



IMPORTANCE OF KEY SUCCESS FACTORS FOR LOCAL AND INTERNATIONAL NGOS IN HUMANITARIAN SUPPLY CHAIN

Muhammad Azmat, Sebastian Kummer

Vienna University of Economics and Business, Vienna, Austria

ABSTRACT. Background: Local and international non-governmental organizations play a pivotal role in a relief operation. However, as the number of disasters and their complexity is increasing, the challenges these organizations face during a relief operation are also growing exponentially. It is crucial for relief organizations to not only understand but also to prioritize the factors, which can make their supply chain work better. Therefore, this research aims at understanding the relationship between the key success factors, which can dramatically enhance the efficiency and effectiveness of the relief operation. Moreover, this study also highlights how LNGOs and INGOs differentiate between these KSFs and how they rank them.

Methods: To address the objective of this study, the Likert scale style questionnaire was developed and distributed online to all such NGOs (worldwide), which take part in the relief operation. The collected data was then tested for its empirical significance on SPSS using Spearman's Rho, Pearson Chi-square, to understand the relationship and importance of these factors. Whereas, the odds ratio was calculated to rank each KSF.

Results: The results of the study indicate that there exist strong correlation among all selected factors and all KSFs affect INGOs supply chain at least twice as much as they do of LNGOs.

Conclusion: According to our findings and in the light of literature discussed in this research, a successful relief supply chain depends not only on greater and stronger coordination & collaboration but also on sharing information and resources among LNGOs and INGOs.

Key words: KSF, Key Success Factors, CSF, Critical Success Factors, Humanitarian Supply Chain, NGO.

INTRODUCTION

In the last couple of decades, there has been a significant increase in the number of disasters worldwide. These disasters are affecting the world in a pronounced economical and geographical manner. Tatham and Houghton [2011] point out that the disasters have raised from around 220 per year in the mid-1990s to approximately 350-400 disasters per annum in recent years, affecting over 200 million people and are estimated to cost around US\$200 billion. This sudden increase in disasters has also put much pressure on all actors involved in the humanitarian supply chain to improve their

performances and to facilitate the beneficiaries efficiently and effectively [Ngwenya, Naude 2016]. A typical relief operation involves several actors like donors, host government, local non-governmental organizations (LNGOs) or international non-governmental organizations (INGOs), military, and suppliers [Maghsoudi et al., 2018, Costa et al. 2012]. However, LNGOs and INGOs have a pivotal role to play; they act as an agent to jell all the components of the humanitarian supply chain and more importantly, in the time of misery, beneficiaries look towards them for all the possible help they can get [Van Wassenhove 2017].

Nonetheless, neither LNGOs nor INGOs have adequate means to respond to the disaster effectively and efficiently on their own, and hurdles like high urgency, uncertainty, lack of resources and local infrastructure can make relief operation even more challenging for such organizations [Martinez et al., 2011, Balciik et al. 2010]. Therefore, Yadav and Barve [2015] suggest breaking down the management process into the factors, might help responsible individuals to systematically manage and improve the disaster management processes. These factors are often referred to as critical success factors or key success factors, and they have been extensively studied in the commercial supply chain [Kabra, Ramesh 2015a]. However, According to Van Wassenhove [2017], Literature on humanitarian supply chain or humanitarian logistics is almost 15 years behind its commercial counterpart. Still, in the past few years handful of researchers like [Celik et al. 2014, Dasaklis, Pappis 2018, Kabra, Ramesh 2015b, Pettit, Beresford 2009, Sridhar, Nagabhushanam 2008] have shown some interest in understanding the impact of these success factors on the humanitarian supply chain. Nonetheless, there work mainly refers to some specific scenarios or is based on some fuzzy approaches or qualitative interviews for identifying the significance of these factors. Therefore, in this study, we try to empirically examine the relationship between some of the most important and most discussed KSFs in humanitarian literature. Furthermore, we also try to identify the differences in opinions of LNGOs and INGOs about the selected KSFs and see how they rank these factors. Thus, it leads to the following research questions we are going to answer through this research.

RQ1: Is there any significant relationship among KSFs in the humanitarian supply chain?

RQ2: What is the importance of KSFs for LNGOs and INGOs for a successful humanitarian relief operation?

LITERATURE REVIEW

In this section, we briefly explain the humanitarian supply chain; its functioning,

involved actors, and compare it to its commercial counterpart. Furthermore, we briefly explain the selected KSFs and highlight their importance in the humanitarian supply chain.

Humanitarian supply chain and key success factors

There is no simple way to explain the humanitarian supply chain, in principle, it is different from its commercial counterpart, and it adapts accordingly to the type of disaster [Eriksson, Karlsson 2017]. The humanitarian supply chain is a complex network of different tasks and activities built by several actors involved in a relief operation [Van Wassenhove 2017]. According to Maghsoudi et al. [2018] a typical humanitarian operation mostly consists of disaster relief supply chain, this includes but is not limited to activities like needs assessment, planning, procurement, warehousing, and distribution of the supplies to beneficiaries. Costa et al. [2012] further explain that humanitarian supply chain resembles a lot with its commercial counterpart, for instance, they share similar activities like preparation, planning, procurement, transportation, storage tracking, and customs clearance. However, the main objective of the humanitarian supply chain in action is to provide the right supplies to the beneficiaries at the right time and location. Maghsoudi et al. [2018] further suggest that the first 72 hours are the most crucial hour, and that is the time when needs are assessed and resources are mobilized. According to Abidi et al. [2014], an effective, efficient and timely supply chain management is directly proportional to the success of disaster relief operation, the speed with which medicine, food, shelter, and water is provided to the beneficiaries can be the difference between life and death. Therefore, it puts much stress on humanitarian organizations (LNGOs / INGOs) to perform each task and activity as efficiently and effectively as possible. Delays in providing relief to the beneficiaries could result in an augmented number of casualties. However, according to Celik et al. [2014], no actor involved in a humanitarian relief operation has enough capacities or resources to deal with the disaster on its own. Therefore, to respond to a disaster efficiently and effectively

it is important for all participating LNGOs and INGOs to develop their performances. Yadav and Barve [2015] suggest, to improve the effectiveness and efficiency of a humanitarian supply chain and to systematically manage certain activities, it is essential to divide management processes into factors. In humanitarian literature, these factors are referred as Critical Success Factors [Pettit, Beresford 2009, Yadav, Barve 2015, Kabra, Ramesh 2015b, Eriksson, Karlsson 2017] or Key success factors [Oloruntoba 2010]. However, for this particular study, we have selected the four most discussed key success factors in humanitarian literature and they are explained underneath.

Donor restrictions

Donors donate billions of dollars to international and local LNGOs for relief activities, and many LNGOs solely rely on these donations to provide aid to the victims of a disaster. Some of the key contributors for this cause are, the European Union, governments of different countries, and a substantial amount comes from the private donors [Burkart et al. 2016]. Although donors do not have an obligation to fund any disaster, they do so out of the goodwill and for humanitarian causes. However, they demand strict scrutiny of the funds provided to relief organizations and if relief organizations fail to adhere to the demands of donors like accountability, transparency, and value for money. The donor may exit the collaboration with specific or all relief organizations involved in relief activities [Costa et al. 2012]. According to Scholten et al. [2006], disasters are becoming more sophisticated and it is a very challenging task to keep trail of the money spend during the operation, which puts an enormous amount of pressure on relief organizations and limits their freedom to use the funds as they see fit. Researchers like Balcik et al. [2010] and Besiou et al. [2011], discuss that donors often issue earmarked funds, which are intended to be used for specific disaster or purpose only. Therefore, we can assume that donors are an integral part of a humanitarian supply chain and it is crucial to understand what relation they as a KSF have with other important factors under discussion in this study.

Limited resources

Shortage of resources like transport vehicles, human resources, funding and capacities during a relief operation has been reported by several researchers [Balcik et al. 2010, Ngwenya, Naude 2016, Pettit, Beresford 2009]. These researchers also suggest that disasters' unique characteristic of 'uncertainty' in time, location and intensity makes it even more challenging to match demand and supply. The threshold of each organization to handle operations and supplies also vary, which is often referred to as capacity constraints. Therefore, it is important for all actors involved in relief operation to develop their capabilities and capacities to respond to a disaster more effectively and efficiently [Celik et al. 2014]. Balcik et al. [2010] also mentioned that it is nearly impossible for LNGOs or INGOs to own and operate fleet vehicles; therefore, they rely on the third-party/local vehicles and drivers to supply relief to the affected area. However, at the time of the disaster several LNGOs or INGOs compete with each other to get hold of scarcely available transport vehicles in the disaster area. Which results in a surge of the price and shortage of vehicles, which at the end hampers the efficiency of the relief operation. Therefore, this is also one such factor we are interested to explore in this study and examine how LNGOs and INGOs rate the importance of this factor.

Information collection and needs assessment

Along with understanding the needs of the beneficiaries, it is also important to have reliable and accurate information about disaster's location, intensity, infrastructural damages and a reasonable estimate of casualties or affected people [Moshtari, Gonçalves 2016, da Costa et al. 2014]. Such information can facilitate the relief operation in several ways, for instance, it helps in understanding the logistical needs, manage resources optimally and based on the location and type of disaster LNGOs or INGOs can prioritize, which sort of supplies could be more helpful in early stages for the victims. It also helps relief organizations in avoiding forecasting errors, which might have led to over or under delivery of supplies to

beneficiaries. The first information about a disaster and needs assessment can dramatically enhance the response efficiency and effectiveness [Balcik et al. 2010, Maghsoudi et al. 2018]. Ngwenya and Naude [2016] add, if the host government or the relief organizations provide incomplete, inconsistent or inaccurate first information about the disaster's aftermath or beneficiaries, it can result in a significant loss of time in delivering relief aid, which may not even be needed by the beneficiaries. Thus, based on the above discussion, it may be concluded that Information and needs assessment plays a pivotal role in a relief operation. However, we shall further analyze how relief organizations think about this KSF and what relation it has with other factors under study in this paper.

Coordination and collaboration

Several actors who participate in the relief operation brings with them different structures, cultures, roles, and mandates, these differences eventually lead to the coordination barriers between different actors involved in a relief operation [Maghsoudi et al. 2018, Kabra et al. 2015, Kabra, Ramesh 2015a]. McLachlin and Larson [2011] suggest that apart from the reasons mentioned above chaotic post-disaster relief environment and lack of sufficient resources creating the atmosphere of urgency also often results in the unsuccessful coordination and collaboration efforts. Coordination among actors is one of the most challenging tasks to accomplish and it has direct consequences on the performance of relief operation. However, According to Lijo et al. [2018] confirms that it is common to see a lack of coordination and communication among different actors during a relief operation. Thus, resulting in making the already complex and difficult task even more challenging. The victims are the ones which most affected by this lack of coordination and collaboration. Therefore, it is safe to say that coordination among all key actors for a successful relief campaign has the utmost importance. As, Lack of coordination is often one of the biggest causes of delays in emergency relief, which adds to the sufferings of victims [Dasaklis, Pappis 2018]. Therefore, the question arises, why this most important

task becomes so difficult. Researchers like Balcik et al. [2010] and Moshtari and Gonçalves [2016] explains that due to the competing interests of the key actors, the simple task of coordination has become very complicated and challenging. They highlight a few key elements, which discourage the actors to coordinate and collaborate. For instance, LNGOs or INGOs have to show their presence in the field to get donations from the donors especially in the early stages of a disaster.

Moreover, they also compete with each other to gain more media attention, as it has a twofold impact, not only they can get more donations by showing their presence on media but also it helps in gaining the support of local networks. Furthermore, another significant issue that causes hindrance in coordination efforts is the cost of coordination. The organizations need to organize training and courses to update the knowledge of their staff members and it has certain costs associated with like salaries and travel allowances, which discourages organizations to spare already scarce resources like money and workforce for training purposes. However, Sandwell [2011] suggests that humanitarian actors involved in relief organizations should understand that coordination and collaboration would give them a competitive edge and they would be able to achieve the humanitarian goals more effectively and efficiently. Therefore, as stressed by all the researches in the discussion above, we can sum it up with a notion that coordination holds extreme importance as a KSF for a successful humanitarian operation.

METHODOLOGY

This section briefly describes how we gathered the data for this research and which statistical tests were applied to answer the research questions.

Selection of KSFs

For the selection of KSFs, we did an extensive the literature review. According to Leiras et al. [2014], literature review helps in understanding the concepts, analysis, and

interpretation of the results of the subject matter. Therefore, we looked up into two academic databases 'Web of Science' and 'Pro-Quest' and used references of key articles to collect 24 peer-reviewed academic articles, which discussed the Critical Success Factors, Key Success Factors, Critical Factors, or Success factors in the humanitarian supply chain [Dasaklis, Pappis 2018]. We discovered that the factors discussed in this research are some of the most discussed factors in humanitarian literature. Therefore, we selected these four factors and made a questionnaire to test their empirical significance.

Data collection and respondents

As discussed by Azmat et al. [2019], [2018], Meek et al. [2007] data were collected using a 5-point Likert Scale questionnaire (5 strongly agree – 1 strongly disagree). An online platform 'Lime Survey' was used to develop the questionnaire and later it was distributed with the help of World Association of Non-Governmental Organizations (WANGO) to all its member organizations in over 120 countries. The online method of distributing survey was used because it provides wide-ranging sample size, saves time, resources, and provides convenient access at lower costs [Bealt et al., 2016]. Moreover, the research team also sent out several emails; however, the response rate was very less and only 30 responses were collected. In total, we received 91 responses, and only 72 out of them were complete and fit for analysis.

For this study, we were interested in only such Local and International organizations, which actively participate in relief operations or have previously been participating in humanitarian relief. Through this survey, we collected the data from 25 LNGOS (incl. City level, Regional Level, National Level), and 47 INGOs. Furthermore, the data collected through this questionnaire was completely anonymous.

Data analysis technique

Collected data was tested for its normality using SPSS, and it was found that the collected data did not meet the assumption of

approximate normal distribution [Azmat et al. 2019]. Therefore, non-parametric Spearman's correlation was used to find the relationship between selected factors. According to Abraham et al. [2016], the Spearman's rho or Spearman's rank correlation calculates the linear relationship of at least two ordinal variables. The advantage of rank correlation analysis is that the data does not need to be normally distributed; thus, we could use it to evaluate the relationship between KSFs under study. Later on, the non-parametric Pearson Chi-Square test and odds ratio tests were used to see the differentiation in importance and ranking between LNGOs and INGOs.

Data reliability test

To check the internal consistency of the responses, we applied the Cronbach's Alpha test. According to Bland and Altman [1997], this test adds to the validity and accuracy of the interpretation of the data. They further suggested that, before employing a test for analysis, internal consistency should be determined to ensure the validity of the data. The acceptable values of alpha are between 0.70 and 0.95. However, for our responses, the value of Alpha is approximately 0.75 (Table 1), which indicates the data is consistent and fit for analysis.

Table 1. Cronbach's Alpha value for the collected data

Cronbach's Alpha	N of Items
.747	28

RESULTS AND DISCUSSION

This section presents the analysis of the data and discusses the main findings of this study.

RQ1 – Is there any significant relationship between different KSFs in the humanitarian supply chain?

To see whether there is any significant relationship among the factors under study, we used Spearman's correlation (Table 2). The results indicate that there exists a strong linear

positive correlation among all the factors with a p-value smaller than alpha at 1% ($P < 0.01$ valid for all factors). However, values of correlation coefficient vary for all factors and indicate that there is a very strong correlation between Information Collection and donor restrictions (.923), which translates, donor's restriction apply based on the information collected after the disaster or vice versa. Similarly, Limited resources and Donor restrictions (.812), indicates that donors restriction also influence the limited resources factor or vice versa. Whereas, a slightly lower correlation between donor restrictions and coordination has been observed (.533), which

indicates these two factors influence each other but not as much compared to the other two. Moreover, there exists a strong correlation between information collection and limited resources (.731), but a relationship between limited resources and coordination and collaboration is significant but not very strong (.325). Similarly, the relationship between Coordination and information collection is also significant but not very strong compared to the relationship with other factors (.486). Thus, to conclude the outcome of responses collected through this survey, it can be assumed that these factors have a statistically significant relationship with one another.

Table 2. Spearman's rho correlations among selected factors

		Donor restrictions	Limited resources	Information collection & needs ass.	Coordination & collaboration
Donor restrictions	Correlation coefficient	1.000	.812**	.923**	.533**
	Sig. (2-tailed)	.	0.000	0.000	0.000
Limited resources	Correlation coefficient	.812**	1.000	.731**	.325**
	Sig. (2-tailed)	0.000	.	0.000	0.005
Information collection & Needs Ass.	Correlation Coefficient	.923**	.731**	1.000	.486**
	Sig. (2-tailed)	0.000	0.000	.	0.000
Coordination & collaboration	Correlation coefficient	.533**	.325**	.486**	1.000
	Sig. (2-tailed)	0.000	0.005	0.000	.

** Correlation is significant at the 0.01 level (2-tailed). N of Valid Cases = 72

RQ2 – What is the importance of KSFs for LNGOs and INGOs for a successful humanitarian relief operation?

The results indicated in Table 3 are discussed under each subheading below.

Table 3. Summary of results of Pearson Chi-Square & Odds Ratio

	Donor Restrictions	Limited Resources	Information Collection & Needs Ass.	Coordination & Collaboration
Pearson Chi-Square (P-Value)	0.000*	0.000*	0.003*	0.012*
Odds Ratio (1.00 / 2.00)	0.129	0.073	0.179	0.175
For cohort LLNGOs & INGOs = LNGOs	0.335	0.262	0.395	0.415
For cohort LLNGOs & INGOs = INGOs	2.596	3.583	2.211	2.366

* $\alpha = 0.05$ N of Valid Cases = 72

Donor restrictions

Since p-value is less than significance level of 5% ($\alpha = 0.05$) i.e. $p < 0.05$ (Table 2). Therefore, we conclude that there is a strong association between an organization's type

(NGO / INGO) and Donors restrictions. Furthermore, the result of the cohort (LNGOs and INGOs) tells us that donor restriction are approximately twice as important factor for INGOs (2.596) compared to local LNGOs (0.335). We speculate that this could be because local LNGOs mostly rely on the local

contributions and the local donors understand that these funds would be utilized for the disaster relief of the affected region within the country and their country mates, thus resulting in fewer or no restrictions on utilization of funds. However, international organizations operate in multiple countries and often at the same time. Therefore, donors can restrict the usage of such donations, for instance, which country they can use the funds and for what purpose the funds may be utilized, can strictly be controlled by the donors. However, the odds ratio value of 0.129 helps us understand that among all four factors under discussion Donor restrictions can be ranked as the third most important factor.

Limited resources

Similar to the factor discussed above, a strong association is observed between organizations type and limited resources. In this case, again P-Value for limited resources is less than $\alpha = 0.05$ i.e. $p < 0.05$ (Table 2). However, the result of cohort LNGOs & INGOs tells us that limited resources are approximately thrice as important for INGOs (3.583) compared to LNGOs (0.262). This might be due to the reason that local LNGOs have strong networks within the country and they are the first one to avail the scarce resources at better prices like transport vehicles, driver, supplies, and donations as discussed by (Balcik et al., 2010, Ngwenya and Naude, 2016, Pettit and Beresford, 2009). This gives them an edge on International organizations. On the other hand, when INGOs arrive in the affected region, they face issues in finding the resources, hence this could be the reason INGOs give it more importance than local organizations. Moreover, the odds ratio value of 0.073 tells us that among all other factors, this factor is ranked at the fourth most important factor.

Information collection & needs assessment

As discussed in the literature, accurate and complete information about disaster and needs of beneficiaries is essential for the successful relief operation. In this study, our results also indicate that information collection holds significant importance when it comes down to LNGOs and INGOs. The results in table 2

show that the P-Value is significantly smaller than $\alpha = 0.05$ i.e. $0.003 < 0.05$. However, if we compare the cohorts LNGOs & INGOs, we see that this factor is approximately twice as important for INGOs (2.211) compared to local LNGOs (0.395). Which suggests that local LNGOs have more chances of having accurate information about the location of the disaster and a good approximation of the affected people as they mostly rely on local networks for such information and they are mostly the first ones to arrive on the affected location. On the other hand, INGOs rely on this information mostly through media, which in many cases might exaggerate the figures and numbers, or they might understate the impact of a disaster. Moreover, the results of the odds ratio (0.179) tells us that this particular factor is ranked first among all other factors under discussion in this research.

Coordination & collaboration

Coordination & collaboration is one of the most discussed factors in humanitarian literature. Many researchers agree that the success and failure of a humanitarian operation heavily rely not only on the coordination among different relief organizations but within the organization as well. The results of this study are also in line with the existing literature, with a p-value smaller than $\alpha = 0.05$, i.e. $0.012 < 0.05$ it can be said that coordination and collaboration is a statistically significant factor for both LNGOs and INGOs. However, the cohort analysis of LNGOs and INGOs indicates that this particular factor is almost twice as important for INGOs (2.366) compared to local LNGOs. Which again boils down to an assumption that LNGOs mostly understand not only the culture of beneficiaries but also the organizational culture of other local relief organizations thus it is relatively easier for them to coordinate and collaborate with other organizations. On the other hand, INGOs bring their organizational structure and culture and find it difficult to coordinate and collaborate with the local NGOs and with other INGOs as more international organizations follow a more hierarchical structure, which makes this complicated issue even more challenging (Eriksson and Karlsson, 2017). However, according to the value of Odds ratio

(0.175), this is the second most important factors among other factors.

CONCLUSIONS

Humanitarian supply chain faces numerous challenges, which are different from its commercial counterpart. These challenges are fairly reflected in the key success factors selected for this study. In this study, we examined the relationship between these factors and found out that there exists a strong relationship between all four factors discussed in this study. Therefore, it helps relief organizations in identifying critical challenges and let them understand the humanitarian supply chain in a better way. Furthermore, we also examined how LNGOs and INGOs differentiate among these factors. The results of the studies address that all four factors understudy have significant importance in the humanitarian supply chain of both local and international non-governmental organizations. However, the magnitude at which these factors affect their supply chain varies significantly; Especially for INGOs, the impact of these factors on their supply chain is at least twice as higher as for LNGOs. This makes sense from a broader perspective, as the scope of operation of both organizations compared in this research also varies significantly. LNGOs, mostly have a competitive edge over INGOs as they not only understand the culture of the beneficiaries and are aware of norms and customs but also due to their presence in the society make them more trustable compared to the INGOs. INGOs on the other need to make stronger ties with LNGOs to improve the efficiency and effectiveness of their supply chain. According to our findings and in the light of literature discussed in this research, a successful relief supply chain depends not only on greater and stronger coordination & collaboration but also on sharing information and resources among LNGOs and INGOs.

ACKNOWLEDGMENTS AND FUNDING SOURCE DECLARATION

This research project was funded by “Kühne Stiftung” (Kuehne Foundation), Switzerland.

REFERENCES

- Abidi H., De Leeuw S., Klumpp M. 2014. Humanitarian supply chain performance management: a systematic literature review. *Supply Chain Management: An International Journal*, 19, 592-608. <http://doi.org/10.1108/SCM-09-2013-0349>
- Abraham H., Lee C., Brady S., Fitzgerald C., Mehler B., Reimer B., Coughlin J.F. 2016. Autonomous vehicles, trust, and driving alternatives: A survey of consumer preferences. *Massachusetts Inst. Technol, AgeLab, Cambridge*, 1-16.
- Azmat M., Kummer S., Moura L.T., Gennaro F.D., Moser R. 2019. Future Outlook of Highway Operations with Implementation of Innovative Technologies Like AV, CV, IoT, and Big Data. *Logistics*, 3. <http://doi.org/10.3390/logistics3020015>
- Azmat M., Kummer S., Trigueiro Moura L., Di Gennaro F., Moser R., 2018. Impact of innovative technologies on highway operators: Tolling organizations' perspective. 7th Transport Research Arena (TRA 2018), Vienna, Austria, 2018. <http://epub.wu.ac.at/id/eprint/6273>, 1-10.
- Balcik B., Beamon B.M., Krejci C.C., Muramatsu K.M., Ramirez M., 2010. Coordination in humanitarian relief chains: Practices, challenges and opportunities. *International Journal of Production Economics*, 126, 22-34. <http://doi.org/10.1016/j.ijpe.2009.09.008>
- Bealt J., Fernández B., Jair C., Mansouri S.A., 2016. Collaborative relationships between logistics service providers and humanitarian organizations during disaster relief operations. *Journal of Humanitarian Logistics and Supply Chain Management*, 6, 118-144. <http://doi.org/10.1108/JHLSCM-02-2015-0008>

- Besiou M., Stapleton O., Van Wassenhove L.N., 2011. System dynamics for humanitarian operations. *Journal of Humanitarian Logistics and Supply Chain Management*, 1, 78-103. <http://doi.org/10.1108/20426741111122420>
- Bland J.M., Altman D.G., 1997. Statistics notes: Cronbach's alpha. *Bmj*, 314, 572. <http://doi.org/10.1136/bmj.314.7080.572>
- Burkart C., Besiou M., Wakolbinger T., 2016. The funding—Humanitarian supply chain interface. *Surveys in Operations Research and Management Science*, 21, 31-45. <http://doi.org/10.1016/j.sorms.2016.10.003>
- Celik E., Gumus A.T., Alegoz M., 2014. A trapezoidal type-2 fuzzy MCDM method to identify and evaluate critical success factors for humanitarian relief logistics management. *Journal of Intelligent & Fuzzy Systems*, 27, 2847-2855. <http://doi.org/10.3233/IFS-141246>
- Costa S.R.A.D., Campos V.B.G., Bandeira R.A.D.M., 2012. Supply Chains in Humanitarian Operations: Cases and Analysis. *Procedia - Social and Behavioral Sciences*, 54, 598-607. <http://doi.org/10.1016/j.sbspro.2012.09.777>
- Da Costa S.R.A., Bandeira R.A.M., Mello L., Campos V.B.G., 2014. Humanitarian supply chain: an analysis of response operations to natural disasters. *European Journal of Transport and Infrastructure Research*, 14, 290-310. <http://doi.org/10.18757/ejtir.2014.14.3.3035>
- Dasaklis T.K., Pappis C.P., 2018. Critical success factors for implementing cholera vaccination campaigns in humanitarian emergencies: a DEMATEL-based approach. *EURO Journal on Decision Processes*, 6, 1-20. <http://doi.org/10.1007/s40070-017-0062-3>
- Eriksson M., Karlsson E., 2017. Critical success factors' impact on agility of humanitarian supply chains. Masters Master Thesis Jonkoping university.
- Kabra G., Ramesh A., 2015a. Analyzing drivers and barriers of coordination in humanitarian supply chain management under fuzzy environment. *Benchmarking: An International Journal*, 22, 559-587. <http://doi.org/10.1108/BIJ-05-2014-0041>
- Kabra G., Ramesh A., 2015b. Segmenting Critical Factors for Enhancing the use of IT in Humanitarian Supply Chain Management. *Procedia - Social and Behavioral Sciences*, 189, 144-152. <http://doi.org/10.1016/j.sbspro.2015.03.208>
- Kabra G., Ramesh A., Arshinder K., 2015. Identification and prioritization of coordination barriers in humanitarian supply chain management. *International Journal of Disaster Risk Reduction*, 13, 128-138. <http://doi.org/10.1016/j.sbspro.2015.03.208>
- Leiras A., De Brito Jr I., Queiroz Peres E., Rejane Bertazzo T., Hugo T., Yoshida Y., 2014. Literature review of humanitarian logistics research: trends and challenges. *Journal of Humanitarian Logistics and Supply Chain Management*, 4, 95-130. <http://doi.org/10.1108/JHLSCM-04-2012-0008>
- Lijo J., Gurumurthy A., Soni G., Jain V., 2018. Modelling the inter-relationship between factors affecting coordination in a humanitarian supply chain: a case of Chennai flood relief. *Annals of Operations Research*, 1-32. <http://doi.org/10.1007/s10479-018-2963-3>
- Maghsoudi A., Zailani S., Ramayah T., Pazirandeh A., 2018. Coordination of efforts in disaster relief supply chains: the moderating role of resource scarcity and redundancy. *International Journal of Logistics-Research and Applications*, 21, 407-430. <http://doi.org/10.1080/13675567.2018.1437894>
- Martinez A.J.P., Orla S., Wassenhove L.N.V., 2011. Field vehicle fleet management in humanitarian operations: A case-based approach. *Journal of Operations Management*, 404-421. <http://doi.org/10.1016/j.jom.2010.11.013>
- Melachlin R., Larson P.D., 2011. Building humanitarian supply chain relationships: lessons from leading practitioners. *Journal of Humanitarian Logistics and Supply Chain Management*, 1, 32-49. <http://doi.org/10.1108/20426741111122402>

- Meek G.E., Ozgur C., Dunning K., 2007. Comparison of the t vs. Wilcoxon Signed-Rank Test for Likert Scale Data and Small Samples. *Journal of Modern Applied Statistical Methods*, 6, 91-106. <http://doi.org/10.22237/jmasm/1177992540>
- Moshtari M., Gonçalves P., 2016. Factors Influencing Interorganizational Collaboration within a Disaster Relief Context. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 28, 1673-1694. <http://doi.org/10.1007/s11266-016-9767-3>
- Ngwenya N.K., Naude M.J.A., 2016. Supply chain management best practices: A case of humanitarian aid in southern Africa. *Journal of Transport and Supply Chain Management*, 10, 242. <http://doi.org/10.4102/jtscm.v10i1.242>
- Oloruntoba R., 2010. An analysis of the Cyclone Larry emergency relief chain: Some key success factors. *International Journal of Production Economics*, 126, 85-101. <http://doi.org/10.1016/j.ijpe.2009.10.013>
- Pettit S., Beresford A., 2009. Critical success factors in the context of humanitarian aid supply chains. *International Journal of Physical Distribution & Logistics Management*, 39, 450-468. <http://doi.org/10.1108/09600030910985811>
- Sandwell C., 2011. A qualitative study exploring the challenges of humanitarian organisations. *Journal of Humanitarian Logistics and Supply Chain Management*, 1, 132-150. <http://doi.org/10.1108/20426741111158430>
- Scholten K., Scott P.S., Fynes B., 2006. (Le)agility in humanitarian aid (NGO) supply chains. *International Journal of Physical Distribution & Logistics Management*, 115-120. <http://doi.org/10.1108/09600031011079292>
- Sridhar K.M., Nagabhushanam M., 2008. NGOs in India- Uniqueness and Critical Success Factors, Results of an FGD. *Vision - The Journal of Business Perspective*, 12, 15-21. <http://doi.org/10.1177/097226290801200202>
- Tatham P., Houghton L., 2011. The wicked problem of humanitarian logistics and disaster relief aid. *Journal of Humanitarian Logistics and Supply Chain Management*, 1, 15-31. <http://doi.org/10.1108/20426741111122394>
- Van Wassenhove L.N., 2017. Humanitarian aid logistics: supply chain management in high gear. *Journal of the Operational Research Society*, 57, 475-489. <http://doi.org/10.1057/palgrave.jors.2602125>
- 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. <http://doi.org/10.1016/j.ijdrr.2015.01.008>

WAŻNE KLUCZOWE CZYNNIKI DLA LOKALNYCH I MIĘDZYNARODOWYCH POZARZĄDOWYCH ORGANIZACJI W OBREBIE HUMANITARNYCH ŁAŃCUCHÓW DOSTAW

STRESZCZENIE. Wstęp: Lokalne jak i międzynarodowe organizacje pozarządowe odgrywają kluczową rolę w realizacji poszczególnych operacji. Jednak ze względu na wzrastającą liczbę katastrof oraz ich wzrastającą kompleksowość, przed tymi organizacjami wzrastają coraz to większe wymagania i wyzwania. Dlatego też organizacje te nie tylko muszą rozumieć, ale też umieć ustalać priorytety dla czynników wpływających na pracę łańcucha dostaw. Celem pracy jest zrozumienie zależności pomiędzy kluczowymi czynnikami prowadzącymi do sukcesu, które to istotnie wpływają na efektywność i wydajność prowadzonych operacji. Celem pracy jest również określenie jak lokalne i międzynarodowe organizacje pozarządowe rozróżniają te czynniki oraz które Suprze nich uważane za najważniejsze.

Metody: W celu uzyskania danych, opracowano ankietę korzystającą ze skali Likerta, którą następnie wysłano do pozarządowych organizacji na całym świecie. Uzyskane w ten sposób dane zostały poddane obróbce statystycznej przy pomocy SPSS (Spearman's Rho, Pearson Chi-square) umożliwiającej zrozumienie zależności i istotności poszczególnych czynników. Dodatkowo zależności zostały wykorzystane w celu utworzenia rankingu tych czynników.

Wyniki: Wyniki przeprowadzonych badań potwierdzają istnienie silnej korelacji pomiędzy wszystkimi wybranymi kluczowymi czynnikami a efektami działania łańcuchów dostaw międzynarodowych organizacji pozarządowych, minimum dwa razy silniejszej niż w przypadku lokalnych organizacji pozarządowych.

Wnioski: Zgodnie z uzyskanymi wynikami oraz w świetle dostępnej literatury na ten temat, efektywne działanie łańcucha dostaw zależy nie tylko od silnej koordynacji i kooperacji ale również do współdzielenia się informacją i zasobami pomiędzy lokalnymi organizacjami pozarządowymi jak i międzynarodowymi organizacjami pozarządowymi.

Słowa kluczowe: kluczowe czynniki sukcesu, krytyczne czynniki sukcesu, humanitarny łańcuch dostaw, organizacje pozarządowe

Muhammad Azmat ORCID ID: <https://orcid.org/0000-0002-8894-3737>

Institute for Transport and Logistics Management,

Vienna University of Economics and Business,

Welthandelsplatz 1, 1020 Vienna, **Austria**

e-mail: mazmat@wu.ac.at

Corresponding author: mazmat@wu.ac.at

Sebastian Kummer

Institute for Transport and Logistics Management,

Vienna University of Economics and Business,

Welthandelsplatz 1, 1020 Vienna, **Austria**

e-mail: Skummer@wu.ac.at