EFFECT OF SUPPLIER RELATIONSHIP MANAGEMENT PRACTICES ON PERFORMANCE OF MANUFACTURING FIRMS IN KISUMU COUNTY, KENYA

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Abstract

Manufacturing industry plays a significant role in the growth of the world's economies. However it is highly affected by increased competition on the global market and extended supply chains. Supplier relationship has been shown to impact on performance of firms. This study sought to establish the effect of supplier relationship management practices on performance of manufacturing firms in Kisumu County. Eighty two personnel involved in procurement in 31 manufacturing firms were asked to rate firms' performance in relation to supplier development, supplier segmentation and information sharing. Both descriptive and inferential methods of analysis were used to assess relationship in the variables involved. Among the respondent were 36/82 procurement officers, 35/82 finance officers and 11/82 general managers. Bivariate analysis found that increase in the three supplier relationship management practices were associated with increased levels of performance (P<0.05). On multivariate analysis, only information sharing was associated with better performance (ordered log odds=1.425, 95CI (0.637-2.213), Adjusted P < 0.001). Supplier development and supplier segmentation were not

significant. Study concludes that increasing information sharing with suppliers would significantly improve performance in manufacturing firms which accounts for 37.8% on performance. Study recommends development of supplier development programs, strategic management of supply base and increased information sharing.

Keywords: Supplier Relationship, Performance, Supplier Segmentation, Supplier Development, Information Sharing

INTRODUCTION

In the backdrop of global markets, increased competition and extended supply chains, manufacturing firms are now confronting new challenges, despite their major contribution to the world economy. Supply chains are becoming increasingly complex and dynamic; distribution channels are expanding with an increasing dependence on outsourced manufacturing and logistics (Smith *et al.*, 2004). Furthermore, globalization and fast changing business practices are putting organizations under tremendous pressure to constantly improve product or process quality, delivery index, performance, and responsiveness along with reducing costs. The need to improve on supplier-buyer relations is becoming more apparent in the quest to achieve operational excellence (Smith et al., 2004).

Today, purchased items represent approximately 60-70 of the total cost of goods sold (Soderborn and Teal, 2002). Indeed, the typical industrial firm spends more than one half of every sales dollar on purchased products and this percentage has been increasing with recent moves towards downsizing and outsourcing (Bresnan & Fowler, 1994). Companies have realized the necessity of focusing their resources on their core businesses and competencies and on outsourcing auxiliary functions in which they do not have a competitive advantage. This allows firms to exploit the capabilities, expertise, technologies, and efficiencies of their suppliers. Increased outsourcing, however, implies greater reliance on suppliers and commensurate need to manage the supplier base (Kannan & Tan, 2005). Thus a more critical and comprehensive understanding of the buyer-supplier relationship and an effective supplier management has become increasingly important to a firm's overall competitiveness (Berkowitz, 2004). SRM allows for the development and maintenance of these strategic relationships with key suppliers and forces enterprises to adopt a new way of thinking about the supply chain and supply chain transparency. This study seeks to establish the specific contribution of supplier development, supplier segmentation and information sharing to performance of manufacturing firms in Kisumu, Kenya.

Statement of the Problem

Despite being a small sector in African economies, in terms of total output or employment, growth of this sector is crucial for economic development (Soderbern and Teal, 2002), having a potential for modernization and a creator of skilled jobs. The sector has been facing challenges in terms of its growth and performance (Berkowitz, 2014). In Kenya, Manufacturing share of total Kenyan economic output has stagnated at 10 (Kenya Economic Report, 2013) with a declining contribution to total wage employment. Although previous research has explored the effect of supplier relationships management (SRM) on performance of firms (Dyer & Chu, 2000; Sanchez & Perez, 2003; Flynn *et al.*, 2010), most of these works have concentrated on developed countries. Consequently, the contribution of specific SRM practices which includes supplier development, supplier segmentation, supplier performance management and information sharing on the performance of manufacturing firms, particularly in Kenya, has received relatively little direct attention from researchers.

General Objectives

The general objective of this study was to determine the effect of Supplier Relationship Management Practices on performance of manufacturing firms in Kisumu County.

LITERATURE REVIEW

Supplier relationship management (SRM) is the discipline of strategically planning for, and managing, all interactions with third party organizations that supply goods and/or services to an organization in order to maximize the value of those interactions. It entails creating closer, more collaborative relationships with key suppliers in order to uncover and realize new value and reduce risk. Herrmann and Hodgson (2001) defined SRM as a process involved in managing preferred suppliers and finding new ones whilst reducing costs, making procurement predictable and repeatable, pooling buyer experience and extracting the benefits of supplier partnerships. SRM has been shown to have an impact on performance of firms (Du Plessis *et al*. 2001 & Lee *et al*. 1997) but majority of the studies have concentrated on developed countries. Various studies have also examined the various elements of SRM. This study concentrated only on supplier development, supplier segmentation and information sharing as elements of SRM.

Supplier Development and Manufacturing Firm's Performance

Supplier development can be defined as any effort a buying firm expends on a supplier to increase the performance and capabilities of the supplier to meet the buying firm's own short-term or long-term supply needs (Krause & Ellram, 1997a). Purchasing literature demonstrates

that improvement in buyer and supplier performance occurs as a result of implementing effective supplier development programs (Watts & Hahn, 1993; Krause, 1997; Gunasekaran & Ngai, 2005). With increased outsourcing, buyers must ensure that their supplier capabilities match their expectations in order to compete in the competitive market (Krause & Ellram, 1997; Handfield, Krause, Scannel, & Monczka, 2000). Manufacturing firms have realized the importance of the performance of their suppliers to the establishment and sustaining of their competitive advantage (Goffin *et al.*, 2006; Li *et al.*, 2006).

Reviewed literature reveals the benefits of practicing supplier development to be enormous to companies. Although literature provides extensive support for the assertions that supplier development is an integrated means of achieving and sustaining competitive advantage through improved overall performance (Hahn et a., 1990; Monczka *et al.*, 1993; Hartley and Choi; 1996; Burt., 2003), these studies have not identified specific efforts of supplier development that contribute to buyer performance (Robinson& Malhortra, 2005). Moreover, no single study on supplier relationship management has been done in Kenya. The contribution of this practice to performance of manufacturing firms in Kenya, particularly Kisumu, is not known.

Supplier Segmentation and Manufacturing Firm's Performance

Supplier relationship management (SRM) programs represent an investment of time and resources. Thus, not every supplier qualifies for the same level of inclusion in such a program. Firms should therefore strategically analyze each supplier to determine which suppliers are best positioned to provide the greatest return to the company through closer collaboration, other than having a 'one size fits all' strategy for supplier management (Dyer et al., 1996). Supplier segmentation represents a step between supplier selection and supplier relationship management, and helps determine distinct groups of suppliers based on their similarities (Rezaei & Ortt, 2013). A company's ability to strategically segment suppliers in such a way as to realize the benefits of both the arms-length as well as the partner models may be the key to future competitive advantage in supply chain management (Dyer et al., 1996) and thus represents a strategic approach for companies with a great number of suppliers. Zsididin and Ellram (2001) argues that relationship with selective suppliers result in mutual advantages such as reducing overall cost, enhance customer satisfaction, flexibility to cope with changes, productivity improvement and long-term competitive advantages in the marketplace. According to Gadde *et al.* (2010) many organizations now need to differentiate among its suppliers in order to handle the variety, complexity and heterogeneity in the supply base. Manufacturing firms deals with a wide range of suppliers with different levels of importance and which requires differential treatment that will drive a firm to its competitive edge. While several studies have

demonstrated the benefits of supplier segmentation, little empirical evidence to support this assertion has been given. Most of the literature reviewed referred to the study by Dyer *et al.*, (1996) comparing supplier segmentation among the U.S, Japan and Korean automotive industries. The practice of supplier segmentation needs to be understood in the Kenyan context among the manufacturing firms, especially those in Kisumu.

Information Sharing and Manufacturing Firm's Performance

The sharing of information with supply chain partners is critical to the success of the supply chain. Information sharing is described by Cooper *et al.* (1993) as "frequent information updating among the chain members for effective supply chain management." In this dynamic and unpredictable world, an organization's capability to access the right information at the right time holds the key to sustenance and longevity. As the suppliers are important and integral part of supply chain management and supplier management an important part of any organization's strategies, having the right information on suppliers and supplier's performance becomes imperative (Kearney, 2013). Effective inter-organizational communication could be characterized as frequent, genuine, and involving personal contacts between buying and selling personnel (Krause & Ellram 1997).

Effective two-way communication is demonstrated throughout the literature as essential to successful supplier relationship (Ansari and Modarress, 1990, Hahn *et al.*, 1990; Veludo *et al.*, 2004) by creating rich knowledge. Bowersox *et al.* (2003) discussed the critical nature of information sharing due to the necessity of providing the firm's data to their supply chain partners in order for "operational connectivity" of an activity to occur. Strategic firm partners must provide each other with a landscape of data such as inventory levels, forecasts, sales promotion strategies, production runs, marketing plans and feedback to suppliers from supplier evaluation in order to reduce uncertainty between each other and to properly plan for their own business needs. Information sharing contributes to the improvements in visibility between firms, production planning, inventory management (Sanders & Premus 2005), product quality as well as creating easier transitions when engaging in new product development projects (Cannon & Perreault, 1999), encourages commitment and cooperation and helps the buyer and seller through the adaptation of processes (Andersen, 1990). Anderson & Weitz (1992) affirm in their own research that the sharing of information results in increased commitment between supply chain partners. Most of the available empirical literature has concentrated on developed countries. Such studies in developing countries such as Kenya are needed also.

METHODOLOGY

The study employed a descriptive cross-sectional survey research design involving quantitative approaches. Cross sectional survey was used because it was a one-time study. The study population comprised a census on 31 manufacturing in Kisumu County. A total 93 senior managers from the firms comprising chief executive officers, procurement officers and finance officers who were involved in procurement activity were purposively selected.

Primary data was obtained using structured and unstructured questionnaires from respondents. The questionnaire was designed according to the objectives and study variables. Item scales were developed based on extensive literature review of the recent empirical studies in supply chain management. Constructs related to SRM were measured on a five-point likert scale with anchors ranging from very high extent (5) to very low extent (1). For the operational performance scale, the respondents were asked to evaluate their actual performance compared to expected performance measures with a five point scale ranging from below 20 (5) to above 80 (1). Of the 84 questionnaires distributed, 82 were sufficiently filled and returned translating to 97.6 response rate which were sufficient to facilitate data analysis.

A pre-test was performed with 9 subjects to identify problems of question understanding, clarity and ambiguity and to assess measurement reliability. Literature review and in-depth discussions with the industry's executives and researchers was conducted to establish the basis of content validity for the instrument. The construct validity of the research instrument was guaranteed by subjecting the instrument to academic researchers and industry executives to critique and check for relevance and clarity.

To check the reliability of the instrument in this study, Cronbach's alpha was used (Cronbach, 1951). Cronbach's coefficient was calculated for the items of each survey construct; the scale measuring performance and the three scales measuring supplier relationship management. The lower limit of 0.6 was considered acceptable for newly developed scales and 0.7 for established scales (Nunnally, 1978).

Table 1: Cronbach's Alpha Reliability Test Results for Data Instrument

Construct	Number of items	Scale statistics
Performance	8	Cronbach's alpha: 0.729
Supplier development	7	Cronbach's alpha: 0.835
Supplier segmentation	6	Cronbach's alpha: 0.739
Information sharing	9	Cronbach's alpha: 0.897

The study employed both descriptive and inferential methods of analysis to analyze the data collected from the respondents. Statistical analysis was performed using SPSS software

Frequencies and percentages were used to describe supplier relationship management (SRM) practices and performance and data presented in form of tables. Ordered logistic regression model was used to establish the effect of SRM practices on performance of firms in relation to cost, quality, and inventory levels and lead time while controlling the effects of demographic variables.

EMPIRICAL RESULTS AND DISCUSSION

Demographic Characteristics of Respondents

Respondents were asked to indicate their gender, current position and the duration they have served in the current position and their highest level of education. In addition they were asked to indicate the average number of years their firm engages with most of the suppliers. Results revealed that majority of the respondents were males (58.5%) compared with females (41.5%). 43.9% were procurement officers and 42.7% were finance officers. The findings indicated that 36.6% of the respondents had worked for less than 3 years, while 50% had worked between 3 and 6 years while 13.4% had worked for more than 6 years. Duration in current position had a mean of 3.95 years. Out of the 82 respondents who took part in the study, 63.4% had a degree and 31.7% had a Diploma as their highest level of education. Majority also indicated doing business with most of their suppliers between 2-3 years (43.9%) and above 3 years (42.7%).

Descriptive Statistics

Performance of Firms

Performance of manufacturing firms were assessed in terms of operational performance of firms and measured in terms of operational cost, quality, lead time and inventory level. Two items were used to measure each of this performance construct, giving a total of eight items. Respondents were asked to rate the statements regarding performance within their firms and responses were elicited on a 5-point scale. The cost of manufacturing, lead time, inventory levels and quality of products manufactured were rated in percentage intervals of (below 20%), (21-40%), (41-60%), (61-80%) and (above 80% . A new variable of performance was computed (table 2) by combining the eight items used to assess the performance. Association of the computed variable with supplier development, supplier segmentation and information sharing was assessed.

Table 2: Manufacturing Firms' Performance

		Freq	**%**
Performance_	Below 20	0	0
	21-40	12	14.6
	41-60	22	26.8
	61-80	38	46.3
	Above 80	10	12.2

Majority of respondents (46.3%) rated performance of their firms at 61-80%, 12.2% above 80%, 26.8% at 41-60% while 14.6% reported their performance of 21-40%. This clearly shows performance of manufacturing firms' average between 40% and 80 % (Table 2).

Supplier Relationship Management and Performance

Supplier development, supplier segmentation and information sharing as constructs of supplier relationship management practices were measured using at least 6 items for each construct within a scale of 5 ranging from "very low extent" to "very high extent". New variables to describe these three constructs were then computed by finding the average response of their respective items. Cross tabulations were then obtained to describe the distribution of supplier development on manufacturing firms' performance (Table3).

Table 3: Firm's Performance within Supplier Relationship Practices

	Firms Performance ⟶	21-40%	41-60%	61-80%	Above 80%	Total
Development	Very Low Extent	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
	Low Extent	8(66.7%)	12(54.5%)	0(0%)	0(0%)	20(24.4%)
	Moderate	4(33.3%)	4(18.2%)	22(57.9%)	7(70%)	37(45.1%)
	High Extent	0(0%)	3(13.6%)	13(34.2%)	3(30%)	19(23.2%)
	Very High Extent	0(0%)	3(13.6%)	3(7.9%)	0(0%)	6(7.3%)
	Total	12(100%)	22(100%)	38(100%)	10(100%)	82(100%)
Segmentation	Very Low Extent	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
	Low Extent	4(33.3%)	0(0%)	0(0%)	0(0%)	8(4.9%)
	Moderate	0(0%)	4(18.2%)	0(0%)	0(0%)	4(4.9%)
	High Extent	8(66.7%)	15(68.2%)	27(71.1%)	10(100%)	60(73.2%)
	Very High Extent	0(0%)	3(13.6%)	11(28.9%)	0(0%)	14(17.1%)
	Total	12(100%)	22(100%)	38(100%)	10(100%)	82(100%)
Information	Very Low Extent	4(33.3%)	0(0%)	0(0%)	0(0%)	4(4.9%)
	Low Extent	4(33.3%)	0(0%)	0(0%)	0(0%)	4(4.9%)
	Moderate	4(33.3%)	4(18.2%)	4(10.5%)	0(0%)	12(14.6%)
	High Extent	0(0%)	15(68.2%)	26(68.4%)	10(100%)	51(62.2%)
	Very High Extent	0(0%)	3(13.6%)	8(21.1%)	0(0%)	11(13.4%)
	Total	12(100%)	22(100%)	38(100%)	10(100%)	82(100%)

Results from table 3 showed that majority of firms which reported lower level of supplier development; supplier segmentation and information sharing were skewed to lower performance and vice versa. Majority of the respondents reported that their firms practiced supplier development to a moderate extent (45.1%) with 24.4% reporting low extent and 23.2% reporting high extent. High performance (above 60%) was reported by those respondents who practiced supplier development at moderate extent, high extent and very high extent. Those who reported supplier development being practiced to low extent (24.4%) were likely to be performing poorly below 40%. Majority of the respondents agreed that their firms practice supplier segmentation to a high extent (73.2%) and 17.1% practicing to a "very high extent". 71.1% and 28.9% of those who ranked performance at 61-80% reported supplier segmentation to high extent and very high extent respectively. All those who ranked performance of their firms above 80% were practicing supplier segmentation to a high extent. Of the 73.2% who practiced supplier segmentation to a high extent, over half of them rated performance of their firms above 60%. Of importance is the fact that those who rated the performance of their firms to be low (21-40%) were more likely to practice supplier segmentation to a low extent (66.7%). Therefore, there was a very close association between supplier segmentation and performance of firms. Majority of respondents who reported that their firms practiced information sharing with suppliers to a high extent (62.2%) and very high extent (13.4%) rated the performance of their firms above 60%, with only 13.5% from the same category rating performance of their firms at 41-60%. A total of 9.8% of the respondents reported information sharing being practiced to a low extent and rated performance at 21-60%.

Inferential Results

To establish the effect of supplier development, supplier segmentation and information sharing on performance of firms, an ordinal regression analysis was performed. Both bivariate and multivariate analysis was performed. Multivariate results were as presented on table 6.

Table 4: Ordinal Regression SPSS Statistical Output

		Estimate	Std. Error	Wald	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Threshold	[Performance_ = 2.00]	3.793	1.423	7.100	0.008	1.003	6.583
	[Performance_ = 3.00]	5.959	1.530	15.176	0.000	2.961	8.956
	[Performance_ = 4.00]	8.656	1.656	27.318	0.000	5.410	11.902
Location	Development_	0.452	0.340	1.769	0.184	-0.214	1.118
	Segmentation_	-0.153	0.509	0.090	0.764	-1.150	0.844
	Information_	1.425	0.402	12.552	0.000	0.637	2.213

Bivariate analysis showed significant association between both supplier development and supplier segmentation and performance of firms (p=0.001, p=0.001 respectively). This was however not significant in multivariate analysis when information sharing were controlled for (Adjusted p=0.184, p=0.764 respectively) as shown in table 4. The null hypotheses were thus rejected. On information sharing and performance, bivariate analysis showed statistically significant association between the two variables (p=0.000) where a unit increase in information sharing results in a 1.562 increase in ordered log odds of a high level of performance. Multivariate analysis results was consistently significant with bivariate results (Adjusted p=0.000) where a unit increase in the level of information sharing would result in a 1.425 increase in ordered log odds of a high level of performance, given all of the other variables in the model are held constant. We therefore fail to reject the null hypothesis that information sharing affect performance of manufacturing firms in Kisumu as shown in table 4.

Since information sharing was the only significant factor on the performance of the firms, we would therefore reduce the model to only include the significant variable one as shown below:

$$\ln(Q_j) = \alpha_j - 1.425 Information$$

The Pseudo R-square (Nagelkerke) for the model was 0.378 which implies that information sharing accounts for 37.8% of the variance in performance model of firms. The chi-square test on assumption of parallel lines for an ordinal regression was not violated (p=0.582) suggesting results from the model is reliable.

DISCUSSION

From the results, supplier development was practiced to a low and moderate extent. The findings contrast with those of Humphreys et al., (2003) which concluded that there is a significant positive relationship between supplier development and purchasing performance and hence general firm's performance. Similarly, it contrasts the findings of Pazirandeh and Mattson (2009) who argues that General Motors were able to improve supplier productivity reduce lead time and reduce inventory levels by implementing supplier development programs. Varied study setups may explain these discordant results. More studies in this study area need to be done to verify the results.

Descriptive data on found Supplier segmentation to be a common practice among firms, with majority firms reporting practice to high and very high extent. Its association with performance was however not significant. Few studies in similar setup have been done that relates supplier segmentation and performance of firms hence the need for more studies to establish consistent relationships between these two variables. The results however contrast

that of Zsididin & Ellram (2001) who argues that relationship with selective suppliers results in mutual advantages. It also contrasts the findings of a study by Dyer *et al*. (1996) carried out among 453 supplier-automaker relationships in the U.S, Japan and Korea and linked the good performance of Japanese firms to strategic management of their suppliers through segmentation. Most of the cited studies are from developed countries which may have already practiced supplier segmentation based on earlier studies. Recommendation from these cited studies can be implemented in developing countries like Kenya and assess the impact on performance.

Information sharing was found to be practiced mostly to high and very high extent among firms. High performance of firms was also associated with increased information sharing among them and their suppliers. These results compares to those of other studies. The finding compares with those of Galt & Dale (1991) their 10 case studies of buying firms in the UK revealed the importance of two-way communication with suppliers and its potential positive effect on the buying firm's competitiveness. In a study of automotive suppliers in Great Britain by Lascelles & Dale (1989) it was observed that poor communication and suppliers' lack of understanding of the buyer's requirements were barriers to quality improvement. A study of Chinese buyers also reported effective communication as critical to their supplier integration efforts and thus performance (Lockström *et al*., 2010). All manufacturing firms should consistently improve communication sharing with their supply base in order to better their performance

CONCLUSIONS AND RECOMMENDATIONS

The study concludes that though supplier development and supplier segmentation are practiced to a certain extent, they do not have significant association with performance of firms. Only information sharing showed statistically significant association with performance and thus increasing information sharing were more likely to result in improved performance. From the conclusions, the study recommends the following.

1. The study recommends the need for manufacturing firms to develop clear supplier development programs. This will enable firms to engage in activities that improve the performance of suppliers thus resulting in better performance of these firms. As in the findings of objective one, performance of firms may be further improved by engaging in supplier development activities.

2. The study also recommends that firms should strategically manage their supply base on the basis of value of spend or nature of items being purchased. This will enable the firms to

categorize their suppliers and thus proper treatment accorded to every supplier based on their importance.

3. Information sharing was found to increase performance of buying firms. It is therefore recommended that manufacturing firms should share important information with its suppliers in order to improve on their performance.

SUGGESTION FOR FURTHER RESEARCH

1. This study focused on Supplier Relationship Management practices and firm performance in manufacturing sector only, further research on other sectors should also be done.

2. More studies also needs to be done in developing countries such as Kenya, to further explain the discordance in results of the relationship between manufacturing firms performance and supplier relationship management practices.

3. Future studies should address other supplier relationship management practices and other measures of performance other than those dealt with in this study so as to account for even higher percentage in variance explained in the model.

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