THE COMMUNITY EMPOWERMENT STRATEGY IN FACING THE POTENTIAL EARTHQUAKES IN SURABAYA: A LITERATURE REVIEW

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Article Info

Abstract

In all communities, there is local wisdom and values that are formed from the disaster experience and the efforts to manage the disaster in the past. There is a lot of local wisdom that develops in the community, so each region will mark the earthquake events in its way. Every disaster event by the community is marked by various unique ways so that future generations could remember and learn from the previous disasters. This diversity of local wisdom needs to be deepened through literature studies so that lessons can be obtained from other regions to inspire the implementation of community empowerment in the city of Surabaya to face the potential for earthquakes. To analyze how community empowerment can enhance the Surabaya community earthquake disaster resilience. This is a Literature Review, that collected articles using the Google Scholar and PubMed search engines. The author filtered and selected according to inclusions criteria. The results of the literature study obtained a proposed strategy design that can be used to increase participation in the context of Surabaya community empowerment. This literature could be accommodating socio-spiritual values, increasing disaster knowledge for all levels of society, and strengthening community social systems to the lowest level.
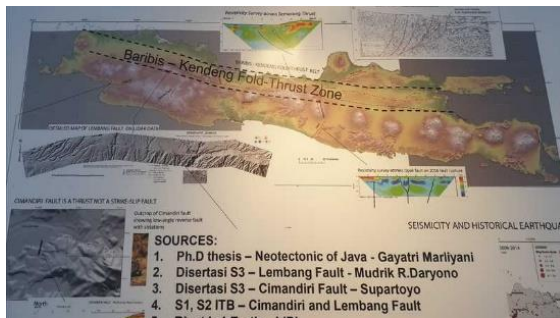
INTRODUCTION

Surabaya government and community nowadays must increase the preparedness and resilience for the potential earthquakes. This earthquake potential refers to findings of an active fault that crosses the Surabaya City area. Researchers from the Bandung Institute of Technology (ITB), the Geospatial Information Agency (BIG), and the Australian National University (ANU) found and called this active fault as Kendeng Fault (Figure 1).

Figure 1. Kendeng Fault
Source: Windarto, 2019

So far, earthquake disaster preparedness has not received special attention from the government and the community. This is because the signs and the symptoms regarding the potential for earthquakes have never been encountered and occurred in Surabaya city. Based on historical records, earthquakes in this area have occurred but have long passed. Basically, in the community, there is local wisdom and a value that was formed by the experience of events and disaster management efforts in the past. There is a lot of local wisdom that develops in the community, so each region will mark earthquake events in its way. Every disaster event by the community is marked in various unique ways so that future generations can remember and learning from the previous disasters. This diversity of local wisdom needs to be deepened through literature studies so that lessons can be obtained from other regions to inspire the implementation of community empowerment in Surabaya city.

The Surabaya citizens need to prepare for a potential earthquake that might occur at any period especially if it is caused by an active fault that crosses the Surabaya area, that named is Kendeng Fault. The confirmation of the existence of the Kendeng Fault is the result of a collaboration between researchers from the Bandung Institute of Technology (ITB), Geospatial Information Agency (BIG), and Australian National University (ANU). The fact of the research results found that the Kendeng Fault is an active fault with a movement of 5 mm per year (Sutedjo, 2020). Currently, the number of Surabaya residents is 2,917,618 people. The number is quite large if an earthquake occurs and residents are not ready (Widodo, 2019).

Earthquakes do not kill, but the impacts of the damage after the earthquake could be caused potential casualties (Siddiq, 2008). The Efforts to improve preparedness are an important element at disaster risk reduction. Indonesian Law Number 24/2007 on Disaster Management states that preparedness is a series of activities that are carried out to anticipate disasters through organizing and taking appropriate and efficient measures.

In line with the statement in the previous paragraph, Widodo (Widodo, 2019) said that the potential for earthquakes is not only in the Surabaya and Madura areas of East Java but also in most parts of Indonesia since Indonesia is in the Pacific Ring of Fire formed by active tectonic plate movements. "The Pacific Ring of Fire is a horseshoe-shaped zone and the most active earthquake belt zone in the world. Not only in Indonesia, other countries such as Japan, Taiwan, and New Zealand are also included in the Pacific Ring of Fire (van Gorsel et al., 2016). Still, in Gorsel it said that based on the historical record of seismicity, the Kendeng Fault route triggered destructive earthquakes in Mojokerto (1836,1837), Madiun (1862, 1915), and Surabaya (1867). Meanwhile, the RMKS Fault has also triggered destructive earthquakes in Rembang-Tuban (1836), Sedayu (1902), Lamongan (1939), Sumenep (13 June 2018

and 11 October 2018). The Indonesian Meteorology and Geophysics Agency we abbreviated as BMKG suggests that, rather than fussing over earthquake predictions, the community, the government, and other stakeholders, we should be proactive ought to the earthquake and tsunami disaster mitigation efforts and preparedness.
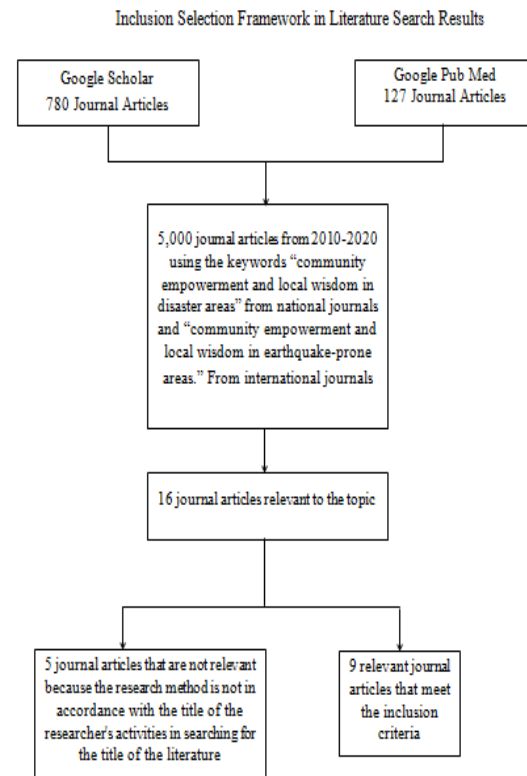
Disaster preparedness could be done by educating the public on how to prepare for protection and safety before, during, and after an earthquake. Build buildings and infrastructure under the "building code" or earthquake-resistant building requirements, establish a spatial layout based on disaster-prone maps, prepare evacuation routes, and build shelters for vertical evacuation from tsunami threats in coastal areas. This study aims to analyze how the community empowerment about the potential of earthquakes in Surabaya can enhance the Surabaya community resilience by searching the journal scientific research.

METHODS
This study is a literature review research, that collected the relevant and significant publications regarding community empowerment and local wisdom in earthquake areas. The population of this research is all journals that appear based on keywords about community empowerment and local wisdom in disaster areas. Meanwhile, the sample of this study is a journal about community empowerment and local wisdom in earthquake-prone areas. Search journals using the inclusion criteria. The inclusion criteria of the journal are:
1. The journal above 5 years
2. Descriptive- Qualitative journal
3. Journal about Community Empowerment Strategy
4. Journal about Kendeng Fault

Nine kinds of literature had been obtained by the research objectives (Figure 2). This study literature is based on the study that was taken from some community empowerment journals, scientific journals,

Figure 2. The Author Journal Selection
Source: Processed by Author, 2021

and legislation for disaster management. The results of these various literature studies will be used to identify what efforts could be used for community empowerment strategies in facing potential earthquakes caused by Kendeng Fault which is an active fault in Surabaya.

RESULTS AND DISCUSSION
An earthquake that occurred in Surabaya in 1867 was a long period since the last time event happened (Nguyen, Griffin, Cipta, & Cummins, 2015). The long duration makes people of Surabaya forget about it. Since they did not learn from the past event to pass on to the next generations, it caused an existed potential of disaster to seem nothing. Lack of awareness of potential disasters happened because of the long period since the first event.

The results of research publication from Bandung Institute of Technology (ITB), Geospatial Information Agency (BIG), and Australian National University (ANU) have

made the city government and a half of the community aware that there is a potential earthquake to occur at the Kendeng Fault passing in Surabaya. Until now, there has been no research or prediction that could determine when the earthquake will happen in Surabaya. The community as the subject of disaster could take part in disaster risk reduction efforts. The community empowerment program expected would make a movement based on by the people and for the people for disaster risk reduction in Surabaya.

The Application of regulation in the community empowerment activities
Disaster management efforts always have the basic of prevailing laws and regulations. Indonesian Law Number 24 of 2007 concerning Disaster Management as the main reference. Furthermore, in the implementation of this law, there are other regulations issued, among products of Laws, Presidential Decrees, Ministerial Regulations, Regulations of the Head of the National Management Agency, and local regulations. The community as a potential disaster victim must have participated in disaster reduction efforts. The law regulates the rights and obligations of the community in disaster management.

Indonesian Law Number 24 of 2007 article 26 paragraph 1 letter d and e that: (d) The government should participate in the planning, operation, and maintenance of programs for the provision of health service assistance including psychosocial support; (e) The government should participate in decision making regarding disaster management activities, especially those are relating to oneself and their communities. Indonesian Law Number 24 of 2007 article 27 paragraph 1 letter a and b, everyone is obligated to: a. to maintain a harmonious social life of the community, maintaining balance, harmony, harmony, and preservation of environmental functions; b. to carry out the disaster management activities. In this regulation, it is clear that the community has an important role in

disaster events, both pre and post-disaster. The community needs to be empowered in disaster risk reduction efforts. The government as the responsible party in a series of disaster cycles is obliged to make efforts to protect its citizens. Community empowerment efforts are one of the efforts that could be made by the government.

The Community Empowerment
Empowerment was an adapted term and developed in Europe started in the Middle Ages. Empowerment is an individual and social process, namely a strengthening of individual abilities, increasing competence, and fostering the development of creativity. The three of them allow people to develop their shared feelings which are become individual responsibility based on their needs (Sukiyah et al., 2018). The essence of 'empowerment' is centered on humans and humanity, in other words, humans, and humanity as normative, structural, and substantial benchmarks. Community empowerment is an economic development concept that encapsulates social values. This concept reflects a new development paradigm, which is people-centered, participatory, empowering, and sustainable (Luitel, 2017). Empowering the community included enabling and authorizing society. The community participates in managing and organizing used their potential by working with them and helping themselves (to help people so they could help them).

Community empowerment includes, firstly increases their ability and independence of their standard of living, secondly places the community as the main party or development center with its target marginalized community, and thirdly increases the community's ability to analyze the conditions, potentials, and problems that need to be resolved. Learning activities in community empowerment must be based on the principle of start with what people know and start with what people have.

The process of community empowerment is carried out through the

Table 1. Community Empowerment Strategies from Literature Studies

Writer	Title	The strategy of Community empowerment
Thene, 2016	Earthquake Mitigation Based on Local Wisdom of the Rote Community in Rote Ndao Regency, East Nusa Tenggara Province	The value applied in the community is a firm asset to develop community empowerment
Ezperansa, 2020	Education of Disaster Preparedness through Promotion and Disaster Preparedness Training	Increasing the community education of disaster as a lever for community empowerment programs
Sukiyah, 2018.	Community Empowerment in Cisewu Village Based on Local Potential in Realizing a Disaster Response Community	Community awareness to be involved in disaster risk reduction efforts is a good step for community empowerment.
Sonjaya, 2020	Communication Management of Lombok Earthquake in West Nusa Tenggara during the Disaster Emergency Response.	Utilization of community systems as decision-makers during a disaster
Takasaki, 2016	Learning from disaster: community-based marine protected areas in Fiji	Lessons from previous disasters for decision-making during a disaster.
Witvorapong, 2015	Social participation and disaster risk reduction behavior in tsunami-prone areas	Community involvement in disaster risk reduction efforts.
Niles, 2019	Social media usage patterns during natural hazards	The use of social media as a medium to empower the community
	Sendai Framework For Disaster Risk Reduction 2015-2030	Efforts to involve all nations in the campaign for the national movement "National Movement for Disaster Risk Reduction" in collective action through traditional forms of community cooperation.

Source: Thene, 2016; Esperanza & Simanjuntak, 2020; Sukiyah et al., 2018; Risqi et al., 2020; Inoguchi & Le, 2020; Witvorapong, Muttarak, & Pothisiri, 2015; Niles, Emery, Reagan, Dodds, & Danforth, 2019.

5Ps, namely: first, possibility: creating an atmosphere or climate that allows the potential of the community to develop optimally, secondly potentiality: strengthening the knowledge and skills possessed by the community in solving problems and meeting their needs, third protection: protecting the community, especially the weak ones, so they would not be oppressed by the strong one, avoid unfair competition (especially unhealthy) between the strong and weak communities, and prevent the exploitation of the strong against the weak, the fourth proponents: provide guidance and support so that the community can carry out their roles and tasks life, the fifth preservation: maintaining conducive conditions. So, there is a balance of power distribution between various groups in society (Ginting & Wijayanti, 2019).

The failure of a community empowerment program so far tends to be the result of a lack of consideration of the needs from their point of view. Policymakers and policy implementing agencies have difficulties understanding the social situation of society. It makes them do

not have enough information to planning suitable programs based on the problem and the community's needs. Being understanding the reality of a community and or society is not easy. Community empowerment facilitators are often trapped in their imaginations and thoughts. So, unconsciously, it will guide the community follows what the facilitator thinks instead of what they think (Haryani, 2016).

Based on the literature, we think that the role of the community empowerment program is needed in line with the target. The government as a policymaker in community empowerment could stand on a principle. The government continues to provide assistance and evaluation of the community empowerment programs. Considering that change is an inevitability, thus, it has to be able to adjust to its surrounding environment. Society as a dynamic human, could not remain silent because the silence is considered as a mental death. Humans must have continued growing and changing for the better condition. However, it is not enough to changing just once in a lifetime. The change must continue to be carried out in line with the demands of change itself. Usually, the cause of humans changing are external factors, but we have to change more often because of the internal factors (willingness to do better). So, we thought that continuous change will lead us to perfection.

The Inside and Outside Role of the Indonesia Empowerment Communities Earthquake
In all disaster cycles, it is important to empower the community. The scientific application of community empowerment is expected to inspire community participation in disaster risk reduction and management, especially for earthquakes. Community empowerment to reduce disaster risk internationally has been mentioned in the Sendai Framework for Disaster Risk Reduction 2015-2030. The world pays special attention to several programs that involve the community as the subject of disasters to take an active role in carrying out the community-based disaster risk reduction movement.

The Indonesian government should be looking to the Sendai Framework For Disaster Risk Reduction 2015-2030 (UNDRR, 2020) by creating a program "National Movement for Disaster Risk Reduction". This movement aims to create "a Resilient, Sustainable and Prosperous Indonesia". The national movement is formulated to be part of a political commitment to carry out a nation's revolution character. One of them is by creating a safe culture. At the practical level, the movement invests in human resources through awareness-raising and mass mobilization to improve disaster risk management based on the Sendai Framework for disaster risk reduction.

Still based on Indonesian Law Number 24 of 2007 about Disaster Management, The National Disaster Risk Reduction Movement is a community empowerment process that focuses on participatory activities in conducting studies, planning, organizing, and taking action that involves various stakeholders to realize a community that capable of managing and reducing disaster risk and improving the quality of life. Efforts to involve the entire nation in the national movement campaign are put into collective actions through traditional forms of community cooperation such as gotong royong. The movement will make social solidarity and gotong-royong the backbone of disaster risk management in Indonesia. From the perspective of community-based disaster risk reduction, the character of community movements is usually 'dynamic and non-uniform', small in scale, and derived from local culture and wisdom.

The spirit of culture and local wisdom, are a good way and traditional way to understanding of human and nature interactions. It will have a more sustainable impact and directly solving the disaster and the environmental problems at the

local/community level. The movement pattern is based on spiritual motivation that leads to the spirit of togetherness and/or gotong royong which is a social learning process to encourage disaster risk reduction movements at the local/community level.

Earthquakes in Indonesia did not occur only in one or two times, it has occurred with high intensity in several areas and even become a part of Indonesian society history. According to the National Volcanology Agency, earthquakes in Indonesia occurred throughout the year and almost in all regions of Indonesia. The scale of the earthquake varies and gives different impacts for each region. The high intensity of earthquakes in Indonesia causes mitigation patterns in the community. Thene (2016) showed how the Rote Ndao community mitigates against earthquakes. The facts are: First, the people of Rote Ndao do not know about earthquakes, they only have myths about earthquakes. Myth for them is a way to bring the members of society closer to the core of their life or their true identity; due to myth, every citizen will be able to meet his unique self and other human beings as well as the universe, and the God. Myths inspire humans to maintain and develop a harmony of life together in the social order: among the macro-cosmos, micro-cosmos, and the Invisible. Second, the experience of the Rote Ndao community in facing the earthquake, they shouted a pearl of local wisdom *ami nai ia o,* when the earthquake happened. They are happy because of the belief that the current year will cause soil fertility so they could reap an abundant harvest. Since they are all in the same boat, they realized the meaning of social collective as social beings. In this case, the earthquake that devastated the past lives of the community had made their solidarity grew stronger. Third, the people of Rote Ndao did not know about earthquake disaster mitigation, they just used local wisdom.

Knowledge has a significant correlation with efforts to raise public awareness to join participatory movements to overcome potential earthquakes. The research showed that a good cumulative average value was found on respondents' knowledge of earthquake preparedness before-after promotion and earthquake preparedness training. Knowledge influence behavior, and attitude influence beliefs, then it correlated back to knowledge to influence behavior. Providing health education will lead to empirical improvement in knowledge and attitude. It implies that health promotion could make individuals increase their knowledge and skills of disaster preparedness, especially earthquakes. If they have both of them, they are expected to be prepared with a good preparedness for disaster, to reduce the risk of potential casualties whenever the real disaster happened. To motivate the active role of people through community empowerment, it could be started by escalates the knowledge.

Sukiyah et al (2018) conducted a research in Cisewu Village, West Java and found that the community wanted to be involved in the disaster mitigation process after gained the understanding through various training and mentoring that applied simple and easy methods. Awareness of the potential disaster areas is conveyed in several activities of community empowerment. Besides, various natural phenomena related to disasters are also informed using simple language and adjust the education level of the local community. This gap should be the government's top consideration to empowers the community to be more concerned about man's life-safety while keeping the environment. Based on data analysis using a descriptive quantitative method, there are community empowerment moves that could be developed in Cisewu Village. First, the role of people has to be enhanced, second, cultural preservation; in this case, is local wisdom, and last, to establish community-based disaster mitigation.

The Lombok earthquake in 2018 caused a devastating effect, however, it succeeds to give the community lessons about

communication management during an earthquake. The results of the study that conducted by Risqi et al (2020) showed that the community has collaborated on three perspectives of crisis coordination, namely the bureaucratic, structural, and networking perspectives. Those are types of citizens' procedures of crisis management that involved various parties. All processes of coordination and policymaking are led by a village head. People of Fiji, Japan did similarly when affected by natural disasters. It becomes a social lesson for the community in decision-making while facing disasters (Takasaki, 2016).

Community participation in facing disasters is believed to have a positive influence on disaster mitigation. People in Phang Nga, Thailand, which is a disaster-prone area, reactivate the existing organizational system in the community to reduce disaster risk (Witvorapong et al., 2015). If it is applied in Indonesia, policymakers could utilize the existing organizational system without creating a new structure. The government could delegate the coordination in empowering the position of local public figures such as neighborhood, village heads, religious leaders, other public figures, youth organizations, and Family Welfare Empowerment (PKK). The systems in the community have been strengthened by the gotong-royong system that existed long before the disaster happened. In general, the culture of gotong royong has become a distinctive feature of Indonesian.

The United Stated disaster analysis results in the last ten years showed that social media is an important medium to help people prepare for and recover from disasters (Niles et al., 2019). Particularly, the information shared throughout the networks during a disaster could have significant implications for damages and disaster recovery. The spread or influence is the key to communication. Social media could be an asset in community empowerment both in pre-disaster and post-disaster phases. Fundraising and social

assistance are collected using social media, both personal and organizational. Information dissemination in the current era through social media is ideal, considering that social media such as WhatsApp, Instagram, Facebook has become a common need in society. Therefore, social media could be the potential key for disaster mitigation in community empowerment.

The Community Empowerment Strategy
All of the references above informed and described that community empowerment when a disaster happened is crucial. Community empowerment is an effort to coordinate the community within the framework of the disaster cycle so the community's ability is enhanced in facing disasters. The planning of the empowerment program could be expected as a sustainable program (Luitel, 2017). The results of a literature study about implementation description of community empowerment obtained from many regions inside and outside Indonesia could be used as references. The goals are summarized to be a suggestion for community empowerment strategies in facing potential earthquakes due to the active Kendeng Fault in Surabaya.

The first, strategy accommodated socio-spiritual values that applied among people in Surabaya. *Sedekah Bumi* is one of the traditional values that has been developed and still stands today in the people of Surabaya, especially West Surabaya. The ritual symbolizes the people's gratitude to God over an abundant harvest (Tajuddin, 2015). Based on the route map of the fault, West Surabaya passed through the Surabaya Fault. The government is expected to consider the *Sedekah Bumi* ritual as a culture of Surabaya people that could be developed throughout the Surabaya region. The government could organize community empowerment programs to reduce the risk of earthquake disasters through a spiritual approach, in this case, is *Sedekah Bumi.* The community

engaged in the ritual since God has protected them from any potential disasters.

Spirituality is an important aspect of man's life. Hence its issue and context are inextricably linked since the social workers provide psychosocial service as their main service. Religion and spirituality are energy and not pathology. Spirituality could help people to solve problems because it is one of the main aspects of human needs. It also may help someone to find the meaning of life, to encourage him/her to do the good thing and think positively, to bind the harmony among God, the universe, and the community, and also to find peace of the heart and mind. Spirituality could brighten up a soul. Freedom from misery with spirituality could also guide people to be better and meaningful people (Bahri, 2019).

The second, strategy is to increase disaster knowledge for all levels of society. Increasing knowledge is an important thing to do since it could encourage someone to do something. Providing disaster knowledge is the next strategy in empowering people so they will be ready to face potential disasters. Enhancement of knowledge through empowerment is one of the non-structural mitigation acts (Ibrahim, Emaliyawati, & Yani, 2020). Education of disaster could be obtained through formal, semi-formal, and non-formal educations (Makhdar, 2018). There are many sources of disaster information for people of Surabaya, they can access it on printed media, electronics, and public service of information. There are also many scientific publications from universities that can be accessed.

Even though there are plenty of information sources, it does not mean that the public is well-educated. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) stated that Indonesia ranks second-last position related to world literacy because Indonesians reading interest has proved very low. According to UNESCO, the reading interest of Indonesian people is only 0.001%. This means, out of 1,000 Indonesians only 1 person is diligently reading (Devega, 2017).

Generally, Indonesians are people who diligently surfing on the internet, but if they are unwilling to access and read the news or information thoroughly, then they become easily believe in hoaxes, which could be a barrier to the knowledge of disaster and disaster risk reduction. The community is expected to educate one another about the reduction of disaster risk through community empowerment. They could plan a counseling program for the people based on their age. Besides, the community could provide education on disasters to identify the real potential of earthquakes.

The third, strategy is strengthening the social system of the community to the lowest level. After the community obtains sufficient knowledge about disasters, especially earthquakes in Surabaya, then will be continued by institutional strengthening in the community. The regional apparatus in the community are strengthened by a leadership capacity program which has targets like RT, RW, local public figures, religious, and youth organization leaders. This enhancement is expected to be a power to empower the community.

The socialization of the empowerment program is conveyed through three approaches, there are (1) strengthening of local community institutions; (2) drafting of regional regulation, and (3) leadership (Ginting & Wijayanti, 2019). The community necessarily needs to have several figures who could encourage them to be actively contributed specifically to the reduction of earthquake disaster risk.

The fourth, strategy is the involvement of people in Disaster risk reduction. For community empowerment, it is necessary. The community is the most important element in planning-implementation-utilization and maintenance assessment (Mulyawan, 2016). The involvement of people would bring out unity, solidarity, and take care of each other for disaster risk reduction. It is the same with a study on a

disaster-resilient community in Ternate city, there is *limau ma dade dade ma bara jiko se doe* spirit which means unity, solidarity, and kinship. The ultimate goal of community involvement in the community empowerment program is actualizing a well-prepared and tough society is facing potential disasters.

The fifth, strategy is the use of social media and another medium of communication as disaster social networking. The Surabaya government has provided a public service application for its people to get all of the disaster information easily, it's called Surabaya Disaster Alert Information (ISYANA). There is information about seismic activity and potential impacts caused by an earthquake on the application. The application also provides information about where monitoring posts, assistance posts, and health-service centers are and the weather reports.

The quality of emergency response services on Command Center 112 is pretty good. However, there are still problems in the dimension access that caused trouble on the telephone network and the internet. The electricity that could go off suddenly at any time also becomes one of the problems considering all required equipment needs electricity while the generator is consecutively used. Besides, socialization is needed for all of Surabaya's people to know and understand these services (Makhdar, 2018).

The limitations of the application could be an opportunity to empower the community to manage disaster information using social media. Social media has become a lifestyle for people today, so they could be directed to use it to gain information, tips, and also disaster risk reduction efforts. A well-controlled source of information in the communication system could be built starting from the smallest community such as neighborhood, sub-district, the district then the city government.

The last, strategy is to try to strengthen the legal basis of community empowerment in disaster risk reduction efforts. The disaster management act obliged the local governments and community to take part in disaster risk reduction efforts. The Surabaya government expected to strengthen community empowerment programs through the legalization of Regional Regulations or other regulations, so they could be a reference in implementing the program. National Disaster Management Authority in the Chairman of NDMA regulation No 03/2012 of Disaster Risk Reduction Capacity Assessment assigned a guideline of what can be done to enhance the capacity in facing the potential disasters.

CONCLUSIONS, RECOMMENDATION AND LIMITATION

Surabaya could potentially have an earthquake of 6.5 M scale since its area is passed by the active Kendeng Fault. Since the city has a 2,917,618 total population, they need to be very well-prepared to face the disaster. In the application of community empowerment, rehabilitation education has been arranged the community empowerment strategies for enhancement of community in facing the potential earthquakes, first, it is accommodating social-spiritual value applied for Surabaya people, second is increasing the knowledge of disaster for all of the community, the third is strengthening social system through the lowest level, fourth is involving the community in the disaster risk reduction, the fifth is using social and other communication media as a disaster networking and information, and sixth is strengthening the legal basis of community empowerment in disaster risk reduction.

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