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Majene Earthquake: Humanitarian AID Integration System

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Abstract

One area that has the potential for an earthquake is West Sulawesi. When an earthquake occurs, the West Sulawesi government will arrange disaster aid distribution through the Regional Disaster Management Agency (BPBD). This research aims at designing an information system to help the management of aid supplies in West Sulawesi. We used a descriptive method in this research. The qualitative approach was also used in this study to obtain the data. The results show that the difficulty faced by BPBD Majene is in communication between various parties involved in disaster management and recording disaster data. It is due to the complex conditions of the Majene earthquake and difficult coordination. So that in developing this information system is expected to provide easy access by users. In conclusion, with this information system, they can share information by the access rights in the information system.

Keywords: Integration system, Humanitarian aid, Earthquake, Information system

INTRODUCTION

West Sulawesi Province is one of the areas categorized as a potential earthquake and tsunami disaster. One of the earthquake disasters occurred on January 15, 2021. The result of the disaster was 73 people died, and 826 people were injured (Kompas.com, n.d). The impact of earthquake disasters can be reduced by two approaches: disaster mitigation and disaster response. Earthquake disaster management includes logistical problems. The success of disaster logistics cannot be separated from commercial logistics. Trivedi has compared commercial and humanitarian or disaster logistics (Trivedi & Singh, 2018). This comparison illustrates that the difference between commercial humanitarian logistics practices is activity orientation. The situation faced by logistics management in the aftermath of the earthquake

is the uncertainty of the number of requests and the situation's abnormality.

Most of the victims were in Mamuju Regency, namely 64 people, followed by Majene Regency with nine people. It becomes a challenge in itself in the process of distributing aid to evacuation points. The process of assisting victims in a disaster context is at the core of Humanitarian Logistics (HL) (Sharma & Joshi, 2019). Four things become problems in dealing with this HL handling, seeing the conditions of the disaster. First, increasing uncertainty for impassable routes, security issues, facility capacity changes, and uncertain logistics demand. Second, complex communication and coordination resulting from the breakdown of communication lines, the involvement of many parties in the disaster, both from the government and civilians, and the inaccessibility of accurate real-time request information. Third, it is not easy to achieve efficient and on-time delivery. Fourth, resources are limited, so the disaster situation's scale often overwhelms them (Kaynak & Tuğer, 2014).

Due to the above problems, one of the obstacles in the logistics process in Indonesia is the dissemination of poor information (Diedrichs et al., 2016). The dissemination of this unfavorable information has made the time needed to determine how big the impact of a disaster will be and what kind of assistance is needed. Although, in the end, victims received assistance, many types of assistance were not well-targeted (Beamon & Balcik, 2018; Palttala et al., 2012; Moorthy et al., 2018).

One way to solve this problem is by designing an integrated inventory information system (Toyasaki et al., 2017). An information system can be established between the Majene District Disaster Management Agency (BPBD) center and all evacuation centers. The absence of an inventory information system in the BPBD of the Majene Regency makes it difficult to process data that has been collected from villages or refugee camps to find out information on disaster conditions. It caused the distribution of relief items to be hampered and not in the right quantity (Yathon et al., 2017). Thus, a database is needed in this information system to produce more accurate information so that assistance needs can be immediately known what type of assistance is needed and how much is needed. It is because if there is an error in the information about the need for assistance, the victim will receive assistance that does not match what is needed. This information system can also be a medium of communication between users at the evacuation posts so that information about the needs of refugees can be immediately informed to the BPBD warehouse of Majene Regency. Therefore, aid distribution can be carried out immediately.

Therefore, a web-based logistical aid supply information system needs to be designed to distribute aid better because information on aid needs can be received directly by the central warehouse at BPBD Majene Regency. This study used a descriptive qualitative method.

RESEARCH METHOD

The characteristic of this research is descriptive research using a qualitative approach. This research is called descriptive research because it aims to study and describe the characteristics of the processes in managing aid supplies in West Sulawesi. Descriptive research is a study conducted to explain and describe the characteristics (research variables) in a situation [10]. Qualitative research is designed to tell researchers how (process) and why (meaning) which aims to achieve an in-depth understanding of a situation (Sekaran & Bougie, 2016; Ghauri et al., 2020; Phansori et al., n.d).

RESEARCH RESULTS AND DISCUSSION

Several actors can access the inventory Management System. The actors will carry out activities on this information system, including superadmin, refugee post admin, and donors.

- Superadmin

Superadmin is the head or employee of the natural disaster management agency responsible for managing and supervising logistical assistance at posts when a natural disaster occurs. Superadmin can manage user data, user aid posts, refugee posts, goods, refugee posts, aid posts, and transaction reports in the system.

- Refugee Command Post admin
  The refugee post admin is an employee/volunteer in the refugee post whose task is to manage requests for logistical goods/materials and validate goods that have been received.
- Donors
  Donors are involved in providing voluntary assistance to the community, either individually or in groups of people, without aiming to profit from their activities.

With this integration, the Inventory Management System helps facilitate the circulation of assistance information from all parties. The Inventory Management System offers several features, including the following:

- Convenience
  This information system can make it easier to recap or collect various transactions from the delivery of goods or the receipt of goods. Therefore, later it can provide the right information for information users.
- Integration of all parties
  This system will integrate central officers in West Sulawesi, officers at refugee posts, and donors. Thus, this system can support their coordination in the distribution of logistical assistance activities.
- Effective and efficient
  The time to use this system is also relatively short and easy to use, supported by website development.
- Report
  This system can be integrated with simple invoices and reports for each activity. This simple invoice and report can be printed directly on the website page.
- Data Changing
  Inventory Management System offers several options for adding, changing, and deleting users.
- Social Network
  Inventory Management System provides several data options, such as the type of assistance that donors will send. There is also a storage area for assistance integrated into the Inventory Management System so that assistance is easily accessible.

Inventory Management System provides various features that can help manage the assistance given to the Majene earthquake. To find out all the activities in and out of help, this Inventory Management System is offered. There will be three actors in this information system: superadmin, refugee post admin, and donors. The login interface is shown in Figure 1.

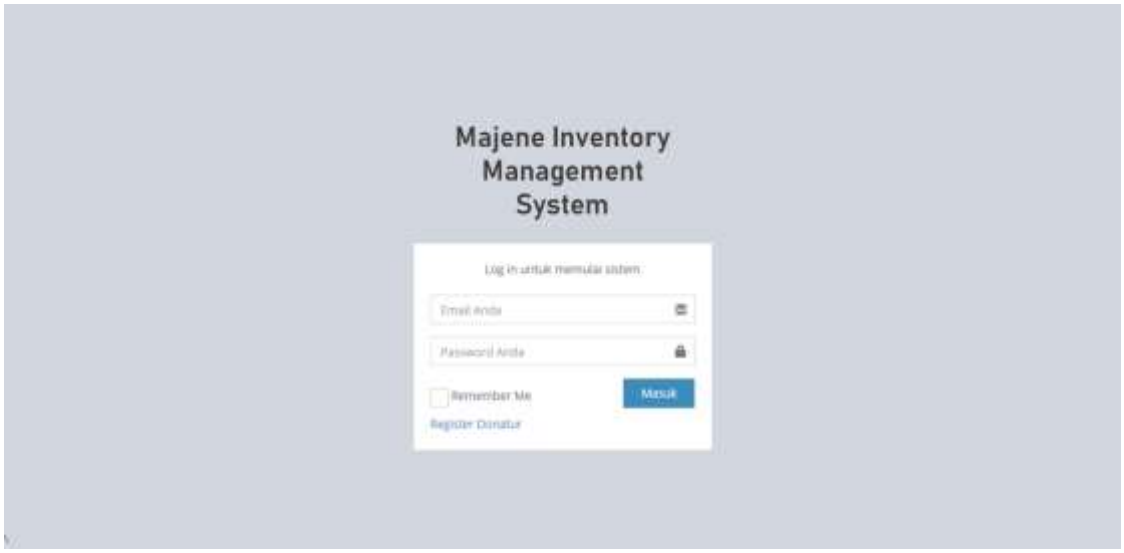

Figure 1. Login Interface.

Figure 2 shows a superadmin dashboard page interface. Superadmin has access rights to add, modify, and delete a user or IDP post admin data. The superadmin can then access the user group to add, change, and remove permissions owned by other users. Superadmin can add, change and delete data related to goods orders such as brands, categories, sources of funds, warehouses, posts, and goods units. Superadmin can also add, modify and delete data on inventory, incoming and outgoing orders. Finally, superadmins can generate reports related to incoming and outgoing orders.

Figure 2. Superadmin dashboard page interface.

Figure 3 shows the user management page used by the superadmin to add, modify, and delete existing IDP post admin users.

Figure 3. The superadmin user manages the page interface.

Figure 4 shows a page for adding donation data.

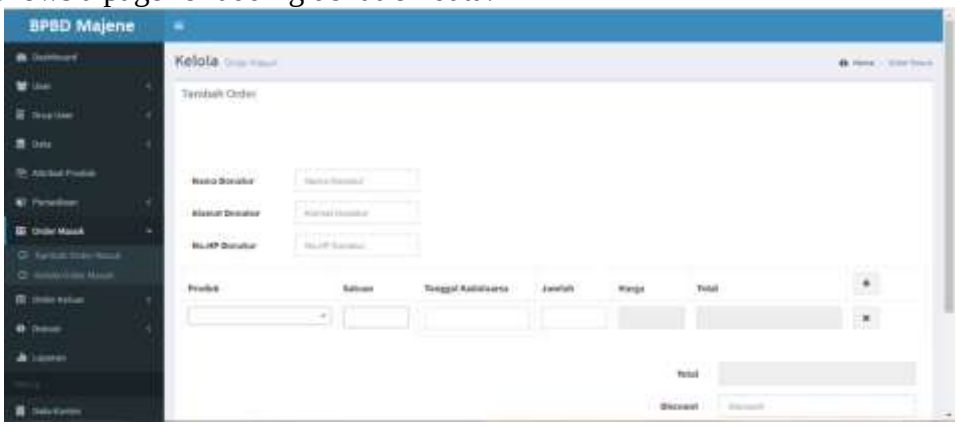

Figure 4. Add donation page interface by donors.

Figure 5 shows the admin's outgoing order page to add, modify, and delete outgoing orders when sending goods to the *posko*.

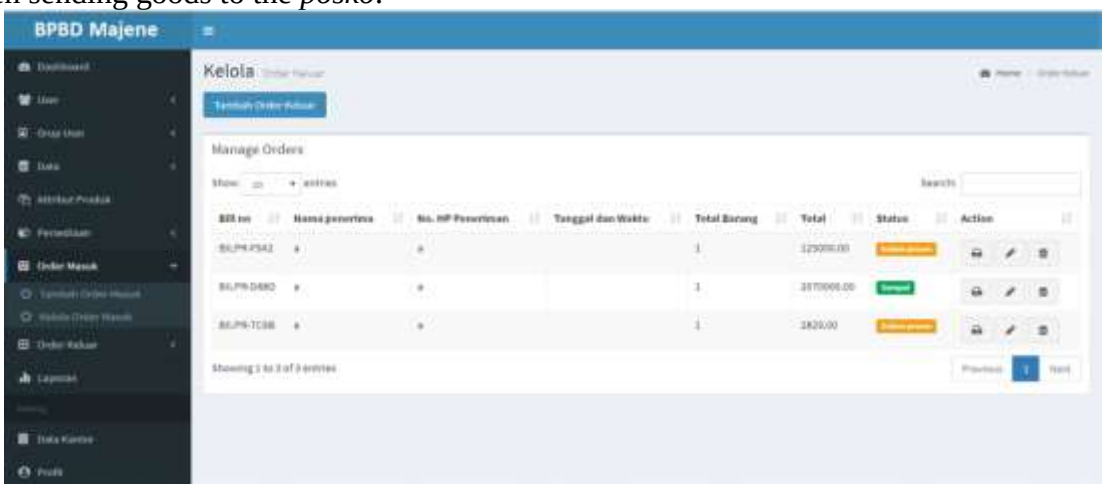

Figure 5. Admin page manage outgoing orders.

Figure 6 shows the incoming orders report page used by superadmin to print existing incoming orders. Moreover, superadmin can also print out the order report, which is shown in figure 6.

Figure 6. The interface page of the order entry report

CONCLUSION

The difficulty faced by BPBD Majene is in communication between various parties involved in disaster management and recording disaster data. It is due to the complex conditions of the Majene earthquake and difficult coordination. Therefore, developing this information system is expected to provide easy access by users. This designed information system integrates three entities: central officers, officers at evacuation posts, and donors. Information obtained from these three entities will be entered into one database to share information by the access rights they have in the information system. The website-based information system can support BPBD Majene to manage logistics distribution so that assistance is sent on target, on time, and according to the refugees' needs at the evacuation post. The website was chosen as a service in this information system because it can easily access its users. Thus, between the central officers at BPBD Majene, officers at the evacuation posts and donors can quickly and precisely provide the information needed by each party. This information will later make logistics aid distribution better due to better coordination between parties.

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