INFORMATION MANAGEMENT AND PERFORMANCE OF HUMANITARIAN ORGANIZATIONS: THE CASE OF KENYA RED CROSS SOCIETY

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ABSTRACT

Information management plays a pivotal function in humanitarian aid and disaster management. The effective management of information and its application in the relief supply chains boosts the efficiency of the humanitarian operations. There has been an upsurge in incidences of disasters, both native and artificial in Kenya leaving devastating effects to the human population. This has been contributed to by the underdeveloped information system of the majority of the humanitarian organizations in Kenya. This informed the objective of the study which was to determine the effects of information management on the performance of humanitarian organizations. The study adopted a descriptive survey research with Kenya Red Cross Society as a case study. The findings revealed that information management had a positive and significant effect on the performance of humanitarian organizations in disaster management. This implied that information management systems would enable humanitarian organizations to monitor the entire logistics value chain in all locations with integrated systems providing real time visibility of demand forecast information, inventory levels and distribution schedules. Hence Humanitarian organizations should adopt modern and robust technology in information and communication that would guarantee accurate and timely information and at the same time allow for real-time visuality along the logistics chain.

Keywords: *Information Management, Humanitarian Organization, Performance*

บทคัดย่อ

การจัดการข้อมูลมีบทบาทสำคัญในการช่วยเหลือทางด้านมนุษยธรรมและการจัดการภัยพิบัติ การจัดการและการนำข้อมูลมาใช้อย่างมีประสิทธิภาพในโซ่อุปทานเพื่อมนุษยธรรมช่วยเพิ่มประสิทธิผลต่อการปฏิบัติการทางด้านมนุษยธรรม ทั้งนี้เคนยาได้เผชิญกับการเพิ่มจำนวนของภัยพิบัติทั้งที่เกิดจากธรรมชาติและจากน้ำมือของมนุษย์ ซึ่งส่งผลเสียหายเป็นวงกว้างต่อประชากร งานวิจัยนี้มีส่วนช่วยให้เห็นถึงระบบการจัดการข้อมูลที่ล้าหลังขององค์กรเพื่อมนุษยธรรมส่วนใหญ่ในเคนยา โดยมีวัตถุประสงค์ เพื่อศึกษาผลกระทบของระบบข้อมูลต่อผลประกอบการขององค์กรเพื่อมนุษยธรรม ซึ่งเป็นการสำรวจเชิงบรรยายจากกรณีศึกษาของสภากาชาดเคนยา ผลการศึกษาพบว่า ระบบการจัดการข้อมูลมีผลเชิงบวกและมีนัยสำคัญต่อผลประกอบการ

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ขององค์กรเพื่อมนุษยธรรมในการจัดการภัยพิบัติ ซึ่งเป็นการบ่งชี้ว่าระบบการจัดการข้อมูลทำให้องค์กรเพื่อมนุษยธรรมสามารถเฝ้าสังเกตโซ่อุปทานทั้งหมดได้ทุกที่ด้วยระบบบูรณาการ ซึ่งทำให้เห็นข้อมูลเป็นปัจจุบัน ทั้งข้อมูลการพยากรณ์ความต้องการ ระดับสินค้าคงคลัง และตารางการกระจายสินค้า ดังนั้นองค์กรเพื่อมนุษยธรรมควรนำเทคโนโลยีที่ทันสมัยและมีประสิทธิภาพมาใช้เพื่อการสื่อสาร ทำให้ได้ข้อมูลที่ถูกต้องแม่นยำ ทันเวลา และสามารถมองเห็นทั้งโซ่อุปทานได้

คำสำคัญ: การจัดการข้อมูล องค์กรเพื่อมนุษยธรรม ผลประกอบการ

INTRODUCTION

Information management and technology utilization are often regarded as enablers for knowledge management in an organization. It plays a significant function in the humanitarian aid and disaster relief environment. Relief activities depend on specific communication systems and decision support systems. For instance, Geographical Information Systems (GIS) can assist in analyzing transportation lifelines, map resources and identify massively destroyed locations (Fiedrich et al., 2000). The function of Information Communication Technology and the degree of its utilization by players in the relief field is below compared to profit-oriented organizations (Haselkorn & Walton, 2009), therefore it is critical that relief organizations acknowledge the value-added use and execution of information and communication plans that boost productivity. The establishment of humanitarian logistics and the increasing understanding among players of the notion of Information Technology and the influence it has on the process is getting more critical. There has been a pattern in the recent past to study applied information solutions in various logistical frameworks to act as a foundation to the humanitarian procedures, however the employment of technology is still not popular (Özdamar & Ertem, 2014). The effective management of information and its use in the relief supply chains is becoming increasingly significant since it boosts the efficiency of the humanitarian operations. Better information flow means better overall view of what is happening and better management of logistics and supply chain. The possession of right information and knowledge enable actors to be proactive since it is not only a supporting tool used to share current data in emergency situation, but also empowers communities and calls for a preparedness in disaster prone areas (Bartell et al., 2006).

Kenya Red Cross Society (KRCS)

The KRCS is organized across eight regions and sixty-four branches, covering the entire country. There are 1200 formal staff members and over 100,000 volunteers work for the KRCS. The society being an affiliate of the IRCS which is arguably the largest humanitarian organization in the world and itself being the largest in the Kenya with branches and presence in all the 47 counties in Kenya, it therefore offers a comprehensive case of humanitarian organizations in Kenya.

Statement of the problem

In Kenya incidences of both the native and artificial disasters have been on the rise and has left devastating effects to the human population (Kenya Red Cross Society, 2014). However, the effects of these disasters can be reduced through an efficient and effective information management system that serves to ensure visibility along the supply chain. This informed the current study which proposed to determine the effects of information management on the performance of humanitarian organizations in Kenya.

General Objective

To determine the effect of information management on the performance of humanitarian organizations in Kenya.

The study pursued the following specific objectives that guided the collection and analysis of data:

i. assess the effect of accurate and timely information on the performance of humanitarian organizations in Kenya.
ii. examine the effects of automated systems on the performance of humanitarian organizations in Kenya.
iii. establish the effects of integration on the performance of humanitarian organizations in Kenya.
iv. evaluate the effects of communication utilities on the performance of humanitarian organizations in Kenya.

Research Hypothesis

H0: There is no statistically significant relationship between information management and the performance of humanitarian organizations in Kenya.

LITERATURE REVIEW

Theory of Constraint

The main idea in Theory of Constraints is that every system has at least one weakest point and if organizations can handle constraints in their system and manage these constraints, they would have a continuous improvement management in the system thus they could achieve higher outputs. Considering the main focus of the study was the effect of information management on the performance of humanitarian organizations TOC allows for the understanding of the effectiveness of information management in humanitarian logistics. Further, humanitarian logistics being a process with different interrelated activities, identifying the weakest link in the information system and focusing on the weak link as a constraint hence focusing all efforts on the one process activity identified as a constraint will definitely improve the performance.

Stakeholder Theory

Stakeholder theory underscore the significance of different partners that hold a stake in an organization and its activities. It persuades managers to have clarity on the way of transacting business particularly the type of associations they wish and require to put forward with their partners to achieve their goal. Relief logistics being a multifaceted operation with numerous logistics functions and partners prominent among them being the government, donors, humanitarian organizations, media and beneficiaries the measures of each stakeholder will invariably affect the activities of the other stakeholder(s). As a principle of ST, all stakeholders should be treated with the importance they deserve and no stakeholder should be looked into in isolation. The worth of all the stakeholders should go together and in the same direction since each stakeholder is important to the success of the organization. The stakeholders should consider their actions since they have effect on the other partners. To preserve lives, stakeholders, and particularly the donors need to work closely with the humanitarian organization. This complex web of interactions makes a holistic approach to humanitarian logistics so important and led to the adoption of a stakeholder theory-based approach in this study.

Empirical review

Altay and Labonte (2014) provided alternative paths for overcoming challenges and restoring the value and utility of humanitarian information management and exchange in humanitarian relief settings. Their findings revealed that there was an increasing recognition of the critical role information management offered in shaping effective humanitarian reaction, coordination and decision-making. Yang et al. (2011) formulated a hybrid system architecture at the network level for a resource information management system in humanitarian logistics points. Van der Laan et al. (2009) integrated humanitarian logistics and organizational literatures to create a framework that tied information cycles with activity cycles that finally resulted into value creation. They developed their conceptual framework on the basis of literature mainly for structuring the analysis but their aim was not to verification. Van de Walle and Comes (2015) analyzed the constraints that information managers face in conflict situations when information is more than anywhere else a source of power and influence. They presented reflections on the nature of information management and its role and function to support coordination in one of the largest humanitarian crises, the Syria crisis. Van de Walle and Dugdale (2012) outlined the coordination processes that were implemented by the United Nations and the role of its Office for the Coordination of Humanitarian Affairs (OCHA). The main aim of their study was on the role and use of information management in these coordination efforts.

Altay and Labonte (2014) assessed the constraints to information flow in the Haiti case and the implications for effective humanitarian response. Van de Walle et al. (2008) presented fundamental principles of humanitarian information management as endorsed by the international humanitarian community, introduced generic systems design and presented two recent collaborative efforts in humanitarian information systems development. Masudin et al. (2021) studied electronic data interchange (EDI) adoption, blockchain (BC) adoption, radio frequency identification (RFID) adoption, traceability of humanitarian logistics, and humanitarian logistics performance. The conceptual model was modeled by introducing three information technologies as independent variables and the humanitarian traceability and logistics performance as dependent variables. The results showed that EDI adoption has no significant effect on the traceability of humanitarian logistics. Mohd et al. (2019) investigated the current practices of the information management system used by disaster management stakeholders in Malaysia during a natural disaster.

Sangiamkul and van Hillegersber (2011) discussed problems in humanitarian relief logistics, identified the stage and disaster type for each article and the article's research methodology and research contribution. Finally, they identified potential future research directions. In their findings, the use of IT to support humanitarian logistics is promising. Rodríguez-Espíndola et al. (2016) used raster GIS to analyze potential flooding scenarios and provide input to an optimization model. Empirical results implied the importance of the integration of advanced remote sensing images and GIS for future systems in humanitarian logistics. Serrato-Garcia et al. (2016) developed a multi objective optimization model and information system based on mobile technology. The trade-off between economic and social (deprivation) costs faced by governmental and nongovernmental organizations involved in humanitarian logistics operations was modeled through a Pareto frontier analysis, which was obtained from a multi objective optimization model. Results showed useful managerial insights for decision-makers by considering both economic and social costs associated to humanitarian logistics operations. Such insights included the importance of timely and accurate

information shared through mobile technology. Tatham and Spens (2011) outlined the difficulties associated with the logistic response to a disaster before discussing a generic approach to knowledge management. The literature review was then used to identify two potential models the Supply-Chain Operations Reference (SCOR) and the UK Defense Lines of Development (LOD), which were further developed and integrated in order to underpin a knowledge taxonomy.

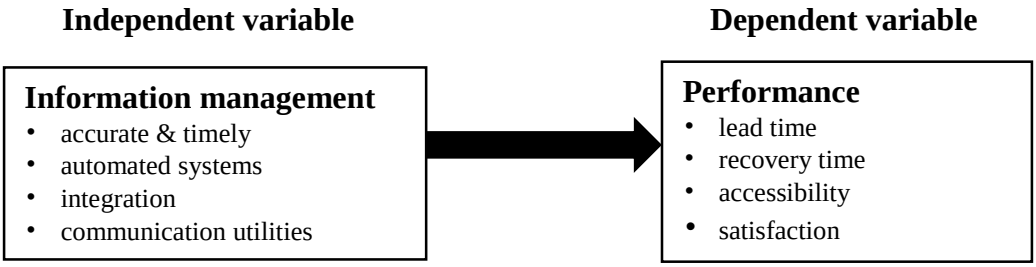
Kovács and Spens (2009) identified the challenges of humanitarian logisticians with respect to different types of disasters, phases of disaster relief and the type of humanitarian organization. The study showed that some disasters defy a categorization between natural and man-made causes. Ojwang (2016) found that IT usage increased efficiency on decisions support systems, management information systems and transaction processing systems in the organizations. Kwonyike and Momanyi (2019) highlighted the role of information and communications technology in management of natural and man-made disasters in Kenya. In their findings, disasters can be managed using a number of features of Information and communications technology (ICT). ICT can be used in disaster prevention, mitigation and management. Advancements in ICT in form of radio, TV, telephone, SMS, satellite radio, sirens, cell broadcasting, drones, or the internet can help in a great deal in planning and reduction of hazards reduction measures. M'muthuiba (2013) examined the extent of information sharing and established factors affecting information sharing among humanitarian organizations in Kenya. The study determined that majority of the organizations do have an information governance policy and guidelines in place and that most organizations have a defined data or information sharing strategy, with majority of them often or always using electronic mail, website / online portal and meetings as a means of information dissemination. The findings also indicate that the sharing of information was to a great extent happening between donors, UN agencies, International and local NGOs, Government and Clusters/ Sectors working groups with most of the primary data sources being field data collection or regular updates from collaborating partner organization or networks and from the coordination meetings. Zook et al. (2010) outlined the ways in which information technologies (ITs) were used in the Haiti relief effort, especially with respect to web-based mapping services. They demonstrated that ITs was a key means through which individuals could make a tangible difference in the work of relief and aid agencies without actually being physically present in Haiti.

Performance of Humanitarian Organizations

Humanitarian Organizations' activities are mostly centered on saving lives and averting further loss of life during crises hence their operations will be deemed successful if they are able to respond to the affected population's needs on time while efficiently utilizing the available resources. The performance Humanitarian Organization is critically dependent on the satisfaction of both the donor and beneficiary, and this is achievable through timely provision of quality goods and services to beneficiaries in a transparent and accountable way (Oloruntoba, et. al., 2009). Unlike commercial supply chains where demand can be predicted and therefore supply be planned, considering the lead times and have the demand met in time. In the humanitarian logistics and supply chain, demand is unpredictable since the events leading up to the need for supplies cannot be forecasted. The lead times are much shorter and at times even zero due to the emergency situation. In acknowledgment of the uniqueness of performance of humanitarian logistics, the study advanced lead time, recovery time, accessibility of relief items and satisfaction of the beneficiaries as predictors of performance.

CONCEPTUAL FRAMEWORK

The conceptual framework below indicated that there was a relationship between the independent variable (information management) and the dependent variable (performance of humanitarian organizations).



METHODOLOGY

The study adopted a descriptive survey research design on Kenya Red Cross Society capturing all the 64 branches in the 5 regions of Kenya Red Cross Society with a total population of 1200 staff members. The sample size was based on Nasuirma (2000) formula $n = \{NC_v^2\} / \{C_v^2 + (N-1)\, e^2\}$. A total of 94 questionnaires were sent through mail and 87 questionnaires were emailed back duly filled making a response rate of 93%. The data was analyzed in SPSS version 14 software. Linear regression was conducted to determine the effects of the independent variable on the dependent variable.

Testing Hypothesis

Hypothesis test to establish the relationship between information management and performance of humanitarian organizations was conducted using correlation analysis. The statistical significance was evaluated on the basis of p-values with the base p-value less than or equal 0.05 for rejecting or accepting the hypothesis.

Regression Model

To determine the linear relationship between logistics function and the performance of humanitarian organizations, linear regression model was used as shown below.

$$\mathbf{Y = \beta_0 + \beta_1 X_1}$$

Where;

Y- dependent variable (performance of humanitarian organizations)

β- Regression coefficient

X_1- Independent variable (information management)

FINDINGS AND DISCUSSION

Simple linear regression analysis was conducted on information management scores against the performance of organization scores to test whether information management had any association with the performance of humanitarian organization in Kenya.

Simple Regression Model on effect of Information Management on the Performance of Humanitarian Organizations in Kenya.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.204[a]	.421	.031	.50984	.421	3.987	1	92	.049	1.631

a. Predictors: (Constant), INFMGT

b. Dependent Variable: OrgPERF

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.036	1	1.036	3.987	.049[b]
	Residual	23.914	92	.260		
	Total	24.950	93			

a. Dependent Variable: Org PERF

b. Predictors: (Constant), INFMGT

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.502	.464		5.394	.000	1.581	3.424
	INFMGT	.248	.124	.204	1.997	.049	.001	.495

The results showed that there was a statistically significant positive correlation with a correlation coefficient of 0.204 (p=0.049) between information management and the performance of humanitarian organizations in Kenya. It was based on the regression coefficient of 0.204 (p=0.049) that gave the evidence that information management had a positive significant relationship with performance of humanitarian organization in Kenya. This provided the basis for the rejection of the Null Hypothesis "there is no statistically significant relationship between information management and the performance of humanitarian organizations in Kenya." Information management had positive significant influence on the performance of humanitarian organizations hence an improvement of logistics function would improve the performance of the humanitarian organizations in disaster management. The linear regression analysis produced positive coefficient which showed that an increase in information management score would boost the performance of humanitarian organization. The study therefore demonstrated that performance of humanitarian organizations positively depends on distribution management for its accomplishment.

CONCLUSION

Information management positively and significantly affected the performance of humanitarian organizations. Information management systems enable humanitarian organizations to monitor the whole logistics value chain in all locations with integrated systems providing real time visibility of demand forecast information, inventory levels and distribution schedules. These technologies make data collection possible and much easier and more accurate by allowing precise and detailed data analysis leading to sound logistical decisions. This suggested that as humanitarian organizations adopt more of information management systems, it contributes to lower lead-time variability, reduced inventory, shorter lead times, increased fill rates and other logistics and supply chain operational improvement. As a result, performance of humanitarian organizations in disaster management is bound to improve.

Recommendation

Humanitarian organizations should adopt modern robust technology in information and communication that would guarantee accurate and timely information and at the same time allow for real-time visibility along the logistics chain. They should equally invest in versatile and superior assessment tools to deliver the right information at the right time to aid in making the right decision. They should also develop superior internal communication solutions that can trace and track both the relief items and services along the logistics chain.

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