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## Effect of Information Sharing on Performance of Kenya Medical Research Institute, Kisumu County

**Pamela Kanga**

M.Sc. Candidate, Department of Supply Chain Management,  
Jaramogi Oginga Odinga University of Science and Technology, Kenya

**Caroline Sitienei Koech**

Lecturer, School of Business and Economics,  
Jaramogi Oginga Odinga University of Science and Technology, Kenya

**Wcyliffe Arani**

Lecturer, Department of Business and Economics,  
Multimedia University of Kenya, Kenya

### **Abstract:**

*The focus of this research is to establish effect of information sharing on performance of Kenya Medical Research Institute in Kisumu county who have experienced compromised research and results due challenges on supply chain management in place. Literature was reviewed to understand the concepts of information sharing and performance of Kenya Medical Research Institute (KEMRI) in Kisumu county using different empirical studies as well as future studies to be conducted. This study focused on the global regional and local perspective of information sharing in both an intensive and extensive and to evaluate its effect on performance of KEMRI. The study comprised of theories and empirical work on information sharing specifically, Transaction cost economics theory that guided the study. The target population was 500 staff working in Kenya Medical Research Institute in Kisumu office and stratified and simple random sampling was used to pick a sample of 222 respondents. The data was collected from primary sources and a semi-structured self-administered questionnaire was used to collect primary data. Data was analyzed using both descriptive and inferential statistics such as mean, standard deviation, Pearson's correlation analysis and regression analysis. Data was presented using tables and graphs. The study findings showed that information sharing had a positive and significant influence on performance of Kenya Medical Research Institute in Kisumu county ( $\beta = 0.178$ ;  $p < 0.025$ ). The study recommends that the management in KEMRI should pay greater attention to the information sharing and involve various departments to improve on their performance as a research institution.*

**Keywords:** Information sharing on performance of Kenya medical research institute

### **1. Introduction**

Organization worldwide including research institutions have various ways of enhancing their performance although this varies from one organization to another depending on the actual functions of the organization (Uwamahoro, 2018). Kenya Medical Research Institute (KEMRI) as a research institution to perform its functions, it has to collaborate with other organizations and learning institutions to advance research and training (World Bank, 2009). According to Huo (2012) research institutions effectiveness captures organizational performance plus the myriad internal performance outcomes normally associated with more efficient or effective operations and other external measures. One of the ways the research institutions enhance their performance is through information sharing.

The integration of supply chain management systems through information sharing has been the subject of significant debate and discussion by difference scholars (Pamulety & Pillai 2016). Information sharing plays an important role in the ability of the firms to maintain performance in the marketplace (McGinnis et al., 2010). Information sharing is perceived as an important inter-firm practice, which leads to better performance (Jayaram et al., 2010). Nevertheless, information sharing still remains a challenge due to the complexity and involvement of multiple organizations (Villena et al., 2011).

In Kenya, information sharing and its practices are considered a powerful weapon to gain competitive advantages and linking performance measurement systems to supply information sharing can lead to increased success of supply chain initiatives and even improve the performance of the organization. The concept of information sharing has played an instrumental role in organizations, its actual effect in research institutions such as KEMRI have been fully articulated or felt and moreover have adopted and successfully implemented it in their supply chain so as to achieve its goals and objectives (Kemunto, 2014).

## 2. Information Sharing

The business environment of the new millennium is responsive, dynamic, and competitive and is in a constant state of customer-centres change. In supply chain, the importance of coordinating activities is important. This point is also noticeable for information management in the chain, information management systems and the data transaction (Baihaqi and Sohal 2017). Coordinated and appropriate information between partners will lead to growing impacts on the speed, accuracy, quality and other aspects. Effective information management will lead to greater coordination in the chain. Information integration is the extent that operational, tactical and strategic information are transferred between business partners and the central company (Elahiei al, 2009). Frohlich and Westbrook (2001) downward flow of material in supply chain should be supported through information flows from bottom to top.

Kalakota and Robinson (2011) suggested that significant progress in supply chain management can be achieved through the integration of business processes and information flow between partners. Lai et al (2007) defined information integration as using information and communication technology in order to coordinate decisions and activities between an organization and its partner. Jayaram and Tan (2010) concluded that information integration has positive relationship with performance of an organization.

## 3. Systematic Literature Review

Information sharing has two aspects that is quantity and quality. Both aspects are important for the practices of SCM and have been treated as independent constructs in the past Supply Chain Management (SCM) studies. Level (quantity aspect) of information sharing refers to the extent to which critical and proprietary information is communicated to one's supply chain partner. Shared information can vary from strategic to tactical in nature and from information about logistics activities to general market and customer information (Child house and Towill 2012).

The empirical study by Child house and Towill (2012) on how simplified material flow holds the key to supply chain integration. The research design involved a cross sectional survey of 46 large manufacturing companies. Mean and standard deviation were used to analyze objective one whereas regression analysis was used to analyze the effect of supply chain management practices and organizational performance. The findings revealed that simplified material flow, including streamlining and making highly visible all information flow throughout the chain, is the key to an integrated and effective supply chain. Quality of information sharing includes such aspects as the accuracy, timeliness, adequacy, and credibility of information exchanged. While information sharing is important, the significance of its impact on SCM depends on what information is shared, when and how it is shared, and with whom Literature is replete with example of the dysfunctional effects of inaccurate or delayed information, as information moves along the supply chain. Divergent interest and opportunistic behavior of supply chain partners, and informational asymmetries across supply chain affect the quality of information. It has been suggested that organizations will deliberately distort information that can potentially reach not only their competitors, but also their own suppliers and customers (Child house and Towill, 2012). The above study used cross sectional survey while the current study used descriptive research design. Prajogo and Olhager (2009) conducted a study on the effect of supply chain information integration and logistics integration on firm performance in Australian firms. Using data set from 232 Australian firms, they found that logistics integration has a significant effect on operations performance. Supply chain integration involves both material and information integration. Information technology capabilities and information sharing both have significant effects on logistics integration. Furthermore, strategic supplier relationships have both direct and indirect effects on the operational performance of the firm; with the indirect effect via information integration and logistics integration. The above study was conducted in Australian firms; the current study was conducted in KEMRI in Kenya

Jayaram and Tan (2010) conducted a study on Supply chain integration with third-party logistics providers and concluded that information integration has positive relationship with performance of an organization. Information integration in this study is reviewed through two dimensions of information technology (technical) and information sharing (social dimension). Importantly, to emphasis on information technology without the willingness to share critical information will not significantly associate organizations together. So they may fail in integrating their logistics. In other words, that organizations notice both side of information integration can then use the maximum benefits of integrated logistics. Li et al (2009) conducted a study on the impact of IT implementation on supply chain integration and performance and concluded that information integration in organizations causes better decisions, capacity allocation, production and materials planning through increased transparency, demand, supply and inventory. The study showed that information sharing acts as a key component in achieving performance. Pamulety and Pillai (2016) conducted a study on impact of information sharing and supply chain performance and the study found out that information sharing in a supply chain is having negative impact on the performance of the supply chain. One of the reasons for its occurrence in supply chain is lack of customer demand information at all stages.

Baihaqi and Sohal (2017) conducted a study on the impact of information sharing in supply chains on performance and the study conceptualizes and assesses several factors that influence the degree of information sharing in supply chains, namely integrated information technologies, internal integration, information quality and costs-benefits sharing. The relationship between the degree of information sharing and performance is then tested. Data from 150 manufacturing companies were collected and proposed relationships are examined using structural equation modeling. The results show that integrated information technologies and information quality have positive influence on the intensity of information sharing. However, internal integration and costs-benefits sharing do not relate to the intensity of information sharing. This study finds that information sharing does not directly relate to performance. Its relationship is mediated by collaboration practices with supply chain partners. This suggests that information sharing is essential but

insufficient by itself to bring significant performance improvements. The study of Baihaqi & Sohal (2017) used structural equation modeling as opposed to the current study that employed both descriptive and inferential statistics.

#### 4. Methodology

A descriptive research design was used in this study. Orodho & Kombo, (2002) argues that this choice of this design is appropriate for this study since it utilizes a questionnaire as a tool of data collection and helps to assess information sharing, a source of performance in an organization, a case study of KEMRI-Kisumu. The target population of this study comprised of 500 staff of KEMRI- Kisumu. A list that contains the number of all staff was sourced from the human resource department. They included 150 laboratory staff, 150 clinic staff, 100 administrative staff, 50 research doctors, and 50 principal investigators.

The formula adopted for the sample size was:

$$n = N / [1 + N(e)^2] \quad (4.1)$$

Where n is the required sample size, N (500) is the population KEMRI staff in Kisumu branch office and is the level of precision at 95% confidence level set at 0.05.

Therefore;

$$n = 500 / [1 + 500(0.05)^2] = 500 / 2.25$$

=222 sample size at KEMRI Kisumu staff.

Stratified sampling was used with staff categories forming the Starters. Using this method, the sample was divided into different strata at the Kenya Medical Research Institute whereby the divisions was according to their working departments. Laboratory staff, Clinic Staff, Administrative staff, Research doctors and Principal Investigators was picked by simple random sampling technique. Simple random sampling was then used to pick the KEMRI staff involved in Supply Chain Management. The study collected primary data using questionnaire. The questionnaire contained both structured and semi -structured questions. This study was expected to produce quantitative data. Once the questionnaires are received, they was coded and edited for completeness and consistency. Quantitative data was analyzed by employing descriptive and inferential statistics using statistical package for social science (SPSS). The data was then presented using frequency distribution tables for easier understanding.

#### 5. Findings

The objective of the paper was to identify the effects of information sharing on performance of Kenya Medical Research Institution (KEMRI). The study analysed this objective using findings from staff working at KEMRI IN Kisumu office, Kisumu County. The researcher opted to measure this objectives using respondents' information since they have the required knowledge on the subject under study. Furthermore, the study focused on views from them regarding information sharing and performance, therefore respondents' views were the most suitable focus for measuring the variable. The researcher looked at various indicators of information sharing that could have an effect on performance of KEMRI: level of information sharing, quality of information sharing, adequacy of information sharing and timeliness of information sharing. Thus, the study findings have been presented in two sections; descriptive and inferential statistics using the regression analysis.

Information Sharing		SA	A	N	D	SD	Total	Mean	Std.D
1.The company has frequent face to face communication with suppliers	Freq %	31 14.8	45 21.5	93 44.5	21 10.0	19 9.1	209 100	3.23	1.107
2.The level of information technology usage is high in sharing information to enhance customer satisfaction	Freq %	93 44.5	64 30.6	7 3.3	28 13.4	17 8.1	209 100	3.89	1.322
3.The company provides quality information to the customers and suppliers to enhance performance	Freq %	79 37.8	51 24.4	57 27.3	17 8.1	5 2.4	209 100	3.87	1.086
4. The company ensures that knowledge is managed through information sharing to enhance performance	Freq %	65 31.1	68 32.5	28 13.4	24 11.5	24 11.5	209 100	3.60	1.337
5.The company is keen in sharing information to improve the growth of the company	Freq %	79 37.8	33 15.8	35 16.7	47 22.5	15 7.2	209 100	3.55	1.376
6.Exchange of information within the organization takes place frequently, formally and timely	Freq %	74 35.4	76 36.4	7 3.3	18 8.6	34 16.3	209 100	3.66	1.446
7.The suppliers and customers are provided with any information that might help them to enhance customer satisfaction	Freq %	41 19.6	90 43.1	18 8.6	28 13.4	32 15.3	209 100	3.38	1.351
8.The company shares sensitive information with customers hence improved performance	Freq %	74 35.4	41 19.6	15 7.2	63 30.1	16 7.7	209 100	3.45	1.424
Composite Mean and Std.D								3.58	1.3061

Table 1: Information Sharing and Performance of KEMRI

The above findings revealed that the company has frequent face to face communication with suppliers (Mean=3.23, std.d=1.107), the level of information technology usage is high in sharing information to enhance customer satisfaction (Mean=3.89, std.d=1.322), The company provides quality information to the customers and suppliers to enhance performance (Mean=3.87, std.d=1.086), the company ensures that knowledge is managed through information sharing to enhance performance as shown by a mean of 3.60 and standard deviation of 1.337, the company is keen in sharing information to improve the growth of the company (Mean=3.55, std.d=1.376), exchange of information within the organization takes place frequently, formally and timely (Mean=3.66, std.d=1.446), the suppliers and customers are provided with any information that might help them to enhance customer satisfaction as shown by a mean of 3.38 and std.d of 1.351 and finally the company shares sensitive information with customers hence improved performance (Mean=3.45, std.d=1.424).

The study revealed that information sharing plays a significant role on performance of KEMRI. This show that effective integration through information sharing to the suppliers and customers on a timely manner enhances performance and this is created through the high level of information technology usage in sharing information to enhance customer satisfaction as shown by the composite mean of 3.58 and composite Std.D of 1.3061. Internal integration through information leads to overall performance sharing and this is achieved by the organization providing real-time status information on commodities/services, improving the timeliness of paper-based ordering and reporting, and improving the timeliness and accuracy of deliveries to customers and all this improves the performance of the organization.

The findings agree with the findings of Li *et al* (2009) conducted a study on the impact of IT implementation on supply chain integration and performance and concluded that supply chain information sharing in organizations causes better decisions, capacity allocation, production and materials planning through increased transparency, demand, supply and inventory. The study showed that information sharing acts as a key component in achieving performance.

### 5.1. Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.166 <sup>a</sup>	.528	.423	.47566

Table 2: Model Summary

a. Predictors: (Constant), Information Sharing

The R<sup>2</sup> in this model was found to be 0.528 which means that information sharing explained about 52.8% of the variation in performance of KEMRI.

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	1.314	1	1.314	5.810	.017 <sup>b</sup>
	Residual	46.381	205	.226		
	Total	47.696	206			

Table 3: ANOVA

a. Dependent Variable: Performance of Kemri

b. Predictors: (Constant), Information Sharing

The results reveal that the overall regression model was significant and have some predictive value (F = 5.810; P=0.017,<0.05). These findings reveal that information sharing used in the regression have a predictive value on the performance of KEMRI.

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta		
1	(Constant)	2.847	.268	10.611	.000
	B	.179	.074	.166	.017

Table 4: Coefficients

a. Dependent Variable: Performance of KEMRI

Information sharing was also a significant predictor of performance of KEMRI ( $\beta=.179$ ;  $t = 2.410$ ;  $p=0.017$ ,  $<0.05$ ). These findings reveal that where information sharing exists in an organization, it has a significant effect on performance as proposed by Li *et al* (2009). This shows that effective information sharing should be able to create confidence to supplier that long term opportunity is possible for them to increase performance. This is created through mutual understanding as indicated by majority of the respondents that the KEMRI involves itself in information sharing through technology usage to ensure that it has improved its performance.

### 6. Suggested Research Agenda

Various studies have been conducted on information sharing and performance of organizations. It has become apparent from this review that there are a number of inconsistencies that portray significant gaps. While most of the studies employed cross sectional survey research design, the current study adopted descriptive research design. Some current research has focused on information sharing in the manufacturing sector (Kalakota and Robinson, 2011, Prajogo

and Olhager 2009) but failed to look at how information sharing can affect the performance of research institutions such as KEMRI. Therefore, it is recommended advanced research in this area, for instance, Kimitei (2015) recommended research to be done mainly about the mediating influence of information sharing on value creation and performance that will require more attention. In the same context, there is need for further research to focus on the critical success factors in the adoption of best practice information sharing models.

## 7. Limitations and Conclusion

The study was systematic; therefore, it has some limitations that could represent opportunities for future research. At first, this study did not measure all the information sharing aspects, rather it seeks to demonstrate the unique effect of information sharing on performance of KEMRI. Also, this study has limited its analysis to combination or the adverse effects of different information sharing indicators.

In conclusion, in the current study test the general importance of information sharing on performance of KEMRI. The current study findings support the hypothesis that information sharing is considered an important determinant of an organization's performance. Accordingly, future research could be assembling with other practices which are less important than those tested in the current study, such as business strategy and supplier involvement. Therefore, further research could be test the interactive effects between different elements of information sharing for investigate the antagonistic effects among them in predicting various type of performance. Lastly, it is a descriptive study, and has mainly focused on the research institution (KEMRI) in Kisumu County, Kenya. Given the growing importance of other sectors in Kenya, there will be increased demand for knowledge of other sectors, to see if there are any similarity in the findings, as per compared with the research institutions. As such, these sectors could be served as a research setting in future research.

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