THE DEVELOPMENT OF ONLINE PLATFORM FOR HUMANITARIAN LOGISTICS

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ABSTRACT

Whenever a disaster happens in Indonesia, there are many personal donators want to help, either transferring money or buy the donated goods at their respective place then deliver the goods to the disaster area, even though sometimes separated by an island. The objective of this paper is to suggest the online donation platform as the single gateway will be handled by Indonesian National Disaster Management Authority called BNPB according to of three metrics of the humanitarian supply chain: efficiency, equity, and efficacy. Anyone who wants to donate just opens the platform using the smartphone and desktop not only in Indonesia but all over the world and click the donation goods item that already decided by BNPB, put on the cart and do the donation fare. The platform also shows accuracy the quantity status of each donation goods, in order to prevent out of stock or overstock to match the need of survivor. The donation fare transferred directly to BNPB's bank account which is a government institution to maintain transparency. For procurement and distribution wise, BNPB can prepare the donated goods from the nearest place by the impact location to keep effective, equity and efficacy. The platform will also show the donated goods status which already distributed to the last mile. This research was conducted using a qualitative approach with data collection by interviewing humanitarian actors and site visit. The result shows the idea of online platform humanitarian logistics is very promising in dealing with the Indonesia archipelago nation, but also can be applied worldwide.

Keywords: online platform, donation goods, humanitarian logistics

1. INTRODUCTION

Indonesia as the largest archipelago in the world with more than 13,000 islands has a position located in the collision area of 3 major plates of the world, namely the Indo-Australia plate, Eurasian Plate and Pacific Plate which makes Indonesia as one of the most earthquake-prone areas and tsunami in the world. According to the Meteorological, Climatological, and Geophysical Agency called BMKG in 2017, there was an earthquake activity of 6,929 times, and, in 2018 11,577 times. While seismic activity increased to 11,920 times, which means there has been a significant increase. (BMKG, 2019)

Table 1. Total Natural Disaster in Indonesia

Type	**2017**	**2018**
Flood	980	871
Landslide	848	614
Tidal Wave/Abrasion	11	53
Tornado	887	1,113
Drought	19	130
Forest and Land Fires	96	527
Earthquake	22	35
Tsunami	0	2
Earthquake and Tsunami	0	1
Volcanic Eruption	6	59
Total	**2,868**	**3,405**

The above data has been issued by the National Disaster Management Agency called BNPB and seen a significant increase between 2017 and 2018. In 2018 there has been an earthquake and tsunami disaster in Lombok on 7 RS. Then followed by the Palu earthquake and tsunami disaster on 7,7 RS, and earthquake 7,4 RS followed by tsunami in Banten in 2019. Besides that, Indonesia also experienced floods, forest fires, landslides, and other disasters. This natural disaster, which could not be predicted, caused many victims who needed immediate assistance, especially during the disaster response period. (BNPB, 2019)

It is common to make donations in the form of used clothing, instant noodles, medicines or other donated goods by setting up a post to collect the donation items before sending them to the affected area. Sometimes the post to collect the donated goods is far away from the shipping area, sometimes even having to cross the ocean because it is located on another island.

The fact is that there are eleven tons of used clothes suitable for use in Jakarta that was not transported to the Palu disaster area, which is 2,434.9 km away and is on another island due to high transportation cost according to our informant in BPNB. This is against three metrics of the humanitarian supply chain: efficiency, equity, and efficacy. And there is still no way to connect between the donors and the needy, showing the collection points, warehouse and distribution points to last-mile users.

However, if the donor want to donate by cash money or transfer money, the question is about the safety of fund and transparency issue.

This has already made us think of conducting further research after research on the humanitarian logistics warehouse, research on the formation of a national logistics cluster under the coordination of BNPB in Aceh and, after community research service in Lombok and Banten (Hidayat, Fahriza, Agusinta, Setyawan, & Marina, 2018; Hidayat, Firdaus, & Lesmini, 2017)

(Hidayat, Olfebri, Saribanon, Rahmawati, & Marina, 2018). BNPB that was formed after the Aceh Tsunami on January 26, 2008 does have the task to coordinate disaster management activities in Indonesia based on Law Number 24 of 2007 and Presidential Regulation Number 8 of 2008. This body has the task of assisting the President of the Republic of Indonesia in coordinating planning and implementation integrated disaster and emergency management activities, as well as carrying out disaster and emergency response management starting from before, during and after a disaster that includes prevention, preparedness, emergency response, and recovery. (R. Indonesia, 2007; Republik Indonesia, 2008)

One of the challenges of humanitarian logistics in Indonesia because it is an archipelago country that has 17,504 islands that are inhabited or not which are scattered around the Equator which provide tropical weather to the country of Indonesia. Indonesia is located at coordinate's 6 degrees north latitude to 11 degrees south latitude, and 95 to 141 degrees east longitude. Indonesia is flanked by two continents and two oceans. Indonesia stretches 3977 miles between two oceans, the Pacific and Indian. The land area of Indonesia is 1,922,570 square km and the sea area is 3,257,483 square km. With a population of more than 263 million, making Indonesia the fourth most populous country in the world after China, India and the United States. (P. O. Indonesia, 2019)

2. LITERATURE REVIEW

A disaster is a serious disruption to the functioning of a community or society that carries far-reaching human, material, economic or environmental losses and impacts and that exceeds the ability of the affected community or society to cope with the use of its own resources. (United Nations, 2019). Whereas BNPB defines a disaster as an event or series of events that threaten and disrupt people's lives and livelihoods caused by natural factors and/or non-natural factors as well as human factors so as to cause human casualties, environmental damage, property losses, and psychological impacts. (R. Indonesia, 2007)

An IT platform consists of a technology base on which complementary add-ons can collaborate according to standards and facilitate transactions between stakeholders within the platform-centric ecosystem. (Sun & Keating, 2015). The data entering the online platform can be classified as part of big data. Big data is helping us achieve competitive advantage by using various analytical techniques. These help us to create insights, patterns that cannot be understood using traditional small data. (Jeble, Kumari, & Patil, 2018).

It turns out that trust and perceived risk are the direct predecessors of the intention to transact, suggesting that reducing uncertainty is a key element of consumer acceptance of e-commerce, which deserves special attention. (Pavlou, 2012). Consumer-to-Government (C2G) Model can be applied for e-commerce meaning an individual consumer interacts with the government. (Shahjee, 2016).

In contrast to commercial logistics that prioritize cost reductions, humanitarian logistics require not only cost reduction, but also the speed of distributing goods to the last mile for survivors. Based on this, there are three statistics in humanitarian logistics, namely efficiency, fairness and effectiveness. Efficiency can be relied on to reduce distribution costs to survivor. Also related to transportation costs. Equity means equating goods without the variance. While the efficacy is related to a rapid distribution to the last mile. (Kobayashi, Khojasteh, & Kainuma, 2019)

Humanitarian logistics which defines as the process of planning, implementing and controlling effective cost effective flow and storage of goods and materials and related

information from a point origin to the point of consumption in order to meet the requirements of the final beneficiary. (Timperio, Gajanan Bhanudas Panchal, Goh, & Souza, 2016)

The satisfaction level of survivor does not increase linearly, but increase remarkably. (Kokaji & Yasutaka, 2018). Not to mention that collaboration is the basis of the spirit that is emphasized in the approach or method in SCM. (Pujawan & Er, 2017)

In addition, the trust, the brand image and the average income explains their charitable behavior and examine the role of key factors that influence on donation fields. (Li, 2017)

Moreover, accepting donations online helps nonprofits, which typically face budgetary constraint, to accomplish their tasks more effectively and efficiently and to put their resources to use where they are needed most, in this case is BNPB. (Treiblmaier, 2006; Treiblmaier & Pollach, 2008). Whereas, there is finding suggest that providing information about the organization's mission information has the greatest impact on aspiring other who donate online. (Lee & Liu, 2017)

From previous research we may conclude that trust in terms of safety of fund, organization who conduct fund raising, and transparency is number factor on online donation.

3. METHODOLOGY

The approach of this research is qualitative in order to detail the development of an online platform for humanitarian logistics. Data collection takes place through in-depth interviews and focus group discussions. (Miles, Huberman, & Saldana, 2014). The data sources in this document are informants who have the ability and competence to ensure that the information provided is useful, credible and meets the requirements of this study. Since the main objective of this research is to identify the development of an online platform for humanitarian logistics, it requires informants who not only have academic knowledge in humanitarian logistics but also practitioners who work daily in the field of humanitarian logistics.

Informants in this study are: 1) National Disaster Management Authority (BNPB), 2) Disaster Management Agency of Bogor Municipality (BPBD), 3) Indonesia Disaster Management Society (MPBI), 4) Indonesian Disaster Experts Association (IABI), 5) Disaster Respond Unit (DERU) UGM, 6) Research Center for Disaster Mitigation ITB, 7) Pacific Disaster Center, 8) Disaster Response Support PDC, 9) Indonesian Logistics Community (ILC), 10) ShipsApp, 11) Porter, and 12) Qlue.

4. RESULT

The factor of platform design will impacts the donor contribution (Chakraborty, Biega, & Gummadi, 2019) and the main concern of the informants of the fund safety, therefore BNPB as government organization is trustable for this online donation platform.

The informants request the platform design as almost the same as other commercial platform, such as Lazada, Amazon.com or other commercial platform which is friendly or easy to use. (Amazon.com, 2019; Lazada, 2019) The difference between commercial and humanitarian platform is we choose the goods that we would like to donate and not to buy the goods to ourselves, then we donate money via transfer, credit card, or debit card to BNPB account number. There is indication of quantity of donated goods to prevent out stock or overstock. The goods display based on BNPB decision on donated goods for disaster.

BNPB will consolidate all the requests from donor and will buy the goods from the nearest location from the disaster area. The notification will be sent by BNPB whether donated goods already received at last mile.

The basic scheme for the online platform on input, process, and output as below:

I: The donor opens the platform from the smartphone of the desktop.
The donor chooses the donated goods that already decided by BNPB on quantity and type
The donor put the donated goods on a cart
The donor pays the amount to BNPB bank account

P: BNPB collect all the request for a donation from donor and send notification
BNPB collect all the fund and will buy the goods based on consolidation
BNPB will buy the donated goods at the nearest location to disaster area
BNPB will storage the donated goods that already bought at the disaster area
BNPB will distribute the donated goods to the last mile

O: BNPB will send a notification to donor on donated goods status
BNPB will send a notification to donor on money status

There is some input from informants with details below:

4.1 Fund Safety

This is the main concern of the informants. Because of the online platform based on transfer or credit card or debit card. The informants give input that the online platform would be managed by BNPB. Due to the transfer of some money or credit card credit to the account. Nevertheless, there was input from informants so that BNPB could work with several humanitarian actors, so that the account numbers used did not only belong to BNPB but also other humanitarian actor account numbers. The interesting part of this platform if you have enough money to buy donated goods, for example the donated goods price is one hundred thousand rupiahs but you only have ten thousand rupiahs to donate, then BNPB will combine the amount from other donors based on sharing. The suggestion of donation amount is ten thousand rupiahs.

4.2 Easy To Use

The use of online platforms is given input so that it can be a software install using both Android and Apple. And not only on smartphones but also on the website version, especially the BNPB and BPBD websites. Anyone who wants to donate just opens the platform using their smartphone and desktop not only in Indonesia but all over the world and click the platform.

4.3 Donated Goods Classification

Because BNPB divides the types of goods into 1) logistics that is anything tangible that can be used to meet the basic needs of human life which consists of clothing, food, and shelter or its decline. Whereas 2) equipment is all forms of tools and equipment that can be used to help search, rescue and evacuate affected communities, help meet basic needs and for immediate recovery of vital infrastructure and facilities, the informant proposes that the online platform focus on logistics and not on equipment (Hidayat et al., 2017). Informant suggested that donated goods be divided into 5 allocations, namely adult men, boys, adult women, girls, and babies. Of the 5 allocations divided into toiletries, apparel, food, and beverage. The informant also suggested that items of goods decided by BNPB.

4.4 e-Commerce Display

Because the public is accustomed to using e-commerce, the informant proposes that the online display platform be shaped like that, so that it is user-friendly. The donor can choose what products they want to donate, put on the cart, and do the donation fare.

4.5 Donated Goods Status

In order, there is no excess stock in certain product items, and vacancies in other items, eating online platforms are equipped with goods status, so donors can find out which product items have been donated by many donors. Then the informant suggested that the platform could direct donors to choose other items that had not been greatly contributed. The platform also shows accuracy the quantity status of each donation goods, in order to prevent out of stock or overstock to match the need of survivor

4.6 Donated Goods Purchase

The informant suggests performing this at the nearest place that is not affected by the disaster. For example, if a disaster occurs in Palu, Central Sulawesi, donated goods purchases can be made in Makassar, South Sulawesi, making it easier for the view of transportation and distribution.

4.7 Logistics Status

The informant suggests the platform will provide donors with notifications and status updates from the time donor funds are received, purchases of goods carried out, and transportation of goods. The platform will also show the donation goods status which already distribution to the last mile. The status will be updated on the online platform.

4.8 24/7 Access

This enables customers to shop or conduct other transactions 24 hours a day, all year round from almost any location.

4.9 Consumer-to-Government (C2G) Model

An individual consumer interacts with the government. The transaction involved in this case is the C2G transaction. Based on the above information, we may conclude the expected outcome of online donation as below:

Efficiency

It is hoped that using this online platform can minimize the costs of procurement, warehouse, inventory, transportation, and distribution.

Equity

It is hoped that using this online platform can help send donations equally and as needed to survivors.

Efficacy

It is hoped that using this online platform will accelerate the distribution of donated goods to survivors.

Basically, it is the same way people shopping at online platforms only for this online donation platform they give money to buy the donated goods not for themselves but for disaster survivors. Definitely BNPB needs collaboration with logistics service provider companies or other institutions to ensure this way of donation.

5. CONCLUSION, SUGGESTION, AND FUTURE RESEARCH

5.1 Conclusion

The online platform for humanitarian logistics is similar to an e-commerce platform with a different intention. Similar in terms of business process, with a focus on fund safety, easy to use, donated goods classification, e-commerce display, donated goods status, donated goods purchase, and, logistics status. Update status also is given per action.

5.2 Suggestion

Collaboration between the government (represented by BNPB/BPBD), the community, the business world, academia, and media is needed to create an online platform for humanitarian logistics because this is a joint work. If needed, making the online platform task force can be done. Future research can be done to address unanswered aspects of the research problem.

6. REFERENCES

Amazon.com. (2019). Amazon.com. Retrieved November 16, 2019, from https://www.amazon.com/

BMKG, R. I. (2019). Badan Meterologi, Klimatologi dan Fisika. Retrieved August 28, 2019, from https://www.bmkg.go.id

BNPB, R. I. (2019). Badan Nasional Penanggulangan Bencana. Retrieved August 29, 2019, from https://www.bnpb.go.id/

Chakraborty, A., Biega, A. J., & Gummadi, K. P. (2019). On the Impact of Choice Architectures on Inequality in Online Donation Platforms. In *International World Wide Web Conference Committee* (pp. 2623–2629).

Hidayat, R. D. R., Fahriza, B., Agusinta, L., Setyawan, A., & Marina, S. (2018). Study of the formation of National Logistics Cluster for Disaster Management (KLASNASLOG PB) by National Disaster Management Authority (BNPB) to streamline transport for disaster management in Indonesia. *MATEC Web of Conferences*, *229*, 04005. https://doi.org/10.1051/matecconf/201822904005

Hidayat, R. D. R., Firdaus, M. I., & Lesmini, L. (2017). BNPB Humanitarian Logistic Warehouse Management, *1*(2), 1–12. https://doi.org/https://doi.org/10.30988/jmil.v1i2

Hidayat, R. D. R., Olfebri, Saribanon, E., Rahmawati, A., & Marina, S. (2018). Peran Aktif Institut Transportasi Dan Logistik (ITL) Trisakti Dalam Meningkatkan Kesadaran Manajemen Kebencanaan Di Indonesia. In *Pengabdian kepada Masyarakat dan Corporate Social Responsibility (PkMCSR) ke-4* (pp. 958–964). Jakarta. Retrieved from https://prosiding-pkmcsr.org/index.php/pkmcsr/article/view/17/118

Indonesia, P. O. (2019). Profil Negara Indonesia. Retrieved August 31, 2019, from https://perpustakaan.id/profil-negara-indonesia/

Indonesia, R. UU No. 24 Tahun 2007 Tentang Penanggulangan Bencana (2007). Jakarta. Retrieved from https://www.bnpb.go.id/uploads/migration/pubs/1.pdf

Jeble, S., Kumari, S., & Patil, Y. (2018). Role of Big Data in Decision Making. *Operations and Supply Chain Management*, *11*(1), 36–44.

Kobayashi, T., Khojasteh, Y., & Kainuma, Y. (2019). Analysis of Multi-objective Decision Problems in Humanitarian Supply Chains. *Operations and Supply Chain Management*, *12*(2), 60–67.

Kokaji, K., & Yasutaka, K. (2018). Development of a Disaster Relief Logistics Model Minimizing the Range of Delivery Time. *Operations and Supply Chain Management*, *11*(2), 66–72.

Lazada. (2019). Lazada.co.id. Retrieved November 16, 2019, from https://www.lazada.co.id/?exlaz=d_1:mm_150050845_51350203_2010350203::11:1664704270!6307 4814446!lazada website!e!kwd-48737877925!c!!!!359441581399&gclid=EAIaIQobChMIp77NioPv5QIVWBaPCh33Yg-5EAAYASAAEgKYF_D_BwE

Lee, M. J., & Liu, X. (2017). What motivates online charitable giving among unaware and not-so-involved publics ? *Public Relations Journal*, *11*(1), 1–14.

Li, Q. (2017). Research on Impact Factors for Online Donation Behavior of Bank Customer. *The Journal of Finance and Data Science*, *3*(1), 13–19. https://doi.org/10.1016/j.jfds.2017.09.001

Miles, M. B., Huberman, M. a, & Saldana, J. (2014). Drawing and Verying Conclusions. *Qualitative Data Analysis: A Methods Sourcebook*, 275–322. https://doi.org/January 11, 2016.

Pavlou, P. A. (2012). Consumer Acceptance of Electronic Commerce : Integrating Trust and Risk with the Technology Acceptance Model. *International Journal of Electronic Commerce*, *7*(3), 101–134. https://doi.org/https://doi.org/10.1080/10864415.2003.11044275

Pujawan, I. N., & Er, M. (2017). *Supply Chain Management*. (Maya, Ed.) (3rd Editio). Yogyakarta: Andi.

Republik Indonesia, P. Peraturan Presiden No. 8 Tahun 2008 Tentang BNPB (2008). Jakarta. Retrieved from https://www.bnpb.go.id/ppid/file/Perpres_08_2008.pdf

Shahjee, R. (2016). The Impact of Electronic Commerce on Business Organization. *Scholarly Research Journal for Interdisclipinary Studies*, *4*(27), 3130–3140. Retrieved from http://oaji.net/articles/2017/1174-1484826380.pdf

Sun, R., & Keating, B. (December, 2015). Information Technology Platforms : Definition and Research Directions Australasian Conference on Information Systems Information Technology Platforms : Conceptualisation and a Review of Emerging Research in IS Research.

Timperio, G., Gajanan Bhanudas Panchal, A. S., Goh, M., & Souza, R. De. (2016). Decision support framework for location selection and disaster relief network design. *Journal of Humanitarian Logistics and Supply Chain Management*, *7*(3), 222. https://doi.org/https://doi.org/10.1108/JHLSCM-11-2016-0040

Treiblmaier, H. (2006). A Framework for Measuring People ' s Intention to Donate Online . A Framework for Measuring People ' s Intention to Donate Online. In *The Tenth Pacific Asia Conference on Information Systems (PACIS 2006)* (pp. 808–819).

Treiblmaier, H., & Pollach, I. (2008). Drivers and Inhibitors of Online Donations to Nonprofit Organizations. *Journal of International Technology and Information Management*, *17*(2), 85–98.

United Nations, T. (2019). Knowledge Portal, Space-Based Information for Disaster Management and Emergency Response. Retrieved August 30, 2019, from http://www.un-spider.org/risks-and-disasters.