

# An Exploration Study of the Influence of Religious Factors on the Resilience of Survivors of the Lapindo Mudflow in Porong Sidoarjo East Java

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The Lapindo mudflow disaster impacted, tremendously, the whole lives of the survivors. That includes physical, psychological, social, and health factors. However, not all survivors of such tragedy suffered a negative impact. Under certain circumstances, it is proved that catastrophe survivors become very powerful, very strong and able to adjust to reality. They are the Muslim survivors of the Lapindo mudflow in Porong Sidoarjo, East Java. They have already lived 10 years in the impacted area. This study examines the correlation between religiosity, religious orientation, and spiritual well-being, and the resilience of the survivors of the Lapindo mudflow. This study used a survey method with a correlational and comparative quantitative approach. To uncover each study variable, 4 (four) instrument scales of psychology are used. They are a Muslims' religiosity scale, religious orientation scale, spiritual well-being scale, and resilience scale. The result of this study indicates that all predictor variables, namely religiosity, religious orientation, and spiritual well-

being either jointly or individually significantly correlate to the resilience of the survivors/victims of the Lapindo mudflow, at the determinant coefficient value = 0.94 ( $p < 0,05$ ). Thus, 94% of the survivor's resilience are affected by religiosity, religious orientation, and spiritual well-being.

**Key words:** *Resilience, religiosity, religious orientation, spiritual well-being, survivors of Lapindo mudflow.*

## Introduction

It has been more than 10 years since the Lapindo mudflow disaster in Porong Sidoarjo (Fitrianto, 2012; Farida 2014) on May 28, 2006. The mudflow incident sank 9 (nine) villages and forced 8,200 inhabitants to evacuate, and more than 25,000 people to leave their land. As a result of this environmental catastrophe, 10,426 units of houses and 77 units of worship houses were submerged in mud. The mud affected land and livestock over 25.61 ha. of sugarcane in Renokenongo, Jatirejo and Kedung-Cangkring. It also affected 172.39 ha. of rice in Siring, Renokenongo, Jatirejo, Kedungbendo, Sentul, Besuki Jabon and Pejarakan.

The Lapindo mudflow disaster impacted the victims' whole order of life tremendously. That includes physical, psychological, social, and health. Not only did it destroy residences, but this tragedy also eliminated sources of livelihood and made people worse off. Various studies showed a very significant increase in a range of physical and psychological health problems experienced by the environmental catastrophe's survivors, in the long term (Norris, 2005; Norris et al., 2002). Brewin, Andrews, and Valentine (2000) found that limited personal, material, and social resources are associated with low function and adjustment of individual psychology after the disaster, as a decrease in individuals' ability to make self-adjustments as they relate to personal, interpersonal, social, and economic changes, post-disaster.

Research conducted by Gregor concluded that natural disaster has resulted in the loss of not only family and friends, and homes and possessions, but the meaning of life which they possessed, changing life and giving a sense of uncertainty for the future as a result of the loss of orientation as well as personal security (Gregor, 2005). Norris' research found that environmental catastrophe has caused survivors poor mental health, including depression, anxiety, post-disaster trauma, and somatic complaints (Norris, 2005). In addition, several studies showed the negative conditions of the survivors who lived in refugee camps. This condition added to their post-disaster psychological stress (Killic et al., 2006). Displacement or relocation would raise much stress despite individuals already planning, anticipating, or handpicking such changes (Sanders et al., 2003).

However, not all disasters impact survivors negatively. Under certain circumstances, disaster survivors have been proved to be very powerful, very strong and able to flourish after the tragedy (Anthony et al., 2006). This shows that tragedy survivors in fact have a positive adjustment to the post-disaster, as demonstrated by their ability to adjust themselves with various shortcomings, limitations, loss and problems that arise in post-environmental catastrophe (Costanzo et al., 2009). Tang's study results showed that 6 months after the earthquake and tsunami that hit Southeast Asia, about 34% of the 267 adult survivors in Thailand experienced a positive psychological adjustment (Tang, 2007).

'Positive psychological adjustment' indicates a positive mental condition, experienced by the individual who refers to the ability to act or solve problems effectively in meeting with a wide range of pressing environmental demands (Seaton, 2009). Individuals who have a positive psychological adjustment are called resilient individuals (Wald et al., 2006). Resilient people are able to overcome a difficult situation, remain stable throughout physical and psychological health conditions, and have the capacity to gain experience and positive emotions. Resilience is a part of an adaptation process, and it can be upgraded throughout the life span (Bonanno et al., 2004). Meanwhile, according to Catuli & Masten, resilient persons are those able to adapt positively to conditions at risk of misfortune (Bonanno et al., 2004). Reivich & Shatte suggest that resilient humans are able to survive, rise up, and adjust to the difficult conditions (Lopez, 2009). Resilience is demonstrated by the ability to control emotions, and be calm even under pressure, and control impulses and evoke thoughts that lead to emotional control, to be optimistic about future, and be able to identify the cause of the problem accurately, have empathy, have a confidence in success, and have the competency to accomplish something (Reivich & Shatte, 2002).

Previous studies related to how the resilience of disaster survivors can be explained by İkizer, who explored the factors that influence them to be resilient individuals (İkizer, 2014). One of İkizer's findings is that a single factor is very significant to survivors' adaptability; spirituality and religiosity. Related research by Madsen & Abell uncovered the role of religiosity (such as belief in the transcendent and religious observance), in affecting the flexibility of survivors after trauma (Madsen & Abell, 2010). Meanwhile, Smyth & Koenig (2014) stated that spirituality and religiosity affect survivors' ability to bounce back, post-trauma. Sossou et al. (2008) found that the power of spirituality, and obedience to religious beliefs, still makes women survivors of the Bosnian refugee crisis resilient. Gillard & Paton (1999) proved that spirituality is very important in fostering psychological strength for victims of tragedy. Conversely those who are susceptible are the victims who have low resilience, those who do not put their religious capacity in the face of temptation which occurs in the form of catastrophe. Hansfingl's research found that aspects of religiosity and spirituality significantly affect positive self-motivation, the meaning of life, internal regulation, and a person's psychological toughness (Hanfstringl, 2013). Religious practice and

belief also affect the hardiness of the survivors (Javanmard, 2013). This was supported by Subandi et al. (2014) who examined the survivors of Mount Merapi 2010 eruptions in Central Java. Spirituality, patience, and life expectations were shown to significantly affect the recovery process of survivors.

The above studies indicate that religiosity is important in supporting the resilience of disaster survivors. Spirituality and religiosity become variable predictors of individuals' toughness. It has also become a very important component in post-disaster recovery. People who have high levels of religiosity are better able to interpret every accident in a positive way, so that life becomes meaningful, and stress or depression can be avoided (Chan & Rhodes, 2013). Conversely, humans whose religiosity is low will quickly despair in facing pressure. They are not able to accept fate, and often blame others. Religiosity, shown in the form of religious behaviour such as obedience and involvement in religious activities, plays a crucial part in the improvement of psychological resources, in the form of optimism, which in turn greatly assists psychological adjustment for post-disaster survivors (Chan et al., 2012). This study wants to prove whether the variables of religiosity, religious orientation and spiritual well-being affect the resilience of the survivors of victims of Lapindo mudflow in Porong Sidoarjo.

## **Methodology**

This study aims to relate, jointly and individually, the variables of religiosity, religious orientation, and spiritual well-being, and the resilience of the Lapindo mudflow survivors. Therefore this study used a survey method with a correlational and comparative quantitative approach. The subjects were the Lapindo survivors who still live in two villages, namely Glagaharum and Gedang Village, Porong, Sidoarjo. They were 150 people, composed of 64 men and 86 women. Respondents were Muslim survivors who have been actively involved in teaching activities and group prayers in the local village council.

To uncover each study variable, 4 (four) instrument scales of psychology were used; the scale of religiosity of Muslims (Scale-RM), the scale of religious orientation (S-OR), the scale of spiritual well-being (Scale-SWB), and the scale of resilience (Scale-Res). The Muslim religiosity scale (Scale-RM) was developed on the theory of five (5) dimensions of Muslim religiosity by El-Menour & Stiftung (2014). A religious orientation scale (scale-OR) was adapted on the basis of a religious orientation scale, adapted to the Muslim community by Khodadady (2012). A spirituality well-being scale (scale-SWB) was adapted from the same scale developed by Abu-El-Noor and Radwan (2015). To measure resilience (Scale-Res), an adapted scale of resilience was based on the resilience scale developed by Othman et.al (2014). The RM-scale consists of 25 items, where Cronbach's alpha reliability coefficient value is 0.892. Scale-OR consists of 20 items, where Cronbach's alpha reliability coefficient

value is 0.902. SWB-scale consists of 21 items, where Cronbach's alpha reliability coefficient value is 0.877. Res-scale consists of 24 items, where Cronbach's alpha reliability coefficient value is 0.894.

## Research Result

To test the hypothesis of this study, quantitative data analysis using multiple linear regression analysis test was used. Multiple linear regression analysis is used to determine whether the three predictor variables; variables of religiosity, religious orientation, and spiritual well-being are jointly correlated to the criterion variable; resilience. Based on the results of multiple linear regression analysis (results of data analysis can be seen in Table 1. and Table 2.), it can be concluded that all three predictor variables in the study (the variables of religiosity, religious orientation, and spiritual well-being) correlate significantly to the criterion variable, i.e. resilience, where F is 766.727 with ( $p < 0.05$ ). The results of data analysis also show that the coefficient determinant value (R- Square) amounted to 0,940, which means that 94% of the survivors' resilience variable is affected by the variables of religiosity, religious orientation, and spiritual well-being.

**Table 1:** Model Summary of Multiple Liner Regression Analysis

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Statistics Change				
					R Square Change	F Change	df1	df2	Sig. Change
1	.970 <sup>a</sup>	.940	.939	2.21763	.940	766.727	3	146	.000

a. Predictors: (Constant), Spiritual Well-Being, Muslim Religiosity, Religious Orientation

**Table 2:** Analysis of Variants

ANOVA <sup>b</sup>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	11311.991	3	3770.664	766.727	.000 <sup>a</sup>
	Residual	718.009	146	4.918		
	Total	12030.000	149			

a. Predictors: (Constant), Spiritual Well-Being, Muslim Religiosity, Religious Orientation

b. Dependent Variable: Resilience

According to Table 3., the partial test analysis offers information about how each predictor variable individually affects the criterion variable. The survivors' religiosity significantly correlates to the resilience of the survivors, indicated by the value of  $t = 29.567$  ( $p < 0.05$ ). While the religious orientation of survivors correlates significantly to their resilience, it is indicated by  $t$  value =  $5.507$  ( $p < 0.05$ ). Then the spiritual well-being of survivors correlates significantly to their, and it is indicated by  $t$  value =  $-3.728$  ( $p < 0.05$ ).

**Table 3:** Coefficients Dependent Variable Resilience

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	16.247	2.178		7.459	.000
	Moslem Religiosity	.788	.027	.828	29.567	.000
	Religious Orientation	.402	.073	.410	5.507	.000
	Spiritual Well-Being	-.234	.063	-.249	-3.728	.000

a. Dependent Variable: Resilience

**Table 4:** Coefficients Dependent Variable Resilience

Coefficients <sup>a</sup>					
Model	95,0% Confidence Interval for B			Correlations	
	Lower Bound	Upper Bound	Zero-order	Partial	Part
(Constant)	11.942	20.552			
Moslem Religiosity	.735	.841	.960	.926	.598
Religious Orientation	.258	.547	.700	.415	.111
Spiritual Well-Being	-.358	-.110	.564	-.295	-.075

a. Dependent Variable: Resilience

The effective contribution (SE) of each predictor variable es according to the criterion variable. Based on the multiple regression analysis test, it can be known that the correlation between the religiosity variables and resilience variables is obtained by the correlation coefficient value =  $0.926$ , coefficient value of (B) =  $0.788$ , cross-product value =  $12126.4$ ,

regression value = 11311.991, and the coefficient determinant value = 0.94. Thus the effective contribution (SE) of religiosity variable toward resilience is 78.5%. While from the correlation between religious orientation variable and adaptability variable, it can be obtained correlation coefficient value = 0.415, coefficient value (B) = 0.402, cross-product value = 8575.4, regression value = 11311.991 value, and the value of the determinant coefficient = 0.94, then effective contribution (SE) religiosity variable toward the resilience is 28.6%. Based on the correlation between the variables of spiritual well-being and resilience variables, it is obtained correlation coefficient = -0.295, coefficient value (B) = -0.239, cross-product value = 7246, the value of regression = 11311.991, and value of the determinant coefficient = 0.94, then the effective contribution (SE) of religiosity variable toward resilience is 14.3%. Thus among the three predictor variables, the most influence on the resilience of the survivors are variable of religiosity, followed by religious orientation and spiritual well-being variables.

**Table 5:** Coefficients Dependent Variable Resilience

Coefficients <sup>a</sup>									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	78.006	1.829		42.660	.000			
	Religious belief	.214	.073	.145	2.927	.004	.924	.237	.052
	Religious Ritual	-.309	.065	-.100	-4.724	.000	-.307	-.366	-.083
	Religious experience	.053	.020	.053	2.704	.008	.346	.220	.048
	knowledge of religion	1.688	.106	.790	15.938	.000	.971	.799	.281
	Appreciation of religious value	.016	.056	.008	.288	.774	.679	.024	.005

a. Dependent Variable: Survivors' Resilience

Description on the test results of multiple linear regression analysis to test each dimensions of the religiosity variables towards resilience. Based on the partial test, results are obtained as follows: (1) on the dimension of religious beliefs, the value of  $t = 2,927$  ( $p < 0.05$ ), means that there is a significant correlation between religious belief and the strength of the survivors; (2) on the dimensions of religious rituals, the value of  $t$  is obtained =  $-4.724$  ( $p < 0.05$ ), means

that there is a significant correlation between the religious rituals and the flexibility of the survivors; (3) on the dimensions of religious experience, it is obtained the value of  $t = 2.704$  ( $p < 0.05$ ) means that there is a significant correlation between the religious experience and the adaptability of the survivors; (4) on the knowledge dimension of religion, the value of  $t$  is obtained = 15.938 ( $p < 0.05$ ) means there is a significant correlation between the knowledge of religion and the resilience of the survivors; and (5) on the dimensions of appreciation of religious values, the value of  $t$  is obtained = 0.288 ( $p > 0.05$ ) means there is no significant correlation between appreciation of the values of religion and the strength of the survivors. Based on the analysis of the partial test on each dimension of religiosity, it can be shown that four (4) dimensions are significantly correlated, and only 1 (one) dimensions, appreciation of the principles of religion, that does not affect the resilience of survivors.

The results of comparative test on the resilience of survivors in terms of religiosity orientation. Based on the results of t-test analysis, the value of  $F$  is obtained = 11.644 with  $t = 13:00$  ( $p < 0.05$ ), thus it can be concluded that there is a significant difference of the survivors' adaptability in terms of religious orientation. Based on the average value of the adaptability of the survivors with intrinsic religious orientation = 111.1416 greater than the average value of the strength of the survivors with extrinsic religious orientation = 95.973. This means that the survivors whose religious orientation are intrinsic are far more influential on flexibility compared to those whose religious orientation are extrinsic.

**Table 6:** Descriptive Statistics

Statistics Group					
	Religious Orientation	N	Mean	Deviation Std.	Error Mean Std.
Survivor resilience	Intrinsic Orientation	113	111.1416	6.65323	.62588
	Extrinsic Orientation	37	95.9730	4.27841	.70337

**Table 7:** The Results of Comparative Test

Independent Samples Test			
		Levene's Test for Equality of Variances	t-test for Equality of Means
			95% Confidence Interval of the Difference

		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Survivors' Resilience	Equal variances assumed	11.644	.001	13.000	148	.000	15.16862	1.16685	12.86278	17.4744
	Equal variances not assumed			16.111	96.196	.000	15.16862	.94152	13.29977	17.0374

The following is a description of the test results of multiple linear regression analysis, testing each dimension on the spiritual well-being variable toward resilience. Based on the partial test, the results obtained are as follows: (1) on the religious well-being dimension, the value of t is obtained = 13.585 ( $p < 0.05$ ). This means a significant correlation between religious well-being and the resilience of the survivors; (2) On the existential well-being dimensions, the value of t is obtained = -5.746 ( $p < 0.05$ ). This means a significant correlation between the existential well-being and adaptability of the survivors.

## Discussion

For more than ten years, the survivors of Lapindo mudflow disaster victims have lived in the impacted area, since the mud overflow impacted Porong and its surrounding area. They are the Muslim people who lost their homes, possessions. It forced them to leave their home town to survive. However, over time, the Muslim survivors with existing capabilities have been able to adjust to reality and even find the spirit that gives them the energy to change things back to normal. The self-adjustment to these changes enabled the survivors to return to life as before. The survivors are able to bounce back from a disaster to continue a functional and prosperous life.

**Table 8:** The Results of Test Each Dimension of the Spiritual Well-Being

Coefficients <sup>a</sup>									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	64.575	1.953		33.066	.000			

Religious Well-Being	.763	.056	.675	13.585	.000	.853	.746	.528
Existential Well-Being	.347	.060	.286	5.746	.000	.707	.428	.223

a. Dependent Variable: Survivors' Resilience

The survivors who were able to have a normal life are called resilient individuals. Vaillant (2008) defines resilience as a positive mental state owned by a person, with the ability to act or solve problems effectively, in meeting a wide range of pressing environmental demands. Charney (2004) defines resilience as a process of adapting to trauma, tragedy and the various situations that affect individual stress. According to the American Psychological Association (APA), resilience is the process of adaptation to be resilient in facing trauma, tragedy, or things that potentially lead to stressful conditions such as loss of family, serious health problems, loss of property or workplace ("American Psychological Association", 2013). Thus, adaptability is a construct to reach behavioural and psychological manifestations to cope when facing with a problem in life. The survivors of Lapindo mudflow victims who became the subjects of this research are those who are resilient. In real life, they are able to adapt and use psychological capacity in the form of religiosity and spiritual potential, in facing tragedy.

The result of this study proves that the three predictor variables; variables of religiosity, religious orientation, and spiritual well-being, significantly influence the survivors' resilience variable. This study also reinforces previous studies that explain factors such as religiosity, religious orientation, and spiritual well-being. Chan & Rhodes' research result also showed that aspects of religiosity influence post-disaster recovery of Hurricane Katrina survivors (Chan & Rhodes, 2013). The results of the study point out that four of the five dimensions of religiosity; religious beliefs, religious rituals, religious experience, and knowledge of the religion, significantly impact the toughness of the survivors, and only the appreciation of the religion's values dimension does not have a significant impact on survivors' ability to bounce back.

This means that the confidence and trust of religion (religiosity) of the survivors make them able to adapt, and live life meaningfully. The resilience of the survivors in the face of a crisis makes them always have hope and optimism, in the face of tough times in life. The ability of survivors to give a positive meaning to an event can be a factor that improves their adaptability. The religious beliefs and awareness owned by the survivors help them to understand the reality and acceptance of God's will. The survivors, with their religious awareness, are able to accept and adapt to conditions that are not desired. This acceptance will affect their level of strength in facing accidents. Based on this explanation, resilience is strongly associated with religiosity owned by survivors. Religiosity acts as a determinant for

the survivors in the face of difficult times. This is because religiosity is the main foundation for the survivors to find the tranquillity of life in a difficult situation. This may present a form of toughness in the midst of a difficult life, post-disaster.

Several other studies have shown a significant positive correlation between practices and religious beliefs, and some variables such as mental health, happiness and family satisfaction (Jomehri et al., 2014). There is a significant negative correlation between religiosity, anxiety and depression (Koenig et al., 2001). Ellison et al.'s research also found that belief and faith in life after death is able to reduce stress and increase the sense of comfort, and that also enables survivors to continue towards further life (be optimistic) (Ellison et al., 2009). It shows that the potential of religiosity is very important in survivors' recovery process and strength.

This study also found a significant correlation between survivors' religious orientation and resilience. Religiosity has an important role in dispelling anxiety and fear that results from uncertainty in life such as natural disasters. In this context, religiosity, according to Allport and Ross, has two aspects, namely the orientation of intrinsic religious orientation and extrinsic religious orientation (Ai & Park, 2007). Intrinsic religious orientation refers to how individuals live their religion whereas extrinsic religious orientation refers to how one 'uses' one's religion. This means that the intrinsic religious orientation saw every occurrence through a religious perspective to create meaning (Kyoo-Man Ha, 2015). Extrinsic religious orientation emphasizes the emotional and social consequences (Rohani & Manavipour, 2008).

The results of this study also found differences in the survivors' resilience, in terms of religious orientation. The adaptability of the survivors who have intrinsic religious orientation was higher than the survivors who have extrinsic religious orientation. This study's findings reinforce the results of research by Seidmahmoodi et. al., that correlated flexibility and religious orientation. It is very significant for predicting post-traumatic growth (PTG) of the survivors of disasters. Intrinsic religious orientation has a significantly greater effect towards PTG of the survivors of disasters, compared to extrinsic religious orientation. Also, there is a significant positive correlation between intrinsic religious orientation and PTG for natural disasters victims (Mir-Kheshti, 1996). Phillips et al. found the same thing; a significant correlation between religious orientations and coping style, and significant differences in coping styles seen in terms of intrinsic and extrinsic religious orientations. In this case an individual's intrinsic religious orientation is more effective than an extrinsic one (Phillips et al., 2014; Okon, 2016).

In addition, this study found a significant correlation between spiritual well-being and survivors' resilience. Religiosity and spiritual well-being are determinant of the quality of

survivors' lives. Individual spirituality and beliefs are the important components in realizing survivors' psychological well-being (Levine & Targ, 2002). Several previous studies such as those by Koenig (2009), Raholm (2002), and Walton (2002) demonstrate the role of spirituality on survivors' life quality, and physical and psychological health. Research by Büssing et al. (2010) also found that spirituality is needed to heal cancer survivors. Khalsa et al. (2003) found a significant correlation between spirituality and health. An individual who has a high level of spirituality tends to be physically and psychologically healthy.

## **Conclusion**

Based on the discussion above, it can be concluded that religiosity and spirituality play an important role in supporting the resilience of survivors. Religiosity and spirituality become predictor variables of individual resilience, and also a very important component in the process of post-disaster recovery. People who have a high level of religiosity are able to interpret every event in a positive way, so that life becomes meaningful, and this may prevent stress or depression due to the tragedy. On the other hand, humans who have a low religiosity will easily despair when facing problems, not being able to accept fate and often blaming others. A person's religiosity, shown in the form of religious behaviour such as obedience and involvement in religious activities, plays an important role for the improvement of psychological resources in the form of optimism, which in turn greatly assist survivors' post-disaster psychological adjustment. This study proved that religiosity, religious orientation and spiritual well-being significantly affect the resilience of the survivors of the Lapindo mudflow in Porong Sidoarjo.



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