International Journal of Innovative Research and Advanced Studies (IJIRAS)
Volume 8 Issue 7, July 2021

ISSN: 2394-4404

Inventory Management Practices And Performance Of Humanitarian Organization: A Case Study Of Kenya Red Cross Society

Dan Ouma Muga

PhD Student, School of Business & Economics, Department of Management & Economics, Jaramogi Oginga Odinga University of Science & Technology, Bondo

Elijah Museve

Chrisostom Aleri Odaya

Lecturer, School of Business & Economics, Department of Accountant & Finance, Jaramogi Oginga Odinga University of Science & Technology, Bondo.

Abstract: ***The objective of the study was to determine the relationship between inventory management practices and the performance of humanitarian organizations in Kenya. The study was conducted in all the 64 branches of Kenya Red Cross Society as a humanitarian organization. The study was anchored on two theories; Grey System Theory and Goal Setting Theory. The study adopted a descriptive research design with a target population of 1200 staff of Kenya Red Cross Society in all the 64 branches. Quantitative data was collected as the primary data with the sample size calculated based on Nasuirma, (2000) formula that gave a sample size of 94 respondents. Cronbach's alpha was used in a testing for reliability and validity to ensure internal consistency of the tool. Correlation test was used to test the association between the variables. The results showed significant positive relationships between inventory management and performance of humanitarian organizations. The findings demonstrated that inventory management practices had a positive relationship with the performance of humanitarian organizations during disaster response. This in essence meant that there was need for enhancement of inventory management practices to ensure an improvement on the performance of humanitarian organizations during disaster response. The bivariate model showed positive correlation coefficients which indicated that an increase in inventory management score, would result in an increase in organization performance. Statistically, the coefficients were significant with a positive sign indicating a positive effect of inventory management practices on the performance of humanitarian organizations.***

Keywords: Inventory, Humanitarian Organization, Performance

I. INTRODUCTION

Inventory plays a basic role in most logistics and supply chains (Zhang, 2013) and is considered as stock of goods kept for sale or use in the future. This therefore makes inventory management an essential part of Logistics and Supply Chain Management. Inventory management should address both existing inventory within the organization and in country sources of supplies which can be accessed at short notice (Long and Wood, 1995). In humanitarian logistics as compared to commercial logistics which considers lead-time as an important factor of service level, lead-time does not gain heightened attention. Commercial inventory management is a core logistics function which is dominated by 'pull' systems. In contrast, Whybark (2007) asserts that disaster relief follows 'push' strategy in initial situation and turns into 'pull' system later to catch up with disaster situations.

A. HUMANITARIAN ORGANIZATIONS IN KENYA

A humanitarian organization is a non-profit organization dedicated to providing relief aid and assistance to the vulnerable members of society. They operate in areas of emergency and areas where people are afflicted by conflict,

disease and poverty. The primary objectives of HOs are to deal with disasters, to protect human rights, to provide relief services and promote the universal desire for personal and collective safety, security, respect, and dignity without any view to profit (Doyle, et. al., 2016; Kent, 2004; Van Wassenhove, 2006) stated that HOs are highly dependent on their logistics and supply chain management which represents approximately 80% of total relief budgets. Therefore sound, knowledgeable management of logistics and supply chain operations is vital to the successful attainment of HO objectives. Humanitarian Organizations Logistics and Supply Chain Management (HO-LSCM) operation cost is known to be approximately 25% higher in comparison to business supply chain management operations (Whiting and Ayala-Öström 2009). Currently humanitarian organizations are coming under increasing competition from United Nations humanitarian agencies, for-profit organizations and government departments to deliver humanitarian services utilizing scarce funding resources (Oloruntoba and Gray 2009; Scholten, et. al., 2010). There are many humanitarian organizations that presently work in Kenya. The reasons for the existence of such organizations are multiple. Persistent vulnerability due to food insecurity is likely to lead to the need for humanitarian aid, the existence of informal settlements in cities such as Nairobi where more than 60% of the population in the city residents pose shelter challenges, ethnic related violence and drought.

B. KENYA RED CROSS SOCIETY (KRCS)

In most cases KRCS responds to disasters within the country through its regional network of 64 branches spread throughout the country. The aim is always to save lives and protect livelihoods of people threatened by disasters by providing sufficient basic needs such as food and non-food aid, water, sanitation, medicine and shelter acceptable to the people. In all of the cases KRCS ensure to preserve people's dignity, security and the environment. the organization has been the co-chair of the Rapid-onset Disasters Committee since 2004 within the country in addition to being the 'lead agency" in implementing disaster response programs in various districts in the country.

C. STATEMENT OF THE PROBLEM

Natural and man- made catastrophes have been on the increase in Kenya and has left devastating effects to the human population Kenya Red Cross (2014). This has been contributed to, by the underdeveloped inventory practices in the majority of the humanitarian organizations in Kenya. The inefficiencies have been reflected by the slow response to disaster and in several occasions, with ineffective execution with experiences of delays and flaws in disaster response leading to increased casualties and worsened conditions of disaster victims.

D. GENERAL OBJECTIVE

To determine the relationship between inventory management on performance and humanitarian organizations in Kenya.

E. SPECIFIC OBJECTIVES

- ✓ To assess the relationship between replenishment and performance of humanitarian organizations in Kenya.
- ✓ To examine the relationship between supplier capacity and performance of humanitarian organizations in Kenya.
- ✓ To evaluate the relationship between storage facility and performance of humanitarian organizations in Kenya.

To identify the relationship between prepositioning and performance of humanitarian organizations in Kenya.

II. THEORETICAL REVIEW

A. GREY SYSTEM THEORY

Grey system theory is an important methodology developed by Julong Deng in 1982 for solving problems which involve uncertainties and aims at handling systems with unknown or incomplete information. Here, on the grounds of grey relations "grey" means poor, incomplete or uncertain information, thus the systems which lack information are referred to as Grey Systems (Deng, 1989). A grey system is a system which contains both known and uncertain unknowns (Zheng and Lewis, 1993). Consistent with this theory, the information is classified into three categories. It is said to be white when it is completely certain; black when it is totally unknown and grey when it is insufficient (Yang, et. al., 2016). The theory was advanced so as to cope with situations characterized by partially known and partially unknown information. A system whose information is completely clear is called a white system. A system whose information is not clear at all is called a black system (a black box). And a system whose information is partly clear or partly unclear is called a grey system. As a matter of fact, incomplete information is the basic characteristic of the problems considered in grey systems theory (Lin, et. al., 2004). These problems are of multi-attribute nature and the decision maker's evaluation of the attributes would be subjective. A grey number, which is one of the inventions of GT, is such a number whose exact value is unknown, but a range within which the value lies is known (Lin, et. al., 2004).

Grey system theory is one that copes with situations with uncertain information and uses grey numbers to describe this uncertainty (Deng, 1982). The grey number is a real number but we do not know its value (Li, 2009). The grey system puts stochastic variables as grey interval numbers that change within a given range. It does not rely on statistical method to deal with the grey quantity, but deals directly with the original data and searches the intrinsic regularity of the data (Hsu and Wang, 2009). One of the biggest hurdles to overcome in Humanitarian Relief Logistics is the huge uncertainty in demand, supplies and assessment accompanied by high time pressure. Hence, humanitarian logistics is determined by a

high level of complexity, which makes this field the most expensive part during disaster relief (about 80 % of total expenditures) according to Van Wassenhove (2006). There is always little information before a disaster happens and it is with this limited information that strategies to respond to the disaster depends upon hence the relevance of theory of Grey System in its applicability to this current study.

B. GOAL SETTING THEORY

The theory was developed in 1979 by Edwin Locke after studying the psychology of organizations and industries over the years. It refers to goals being set up for the future for subsequent performances of an individual or organization and goals refer to future valued outcomes. The setting of goals is first and foremost a discretionary creating process (Lock and Latham, 2013). The primary axiom of goal setting theory is that specific, difficult goals lead to higher performance than when people strive to simply "do their best" (Locke, 1966; Locke and Latham, 1990). The performance benefits of challenging, specific goals have been demonstrated in hundreds of laboratory and field studies (Locke and Latham, 1990, 2002). Such goals positively affect the performance of individuals (Baum and Locke, 2004), groups (O'Leary-Kelly, et. al., 1994), organizational units (Rogers and Hunter, 1991), as well as entire organizations (Baum, et. al., 2001) and over periods as long as twenty-five years (Howard and Bray, 1988; Locke and Latham, 2002). By providing direction and a standard against which progress can be monitored, challenging goals can enable people to guide and refine their performance. It is well documented in the scholarly (Locke and Latham, 2002) and practitioner (Latham, 2004) literatures that specific goals can boost motivation and performance by leading people to focus their attention on specific objectives (Locke and Bryan, 1969), increase their effort to achieve these objectives (Bandura and Cervone, 1983), persist in the face of setbacks (Latham and Locke, 1975), and develop new strategies to better deal with complex challenges to goal attainment (Wood and Locke, 1990).

Even though setting high goals sets the bar higher to obtain self-satisfaction, attaining goals creates a heightened sense of efficacy (personal effectiveness), self-satisfaction, positive affect, and sense of well-being especially when the goals conquered were considered challenging (Wiese and Freund, 2005). By providing self-satisfaction, achieving goals often also increases organizational commitment (Tziner and Latham, 1989), which in turn positively affects organizational citizenship behavior (Organ, et. al., 2006) negatively affects turnover (Wagner, 2007), and increases the strength of the relationship between difficult goals and performance (Locke and Latham, 1990, 2002). The results from goal setting depend critically on issues pertaining to goal commitment, task complexity, goal framing, team goals, and feedback. In humanitarian organizations, the goal is to respond to human suffering by delivering humanitarian assistance effectively within set timelines to assist the victims of disasters. This requires constant goal setting within an uncertain environment often within limited time frames. With the importance of achieving the specific goal of lessening the suffering of the victims as the main aim of humanitarian logistics in disaster response, theory of goal setting derives its relevance to the study.

C. CONCEPTUAL REVIEW

The objective of inventory management is to replace a very expensive asset called "inventory" with a less-expensive asset called "information". The major reason for managing inventory is to reconcile the following potentially conflicting objectives: maximize customer service, maximizing efficiency of purchasing and production, minimizing inventory investment and maximizing profit (Viale,1996,). Inventory serves five purposes within the organization: enables the organization to achieve economies of scale; balances supply and demand; enables specialization in manufacturing; provides protection from uncertainties in demand and order cycle and acts as a buffer between critical interfaces with the channel of distribution (Lambert, et. al., 1998). Inventory plays a role of staple in most Logistics and Supply Chains (Zhang, 2013). Therefore, inventory management is an indispensable part of Logistics and Supply Chain Management. Since scholars in different areas try to advance the theories and practices in inventory management, inventory management research has long been central to academic literature. Overall, there are four themes: traditional inventory management models, collaborative inventory management models, Just-In-Time (JIT) inventory management strategy and inventory prepositioning.

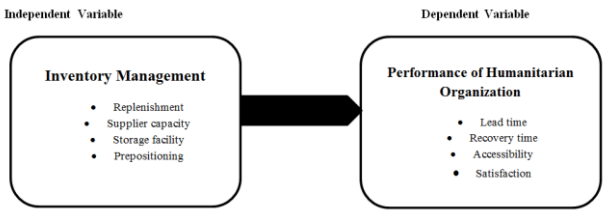
Soon after a disaster strikes, relief organizations conduct an initial assessment, usually within one day after occurrence to determine the expected quantity of supplies required to meet the relief needs of the affected population as well as pre-positioned supplies, already available at the organization's warehouses. Supplies are mainly 'pushed' to the disaster area in the response phase, whereas during the reconstruction phase the principle of 'pull' in sourcing is predominately applied (Kovacs and Spens, 2007). As emergencies cannot be planned properly in advance, an immediate response is required. Therefore, emergency stock piles of frequently needed goods like blankets, plastic sheets, food and vehicles shorten delivery times tremendously. Supply chain teams of relief organizations are responsible of transporting, warehousing and storage, order fulfillment, demand forecast, inventory control, customer service, material handling, production planning and schedule, procurement (Sandwell, 2011). Controlling disaster relief inventories is challenging. On the one hand, organizations may experience stock-outs for responding to demand surge without sufficient inventory. On the other hand, large amount of excess inventory can be commonplace due to an inactive period of extreme event disasters. Within the disaster preparedness phase, facility location and stock prepositioning decisions are two important parts that require long-term planning to achieve a high-performance disaster response (Balcik and Beamon, 2008). Recently, some humanitarian aid and disaster relief organizations have pre-positioned relief items in strategic locations to improve the ability of delivering sufficient items in a short period.

Inventory prepositioning implies that 'the point of origin' is vendor's location and 'the point of consumption' is victim location. Additionally, the segment of relief chain from

vendor's location to 'humanitarian response depot' accomplishes before disaster. Likewise, the segment from 'humanitarian response depot' to victim location accomplish after disaster. Here after 'humanitarian response depot'' are named as 'facility'. The transportation from vendor location to facility is not time sensitive action, rather cost sensitive since it takes place before disaster. Different kinds of relief items are needed at different times. Thus, some items which are immediately needed during the earliest phases of relief operations should be pre-positioned; while those which can be safely provided in later phases can be postponed. Pre-positioned items include food items, e.g., ready-to-eat meals; non-food items such as blankets, tents and jerry cans; medical supplies; as well as equipment such as telecommunication equipment (Balcik and Beamon, 2008). The prepositioning system should keep a balance between costs against risks in humanitarian aid supply chain, and increase the benefits to the affected population (Balcik and Beamon, 2008). Inventory prepositioning theory includes two broad categories: one is inventory theory which appraises stock levels needed at various nodes along a supply chain; the other is related to facility location which uses a facility location model to identify optimal locations for stocks (Ukkusuri and Yushimito, 2008).

D. CONCEPTUAL FRAMEWORK

Performance of humanitarian organizations (dependent variable) is dependent on one independent variable; inventory management, However, the applicability of each the independent variable is operationalized by the indicators under the variable. Below is a conceptual representation of this argument,



E. INDEPENDENT AND DEPENDENT VARIABLES

From the conceptual framework, there was a relationship between the independent variable (transportation management) and the dependent variable (performance of humanitarian organizations). On the independent variable, there are a number of indicators that were used to measure the relationship between the independent and the dependent variable. The indicators under transportation management were; transport modes, infrastructure status, use of 3PL and number of vehicles. The dependent variable was measured under the following indicators; lead time, recovery time, accessibility and satisfaction.

III. METHODOLOGY

The research adopted a descriptive survey research design in conducting the study. The research targeted Kenya Red Cross Society as a humanitarian organization operating in Kenya with its 5 regional offices, 64 branches and 1200 staff members in the all country. The study adopted a simple random sampling that gave an equal chance for every individual to be selected. The sample size was based on Nasuirma (2000) formula which gave a sample size of 94. Quantitative data was collected from the sample of 94 staff from the total number of 1200 staff of KRCS whereby 87 questionnaires were emailed back representing 93% response rate. Respondents were selected using simple random sampling technique. The reliability of a research instrument concerns the extent to which the instrument yields the same results on repeated trials. Cronbach's alpha which is a commonly used reliability test for assessing the internal consistency of a questionnaire (or survey) that is made up of multiple Likert-type scales and items was used. The data was edited, coded, cleaned and analyzed using STATA (version 14) program according to descriptive information following research questions. Descriptive statistical analysis was employed in order to enable the researcher to summarize, organize, evaluate, and interpret the numeric information. Descriptive statistics such as standard deviation, median, mode and mean were applied for analysis. The study used the 5- Likert scale in analyzing the data obtained from the questionnaire. The 5- Likert scale was made up of 1- strongly disagree 2- disagree 3- neutral 4- agree 5- strongly agree.

IV. FINDINGS

Results indicated that 49% and 47% of the respondents agreed and strongly agreed respectively that frequency of replenishment affects performance, 35% and 52% respectively agreed and strongly agreed that supplier capacity affects performance. On storage facilities, 40% and 47% of the respondents agreed and strongly agreed that storage facilities affect performance. Relief preposition affects performance according to 41% and 55% respectively of the respondents who agreed and strongly agreed to this statement respectively.

	n (%)	Mean (sd)
Frequency of replenishment affect performance		
Disagree	1 (1.1)	
Neutral	11 (12.6)	
Agree	34 (39.1)	
Strongly Agree	41 (47.1)	4.3 (0.7)
Supplier capacity affect performance		
Neutral	12 (13.8)	
Agree	30 (34.5)	
Strongly Agree	45 (51.7)	4.4 (0.7)
Storage facilities affect performance		
Neutral	11 (12.6)	
Agree	35 (40.2)	
Strongly Agree	41 (47.1)	4.3 (0.7)
Relief preposition affect performance		

Neutral	3 (3.4)	
Agree	36 (41.4)	
Strongly Agree	48 (55.2)	4.5 (0.6)
Overall Score (mean, sd)	**17.6 (0.2)**	**4.4 (0.4)**

Source: Survey Data, 2020

Table 1: Proportions of respondents' opinion on whether inventory management affect organizational Performance in the Kenya Red Cross Society

There was an overall mean score of 4.4 out of 5 which indicated a high agreement score by the respondents that inventory management has a relationship on organizational performance. Pearson correlation analysis was conducted on inventory management score against organization performance score to test whether inventory management had any association with organization performance.

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	.531[a]	.281	.274	.44143	.281	36.042	1	92	.000	1.825

a. Predictors: (Constant), Inv. Mgt.

b. Dependent Variable: Org. Perf.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.023	1	7.023	36.042	.000[b]
	Residual	17.927	92	.195		
	Total	24.950	93			

a. Dependent Variable: Org. Perf.

b. Predictors: (Constant), Inv. Mgt.

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)	1.592	.308		5.166	.000	.980	2.205
	Inv. mgt	.492	.082	.531	6.004	.000	.329	.655

a. Dependent Variable: Org. Perf.

Source: Survey Data, (2020)

Table 2: Simple Regression Model on effect of Inventory Management on Organizational Performance

From the above analysis, it is evident that the association between the independent variable (inventory management practices) is positive and significant (R=0.531). the coefficient of determination which shows the proportion of the relationship was (R2= 0.281) which means that 28.1% of the variation in inventory practices as explained by the performance of humanitarian organizations. The results also show a statistically significance at 5% significance level (p=0.000).

In view of the above analysis, it was therefore concluded that there was sufficient evidence to indicate that inventory management practices had a significant positive relationship on performance of humanitarian organizations.

The findings demonstrated that over 80% of the respondents agreed and strongly agreed that inventory management practices positively affect performance of humanitarian organizations. This meant that an improvement in inventory management practices would improve the performance of humanitarian organizations. Hence it is imperative that humanitarian organizations enhance their inventory management practices to enable them respond effectively in relief assistance and consequently reduce the suffering of the victims of disasters.

The study mirrors a study by G. P. Ramsden (2014), who found out that, one, there was increasing support for the view that the traditional concept of a predictable and stable commercial supply chain should no longer be the accepted norm and that, as a consequence supply chain managers employed within the business sector were increasingly forced to adopt the more event driven approaches utilized by their humanitarian relief counterparts. Two, in keeping with the corresponding organizations in the business sector, those who operate in the humanitarian sector are acutely aware of the importance that the effective inventory management has to offer. Three, in support to the view that logistics & supply chain management techniques are becoming more prevalent within the humanitarian sector and that theoretical views offered on the drive to encompass cross-functional and inter-agency approaches should be extended to include the humanitarian sector and four the data gathered offers agreement that there is a clear requirement for experienced and professional humanitarian logisticians, and an acknowledgement that such skills are not easy to find and go on to contend that Humanitarian Logistics and SCM requires more research with empirical data being gathered through the use of case studies or other qualitative methodologies.

V. CONCLUSION

The study focused on establishing the relationships between inventory management practices and the performance of humanitarian organizations in Kenya with a case study on Kenya Red Cross Society. The results indicated significant positive relationships between inventory management practices and the performance of humanitarian organizations in Kenya. The research concluded that inventory management practices had a positive significant relationship with the Performance of Humanitarian Organizations in Kenya, hence there was need for improvement of inventory management practices to ensure an effective and efficient performance in humanitarian organizations in Kenya.

VI. CONTRIBUTION

The study will help Humanitarian Logistics & Supply Chain relief practitioners in setting up their goals, plans and making decisions, which is likely to improve the effectiveness and efficiency of relief operations with reference to inventory

management.

VII. RECOMMENDATIONS

The researcher recommended that humanitarian organizations should aim at enhancing inventory management because it contributes to shorter lead time, higher accessibility to disaster zones, increased recovery time and higher satisfaction of the disaster victims.

VIII. FUTURE RESEARCH

The limited number of domains under consideration during this research was acknowledged as a limitation. Hence, a repeat of this methodology across a wider section of the humanitarian relief community which encompasses more participant organizations, would serve as a test of the contended generalizability and triangulation of the final contribution and research proposition.

REFERENCES

[1] Balcik, B., Beamon, B.M., 2008. Facility location in humanitarian relief. International Journal of Logistics: Research and Application, vol. 126, no. 2, pp. 101-121.
[2] Bandura, A., & Cervone, D. (1983). Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems. Journal of Personality and Social Psychology, 45, 1017–1028.
[3] Baum, J. R., & Locke, E.A. (2004). The relationship of entrepreneurial traits, skill, and motivation to subsequent venture. Journal of Applied Psychology, 89, 587–598.
[4] Baum, J. R., Locke, E., & Smith, K. (2001). A multi-dimensional model of venture growth. Academy of Management Journal, 44, 292–303.
[5] Deng, J.L. (1982). "Control problems of grey systems", Systems & Control Letters, Vol. 1 No. 5, pp. 288-94.
[6] Doyle T.E., Gorman R.F., Mihalkanin E.S., 2016. Historical Dictionary of Human Rights and Humanitarian Organizations: Rowman & Littlefield
[7] Howard, A., & Bray, D. (1988). Managerial lives in transition. New York: Guilford Press.
[8] Hsu, L.C. and Wang, C.H. (2009). "Forecasting integrated circuit output using multivariate grey model and grey relational analysis", Expert Systems with Applications, Vol. 36No. 2, pp. 1403-9.
[9] Kovács, G and Spens, K M. (2007) Humanitarian Logistics in Disaster Relief Operations. International Journal of Physical Distribution and Logistics Management, 37 (2), 99-114.
[10] KRCS. (2006). Kenya Red Cross Society, Strategic Plan 2006-2010.
[11] Lambert, D M, Cooper, M C and Pagh, J D. (1998). Supply Chain Management Implementation Issues and Research Opportunities, International Journal of Logistics Management, 9(2), p.1-91.
[12] Latham, G. P., & Locke, E. A. (2006). Enhancing the benefits and overcoming the pitfalls of goal setting. Organizational Dynamics, 35, 332–340.
[13] Li, J. P.; Chen, R., Lee, J.; Rao, H. R. (2013). A case study of private–public collaboration for humanitarian free and open-source disaster management software deployment. Decision Support Systems 55(1): 1-11.
[14] Lin, Y., Chen, M. and Liu, S. (2004). "Theory of grey systems: capturing uncertainties of grey information", Kybernetes, Vol. 33 No. 2, pp. 196-218.
[15] Locke, E. A. (1966). The relationship of intentions to level of performance. Journal of Applied Psychology, 50, 60–66.
[16] Locke, E. A. (1966). The relationship of intentions to level of performance. Journal of Applied Psychology, 50, 60–66.
[17] Locke, E. A. (2004). Linking goals to incentives. Academy of Management Executive, 18, 130–133
[18] Long, D.C. and Wood, D.F. (1995) 'The logistics of famine relief', Journal of Busniess Logistics, vol. 16, no. 1, pp. 213-229.
[19] Nasiurma, D. K. (2000). Survey Sampling: Theory and methods. University of Nairobi: Nairobi, Kenya.
[20] Rogers, R., & Hunter, J. (1991). Impact of management by objectives on organizational productivity. Journal of Applied Psychology, 76, 322–336.
[21] Sandwell C. (2011) A qualitative study exploring the challenges of humanitarian organisations, Journal of Humanitarian Logistics and Supply Chain Management, 1(2), 132-150.
[22] Tziner, A., & Latham, G. P. (1989). The effects of appraisal instrument, feedback and goal-setting on worker satisfaction and commitment. Journal of Organizational Behavior, 10, 145– 153.
[23] Ukkusuri, S.V. & Yushimito, W.F. (2008). Location routing approach for the humanitarian prepositioning problem. Transportation Research Record: Journal of the Transportation Research Board, 2089(1), pp.18–25.
[24] Van Wassenhove, L. N. (2006). Humanitarian Aid Logistics: Supply Chain Management in High Gear. Journal of the Operational Research Society, 57(5), 475–489.
[25] Viale J.David, Basics of Inventory Management: From Warehouse to DistributionCenter, Library of Congress Catalog Card Number 96-83618)
[26] Whiting M.C., Ayala-Öström B.E. (2009). Advocacy to promote logistics in humanitarian aid. Management Research News, 32(11), 1081-1089. https://doi.org/10.1108/01409170910998309
[27] Whybark, D.C. (2007) ' Issues in managing disaster relief inventories', International Journal Production Economics, vol. 108, no. 1-2, pp. 228-235.
[28] Wood, R. E., Mento, A. J., & Locke, E. A. (1987). Task complexity as a moderator of goal effects: A meta - analysis. Journal of Applied Psychology, 72, 416–425.
[29] Yang, C. C., & Wei, H. H. (2013). The effect of supply chain security management on security performance in container shipping operations. Supply Chain Management: An International Journal, 18(1), 74-85.

ISSN: 2394-4404

[30] Zhang, J., Dong, M. & Frank Chen, F., 2013. A bottleneck Steiner tree based multi-objective location model and intelligent optimization of emergency logistics systems. Robotics and Computer-Integrated Manufacturing, 48(55).