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Medical Authority's Trust as Mediator of Risk Perception on Haze Mitigation Efforts

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ABSTRACT

Haze is a seasonal disaster that continues to recur in several parts of Indonesia. Mitigation as an effort to reduce risk needs to be done to anticipate more losses. Individual risk perceptions in assessing the impact of haze are considered as factors that influence mitigation efforts, however, mitigation is also related to external situations related to individual dependence on the authority that is more authorized in disaster situations, in this case, the medical authority. Trust in medical authorities is considered to mediate the relationship between risk perception and smoke haze mitigation. This study aims to look at the role of trust in medical authorities in helping individuals to perceive risk and seek mitigation. The research sample was 236 affected communities, using a sampling quota. Data were collected with three scales, mitigation scale, risk perception, and medical authority trust. Research shows that the trust of medical authorities can be a partial mediator of the relationship between risk perception and efforts to mitigate haze.

1. Introduction

In 2015 Indonesia again experienced a haze disaster in several areas. This condition also occurred in 1997/1998. The occurrence of forest fires that affect smog will continue to recur, given the condition of the affected area that has peatlands and flammable biomass or due to conditions of human neglect. Haze is a seasonal disaster (Deni & Pratiwi, 2016). In the case of seasonal disasters, and it is possible to make predictions, individuals who are victims of a disaster tend to be less likely to work towards mitigation (Lin & Shaw, 2008; Slovic, 2000). This is because the condition of the repeated haze causes individuals to feel less threatened and tends to neglect mitigation efforts (Aiyuda & Koentjoro, 2017).

Mitigation is an effort to reduce disaster risk (BNPB (Badan penanggulangan bencana), 2014) such as reducing potential losses from natural hazards (Benson et al., 2007; Maulana et al., 2007), the impact of haze (Aiyuda & Koentjoro, 2017). Several studies have revealed that risk perceptions can contribute to individuals in seeking mitigation in the face of disasters such as earthquakes, floods (Lin & Shaw, 2008), landslides (Lin & Shaw, 2008) and climate change (Leiserowitz, 2006; O'Conner et al., 1999; Whitmarsh, 2008) and haze (Aiyuda & Koentjoro, 2017; Zhou & Dai, 2019). In perceiving individual risk is influenced by social factors, such as information provided by neighbors (Brenkert-smith et al., 2012) friends and the influence of mass media (Kasperson et al., 2000)(Champ et al., 2011). Having more information in assessing risk will enable the tendency of high mitigation efforts (Champ et al., 2011). However, from various information available in disaster preparedness efforts, individuals tend not to be able to distinguish "know" and actual knowledge about disaster preparedness processes (Paton et al., 2008), individuals tend to be heuristic when too much information comes in (Renn & Rohrmann, 2000), so they only seek mitigation according to what they have done before. Little actual knowledge and the information can be known to everyone, in general, make individuals pay less attention to additional information that is considered not to contribute to additional preparation efforts in the face of disasters (Paton et al., 2008).

Mistakes in risk perception can cause individuals to misjudge the security of risk. When the perceived level of risk decreases and is safe, individuals tend not to seek mitigation (Paton et al., 2008). Haze risk perception tends to be low (Aiyuda, 2018b, 2018a), however Hidayati, Hanifa, Aiyuda, dan Yunas (2019) research shows that although risk perception is related to smoke haze mitigation, individual mitigation

remains low despite the high public risk perception. In other words, although individuals have a high-risk perception related to the impact of the haze, it does not necessarily make the individual seek high mitigation. It is probable that mitigation will only be short-term mitigation when a disaster occurs (Aiyuda & Koentjoro, 2017). Individuals need other factors that cause mitigation efforts to be more leverage.

On the other hand, powerlessness in disaster conditions can also lead to reduced mitigation (Lin & Shaw, 2008). In this condition, the individual will depend on authority outside himself. In other words, in situations involving risk or disaster, powerlessness causes individuals to be inclined to depend on political trust (Zhou & Dai, 2019), as well as the trust of authorities, such as government, police or medical (Aiyuda & Koentjoro, 2017). In pollution conditions, although people have a low tolerance level for pollution, high trust in authority can help to reduce risk through authority policies (Zhou & Dai, 2019). This illustrates that mitigation efforts depend on the extent to which public confidence is affected by the authority in the risk situation.

Several studies have shown that trust in authority that has authority in disaster situations can help mitigation efforts (Bronfman et al., 2016; Lin & Shaw, 2008). Trust in risk-related research includes trust in government, experts, and finally in science (Slovic, Flynn, et al., 2000). In conditions of natural disasters, trust in authority and experts is divided into three, namely: trust in the authority of institutions and government, including central and local governments, trust in institutions with the role of education and preparation. Trust in institutions and authorities responsible for maintaining public order and carrying out rescue operations. In this third authority, trust refers to groups that maintain public order including the TNI and Polri, while those who conduct rescue and assistance in emergencies are exemplified by the Red Cross. This institution is the institution with the highest authority, this is because both institutions work voluntarily and provide free services (Bronfman et al., 2016). The medical authority is at the authority related to rescue assistance. A study in 2017 that examined people affected by haze found that the highest trust in seeking mitigation in haze conditions was trust in medical authorities (Aiyuda & Koentjoro, 2017).

In information processing theory, when assessing risk, individuals who are over-trusted with expertise will shape how the general public evaluates an event or event (Chaiken & Ledgerwood, 2012). In other words, trust in experts contributes to perceiving risk (Wachinger et al., 2013). In addition, the level of individual trust in the authority in dealing with disasters also contributes to the level of mitigation efforts in disaster management (Wachinger et al., 2013). In assessing individual risk, other authorities need to then pursue mitigation measures, so as not to blame other authorities outside themselves and ignore mitigation, based on this description, the researcher wants to see how trust in medical authorities can mediate the relationship between perceptions of haze risk in seeking mitigation?

2. Methods

The subjects of this study were 236 individuals (65 men; 171 women) who were affected by the haze from various provinces including, northern Sumatra, Riau, Padang, Palembang, and Kalimantan. Research data collection uses three scales. Each scale was adopted using a scale from a previous study (Aiyuda & Koentjoro, 2017). First, the smoke haze mitigation scale is based on the type of air pollution mitigation) in three forms of mitigation namely mitigation to reduce smoke haze and mitigation to reduce the impact of smoke haze exposure for individuals, as well as other mitigations including information related to haze. The scale is assessed using a rating scale. Scores range from 1 (never) to 5 (ever) to assess items such as "using an N95 mask when leaving the house", "using an air filter inside the house", "burying trash". There are 14 scale items with a Cronbach alpha reliability of 0.811.

On the scale of risk perception and trust of medical authorities, the scale is assessed with the provisions of strongly disagree (1) to strongly agree (5). The scale of haze risk perception is based on Paul Slovic's risk perception dimension, namely the *unknown Risk* and *Dread Risk* dimensions. Items that are rated as "Haze causes slow death", "I experienced immediate health problems, after being exposed to smog", "Haze causes health problems in the future". On the Cronbach alpha reliability, the risk perception scale is 0.835 with 14 item scale. Meanwhile, the authority trust scale is based on the competency-based trust dimension and the virtue-based trust dimension. Examples of scale items such as "I believe the authority has the ability to make good decisions related to haze", "I believe the authority has experience in making good decisions related to haze", "I believe the authority has the ability to properly calculate the risk of haze" Cronbach alpha reliability 0.966 on the Medical authority trust scale.

3. Findings and Discussion

This research uses mediation analysis through the JASP program. Mediation analysis was carried out to see the direct and indirect relationships of the three variables. As shown below, direct effects can be seen on Table 1, indirect effects presented on Table 2, and total effects presented on Table 3.

Table 1.
Direct effects

					95% Confidence Interval	
	Estimate	Std. Error	z-value	p	Lower	Upper
Risk perception → mitigation	0.533	0.068	7.838	< .001	0.399	0.666

Note. Delta method standard errors, normal theory confidence intervals, ML estimator.

Table 2.
Indirect effects

							95% Confidence Interval	
			Estimate	Std. Error	z-value	p	Lower	Upper
Risk perception	→	Medical Authority's Trust → Mitigation	-0.072	0.025	-2.871	0.004	-0.121	-0.023

Note. Delta method standard errors, normal theory confidence intervals, ML estimator.

Table 3.
Total effects

					95% Confidence Interval	
	Estimate	Std. Error	z-value	p	Lower	Upper
Risk perception → Mitigation	0.460	0.069	6.689	< .001	0.325	0.595

Note. Delta method standard errors, normal theory confidence intervals, ML estimator.

In this research, mediation analysis is needed to see the role of authority trust as a mediation between risk perception and mitigation. Mediation analysis is done by looking at direct, indirect, and total effect relationships (Baron & Kenny, 1986). Through table 1. the direct effects between risk perception and mitigation are known to have a significant value of $p < 0.01$ meaning that there is a relationship between risk perception and mitigation. While the value of the indirect effect of $p = 0.004$ ($p < 0.01$) as well as the total effects, the value of $p < 0.01$ is known. Based on this data, the results cannot show that the medical authority as a complete mediator in which the total effect has a significance value of $p < 0.01$ as required by the analysis phase of Baron dan Kenny, (1986). However, the trust of medical authorities remains a mediator, given the variable requirements are said to be mediators when indirect and direct effects have a significance value of $p < 0.01$, while the total effect only determines variables as complete mediators or not (Widhiarso, 2010). In this case, based on the results of the above data, it can be concluded that the trust of medical authorities can be a mediator between the perception of risk to mitigation efforts as a partial mediation.

Based on the results of data analysis, as predicted there is a relationship between risk perception and smoke haze mitigation, and trust in being a mediator that can affect the relationship between the two variables. This finding is in line with previous research which states that there is a relationship between risk perception can be a guideline for seeking mitigation (Hidayati et al., 2019; Kusumawati et al., 2019; Truelove & Parks, 2012) as well as the relationship of trust authority towards mitigation efforts (Aiyuda & Koentjoro, 2017; Lin & Shaw, 2008; Zhou & Dai, 2019). In seeking mitigation, individuals can accept or reject the known risks (Renn, 2008), so that individuals can choose to mitigate or not.

The role of authority is needed to confirm the assessment of risk and help make policies related to mitigation. Through trust in authority, individuals will determine the acceptance and rejection of risk before finally taking mitigation actions (Bronfman et al., 2012, 2015), in other words, authority's trust becomes a mediator for individuals to determine risk assessments in seeking mitigation. The description of the relationship between risk perception, authority trust, and mitigation can also be explained by systematic heuristic theory. This theory is a persuasion theory that illustrates the change in attitude in two events, namely heuristic and systematic (Chaiken & Ledgerwood, 2012).

Haze is a disaster situation that is not only caused by individual negligence but also related to climate change. According to Ferguson and Branscombe (2010) mitigation related to climate change will decrease from year to year. Knowing risk perceptions can shape community preferences to prepare for risk reduction or mitigation efforts (Slovic, Fischhoff, et al., 2000), however, in situations involving risk, the amount of information can make individuals tend to be heuristic (Slovic, 2000).

Basically, individuals have many opportunities to extract information, however, not all information can survive and then be processed, the only information that gets attention will be forwarded and then help decision making. In conditions that involve individual risk tend to be the same as those around (Bickerstaff, 2004) in seeking mitigation. Individuals tend to think practically without filtering incoming information, this is referred to as heuristic thought processes (Chaiken & Ledgerwood, 2012).

On the other hand, the heuristic process in assessing risk will cause mitigation that is not optimal because only based on practical information that allows mitigation is short-term. While Haze requires long-term and consistent mitigation. In this case, individuals need experts or experts who can help organize information to carry out regular mitigation. Medical authority becomes the trusted authority in haze conditions to seek mitigation(Aiyuda & Koentjoro, 2017). Nevertheless, heuristic processes involving expertise can also occur when individuals make decisions. According to Chaiken and Ledgerwood (2012) expert opinion can cause heuristic thinking processes because it is considered as the right thing, the more trusted by an expert in assessing risk, the greater the possibility to be followed without confirmation. In perceiving risk individuals tend to perceive risks by referring to the authorities involved in risk situations (Bickerstaff, 2004).

The heuristic process is a natural thing to do given the amount of information that comes in and the mitigation needs that need to be done immediately. Assessments based on individual risk perceptions which are heuristic can lead to errors in mitigation efforts. While involving authorities such as the medical will also allow heuristic and biased information, but mitigation is more applicable and used as a guideline because it is recommended by individuals who have expertise. However, in the involvement of experts in outlining policies must be used systematically, so as to avoid the mistake of mitigation measures. A systematic process is a process where individuals think more carefully about the information available and involve facts (Chaiken & Ledgerwood, 2012). This process will prevent individuals from heuristic situations and seek maximum mitigation.

4. Conclusion

Mitigation is an effort to reduce the risk needed to deal with the effects of haze in various parts of Indonesia. The mitigation efforts can be maximized by the correct risk assessment of the affected individual. Besides external factors outside the individual such as the involvement of authorities, especially medical considered to help individuals in seeking mitigation also found in this study. The final findings show that before rejecting or accepting risk, the trust of the authority can influence the affected individual and then seek mitigation.

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