

Digital Sociological Review of KP2C in the Use of Whatsapp Groups for Flood Mitigation

Tinjauan Sosiologi Digital terhadap KP2C dalam Penggunaan Grup Whatsapp untuk Mitigasi Banjir

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ABSTRACT

KP2C has implemented a flood early warning system through Whatsapp groups since 2016. However, in the areas of Bojong Kulur and Jatirasa, which are the focus of KP2C information and downstream of the Cileungsi and Cikeas rivers, there are still losses for members. The interaction illustrates that achievement of KP2C's goals has not been maximized, so the meaning of effectiveness is important to explore sociologically with variables thought to be related to it such as the digital divide, social structure's form, and social capital's level. This study uses a postpositivism paradigm and survey methods with data qualitative as a support. Respondents in this study were obtained by purposive technique with 40 individuals in RW 24 Bojong Kulur and RW 8 Jatirasa Village as affected areas. The results showed the majority of all variables were dominated by the medium category. Digital divide variable is strongly and positively related to social structure. Both are simultaneously also related to social capital. Therefore, it can be said that if the role of the early warning system is to be effective, then the three variables must clearly be considered.

Keywords: early warning, effectiveness, social capital



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INTRODUCTION

Hunter (2000) revealed that the addition, distribution, and composition of the population affect the sustainability of the surrounding environment. Likewise with regard to space, according to Rusli (2012), land and several other natural resources cannot balance the increase in population and their needs. Therefore, efforts to protect the environment from population activities must be present, even though in reality it is difficult to implement.

Although it cannot be separated from natural factors, until now there is still one catastrophic phenomenon such as flooding that can occur because human activities are not monitored. Rosyidie (2013) states that the causes of flooding from human factors include decreased quantity and quality of land, the amount of waste that does not decompose naturally, slum settlements, and incorrect flood control. As a result, material and non-material losses can befall the community itself, especially in flood-prone areas.

Equivalent to supervising individual activities, minimizing risk as intended by flood mitigation often does not work out ideally. According to Muhamad et al. (2017), so far some realizations of flood management can be said to have not been carried out optimally, such as river normalization and relocation of settlements. The realization of flood management is said to be not optimal because it is influenced by the attitudes and actions of individuals who still use the environment, but the individual concerned is reluctant to maintain the ecosystem around the watershed. Based on several previous reviews, there is a link between individuals as environmental users and the difficulty of mitigating or suppressing uncontrolled human activities as the cause of flooding. Therefore, it is clear that sociological aspects must be involved to deal with the danger of flooding.

There are some flood cases that are often present to date, namely flooding in Bojong Kulur Village, Gunung Putri District, Bogor Regency and Jatirasa Village, Jatiasih District, Bekasi City (Hakim, 2019). The areas which are the confluence of two downstream rivers, namely the Cileungsi and Cikeas rivers, are still negatively affected by the surrounding community. Since 2016, flooding around the two rural-urban areas has begun to threaten the lives, materials and psychology of the wider community because they depend on the presence of water from the upstream of their respective rivers¹. Therefore, with the existing awareness, several efforts must be made to contextually mitigate flooding according to the characteristics of the location.

Due to the similarity of interests and territories, one of the efforts made by several local individuals for flood mitigation is through the Cileungsi and Cikeas River Care Community (KP2C). Learning from the experiences of 2016 and previous years, through connectivity in Whatsapp group, KP2C carried out non-structural mitigation in the form of an early warning system (Ginting & Putuhena, 2014; Murdiana et al., 2015). Not only accommodated through Whatsapp group, the role of KP2C can be said to be quite broad in flood mitigation. The KP2C early warning system includes Closed Circuit Television (CCTV) monitoring for water level and weather at 5 monitoring points. Then, from the results of the monitoring, the information is processed into messages, so that it can be understood and distributed to social media (Whatsapp, Twitter, Telegram, Facebook, and Instagram groups) by the KP2C management. Monitoring is carried out in real time with the help of volunteers, while information dissemination is always carried out every day in the morning, afternoon, and evening.

KP2C's action in establishing a flood early warning system has made individuals in it begin to pay attention to flood mitigation. Although moving from a collection of individuals who confirmed it, KP2C has developed into a virtual community in today's digital era. Connectivity through Whatsapp group makes interaction patterns borderless (unlimited by space) and timeless (not bound by time) as a form of interactive social structure in today's community (Evans, 2013).

Castells (2005) revealed that now people can network to disseminate information through their own digital devices along with the role of these tools. The network society that Castells describes can be considered as a process/action between individuals to create, confirm, and utilize information for any purpose, including flood mitigation (Rustam, 2017). According to Sugihartati (2014), the social productivity of the community must now go through the transfer of knowledge and information as Castells expressed in the concept of "informationalism". Without information processing actions, the quality of human resources in an area will be left behind. Castells calls the lack of access and processing

¹ Monthly Disaster Information. Source: https://bnpb.go.id/uploads/publication/Info_bencana_april_final.pdf

of this information as the concept of the digital divide in the information age in any context, including disaster (Sugihartati, 2014). In line with Gad-el-Hak (2008) statement on his views on disasters, the use of digital devices, data, and internet networks may not always be managed properly by each individual, including information on early warning systems. In fact, access, networks, and patterns of information dissemination as repeating social structures are very important for early warning systems (Dijk, 2006; Evans, 2013; Sugihartati, 2014). Without these three things, individual preparedness during floods will not materialize, and even the potential for response will be minimal.

Although there is a KP2C early warning system, in fact it must be acknowledged that individuals in the Whatsapp group and the wider community are still experiencing material and non-material losses (Prihartanto & Ganessa, 2019). Some of the floods that occurred could not be handled by the community with a height of about 2-3 meters (Rojali, 2020). In fact, apart from providing water level and weather monitoring, KP2C early warning system also plays a role in helping its management/members to have time to save important items and their families when a flood occurs (Akhirianto, 2018). Due to this case, KP2C goal not fully achieved becomes a separate question and is important to follow up with a perspective from digital sociology because there are patterns of interaction in Whatsapp group that are beneficial to the community (Damayanti et al., 2018). Through the effectiveness of this research, it was hoped that the description of the advantages and disadvantages of the KP2C early warning system could be described accurately. According to Sadat (2016), effectiveness can explain the achievement of roles whose context is adapted to the presence of any natural disaster handling media. Based on this concept, research on the achievements of the early warning system aimed to develop the affirmation of KP2C's roles.

Research on the achievement of the effectiveness of the early warning system cannot be directly carried out without relating it to other variables related to the substance of the interaction between individuals sociologically (Keoduangsine & Goodwin, 2012; Pramitha et al., 2020; Fahriyani & Harmaningsih, 2019; Fathy, 2019). According to Keoduangsine & Goodwin (2012), although the role of the early warning system reaches the individual level, the digital divide has the potential to occur due to differences in access to information. This is equivalent to the research of Pramitha et al. (2020), which was carried out in Surakarta, generalizing access and skills to process existing information, so that the expansion of the role of the early warning system and panic/hoaxes can be anticipated. Without attention to the digital divide, the achievement of information on individuals along with the presence of their responses to floods will fail as research from Akhirianto (2018). According to Akhirianto (2018), the flood case that had a severe impact on the residents of Bekasi can be caused by the residents failing to evacuate themselves even though they have been exposed to water level information. Through these reviews, a digital divide (access ability, skills, and benefits) is needed to explore the problem of the effectiveness of the KP2C early warning system that has not yet obtained (Lupton, 2014; Lutz, 2019).

After being able to be accommodated through Whatsapp groups, according to Fahriyani & Harmaningsih (2019), interactions in social media will form a pattern that is repeated or routine. In the case of KP2C, the dissemination of information in the Whatsapp group was scheduled and there were responses/interactions between individuals that occurred. Dijk (2006), Evans (2013), and Kinseng (2017) mention that the pattern of interaction will form a new community structure in the digital era with an interactional nature. Let alone, the Whatsapp group in this case has become a new moderate in the context of an early warning system. So far, the flood early warning system cannot be owned/accessed directly by individual community (Danang et al., 2019). Therefore, interaction patterns are important to review because apart from forming the social structure of new media through interaction indicators between space and time, information dissemination as an element of the effectiveness of the early warning system will show its role (BNPB, 2018; Dijk, 2006).

The assessment of the effectiveness of the KP2C early warning system according to Afrian & Islami (2018) and Sa'ida & Ma'ady (2019) is also related to social capital. Networks, norms, and trust at the micro level (between individuals) will be seen as significant benefits of interaction between individuals in the community. Currently, information and assistance in the form of materials from other parties is a unity that is expected to be present when a disaster occurs (Fathy, 2019; Muhamad et al., 2017). Therefore, due to the association with other variables, the search for the effectiveness of the KP2C early warning system in terms of the dynamics of sociological variables could be carried out further with the objectives of: (1) analyzing the condition of the digital divide as the diversity of capabilities in the use of digital devices and social media at individual level; (2) analyzing the form of community structure as

a pattern of interaction between individuals in KP2C Whatsapp group; (3) analyzing the level of social capital between individuals; and (4) analyzing the level of effectiveness of the early warning system.

METHODS

This study used post-positivism paradigm to analyze social reality in terms of objective and subjectivity in KP2C. The Post-positivism paradigm was adapted to the type of research analyzing and relating quantitative variables with the support of qualitative data (Creswell, 2009). This research was conducted through a mixed methods approach (a combination of quantitative and qualitative methods) at the level of data collection, analysis, and presentation with a concurrent embedded strategy design. The concurrent design explained that there is a dominant weight of quantitative data, both primary and secondary, which is greater than qualitative data. In this study, qualitative data complemented quantitative data (Creswell, 2009).

The researcher conducted a survey method (sampling), adapted to the purposive approach, strategy, and research paradigm. The survey method was carried out because individual representation was sufficient to describe the entire population related to social phenomena in KP2C with the note several individuals, both important respondents/informants, were also present (Creswell, 2009; Singarimbun et al., 2017). Not only directing the collection of complex and concise data, this method was also able to explain the size of the variables and their relationships, as well as avoiding long periods of time and preventing information bias from one sample to another because they already knew the motives of this research.

The location of this research was carried out in the Cileungsi and Cikeas River Care Community (KP2C) purposively according to the background of the problem. The research area was located in Bojong Kulur Village, Gunung Putri District, Bogor Regency and Jatirasa Village, Jatiasih District, Bekasi City. The two areas became the downstream area of the confluence of two rivers between the Cileungsi and Cikeas rivers. The study was conducted to determine the advantages and disadvantages of the KP2C early warning system, which could later be developed (Fitriawan, 2017; Akhirianto, 2018). As for the time, the research was conducted on December 14th, 2020 to February 2021.

The selection of respondents in this study was based on a purposive technique because it required special characteristics to review the significance of the role of the KP2C early warning system. If they were not selected based on a purposive technique, then the selected individual might not know the exact existence or role of KP2C, considering that his/her participation as a member was only pseudo/following the trends of surrounding individuals. The unit of analysis in this study consisted of individuals as members/management of KP2C in RW 24 of Bojong Kulur Village and RW 8 of Jatirasa Village as the areas most affected by flooding according to information from the Head of KP2C and his deputy, Head of Bojong Kulur Village, and Secretary of the Jatirasa. Respondents in this study amounted to 40 individuals from the total population/samples which were not known for sure by KP2C/any party. If there was no information on population size, variety, and sampling costs, researchers generally could set a sample size of at least 30 individuals due to the central limit theory (Juanda, 2009; Singarimbun et al., 2017). However, it is undeniable that the number of samples taken was also affected due to the Covid-19 pandemic situation during the research. At the time of data collection, there were still individuals who were characterized as respondents, but were reluctant to be met or to answer the online questionnaires provided by the researcher because of the trust factor in data storage.

Researchers used primary and secondary data to answer the problem. Quantitative primary data were obtained from direct structured interviews with 33 respondents on an online questionnaire (google form) guided by the researcher. The rest, as many as 7 respondents, were only willing and able to fill out the online questionnaire via their respective smartphones. The variables proposed in the questionnaire included the digital divide as a measure of the ability of individuals in KP2C to use their early warning system, namely the form of social structure as an interaction pattern, the level of social capital, and the level of effectiveness of the early warning system. All components of the questionnaire would describe their level and prove their relationship to the effectiveness of the KP2C warning system. After the data were collected and exported to Microsoft Excel program, the coding was done by adjusting the code book that had been compiled by the researcher. After becoming codes and scores, processing and analyzing quantitative data were carried out statistically through the Statistical Package for the Social Sciences (SPSS) version 25 which was also to produce percentage graphs as well as Pearson and multiple linear correlation tests.

Qualitative primary data was obtained through in-depth interview technique to informants who were asked by researchers according to the guidelines. Informants were selected purposively to obtain

supporting and complementary data on the existing quantitative data. The nine informants interviewed by the researcher consisted of the Head of KP2C and his deputy, an administrator of the IT (Information Technology), web, and social media division, an administrator of the advocacy and partnership division, the Head of Bojong Kulur Village, Secretary of the Jatirasa Village, 2 monitoring officers from the BBWSCC (Balai Besar Ciliwung River Cisadane), as well as a monitoring officer from elements of the local community. If the respondent's information contains important information that has been selected and was related to the research objectives, then this was also qualitative primary data. The process of managing qualitative primary data was passed through the stages of reduction, verification of its relation to variables, and presentation of data to draw conclusions (Singarimbun et al., 2017). Especially secondary data sourced from previous research and community/institutional data regarding the role of KP2C and flood mitigation, management was carried out through sorting that was adapted to the cases that KP2C faced.

RESULTS AND DISCUSSION

Digital Divide as Diversity of Individual Abilities in KP2C

Literally, the meaning of digital divide is defined as a digital asymmetry. However, sociological analysis sees this meaning more clearly and is closely related to the diversity of individual abilities in using their own digital devices for certain purposes (Lupton, 2014). Referring to the KP2C case, it is very important to review the issue of access obtained for the benefits of members/management. In this regard, through the 3 existing indicators regarding access to ownership, skills, and benefits, individuals in KP2C had their own low, moderate, or high degrees. Figure 1 below is the percentage of respondents based on the digital divide indicator.

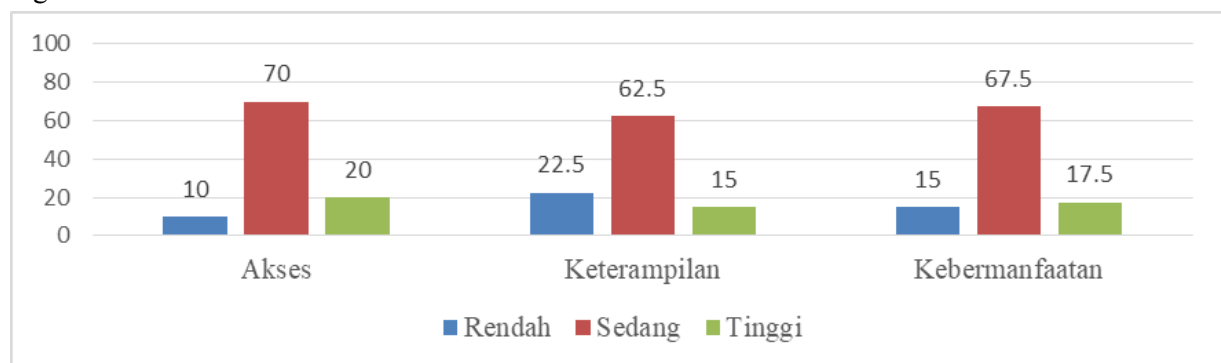


Figure 1. Percentage of Respondents based on Digital Divide Indicator

Based on Figure 1, the majority of the three indicators were dominated by the moderate category. Regarding access, the majority of respondents were categorized as moderate with 70 percent or 28 individuals from the total respondents in this study. This indicates that many individuals who were members of KP2C had at least two digital devices such as smartphones, tabs or laptops for their information needs on water level and weather. Likewise with the social media accounts used, apart from Whatsapp, some individuals also followed KP2C on Twitter/Facebook/Telegram. Regarding the response, the category of individuals was being predicted indirectly to always open their KP2C Whatsapp group quickly or stand by when intensive information circulates. Similar to research by Keoduangsine & Goodwin (2012), often when a flood early warning system is available, individuals as users rarely access or delay viewing water level information. This could also slow down the disaster response process.

“Malem pernah kita banjir dan kalang kabut semua, ada yang engga baca dan bales pasti, pernah juga pagi atau sore pas kita kerja, tapi info KP2C-nya tetep aja masuk.” (HY, In-depth Interview, 15/12/2020)

As many as 20 percent or 8 individuals were included in the high category as the second most in the access indicator. Based on needs, abilities, and social status such as heads of neighborhood association, heads of neighborhood unit, KP2C administrators and local environmental volunteers, some high category individuals accessed KP2C information faster because they had to disseminate information to other groups such as Whatsapp groups of neighborhood unit and local neighborhood associations. Due

to excess access, if there was a problem with one digital device/social media, this high category individual was still able to access it from other social media/devices.

“Kalau di RW 24 ini ada beberapa yang ditunjuk Pak Agung buat nyebarin ke grup RT dan RW, saya salah satunya, itu saya lakuin karna ada yang ga gabung KP2C mas, jadi kita kalo bisa cepet.” (WW, In-depth Interview, 23/01/2021)

The low category on the access indicator should be considered. This is because the availability of information from the start could make participation steps and individual responses to the phenomenon of environmental change active (Hapsari et al., 2018). Without the presence of access and information, the important content of the early warning system would be neglected. As many as 10 percent or 4 individuals from the total respondents belonged to the low category in access indicators. Even they had entered the KP2C Whatsapp group, low category individuals were indicated to have limited access in terms of the availability of KP2C digital devices/social media.

If high category individuals could get more access, then low category individuals were predicted to be not free to get access because their abilities and needs were very minimal. In addition to dependence on individual conditions or activities, low category individuals also depended on the state of their smartphone, so that the response to information provided by the group was minimal. When the battery was low or inactive, information from the Whatsapp group could not be obtained. Therefore, barriers to getting information could occur in this low category of individuals. In line with the research by Pramitha et al., (2020), the problems existing in KP2C were not only the early warning system tools owned by the community, but also the individual devices themselves sometimes did not support incoming water level information.

The existence of awareness and individual skills to obtain accurate and fast information was undeniable if it was very necessary in the role of this early warning system. The delay in information, the existence of hoaxes, and little information reaching individuals were the causes of the late response in dealing with flood risk. The results research of Fahriyani & Harmaningsih (2019) state that the skills to process information to be useful are a key factor if access is adequate. Referring to Figure 1, the moderate category still dominated the skill indicators, namely as much as 62.5 percent or 25 individuals from the total respondents. This figure indicates that the majority of individuals in KP2C already had sufficient skills to expose themselves to accurate water level and weather information. However, in terms of responding to KP2C information and comparing it with other sources of information, this action from individuals in this category was not necessarily present immediately. Based on only one source, some of them were more likely to rely on KP2C for disaster information than volunteers/other parties.

As many as 15 percent or 6 individuals from the total respondents belonged to the high category of skill indicators. Individuals in it were indicated to be active. Responses to the KP2C Whatsapp group as well as actions to confirm information with other sources such as volunteer groups and parties outside KP2C could occur in high category individuals. Meanwhile, as many as 22.5 percent or 9 individuals from the total respondents were in the low category on the skill indicator. The question of knowledge from social media accounts used by KP2C was predicted to be minimal, so that it was not sufficient to access a lot of information related to flood mitigation. Let alone, in the context of confirmation, confirmation from other sources could not be freely carried out by low category individuals. When compared with other categories, this individual could be declared passive.

Usefulness was clearly the end of the individual's ability to access information on KP2C. Profit or loss will be obtained by each individual in the form of information that can trigger any response (Sarvianto, 2020). According to Miller et al. (2016), the usefulness of accessing information can have an impact on social mobility for related individuals, in the sense that individuals are able to accelerate with their profits or even lose, influencing how they live in the society.

Referring to the KP2C case, apart from getting water level and weather information, this usefulness issue was more likely to be related to the ability to interact between individuals, both within the community and outside parties. The usefulness indicator itself was still dominated by the moderate category with a total of 67.5 percent or 27 individuals from the total respondents. This indicates that the majority of individuals in KP2C had quite benefited from the use of digital devices and their Whatsapp groups, especially regarding the fast and cheap circulation of water level and weather information. However, because they did not interact widely, the benefits obtained from other parties outside of KP2C in the form of information were not obtained by these individuals. Finally, the benefits of interacting with parties outside of KP2C to support disaster mitigation were indicated not to be felt.

In the high category with more intensive activity in interaction, this category was able to gain advantages over other categories. A total of 17.5 percent or 7 individuals from the total respondents included in the high category. This indicates that apart from the KP2C Whatsapp group itself, individuals in the high category were able to find out information about floods/ rivers from outside KP2C. Knowledge from other individuals they knew or joining volunteer groups/ communities outside of KP2C was the reason for obtaining benefits for high-level individuals.

Individuals in the low category can be said to still had very little benefits. As many as 6 individuals or 15 percent of the total respondents were included in the low category of usefulness indicators. The benefits obtained were only in the form of information from KP2C, indicating that individuals in it referred to KP2C only without any attempt to confirm the information. Based on the less active response/ interaction, it can be predicted that this individual had missed updating and confirming information. Worried, missing the right information is related to the ability to respond when a flood will occur (Arifin, 2016).

The flood mitigation carried out by KP2C through its Whatsapp group has indeed succeeded in having a positive impact on several individuals in it. However, the degree of individual ability to use digital devices and social media such as Whatsapp was closely related to KP2C's actions as long as it disseminated water level and disaster information. The problem then, it turned out that it was not only the diversity of abilities, in KP2C itself it was proven that there was an imbalance between those who had benefited and individuals who had lost. Equivalent to research by Keoduangsine & Goodwin (2012) and Pramitha et al. (2020), that in a community/ region there must be an unequal availability of early warning system equipment both at the individual level and at the local community level. On the other hand, both of them also mentioned that regarding the intensity of only viewing information, there were differences in responses for those who were able to access it correctly and those who were not. Based on these things, it seems that the theory of networked society that Castells expressed with the benefits of the information in it must pay attention to the context, in this case the matter of disaster (Sugihartati, 2014). Castells' proof of his theory was clearly related to the digital divide for each individual KP2C.

Interaction Patterns in KP2C: Forms of Social Structure

The connectivity that had been built through the Whatsapp group for the early warning system gave its own meaning, especially regarding interactions between individuals (Fahriyani & Harmaningsih, 2019). Routinely and when the water level upstream of the river had increased, the dissemination of information in the group presented its own sociological pattern. Similar to Nicos Mouzelis' statement that the actual pattern of relationships between individuals through a certain time and place can be called an interactive type of social structure, although there are other forms of structure, namely normative and distributional (Kinseng, 2017).

Now in the digital era, it must be admitted that the interaction patterns occurring are no longer conventional. The tendency is that each individual interacts through their respective smartphones freely to find out information from other individuals. The means that have built connectivity make interaction patterns able to be independent of time and space (Dijk, 2006; Evans, 2013). Dijk (2006) explicitly states that there are 3 elements, namely space, time, and depth of information with important substance related to the presence of interaction patterns, so that mutual understanding is achieved in a community. Figure 2 below is the percentage of respondents based on indicators of the form of social structure as a pattern of interaction among individuals in KP2C.

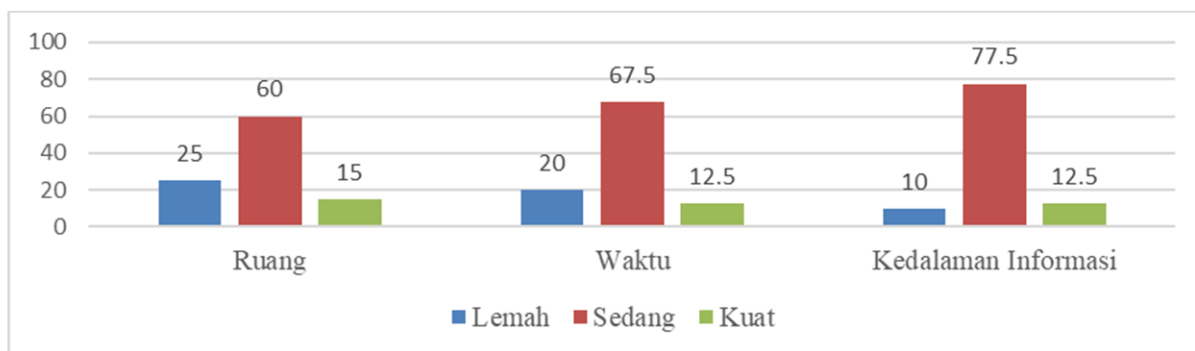


Figure 2. Percentage of Respondents based on the Forms of Social Structure Indicator

If you look at Figure 2, the three indicators were dominated by the moderate category. In the indicators of inter-space interaction patterns, as many as 60 percent or 24 individuals of the total respondents were in the moderate category. Although the use of Whatsapp group had become easy and the main social media for KP2C individuals, this figure indicates that the interaction existing among individuals was not always carried out directly when the water level continued to increase or the weather was rainy. Some individuals in the predicted category still paid attention to the context of the existence of other individuals they knew to establish their interactions related to disasters. Therefore, if they wanted to interact intensely, middle category individuals tended to contact other members/management they knew and their neighbors. Regarding reporting on flood monitoring conditions from their home environment, it is indicated that individuals in the moderate category tended to indirectly share this information. In fact, with the monitoring information, other individuals could feel a warning/alarm for evacuation before the flood came (Arifin, 2016).

As many as 25 percent or 10 individuals from the total respondents belonged to the weak category on indicators of inter-space interaction patterns. It is indicated that individuals in the weak category were more likely to be inactive in interacting, responding, and providing information about disasters. The motive for joining KP2C could also be predicted only for his personal interests rather than contributing more. Individuals in this weak category were also possible if they only interacted with a few individuals in the surrounding environment, regardless of whether they were KP2C members or not. The obstacles that were present for individuals in this category were the lack of knowledge and the establishment of relationships among individuals.

The presence of a strong category in this interaction pattern clearly made the indication more active than other categories. As many as 15 percent or 6 individuals from the total respondents were included in the strong category in the indicators of inter-space interaction patterns. If water level and upstream weather had caused the flow of the two rivers to increase, then the strong category of intensive individuals spread information everywhere, regardless of the KP2C Whatsapp group or not. Individuals' access, skills, and interests were predicted to be related to the actions they took. In fact, individuals in this category were able to directly participate in several face-to-face meetings with other structural/community parties if there was a discussion regarding the flood disaster.

In retrospect, the dissemination and communication in KP2C still did not have a positive picture. Some individuals categorized as moderate and weak had interactions that depended on the territorial context of their home environment, and tended to provide information to other individuals who were known close to them. In fact, one indicator of the effectiveness of the early warning system was the realization of dissemination and communication between individuals (BNPB, 2018).

The condition of the large number of individuals who were still categorized as moderate and weak was different from the general statement that the use of social media has been able to create unlimited interactions between spaces or borderless to achieve a common understanding in each community (Dijk, 2006; Evans, 2013). Having not yet achieved a positive impact on the early warning system, KP2C individuals seemed unaware that existing connectivity should be utilized optimally through interactions between individuals. Piliang (2012) states that cyberspace has the potential to ignore other subject/individual elements in a community, considering that the reality of existing identities is only pseudo and without building associative relationships. In the future, the connection made by KP2C can become a symbol of one-way information, without being followed by the role of individuals or active participation in flood mitigation. Not only that, the centrality of information as a symptom of the digital divide can occur in high category management/individuals, so that more benefits are only enjoyed by a few individuals, without being followed by the development of the quality of other individuals and KP2C institution (Hapsari et al., 2018).

In the indicator of inter-time interaction patterns, the moderate category as much as 67.5 percent or 27 individuals from the total respondents still dominated. This figure indicates that the majority of KP2C individuals were not always active to respond during or post-flood event. Even Whatsapp has become the first choice compared to other social media, it can be said that moderate category individuals still felt obstacles in the form of time availability in terms of monitoring information, interacting between individuals and knowing more about floods. Therefore, busyness and other interests caused individuals in the middle category to indirectly disseminate information and interact to get the benefits of this warning system.

As many as 20 percent or 8 individuals from the total respondents belonged to the weak category on indicators of inter-time interaction patterns. Individual passivity is one indication of this category

because of their tendency to only receive KP2C information. In addition, the responses that individuals did were predicted to be minimally present in the weak category because they only focused on their personal interests. Therefore, when the information was either intensive or not, some of them were more likely not to disseminate it or to react to it. In contrast to the strong category, as many as 12.5 percent or 5 individuals from the total respondents indicated that individuals in this category were more intensive in responding, providing information and disseminating it, even though they were busy or had other interests. Status and the need for other individuals in the vicinity were predicted to be related to the activity of this category of individuals.

In addition to the unavailability of time for the weak and moderate categories to interact while in the field, the researchers found two more reasons so that individuals in these two categories indicated that they were reluctant to interact. First, in its daily interaction pattern, KP2C has regulations regulating chat "traffic" so as not to interfere with the dissemination of water level and weather information when intensive/updated every 15-30 minutes. The hope was that individuals in the Whatsapp group were able to leave the chat column (message) for non-important information, so that monitoring of the latest conditions related to flooding could be present quickly. If there were individuals using the chat column for unimportant information, then the KP2C administrator as admin had the right to remove the individual from the Whatsapp group. Therefore, it can be indicated that because they did not want to be penalized, individuals in KP2C preferred not to be active in responding to information. In fact, if the information was disseminated in a useful context, KP2C individuals were still allowed to be involved.

Second, regarding the behavior of KP2C management and other active members, this pattern of inter-time interaction became more limited. Some individuals were reluctant to respond or provide information because they were reluctant to other individuals, both administrators and those who were considered more knowledgeable and competent regarding flood mitigation. On the other hand, there was also the behavior of the management who was considered firm if there was an error in the group. Individuals in the weak or moderate category were better off not interacting with each other than having to be exposed to a firm response from the management. Therefore, based on the two field findings, compliance with regulations and their reluctance to do with the actions of KP2C individuals were not very active in their interaction patterns.

"Kalau saya aktif, tapi KP2C ini modelnya mau nyubit tapi gamau dicubit. Saya pernah itu share info, saya kan dari BBWSSC, tapi pernah disangah sama pengurusnya karna saya katanya ga punya hak." (BM, In-depth Interview, 31/01/2021)

The indicator for the depth/clarity of information can be the degree of usefulness of the interaction pattern between individuals in KP2C. The presence of depth of information is the final determinant of interactions between individuals which will have a positive impact or not (Dijk, 2006). Not only as a mere symbol, it was hoped that the presence of KP2C would be able to bring more contributions from each individual, so that the development of the effectiveness of the early warning system could run smoothly.

The majority of the information depth indicator was filled by the moderate category with a total of 77.5 percent or 31 individuals from the total respondents. This number indicates that although they had not reached the stage of conveying shortcomings, solutions, or ideas regarding flood mitigation, several individuals in the moderate category had received quite useful information through confirmations made in the KP2C Whatsapp group. However, because it is indicated that they were not very active/knowing about assessing KP2C actions, individuals in the moderate category tended to react negatively because there were weaknesses related to their information's accuracy.

As many as 12.5 percent or 5 individuals from the total respondents were included in the strong category on this information depth indicator. This figure is predicted because apart from confirming information and responding to it, several individuals had reached the stage of making active contributions in the form of ideas and solutions for the development of the role of KP2C. Ideas and solutions such as suggestions for building facilities, the presence of fees for monitoring officers, and criticism of complaints to other parties related to flooding, came through several strong categories of individuals. The reactions/assessments of individuals in this category also tended to give a positive response to KP2C actions. In contrast to the weak category, there were 10 percent or 4 individuals from the total respondents in it. Through their inactivity and ability, some individuals in the weak category had not reached the stage of always being able to confirm information, let alone providing ideas/solutions for

flood mitigation carried out by KP2C. Thus, it is undeniable that the reaction to the assessment of KP2C tended to be negative due to the lack of benefits.

Based on the shortcomings existing in the pattern of interaction between KP2C individuals which tended to weaken, it can be clearly illustrated that connectivity through the KP2C Whatsapp group had not been optimized. The availability of the KP2C Whatsapp group had not been able to be utilized properly and quickly by some individuals. Even, the routine of providing water level and weather information had emerged as a pattern, the potential for Whatsapp group to individuals to be wasted remained. Even in terms of access availability, the form of early warning system is still very rarely built from the community level in other regions in Indonesia (Wuri & Khardiyanta, 2019).

In the context of skills and knowledge to use Whatsapp group as a new media in flood mitigation, it was still a concern. Unawareness of the common interest made some individuals still careless to play a role in developing the effectiveness of the early warning system. According to Oko (2013), for individuals who have not been able to maximize social media to achieve certain goals in a community/group, the symptom of the information poor will hit the individual, so that eventually they experience a knowledge divide (knowledge gap). Therefore, for the sake of creating risk knowledge to response capabilities as well as elements of the effectiveness of the early warning system, the interaction pattern might be actively utilized. Statistically, the interaction pattern and the diversity of ability to use social media (digital divide) were also shown to be strongly related through the Pearson linear correlation test with a significance of 0.000 and a coefficient of 0.824.

Interindividual Social Capital of KP2C

As a forum with similar interests and territorial territories between individuals, KP2C provided its own degree of closeness in it. Let alone, for Whatsapp social media, the assumption is that interaction patterns can be realized (Fahriyani & Harmaningsih, 2019). According to Sa'ida & Ma'ady (2019), social capital is also an indicator of the effectiveness of the natural disaster early warning system for community preparedness. Without individual presence, assistance/help could not be realized in responding to disasters, considering that there was a loose relationship in it. In addition, the capital obtained from relationships (social capital) with norms and beliefs will be able to make a community to face disasters sustainable (Fathy, 2019). Therefore, based on this urgency, it is important to explore the context of KP2C, because it relates to the positive response or not from surrounding actors related to flood mitigation. Figure 3 below is the percentage of respondents based on indicators of the level of social capital among individuals in KP2C.

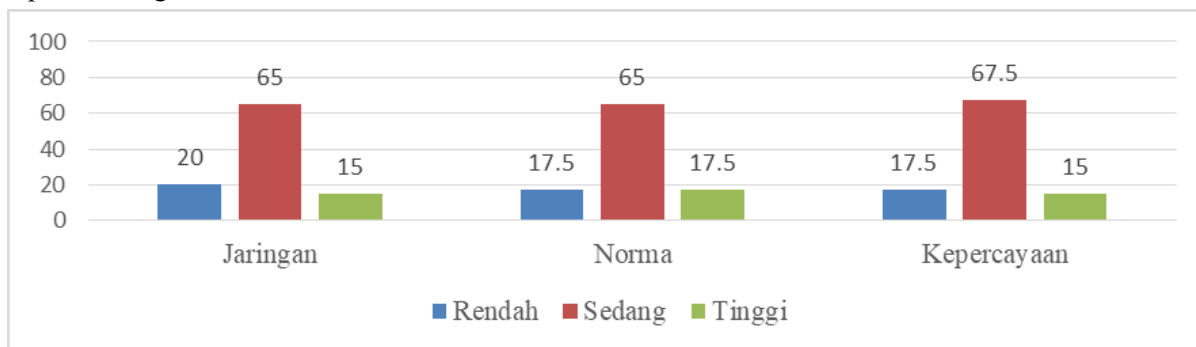


Figure 3. Percentage of Respondents based on Social Capital Level Indicator

The three social capital level indicators were dominated by the moderate category. As for network indicators, as many as 65 percent or 26 individuals of the total respondents were in the moderate category. This indicates that the moderate category individual had a relationship that was not so broad, but they were opened/active enough to interact with other parties in flood mitigation. Some individuals in the category of being predicted that they knew other KP2C members/managers those whom were still/neighbors in the neighborhood around their homes. It is not only bonding, in terms of bridging, individuals in this category were indicated to know/have interacted with community volunteers/individuals from other environments related to flooding.

“Karna saya pernah ikutan kegiatan relawan peduli lingkungan, saya ga cuma dapet info dari KP2C, sering nanya juga di grup relawan tanggap bencana kalo TMA naik, kan dia lebih kesebar di hulu ya.” (FH, Structured Interview, 17/01/2021)

On the network indicator with low/narrow frequency, as much as 20 percent or 8 individuals from the total respondents were included in it. This figure was predicted to illustrate that individuals with a narrow network category tended to have relationships with only a few KP2C members/management. Of course, other individuals they knew only had closeness to this category of individuals based on their home environment. It is unlikely for narrow category individuals to know community volunteers or other structural parties related to disasters. It relates to individual activity and knowledge.

As many as 15 percent or 6 individuals from the total respondents belonged to the high frequency/wide category in the network indicator. Because of their activeness, individuals had many relationships with other individuals, both fellow members/management of KP2C, other community volunteers, and structural parties related to flooding. Viewed from the perspective of associative relationships, broad categories of individuals were indicated to also know several interested parties about flooding. In fact, with their respective statuses attached to several individuals, these individuals with broad network categories were also present when there were meetings/advocacy activities with local governments, both Bogor Regency and Bekasi City.

“Di sini saya kan RW, jadi ikut kalo Pak Puarman, Pak Kades mau ngobrol atau diskusi soal banjir, apalagi di sini kan dekat tanggul ya sama ada bantuan pompa, kalo ada kerusakan pun juga lapor.” (AG, Structured Interview, 18/01/2021)

The meaning of network in KP2C with the theory put forward by Castells does have a quite different explanation. Let alone, it has entered the individual level as a Whatsapp user, which depends on each individual condition. Sugihartati (2014) mentions that the network that is meant by Castells is more likely to have the characteristics of being open, able to expand to achieve broad goals (especially in information), dynamic, and able to innovate without damaging the system. Based on the field finding, it can be stated that KP2C individuals have not yet reached the stage of utilizing social media to create collaborative networks in disasters.

It is also undeniable that the established social structure in KP2C was not yet present, causing problems regarding the extent of relations in order to gain knowledge about flooding. According to Sugihartati (2014), the network community that Castells describes needs to review the connectedness of access, status, interests, activities, and knowledge possessed. Talking about KP2C and flooding, later the network that is present will have an impact on the flood emergency response situation. The potential presence of other parties will be able to help individual flood victims.

It cannot be separated from the substance in the network owned by individuals, regarding norms, the closeness that is present in the relationships between individuals is so important and able to be sustainable if there are social values with positive goals (Fathy, 2019). Later these values can be implemented by KP2C individuals for the realization of flood mitigation, or at least alleviate the difficulties of fellow affected flood victims. However, with varying degrees, each individual in the respective categories has a measure to realize the value of the norm. As many as 65 percent or 26 individuals from the total respondents belonged to the moderate category in the indicator value. This number indicates that the presence of values did not always apply to some KP2C individuals. However, some of them still provided important information to confirm the truth of conditions related to flooding. However, this was not as sensitive and intensive as the high category individuals who were often present to help others in terms of information. The moderate category was more likely to only confirm information according to its own interests.

On the other hand, individuals in the moderate category were predicted to tend not to participate in seeking assistance from other parties outside KP2C, both community volunteers and structural parties. Some individuals in the middle and low categories were very likely to only help their neighbors as they were, rather than KP2C individuals who lived not in the area around their homes. Thus, even they had been quite helpful in terms of information and direct action, but they had not yet reached the stage of action as local environmental volunteers.

In Figure 3, as many as 17.5 percent or 7 individuals from the total respondents in the high category can be said to have given their own positive role. Apart from providing information and actively confirming the truth, high category individuals also sought help from other parties outside KP2C, both community volunteers and structural parties. Based on their needs and abilities, this was done for the sake of personal interest and the surrounding environment at large. In fact, the level of contribution of this category was also carried out in terms of maintaining the management of digital devices that KP2C provided for flood mitigation. Voluntary contributions or donations were more intensely distributed by this high category.

If there was no voluntary donation, then the sustainability of the community in terms of material value would not materialize, especially for maintaining the equipment and salaries of the monitoring point officers/volunteers.

Based on the description of the degree of presence of norms, the low category seemed to have to be considered in this KP2C case. As many as 17.5 percent or 7 individuals from the total respondents were in the low category for the norm indicator. Individuals in the low category were indicated to be inactive to confirm, especially at the stage of seeking assistance or contributing materially to KP2C. Limited access and capabilities were the cause of these indications present. Therefore, it can be said that the needs of low category individuals tended to be only related to the interests of obtaining information. In the future, it is worried that the low category individuals have to be assisted in the context of flood mitigation according to cases that often occur among several other categories of individuals in the KP2C context.

The low awareness of the importance of sharing, confirming information, and seeking help from parties outside KP2C needs to be considered as a problem. Regarding the early warning system in particular, the dissemination of appropriate information is clearly related to the real action/response that will be taken by anyone when a flood occurs. In addition, KP2C individuals must actively seek information and even assistance in order to avoid panic together when the upstream of the two rivers rises or the highland area is hit by heavy rains.

“P2C ini kan pertemuan dua sungai yang gaada kaitannya sama katulampa, sering kalo ada himbauan dari Gubernur Jakarta di TV atau medsos soal katulampa naik, member di grup ikutan panik tanpa nanya atau ngeliat info kita di Twitter. Di Twitter itu padahal ada jalur kedua sungai dari hulu, di WA juga pernah dikasih.” (UU, In-depth Interview, 27/01/2021)

The attention and value of information on the KP2C early warning system is significantly visible. A paradigm shift has occurred in line with the current development of social media, especially in the disaster sector. According to Savage (2013), information has now turned into a resource or can be referred to as an information capital that can be used to carry out survival strategies from the dynamics of situations around individual social media users. Completely, without information, the initial role of KP2C early warning system will certainly not be realized at all for flood mitigation.

In addition to values on norms, other social capital substances such as trust also affect the closeness between individuals in a community (Fathy, 2019). Likewise, if it is associated with the KP2C case, trust as an expectation between individuals will influence subsequent actions in flood mitigation. If there are many notes or if there is dissatisfaction, then it needs to be addressed so that the flexibility of individual roles to help each other can be present in real terms.

On the indicator of trust, the majority of 67.5 percent or 27 individuals from the total respondents were in the moderate category. This indicates that the average KP2C individual already had sufficient confidence in the early warning system, but it was still uncertain because there were several records in it. Although the information on water level, weather, and the arrival of water from upstream is quite accurate, the role of KP2C still needs to be improved, especially in terms of accuracy. Regarding the involvement of other individuals in providing material assistance, this moderate category individual still doubted if the assistance could actually be present during a flood. Indirectly, the lack of involvement of KP2C individuals will potentially be able to bring out the meaning of individualism which then dominates rather than having to help each other.

A total of 17.5 percent or 7 individuals from the total respondents were categorized as low on the confidence indicator. This figure indicates that trust in individuals in this category was the weakest because the role of KP2C was still lacking. Another indication was that because individuals in this category did not know the complex role of KP2C, so they reacted negatively to the early warning system. Likewise, non-material assistance was not considered present for low category individuals. In fact, with the following information with interaction activities and KP2C digital tools, these things had been able to become part of non-material assistance. Meanwhile, 15 percent or 6 individuals of the total respondents were in the high category in the confidence indicator. The form of high trust was reflected in the positive reactions of several individuals in this category. In terms of information, it is indicated in this category that the average individual believed that KP2C's actions had been appropriate. In fact, the involvement of other individuals was also predicted to have a positive impact on high category individuals. However, there were also field finding indicating that the confidence of individuals in the high category was supported by their knowledge and activeness in seeking information.

“Di sini katanya mau dibuat normalisasi mas, dari hilir dulu bekasi dimulainya, tanggul dirapiin sama dilebarin, nanti naik ke atas, jarak berapa meter dari tanggul akan kena ganti rugi, kalo gitu air bisa ditampung dari hulu kan nanti.” (BM, In-depth Interview, 31/01/2021)

If it is looked at the facts related to the previous level of social capital, the attention must focus on the difference in the meaning of Castells’ network with the actual field findings. The ease of using social media for a community did not necessarily contribute to building a broad network, let alone the value of togetherness and the emergence of trust between individuals. According to Sam (2018), Castells explains that a person’s identity is now able to be widely connected to one another through the media of information technology. Likewise, values are often confirmed jointly between social media users. In fact, KP2C had several individuals who were less active, so they had narrow relationships and did not apply norms compared to other active individuals. The bond and cooperation occurring was not like Castells’ expression when information is present in the context of flood mitigation (Sam, 2018). Let alone, regarding trust, with actual experience and personal tendencies, there were quite a lot of individuals who were categorized as moderate and low in the context of their assessment of the early warning system and KP2C actions broadly (Fajar, 2011).

Based on empirical studies, the level of social capital is not a stand-alone variable without the role of the ability to use social media and individual interaction patterns. This can be seen in the network, whether formed through individual activity or not in it. Not only that, the knowledge that was mentioned frequently on the digital divide variable and the form of social structure also determined the individual’s assessment of KP2C in terms of expectations/beliefs. In line with research from Savage (2013), he said that increasing access to information to gain knowledge can play a role in forming other capital and actions that benefit the individual concerned. Statistically, the proof of the connectedness of the digital divide and the form of social structure as an interaction pattern on the level of social capital also occurred very strongly through a multiple linear correlation test with a significance of 0.000 level (α) and a coefficient of 0.851.

KP2C’s Early Warning System Effectiveness

Effectiveness is an assessment of the achievement of goals through the use of facilities and infrastructure owned by a community/party with the final form as success or failure (Lestanata & Pribadi, 2016). Regarding disaster, the existence of effectiveness is also able to be an analysis of the achievement of roles or performances that are generally carried out by anyone in mitigation (Sadat, 2016). Thus, an overview of the advantages or disadvantages can be used as material for the development of future roles for KP2C and related parties.

Based on a community basis, an effective early warning system must have 4 indicators in it, as BNPB (2018) requires. The four standard indicators include: (1) risk knowledge, (2) monitoring and warning services, (3) dissemination and communication, and (4) individual response ability. Regarding KP2C actions, the following in Figure 4 is the percentage of categorization based on indicators of the early warning system effectiveness.

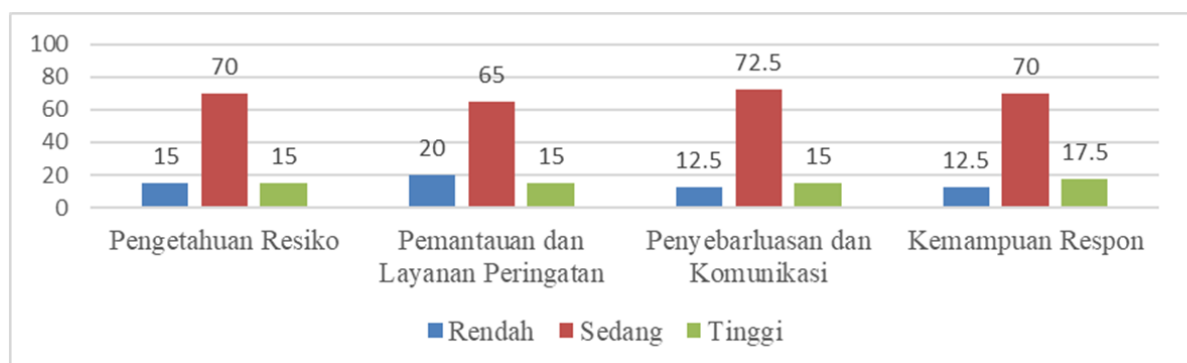


Figure 4. Percentage of Respondents based on Indicator of the Early Warning System Effectiveness

Referring to Figure 4, the four indicators of the effectiveness of the KP2C early warning system were dominated by the moderate category. In the risk knowledge indicator, as many as 70 percent or 28 individuals of the total respondents were in the moderate category. This is predicted because the majority of individuals on this risk knowledge indicator already had sufficient knowledge and perception.

However, some individuals in the moderate category were indicated to have minimal flood experience to predict the water level of the two rivers and they did not always directly confirm signs of flooding through conventional monitoring. In fact, this action is very important, especially for some individuals who live near the embankment such as RW 24 of Bojong Kulur Village and RW 8 of Jatirasa Village.

The flood coming the upstream was not comparable to the weather in the Bojong Kulur and Jatirasa areas, making individuals in the moderate category indicated a lack of vigilance. Even there was KP2C information, when the area was not covered with clouds, then the individuals did not immediately open the KP2C Whatsapp group/look for other sources of information. In the end, if the water from upstream and in the middle of the river was heavy and it did not take long to reach the confluence of the Cileungsi and Cikeas Rivers (P2C), then the evacuation would not be able to run optimally. However, regarding perception, this moderate category individual had assumed that the surrounding environment was a flood-prone area. Not only shipments, local rain (from the middle to the lower stream reaching the two rivers) was considered to be able to cause flooding in the environment. Thus, based on several existing indications, it can be said that the reference to KP2C information must be taken notice by moderate category of individuals.

As many as 15 percent or 6 individuals belonged to the high category on the risk knowledge indicator. This figure indicates that some individuals already had more knowledge related to finding water level and weather information, the causes of floods, as well as actions for flood mitigation. Experience and ability to access information from other parties as well as conventional monitoring must be recognized as better in this high category. Therefore, to respond to events when a flood will occur, it can be predicted to be able to run optimally.

In the low category of risk knowledge indicator, 15 percent or 6 individuals from the total respondents were included. Not as intense as the moderate category who was still looking for direct/conventional information to observe the monitoring of the two rivers, low category individuals were more likely to strongly refer to the information issued by KP2C. Even in terms of risk perception, individuals in the low category were indicated to be more likely to perceive their environment as not a flood-prone area. They assumed that the flood came as the flow from upstream area. In fact, according to the observations of researcher during the flood, there are other factors influencing the occurrence of flooding in the vicinity of Bojong Kulur Village and Jatirasa Village. Other things include the opening and closing of the Bekasi dam doors, leaking embankments, the amount of garbage, and high local rainfall intensity in the middle and downstream areas of the two rivers (Akhirianto, 2018). In addition, based on limited capabilities, contextual knowledge of flooding appears to be low. When the floods have receded in their area, low category individuals were indicated indirectly to pay attention to rain in the upstream and in the middle of the two rivers, according to information obtained from KP2C. Thus, this low category was predicted to immediately tidy up their belongings back to be evacuated to their original place. Even so, aftershocks were still potential.

The second indicator was monitoring and warning services. The degree of effectiveness was in the form of assessments from several KP2C individuals. This category was still dominated by the moderate category. As many as 65 percent or 26 individuals from the total respondents belonged to the moderate category or had assessed that the monitoring and early warning services at KP2C were quite effective. This figure indicates that the KP2C early warning system had provided sufficient benefits to individuals within it. However, KP2C individuals were still hoping for a more accurate and effective early warning system for water level and weather aspects. This included the addition of CCTV in terms of equipment, as well as volunteers to assist KP2C individuals in conventional surveillance at several new monitoring points along the Cileungsi and Cikeas Rivers.

In contrast to those who considered it less effective, as many as 20 percent or 8 individuals from the total respondents were included. This indicates that individuals in this category tended to rate the KP2C early warning system with a negative reaction. From several individual responses, it was predicted that low category individuals viewed the weather information provided by KP2C as less accurate. Due to the limitations of CCTV, some monitoring points were more directed towards the peilschaal (water level measuring instrument) rather than the upstream or mid-river environment. However, the negative reaction was also predicted to occur because it was related to the lack of fast response given between individuals in the Whatsapp group regarding the circulation of information. The lack of individual involvement in maintaining early warning system services and contribution directly to the development (maintenance) of KP2C role was indicated to be a record for low category individuals. There were 15 percent (6 individuals) or those who assessed that the monitoring indicators and early warning services

had been very effective. For this high category of individuals, the speed of information and responses between individuals had been considered very effective for a community-based early warning system. In addition, regarding water level and weather information, individuals in the high category were indicated to be satisfied because the presence of KP2C activities was in accordance with environmental conditions around the two rivers. The involvement of individuals in contributing to maintaining and developing the role of KP2C was considered as optimal flood mitigation by several high category individuals.

In the third indicator related to dissemination and communication, the moderate category dominated this indicator. As many as 72.5 percent or 29 individuals from the total respondents were in the moderate category or who assessed the dissemination and communication indicators as quite effective. This indicates that some moderate category individuals had been quite satisfied with the dissemination of KP2C information and the parties who responded to the information. However, individuals in this category were predicted to still consider that the relevant parties rarely responded immediately when a disaster occurred. Related parties, both other communities and structural parties (BPBD Bogor Regency and Bekasi City) did not immediately come to evacuate. From the internal side, even KP2C was also considered difficult to invite its elements (management/members) in a fast time to act together if there was pollution of the surrounding river as a flood hazard.

As many as 15 percent or 6 individuals from the total respondents were in the high category on the dissemination indicator. This figure was considered as effective. Positive responses arising from other parties outside KP2C were indicated to be present because of their knowledge, activeness, and experience when assisted/involved in flood mitigation. Therefore, it was undeniable, the benefits derived from the presence of dissemination and communication became apparent.

Meanwhile, as many as 12.5 percent or 5 individuals from the total respondents still considered that dissemination and communication were less effective. Individuals in this low category had a tendency to be dissatisfied with other parties outside KP2C in flood mitigation. Furthermore, not knowing about KP2C activities was another indication that the dissemination was considered ineffective. Inactivity in monitoring and responding to circulating KP2C information was suspected to occur in this category of individuals. In the end, the less effective of this indicator in KP2C for low category was analogue to dividing the assessment into two different things. On the one hand, it is true that they were dissatisfied. This low category individual had a false assessment because the individual in it was not yet fully active.

As a final indicator and also a determinant of the role of the early warning system, at the level of response capability, as many as 70 percent or 28 individuals were in the moderate category. This figure indicates that in responding to information from the early warning system, moderate category individuals tended to be indifferent or hesitant to immediately save themselves/his family to a safer place (refuge). Likewise with packing important items, from individuals of this category it can still be predicted that the loss of important items often occurred because they were not optimal in evacuating. This moderate category also provided an illustration that the response from KP2C's information (in the form of evacuation) only presented if the flood was severe enough. If the flood did not reach the second floor, then this moderate category individual was indicated not to evacuate.

“Kebanyakan warga itu engga mau dievakuasi pada saat itu, gatau juga saya, kalo kita udah sampe nih, mobil udah sampe, warga tu bilang kadang saya di sini aja Pak, ada warga yang kayak gitu, ngeyel la ya katanya, ntar pas saat banjir mau dia teriak, minta dievakuasi.” (EN, In-depth Interview, 23/02/2021)

As many as 12.5 percent or 5 individuals from the total respondents were included in the low category in the indicator of response ability. Not far from the indications in the moderate category, individuals in the low category also did not get enough benefit from the existence of an early warning system. The response to KP2C information on individuals in this category was predicted to be very weak/low because it was related to their own desires, attitudes, and personal motives. In order to help other individuals, both material and non-material, low category individuals also tended to be unmoved because of their limited ability during floods. Finally, the risk of delay in low category individuals tended to occur to be compared to other categories in evacuating important/family items, let alone helping other individuals around their environment.

In another category, as many as 17.5 percent or 7 individuals from the total respondents were in the high category in the indicator of response ability. This number predicts that individuals in the high category were more responsive to immediately evacuate when the information stated that the water level

increased in the two rivers was starting to be alert 2. There was no potential for late, individuals in this category were indicated to be able to carry/save important items such as vehicles, valuable papers and their families to a safe place first instead of staying in his house. Deft actions to reduce the risk of flooding before it got serious were clearly illustrated.

When viewed from the data and discussion of standard indicators regarding the effectiveness of this early warning system, it can be stated that KP2C was still reaping several notes in it. The procurement of the number of digital devices as well as the involvement of individuals in monitoring the water level and the weather of the two rivers still needs to be improved because the accuracy was very much needed by KP2C individuals, especially for individuals with low-risk knowledge and dissatisfied with community actions. According to Fahriyani & Harmaningsih (2019) and Fitriawan (2017), the ease of obtaining and managing information will be able to create awareness and knowledge that can lead to positive actions for self/family evacuation during floods. In fact, according to Dewantara & Widhyharto (2016), a social media base with the right form of disaster information in it, such as weather/water level information, can also be applied to increase the role of activism and volunteerism to help fellow individuals in a community. Thus, it is not only the dissemination of information and communication that fulfills its elements, the degree of social capital is also able to grow and develop to tend in a positive direction.

It is not only in terms of the content of the KP2C early warning system, individuals in it, especially the low and moderate categories, just responded to information that was quite dangerous for themselves/his family during a flood. Although KP2C had given a time lag of 3-4 hours to evacuate themselves, their families, and important items during a flood, some KP2C individuals still did not take any action and were reluctant to maximize flood mitigation. This is in line with the research from Akhirianto (2018), which is located around RW 8 of Jatirasa village, showing that as many as 80 percent of the total respondents (n=60) prefer to stay in their respective homes rather than flee to the safer place. Because they are used to it, individuals in that percentage do not evacuate (Akhirianto, 2018).

Based on a review of previous field and empirical facts, it can be stated that the socio-cultural aspects of each individual have a relationship with their response ability in dealing with floods. Apart from quantitative analysis, statistically there is a relationship between individuals from the degree of social capital to the aspect of access to the effectiveness of the early warning system. The significance of 0.000 and a coefficient of 0.85 means that the level of social capital has a strong and positive relationship to the effectiveness of the KP2C early warning system. Likewise, between the digital divide and the form of social structure as an interaction pattern, through multiple linear correlations, both of them together with the level of social capital also had a strong and positive correlation with the level of effectiveness of the early warning system with a significance of 0.000 over the significance level (α) 5 percent and a coefficient of 0.899. Therefore, from all the existing variables, it can be said that if KP2C and related parties want to develop the role of its early warning system effectively, then the digital divide, interaction patterns, and social capital must be considered to the level between individuals in it.

CONCLUSION

The achievement of the objectives of the early warning system that KP2C implemented had been successfully illustrated through its effectiveness according to the point of view of digital sociology. Several variables were noted because they had their own degree and are related to each other with effectiveness. The condition of the digital divide as the diversity of individual abilities in the use of digital devices and social media, especially the KP2C Whatsapp group was still dominated by the moderate or affluent category. Some individuals belonging to the moderate category were predicted to have more than one digital device and social media account to review KP2C information. Not only that, several individuals in the moderate category in this variable also had sufficient skills and usefulness in confirming KP2C information. Unfortunately, the intensity to confirm or get information could not be directly present/maximum because they tended to rely on KP2C. However, in this degree of ability, there were still some individuals who were in the low category. This category was indicated to be an obstacle for the individual concerned due to the lack of availability of access and skills in processing information. Equal to Castells' theory of digital divide and research from Keoduangsine & Goodwin (2012), lags in getting information also occurred in KP2C. In fact, it was related to the lack of benefits obtained.

Likewise with the form of the social structure of the community as a pattern of interaction between individuals, the moderate category dominated the indicators in it. This was indicated because several

individuals belonging to the moderate category had conducted quite intensive interactions with other individuals who were members of KP2C based on the dimensions of space and time, although not as active as some individuals in the strong category. Some individuals in the moderate category still saw the context in which other individuals lived and the time available for themselves to interact and confirm information. In contrast to the weak category, individuals who belonged to the weak category were indicated to be present because of inactivity, busyness, and personal knowledge. The existence of a weak category also stated that dissemination and communication did not occur massively as an element of the effectiveness of the early warning system. Whatsapp group at the individual level would potentially be a waste. For individuals who had not been able to maximize social media to achieve certain goals in a community/group, then the symptom of the information poor could hit the individual so that eventually they experienced a knowledge divide (knowledge gap) in terms of responding to water level for flooding. When associated with the digital divide, this form of structure had a strong and significant correlation of 0.000 over the 5 percent real level and a coefficient of 0.824.

The presence of social capital in KP2C was dominated by the moderate category in all indicators. The moderate category was predicted because some of the individuals in it had sufficient and horizontal networks, and had experience in helping other individuals both materially and non-materially. Specifically for this social capital variable, the low category was the second most common in each indicator. This was predicted because the network owned by several individuals was still narrow and did not know much about other communities/structural verticals. Even during the flood, this low category individual was predicted to be concerned with personal or family, and did not include activism/volunteers with their inability or inactivity. The bond that was expected to occur more easily with the existence of social media, as Castells mentioned, was in fact absent in this low category of individuals. When referring to its relationship with the digital divide and the form of the structure, this social capital had a strong and simultaneous connection of over the 5 percent significance level and a coefficient of 0.851.

The level of effectiveness of the KP2C early warning system was also dominated by the moderate category, in the sense that it was quite effective. This was indicated because the individuals in it had fairly precise risk knowledge, a positive assessment of KP2C actions, and the ability to respond in the form of direct actions that were hesitant when a flood would occur. The presence of individuals in the low category or those who assessing that KP2C actions were less effective was predicted to occur due to lack of risk knowledge, personal assessment of KP2C mitigation actions which tended to be negative due to lack of benefits/passiveness, and indifferent to water level and disaster information. Thus, when faced with a flood situation, individuals who were categorized as low harmed themselves/his family, in the sense of not evacuating. The ability to respond to this level of effectiveness can be said to be indirectly present in several KP2C individuals in the moderate or low category. Some of them were more likely to wait for more severe flood water levels, then decide whether or not to evacuate their family and important belongings. These socio-cultural problems can be indicated as obstacles to KP2C. Simultaneously, from the digital divide variables, the form of structure, and social capital, the correlation with the effectiveness of the KP2C early warning system occurred significantly at 5 percent significance level and the coefficient of 0.899. Therefore, based on the field findings, it can be concluded that in order to increase the effectiveness of the KP2C early warning system, access, information confirmation patterns and interactions between individuals as a form of structure, as well as social capital must be considered, so that individual will respond when floods occur.

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