



# Revitalizing Disaster Communication: Improving Regional Management Websites for Effective Information Sharing

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**Abstract.** The aim of this study was to evaluate the effectiveness of public information management on the Sleman Regency Regional Disaster Management Agency (BPBD) website in 2021, as the website received the lowest rating for not uploading news that the community needed. The study used mixed methods research, collecting quantitative data through questionnaire analysis and qualitative data through interviews with BPBD managers and the community. The study utilized the Balanced Scorecard method with perspective indicators of internal processes, growth and learning, and customers. The results showed that the management of public information on the BPBD Sleman website needs improvement in the internal processes perspective, while growth and learning and customers perspectives were effective. The study’s implications suggest that the BPBD Sleman website needs better management to increase its effectiveness in disseminating disaster information to the community.

**Keywords:** balance scorecard · BPBD of Sleman Regency · Sleman Regency · Disaster communication · website

## 1 Introduction

The Special Region of Yogyakarta (DIY) is a province in Indonesia, located in the southern part of Java Island. DIY is highly prone to natural disasters, namely volcanic earthquakes originating from Mount Merapi and tectonic earthquakes originating from the southern ocean and can have the potential for a tsunami. Along with the increased burden and responsibility, after the eruption of Mount Merapi in 2010, the administration of the DIY Regional Disaster Management (PBA) administration is expanded to be the Regional Disaster Management Agency (BPBD) with Sleman Regency Regional Regulation Number 12 of 2011 concerning Amendments to Sleman Regency Regional Regulations Number 9 of 2009 concerning the Regional Apparatus Organization (OPD) of Sleman Regency. The BPBD of Sleman Regency is a regional government implementing agency led by the head of the body that is functionally held by the Regional Secretary. The BPBD Head of Sleman Regency is under and responsible to the Regent. BPBD Sleman Regency has main tasks and functions in disaster management.

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BPBD of Sleman Regency is vital because of its roles, one of which is to communicate and provide information related to prevention, control and evaluation of disaster management activities. Disaster information is an educational tool for the people of Sleman Regency so that they have good knowledge about disaster mitigation and understand what to do when nature has begun to and have the sign of an impending disaster. The existence of such information can minimize the number of victims and losses due to natural disasters. Currently, society has entered the digitalization era so that information is easier to obtain. Organizations are required to be transparent with information so that what the public needs and wants can be fulfilled. It can be established through accountability. Accountability enables organizations to provide better and more targeted public services. Organizations need the media as a means of interacting with the public to achieve accountability.

BPBD Sleman Regency as a public organization has a media website as a means of communication with the public at [bpbdslemankab.go.id](http://bpbdslemankab.go.id). The website contains all information related to disasters such as the way to find out the natural disasters, to avoid disasters, to save from disasters, to deal with trauma after experiencing a disaster, the contribution of people who care about disasters, disaster training, and collaboration with the Sleman Regency BPBD with various parties. Based on the evaluation of the 2021 Annual Report on the Implementation of Public Services and Information (PPIP) published by the Sleman Regency Information and Documentation Management Officer ([ppid.slemankab.go.id](http://ppid.slemankab.go.id)), the Sleman Regency BPBD website during that year did not upload news so it was given the “bad” title. As the lowest predicate even though the community really needs disaster information. This condition shows that the BPBD Sleman website has not been effective.

Effective means able to bring results, while effectiveness means usability. Generally, effectiveness shows suitability in activities between someone who carries out the task with the goals to be achieved [1]. Effectiveness is assessed as the ability of the unit to achieve the desired goals. Effectiveness is also related to the success of public sector activities. The activity is said to be effective if it has a significant impact on its ability to provide public services [2]. The effectiveness of this research can be measured using the Balanced Scorecard method to detect the success of an organization.

The Balanced Scorecard (BSC) is a tool that can be used to identify the success of an organization from a financial and non-financial perspective. The non-financial perspective consists of a learning and growth perspective, an internal process perspective, and a customer perspective. Prior to the existence of the Balanced Scorecard, organizational success is only measured in financial terms. The Balanced Scorecard can be applied to non-profit organizations or the public sector [3].

The research team conducted interviews with sources from BPBD Sleman Regency, such as Asih Kushartati, S.TP, MT. As Secretary of the Sleman Regency BPBD and Sarjimin as a contributor to the Sleman BPBD website. Based on the results of the interviews, the funds for the Sleman Regency BPBD website were always sufficient and the funds had been received by donors. The results of the interviews showed that there were no problems in terms of finance. This study aimed to determine the non-financial Balanced Scorecard factors influence the effectiveness of the BPBD Sleman Regency website. It is expected that in the future there will be an increase in the management

of the website so that it can meet the community need for public information about disasters. Disaster information contained in the website is also expected to be complete and up-to-date.

## 2 Literature Review

Experience coping with catastrophe hazards and disaster-related education can help to shape community perceptions of disaster dangers [4]. For society, information is vital data that is processed to be relevant and valuable in present and future decision making. Information is also perceived as the consequence of data processing, making it easier for receivers to describe real-world events employed in decision making [5].

According to Law No. 14 of 2008 on public information disclosure, public information is defined as information generated, stored, managed, sent, and/or received by public bodies relating to state administration and/or other public administration in accordance with this law, as well as other related information. These entities include the executive, legislative, judicial, and other bodies with primary tasks and obligations as state administrators.

Disasters require mitigation through communication. Communication is delivering messages from communicators to communicants using certain media to achieve uniformity of meaning. Communication is needed in all fields, including in the field of disaster [6]. Disaster communication is an important element to reduce disaster threats, victims' needs, and various disaster risk evaluations [7]. Communication is the process of exchanging information between individuals through a shared system with symbols, signals and behavior or actions [8]. Communication involves the communicator (message sender), message giver, channel, communicant (message receiver), and the effect of a message [9]. Communication between one person and another will occur when the sender of the message (communicator) sends a message to the recipient of the message (communicant). Based on [8], the communication process consists of six stages, namely: 1) the communicator has an idea; 2) the communicator turns ideas into messages; 3) the communicator conveys the message; 4) the communicant receives the message; 5) the communicant interprets the message, and 6) the communicant responds and sends feedback to the communicator. The communication referred to in this study is disaster communication, namely the process of communicating disaster messages for disaster risk management through the BPBD website.

Website is a collection of pages that are used to display text, still or moving figures, animation and sound, or a combination of all of them to form a series of information between pages [10]. The website is also understood as an interconnected system capable of displaying text, figures, multimedia, and others on the internet network [11]. Through the balanced scorecard, organizations can implement an action that can produce several important things, such as 1) clarifying and translating the vision and mission; 2) communicating and linking various goals and strategic steps in achieving goal alignment; 3) planning, setting goals and aligning various strategic initiatives; and 4) improve feedback and strategic learning [12]. The BPBD website as an object of study is evaluated using the Balanced Scorecard.

The Balanced Scorecard is a performance measurement tool that emphasizes the balance between various strategic aspects in an effort to achieve goal alignment so that it

encourages employees to act to realize company goals [13]. The Balanced Scorecard is understood as a scorecard to record an organization performance score in a balanced and integrated manner from non-financial, short-term, and internal-external aspects [3]. Balance scorecard dapat digunakan untuk mengevaluasi proses komunikasi bencana melalui website BPBD Sleman. [14] Explains that the Balanced Scorecard contains guidelines for measuring the critical success factors of an organization, including a balance of financial and non-financial factors consisting of a financial perspective, a customer perspective, an internal process perspective, and a learning and growth perspective. The financial perspective is used to measure an organization ability to manage finances. Good results show that managers are able to carry out their duties and responsibilities properly and are able to respond to the interests of the community. The customer perspective measures an organization ability to provide services to meet the needs of consumers or society so that customers are satisfied with the service. The well-running organizational indicator is shown by the number of potential customers that does not decrease over time, the increase of new customers and the decrease of the complaints because customers or the community are satisfied.

The internal process perspective is used to measure an organization ability to operationalize tasks and functions. The learning and growth perspective can be used to measure the ability or competence of Human Resources (HR). A person skills will develop the longer a person works in an organization. Organizations must provide training that is relevant to the main tasks and functions for all human resources, starting from the level of employees to managers.

This study used a non-financial perspective on the management of BPBD Sleman Regency websites. The growth and learning perspective can be measured through 1) the competence of managers and employees; 2) frequency of attending education and training; 3) type of training attended; 4) personnel skills in using and utilizing technology to carry out their duties; 5) job satisfaction; and 6) employee turnover. The four perspectives of the Balanced Scorecard are interrelated. It is known as a strategy map for determining the success of an organization. The aspects of growth and learning perspective can be a start in achieving success. Satisfaction with work in the organization is characterized by better and more skilled competence, no complaints about tasks, and decreased employee turnover. The better the competency showed the better the internal process perspective with increased productivity and product quality (goods or services) produced. It will have an impact on the customer perspective. Customers are satisfied with the products produced, they can even add new customers. This condition will have an impact on the financial perspective namely costs will be reduced or become more efficient and organizational income may increase.

### 3 Methodology

Based on the theoretical basis and previous studies, it is known that the Balanced Scorecard can also be applied to public sector organizations, including to determine the management of the Sleman Regency BPBD website. The indicators from each perspective on the Balanced Scorecard are adapted to the purpose of this study that is to measure the performance or effectiveness of the BPBD Sleman Regency website.

This study used a mixed method, namely quantitative and qualitative because it is considered the most suitable and appropriate to answer the problem formulation. Quantitative primary data was obtained through questionnaires from internal and external respondents, while qualitative data was obtained by interviews. Questionnaires were distributed via google form to be effective and efficient. The list of questionnaire questions can be seen in Table 1. Respondents were asked to provide one answer from the three alternative answers provided, namely agreeing, undecided, or disagreeing with each statement on the questionnaire according to the Likert scale. This study used the Balanced Scorecard with three perspective indicators, namely: 1) internal processes; 2) growth and learning perspective; 3) customer perspective.

Respondents from internal parties were BPBD Sleman Regency website managers who were given the additional task of creating news content on the Sleman Regency BPBD website. There were 10 internal respondents who filled out questionnaires regarding the learning and growth perspective as well as the internal process perspective. While the questionnaire regarding the customer perspective was filled out by readers of the Sleman Regency BPBD website represented by 105 semester 5 students of the UPN "Veteran" Yogyakarta Public Relations Study Program who had taken Basics of Journalism and Fundamentals of Public Relations (PR) courses. The calculations using the Slovin formula stated that a minimum of 50 data was feasible to use to analyze the perspective of reader satisfaction on the BPBD Sleman Regency website. The financial perspective was not studied in this study because the results of interviews with the head of the Sleman Regency BPBD and observations showed that the financial management of the Sleman Regency BPBD website was good. It can be seen from the sufficient funds for managing the BPBD Sleman website every month and it has never received a bad rating.

## 4 Results and Discussion

Questionnaires were distributed to 10 internal respondents from BPBD Sleman Regency regarding learning perspectives and internal process perspectives, as well as 50 external respondents from 5<sup>th</sup> semester students of the Public Relations Study Program UPN "Veteran" Yogyakarta who had taken the Basics of Journalism and PR basics courses. The management of public information on the BPBD Sleman Regency website in general still needs to be improved. The statement is based on the results of the analysis of each perspective as follows:

### 4.1 Growth and Learning Perspective

The perspective of growth and learning is measured through the performance of BPBD Sleman Regency. This perspective illustrates the ability of BPBD Sleman Regency to make improvements and changes by utilizing internal resources. Based on the results of the questionnaire to 10 internal respondents, it was shown that the HR of the BPBD in Sleman Regency had high motivation and loyalty at work. The results of the questionnaire showed that covering the news was not a tiring job as stated by 60% of the respondents. It is different from the other 30% who admitted that covering news was tiring because

**Table 1.** Questionnaire Indicator

NO	INDICATOR	QUESTION
1	Growth and Learning Perspectives	1. For me, covering news is an exhausting job. 2. For me, reporting is an uninteresting job 3. I make the news when my manager told me 4. I am always involved in covering the news when disaster occurs around Sleman 5. I am able to make news on the BPBD Sleman website properly according to the standards for creating news content 6. Every day I always look for news sources related to BPBD Sleman 7. I make news every day to be uploaded on the BPBD Sleman website even though it is not directly related to disaster news 8. I attend journalism training at least once every 6 months 9. I motivate myself to always make news about all things related to disasters and their management. 10. I can use the Wordpress application to create and upload news on the BPBD Sleman website 11. If I have trouble making news to be uploaded on the BPBD Sleman website, I will stop and cancel uploading the news.
2	Internal Process Perspective	1. BPBD Sleman has the employees who are specifically tasked with covering the news 2. BPBD Sleman has employees specifically tasked with uploading news on the Sleman Regency BPBD website 3. BPBD Sleman has employees who are specifically tasked with responding to comments from the public who have read the news on the BPBD Sleman website 4. Upload at least one news story a week on the BPBD Sleman website 5. Every news that will be uploaded is always corrected for the content and format of the news by the person in charge (Head of the Executive Committee or Secretariat) 6. Periodically new features are added to the BPBD Sleman website to increase people comfort and satisfaction when reading the news 7. BPBD Sleman provides routine and scheduled journalistic training to the employees

*(continued)*

**Table 1.** (continued)

NO	INDICATOR	QUESTION
3	Customer Perspective	1. I know BPBD Sleman has a website 2. BPBD Sleman only uploads news if a disaster occurs 3. The news on the BPBD Sleman website is up-to-date and accurate 4. I can easily understand the news presented on the BPBD Sleman website 5. The public is given the freedom to write comments in a special column regarding news uploaded by BPBD Sleman 6. I always look for information related to disasters in Sleman from the BPBD Sleman website 7. The appearance of news on the BPBD Sleman website is getting more interesting 8. I am satisfied with the presentation of information/news on the BPBD Sleman website

Source: Processed Data, 2022

covering disaster news at BPBD Sleman Regency was a side job (not their main job). News coverage is an interesting thing and is done not only on orders but on personal wishes as a form of additional work recognized by all respondents.

Respondent interest in making disaster news was shown by 80% of respondents always participating in making disaster news in Sleman Regency and always looking for materials for making disaster news content for the BPBD Sleman Regency website. News content is produced according to news writing work standards. As many as 40% of respondents made news every day and uploaded it on the Sleman Regency BPBD website even though the news is not directly related. However, 40% of respondents were also worried about making news every day and not directly related to the disaster because respondents were more enthusiastic about disaster-related information in accordance with the main tasks and functions of BPBD Sleman Regency.

Growth and learning indicators showed that 70% of respondents attend journalism training at least once every six months. It is useful for increasing the ability to present disaster information through creating news content on the website. To achieve this ability, 90% of respondents were always self-motivated so they can upload news about various matters related to disasters and their management. The purpose of this motivation was to create disaster information that was fast, precise, and accurate, so as not to trigger disaster hoax information.

News content on the BPBD Sleman Regency website is made using WordPress. Content managers must be able to use the application properly. The results of the analysis showed that all respondents can use WordPress to create disaster news and uploaded it to the BPBD Sleman Regency website. All respondents will not stop or cancel uploading news if there are problems in uploading news to the website, but respondents will try to ask those who understand more.

The results showed that all respondents had attended education and training in creating news content to be uploaded to the website. They attended journalistic training from UPN “Veteran” Yogyakarta and the UGM Faculty of Letters. The training aimed to increase the capacity of human resources in creating and managing disaster-related news content.

#### **4.2 Internal Process Perspective**

The internal process perspective is used to measure the ability of the Sleman Regency BPBD in building websites with the purpose of providing services and meeting customer or community expectations as well as to measure the productivity and innovation of the Sleman Regency BPBD website. Based on the results of the questionnaire distributed to 10 respondents, BPBD Sleman Regency did not have a special employee assigned as a reporter. It is because the majority of reporters are disaster volunteers. The results of the interviews showed that the BPBD of Sleman Regency did not have a special employee in charge of covering news to be uploaded on the website.

The news published in BPBD Sleman Regency refers to the activities of each sector. For example, when the prevention and preparedness department organized trainings for the community in an area, the officer in that field made news about the activities carried out. If the rehabilitation and reconstruction sector carried out infrastructure repair activities for disaster victims in an area, the personnel in this field create news content to be uploaded on the Sleman Regency BPBD website. It means that there is no specific reporter who creates overall disaster news content so that the information on the website diverse.

The results of the questionnaire showed that there were special employees in the field of communication and information media with the task to upload content to the BPBD Sleman Regency website. As many as 60% of respondents admitted that the BPBD of Sleman Regency had dedicated the employees to help news reporters upload disaster information through the website. Furthermore, 60% of respondents believed that the employee was able to respond to news reader comments on the website. Special staff besides reporting volunteers have greater responsibility for the information needed by the community.

The BPBD of Sleman Regency did not have a target for the number of news content uploaded each period. However, 60% admit that there was at least one piece of news a week uploaded on the website. It was to inform disaster regularly to reduce the level of mismatched information. To create harmony of information, 60% of respondents admitted that every news uploaded always corrected in advance by the person in charge of the news, namely the Head of the Executive Committee or the Secretariat. However, there was still news that has not been corrected beforehand by the person in charge of the that was acknowledged by 30% of respondents.

BPBD Sleman Regency as a disaster organization has the duty to provide regular communication and information. As many as 60% of respondents admitted that the BPBD Sleman Regency website regularly provides additional features to attract interest to create public comfort and satisfaction in reading the news presented on the website. However, 40% of respondents felt that the new feature had not been fully implemented properly. It is due to the lack of human resources managing the Sleman Regency



BPBD website. The BPBD of Sleman Regency regularly provided journalistic training to employees to improve their skills which is recognized by 60% of respondents. As many as 30% of respondents admitted that the BPBD of Sleman Regency did not routinely hold training due to a tight schedule.

### **4.3 Customer Perspective (BPBD Sleman Website News Reader)**

The customer perspective is to measure customer satisfaction with the need to obtain information on disaster prevention and management, especially in Sleman Regency. This perspective is also customer oriented, in this case the readers of the BPBD Sleman Regency website were analyzed through a questionnaire on 50 journalistic students at UPN "Veteran" Yogyakarta. The BPBD of Sleman Regency must pay attention to the things that website readers want because public service is an attempt to fulfill the basic needs and civil rights of every citizen.

Based on the analysis of customer satisfaction indicators, 94% of respondents know the existence of the BPBD Sleman Regency website. This knowledge made 50% of respondents think BPBD Sleman Regency only uploads news when a disaster occurs. It happens because of a lack of human resources to manage disaster content on websites. However, the news content on the BPBD Sleman Regency website is always up-to-date and accurate, as expressed by 70% of respondents.

Up-to-date and accurate information are to increase public knowledge about the disasters that occurred in Sleman Regency. It was supported by 86% of respondents who stated that the news presented by BPBD Sleman Regency was easy to understand. BPBD Sleman Regency provides flexibility for readers to write comments related to news uploaded on the website to increase public interest in understanding disaster information. This freedom was acknowledged by 82% of respondents with the purpose at the disaster information presented could be two-way and complex.

The Sleman Regency BPBD website is well known and used by the community. It is indicated by 44% of respondents admitting that they were always looking for information related to disasters in Sleman Regency through the website. However, 26% of respondents had not fully utilized the website as a media for disaster information, because there had been many social media that can provide information more quickly and efficiently, such as Instagram and Twitter. BPBD website users in Sleman Regency rate the appearance of news on the website to attract readers' attention which is recognized by 64% of respondents. As many as 30% of respondents were confused about the evaluation of news broadcasts because these respondents did not fully use the Sleman Regency BPBD website on a regular basis to find out disaster information.

Results related to customer satisfaction showed that BPBD Sleman Regency as an organization or disaster service provider was required to be able to provide quality services for the community. Quality public services were able to provide satisfaction to the community. This can be seen from the five dimensions of public service quality as benchmarks in providing community satisfaction, namely: reliability, responsiveness, assurance, empathy, and tangible [15].

Reliability is related to the ability of the BPBD of Sleman Regency to provide fast, precise and accurate services. The questionnaire showed that people were satisfied with the presentation of information and news data on the website. Respondents also felt



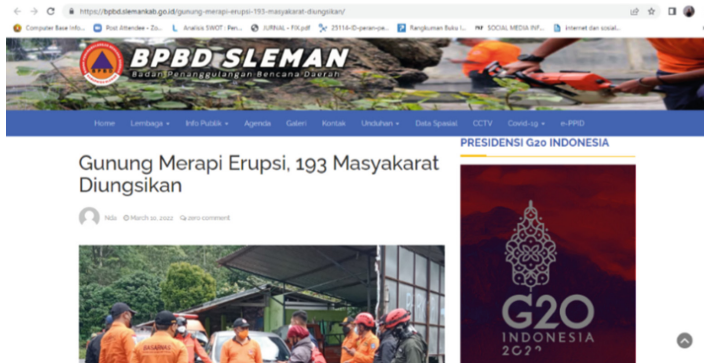
**Fig. 1.** Display of BPBD Sleman Regency website on Disaster Mitigation and Training at Sakina Idaman Hospital. Source: BPBD Sleman Regency Website, 2022

that they could understand the content of the news presented on the Sleman Regency BPBD website. Responsiveness is the speed and accuracy of the BPBD in providing the required services. From the results of distributing the questionnaires, it can be seen that respondents stated that the news content on the BPBD Sleman Regency website was always up-to-date and accurate. Assurance includes ability, courtesy, and trustworthiness. Security and convenience, accuracy of inspection, and quality service are also needed by BPBD Sleman Regency in uploading content on the website.

Empathy showed the BPBD Sleman provides a forum for complaints for the community and responds quickly. As a result of distributing the questionnaires, the majority of respondents stated that they were given discretion by the Sleman Regency BPBD in writing comments in a special column related to news uploaded by the Sleman Regency BPBD. The tangibles aspect showed the existence of physical evidence, namely the website provides information about disasters and disaster management. This resulted in the majority of respondents answering that they always use the BPBD Sleman Regency website as a reference in finding information related to disasters and their management.

Disaster management is the responsibility of the government and regional governments. The realization of quality public services is one of the characteristics of good governance to achieve effectiveness [16]. Executors of public services are managers and employees. BPBD Sleman Regency is to meet the needs of disaster socialization needs to be supported by the availability of human resources in the division of work responsibilities and optimization so that the services provided are better. Disaster communication and information through the website is an important element in the disaster cycle to prepare protection at the pre-disaster, disaster and post-disaster stages [17].

The pre-disaster process consists of planning actions, recognizing and assessing disaster threats, understanding community vulnerabilities, analyzing possible disaster impacts, selecting disaster risk reduction actions; establishing mechanisms for disaster preparedness and managing impacts as well as allocation of tasks, authorities and available resources. The main part of the pre-disaster stage is prevention and preparedness for possible disasters.

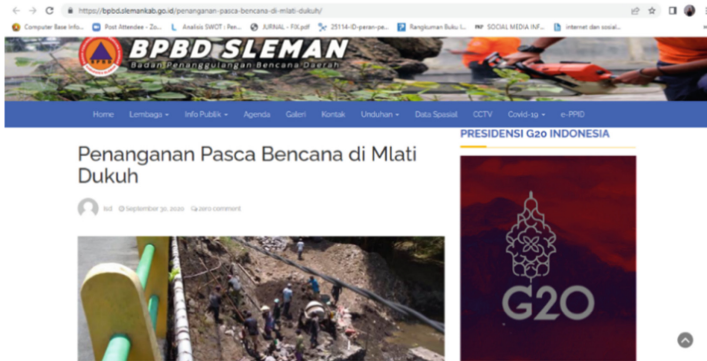


**Fig. 2.** Display of BPBD Sleman website in handling the Victims of Mount Merapi Eruption. Source: BPBD Regency Website, 2022

Figure 1 shows one of the news uploaded on the Sleman Regency BPBD website. The content uploaded by the Sleman Regency BPBD showed a series of activities carried out to increase community capacity in disaster management through socialization of disaster mitigation at Sakina Idaman Hospital. It is one example of the education needed to warn people about a disaster. Disaster mitigation is a series of efforts to reduce disaster risk, through physical development as well as awareness and disaster response capacity building.

When a disaster occurs, the emergency response phase includes evacuation and rescue of disaster victims as well as immediate fulfillment of basic needs. This stage also pays attention to things such as sanitation, clothing, food, health services, and shelter. Figure 2 is one of the contents uploaded by the Sleman Regency BPBD that shows the response actions of the Sleman Regency BPBD in handling the eruption of Mount Merapi. Emergency response activities are a series of activities carried out immediately when a disaster occurs to overcome the adverse effects caused. During the disaster stage, the emergency response stage includes rescue and evacuation of victims and property, fulfillment of basic needs, protection, management, evacuation, rescue and restoration of facilities and infrastructure.

The post-disaster phase is the recovery stage that includes rehabilitation and reconstruction. Rehabilitation includes repairing the environment in the disaster area, repairing public infrastructure and facilities, providing assistance for community housing repairs, socio-psychological recovery, health services, socio-economic and cultural recovery, restoration of security and order, restoration of governmental functions, and public service functions. Figure 3 shows the responsiveness of the Sleman Regency BPBD in following up on the disaster incident at the bridge connecting Jalan Raya Magelang and Jombor Baru Housing Complex. It is one of the rehabilitation processes that there is improvement and restoration of aspects of public services as a form of disaster communication.



**Fig. 3.** Display of BPBD Sleman website regarding Post-Disaster Activities. Source: BPBD Regency Website, 2022

## 5 Conclusion

The results of the research shows that the Balanced Scorecard method uses three perspectives, namely: 1) internal processes; 2) growth and learning perspective; 3) customer perspective. The results of the research show that the growth and learning perspective is quite effective. The customer perspective (the people of Sleman Regency) shows that the community is satisfied with the fulfillment of their needs in receiving disaster information and the management that is conveyed on the BPBD Sleman Regency website. The internal process perspective is still not effective because the management of the Sleman Regency BPBD website has not been carried out professionally. The human resources involved in making news are BPBD Sleman employees and community contributors with the main job is not to be news reporters. Website administrators are responsible for news at the prevention and preparedness, emergency and logistics, and rehabilitation and reconstruction stages. Everyone is responsible for the smooth flow of public information and communication as the implementation of disaster communication that is beneficial for disaster risk management. This study contributes to increase the effectiveness of the Sleman BPBD website so the website management becomes better.

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