

Risk Perception and Helplessness in Mitigation Efforts to Impact Haze in Riau

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Abstract

Purpose: This study aims to examine the Risk Perception and Helplessness of smoke haze efforts in Riau.

Methodology: Riau community research subjects with a sample of 138 people (41 men and 97 women). With an average age of 23-27 years. This study uses three scales. The first scale of smoke haze mitigation, the second scale of smoke haze risk perception and thirdly the adaptation scale of Helplessness. The study uses a quantitative approach. Sampling is done using non-probability sampling with a purposive sampling technique.

Results: Risk perception and helplessness towards mitigation simultaneously have a significance value of 0.00 with an f value of 15.206 ($p < 0.05$). While separately, risk perception has a positive relationship with mitigation efforts with a significance of 0.00 ($p < 0.05$) and a Beta value of 0.430. Helplessness has no relationship with mitigation with a significance of 0.996 ($p < 0.05$). With reliability 0.925.

Applications / Originality / Value: This study shows the correlation of Risk Perception, Helplessness, and Mitigation. This study shows the risk perception and Helplessness of correlation with mitigation. This study has implications for smoke haze mitigation efforts in Pekanbaru both by individuals, institute and governments.

INTRODUCTION

Forest fires in recent years often occur, especially in the dry season (Suryani, 2012). Unattended burning of land causes uncontrolled fires that cause haze disasters (Miettinen, & Liew, 2010). Riau Province is one of the areas with a high potential for forest and land fires and often occurs, land and forest fires can be monitored through the distribution and number of hotspots (hotspots) from satellite monitoring (Mulyana, 2014).

The direct impacts of forest fires are vegetation degradation, biological losses, property, and even lives, while the indirect impacts of forest fires are smoke generation, carbon emissions to the atmosphere and health (Herawati & Santoso, 2011). Other impacts of forest fires are acute respiratory infections (ARI), social and economic losses, material and nonmaterial losses, transboundary haze pollution to neighboring countries, such as Malaysia, Singapore and Brunei Darussalam (Awaludin, 2016). Psychological effects that can affect mental health, affect the loss of social feelings, depression, stress, and anxiety (Rataj, Kunzweiler & Niegel, 2016).

Forest and land fires that occur in Riau province are on peatlands that dominate this area reaching 60% (Telekomunikasi & Caltex, 2012). In 2015 the smoke haze disaster in Riau Province occurred on March 1, 2015. The population of Riau Province exposed to smoke was 6.3 million in 12 districts or cities. Data obtained until September 17, 2015, found that the number of people suffering from the disease was 31,518 people consisting of; ARI 25,834 people, skin irritation 2,246 people, eye irritation 1,656 people and pneumonia as many as 538 people (Ministry of Health of the Republic of Indonesia, 2015). While the Riau provincial health department data found that the haze disaster in the period 29 June-29 October 2015 caused ARI by 83.9%, skin disease by 6.07%, eye disease by 4.83%, asthma by 3.83 % and pneumonia by 1.34% (Pekanbaru

City Health Service, 2015). While this year the air quality in Pekanbaru, Riau had reached a purple color which means dangerous at 07.00 to 12.00 on Friday, September 13, 2019, judging the official BMKG. Poor air quality has caused thousands of people to be infected with acute respiratory infections (ISPA) in the last two weeks. According to the Head of Disease Prevention and Control Division of the Pekanbaru City Health Office, Riau, Maisel, based on data from 21 Puskesmas in Pekanbaru for the period 2-13 September 2019, there were 1,520 residents affected by ISPA (Liputan6.com, 2019).

Reducing the impact of haze needs to be overcome or mitigated. In general, mitigation can be grouped into two categories, structural mitigation, and non-structural mitigation, structural mitigation related to the physical construction business, while non-structural mitigation includes land use planning, enacting development regulations, and education (Rusilowati, Supriyadi, Mulyani, 2012) Mitigation is not only carried out in the reduction of haze but also in prevention steps before the occurrence of haze (Aiyuda 2018). Mitigation can be done by changing the perception of community risk to be able to do mitigation efforts. Risk perception is important in disaster management (Agustin., 2014). Risk perception is also interpreted as a person's subjective assessment of a possibility and consequence or impact caused by an accident (Suhir, Suyadi, & Riyadi (2014); Wahyuningtyas & Widiastuti (2015), while according to Paul Slovic (2000), risk perception has two dimensions of ignorance of risk (unknown risk) and fear of risk (dread risk). Ignorance of risk tends to make someone not make efforts to overcome disasters, whereas fear of risk tends to make someone make an assessment of the potential and severity of the disaster that is happening (Slovic, Fischhoff, & Lichtenstein (2000); Slovic, Flynn, Mertz, Poumadere, & Mays, (2000).

Individual risk perceptions of disasters will make individuals carry out mitigations. This is in line with the research of Brenkert Smith, Champ, & Flores (2012) which states that risk perception plays a role in seeking mitigation measures. However, in addition to the disasters that continue to repeatedly cause the public to not believe in the inability of individuals (Helplessness) in carrying out disaster mitigation efforts, in accordance with the statement of Sari and Kartasasmita (2017), learned helplessness is an individual's belief in his inability to handle, control, or change the circumstances that occur around it that are considered unpleasant and occur repeatedly, giving rise to a sense of surrender and passivity, due to the continuous failure of the effort made.

According to Seligman and Maier (1967), helplessness is expressed as something that illustrates the powerlessness of reactions that cannot be controlled. Helplessness is related to something related to individuals, namely the helplessness of the individual makes him need help from outside to overcome the effects experienced by Lin & Shaw (2008). Mohanty, Pradhan, Jena (2015) said that helplessness is influenced by motivation, cognitive and emotional. The motivation which is motivated by voluntary responses so as to produce hope that responding is futile. Cognitive where the individual is difficult to understand the response and emotional impact of depression on which there is no certainty between response and outcome. The lack of research on helplessness in haze disasters, so in this case researchers are interested in researching risk perceptions and helplessness in efforts to mitigate the impact of haze in Riau. The hypothesis in this study is the relationship between risk perception and helplessness towards disaster mitigation.

RESEARCH METHODS

Sample

The subjects in this study were the Riau Community who were directly affected by the haze and had lived in Riau. Sampling is done using non-probability sampling with a purposive sampling

technique. Data is collected online through Google form then distributed using social media. Subjects in the study were 138 (41 men and 97 women). With an average age of 23.27 years.

Measurement Tools

Data collection uses three scales. First, the haze mitigation scale by Aiyuda (2017) based on the type of air pollution mitigation from Skov, Cordtz, Jensen, Saugman, Schmidt and Theilade (1991) with three forms of mitigation namely mitigation to reduce haze, mitigation to reduce the impact of haze exposure smoke for individuals and mitigation related to its prevention. There are 14 item scales (for example, item scales: Share information about the impact of haze with those closest to you, Participate as a participant in counseling about the impact of haze, use N95 masks when going out). The scale was measured from 1 = never to 5 = ever with Cronbach α 0.811 reliability.

Second, smoke haze risk perception scale by Aiyuda (2017) is based on Paul Slovic’s dimension of risk perception, namely the Unknown Risk and Dread Risk dimensions (Slovic, 1993b; Slovic, Fischhoff, & Lichtenstein, 1980, 1986, 2000; Slovic, Flynn, Mertz, Poumadere, & Mays, 2000). There are 14 scale items (for example item scale: Haze causes slow death, I experience immediate health problems, after being exposed to smog, I know the risk of being exposed to smog). The scale measured from 1 = strongly disagrees to 5 = strongly agrees with the reliability of Cronbach α 0.835.

The third scale is the adaptation scale of helplessness Quinless (1988), which uses multiple regression with correlation analysis. There are 20 items (for example, a scale item: I feel I have no responsibility for the results of the work I do, I cannot find a solution to a difficult problem). The scale measured from 1 = strongly disagrees to 5 = strongly agrees with the reliability of Cronbach α 0.925.

RESULT

Table 1. Descriptive Statistics

Variabel	Hipotetik					Empirik				
	Range	Min	Max	μ	SD	Range	Min	Max	μ	SD
Helplessness	76	19	95	57	12.6	76	19	95	41.77	14.79
Risk Perception	56	14	70	42	9.3	56	14	70	53.10	9.40
Mitigation	56	14	70	42	9.33	56	14	70	35.63	10.44

Based on table 1, it can be seen that hypothetical helplessness has a mean (mean) of 60, while empirically helplessness produces a mean (mean) of 41.77. Normatively the empirical helplessness means is lower than the hypothetical mean (mean). Risk perception has a mean (mean) 42, empirically risk perception has a mean (average) 53.10. This suggests that the research subjects have a higher risk perception compared to the hypothetical mean (mean). Whereas for hypothetical mitigation has a mean (mean) 42, empirically has a mean (average) of 35.63. Where the research subjects in mitigation efforts are lower than the average they should.

Tabel 2. Regression

Variabel	F	Sig.
Risk Perception and Helplessness toward Mitigation	15.206	.000

	Beta	Sig.
Risk Perception toward Mitigation	.430	.000
Helplessness toward Mitigation	.000	.996

Table 2. The results of the multiple regression analysis note that the perception of risk and helplessness towards mitigation has a significance value of 0.00 with a value of f 15.206 ($p < 0.05$) meaning that there is simultaneously a relationship between risk perception and helplessness towards mitigation. While separately, risk perception has a positive relationship with mitigation efforts with a significance of 0.00 ($p < 0.05$) and a Beta value of 0.430. That the higher the community's risk perception, the higher the mitigation efforts undertaken. While helplessness does not have a relationship to mitigation with a significance of 0.996 ($p < 0.05$).

DISCUSSION

The results showed that it can simultaneously influence mitigation efforts on the impact of haze. That is, there is a relationship between risk perception and helplessness to the mitigation efforts undertaken by the community. While separately helplessness has no relationship with mitigation efforts, this can be caused by the lack of community preparedness in facing a disaster, so that someone with a helpless situation is still lacking in mitigating efforts. This is in accordance with the statement of O'Neill (2013) which revealed that powerlessness makes the community unprepared in facing natural disasters that occur. In this case, the people in Riau are still at a high level of feeling of helplessness towards the mitigation of smoke haze in Riau, even though the prevalence of hypothetical values is higher than the empirical values.

Lin and Shaw (2008) state that powerlessness can be divided into two: powerlessness and helplessness. Powerlessness is a condition of an individual who feels a high risk or danger but has the belief that he can not do anything in dealing with risk. While helplessness is related to something that is outside the individual, namely the helplessness of the individual makes him need help from the authority outside himself to overcome the risk. In Riau, the helplessness experienced is low because the community has received assistance from the authorities regarding the haze disaster that occurred. In accordance with Sulisty (2019), in efforts to mitigate haze in Riau, the government has made various efforts to deal with these problems, such as making regulations for law enforcement for forest fires, building embung and canals in several places to moisturize dry land, empowering communities around the forest, fire preparedness supporting equipment such as helicopters for patrol and watering through the air.

It is this assistance from the government that makes communities less able to mitigate efforts to overcome disasters that occur so that communities tend not to do mitigation and passive efforts. In accordance with research Maier and Seligman (1976) feelings of helplessness that encourage a condition where individuals feel unable to do anything and tend to be passive.

While risk perception has a positive relationship with mitigation efforts. This positive relationship will enable individuals to make mitigation efforts, this is in line with the opinion of Aiyuda and Koentjoro (2017) reveals that there is a positive relationship between risk perception and mitigation or risk management efforts. Martin et al. (2009) also revealed that there is a relationship between perceived risk perceived and mitigation efforts undertaken by the individual himself. In this study, individual risk perceptions of a disaster have a role in making decisions to mitigate. This is in accordance with research Mase (2016); O'Connor et al. (2005); Grothmann and Patt (2005) which

states risk perception plays a role in decision making for mitigation efforts. This study also shows that Riau society empirically has a higher risk perception compared to hypothetical risk perception. Increased risk perception is associated with greater mitigation efforts undertaken (O'Connor, Bard, & Fisher, 1999; Spence, Poortinga, Butler, & Pidgeon, 2011; Van Der Lin, 2015).

The increasing perception of community risk due to the recurring haze disaster situation, this makes people more likely to seek information about the risks posed by haze. Martin, Bender, and Raish (2007) stated that subjective knowledge that is low (pre contemplative) or high (contemplative) in the community who know information about disasters will affect the level of individual risk perception of the disaster itself. Increased knowledge and understanding are very important for involvement and support for mitigation efforts (Lee et al., (2015). In addition to knowledge that can increase risk perceptions, worries and fears can also affect risk perceptions, according to Bebcicky's research, and Seebauer (2016) revealed that affective elements, such as fear or fear of disaster, were also important in shaping risk perception.

This repeated haze of smoke makes the community have an understanding, concern, and fear of the risk of disasters that occur. A good understanding of risk perception can improve risk management by individuals (Lebel, Whangchai, Chitmanat, Promya, & Lebel, 2015). According to the Protection Motivation Theory (Rogers 1975), individuals at risk separately evaluate threats (risk perception) and their coping abilities (including self-efficacy). Two cognitive results in high or low protective motivation depending on the actual obstacles encountered, allowing in encouraging individuals to protect against an experienced disaster (Bubeck et al. 2013).

Individuals in carrying out mitigation measures are also influenced by their ability to cope with perceived, in addition to risk perception. The combined effect of perceived risk and perceived coping abilities also determine whether individuals consider taking mitigation actions (Floyd, Prentice-Dunn, & Rogers 2000; Milne, Sheeran, & Orbell 2000). Grothmann and Reusswig (2006) show that risk perception and perceived ability to overcome problems must be high to encourage protection measures. Although the people of Riau have a high enough risk perception, it is still low in individual mitigation efforts. The low mitigation effort is possible that mitigation is done unsustainably or temporarily, this is what causes the community to only imitate the people around them in carrying out mitigation without knowing the correct mitigation measures (Martin, Bender, & Raish, 2007).

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