Jurnal SERAMBI ILMU

Journal of Scientific Information and Educational Creativity

VOLUME 22

NOMOR 1

EDISI MARET 2021

- Taboo Words (*Haba Geutham*) As A Morals In Language and Psychological Effect in Pidie Community
Vera Wardani and Nuraiza 1-19
- Analysis of Student Needs for *Context*-Based Teaching Materials and Creativity to Improve Science Literacy of Elementary School Students
Rahmani, Maulidar, Ali Mustadi, and Anwar Senen 20-32
- Disaster Logistics *Management* as an Educational Foundation for Disaster Logistics Managers
Yeni Rimadeni, Nasrullah, Afdhal, Berwi Fazri Pamudi. Munazar, Arnisam and Erdi Surya 33-49
- Children Motoric Development Through Variety of Greetings
Taat Kurnita Yeniningsih, Nelvi Maulid, Hayati, Aida Fitri, Israwati, Dani Sukma Agus Setiawan and M. Syukri Azwar Lubis 50-61
- Competency Analysis of Student Coqnitive in Learning in Elementary Schools
Fita Nelyza, Dwi Putri Rejeki, Fatimah, 62-73
- Actualization the Trilogy of Education Values in the Family: A Empiric Study of the Community of Banda Aceh City
Darwin 74-87
- The Impact of Covid-19 Pandemic on Adolescence Learning Behavior in Indonesia
Syiva Fitria and Dedy Surya 87-97
- Analysis of Student's Creativity Value and Process Skills through Learning Strategies Guided Inquiry
Muchsini and Hamdi 98-108
- The Analysis of Learning Outcomes through Problem-Based Learning Model Approach On Circle Materials
Muhamad Saleh, Uli Lastriani, Rifaatul Mahmuzah, Heri Kurnia and Aklimawati 110-125
- Provide Student Knowledge About How Response On Growth Of Vetiver Seeds (*Vetiveria zizanioides*) In Saline Soil To Ascorbic Acid on Field Practice Learning of Plant Physiology
Aisar Novita, Suwandi Saragih, Efrida Lubis, Abdul Rahman Cemda, Fitria, Rini Susanti, Silvia Nora, Arie Hapsani Hasan Basri and Merlyn Mariana 126-138
- Computer Adaptive Test Development To Assess Students' Psychology
Phan Thi Thu Nguyet and Muslem Daud 139-149

Diterbitkan Oleh
FKIP Universitas Serambi Mekkah Banda Aceh

Jurnal
Serambi Ilmu

Volume 22

Nomor 1

Hal.
1 - 149

Banda Aceh
March 2021

Disaster Logistics Management as an Educational Foundation for Disaster Logistics Managers

Yeni Rimadeni¹ Nasrullah², Afdhal³, Berwi Fazri Pamudi⁴. Munazar⁵, Arnisam⁶ and Erdi Surya⁷

¹Yeni Rimadeni is a Lecturer of Health Polytechnic of the Ministry of Health, Aceh Besar, Indonesia

Email: yeni.rimadeni@poltekkesaceh.ac.id

²Nasrullah is an Alumni of the Master of Disaster Science at Syiah Kuala University, Banda Aceh, Indonesia

Email: nasrullah1426@gmail.com

³Afdhal is a Lecturer of Health Polytechnic of the Ministry of Health, Aceh Besar Indonesia

Email: afdhal2006@gmail.com

⁴Berwi Fazri Pamudi is a Lecturer of Health Polytechnic of the Ministry of Health, Aceh Besar Indonesia

Email: berwi.skrining07@gmail.com

⁵Munazar is a Lecturer of Health Polytechnic of the Ministry of Health, Aceh Besar Indonesia

Email: nazar_1575@yahoo.com

⁶Arnisam is a Lecturer of Health Polytechnic of the Ministry of Health, Aceh Besar Indonesia

Email : arnisam11@yahoo.com

⁷Erdi Surya is a Lecturer of Universitas Serambi Mekkah, Banda Aceh, Indonesia

Email : erdisurya@serambimekkah.ac.id

Abstrac

The availability of optimal logistics according to the minimum standards for the needs during the emergency response is crucial in the success of the disaster logistics management series. Logistics supplies with a minimum standard carried out by the Central Aceh District Government are currently not optimal and effective, so disaster logistics planning is needed. With the limitation of the research problem that humanitarian logistics supplies according to the minimum standards for the needs in the initial phase of the emergency response in the face of the landslide disaster in Central Aceh District have not been fulfilled optimally, this study aims to produce optimal and effective efforts to meet the availability of logistics with minimum requirements the right way to do logistics supplies, and how to monitor disaster logistics supplies. All of these things are focused on dealing with the landslide disaster in Central Aceh District. To obtain maximum results this research uses a system consisting of input elements, process elements, and output elements which are supported by primary data and secondary data obtained through in-depth interviews and observations. The results of this study indicate that (1) evaluating several components in the aspect of local government

capacity related to logistics supply implementation, (2) Geographically, by analyzing rainfall data, the time is right for carrying out logistics supplies.

Kata Kunci: logistics management, disaster, education values

INTRUDUCTION

A disaster is an event or series of events that threatens and disrupts people's lives and livelihoods which are caused either by natural or non-natural factors as well as human factors resulting in human casualties, environmental damage, property losses and psychological impacts (Law No. 24 of 2007). Logistics and equipment management in disaster management consists of planning and inventorying needs, procurement and reception, warehousing and storage, distribution, transportation, receiving to destination, elimination and accountability (Hadiguna and Wibowo, 2012).

Central Aceh District is one of the districts in Aceh Province which is prone to landslides and almost every year the Regency is hit by landslides that occur during high rainfall. Based on data from the Regional Disaster Management Agency for Central Aceh District in Central Aceh in Figures, landslides that occurred in the last 3 (three) years in Central Aceh District resulted in 825 families being displaced, 1020 houses damaged, and 142 Ha of damaged gardens in 2013. In 2014, 20062 families were displaced and 1571 hectares of gardens were damaged. In 2015 the Central Aceh BPBD released due to a landslide disaster that resulted in 6626 families being displaced, and 5893 Ha of damaged gardens (BPBD Aceh Tengah, 2019).

From the data conditions of landslides that occurred in the last 3 (three) years in Central Aceh District and the impacts experienced, it requires the Government to be more prepared in dealing with it, especially handling during emergency response, including how to optimize the humanitarian logistics system running well, especially the availability of logistics. Based on the description above, so that disaster logistics supplies can be maximized, a strategy is needed in planning the availability or logistics resources in Central Aceh District as well as supplies from outside the region and how to process the supplies. So that through this planning strategy, an effective way is obtained in fulfilling the availability of disaster logistics in the storage warehouse and can also meet all requests in the upcoming landslide disaster period. The importance of the availability of logistics is also the main key and absolute requirement, because logistics are directly related to the survival of disaster victims.

Disaster Logistics

Logistics is anything that is tangible and can be used to meet basic human needs consisting of clothing, food and shelter or its derivatives. Included in the logistics category are consumable or consumable goods such as: nine staples, medicines, clothing and accessories, water, tents, sleepwear and so on (Perka BNPB No.13 of 2008). Logistics

are key to disaster response operations and humanitarian assistance missions. Duration and quality of care, critical factors for reducing the social and economic impact of humanitarian operations in an emergency, are strongly influenced by the degree of excellence in logistics operations (Aparecida. Maria et all. 2014).

Thomas and Mizushima (2005) argue that humanitarian logistics is a process of planning, implementing, efficient monitoring, cost effective flow, and storage of goods and related information from point of origin to point of consumption for the purpose of meeting the final demand of beneficiaries. The availability of humanitarian logistics is strongly influenced by several sectors, one of which is the agribusiness sector, in its implementation the agribusiness sector is organized between several complex supply chain values, namely: input from suppliers, producers, intermediaries, processors and consumers mediated by facilitating agents. and environmental factors.

According to Rienna Oktarina (2009), in general, logistical definitions are activities related to the procurement, storage and delivery of goods according to the type, quantity, time, and place that consumers want or need from the point of origin (point of origin) to the point of destination (point of destination). Disaster logistics is an activity carried out to fulfill basic human needs when a disaster occurs. These basic needs are categorized into needs for clothing, food and shelter or their derivatives. However, the category of disaster logistics is more to what is really needed at the time of a disaster, namely food, medicine, clothing and accessories, water, tents, sleeping suits and others (Nofa Ariyana, 2012). Nofa Ariyana (2012) also explains that the main factors that can support the operation of the logistics system and equipment for disaster management are the ability of infrastructure and the availability of transportation means. The supply chain in the logistics management system and disaster management equipment is based on: Logistics entry point, main warehouse, distribution warehouse and last storage warehouse at command post.

According to Loree. Nick 2018 stated that in disaster logistics management, you can use a mathematical model to determine the location of the points of distribution of points of distribution (POD) and the allocation of inventory in Post-Disaster Humanitarian Logistics (PD-HL). The model minimizes the costs of facility placement, logistics, and deprivation (that is, the costs imposed on survivors due to lack of access to availability).

Logistics Management Stages

Regulation of the Head of the National Disaster Management Agency No. 13 of 2008 concerning Guidelines for Logistics Management and Disaster Management Equipment explains that the stages of the logistics management process in disaster management consist of eight stages, namely: planning or inventory of needs, procurement or receipt of goods, warehousing or storage, distribution, transportation, acceptance, elimination, and accountability.

In logistics management, it is very important to pay attention to the context of the warehouse, adjust the assessment in terms of classification of requests, forecast the required logistics, and control the stock of goods (Kholidasari, 2018)

Disaster Logistics Inventory Planning

In general, Rangkuti (2004) explains that inventory is the materials provided for the production process in a company or goods provided to meet consumer or customer demand at any time. Logistic or goods inventories have a function, according to Rangkuti (2004), the functions of inventory are: (1) The decoupling function is an inventory process that aims to meet customer demand without depending on suppliers (2) The economic lot sizing function, namely the process of inventory by making purchases in the quantity is greater than the costs arising from the large amount of inventory (rent and warehouse maintenance costs or other risks) (3) Anticipation function, namely the process of inventory to deal with fluctuations in demand and face uncertainty in delivery periods and demand for goods.

The Sphere Project Humanitarian Charter and Minimum Standards in Humanitarian Response (2011) explains that there are several minimum standards for the needs of people affected by disasters, namely:

1. Minimum Standards in Water Supply, Sanitation and Health Promotion

Minimum needs for people affected by disasters or refugees in water supply, sanitation, and health promotion are described in table 1:

Table 1
**Minimum Standards in Water Supply, Sanitation and
Health Promotion**

Requirements Details	Total Requirements
Water container for transportation with a capacity of 10-20 liters	One per family
Water container for storage with a capacity of 10-20 liters	One per family
250 grams of soap	One per person per month
200 grams of laundry soap	One per person per month
Material for menstrual hygiene for women and easy to wash	One per person
Total basic water needs (survival needs, basic hygiene needs, and basic needs for cooking)	15 liters per person per day
Toilet	One per 20 people
Garbage drum	Two drums per 80 - 100 people

1. Minimum Standards for Food Security and Nutrition

The minimum standard is the availability of rice or other staple foodstuffs of 400 grams per person per day, assuming that the affected community receives 2 (two) meals a

day, or the availability of foodstuffs is equivalent to 2100 calories / person / day where 10-20% of the total energy protein and 17% of the total energy provided by fat.

2. Minimum Standards for Shelter, Settlements, and Non-Food Rocks

Communities affected by disasters or refugees for shelter should be provided with closed spaces with an average size of 3.5 - 4.5 square meters per person. In addition, each victim also has sufficient access to non-food assistance to protect them from the climate while ensuring their welfare, such as: blankets, clothes, footwear, towels and kitchen utensils for each family by adjusting the number of people in each family.

3. Minimum Health Service Standards

Public health services for disaster victims are based on initial situation assessments as well as continuous health information data aimed at preventing the increase in the death rate and falling victims due to disease through health services as needed. The minimum standards for health services that need to be considered are one basic health unit that provides general basic health services per 10,000 people, one health center per 50,000 people, and one district hospital per 250,000 people. Every health service must have main medicines with a supply of more than a week, for disaster needs, health workers must have a list that has been prepared in advance, especially medicines for diseases that are easily infected in refugee camps such as: cholera, dysentery, typhus, measles, malaria and dengue fever.

Landslide Disaster Analysis and Social Impact on Society

According to the Center for Volcanology and Geological Disaster Mitigation, Landslides are the movement of slope-forming material in the form of rock, rubble, soil, or mixed materials, moving down or out of the slope. The process of landslides, water that seeps into the ground will increase the weight of the soil. If the water penetrates until the soil is impermeable which acts as a sliding area, the soil becomes slippery and the weathering soil above it will move along the slope and exit the slope.

Landslide is a type of mass movement of soil or rock, or a mixture of the two, down or out of the slope as a result of disturbing the stability of the soil or rock making up the slope. Landslides occur due to stability disturbances in the soil / rock making up the slopes. The causes of landslides can be divided into causes in the form of: controlling factors for slope stability and the triggering process of landslides. This slope stability disturbance is controlled by morphological conditions (slope slope), rock or soil conditions that compose the slope and hydrological or water system conditions on the slope. Even though a slope is vulnerable or has the potential for landslides, due to the conditions of the slope, rock / soil and water system, the slope will not slide or be disturbed by its stability without being triggered by a triggering process (factors causing landslides).

Socio-economic conditions are a condition or position that is socially regulated and determines a person in a certain position in the structure of society. The granting of this position is accompanied by a set of rights and obligations that must be fulfilled by the status bearer. The social level is a non-economic factor such as culture, education, age and gender, while the economic level is such as income, type of work, education and investment (Melly in Susanto, 1984).

The landslide natural disaster that often occurs in Central Aceh Regency is one of the natural disasters that cause losses even though in fact there are some landslides that have no casualties in the event, but have a significant impact on socio-economic changes among the people living around the landslide affected areas . The impact on the socio-economic life is the damage to the place of residence even to the point where it is no longer livable. People affected by landslides inevitably have to be relocated to other safer places. In addition, with the landslides, people have to evacuate which has an impact on household income. With such circumstances, the government must provide logistical assistance, especially the basic needs of the community.

In the pre-disaster situation the head of the household must be able to take appropriate actions to reduce casualties, property and environmental damage with early disaster warnings, therefore disaster training / simulations are needed which must be carried out when he hears a warning, where and how to save himself at a certain time according to with the landslide location.

RESEARCH METHODS

The design of this study is a qualitative research using a system approach which consists of elements of input, process and output. The method used is descriptive method by studying the condition of the current disaster logistics supply system in Central Aceh District. Arikunto (2006) states that qualitative research is a research procedure that produces descriptive data in the form of speech or writing and the behavior of the people being observed. In this study, the authors try to describe the organization that handles disaster logistics, human resources (HR) involved, logistics sources, supporting facilities and infrastructure, funding allocation, the amount and type of supplies, and geographical factors.

This research is located in Central Aceh District. The population in this study were heads, secretaries, section heads and section heads in agencies that are directly involved with planning, implementation and evaluation of disaster logistics supplies, including BAPPEDA, BPKD, BPBD, Social Service and Health Service. Then the researchers took a sample of 5 people who were used as key sources, namely 1 person from the Regional Development Planning Agency (BAPPEDA), 1 person from the Regional Financial Management Agency (BPKD), 1 person from the Regional Disaster Management Agency (BPBD), 1 person from the Department. Health and 1 person from the Social Service.

The technique of collecting data was by means of in-depth interviews with the 5 sources. This study also uses data collection techniques through the method of observation (observation) directly to the logistics storage warehouse. The tools used in data collection were a structured list of questions in the form of an in-depth interview guide of 17 questions, field observation guidelines consisting of 13 questions. In the interview process and data collection, researchers used voice recording tools, videos and cameras available on OPPO cellphones.

Based on the explanation that has been developed by Agus Salim (2006), it can be briefly explained that (1) data reduction, in this stage the researcher makes a selection, and focuses attention on simplification, abstraction, and transformation of the crude data obtained. (2) Presentation of data (data display). The researcher develops a structured information description to draw conclusions and take action. Data display or data presentation commonly used in this step is in the form of narrative text. (3) Conclusion drawing and verification. The researcher tries to draw conclusions and carry out verification by looking for the meaning of each symptom he gets from the field, noting the possible regularities and configurations, the causality of phenomena, and propositions.

RESEARCH RESULTS AND DISCUSSION

Through the following systems approach method will be presented in full about the information obtained and the results obtained in the development of this research.

Input Element

1. Organization

One of the research results obtained in this research is to know the extent of the involvement of agencies related to disaster logistics in disaster logistics supply activities, the intended involvement is whether the agency is only involved in the planning stage, implementation or implementation stage, and evaluation stage. In addition, it is also reviewed from each stage of the logistics inventory activity, in managing the logistics inventory section, it has or does not have a separate structure.

The researcher's question related to the organization "To what extent are your agencies involved in disaster logistics supply activities?"

The researcher asked the Head of the Infrastructure and Territorial Division of BAPPEDA Central Aceh Regency, he said:

"...di BAPPEDA pada dasarnya adalah menerima usulan-usulan teknis yang diusulkan dari dinas terkait dalam penanggulangan bencana khususnya dinas penanggulangan bencana mengusulkan kegiatan dalam penanggulangan bencana baik itu pasca atau pra-bencana dinas tersebut mengusulkan kepada kita, kemudian kita menyesuaikan dengan kemampuan daerah sekaligus dengan RPJM daerah dan menyesuaikan kepentingan-kepentingan dalam proses penyediaan bahan-bahan logistic agar tidak ada tumpang tindih antara dinas lainnya dalam penanggulangan bencana..."

Next the Secretary at the Central Aceh District BPKD answered the above questions as follows:

"...BPKD fungsinya hanya mencairkan dana bantuan kepada BPDB mengajukan semacam pernyataan dengan bahan-bahan yang sudah lengkap dan dengan data yang diberikan BPBD untuk mencairkan dana tersebut dalam bentuk TU (Tambah Uang)..."

Then with the same question was also asked to the Head of Emergency and Logistics Division of the Central Aceh District BPBD, his answers to the questions above:

"...Untuk saat ini apabila terjadi bencana maka dari BPBD yaitu TRC itu kami tugaskan kelapangan setelah itu baru kita tahu setelah ada tagihan cepat, seperti jumlah korban, kerugian maupun kerusakan yang terjadi, kemudian baru dihitung jumlah kerugiannya sehingga kita bisa menghitung jumlah logistik untuk bencana tersebut..."

Next, the Head of the Primary Health Services Section of the Central Aceh District Health Office answered the above questions:

“...Pada Dinas Kesehatan saat ini kami sesuai dengan anggaran yang ada dan arahan dari atasan kami hanya mendata jumlah korban terutama yang luka atau yang mengungsi, jadi kalau logistik kami juga menyediakan obat-obatan serta membuka pos kesehatan yang bekerjasama dengan puskesmas...”

Then the Head of the Social Protection and Disaster Victims Section of the Central Aceh Social Service, answered the same question above as follows: *“...Dalam konsep kebencanaan ada 2, bencana alam seperti longsor, gempa bumi, angin puting beliung, sedangkan bencana social seperti kebakaran, konflik, tetapi di Aceh Tengah ini sudah seperti marketnya bencana, dari bulan 1- 3 biasanya kita menghadapi longsor, longsor dan longsor bandang akibat musim hujan yang kadang-kadang tidak bisa diprediksi, dan untuk saat ini dari bulan 3 hingga sekarang sering terjadi bencana social yaitu kebakaran dari beberapa kecamatan di Aceh Tengah. Menyangkut logistiknya itu sumbernya dari Kementerian Sosial dan APBA, jadi apabila terjadi bencana kecil maupun besar logistiknya tetap dari Dinas Sosial yang menyangkut semua tentang kedaruratan...”*

The following is a statement from the Head of the Logistics Section of the Central Aceh BPBD in answering the question that your agency has a separate section for disaster logistics supplies and is there an organizational structure? *“...Disini sudah ada SK untuk bagian Logistik berjumlah 5 orang dari TRC untuk mengelola gudang ...”*

Furthermore, one of the statements regarding the absence of an organizational structure in the agencies involved in disaster logistics supply activities, for the same question above was submitted to one of the staff in the Social Protection and Disaster Victims Section of the Social Service of the Central Aceh Regency, he answered: *“...Kalau untuk struktur setahu saya memang tidak ada sama sekali, kami beberapa orang staf ditunjuk langsung oleh kepala seksi untuk membantu mengurus logistik pada gudang logistik dinas sosial...”*

Based on the results of the research above with regard to organizations, it is known that the role and involvement of agencies under the Central Aceh District Government related to disaster logistics supply activities has not been running optimally, there are still problems including: From several agencies involved in supply activities In disaster logistics, there are still agencies that are not involved in the planning, implementation and evaluation stages, in this case the Office of Cooperatives (Dinas Koperasi), Small and Medium Enterprises and Industry. This is due to more technical constraints within the Central Aceh District Government where the leadership through FORKOPIMDA has not determined the main tasks and functions of the agency in disaster logistics supply activities so that the Cooperatives, Small and Medium Enterprises and Industry Offices cannot take a stand to be involved in disaster logistics supply activities.

It is still seen in general that the Central Aceh District Government does not yet have an organizational structure related to disaster logistics. In particular, it is also seen that several organizations, especially agencies involved in the implementation of disaster logistics supplies, do not yet have their own organizational structure, only BPBD has its own organizational structure. This is also more of a technical constraint for each agency that does not create a separate structure because it considers that the logistics provided are not only for disaster needs, but also for the need for structure to facilitate coordination.

The involvement of related agencies under the Central Aceh District Government in disaster logistics supply activities is considered very important, not only the task of the BPBD but the role of other agencies is also highly expected, indeed according to Law no. 24 of 2007 concerning Disaster Management states that the implementation of disaster management is the responsibility of BPBD but what needs to be underlined is that the Law also states that the Head of BPBD is the Regional Secretary, so that technical agencies that are still related such as the Cooperative, Small and Medium Enterprises and Industry Office must also involved in particular in disaster logistics activities. In addition, the important role of these organizations is to establish good coordination and cooperation to achieve the main goals, while the main objective is the fulfillment of optimal disaster logistics supplies, according to Malayu Hasibuan (2013) that the organization is a formal, structured and coordinated system of alliance of several groups that work together to achieve goals. As it is known that the availability of logistics is very much influenced by the industrial sector, so in its implementation in Central Aceh district, it is necessary to involve the Office of Cooperatives (Dinas Koperasi, Small and Medium Enterprises and Industry 9 Dinas Koperasi, Usaha Kecil Menengah dan Perindustrian) to coordinate it.

In addition, in the implementation of activities, especially in this case the supply of disaster logistics, work units working in these agencies should have their own work structure so that they become the basis for their respective functions / jobdesk and have direct responsibility for work and responsibility for providing job reports to superiors. Malayu Hasibuan (2013) also explains that the organizational structure shows a division of labor and shows how these different functions or activities are coordinated. Apart from that the organizational structure also shows the specialization of work, channels of orders and submission of reports.

2. Human Resources

In general, based on observations, it is known that the human resources or employees who are actively involved in disaster logistics under the Central Aceh Regency Government are 26 people with the following distribution: 16 people involved in the Regional Disaster Management Agency, the number of employees involved in the Regional Disaster Management Agency. The Social Service is 6 people, and the number of employees involved in the health office is 4 people. From the data, the number of employees who are actively involved in disaster logistics is more dominant or the largest number is in the Regional Disaster Management Agency (BPBD) with details of the duties of each employee.

The next researcher's question regarding human resources in logistics management is whether the existing staff has fulfilled the number as a disaster logistics supply person?

In-depth questions the author asked the Head of the Logistics Section of the Central Aceh BPBD, he said:

“...Untuk saat ini pegawai yang kami miliki masih sangat kurang dan sebenarnya kami sangat membutuhkan penambahan pegawai khususnya tenaga pengelola barang, karena mereka petugas yang utama dalam melakukan persediaan logistik hingga mempersiapkan barang untuk di distribusikan...”

Then the same thing was conveyed by the Head of the Pharmacy Warehouse of the Central Aceh District Health Service, his answers to the questions above were:

“...Pegawai yang ada ini tidak cukup, sampai saat ini pegawai yang kami miliki di gudang farmasi untuk mengurus logistik hanya 2 orang dan belum ada penambahan, saya tidak tahu pasti kenapa belum ada penambahan pegawai, mungkin bisa karena keterbatasan dana...”

Next the question was asked to the Head of the Social Protection and Disaster Victim Section of the Central Aceh Social Service, his answers to the questions above were: *“...Sudah pasti pegawai yang ada ini tidak cukup, segala fasilitas yang ada saat ini adalah dukungan provinsi dan kami berharap dukungan dari dinas sosial provinsi untuk menambah jumlah petugas yang mengurus logistik. Karena kami di daerah anggaran sangat terbatas...”*

Based on the results of the study, the lack of human resources or staff in charge of disaster logistics in several agencies within the Central Aceh District Government is the main problem due to limited budgets to recruit new officers. Adequacy of the quantity of human resources owned by an agency is also an important factor that must be considered by the agency so that its objectives can be maximally achieved.

According to Hani Handoko (2010) that whether employees are sufficient or not is based on the analysis of existing tasks and organizational structures, even though in the task analysis only quality and not quantity requirements are determined, with the task analysis we can determine the number of employees we need precisely. Thus the right solution to staff shortages in addition to adding employees, analysis of employee duties also needs to be carried out by agency leaders who carry out disaster logistics supplies, so that when there are additional distribution employees the number of employees to fulfill important tasks can be fulfilled effectively and efficiently.

Hani Handoko (2010) also explains that training and education are activities that aim to improve and develop employee attitudes, behaviors, skills and knowledge as desired by the organization. The training and education process can be carried out after the recruitment of employees or after the employee has worked at the organization.

3. Facilities and Infrastructure

To support the smooth running of disaster logistics supply activities in Central Aceh District, agencies that carry out disaster logistics supplies are also supported by facilities and infrastructure. To find out the condition and whether or not the facilities

currently available are fulfilled in supporting disaster logistics supply activities, researchers also ask questions to resource persons from both BPBD, Social Service and Health Service. What are the conditions of the existing facilities and have they been met to support disaster logistics supply activities?

First, the researcher asked the logistics management officer of the Central Aceh District BPBD, his answers to the questions above: *"...Untuk saat ini fasilitas yang ada saya rasa belum cukup, masih kurang memenuhi syarat untuk kelayakannya yang seharusnya dipisahkan antara logistik dan peralatan..."*

Furthermore, the same question above was asked to the logistics warehouse officer for the Social Service of Central Aceh Regency, he answered as follows: *"...Kondisi fasilitas yang ada semua baik, dapat digunakan semuanya. Namun kalau ditanya apakah sudah terpenuhi saya dapat pastikan dari jumlah yang ada semua ini belum terpenuhi karena masing-masing cuma punya 1 unit. Contoh saja gudang yang ada saat ini terletak di Kec. Kebayakan, ini hanya mempermudah untuk akses bagian Tengah. Kalau untuk penyimpanan sebenarnya gudang sudah cukup, namun harus juga didukung oleh fasilitas lain seperti transportasi agar dapat mudah menjangkau seluruh wilayah Tengah dengan cepat..."*

The same thing was conveyed by the staff of the Pharmacy Warehouse of the Health Service of Central Aceh Regency, his answers to the questions above: *"...Kekurangan fasilitas pendukung masih kami rasakan sekarang ini khususnya kebutuhan transportasi, mungkin untuk pasok obat-obatan ke gudang farmasi ini agak sedikit mudah karena langsung dari bagian pendistribusi obat-obatan. Kita juga harus melakukan stock obat-obatan di puskesmas, di sini kita butuh transportasi untuk pendistribusian..."*

From the results of the analysis that the facilities and infrastructure are a very important part of supporting the implementation of disaster logistics supplies. If the need for facilities and infrastructure is not properly available, it will result in the activity in question being constrained, so that it can have an impact on the distribution of logistics to disaster victims as well.

4. Funding

In supporting disaster logistics supply activities in Central Aceh District, funding allocation is also one of the main supporting factors. To find out the amount of funding allocation each year, the author reviews the Budget Implementation List (DIPA) document at the Regional Financial Management Agency for Central Aceh Regency for 2019. In general, it is known that support for disaster activities in 2019 comes from unexpected spending of Rp. 3,433,552,250.

According to Supriyatno and Ernawati (2010) that all costs related to inventory management are called inventory costs. This inventory cost consists of: storage costs, ordering costs, installation costs and costs of running out or shortage of materials. So that to meet the cost of supplies, the availability of a budget is very important, and must be supported by all parties involved.

Funding allocated for disaster activities is a preparedness effort in facing disasters, according to Wursanty (2010), between preparedness and funding allocation has a relationship in dealing with disasters that occur in DKI Jakarta, this is evidenced by 61%

of respondents answered that the availability of funds is needed to support costs. operational when a disaster occurs.

5. Geografi

Central Aceh District when viewed from a geographical aspect, the characteristics of the area are mostly hills, wavy and plains. Rainfall, morphology (slope), hydrological conditions in some areas have the potential for landslides to occur.

Process Elements

1. Disaster Logistics Inventory Process in effect in Central Aceh District

To find out what disaster logistics supply in Central Aceh District has been done with the optimal amount, the authors conducted interviews with several resource persons with the question whether the supplies that have been carried out so far have always been maintained in optimal quantities and to optimize the logistics supply whether it is sufficient with local availability or must be obtained from outside the area?

First the writer asked the Head of the Logistics Section of the Central Aceh BPBD, he said his answers to the questions above: “...Selama ini persediaan yang ada jumlahnya belum optimal, tetapi kalau permintaan dari Provinsi dan dari Pusat cepat datangnya ini mencukupi...”

Furthermore, the same question above was asked to the Head of the Social Protection and Disaster Victims Section of the Central Aceh Social Service, he answered as follows: “...Persediaan kadang-kadang optimal, kadang-kadang juga tidak optimal, ini tergantung pihak provinsi memasukkan barang kedalam gudang. Pihak provinsi jika ingin mengantar barang akan berkoordinasi dengan kami di sini, dan kami di sini tidak melakukan pembelian lagi hanya menerima barang. Menurut informasi barang tersebut ada yang didatangkan dari Banda Aceh dan pernah juga dari Medan Sumatera Utara...”

Next, the Head of the Pharmacy Warehouse of the Aceh Tengah District Health Office, answered the same question above as follows: “...Persediaan logistik obat-obatan untuk kebencanaan kami rasa sudah sangat optimal, memang data obat-obatan untuk kebencanaan tidak ada list tersendiri tapi jika terjadi bencana kami bisa menggunakan obat yang ada di gudang farmasi, rumah sakit, dan puskesmas. Obat-obatan ini sudah pasti didatangkan dari luar daerah melalui distributor...”

Based on the results of the above research, it can be seen that the supply of disaster logistics carried out by BPBD and the Social Service, especially food logistics, is not optimal, resulting in a shortage of logistics when needed, while the supply of medicines carried out by the Health Office is optimal even though a separate list of medicines is not made which will be used for disaster. Disaster logistics supplies carried out by BPBD, especially for staple food or rice, can be concluded that it is not optimal, this can be seen from the stock of staple food supplies or rice types of 15 kg sacks totaling 50 sacks with a total of 750 kilograms or 750,000 grams.

The Sphere Project Humanitarian Charter and Minimum Standards in Humanitarian Response (2011) also explains that the minimum standard for food needs is the availability of rice or 400 grams of staple food per person per day. So based on the results of the analysis above, to optimize logistics supplies with minimum standards in Central Aceh District, especially for food logistics, it must be available in the amount of 3,394,800 grams or 3394 kilograms (400 gr x 3 days x 1% of the population (2,829)) The amount of disaster logistics supplies with this minimum standard fluctuates greatly, depending on conditions in the field after a disaster occurs.

2. Annual Logistics Supply in Central Aceh District

The availability of sufficient logistics in dealing with disasters must be planned in the pre-disaster period, although we do not yet know the conditions to be faced during the emergency response period, but efforts have been made to prepare for disasters. Especially in dealing with the annual landslide disaster in Central Aceh District, it is also necessary to have a plan to carry out an annual logistics supply. Logistics supply planning is also needed to anticipate expiration, especially food logistics that are not durable, because there are also types of food logistics that expire fast and some that can still be used up to 1 year such as rice. This annual logistics supply process must also be supported by regulations at both the central and regional levels, if it is not supported by related regulations, the implementation of this annual logistics inventory will certainly not run smoothly.

Unsur Output

1. Implementation of Disaster Logistics Inventory

Based on the results of the evaluation of variables on input elements and process elements related to the implementation of disaster logistics supplies in Central Aceh District, it is known that the implementation of the supplies is not optimal, this can be seen from one of the staple food supplies or rice that has been carried out is only 750 kilograms and this does not meet the need. The minimum standard is 3394 kilograms for general standards or 1% of the population of Central Aceh Regency and 5000 kilograms for special standards or authorities that must be prepared by the District.

Logistical supplies in Central Aceh Regency, especially for staple food or rice, will be optimal if assisted by the Takengon City Bulog Sub Divre, because the Takengon City Bulog Sub Divre has the authority to assist disaster logistics for the Southeast Aceh area, Takengon City, and Central Aceh Regency with a total supply. logistics rice up to 100 tons. However, the rice logistics can be issued with a district disaster status, so further coordination with Bulog is needed so that there is a regulation so that the rice logistics can be issued in the face of annual landslides in Central Aceh District.

2. Planning Model for Disaster Logistics Inventory in Facing Landslide Disaster in Central Aceh District

Based on the results of interviews and observations, it is known that in Central Aceh District the planning of supplies that is carried out is still generally not specific to disaster logistics supply activities either as a whole or internally in each agency carrying

out disaster logistics supplies, which basically needs to be done to evaluate what are the obstacles in implementing the current disaster logistics supply.

From the description above and the results of planning for disaster logistics supplies in the face of annual landslide disasters in Central Aceh District carried out by researchers, and based on variable analysis on input and process elements, the resulting output is in the form of a disaster logistics supply planning model in the form of a flow chart, where the model these can be developed, among others:

- a. Through the disaster logistics supply planning model, inventory planning should be carried out regularly and periodically at least once every 3 (three) months, by forming a special team for logistics inventory planning to be carried out for agencies that carry out disaster logistics supplies. This logistics supply planning model is carried out by evaluating several components in aspects of local government capacity related to the implementation of supplies, for example: the implementing organization, the human resources involved, supporting facilities and infrastructure, funding allocation, and geographical aspects, namely the rainfall factor that is considered logistics inventory time.
- b. In this model it also analyzes the inventory of disaster logistics in the face of a landslide disaster, adjustments must be made between the inventory time and the prediction of landslides so that logistics do not expire. From a geographical point of view, by analyzing rainfall data, the right time to carry out logistical supplies is in June.
- c. The inventory method that is an option in this planning model is the EOQ method, and the results of the analysis with the EOQ method have a frequency of 12 times a year, thus the logistics inventory can be carried out every month where the implementation method is set at the planning stage. Logistic supplies that are always available every month become buffer stocks or safety supplies that are needed at times of disaster.
- d. This disaster logistics supply planning model is expected to produce a conclusion or recommendation that can be applied regularly, for example in Central Aceh District, logistics that will expire are issued for mutual cooperation and distributed to the poor. Logistics expenditures to avoid expiration should be supported by regulations so that there are no errors in implementation even though disaster logistics are issued for activities outside of a disaster.

CONCLUSION

Based on the results of data analysis and the discussion above, there are several important points that can be drawn as a conclusion in this study, namely.

1. Planning for disaster logistics supplies in the face of landslides must pay attention to the right time, including taking into account geographical factors such as rainfall. As well as planning, it is necessary to manage input, process and output properly and with high transparency

2. Evaluation targets in the formulation of logistics supply planning model development are aspects of local government capacity that support disaster logistics supply activities, namely organization, human resources, facilities and infrastructure, funding, and geography.
3. Management of disaster logistics Kab. Central Aceh is still generally not specific to disaster logistics supply activities either as a whole or internally by each agency that carries out disaster logistics supplies, which basically needs to be done to evaluate what are the obstacles in implementing disaster logistics supplies that are valid for this is in accordance with the disaster characteristics of the area

REFERENCES

- Aparecida .Maria et al. 2014 *Logistic Processes in a Post-disaster Relief Operation. Procedia*. doi.org/10.1016/j.sbspro.2014.01.152
- Azwar, A. 2010. *Menjaga Mutu Pelayanan Kesehatan*. Pustaka Sinar Harapan. Jakarta.
- Ballou, H. R. 1998. *Business Logistic Management*. 3rd Ed. New Jersey USA:Prentice-Hall Inc.
- BAPPENAS. 2006. *Laporan Kajian Kebijakan Penanggulangan (Wabah) Penyakit Menular*. Direktorat Kesehatan dan Gizi Masyarakat Badan Perencanaan Pembangunan Nasional. Jakarta.
- BAPPENAS. 2011. *Evaluasi Paruh Waktu Rencana Aksi Kesiambungan Rekonstruksi Aceh-Nias*. Laporan Pemantauan dan Evaluasi Pelaksanaan Rencana Aksi Kesiambungan Rekonstruksi di Provinsi Aceh dan Kepulauan Nias Sumatera Utara. Badan Perencanaan Pembangunan Nasional. Jakarta.
- BNPB. 2008. Peraturan Kepala Badan Nasional Penanggulangan Bencana Nomor 13 Tahun 2008 tentang Pedoman Manajemen Logistik dan Peralatan Penanggulangan Bencana. Indonesia.
- BNPB. 2008. Peraturan Kepala Badan Nasional Penanggulangan Bencana Nomor 4 Tahun 2008 tentang Pedoman Penyusunan Rencana Penanggulangan Bencana. Indonesia.
- BNPB. 2009. Peraturan Kepala Badan Nasional Penanggulangan Bencana Nomor 18 Tahun 2009 tentang Pedoman Standarisasi Logistik Penanggulangan Bencana. Indonesia.
- BNPB. 2011. Peraturan Kepala Badan Nasional Penanggulangan Bencana Nomor 20 Tahun 2011 tentang Pedoman Monitoring dan Evaluasi Manajemen Logistik Penanggulangan Bencana. Indonesia.
- Bugin, B. 2005. *Metodologi Penelitian Kuantitatif: Komunikasi, Ekonomi, dan Ilmu-ilmu Sosial Lainnya* . Jakarta: kencana Prenada Media Group.
- Nofa Ariyana. 2012. *Model Lokasi-Alokasi Bantuan Logistik Catastrophic Berbasis Masjid Di Kota Padang*. Jurnal Optimasi Sistem Industri Volume 11 Nomor 2. Padang.
- Pan American Health Organization, World Health Organization. 2001. *Manajemen dan Logistik Bantuan Kemanusiaan Dalam Sektor Kesehatan*. Buku Kedokteran. Jakarta
- Peraturan Pemerintah RI. 2008. Peraturan Pemerintah Republik Indonesia Nomor 21 tahun 2008 Tentang Penyelenggaraan Penanggulangan Bencana.

- Rangkuti, Freddy. 2004. *Manajemen Persediaan: Aplikasi di Bidang Bisnis*. Grafindo Persada. Jakarta.
- Richardus Eko Indrajit dan Richardus Djokopranoto. 2009. *Manajemen Persediaan*. Jakarta: Gramedia Widiasarana Indonesia.
- Rienna Oktarina. 2009. *Konseptual Perancangan Sistem Informasi Manajemen Logistik Penanggulangan Bencana (SIMLOG-PB) Berbasis GIS (Geographic Information System) Di Yogyakarta*. Jurnal Seminar Nasional Aplikasi Teknologi Informatika. Yogyakarta.
- Ristono A. 2009. *Manajemen Persediaan*. Yogyakarta: Graha Ilmu.
- Suharsimi Arikunto., (2006). *Prosedur Penelitian Sosial dan Pendidikan: Teori Aplikasi*. Jakarta: PT. Bumi Aksara.
- Sugiyono. 2014. *Metode Penelitian Pendidikan (Pendekatan Kuantitatif, Kualitatif dan R&D)*. Bandung: Alfabeta.
- Supriyanto, S dan Ernawati. 2010. *Pemasaran Industri Jasa Kesehatan*. Penerbit CV. Andi Offset. Yogyakarta.
- Suryani, dan Erma. 2006. *Model dan Simulasi*. Yogyakarta: Graha Ilmu.
- Undang-Undang Republik Indonesia nomor 24 tahun 2007 tentang Penanggulangan Bencana. Badan Nasional Penanggulangan Bencana, Jakarta.
- Wursanty. 2010. *Kesiapsiagaan Sumber Daya Manusia Dalam Penanggulangan Masalah Kesehatan Akibat Bencana Banjir di Provinsi DKI Jakarta*. Tesis Magister Kesehatan Masyarakat Program Pascasarjana FKM UI.
- Chazienul Ulum, M. 2013. *Governance Dan Capacity Building Dalam Manajemen Bencana Banjir di Indonesia*. Jurnal Penanggulangan Bencana Volume 4 Nomor 2. Yogyakarta.
- David, F. R. 2006. *Manajemen Strategis*. Jakarta. DKI Jakarta, Indonesia: Penerbit Salemba Empat.
- Divianto. 2011. *Faktor-Faktor Yang Mempengaruhi Perusahaan Dalam Melakukan Auditor Switch*. Jurnal Ekonomi dan Akutansi Volume 1 Nomor 2 Hal 153-173.
- Dodon. 2013. *Indikator Dan Perilaku Kesiapsiagaan Masyarakat Di Permukiman Padat Penduduk Dalam Antisipasi Berbagai Fase Bencana Banjir*. Jurnal Perencanaan Wilayah dan Kota Volume 24 Nomor 2. Bandung.
- Fahmi Irham. 2011. *Manajemen Teori, Kasus, dan Solusi (Manajemen Persediaan)*. Jilid I. Penerbit Alfabeta. Bandung.
- Ghiani G. 2013. *Introduction to Logistics Systems Management*. A catalogue record for this book is available from the British Library, ISBN: 978-1-119-94338-9.
- Hadiguna, Wibowo. 2012. *Simulasi Sistem Logistik Bantuan Bencana Gempa-Tsunami: Studi Kasus di Kota Padang*. Jurnal Teknik Industri Volume 13 Nomor 2. Padang.
- Handoko, T. Hani. 2010. *Dasar-dasar Manajemen Produksi dan Operasi*. UNS PRESS. Surakarta.

- Handoko, T. Hani. 2012. *Manajemen Personalia dan Sumber Daya Manusia*. BPFE. Yogyakarta.
- Hasibuan, Malayu. 2013. *Manajemen Sumber Daya Manusia*. Cetakan Ketujuh Belas. Bumi Aksara. Jakarta.
- Indradewa, MS. 2008. *Potensi Dan Upaya Penanggulangan Bencana Banjir Sungai Wolowona, Nangaba Dan Kaliputih Di Kabupaten Ende Tesis*. Surakarta. Universitas Sebelas Maret Surakarta.
- Kholidasari . panellnna *et all*. 2018 . *A Review of Human Judgment in Stock Control System for Disaster Logistics*. *Procedia Engineering*, Volume 212, 1319-1325. doi.org/10.1016/j.proeng.2018.01.170
- Kamus Besar Bahasa Indonesia. 2017. *Arti Kata Sarana dan Prasarana*. <http://kbbi.web.id>
- Loree. Nick. 2018. Points of distribution location and inventory management model for Post-Disaster Humanitarian Logistics. *Transportation Review*. Volume 116, August 2018, Pages 1-24. doi.org/10.1016/j.tre.2018.05.003
- Mc. Millan, James H. dan Sally Schumacher. 2011. *Research In Education A Conceptual Introduction 5th edition*. New York: Addison Wesley Longman, Inc.
- Moleong, Lexy. 2014. *Metodologi Penelitian Kualitatif*. Bandung: Remaja Rosdakarya.
- MPBI. 2011. *The Sphere Project*. Piagam Kemanusiaan dan Standar-Standar Minimum dalam Respon Kemanusiaan. www.mpbi.org.

Copyright © 2021 Yeni Rimadeni, Nasrullah, Afdhal, Berwi Fazri Pamudi. Munazar Arnisam and Erdi Surya. The manuscript open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.