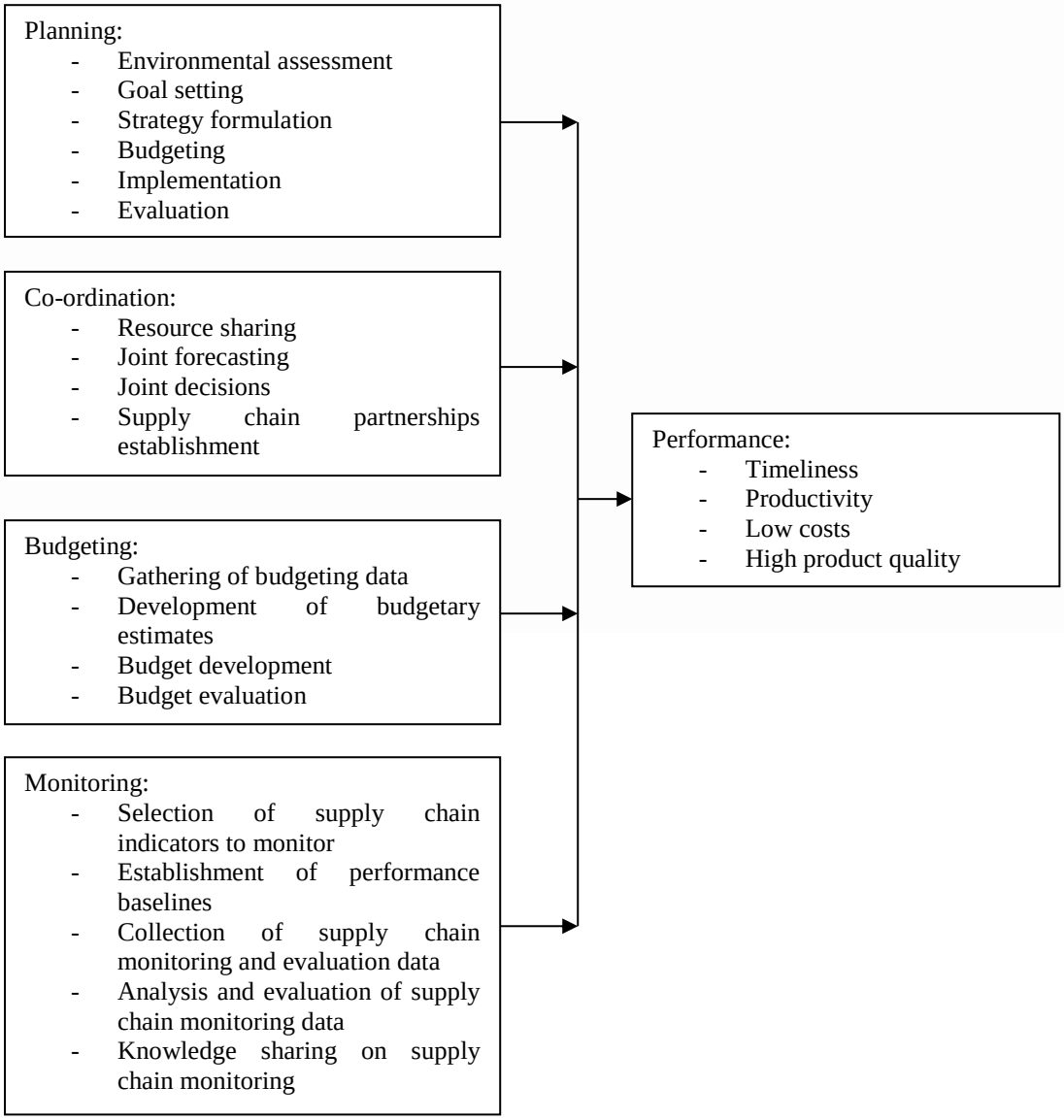

Figure 1. Conceptual Framework

3. Research Methodology

This study adopted a cross sectional survey research design. A cross sectional survey is oriented towards the determination of the status of a given phenomenon at given point in time rather than towards the isolation of causative factors accounting for its existence (Singh, 2006). Cross sectional survey research design was chosen by the study since the aim of the study is to examine the existence and magnitude of causal effects of independent variables upon a dependent variable of interest at a given point in time for manufacturing firms in Kenya.

The population for this study was all the manufacturing firms in Kenya. The target population for this study was all the manufacturing firms operating in Nairobi's Industrial Area. This target population was chosen for the study since due to the fact that Nairobi's

industrial Area has the highest concentration of manufacturing firms in Kenya (KNBS, 2013). This high concentration of firms, whether in direct or indirect competition, in a given locality makes them highly adoptive of and adaptive to innovations in order to improve their relative overall performance (Strange, 2011). Therefore these firms in Nairobi's industrial area are most likely to have adopted the most recent innovations and trends in supply chain management such as supply chain processes outsourcing and hence provide a suitable population for the study.

The sampling frame for this study was all the manufacturing firms operating in Nairobi's industrial area. Records indicate that there were 358 firms operating in these area (KNBS, 2013). Simple random sampling was adopted for this study in selecting the respondents. The sample captured 30% of members of the sampling frame to comprise the sample. Gall, Gall and Borg (2003) advocate that at least 30% of the total population is a representative sample. KNBS (2013) indicates that there are 358 manufacturing firms in this area. This is the highest concentration in any geographical zoning in Kenya. The sample for the study was obtained as shown in Table 1.

Table 1. Sample Size

Industry	**Total Number of Firms**	**Sample size (30%)**
Human and animal food products	88	26
Tobacco, alcohol and soft drinks	26	8
Textiles, leather products and accessories	62	19
Wood, wooden products, rubber and paper products	37	11
Petroleum products, chemicals and fertilizers	20	6
Glass and Plastics	15	5
Detergents, pesticides and pharmaceutical products	19	6
Cement, concrete, iron and steel products	34	10
Electronics and electric products	19	6
Motor vehicles, motor vehicle parts and other machinery	38	11
Total	**358**	**108**

This research utilized a structured questionnaire to collect data. The questionnaire was divided into six sections. The first section focused on personal and professional aspects of the respondents while the other five sections each focused on a single research objective. In relation to the data collection procedure the study developed a timetable for data collection and scheduled appointments with the respondents, specifying in detail the date, time and place where the data was to be collected. The unit of analysis in this study is the manufacturing firm. Since the study is majorly based on steering supply chain processes outsourcing effect on performance, the target respondents were the officers in charge of supply chain management or its equivalent. The study adopted descriptive data analysis and inferential data analysis. The study used SPSS version 20 and MS Excel to facilitate the analysis of data.

4. Research Findings and Discussion

Out of the administered 108 questionnaires, 104 were returned fully completed while 4 were retuned either incomplete or spoilt in a manner that rendered them incomprehensible and incapable of analysis. The incomplete questionnaires were discarded from the analysis process while the completed questionnaires were taken for analysis. These 104 questionnaires represented a response rate of 96% and a non response rate of 4%. This response was deemed adequate for further analysis in line with the recommendations of Fan & Yan (2010) who state that a response rate of 80% and above is adequate for further analysis in face to face administered questionnaires, such as the one used in this study.

The questionnaire was pilot tested on 10% of the members of the sampling frame making a total of 36 firms. A Cronbach alpha test was conducted to check the reliability of the responses from the pilot test. The pilot test results revealed that the data collection instrument was reliable. All the responses recorded a Cronbach alpha result greater than the minimum 0.800. Brown (2014) states that Cronbach alpha of at least 0.800 implies there is adequate internal consistency reliability of the instrument. The study used the expert opinion and peer review of the two supervisors and four fellow students respectively who confirmed that the questionnaire was indeed valid in terms of construct discriminant and content validity. Construct validity is used to measure whether the operational definition of variables actually reflect the true theoretical meaning of a concept. Discriminant validity is the degree to which scores on a scale do not correlate with the scores on the other scales defined to measure different constructs. Content validity confirms whether the theoretical dimensions emerge as conceptualized (Orucho, 2014).

The respondents were required to provide numerical responses (in appropriate units) for each year over a period of five years on the total volume of each activity and numerical responses on the volume of each activity that was outsourced. From these five year responses a simple arithmetic mean was calculated to determine the average volume of the total of each activity and its corresponding outsourced volume. The latter was expressed as a percentage of the former to determine the level to which the activity in question was outsourced. The computed percentages were then categorized into five categories as follows: 0%-20%, 21%-40%, 41%-60%, 61%-80% and 81%-100%. For more effective and efficient analysis each of the categories was assigned a score of 1,2,3,4 and 5 respectively. The general level of outsourcing adoption was determined by calculating the means and standard deviation for the various statements as per the scores and tabulated**.**

4.1 Planning

Findings from the study revealed that most planning activities were conducted in-house with an exception of environmental assessment as this parameter had the highest mean score of 4.45 with the rest of the parameters having less mean scores. The study also revealed that most organization conducted self-evaluation for benchmarking purposes as this parameter had a mean score of 2.82. The results from the environmental assessment were used in in-house goal setting and strategy formulation as this parameters had low mean scores of 2.8 and 2.9. These findings are shown in Table 2

Table 2. Outsourcing of Planning

	N	Minimum	Maximum	Mean	Std. Deviation
Environmental assessment	104	1	5	4.45	**1.114**
Goal/objective setting	104	1	5	2.86	**1.118**
Strategy formulation	104	1	5	2.93	**1.117**
Budgeting	103	1	5	2.79	**1.081**
Implementation	104	1	5	2.72	**1.019**
Evaluation	104	1	5	2.82	**1.059**
Valid N (list wise)	**103**				

Relative to the outsourcing of planning, 73% of the respondents indicated that it would lead to timeliness due to a better understanding of the environment. 69% of the respondents indicated that the outsourcing of planning would lead to increased productivity due to appropriate plans. Outsourcing of planning was said would lead to low costs according to 86% of the respondents. They posit that appropriate assessment would lead to the formulation of appropriate strategies and budgets hence resulting in overall efficiency in the utilization of available resources. 62% of the respondents indicated that outsourcing of the planning process would lead to high product quality. These findings are shown in Figure 2.

These findings reflect those of Rajee, Surab and Hamed (2013) who found out that that planning outsourcing is beneficial to organizational performance, and enhances firm's financial economies and performance in the market place. These findings are also similar to those of Ohnemus (2009) who found that planning outsourcing has a considerably positive and significant effect on firm-level productivity. It allows managers to focus on the core business of the firm. Moreover, the qualified and experienced work of the service provider and the cost savings finally result in an improved business performance. These findings also confirm those Awino and Mutua (2014) who established that there is a significant relationship between planning outsourcing and overall firm performance made up of; profitability, cost efficiency, firm image, customer satisfaction and process efficiency. This study concludes that the outsourcing of planning leads to the improvement of firm performance.

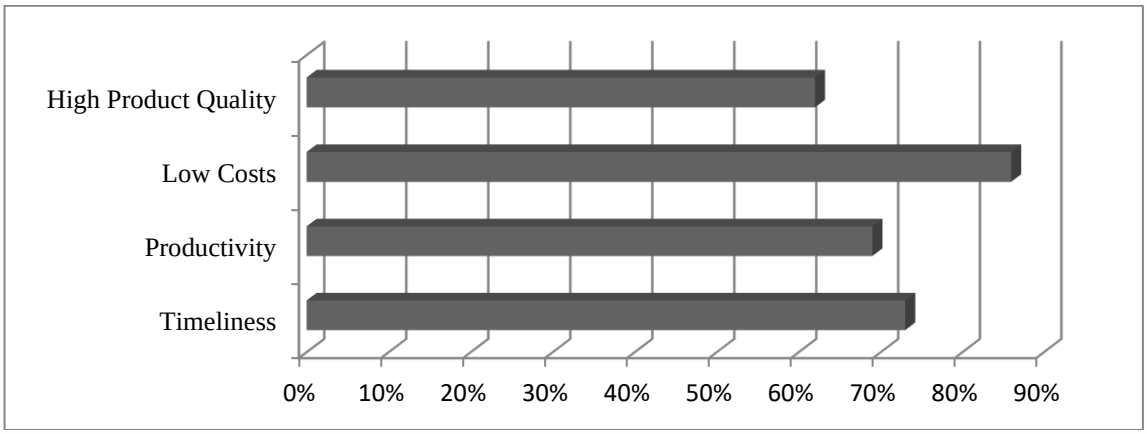

Figure 2. Outsourcing of Planning

4.2 Coordination activities

The study revealed that organizations in the manufacturing sector outsourced resource sharing as the parameter had the highest mean score of 4.4 and a standard deviation of 0.857. The study ascertained that the rest of processes were outsourced to a low extent as the parameters ranged from 2.21 – 1.99 with conditions being the least outsourced. This is indicative that most manufacturing companies do not outsource their major manufacturing activities. These findings are shown in Table 3.

Table 3. Coordination Activities

	N	Minimum	Maximum	Mean	Std. Deviation
Resource Sharing	104	2	5	4.44	.857
Joint forecasting	104	1	3	2.21	.552
Joint decisions	104	1	4	2.19	.687
Supply chain partnerships establishment	104	1	5	1.99	.782
Valid N (list wise)	**104**				

In relation to the outsourcing of coordination, 32%, 26% 51% and 62% of the respondents indicated that its outsourcing lead to timeliness, increase in productivity, low cost and high product quality respectively. These findings are represented in Table 4. These findings contradict those of Strange (2013) who found out that coordination outsourcing enables the firm to concentrate on core competencies, gain access to expertise and competencies not available in-house, and to take advantage of economies of scale and/or scope provided by external suppliers. These findings also contradict Berlingieri (2014) who found out that three main benefits may affect the firm's decision to contract out its coordination; namely: wage cost savings, the volatility of output demand, and the external provider's specialized skills. This study concludes that outsourcing of coordination does not lead to the improvement of performance.

Table 4. Coordination Outsourcing

Performance Dimension	Frequency	Percentage (%)
Timeliness	33	32%
Productivity	27	26%
Low costs	53	51%
High product quality	64	62%

4.3 Budgeting process

The parameter with the highest mean score in budgeting outsourcing was budget development with a mean score of 3.18. Budget evaluation and development of budgetary estimates had mean scores of 2.98 and 2.9 respectively. These findings reveal that most manufacturing companies prefer to carry out budgeting functions in house. This is evident from the mean scores of less than 3.0. These findings are shown in Table 5.

Table 5. Budgeting Activities

	N	Minimum	Maximum	Mean	Std. Deviation
Gathering of budgeting data	104	1	5	3.02	**1.140**
Development of budgetary Estimates	104	1	5	2.90	**1.102**
Budget development	104	1	5	3.18	**1.172**
Budget Evaluation	104	1	5	2.98	**1.254**
Valid N (list wise)	**104**				

In relation to budgeting only 16% of the respondents indicated that it would lead to timeliness. 71% of the respondents indicated that its outsourcing would lead to increase in productivity. 92% indicated that its outsourcing would lead to reduced costs since the costs associated with it will have been transferred to the outsourcing agent. 84% of the respondents indicated that outsourcing of the budgeting process would lead to high quality data. These findings are represented in Table 6.

These findings confirm those of Kamyabi and Devi (2011) who found out that its outsourcing has a positive impact on firm performance. These findings to an extent confirm those of Bersin (2005) who found out that outsourcing of budgeting led to reduction of costs in three areas: implementation costs, operational costs and technical staff costs. It was also found to free up resources in the outsourcing organization, increase business effectiveness, facilitate the reallocation of resources and provides an opportunity for business to evaluate new technology and approaches for greater efficiency and effectiveness. These findings mirror those of accounting and audit firm Deloitte (2012) who found out that outsourcing of the budget process leads to improved business insight, budget standardisation and the introduction of a single management performance metric package and a reduction in time spent building budgets, and freeing time for analysis. This study concludes that outsourcing of the budget process leads to improvement of performance.

Table 6. Budget Process Outsourcing

Performance Dimension	Frequency	Percentage (%)
Timeliness	17	16%
Productivity	74	71%
Low costs	96	92%
High product quality	87	84%

4.4 Monitoring activities

The study found out that most organizations outsourced the collection of supply chain monitoring and evaluation data as this parameter had the highest mean score of 3.64. The data collected is then used in-house for establishing performance baseline as this parameter had a mean score of 2.6. The study also established that Knowledge sharing on supply chain monitoring in the manufacturing industry was not popular as this parameter had the lowest mean score of 2.4. These findings are shown in Table 7.

Table 7. Monitoring Activities

	N	Minimum	Maximum	Mean	Std. Deviation
Selection of supply chain indicators to monitor	104	1	5	2.60	**1.057**
Establishment of performance baselines	104	1	5	2.62	**1.091**
Collection of supply chain monitoring and evaluation data	104	1	5	3.64	**1.088**
Analysis and evaluation of supply chain monitoring data	104	1	5	2.71	**1.094**
Knowledge sharing on supply chain monitoring	104	1	5	2.47	**1.033**
Valid N (list wise)	**104**				

In relation to monitoring 51% of the respondents indicated that its outsourcing would lead to timeliness. Only 16% of the respondents indicated that its outsourcing would lead to increase in productivity. 14% of the respondents indicated that the outsourcing of selection of supply chain indicators to monitor would lead to low costs. 48% of the respondents indicated its outsourcing would lead to high product quality. These findings are shown in Table 8. These findings confirm those of Jiang, Stanford, and Xie (2012) and Rashed, Azeem and Halim (2010) who found that supply chain monitoring outsourcing agents were lax when monitoring their own paying clients and it does not lead to operational performance but contrary to those of Lapide (2000) who found that outsourced monitoring is important to directly controlling behavior and indirectly to performance, outsourced monitoring will go a long way toward keeping a company on track towards achieving its supply chain improvement objectives. This study concludes that outsourcing of supply chain monitoring does not lead to the improvement of performance.

Table 8. Outsourcing of Monitoring

Performance Dimension	Frequency	Percentage (%)
Timeliness	53	51%
Productivity	16	16%
Low costs	15	14%
High product quality	50	48%

4.5 Chi Square Test

In determining the significance of the association between the independent variables steering supply chain processes outsourcing and the dependent variable performance, a chi-square test was conducted. Table 9 indicates that, 77 organizations indicated that they outsourced their steering functions at the various levels thus gaining a performance improvement of less than 50%. It was observed that twenty seven (27) organizations that outsourced their steering supply chain processes at the various levels specified and got greater than 50% performance improvement.

Table 9. Cross Tabulation between Steering Supply Chain Processes Outsourcing and Performance

Steering Functions * Performance Cross Tabulation					
	Outsourced		Performance		**Total**
			1%-50%	51%-100%	
Steering Functions	0%-20%	Count	18	5	**23**
		Expected Count	17	6	**23**
	21%-40%	Count	9	3	**12**
		Expected Count	9	3	**12**
	41%-60%	Count	26	9	**35**
		Expected Count	26	9	**35**
	61%-80%	Count	19	6	**25**
		Expected Count	19	6	**25**
	81%-100%	Count	5	4	**9**
		Expected Count	2	7	**9**
Total		Count	77	27	**104**
		Expected Count	**77**	**27**	**104**

Table 10 indicates that the calculated value of the Chi-Square statistic was 1.869 at 4 degrees of freedom. Because the significance level (0.0005) is less than the threshold of 0.05, it can be clearly observed that there is a significant association between steering supply chain processes outsourcing and performance.

Table 10. Chi-Square Tests between Steering Supply Chain Processes Outsourcing and Performance

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.869803	4	0.009
Likelihood Ratio	1.70846	4	0.009
Linear-by-Linear Association	0.757937	1	0.004
N of Valid Cases	104		
A	2 cells (20.0%) have expected count less than 5. The minimum expected count is 2.34.		

The association was strong with a contingency value of 0.83 which was statically significance sig=0.005 as shown by Table 11.

Table 11. Symmetric Measures between Steering Supply Chain Processes Outsourcing and Performance

Symmetric Measures			
		Value	**Approx. Sig.**
Nominal by Nominal	Contingency Coefficient	0.83	**0.0068**
N of Valid Cases		104	
A	**Not assuming the null hypothesis.**		
B	**Using the asymptotic standard error assuming the null hypothesis.**		

4.6 Pearson's correlation

A simple Pearson's correlation was used to confirm the results of the chi square, according. All the tested variables were significant as all of them had a p value of 0.000. From the correlation analysis, it can be noted that steering supply processes outsourcing has a

relatively strong positive correlation with performance as the r value was 0.558 as shown in Table 12.

Table 12. Correlation between Steering Processes Outsourcing and Performance

Correlations			
		Performance	Steering processes
Performance	Pearson Correlation	1.000	0.558
	Sig. (2-tailed)		0.000
	N	95.000	95.000
Steering processes	Pearson Correlation	0.558	1.000
	Sig. (2-tailed)	0.000	
	N	95.000	103.000
**	Correlation is significant at the 0.01 level (2-tailed).		

4.7 Regression Analysis between Steering Supply Chain Processes Outsourcing and Performance

The objective of this study tried to establish whether steering supply chain processes outsourcing had a significant effect on the performance of manufacturing firms in Kenya. This objective was tested by regressing steering supply chain processes outsourcing on performance guided by the equation $Y= \beta_0+\beta_1X$ where X represented steering processes outsourcing and Y denoted Performance. The results of the regression are presented in Table 13.

Table 13 displays R (the correlation between the observed and predicted values of the dependent variable), which is .557. This is an average relationship between the observed and predicted values of the dependent variable. The table also displays R squared which is the proportion of variation in the dependent variable explained by the regression model. In this case, it is .511. This means that 51% of the variation performance (dependent variable) can be explained from outsourcing steering supply chain processes. The value of the standard error (sy/x) is shown in the output as .355 The regression was a fair fit describing 51% of the variance in steering processes outsourcing $R^2adj=50.3\%$ this indicates only a slight overestimate with the model.

Table 13. Model Summary for Steering Supply Chain Processes Outsourcing and Performance

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.557669	0.510995	0.503586	0.355485
A	**Predictors: (Constant), Steering processes**			

Table 14 summarizes the results of an analysis of variance, with the sum of squares, degrees of freedom, and mean square being displayed for two sources of variation, regression and residual. For the accounted for values, the mean square (the sum of squares divided by the degrees of freedom), is 5.3, the F statistic (the regression mean square (MSR) divided by the residual mean square [MSE]) is 5.304 and the degree of freedom (df) is 1 whereas the output for residual which displays information about the variation that is not accounted for by the model has the following values: sum of squares as 11.75, df as 93 and a mean square of 0.12. The overall relationship was statistically significant ($F_{1,94}=41.977$, $p<0.05$) It has a

significant level of 0.000 this means that the chances are zero that the result of regression model are due to random events instead of a true relationship.

Table 14. ANOVA for Steering Supply Chain Processes Outsourcing and Performance

ANOVA(b)						
Model		Sum of Squares		Mean Square	F	**Sig.**
1	Regression	5.304649	1	5.304649072	41.9772299	**0.000**
	Residual	11.75238	93	0.126369679		
	Total	17.05703	94			
A	Predictors: (Constant), Steering processes					
B	**Dependent Variable: Performance**					

Table 15 represents coefficients of all the independent variables and the dependent variable. It can be noticed from the significance column that the predictor is significant at 0.002 this is less than 0.05. It can be observed that every time steering supply chain processes outsourcing is increased by 1 unit, performance is improved by 0.39 units, when all other variables are held constant.

Table 15. Coefficients for Steering Process Outsourcing and Performance

Coefficients(a)						
Model		Unstandardized Coefficients		Standardized Coefficients	T	**Sig.**
		B	Std. Error	Beta		
1	(Constant)	1.521472	0.166819		9.12050217	**0.002**
	Steering processes	0.395737	0.06108	0.557669166	6.47898371	**0.004**
A	**Dependent Variable: Performance**					

5. Summary of Findings

This study sought to examine the effect of steering supply chain processes outsourcing on the performance of manufacturing firms in Kenya. The study found out that monitoring was the most outsourced function with a mean 3.19 followed by budgeting, monitoring and coordination with respective means of 3.02, 2.8 and 2.7. With respect to the effect on the performance improvement of the firm planning outsourcing has the most causal effect, followed by budgeting, monitoring and finally the outsourcing of coordination has the least effect on the improvement of the performance. From the results of multi-linear regression analysis, an increase in outsourcing of steering supply chain processes by one unit leads to an improvement in supply chain performance by 43.7%.

6. Conclusions and Recommendations

The general objective of this study was to examine the effect of steering supply chain processes outsourcing on the performance of manufacturing firms in Kenya. From the findings of this study it is concluded that a significant proportion of steering supply chain processes are outsourced in most manufacturing organizations in Kenya. From the findings this study concludes that the outsourcing of steering processes has a significant effect on the improvement of supply chain performance of manufacturing firms in Kenya. With regards to steering supply chain processes the firm should outsource it's planning and budgeting functions only since it will yield a substantial improvement in performance. While

coordination and monitoring activities should be undertaken in-house since their outsourcing will not yield substantial improvement in performance.

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