



Logistics Operational Performance of Relief Organisations in the Management of Internally Displaced Persons (IDPs) in Nigeria

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ABSTRACT

NEMA and JISEMA, like most relief organisations, are mandated to provide temporary emergency response services targeted at preserving lives, preventing and alleviating human sufferings until the internally displaced persons (IDPs) are relocated back to their individual communities, yet their logistics activities is a clog in the wheel of these objectives based on logistics performances as the yardstick to measure and manage their performances (transport and operations). This paper aims to determine the impacts of relief organisations' logistics performance during relief aid distributions to IDPs in Jigawa State, and Nigeria at large. Descriptive and inferential survey designs are used to analyse both primary and secondary data obtained for this study. The findings in this study reveals logistics performance had little impact on internally displaced persons (IDPS). This study revealed that diversions of these materials especially in transit and delays did not just result to hunger or malnutrition amongst the IDPs, but further bred and brought negative social impacts such as prostitution, drug use and peddling, alms collection and child labour (Almajir) in Dutse, the Jigawa State capital where most women and children from various IDP communities trooped in daily for alms collection. In view of the foregoing, this study concluded that relief organisations are not doing enough to alleviate the sufferings of IDPs in Nigeria in line with the targeted objectives of reducing and/or eliminating the plight of IDPs. This paper, therefore, recommends that the Federal Government should carry out proper evaluation of relief organisations' capacities in terms of staff professionalism, inbound/outbound distribution with respect to delivery of relief materials. Evaluations of relief organisations be made in order to ensure they achieve activity-related objectives such as last mile aid distribution methods, as well as transit visibility, IT usage, gadget availability, staff professionalism, responsiveness, transparency, supply chain reliability, transport practices compliance and logistics performance because these factors could inhibit the building of the institutional capacity of government agencies such as the NEMA, JISEMA and other relevant national bodies.

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INTRODUCTION

Transportation Management Practices (TMP) are practices found to be most effective, and practical that if worked with rightly, would assist organisations achieve their transportation goals especially in the areas of cost reduction, timeliness, transport related optimization and resource maximization (Brown, Blackmon, Cousins & Maylor, 2013); and transports in emergencies are embodied in, and are a part of the logistics activities of relief organisations.

Relief Organizations (ROs) according to the European Consensus on Humanitarian Aid (ECHA) are those organizations seeking to provide a needs-based

emergency response aimed at preserving life, preventing and alleviating human suffering and maintaining human dignity wherever the need arise even where the governments and local actors are overwhelmed, unable or unwilling to act (Carbone, 2007). The drivers of ROs supply chain are of four categories namely, United Nations (UN) with the United Nations High Commissioner for Refugees (UNHCR), federations with country offices such as the International Federation of Red Cross (IFRC), Non-Governmental Organizations (NGOs) (Thomas & Kopczak, 2005); and, Governments of countries or locations. Transport Management (TM) in emergencies is a complex task depending on the



nature of the disaster at hand; and structuring a transport management practice by most relief organisations is dependent on the state of available infrastructure and security in the area of disaster and the needs, demands and frequencies of the relief aid deliveries to the displaced persons (Thévenaz & Resodihardjo, 2010). Irrespective of the whole scenario though, during an emergency, a good transport operations and management practice in any relief organisation should fulfill three of the “rights” of supply which are: getting the goods to locations where they are needed at the right time, in the right condition and in a cost effective manner (Stadtler, 2015). The last option of the right cost is most times overlooked in humanitarian operations which relief organisations are faced with since relief organisations are not profit driven, but after saving lives (Yadav & Barve, 2015). Increasing IDP populations fueled by disasters and human displacements in Nigeria has elicited response and therefore, prompted researchers and international communities to seek pragmatic ways for transport effectiveness and efficiency through improved transports management practices and operations in humanitarian relief organisations (Thakur & Schnabel, 2001). This quest/search for pragmatic solutions according to Van Wassenhove (2006) is not farfetched from the increasing disasters that hit various regions of the world: that largely destroyed environments, claimed thousands of lives and displaced millions (refugees and IDPs) of individuals forcefully. Refugees are persons displaced across national borders to other countries while, IDPs are displaced persons who remain within the boundaries of their nation (Kunz & Reiner, 2012).

A search for literature on relief organisations’ logistics operations with specific interest in Nigeria revealed that not much success has been achieved in terms of research on relief aid material transports and distributions. Various global studies though have revealed that, just as displaced persons are on the increase, so are complaints against relief organisations especially in the areas of delays and missing aid materials in transit (Balcik et al., 2008), inefficiency and usage of poor/old vehicles, (Barbarosoğlu & Arda, 2004), and lack of effectiveness, lateness and wrong mode of transport (Beamon & Balcik, 2008). Other allegations are refusal of information sharing (Willitts-King & Harvey, 2005), corruption (PAHO, 2001), material diversion and delay (Cooley & Ron, 2002), poor transport management (Duran, Gutierrez & Keskinocak, 2011;

Kiraga, 2014) lack of logistics experts and professionals in field (Wright & Sridharan, 2002), lack of responsiveness, collaboration and flexibility (Mebrahtom, 2016), poor relief aid deliveries in LMD.

The aim of this research is to assess the operational transport practices of relief organisations in the study area. This study, from a transporter’s perspective, assesses IDPs relief organisations’ operational logistics. The study places emphasis on transport management practices and relief aid distribution operations to ascertain if really relief organisational goals of helping to source, transport and distribute relief aid materials so as to provide succor to the disturbed and displaced are met.

REVIEW OF RELATED LITERATURE

Transportations therein includes inbound, outbound, internal, and external transports and according to Tseng, Yue and Taylor (2005), once transport, logistics and other operational actors, are put in place within an organisation, a proper and effective management system practices should be put in place to serve as a guide and at the same time check their activities. Best practices are sets of useful solutions adopted and put in place by organisations for their staff to help them perform effectively and efficiently within standards while discharging their duties.

A disaster is a catastrophic event that overwhelms available resources and necessitates supports or assistance from external sources (Koenig, Dinerman & Kuehl, 1996). According to the American Red Cross (2008), there are two main types of disasters namely natural and man-made. Natural disasters include meteorological, such as hurricanes and tornadoes; topological, which include avalanches and floods; underground disasters; and biological disasters like communicable disease epidemics (Kovács & Spens, 2009). Man-made disasters include warfare (nuclear, chemical, and biological), civil, criminal/terrorist, and accidents. Whether man-made or natural, the fact remains that disasters are economically significant, with a direct insured cost of about \$8 billion per year (Swiss Report, 2005); and it is worthy to know that the costs of disasters extend beyond their immediate impacts, and affect man’s value and that of his environments’ (Pretty & Knight, 1997).

As at 2016 an estimated 31.1 million people were internally displaced due to conflicts and natural disasters. This figure is equivalent to one displaced person per second. In total, approximately 6.9 million new internal displacements by conflict and violence



were recorded in 2016 (IDMC, global report 2016); with Sub-Saharan Africa overtaking the Middle East as the region most affected, with almost one million new displacements in the Democratic Republic of Congo alone as a result of violent clashes in the provinces of North Kivu, South Kivu and Kasai. Significant levels of displacement have also continued in the Middle East, with Syria, Iraq and Yemen experiencing close to two million new displacements in total during 2016. The 2016 IDMC with World Bank data on New IDPs displacements showed, Sub-Saharan Africa 2.6 million (38.0%), Middle East and North Africa 2.1 million (30.7%), South Asia 1.1 million (15.9%), Latin America and the Caribbean 0.4 million (6.3%), East Asia and The Pacific 0.3 million (4.6%), and Europe and Central Asia 0.3 million (4.5%). Globally now as at the first quarter of 2017, over 40.3 million people are internally displaced as a result of conflict and violence (IDMC 2017 Global Report Grid); while 22.5 million are refugees and 2.8 million, asylum-seekers (UNHCR 2016 Global Trends Report). At the end of 2011, around 25 million people around the world were internally displaced by armed conflict, generalized violence and human rights violations. In contrast, the number of refugees was approximately 16 million. In spite of the fact that the number of IDPs is nearly twice that of refugees and that they face the same human rights violations, IDPs do not enjoy the same level of attention and protection from the international community (Jörnruud, 2012).

In Africa, according to the IDMC (2016), Nigeria has the highest numbers of IDPs in Africa with Three Million Three Hundred Thousand (3,300,000) IDPs and is third only to Syria with Six Million Two Hundred Thousand (6,200,000) and Colombia Five Million Seven Hundred Thousand (5,700,000) globally. The total populations of internally displaced persons (IDPs) in Africa are a lot more than those of refugees; only as at late 2010, while refugees totaled about two (2) million, the corresponding figure for IDPs was nearly five times as many showing around eleven million (11,000,000) in sub-Saharan Africa alone (Ferris, 2012).

Earliest IDPs days in Nigeria dates back to the 1967-1970 "Biafran" civil war (Nwanolue, 2017); during the almost thirty months of fighting between the Federal Government and Biafran secessionists, the conflict received more attention from the west than any other previous African 'emergency.' The Biafran civil war of Nigeria as at the time fought, led

to internal displacement of about ten (10) million people (Ibeanu, 1999).

Since her return to civil rule in 1999 after many years under the military rule, Nigeria has been affected by numerous floods (Tajudeen & Adebayo, 2013); recurrent internal conflicts and generalized violence that have resulted in the displacement of many innocent people (IDPs) within and across the six geopolitical zones in the country (Adesote & Peters, 2015), natural disasters such as flood (Adedeji, Odufuwa, & Adebayo, 2012), and various categories of violence such as inter-ethnic, ethno-religious, communal and political (Adesote & Peters, 2015).

A good logistics management system strives for effectiveness, agility, good information flow, costs minimization, and maximizes service to end-users who in the case of relief organisations are affected person (Ababa, 2016). A logistics management system is considered as a complex system given that it involves interdependent actors with a high degree of interactions (Nilsson & Waidringer, 2004); and its importance is estimated to rise since business owners now desire adjustments to procurement, production, and transportation and want it as fast and accurate as possible with the right flow of information (Dornier, Ernst, Fender & Kouvelis, 2008). Though logistics is perceived as complicated, many organizations especially in the business world have recognised the logistics and the need for its monitoring. Seeing logistics efficiency and recorded successes in business organisations' environments, relief organisations, which are service driven and not profit driven like the business organisations embraced and integrated logistics management practices into their operations (Rottkemper, Fischer, Blecken & Danne, 2011).

Transport Operations Management (TOM) best practices are standard methods or techniques established to be the most effective and practical means in achieving transportation objectives. To achieve a successful transport operation, best practices such as, carrier management, load planning and optimisation, shipment practice, and logistics performance, measurement and evaluation need to be in place and properly managed (Kiraga, 2014).

Performance measurement is very important as a strategic tool and also provides means to achieve objectives needed to fulfill an organisation's mission statement. Organisations of old basically based evaluations on performance cost, then efficiency (Skinner, 1971). But, today besides the financial measures, non-financial measures such as time, quality and flexibility are also used to evaluate



organisational performance (Folan, & Browne, 2005). Since time element has great strategic importance in business (Stack et al, 1990); its proper measurement and control is needed as it can lead to quality improvement, cost reduction, improved responsiveness to end users and delivery enhancement and productivity (Folan, & Browne, 2005). Another performance of necessity in organisations is flexibility. Flexibility shows the ability of organisation in dealing with the business and environmental dynamism (De Toni & Tonchia, 1998).

A performance measure is a metric used to measure the effectiveness and efficiency of deed (Gunasekaran, & Kobu, 2007). Organisational set of performance metrics should represent performance indicators of the entire logistics chain and show relationships between logistics functions (Van der Meulen & Spijkerman, 1985); it should also be capable for use as a calculation model in order to obtain quantifiable results. This will enhance decision making, improve performance and provide accountability.

MATERIALS AND METHODS

This study adopted a survey method with respect to inferential statistics. The Ordinary Least Square (OLS) technique was used to estimate the relationship between transport measurement practices/performance and logistics measurement of relief organisations' operations as regards last mile aid delivery, whose data (primary and secondary) spanned across a range of time. The sampling technique used for this study is purposive sampling. A sampling procedure is a purposive sampling that is a selection of professional people who have experience in various contexts in big data sets because they can purposefully inform an understanding of the research problem in the exploratory approach, and were chosen randomly based on deliberate criteria such as their knowledge, understanding, and experience on the subject of the study (Gall, Borg & Gall, 2013).

According to NEMA and JISEMA (2015), there were 15, 217 IDPs in Jigawa state. In order to

Simple Regression Analysis

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.696 ^a	.684	.680	14.10620

Source: Field Survey: 2019

have a wide geospatial coverage and in-depth qualitative academic research, this study used the Yamane (1967) simplified formula for proportions to calculate sample sizes for NEMA and JISEMA logistics staff, as well as the IDPs in the selected IDPs' community with huge logistics presence. The total sample of this study was 2259 IDPs and 25 ROs' staff as respondents. To determine the sample size for each selected IDP location, Yamane (1967) formula for determining number of respondents was employed using the formula $n = \frac{N}{1+N(e)^2}$

where n = was the sample size

N = was the population size, and

e = was the level of precision (0.05).

Therefore, to elicit empirical findings and analyses, this study adopted the use of Statistical Package for Social Sciences (SPSS) software to analyse the data relevant in this study. The hypothetical statements were tested using the simple linear regression test of significance as a tool for parametric test. This was done in order to identify whether the test results as well as the opinion of the respondents were significant or insignificant in order to make inferences.

RESULTS AND DISCUSSIONS

The objective of this study examines relief organisations' transport measurement practices/performance especially in the area of transport, and the results presented accordingly. The findings in this study revealed the transport measurement practices/performance of relief organisations was grossly ineffective and therefore responsible for the underperformance of their transport related businesses.

Hypothesis Test:

H₀: There is no significant impact of transport measurement practices/performance on logistics measurement of relief organisations' operations in the study area



The table above gives us summary statistics. Reading across, the second box tells us the Correlation (0.696 – a strong, positive, linear relationship). The next box gives a measure of effect R^2 : 68.4% of the variance in logistics measurement of relief organisations' operations is accounted for by

transport measurement practices/performance. Adjusted R^2 (68.0%) adjusts for the fact that we are using a sample to make inferences about a population. Then, we see the standard error of the estimate: 14.10620 (This is the standard deviation around the regression line).

Table 2: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1692.472	5	338.4944	374.4699	.286 ^b
	Residual	683.534	19	35.9755		
	Total	2376.006	24			

Source: Field Survey: 2019

A regression Analysis, predicting logistics measurement of relief organisations' operations was statistically insignificant. On a combined Analysis, F statistics is insignificant at .05. In effect, transport measurement practices/performance had no impact on logistics measurement of relief organisations' operations in the study area. The result of the findings supports the null hypothesis, therefore we accept it. Conversely, the transport measurement

practices/performance of relief organisations was grossly ineffective and therefore responsible for the underperformance of their transport related businesses. Again, ineffective transport measurement practices/performance impede the overall logistics measurement of relief organisations' operations and largely responsible for their dismal performance ratings. For actual prediction, we would have the following equation: $\hat{Y} = 38.201 + 4.202X_1$

Table 3: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	38.201	5.062		7.546	.073
	Transport Measurement Practices/Performance	4.202	.837	.474	5.021	.286

Source: Field Survey: 2019

We can see that the t value (5.021; $p > .05$) associated with transport measurement practices/performance was insignificant. The regression equation is: $\hat{Y} = 38.201 + 4.202X_1$.

The summary test of hypothesis revealed a statistically insignificant impact ($F = 374.4699$, $p = 0.286$, or $p > 0.05$) of transport measurement practices/operations on relief organisations' performance in this study. On a combined analysis, F statistic was insignificant at 0.05 level of significance. Consequently, the regression test of significance prompted the acceptance of the null hypothesis since by implication, standard transport operations practices had little or no impact on the relief organisations performance and conversely, this gave rise to the below par performance of the relief organisations. According to Balcik, Beamon, Krejci, Muramatsu, and Ramirez (2010), the effectiveness of

a particular transport practices on logistics performance is sometimes almost negligible because of the too many logistics players on the field, with each coming with a practice or the other.

RECOMMENDATIONS

Having assessed the two Federal and State funded relief organisations' operations and putting into consideration their challenges, the study provides the following recommendations.

1. Since findings of this study have revealed, that diversion of materials in transit and delays during distribution are the major challenges to relief organisations, to forestall unending occurrence, there is need to enable transport technology and visibility through the use of Information Technology (IT) structures and gadgets such as Global Position System (GPS), Geography



- Information System (GIS), car trackers, bar coded containers and crates, as well as Radio Frequency Identification (RFID) to checkmate the activities of government relief organisations. This will go a long way in providing visibility of goods in transit and further reduce, to the barest minimum, the public outcry of diverted relief materials and theft.
2. Based on the findings in this study, it was revealed that corrupt practices by persons in positions in humanitarian relief organisations and leaders of IDP camps had, on several occasions, colluded to divert funds and relief materials meant for displaced persons especially in transit for their personal purposes. Therefore, more concerted efforts must be put in place by the Federal Government to rid these corrupt and sharp practices especially that there is renewed commitments to provide more funds for relief materials. However, where these funds are provided, proper accountability and transparency must be the watch word to ensure the judicial use of the funds by relief organisations as that will evoke more participatory actions by local and foreign aid groups who will seek to render assistance to IDPs.
 3. The findings in this study revealed that IDPs' expectations of relief organisations were not met. It could be recalled that NEMA and JISEMA were funded to meet the needs of IDPs. In most relief organisations, logistics performances enabled them to measure and manage their performances (transport and operations) as against expectations of their personal goals, yet these performances had little impact on internally displaced persons. Therefore, the Federal Government must have carried out proper evaluation of these relief organisations to ensure they achieve activity-related objectives.
 4. Based on the findings in this study, it was revealed that IDPs' needs were not properly assessed before been supplied with relief materials. It was further revealed that tents and other materials such as mosquito nets for expectant and nursing mothers were not readily available. Therefore, the relief organisations must have properly assessed the needs of IDPs if they must achieve the objectives of providing succour to IDPs. Conversely, this is at variance with the theory of human needs, as IDPs' needs were not met.

5. Owing to the findings of this study that relief organisations were not doing enough to alleviate the sufferings of IDPs in Nigeria. Therefore, more policy actions are required from the Federal Government to monitor, assess and evaluate the activities of relief organisations with the view to ensure full compliance and achievements of the target objectives of reducing and/or eliminating the plight of IDPs. One effective way of doing that will be to institute Key Performance Index (KPI) to measure and monitor strictly the activities of relief organisations.

REFERENCES

- Ababa, A. (2016). *School of commerce department of logistics and Supply Chain Management* (Doctoral dissertation, Addis Ababa University).
- Adedeji, O. H., Odufuwa, B. O., & Adebayo, O. H. (2012). Building capabilities for flood disaster and hazard preparedness and risk reduction in Nigeria: need for spatial planning and land management. *Journal of sustainable development in Africa*, 14(1), 45-58.
- Adesote, S., & Peters, A. (2015). A historical analysis of violence and internal population
- Balcik, B., Beamon, B. M., & Smilowitz, K. (2008). Last mile distribution in humanitarian relief. *Journal of Intelligent Transportation Systems*, 12(2), 51-63.
- Beamon, B.M., & Balcik, B., (2008). Performance measurement in humanitarian relief chains, *International Journal of Public Sector Management*, Vol. 21 Iss: 1, pp.4 – 25
- Brown, S., Blackmon, K., Cousins, P., & Maylor, H. (2013). *Operations management: policy, practice and performance improvement*. Routledge.
- Carbone, G. (2007). *Exercises for weather and climate*, 6th ed. Englewood Cliffs, NJ: Prentice Hall.
- Cooley, A., & Ron, J. (2002). The NGO scramble: Organizational insecurity and the political economy of transnational action. *International Security*, 27(1), 5-39.
- De Toni, A. and Tonchia, S. (1998), "Manufacturing flexibility: a literature review", *International Journal of Production Research*, 36(6), 1587-617.
- Dornier, P. P., Ernst, R., Fender, M., & Kouvelis, P. (2008). *Global operations and logistics: Text and cases*. John Wiley & Sons.
- Duran, S., Gutierrez, M. A., & Keskinocak, P. (2011). Pre-positioning of emergency items for CARE international. *Interfaces*, 41(3), 223-237.
- Folan, P., & Browne, J. (2005). A review of performance measurement: Towards performance management. *Computers in industry*, 56(7), 663-680.
- Gall, M. D., Borg, W. R., & Gall, J. P. (1996). *Educational research: An introduction*. Longman Publishing.



- Gunasekaran, A., & Kobu, B. (2007). Performance measures and metrics in logistics and supply chain management: a review of recent literature (1995–2004) for research and applications. *International journal of production research*, 45(12), 2819-2840.
- Ibeanu, O. O. (1999). Exiles in their own home: conflicts and internal population displacement in Nigeria. *Journal of Refugee Studies*, 12(2), 161-179.
- Kiraga, R. (2014). Transport management practices and logistics performance of humanitarian organizations in Kenya. A University of Nairobi (Unpublished MBA Project).
- Koenig, K. L., Dinerman, N., & Kuehl, A. E. (1996). Disaster nomenclature—a functional impact approach: the PICE system. *Academic Emergency Medicine*, 3(7), 723-727.
- Kovács, G., & Spens, K. M. (2007). Humanitarian logistics in disaster relief operations. *International Journal of Physical Distribution & Logistics Management*, 37(2), 99-114.
- Kunz, N. & Reiner, G. (2012), "A meta-analysis of humanitarian logistics research". *Journal of Humanitarian Logistics and Supply Chain Management*, (2)2, 116-147.
- Mebrahtom, T. (2016). The Effect of Supply Chain Management Challenges on the Performance of Humanitarian Aid Organization: The case study of Addis Ababa City Administration (Doctoral dissertation, aau) Retrieved May, 18, 2017.
- Nilsson, F., & Waidringer, J. (2004). Logistics management from a complexity perspective. *The ICFAI Journal of Operations Management*, 3(2), 59-73.
- Nwanolue, B. (2017) Humanitarian issues in Biafran conflict: Lessons to the United Nations for the management of contemporary armed conflicts in Africa.
- Pan American Health Organisation (PAHO) (2001). Earthquakes in El Salvador. Disaster: Prevention and Mitigation in the Americas 83 (April): S-3
- Pretty, D., Knight, R. F. & Templeton Coll., Oxford (United Kingdom); (1997). Impact of catastrophes on shareholder value. *TREASURER*, 27-30
- Rodrigue, J. P., Comtois, C., & Slack, B. (2016). *The geography of transport systems*. Taylor & Francis.
- Siabour, K. O. (2008). *Assessing humanitarian logistics and supply chain operations-a case of Catholic Relief Services/Ghana* (Doctoral dissertation).
- Skinner, W. (1971). ANACHRONISTIC FACTORY. *Harvard Business Review*, 49(1), 61-70.
- Stadtler, H. (2015). Supply chain management: An overview. In *Supply chain management and advanced planning* (pp. 3-28). Springer, Berlin, Heidelberg.
- Swiss Report (2005), Natural Catastrophes and Man-Made Disasters in 2004. <http://www.swissre.com>. Accessed: 20 August, 2017)
- Tajudeen, O. A., & Adebayo, F. O. (2013). Issues of refugees and displaced persons in Nigeria. *Journal of Sociological Research*, 4(1), 1.
- Thakur, R. C., & Schnabel, A. (Eds.). (2001). *United Nations peacekeeping operations: ad hoc missions, permanent engagement*. United Nations University Press.
- Thévenaz, C., & Resodihardjo, S. L. (2010). All the best laid plans... conditions impeding proper emergency response. *International Journal of Production Economics*, 126(1), 7- 21.
- Thomas, A. S., & Kopczak, L. R. (2005). From logistics to supply chain management: the path forward in the humanitarian sector. *Fritz Institute*, 15, 1-15.
- Tseng, Y. Y., Yue, W. L., & Taylor, M. A. (2005). The role of transportation in logistics chain. Eastern Asia Society for Transportation Studies.
- UNHCR Global Trends Report (2016) Retrieved July 11, 2017, from www.unhcr.org/globaltrends2016/
- Van der Meulen, P. R. H., & Spijkerman, G. (1985). The logistics input-output model and its application. *International Journal of Physical Distribution & Materials Management*, 15(3), 17-25.
- Van Wassenhove, L. N. (2006). Humanitarian aid logistics: Supply chain management in high gear. *Journal of the Operational Research Society*, 57(5), 475-489.
- Willitts-King, B., & Harvey, P. (2005). Managing the risks of corruption in humanitarian relief operations. *A study for the UK Department for International Development. Overseas Development Institute: Humanitarian Policy Group*. Retrieved May, 11, 2017.
- Yadav, D. K., & Barve, A. (2015). Analysis of critical success factors of humanitarian supply chain: An application of Interpretive Structural Modeling. *International journal of disaster risk reduction*, 12, 213-225.
- Yamane, T. (1967). *Statistics: An introductory analysis*, 2nd Ed., New York: Harper and Row.