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The Influence of Information Security Management on Operational Performance of Humanitarian Value Chains in Arid and Semi-Arid Lands of Kenya

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Abstract

Purpose: Managements of humanitarian organizations in arid and semi-arid lands have recently become sensitized to the vulnerability of their supply chains. This is due to an ever-increasing range of security breaches and disruptions that affect global value chains especially in information security management. The current study sought to determine the influence of information security management on the operational performance of humanitarian value chains in arid and semi-arid lands of Kenya.

Methodology: The study adopted a cross-sectional design. A target population of 100 respondents was studied through census method from humanitarian organizations operating in arid and semi-arid lands of Kenya. A semi-structured questionnaire was used to collect information whereas descriptive and inferential statistics were used to analyze the data. The results were presented by use of tables.

Findings: Scrutiny of the results of linear regression analysis indicated that information security management significantly predicted the operational performance of the organizations (r=.659, p=0.000).

Unique contribution to theory, practice and policy: The study recommends that humanitarian organizations should put measures into place to ensure access control and safe storage of

information. Employees should also be trained in information security management to understand their role on overall organizational performance.

Key Words: *Information Security, Humanitarian Organizations, Arid and Semi-Arid Lands, Performance, Value Chains.*

1.0 Introduction

With the increased climate change phenomenon, disasters have become widespread with far reaching consequences on human life and livelihoods. This has created a need for humanitarian aid. Consequently, humanitarian organizations play a big role in helping millions of people affected by disasters to meet their basic needs. These institutions operate in areas of emergency, where people are facing consequences of disasters such as conflicts, diseases and poverty. They depend fully on donor funds from development partners, governments and volunteers. The institutions are also referred to as Non-Governmental Organizations (NGOs) or relief organizations.

The main objective of humanitarian organizations include value for money, achieving efficiency and effectiveness, ensuring fair competition among suppliers, ensuring accountability, transparency and ethics. This in turn helps the organizations achieve their main objective which is reducing vulnerability of communities through saving lives and salvaging livelihoods. In addition, donor organizations are increasingly becoming more concerned in operations of humanitarian organizations to ensure that there is effectiveness and efficiency. Consequently, there is great concern from all stakeholders involved to monitor not just the impact of aid, the input and the output but the overall operations of humanitarian organizations (Wassenhove, 2006). This has created aspects of accountability and transparency in operations of humanitarian organizations.

In humanitarian organizations relief operations, 80 percent of the work constitute supply chain management (SCM). Consequently, the effectiveness and efficiency with which humanitarian organizations carry out their operations is insidiously affected by supply chain management (Wassenhove, 2006). This makes the security of supply chain paramount in ensuring smooth operations of the humanitarian organizations. One important aspect in the entire supply chain security is the information security management. Humanitarian organizations are supposed to put into place robust measures in terms of records management to ensure high levels of information security.

The concerns on information security management in humanitarian value chains have led to the introduction of new security initiatives, standards and measures to such an extent that these have become an integral part of supply chain management. As a consequence, supply chain information security management is now an important requirement in an organization and should be coordinated with supply chain management (Hameri & Hintsa 2009; Sheffi 2001; Urciuoli 2010).

Most of the literature on supply chain information security management and its influence on the operations of humanitarian organizations has been undertaken from the perspective and experience of developed countries and only a few studies have been done in the context of emerging countries like Kenya. Consequently, the influence of information security management on the operational performance of humanitarian value chains has not been documented. This presents a knowledge gap that the current study sought to fill.

2.0 Research Methodology

This study employed a cross-sectional survey design. The target population was humanitarian organizations operating in Kajiado County, an arid and semi-arid part of Kenya. Census technique was applied to include all the twenty humanitarian organizations operating in the study area. The units of analysis were one functional officer from each of the four functions (Logistics, operations, finance and security) from the twenty humanitarian organizations making a total of 100 functional personnel. Primary data was collected using semi-structured questionnaires and analyzed using both descriptive and inferential statistics. Results were presented using tables.

3.0 Findings and Discussions

Cronbach's alpha was utilized to examine the trustworthiness of the data in the research (Table 1). Reliability is a measure of how consistently an instrument's measurements are the same each time it is used on a same set of conditions with a similar set of individuals. The Cronbach's alpha coefficients ranged from 0.853 to 0.976. According to George and Mallery (2019), Cronbach's Alpha value which is > .9 is Excellent, > .8 is Good, > .7 is Acceptable, > .6 is Questionable, > .5 is Poor, and < .5 is Unacceptable. Table 1 shows that all variables had Cronbach alpha value of more than 0.7 and thus acceptable.

Table 1: Summary of Cronbach's Alpha of Research Instrument

Variable	No of items	Alpha (α)	Decision
Information Security Management	9	0.874	Reliable
Operational Performance	5	0.963	Reliable

Descriptive Statistics of Information Security Management

The respondents were asked to indicate the extent to which they agreed with the influence of information security management on the operational performance of humanitarian organizations using the five-point Likert Scale of (1=Strongly Disagree, 2= Disagree, 3= Undecided, 4=Agree,

5=Strongly Agree). The data was summarized using percentages, means and standard deviations as shown in Table 2.

Table 2: Descriptive Analysis of Information Security Management

Statement on Information Security Management	1 %	2 %	3 %	4 %	5 %	Mean	Std Dev
I am familiar with information security management initiatives in our organization.	-	23.7	14.0	50.5	11.8	3.51	0.97
We have controlled access to our organization's information.	-	25.8	8.6	55.9	9.7	3.49	0.99
We use appropriate storage techniques to ensure organization information is secure.	-	28.0	2.2	63.4	6.5	3.48	0.95
Controlled access to our organization information reduces our operational costs.	1.1	32.1	10.8	39.8	16.1	3.38	1.13
Proper storage of our information improves the security of our supply chain.	-	29.0	4.3	53.8	12.9	3.51	1.05
The appropriate management of information has improved our supply chain reliability.	-	32.3	15.1	46.2	6.5	3.27	0.99
Proper information management has enhanced our supply chain responsiveness.	-	36.6	20.4	40.9	2.2	3.09	0.93

From the results presented in Table 2 majority of the respondents at 50.5% agreed with the statement that they were familiar with information security management initiatives in their organization. However, 23.7% did not agree with the statement. With regards to controlled access to organization's information, 55.9% of the respondents agreed with the statement while 25.8% disagreed with the statement. In addition, 63.4% of the respondents agreed that appropriate storage techniques ensured that the organization information was secure. On the other hand, 28% of the respondents did not agree with the statement. On the controlled access to the organization's information and its role in reducing operational cost, 39.8% of the respondents agreed with the statement while 32.1% disagreed. Proper storage of information improves supply chain security was supported by 53.8% of the respondents. However, 29% did not agree with the statement. Moreover, 46.2% of the respondents agreed with the statement that appropriate management of

information had improved the supply chain reliability of the organization while 32.3% disagreed with the statement. Finally, 40.9% of the respondents agreed that proper information management enhanced supply chain responsiveness. However, 36.6% did not agree with the statement. The results are in consonance with other studies which indicated that keeping information out of the reach of others who are not authorized to access it prevent hackers from disconnecting the system (Hutter, 2016).

Descriptive Statistics of Operational Performance of Humanitarian Organizations

The respondents were asked to indicate the extent to which they agreed with the statements regarding the performance of humanitarian organizations using the five-point Likert scale of (1=Strongly Disagree, 2= Disagree, 3= Undecided, 4=Agree, 5=Strongly Agree). The study used percentages, means and standard deviations to report the data as shown in Table 3.

Table 3: Descriptive Analysis of the Operational Performance of Humanitarian Organizations

Statement on Operational Performance	1 %	2 %	3 %	4 %	5 %	Mean	Std Dev
We have a highly reliable supply chain	-	8.6	11.8	69.9	9.7	3.81	0.73
We have a flexible supply chain to meet our customer needs	-	12.9	29.0	50.5	7.3	3.53	0.82
We have a supply chain that is responsive to customer needs	1.1	20.2	14.0	57.0	7.5	3.49	0.94
Our operational costs are within planned levels	-	20.4	17.2	59.1	3.2	3.45	0.85

Results presented in Table 3 indicated that 69.9% of the respondents agreed with the statement that they had a highly reliable supply chain in their organization while 8.6% did not agree. Similarly, 50.5% of the respondents agreed with the statement that they had a flexible supply chain that met customer needs. However, 12.9% of the respondents felt otherwise. With regards to responsiveness of the supply chain to customer needs, 57% of the respondents agreed with the statement while 20.4% did not support the statement. Finally, 59.1% of the respondents agreed that the operational costs were within the planned levels. However, 20.4% of the respondents did not agree with the statement. This study findings concur with (Urciuoli et al. 2014) who highlighted that there is a close interrelation in supply chain between security and efficiency. This is because advanced security result to reduced customs delays and higher transparency of information of goods flows that reduce operation costs and time.

Univariate Regression Analysis

This section contains inferential analysis of information security management and operational performance of humanitarian organizations as independent and dependent variables, respectively. Results presented in Table 4 indicate details of regression coefficients of the variables under study.

The regressions results are presented in Table 4. The model summary results indicate that Information Security Management explains 56.4% (R^2 = .564) of the total variations in the operational performance of humanitarian organizations. The ANOVA results reveal an F statistic of 258.594 and reported P value of 0.000. The P value being less than the alpha value (P < .05), the proposed model is therefore statistically significant (good fit) in predicting the dependent variable.

Further, the regression of coefficient findings indicate that information security management had a positive and significant effect on operational performance (β=0.562 P < .000). This implied that a change in information security management by one unit would result to a change in operational performance of humanitarian organizations by 0.562 units. The study findings were consistent with Nyaoga, Magutu and Aduda (2015) assertion that information security management significantly influenced firm performance.

Świerczek (2010) also found that Information Security Management strategies influenced performance in value chains. Further, Boone, Craighead and Hanna (2017) revealed a significant increase in the number of information security management research efforts, many of which at least partially addressed past challenges noted in previous research.

Model;
Firm Performance = 1.044+ 0.562 Information Security Management

Table 4: Regression Model: Information Security Management and Operational Performance

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	1.044	.084		12.361	.000
	X3	.572	.036	.751	16.081	.000
	R Squared	.564				
	Adjusted R Squared	.562				
	F statistic	258.594				
	P value	.000				

a Dependent Variable: Y

4.0 Conclusion and Recommendations

Findings from the study established that information security management had a positive and significant effect on performance of humanitarian organizations in arid and semi-arid lands of Kenya. The study recommend that the humanitarian organizations should maintain proper information security management practices for continued supply chain performance. Information security management can be done through efficient storage systems, secured backup control and limited access of information in the organizations through various system authorizations.

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