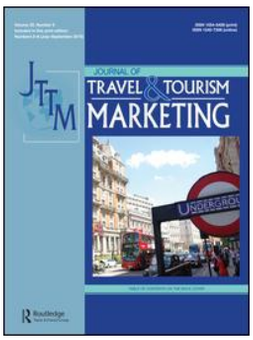

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Journal of Travel & Tourism Marketing

ISSN: 1054-8408 (Print) 1540-7306 (Online) Journal homepage: https://www.tandfonline.com/loi/wttm20

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To cite this article: Sari Lenggogeni, Brent W. Ritchie & Lee Slaughter (2019) Understanding travel risks in a developing country: a bottom up approach, Journal of Travel & Tourism Marketing, 36:8, 941-955

To link to this article: https://doi.org/10.1080/10548408.2019.1661329

Published online: 17 Sep 2019.

JOURNAL OF TRAVEL & TOURISM MARKETING
2019, VOL. 36, NO. 8, 941–955
https://doi.org/10.1080/10548408.2019.1661329

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ARTICLE

Understanding travel risks in a developing country: a bottom up approach

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ABSTRACT

This paper explores travel risk associated with natural disasters focusing on a developing country context using a bottom-up approach. A mixed method was used to identify seven travel risk types from tourists' perspective. The exploratory sequential design was applied to 52 respondents in the qualitative phase and 605 respondents in the quantitative phase. The study area was West Sumatra, Indonesia, a popular tourist destination that is prone to natural disasters. This study found different dimensions of travel risk and provide scales for future research in Indonesia and other developing countries.

ARTICLE HISTORY
Received 29 October 2018
Revised 15 February 2019
Accepted 20 May 2019

KEYWORDS
Travel risk; bottom up approach; natural disaster; mixed method; crisis and disaster tourism; Indonesia; developing country

Introduction

Tourism is a major economic activity, therefore understanding why tourists choose to visit destination is important. The literature consistently shows that tourists' perception of how safe a destination is (travel risk) has a significant influence on their choice of destination (Hasan, Ismail, & Islam, 2017; Sharifpour, Walters, & Ritchie, 2014). Although literature on tourism crisis and disaster management is rapidly growing (Jiang, Ritchie, & Benckendorff, 2019), studies tend to ignore developing countries. Cross-cultural studies of consumers' risk perceptions are limited but receiving increased attention (i.e. Kozak, Crotts, & Law, 2007). Jiang et al. (2019) highlighted that Tourism Crises and Disaster Management (TDCM) literature have been focused on three developed countries such as the USA, Australia, and the UK. There are fewer studies in developing countries (for example, Rittichainuwat, Qu, & Mongkhonvanit, 2007), yet Western-based research on travel risk are less likely applicable outside of developing countries in Asia.

Jiang et al. (2017) also lamented that the field tends to apply existing theories and concepts (a top-down approach) rather than developing their own concepts and theories from actual empirical data (a bottom-up approach). In fact, once disaster hits developing countries, their extensive effects on human, political and cultural system may be more complex than their effects on a developed country (Alcantara-Ayala, 2002). Such complexity allows researchers to require a multiple or embedded approach to understand the fundamental barriers perceived by the traveler. Studies of consumer behavior related to risk perception, which adopts a multiple or embedded case study, are lacking in the TDCM, yet can help the field to identify deeper insights (Jiang et al., 2019). While previous studies tend to adopt a single method in exploring travel risks across various context, a mixed method research may help untangle the complexity of travel risk from a bottom-up traveler perspective. Such an approach may increase research validity and help guide future research from a sound evidence base.

Travel risk is context specific and all travel risks are different in nature and cannot be examined as a whole (Dolnicar, 2005; Sharifpour et al., 2014). Risk types are usually divided into two broad categories – man-made disasters and natural disasters. Man-made disasters include the often widely reported cases of terrorism (Ayesha & Raj, 2018; Sönmez & Graefe, 1998b). While it is important to understand travel risk associated with man-made disasters, it is equally important to understand travel risk associated with natural disasters. The increasing number of natural disasters across the globe today has directly affected the tourism industry. Advances in modern technology mean that these natural disasters are increasingly broadcast around the world as they unfold and a downturn in tourism to the area is often a flow on effect.

Lombok, Indonesia, is one example. This well-known tourist destination was devastated by a 7.0 magnitude earthquake. As a result, more than 2000 international tourists were evacuated (Chanel News Asia, 2018). Other tourists either reduced their length of stay or opted to find an alternative destination.

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The United Nations International Strategy for Disaster Reduction (2016) provided evidence that the number and scale of natural disasters are increasing sharply highlighting Asia as the most greatly affected continent in the world. It included Indonesia as one of the world's most natural disaster-prone country. The Inform Global Risk Index 2018 published by European Commission (2018) reported that of 191 countries, Indonesia ranked sixth in the category of highest reliability risk score of natural disasters. Indonesia is believed to be one of the most active tectonic regions on earth (Cummins, 2017). The territory covers over 18 000 km of major tectonic plate boundaries, more than twice that of Japan and Papua New Guinea (Cummins, 2017); hence it is important for natural disaster research to be conducted in Indonesia.

In summary, while there has been an increasing interest in exploring tourists' perceived risk across various context of crises and disaster, there are limited studies that investigate the travel risk from tourists' perspective at destinations with multiple experiences of natural disasters (Park & Reisinger, 2008; Rittichainuwat, Nelson, & Rahmafitria, 2018). Despite risk perceptions being context specific, few number of studies have been conducted in developing countries, especially those in Asia (Jiang et al., 2019). By combining qualitative and quantitative methods, this may help to better understand travel risk associated with natural disaster in a developing country. Furthermore, a majority of studies have focused on the perceived risk of international tourists, despite the fact that domestic tourism has proved to be an important contributor to economic growth and development.

Thus, this study aims to explore the domestic tourists' travel risk in destinations that have actually experienced natural disasters in one of the world's most disaster-prone countries, Indonesia. By taking a bottom-up approach, it provides a better understanding about the underlying dimensions of risk perceptions and helps provide guidance for future research.

Literature review

Risk perceptions

Risk perception, also labeled perceived risk, plays a critical role on consumer purchase behavior. It was initially found by Bauer (1960) within the marketing discipline, in the field of consumer decision-making. This concept has been further applied by scholars to a wide range of disciplines including geography, political science, sociology and psychology (Mitchell, 1999; Slovic, 1987).

The debate of risk perception dimensions classifications and broad concept have been continuously expressed by researchers in marketing studies (Conchar, Zinkhan, Peters, & Olavarrieta, 2004; Kaplan, Szybillo, & Jacoby, 1974). Most of these studies have suffered from inconsistent term of risk perception *dimensionality* that were often exchangeable with words like *component* (Brooker, 1984) or *typicality* (Mitchell, 1992; Ross, 1975). Furthermore, previous studies also identified that risk perception dimensionalities terminology is not consistent. For instance, Mitchell (1992) employed the term financial risk, while Roselius (1971) used *monetary loss*.

Scholars have broadly discussed risk dimensions classification since the 1970s. Roselius (1971) first introduced four groups of risks including money loss, time loss, hazard loss, and ego loss. In 1974, Kaplan et al. (1974) proposed another five dimensions of perceived risk: physical, social, financial, psychological, and performance. Building on the works of Kaplan's et al. (1974) and Roselius (1971), interestingly, Broker's (1984) has formulated the combination of five dimensions of risk perception of Kaplan's et al. and *time loss* by Roselius's (1971). This study claimed that strongest influencers of consumer decision-making were found on performance and financial risks. While much research has been carried out on risk dimensions exploration, only Brooker's (1984) studies have been extensively adopted by scholars. They consisted of performance, psychological, financial, social, physical, social and time risk dimensions.

Since tourism is vulnerable and often considered as a risky industry, research on the travel decision-making process – center on risk perception – has attracted scholars' attention for some time (Kapuściński & Richards, 2016; Moutinho, 1987; Reisinger & Mavondo, 2005). Lenggogeni (2014) and Simpson & Siguaw (2008) argued that early works in this subject used to lend the basic type of risk perception from the marketing literatures. Moutinho (1987) was the first to propose the perceived risk concept in tourist behavior. Since then, the literature has explored risk perception studies from two main perspectives: the general travel risk research and crises and disaster travel risk research. While the former areas allow researchers to conduct studies in a leisure context in different settings, the latter areas have viewed travel risk inventories associated with crises and disaster context.

In a general travel risk study, Roehl and Fesenmaier (1992) first introduced the marketing's risk perception dimensionalities when segmenting the traveler. Their studies emphasize the importance of equipment, financial, physical, psychological, satisfaction, social, and time when profiling the tourists in a leisure context. To further explore travel risks, in 1998, combining with marketing's risk perception (Roehl & Fesenmaier, 1992), the three additional dimensions of risk (health, terrorism, and

political instability) for International travel based on United States residents were thus developed by Sönmez and Graefe (1998a). Hence, the seven general risk perceptions from marketing to tourism literature (Roehl & Fesenmaier, 1992) have been expanded afterward in tourism research. Thus far, studies in this area have made an attempt to view the role of travel risk in a different setting; backpacking experience (Adam, 2015; Fuchs, 2011; Reichel, Fuchs, & Uriely, 2007), college experience (Lin, Lee, & Wang, 2012), tropical context (Russel & Prideaux, 2014). The majority of these studies' context was found in Western countries such as the USA, United Kingdom, Australia (e.g. Dolnicar, 2005; Floyd, Gibson, Pennington Gray, & Thapa, 2004; Lepp & Gibson, 2003; Russel & Prideaux, 2014).

In the past two decades, a latter category emerged. Tourism has encountered the turbulence era (Larsen, 2011; Ritchie, 2004; Ritchie & Campiranon, 2014) where a numbers of crises and disasters plagued this industry. Since then, most research have been carried out with the investigation of how man-made (i.e, the act of terror or political instability) and act of God disasters (i.e, earthquakes, and tsunami) could have impacted the tourists' risk perception and its subsequent impact on decision-making (see studies of Rittichainuwat & Chakraborty, 2009; Turvey, Onyango, Cuite, & Hallman, 2010). Sönmez and Graefe (1998b) were an early researcher that proposed how a terrorism risk mitigated foreign travel decision-making. In addition, Chew and Jahari (2014), Park and Reisinger (2008), Rittichainuwat et al. (2018), evaluated risk perception in natural disasters for International travel based on the United States perspective, 2011 Great East Japan tsunami and 2004 Indian Ocean tsunami cases. These studies, however, most likely borrowed risk inventories in the marketing disciplines and incorporated new types of risks associated with catastrophe or disasters, including violations, acts of terror, health risks and natural disasters. For instance, He, Park, and Roehl (2013); Park and Reisinger (2008), with the exception of Rittichainuwat (2013a), have sought travel risk associated to tsunami from both the tourists' and stakeholders' perspectives. Thus, the movement from general travel risk studies to travel risk associated to crises and disasters highlighted that travel risks are a context and destination specific (Rittichainuwat et al., 2018; Sharifpour et al., 2014).

Within this scope, a broader review of research patterns of travel risk dimensionalities studies was mostly found in regression-based studies, followed by exploratory-based studies and cluster-based studies. Specifically, several studies have investigated the influence of travel risks in a travel behavior model (for example, He et al., 2013; Sharifpour et al., 2014) clustering or profiling travel risk segment (Ritchie, Chien, & Sharifpour, 2017) and exploration of travel risk inventories (Dolnicar, 2005; Fuchs, Uriely, Reichel, & Maoz, 2013; Rittichainuwat et al., 2007). A set of travel risk items or travel risk dimensionalities have emerged mostly in the context of terrorism in Israel (see Fuchs & Reichel, 2006, 2011; Reichel et al., 2007).

While focus on travel risk research studies were found in Western countries (e.g. Russel & Prideaux, 2014), few non-Western countries were found in Asia covering Japan (Chew & Jahari, 2014), China (He et al., 2013), Thailand (Rittichainuwat & Chakraborty, 2009; Rittichainuwat et al., 2007; Rittichainuwat, 2013b), Malaysia (Yang, Sharif, & Khoo-Lattimore, 2015) in single or even multiple countries including Australia, Japan, Thailand and Indonesia (Rittichainuwat et al., 2018). Yet with limited studies in developing countries and in a natural disaster context, the adoption of travel risk dimensionalities was mostly found in a single method (for example, Chew & Jahari, 2014) rather than mixed method (Rittichainuwat, 2013a)).

The following table presents the review of risk perception studies from tourism literature.

The evidence reviewed of travel risk dimensions provided in Table 1 suggest several research gaps. First, these studies have pointed out that there is a complexity of travel risk sub dimensionalities. As reported by Reichel et al. (2007) a subdimensions of travel risk associated to physical risk, socio-psychological, financial, self-behavior, mass, and sociopolitical were identified in their study while Rittichainuwat and Chakraborty (2009) found the subdimensions of travel risk in the fields of acts of terror, travel costs, novelty seeking, disease, deterioration of tourists, and travel inconvenience.

Second, prior studies have shown that perceived risk dimensionalities were most likely determined by the context of disasters. Rittichainuwat and Chakraborty (2009) study, for example, revealed that terrorism, SARS and bird flu were most of the fundamental risk types perceived by inbound travelers in Thailand. Likewise, Jonas, Mansfeld, Paz, and Potasman (2011) research in a health context reported that physical risk dimensionalities elevated tourists' concern. Interestingly, Giusti and Raya (2019) confirmed that crime risk has influenced tourist to visit Colombia, this is supported by Richard (2010) that emphasized the fear of attack and burglary risk has deterred tourists from visiting South Africa. It is clear that travel risk is often context specific (Ritchie, 2009; Sharifpour et al., 2014) and multifaceted (Dolnicar, 2005). While these studies show that context is important when determining risk perception, interestingly, Park and Reisinger (2008) highlighted that travel risk research associated with natural disasters in affected destinations is a call for research attention.

Table 1. Selected travel-specific risk taxonomies in tourism journal.

Type of studies	Author & year	Title	Type of Method	Risk Instrument Source	Context
General travel	Roehl and Fesenmaier (1992)	Risk perceptions and pleasure travel: An exploratory analysis	Single	Literature	United States
	Sönmez and Graefe (1998a)	Determining future travel behavior from past travel experience and perceptions of risk and safety	Single	Literature	United States/ International Travel
	Mitchell and Vassos (1998)	Perceived risk and risk reduction in holiday purchases: A cross-cultural and gender analysis	Mixed	Focus group and interview	Corfu
	Lepp and Gibson (2003)	Tourist roles, perceived risk and international tourism	Single	Literature and Survey	United States
	Floyd and Pennington Gray (2004)	Profiling risk perception of tourists	Single	Literature and Telephone Survey	United States
	Dolnicar (2005)	Understanding barriers to leisure travel: Tourist fears as a marketing basis	Mixed	Open ended survey in the tour operator and survey	Australia
	Reisinger and Mavondo (2005)	Travel anxiety and intentions to travel internationally: Implications of travel risk perception	Single	Literature	Australia
	Fuchs and Reichel (2006)	Tourist destination risk perception: The case of Israel	Mixed	Literature, interview with academics, expert, tourist and tour guides	Israel
	Reichel et al. (2007)	Perceived risk and the non-institutionalized tourist role: The case of Israeli Student Ex-Backpacker	Mixed	Literature and in-depth interview with tourist, tourist guide and tourism experts	Israel
	Eitzinger and Wiedemann (2007)	Risk perceptions in the alpine tourist destination Tyrol: An exploratory analysis of residents' views	Single	Interview with Sorting Method (adapted)	Austria
	Lin et al. (2012)	Analysis of motivation, travel risk and travel satisfaction of Taiwan undergraduates on work and travel overseas programmes: Developing measurement scale	Single	Literature	Taiwan
	He et al. (2013)	Religion and perceived travel risk	Single	Literature	China
	Russel and Prideaux (2014)	An analysis of risk perceptions in a tropical destination and a suggested risk destination risk model	Single	Literature (Review of Website)	Australia
	Yang et al. (2015)	Tourists' risk perception of risk destinations: The case of Sabah's eastern coast	Single	Literature Survey	Malaysia
	Adam (2015)	Backpackers' risk perceptions and risk reduction strategies in Ghana	Single	Literature	Ghana
	Deng and Ritchie (2018)	International university students' travel risk perceptions: an exploratory study	Mixed	Literature	Australia
Crises and disaster studies	Sönmez and Graefe (1998b)	Influence of terrorism risk on foreign tourism decisions	Single	Literature	United States/ International travel
	Floyd et al. (2004)	The effect of risk perceptions on intentions to travel in the aftermath of September 11 2001	Single	Literature	United States
	Kozak et al. (2007)	The impact of the perception of risk on international travel	Single	Literature	Hongkong/ International Travel
	Rittichainuwat et al., 2007)	A study of the impact of travel inhibitors on the likelihood of traveler revisiting Thailand	Single	Literature	Thailand
	Huang et al. (2008)	Folk religion and tourist intention avoiding tsunami-affected destinations	Mixed	Literature, Expert Interview, Focus Group	Taiwan
	Rittichainuwat and Chakraborty (2009)	Perceived travel risks regarding terrorism and disease: the case of Thailand	Mixed	Semi-structured interview	Thailand
	Park and Reisinger (2010)	Difference in the perceived influence of natural disaster and travel risk on International travel	Single	Literature	United States
	Rittichainuwat (2013a)	Tourists' and tourism suppliers' perceptions toward crisis management on tsunami	Mixed	Survey, participant observation and interview	Thailand
	Fuchs et al. (2013)	Vacationing a terror-stricken destination: Tourists' risk perceptions and rationalizations	Mixed	Literature and in-depth interview	Israel
	Sharifpour et al. (2014)	Risk perception, prior knowledge, and willingness to travel: Investigating the Australian tourist market's risk perception toward the Middle East	Single	Literature and survey	Middle East
	Wolff and Larsen (2014)	Can terrorism make us feel safer? Risk perceptions and worries before and after the July 22nd attacks	Single	Literature	Norway
	Chew and Jahari (2014)	Destination image as a mediator between perceived risks and revisit intention: A case of post-disaster Japan	Single	Literature review	Japan
	Rittichainuwat et al. (2018)	Applying the perceived probability of risk and bias toward optimism: Implications for travel decision in the face of natural disasters	Single	Literature review	Thailand, Indonesia, Australia, Japan

Source: developed from Lenggogeni (2014)

Third, few previous studies have used a mixed method. However, these studies were based on a Western perspective (e.g. Deng & Ritchie, 2018; Dolnicar, 2005; Mitchell & Vassos, 1998) and most of them focus on terrorism context (see Fuchs et al., 2013). There are limited studies discusson the natural disasters context, and few of them have used mixed method in this field such as Huang, Chuang, and Lin (2008) and Rittichainuwat (2013a). Huang et al. (2008) is a regression-based study that adopted only a single dimensionality of perceived risk covering three indicators only, while Rittichainuwat (2013a) was limited to a single case disaster and the instrument was tsunami safety instead of travel risk. Rittichainuwat (2013) adopted both quantitative design with self-completed questionnaire survey and qualitative with interviews and participant observation study and found three underlying dimensions of tsunami safety including crisis management, tsunami evacuation systems and emergency kits covering 10 indicators. Despite these interesting findings, this study uncovers travel risk inventories for multiple natural disasters, such as earthquakes and tsunamis in Asia. While natural disasters in a developing country are complex (Alcantara-Ayala, 2002), exploring a travel risk from multiple aspects associated with natural disasters is an important research subject in an increasingly vulnerable and risk-prone world.

Fourth, a majority of studies adopted travel risk dimensions based on literature rather than obtaining them from tourist perspectives that can provide a more in-depth exploration of perceived risk. Efficiently, the travel risk dimensions are frequently presumed and borrowed from marketing literature risk typologies rather than obtaining multiple perspectives from potential tourists through a qualitative method (such as, interviews or focus group discussions) before proceeding to a quantitative stage (Simpson & Siguaw, 2008). The second technique, in fact, is essential for research in the field of tourism, particularly in developing countries (Jiang et al., 2019), which are prone to experiencing more complex issues concerning travel risks. Therefore, developing the travel risk dimensionalities from a multiple method based on tourists' perspective, rather than the literature, may result in a deeper insight of tourists' fear. This is known as a "bottom-up approach" (Lenggogeni, 2014). This approach is crucial because it may not only help the appropriate managerial implications for the tourism industry but also provides a better understanding of travel risk perception (Simpson & Siguaw, 2008). In conclusion, a series of travel risk studies highlight the need for filling this literature gap by investigating the underlying dimensions of domestic tourists' risk perception associated with a natural disaster context.

Methodology

This study employed mixed method with an exploratory sequential design (Cresswell & Clark, 2011). After a pilot test, preliminary qualitative data from 52 domestic tourists were obtained by using a semi-structured interview to identify travel risk perception themes related to a natural disaster context in the cities of Jakarta and Pekanbaru in Indonesia (Lenggogeni, 2014). The data were validated by member checking and then analyzed by thematic analysis. The qualitative stage resulted in 60 items of travel risk (see Table 2).

The first stage found 60 travel risk perception items associated with the theme of natural disaster risks. It represented the six basic risk perception types in marketing literature themes and other new risks themes, such as cultural risks, natural disaster risks, tsunami zones, and mitigation awareness. These items were then incorporated into a survey instrument in the second stage of data collection. To examine the underlying travel risk perceptions, respondents were asked with a question of "When you consider travelling to West Sumatra, how would you rate your level of concern?" to indicate their level of risk perceptions for a natural disaster using a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree).

A pilot test was conducted prior to the main mall intercept survey in the next stage. Screening questions were applied to ensure respondent eligibility. The potential respondents must recognize that West Sumatra is vulnerable to natural disasters and they must be Indonesian citizens that did not live in West Sumatra.

The survey was administered three times a week (Wednesday, Friday, and Sunday) in three different shopping centers in Jakarta and Pekanbaru to domestic tourists that intend to travel to West Sumatra to minimize mall intercept bias (Sudman, 1980). Out of the 850 questionnaires distributed to the respondents, 775 questionnaires were returned. This indicates that the response rate (91.7%) was very high. With a confidence level of 95% and an error margin of +5%, this study met the rule of thumb for sample size (Krejcie & Morgan, 1970); thus 605 (71.12%) of the final data proceeded to the statistical analysis stage.

Results

This study used a sample of 605 respondents. Most of the respondents were female (56.5%) while the remaining respondents were male (43.5%). The majority of the respondents were in the 18 to 24-year-old age group (55.7%) followed by the 25 to 34-year-old age group (34%) and

Table 2. The result of qualitative stage – travel risk associated with a natural disaster.

Major Themes	Minor Themes	
Disaster atmosphere	1. City destruction	6. Road being disconnected or cracked
	2. Sudden emergence of earthquake	7. Rumbling of earthquake
	3. Panic or chaotic	8. Witnessing family grieving
	4. Seeing corpses	9. Hearing victim cries
	5. Trauma due to Aceh Tsunami	
Physical risk	1. Death/injury/disability	2. Hit by falling building
		3. Body corpses not recovered
Potential natural disaster	1. Tsunami	4. Stormy weather
	2. Earthquake	5. Volcanic eruption
	3. Landslide	1. Flash floods
General risks	1. Financial risk	3. Useless trip
	2. Social risk	4. Holiday plan failed
Helplessness	1. Separated from family	3. Unable to save family member
	2. Family member or loved one dying	4. Family member thinks about respondent's fate
		5. No one will help
Post disaster	1. No telecommunication	4. Lack of power
	2. Difficult to obtain accommodation and transportation	5. No logistical plans
	3. Lack of clean water	6. Mythical beliefs
		7. Fear of the spread of disease
		8. New hotel with local developer
Feeling Trapped	1. Trapped in tall building and lift	4. Fear of going to the mall
	2. Inability to escape others and no one to help	5. Fear of staying in a large hotel
	3. Trapped on congested road during disaster	6. Earthquake during night
		7. Inability to swim
Government preparedness	1. Distrust government's disaster management planning	5. Local behavior during evacuation
	2. Government quake recovery	6. Local responsibility in maintaining public infrastructure
	3. Tsunami alert warning	7. Police and government role in safety procedure
	4. Quake shelters	
Tsunami zone	1. Visiting coastal town	3. Accommodation near to the beach lines
	2. Beach activities tourism	4. Airport location nearby the beach
Mitigation awareness	1. Non-seismic construction information	4. Unclear mitigation information from government
	2. Cracked building post-earthquake knowledge	5. Tsunami free zone information
	3. Evacuation route information	6. Government travel warning
		7. Personal mitigation knowledge

Source: Lenggogeni (2014)

lastly, the 35 years and above age group (10%). The largest group of respondents' occupations was in the private sector (36.5%), while the other 31.4% of respondents were students. Meanwhile, some other respondents opted to consider themselves as professionals (12.9%) or entrepreneurs (4.8%). In regards to respondents' education background, 49.8% were high school graduates while 46.2 2% attended college or a tertiary education facility. Most of these respondents fell under the low income (38.5%) to middle income (45%) bracket.

Generally, a majority of domestic tourists (78.7%) intended to visit West Sumatra, 11.6% did not intend to visit West Sumatra and 9.7% were unsure. In terms of the period of time they intend to visit West Sumatra, 34.2% said they plan to visit West Sumatra in the next 6 months, 24.8% plan to visit in the next 6–12 months, 27.7% said that they plan to visit in the next 1–2 years, and 13.3% were unsure. Only 28.5% never visited West Sumatra, while most respondents (71.4%) were repeat visitors. Meanwhile, less than one third had experienced a natural disaster (31.7%).

The results of the second stage were analyzed by Principal Axis Factoring using an orthogonal rotation method with Varimax rotation (Hair, Black, Babin, Anderson, & Tatham, 2011). The results show the seven underlying dimensions of risk perceptions with a total of 65.36% of the variances extracted from analysis. Factors with an eigenvalue above 1 were included in the analysis (Huck, 2012). Of the 60 indicators, 24 were removed because they loaded below 0.50 (Hair et al., 2011). Kaiser-Meyer-Olkin (KMO) valued at 0.98 and Barlett's Test of Sphericity was significant at 0.000. All indicators performed a value above 0.92, approving that the factors were sufficiently correlated. With an exception, three indicator communalities valued at below 0.5. (ghosts, airport and deep empathy to victims), yet they were retained as their factor loading (>0.5) satisfied the rule of thumb by Hair et al. (2011).

The purpose of the present research is to utilize a bottom-up approach to examine the underlying travel risks associated with natural disasters. The result, as shown in Table 3, identified an interesting finding comprised of a classification of seven perceived risk factors associated with a natural disaster context. With an exception of mythical beliefs, all factors show their high internal consistency (Cronbach's $\alpha > .85$, $n = 605$). However, according to Martin, Mullis, Foy, and Arora (2012) and Nunnally (1967), the two items extracted in the Exploratory Factor Analysis (EFA) it is still acceptable

Table 3. The seven travel risk factors associated with a natural disaster context.

Items	Communalities	Loading	Eigen value	% of variance	Cronbach's alpha
Factor 1: Government preparedness					
The unpreparedness of government disaster management	.721	.761	25.405	43.802	.927
The unprofessional earthquake recovery	.681	.744			
The uncooperative behavior of the local people during an evacuation	.545	.667			
The unavailability of quake shelter	.635	.633			
The malfunction of tsunami alert warning	.558	.569			
Difficulties finding accommodation & transportation post-earthquake	.635	.555			
Lack of police task forces and government roles in developing safety procedures	.541	.545			
Lack of information on the construction of non-seismic resistant building	.651	.536			
Unavailability of logistic (food and basic needs) post-earthquake	.622	.509			
Unavailability of travel warnings	.651	.503			
Factor 2: Helplessness					
The family members/loved one dying or injured	.688	.717	2.881	4.968	.890
The family members will worry about me	.668	.693			
Unable to save a family member during disaster	.707	.665			
Get trapped in a building or lift during disaster	.597	.587			
The unavailability of clean water post-earthquake	.632	.570			
Disconnection of telecommunication network post-earthquake	.607	.528			
Negative feeling (deep sadness) seeing earthquake victims and their family	.452	.516			
Factor 3: Tsunami					
Doing beach tourism	.675	.766	2.508	4.324	.866
Large hotels are not safe	.653	.727			
Visiting a coastal town	.654	.713			
The traumatic experience of seeing pictures/movies of a tsunami in the media	.690	.587			
Factor 4: Feeling Trapped					
Unable to escape/save others	.809	.756	1.775	3.060	.916
An earthquake will happen while I am asleep/during the night	.790	.699			
No-one will help me	.730	.665			
My remains can't be found/recovered	.688	.647			
Get separated from my family members during an earthquake	.710	.538			
Factor 5: Earthquake Anxiety					
To hear the cries from earthquake victims if an earthquake struck	.699	.678	1.661	2.863	.897
The chaotic situation if an earthquake hits	.748	.612			
To hear the sound of rumbling earthquake	.661	.601			
Inadequate information on cracked building caused by previous earthquake(s) which makes me feel unsafe	.665	.519			
The sudden emergence of an earthquake	.686	.513			
Factor 6: Mitigation Awareness					
The lack of information of tsunami-free zone	.548	.548	1.468	2.532	.840
The obscure information on disaster mitigation from government	.514	.514			
Not knowing the earthquake evacuation route followed by tsunami warning	.507	.507			
Factor 7: Mythical Beliefs					
The airport is close to the beach	.438	.661	1.204	2.076	.650
Ghosts/mythical creatures in post-earthquake hotels	.489	.516			

Extraction Method: Principal Axis factoring
Rotation Method: Varimax with Kaiser Normalization
Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .968, Barlett's Test of Sphericity: 25,141.987, p = .000
Source: Lenggogeni (2014)

for a new scale development, thus it was retained (Martin et al., 2012; Nunnally, 1967).

The first group was Government Preparedness. This factor consists of 10 risk indicators of the government's functions in disaster management ranging from working with the community, disaster mitigation and recovery plans, which includes infrastructures. **The second group** was Helplessness. This factor has seven risk indicators that express respondents' emotional concern about their own safety, as well as fear of being separated from their family members in a disaster. **The third group** was Tsunami. This factor (covering four indicators) represents respondents' fear for beach activities and imaging in tsunami trauma. **The fourth group** was Feeling Trapped. This factor consists of four indicators that reflects respondents' psychological fears concerning escape, rescue, and survival in a disaster. **The fifth group** was Earthquake Anxiety. The five indicators retrieved in one factor expressed respondents' concerns about the horrific feeling of earthquake situations. **The sixth group** was Mitigation Awareness. This factor, which includes three indicators, describes respondents' worries about disaster management and mitigation information systems at the destination. **The seventh group** was Mythical Beliefs. It includes two indicators that represent the fear of respondents about mythical beliefs associated with ghosts in affected destinations.

Discussion

The bottom-up approach proposed in this present study enables the researcher to gain an in-depth insight of the domestic tourists' concern when they visit a disaster-prone destination. Since the majority of travel risks studies adopt the six general risk types from marketing literature, the present study's goal is to investigate whether these travel risks remain existent when the domestic tourists were asked to identify their travel risks when planning a vacation to a natural disaster – prone destination. By utilizing this method, this study demonstrates that travel risk is multidimensional and strongly determined by the context of destinations or disasters, as proposed by Dolnicar (2005) and Ritchie (2009).

Seven groups of travel risks associated with natural disasters were identified in the domestic travel market of West Sumatra, Indonesia. Although some of the risks found in the marketing literature overlapped, they did not provide an accurate reflection of the travel risks in the context of natural disaster. Thus, a bottom-up approach has proven to be valuable for identifying risk perceptions. The following is a discussion of the seven travel risk types associated with natural disasters resulted from this study in descending order of importance.

1) Helplessness

"Helplessness" was the underlying risk that raised as the most concerns for domestic tourists. It represents psychological risk (Kaplan et al., 1974) because this risk type has a negative effect on travelers' "peace of mind". This study identified that "helplessness" stresses "negative emotion" as a substantial element in formulating psychological risks related to tourists' loved ones and family in a disaster. This finding supports Lehto, Douglas, and Park's (2008) study that a possibility of different feelings could emerge when tourists are affected by a natural disaster. Examples of "helplessness" include anxiety over the possible death of a loved one, negative feelings (sadness) upon witnessing disaster victims, concerns about how family members fear the travelers' safety as well as the suffering of their families. To some degree, an in-depth element of psychological risk (Mitchell, 1992) from marketing literature was shown in this risk dimension. In this case, the "negative emotions" identified in this finding are seen as fundamental aspects that construct the psychological risk in the context of natural disasters and it is most likely that this feeling may emerge during events concerning natural disasters. Thus, this finding supports Breakwell's (2007) study, which shows that emotional states, such as unhappiness or grief, stimulate risk assessment in various types of circumstances.

(2) Feeling Trapped

Tourists also considered "feeling trapped", or discomfort, as one of the psychological risks associated with travel (Kaplan et al., 1974; Mitchell, 1992). It is interesting to note, while both "helplessness" and "feeling trapped" represents a psychological risk (Mitchell, 1992), the latter research expressed more tourists' nervousness about being trapped in a disaster. That is a "situation" identified is a fundamental aspect that formulated psychological risk, specifically when it comes to a destination that has a high risk of being plagued with natural disasters. Consistent with Huan's (2007) study, this finding shows the fear of being stuck in a disaster is most likely to develop in "non-escapable" natural disasters. For example, this risk factor found that tourists are afraid about being separated from loved ones in a disaster because they did not have time to escape; or having the inability to save other persons or to escape; and about the situation of being caught in a disaster during the nighttime. One example of separation was reported by Henderson (2005), who found a family member was separated during the massive Indian Ocean tsunami of 2004 in Thailand. There is a chance that this risk emerged because of the probability of a tsunami arriving 15 min after an earthquake occurred in Indonesia due to its location (Rittichainuwat et al., 2018). These studies proved that the anxiety of being trapped in a disaster is an underlying risk for tourists when they plan to visit a destination with high risk of natural disaster.

(3) Mitigation Awareness

The "mitigation awareness" was ranked as the third travel risk factor in this study. This is a rather surprising finding because this result was not found in the marketing literature risk inventories. This factor shows that inadequate "information" in regards to mitigation reflects one of the most concerns for domestic tourists prior to their visit to a destination prone to natural disasters. Their concerns are mainly focused on "lack of information of tsunami-free zone", "lack of knowledge about tsunami warning system and tsunami evacuation routes" as well as "vague knowledge on disaster mitigation by local authorities". This finding demonstrated the importance about having disaster mitigation information that can be very helpful for domestic tourists when

planning a vacation to a natural disaster-prone destination. This study confirms Lindell and Prater's (2010) finding about the importance of having information on "protective action implementation" prior to visiting a high-risk destination. For example, the tsunami safety zones sign or information. Another example that supports this study is Murakami, Takimoto & Pomonis' (2012) study. Their finding highlights that inadequate information about mitigation in the Natori city in Japan resulted in a large number of deaths during a disaster. Consistent with Rittichainuwat et al. (2018), this finding demonstrates that the knowledge of tsunami safety precautions can affect travelers' coping behavior in a tsunami-prone destination. Therefore, this event places an emphasis on how mitigation awareness is crucial for tourists when it comes to natural disaster-prone areas.

(4) Government Preparedness

The current study found that "government preparedness" is the fourth-ranked travel risk and one of the concerns for domestic tourists. This risk type is mostly relevant to "equipment risk" by Roehl and Fesenmaier (1992) or "performance risk" by Kaplan et al. (1974) and Mitchell's (1992). This risk reflects that the failure of mechanical and low performance of organization leads to the dissatisfaction of tourists. For example, the tourists' "distrust" and inability to cooperate with stakeholders during a disaster.

One of the interesting findings in this study is tourists perceived that the poor maintenance of mitigation infrastructures (earthquake shelters and tsunami alert warning tools) that are crucial to saving tourists' lives highly influence their risks prior to their visit to high-risk destination. This present finding is consistent with Rittichainuwat's (2013a) study that identified well-functioning tsunami alert warning systems as well as mitigation equipment at beaches are critical for tourist safety in a high-risk tsunami destination. Moreover, Samarajiva (2005) argued that intergovernmental responsibility should be improved in the future considering tsunami warning system did not work in several countries in the past, such as the case of the 2004 Indian Ocean tsunami. Hence, the distrust of this study's finding on how the government's performance is included in the list of travel risks is not a surprising issue.

Another important finding is the role of local people's "cooperation" where community participation and responsibility after a disaster was seen as an important factor for domestic tourists. This is consistent with Said, Mahmud and Abas' (2011) study that claimed the importance of local people's cooperation in the aftermath of a disaster, such as tsunamis, is vital to the recovery process. In addition, Tsai, Wu, Wall, and Linliu (2016) stressed the community who used to live in a high-risk area of natural disaster are more aware to the threat of potential natural disaster; thus, the government-tourist-community collaboration should not be detached from disaster recovery plan. Therefore, by utilizing a bottom-up approach, the present study has extensively discovered the diverse elements of performance risks, particularly in a natural disaster context. The possible explanation for this might be due to the devastating effect of the Indian Ocean tsunami 2004, which increased the level of public awareness on the importance of crisis management in Indonesia (Rittichainuwat et al., 2018).

By taking a bottom-up approach this study demonstrated that performance risk is a broad element that is viewed at different stages of a disaster. It is interesting to note that "the government preparedness" dimension that emerged as a major concern for tourists, as identified in the qualitative study and evident in the subsequent quantitative study. For instance, the well-functioning mitigation infrastructure, such as a tsunami alert warning system and a quake shelter, was developed in both methods. Interestingly enough, tourists did not only seek the police for their safety during a disaster, as they also sought the solidarity of local people in the recovery process. In the aftermath, the difficulties in finding lodges as well as inadequate logistics emerged as tourists' concern in the recovery process. These findings probably developed because of previous disasters experienced by our respondents across both our methods. Such disaster experiences contribute to travel risks in different time periods of disasters. Therefore, these results are consistent with Faulkner (2001) and Ritchie's (2004), who stressed the role of local authority in managing mitigation problems is critical particularly in a developing country context.

(5) Earthquake Anxiety

The "earthquake anxiety" identified as the fifth travel risk rated by domestic tourists in this study. This risk, however, not only represented a new dimension of travel risk but also shows the propensity of combining two underlying risk dimensions retrieved from marketing literature is plausible. This risk not only represents psychological risk, such as impeding the travelers' "peace of mind", but also stimulates physical safety during a vacation (Roehl & Fesenmaier, 1992). Both "tsunami" risk and "earthquake anxiety" typically represent two risk dimensions from the marketing literature (psychological risk and physical risk) (Kaplan et al., 1974; Mitchell, 1992). This

finding shows the likelihood of risk dimensions to combine.

Similar to "feeling trapped" and "helplessness", this risk dimension also includes "situation" and "emotion" elements. One of this risk's indicator, "hearing cries from an earthquake victim", is an example of an element that may elicit a negative emotion during a disaster. Furthermore, this category highlights that the chaotic situation during earthquake, or anxiety to hear the sound of a rumbling earthquake, compiles the psychophysical risk in the context of a natural disaster.

Clearly, this category portrays that tourists face a phobia in regards to future or potential earthquakes, particularly in destinations that are frequently affected by earthquakes or disasters, strengthening Karanci and RUStemli' (1995) study. Equally relevant, as Zhu, Xie, and Gan (2011) emphasized, the high likelihood of an earthquake striking in this city was perceived by residents in Mianzhu before the earthquake hit this city. Therefore, "earthquake anxiety", a psychophysical risk found in this study, is an inevitable risk for tourists when they plan to visit an earthquake-prone destination.

(6) Tsunami Risk

The sixth-ranked travel risk of concern for domestic tourists is "tsunami risk". Equally relevant with "earthquake anxiety", the "tsunami" risk type presents a combination of physical and psychological risk categories from marketing literature. On the contrary, unlike "earthquake anxiety", "tsunami risk" stresses tourists' fear about potential tsunami hazards. This factor involves indicators such as large accommodation, avoiding coastal activities, and experiencing post-traumatic syndrome distress due to the overexposure of news and images by the media in regards to the Aceh tsunami in 2004.

In the same way, as "earthquake anxiety", this finding highlight that a single risk dimension is potentially subsumed by two elements of psychological risk, "memory" and "location". A possible explanation for this might be that both of these aspects could result in physical danger for tourists. For example, visiting coastal destination and beach activities could very well influence tourists' physical risk, with fears of injury or death due to a tsunami.

Therefore, this finding highlights that beach safety regulations are crucial to tourists, particularly in regards to their accommodation (Rittichainuwat, 2013a). This result is consistent with Rittichainuwat's (2013a) research, which confirmed that there is a tendency for inbound tourists to avoid beaches affected by the tsunami in Thailand. An interesting finding by Rittichainuwat et al. (2018) provided a reason for this risk. Their study confirmed that the majority of Indonesian domestic travelers perceived a higher probability of a tsunami due to the country's position in the Ring of Fire and their experience related to the 2004 Indian Ocean tsunami.

(7) Mythical Beliefs

The last travel risk dimension developed from this study can be, very interestingly, "the presence of ghosts" at a post-disaster area, namely "mythical beliefs". This is a new risk that not included in the six basic risk types from the marketing literature (Mitchell, 1992; Roehl & Fesenmaier, 1992). This factor reflects that the cultural context (Reisinger & Mavondo, 2005) cannot be detached in determining tourists' risk. Ghosts, as described by Bryant (2003) are a reincarnation of the soul or spirit from an ancestor or a dead body. Sjöberg and Wåhlberg (2002) emphasized that the belief of ghosts, usually associated to paranormal activities or folk superstition, is closely related to religious philosophies, like Confucianism, Buddhism, Yin-Yang and Taoism (Huang et al., 2008; Ladwig, 2012), and they are culturally diverse. In general, Asian countries are more accepting when it comes to the believing in ghosts, as found by Rittichainuwat (2011) in the affected destination after the tsunami that hit Thailand. This is reinforced by Huang et al. (2008), who stressed the belief in ghosts affected the risk perception of Asian tourists in Taiwan. Hence, the mythical beliefs represented as a cultural context, however, should not be neglected in Asian countries. This is the new risk that is considered as an important aspect in cultural risk.

Conclusion

This study was undertaken to design an appropriate method to explore a deeper insight of travel risks inventories in the context of natural disasters. Using a bottom-up approach, two conclusions can be drawn. First, this study has shown that the risk perception inventories from the marketing literature are not always validated, as identified in the context of natural disaster. Three of the six risk dimensions from the marketing literature were evident in this research: psychological risk, physical risk, and performance risk. Surprisingly, the other three risk types, financial risk, time risk, and social risk, were not considered relevant by domestic tourists traveling to a destination prone to natural disasters. Therefore, travel risk is context-specific.

It is somewhat interesting that the three risks that were not valid in the context of a natural disaster were likely to have a profound effect in the other contexts and destinations. For instance, in the context of Israel's political instability, social and financial risks shape the

tourists' travel risk perceptions (Fuchs & Reichel, 2006; Reichel et al., 2007). Meanwhile, Rittichainuwat and Chakraborty (2009) found financial risk to be important, in the contexts of terrorism, bird flu and SARS in Thailand. This is apparently because domestic travel expenditure and time expense is relatively lower than international travel depending on travel distances and types the types of decisions made by travelers. Mitchell (1999) argued that consumers used to have complex buying behaviors in the high involvement purchase behavior such as International travel. For instance, tourists will be more selective when it comes to their purchase behavior when they plan their tourist destinations because it could lead to financial loss. Nevertheless, domestic tourists apparently use their habitual buying behavior because their buying engagement (Mitchell, 1999) for traveling is relatively low. Hence, it is possible that time, social and financial risks are probably neglected by domestic tourists. This result further supports the idea of Ritchie (2009) and Sharifpour (2012), who stressed that travel risk inventories are determined by contexts or destinations types, making it perfectly clear that the six risk dimensions in marketing literature are less likely applicable to all tourism contexts.

Second, this research identified that a single dimension of travel risk emerged across different risk groups, for example, those found in "earthquake anxiety", "mythical beliefs", or "helplessness". Whilst they appear to be inconsistent, the finding is formed based on travelers' perspective-based explorations. This finding reflects those of Fuchs and Reichel (2006) who also found that weather and food safety were subsumed under a single dimension in the case of tourists visiting Israel. Clearly, risk perception is a broad and "fuzzy concept" (Sheng-Hshiung, Gwo-Hshiung, & Kuo-Ching, 1997). This is strengthened by Dolnicar (2005, p. 205), who claimed that risk classification is "highly multifaceted and cannot be subsumed under a single heading or measured by a single item".

In summary, this exploratory research is one of the first to investigate travel risk using a bottom-up approach in the natural disaster context. It extends our knowledge of the importance of physical, cultural, performance, psychological, and psychophysical risks, also the introduction of "Information risk" a new dimension in tourism marketing literature. It is interesting to note that this information travel risk, which has not been identified in the basic risk types of marketing literature, is evident in a destination prone to natural disasters in a developing country. It can therefore be assumed that by taking a bottom-up approach, further evidence of in-depth insight of risk concepts associated with natural disaster context in a developing country is discovered. This study also reinforces the knowledge that the basic risk inventories from the marketing literature may not always formulate as a single factor. Instead, these risks are most likely to be incorporated into two factors. Clearly, this method has proven that the basic risk inventories in the marketing literature are insufficient (e.g. Floyd et al., 2004; Sönmez & Graefe, 1998b) and that new risks, such as cultural and information (Reisinger & Mavondo, 2006; Rittichainuwat, 2011), may also develop. Above all, the bottom-up approach extends the knowledge of risk dimensionalities such as "distrust", "equipment", and "cooperation" in performance risks, "negative emotions", "situation", "memory" for psychological risks, "beliefs" in cultural risks and "location" in physical risks. Therefore, this approach – despite its complexity – provides a better research direction for further analysis (i.e regression-based studies) on traveler behavior research center on risk perceptions, as it provides a real insight of travel risks determined by tourists rather than simply borrowing the basic risk inventories from the marketing literature.

Implications and future research

By carrying out a multiple method using a bottom-up approach, this study confirms the theoretical contribution in tourism disaster and crisis management literature. **First**, since the impact of climate change in the tourism industry has been more profound in the last decade, studies investigating the tourist behavior center of travel risks in countries that were actually hit by natural disasters are underdeveloped. By taking a bottom-up approach (Jiang et al., 2019; Simpson & Siguaw, 2008), this study provides a deeper insight of the seven travel risk dimensions in the natural disaster context. **Second**, this research demonstrated that the basic risk inventories in the marketing literature (Brooker, 1984; Kaplan et al., 1974; Mitchell, 1992) that are broadly employed by tourism scholars is inadequate. Rather, this study provides additional evidence that new travel risks, aside from those identified in the marketing literature, are most likely to develop. For instance, information and cultural risks, which could possibly present a deeper understanding and reveal further aspects of each of the dimensions of travel risk. **Third**, this study confirms that travel risk is destination-specific (Rittichainuwat et al., 2018). Information, as well as cultural risk (Reisinger & Mavondo, 2005), are new risks identified in the context of natural disasters, thus these findings improve the risk inventories from marketing literature. **Fourth**, the combination of two methods allows us to gain a much better understanding of

risk perception in a non-Western context. **Finally**, using a bottom-up approach, this study suggests that integrating the two different risks under a single dimension is plausible.

The present study also implies the practical contribution that the government's actions to better understand on disaster preparedness and recovery plan as well as managing tourism's vulnerability to natural disaster in a developing country is crucial in order to avoid the tourism downturn. **First**, the case of West Sumatra, Indonesia, a region with a record of thousands tragic loss of life due to the September 2009 earthquake and followed by massive tsunami in near future (Imamura et al., 2012; Schlurmann, Kongko, Goseberg, Natawidjaja, & Sieh, 2010), demonstrates that tourists would most probably avoid destinations and tourism industries in coastal areas. **Second**, this research extends our knowledge that that government's poor management of disasters has raised concerns for domestic tourists. Therefore, the government considerably needs to enhance its crisis and disaster marketing communication plan, as this has been found to be an important issue for travelers. **Third**, this study suggests that the government is encouraged to improve its infrastructure for disaster mitigation and maintenance of threats from earthquakes and tsunamis in the future. **Fourth**, these findings provide important insight into that a government-community-tourist collaboration action plan is practically important, as it could lead to having a better understanding on how to enhance the safety of a destination. **Fifth**, the government and tourism industry need to be well prepared in regards to a disaster recovery plan, such as logistics and basic needs, medical assistance, the management of evacuation lodges, clean water and recovery of public service. Equally important, the government also needs to better prepare the mitigation procedure for accommodation and other elements in the tourism industry. For instance, by providing a booklet that serves as a guideline for mitigation procedures or information signs, as supported by Rittichainuwat (2013a). Overall, all stakeholders need to consider establishing better collaborations in the future in order to further assess long-term planning for this industry. Most importantly, the marketing strategy should not be detached from the local cultural context involving values, norms and religious point of views.

Because this study is valid for research with the natural disaster context, caution must be applied, as the findings may not be generalizable to a broader range of other contexts of crises and disasters. Since this research was carried out in the destination that experienced four natural disaster risk cases (tsunami, earthquake, landslide, flood), it might not be applicable to other destination with a single context of disasters. By taking a bottom-up approach that provides a better insight of risk perceptions, further works are required to confirm and validate these results and investigate their role in other travelers' travel intentions and actual behavior. A replication using a quota sampling to minimize a potential bias in a non-probability sampling can serve as potential research in the future. In addition, replications for future study are necessary using a pre, on-site, and post-test for a more methodologically sound research.

Disclosure statement

No potential conflict of interest was reported by the authors.

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