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Crisis, Risk, and the Tourist: Understanding Guest Perception of Risk-Based Segmentation in the Post Crisis Destination in Indonesia

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Abstract

This study presents a comprehensive approach to segmenting tourists based on their risk perceptions. It recognizes the importance of understanding tourism segmentation in the context of changing tourist behaviors following the health crisis in a destination. While research on risk perception and tourist segmentation is growing, there still needs to be a gap in investigating risk perception as a basis for segmentation, particularly in the post-COVID-19 era. The study employed a mixed-methods strategy; data were collected through focus group discussions (FGDs) and extensive field surveys involving both domestic and international tourists. The FGDs engaged eleven participants, while the main survey included 568 respondents. The study identifies 21 distinct risk perception items influencing hotel decision-making processes. It utilizes cluster analysis to categorize tourists into four segments: *The Performer* (engaging in leisure without perceived pressure), *The Valuator* (seeking leisure experiences based on perceived value for money), *The Avoider* (preferring private and secluded leisure pursuits), and *The Hesitator* (experiencing leisure under perceived pressure). This research contributes to the evolving theory of risk perception by proposing 21 indicators categorized into five dimensions. Furthermore, those

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items are developed as the basis of tourist segmentation in the postcrisis situation. This is one of the few study that conduct tourist segmentation based on multi-items of risk perception. Hotel managers and accommodation owners can tailor their promotional strategies to target specific segments and address their needs based on perceived risks in leisure activities.

Keywords: *risk perception, perceived risk, tourist segmentation, post-pandemic, tourist behavior*

Resumen

Este estudio presenta un enfoque integral para segmentar a los turistas en función de sus percepciones de riesgo. Reconoce la importancia de comprender la segmentación del turismo en el contexto de los cambios en los comportamientos turísticos tras la crisis sanitaria en un destino. Si bien la investigación sobre la percepción del riesgo y la segmentación turística está creciendo, todavía es necesario que haya un vacío en la investigación de la percepción del riesgo como base para la segmentación, particularmente en la era posterior a la COVID-19. El estudio empleó una estrategia de métodos mixtos; Los datos se recopilaron a través de discusiones de grupos focales (DGF) y extensas encuestas de campo en las que participaron turistas nacionales e internacionales. Los grupos focales involucraron a once participantes, mientras que la encuesta principal incluyó a 568 encuestados. El estudio identifica 21 elementos distintos de percepción de riesgo que influyen en los procesos de toma de decisiones de los hoteles. Utiliza un análisis de conglomerados para clasificar a los turistas en cuatro segmentos: el ejecutante (que participa en actividades de ocio sin percibir presión), el valorador (que busca experiencias de ocio basadas en la relación calidad-precio percibida), el que evita (que prefiere actividades de ocio privadas y aisladas) y el que duda. (experimentar ocio bajo presión percibida). Esta investigación contribuye a la evolución de la teoría de la percepción del riesgo al proponer 21 indicadores categorizados en cinco dimensiones. Además, dichos rubros se desarrollan como base de la segmentación turística en la situación poscrisis. Este es uno de los pocos estudios que realiza una segmentación turística basada en múltiples elementos de percepción de riesgo. Los administradores de hoteles y propietarios de alojamientos pueden adaptar sus estrategias de promoción para dirigirse a segmentos específicos y abordar sus necesidades en función de los riesgos percibidos en las actividades de ocio.

Palabras clave: *percepción de riesgo, riesgo percibido, segmentación turística, pospandemia, comportamiento turístico*

1 Introduction

The COVID-19 pandemic has significantly impacted travel and tourism sector which has forced a rethinking of leisure time pursuits in a post-pandemic environment (Wadhar et al., 2023). People are looking for novel and modified pastimes that promote safety, well-being, and meaningful experiences as the world gradually heals and travel limitations loosen since the outbreak in 2020. However, some consumers had a limited selection of options for how to spend their time; some saw a dramatic increase in leisure time, while others saw a sharp reduction owing to care duties (Feder et al., 2023; Youn et al., 2021). In May 2023, the World Health Organization (WHO) declares that COVID-19 is entering a new phase as an endemic globally. However, the impact of this pandemic still threatens human life in many sectors, including in the hospitality and leisure industry. Some scholars predicted that tourism and leisure activities will differ from before the pandemic (Gennings et al., 2023; Maulana et al., 2022; Zheng et al., 2021).

For the example, the dissatisfaction on health protocol implementation in the tourist destination (Mellinas et al., 2023) has significantly reduce the leisure activities of visitors in a theme park in China during the zero-COVID-19 policy in the country. Furthermore, some studies also predicted behavioral changes among the tourist and local people in the destination. A study also found not only general decline in trust but also, concurrently, a rise in mistrust towards travel destinations, as shown in the activities, institutions, and risk-reduction strategies of the public sector, the healthcare industry, and the tourism industry in the specific country destination (O'Malley et al., 2022). Distrust between local resident and tourist is also raising during the tourism recovery in the post COVID-19 pandemic (Woosnam et al., 2023). It is needed to improve significance understanding on resident-tourist nexus as a precursor to the postcrisis tourist experience and sustainable tourism recovery as a whole. The resident-tourist interaction emerges as a vital post-crisis discourse in this post pandemic era (Matiza, 2023). Tourist behavior will be changing and adapting new normal situation in this post-pandemic era (Sánchez-Cañizares et al., 2021; Wadhar et al., 2023).

Hence, to better understand tourist behavior in purchasing leisure choices after the pandemic, a study of risk perception on leisure activities shall be conducted. The worldwide pandemic has increased our knowledge of health risks, causing a dramatic change in how we perceive risks associated with leisure activities. People are more concerned about potential health risks, especially in crowded and enclosed areas (J. Yang et al., 2022). How we perceive risk is impacted by psychological and subjective factors in addition to objective ones (Aebli et al., 2021). Even when

the real danger is low, the epidemic's fear and anxiety may cause an exaggerated impression of risk. Regardless of the danger involved, this psychological effect might affect people's willingness to partake in leisure activities (Abadi et al., 2021).

Risk perception is of the utmost importance in the hospitality industry since it directly impacts how customers make purchases. Tourists evaluate the risks of participating in leisure activities such as water sports, adventure journeys, spa treatments, hotel stay vacation, and dining experiences. Understanding how tourists perceive risk helps design and present activities that align with their comfort zones, delivering a pleasurable and positive experience (Bratić et al., 2021).

In order to provide enjoyable and memorable guest experiences, the hospitality industry should understand the connection between leisure activities and risk perception (Secchi et al., 2020). Hospitality providers can control and reduce their visitors' perceived risks by identifying the elements that affect risk perception, improving safety procedures, and implementing effective communication strategies (Volgger et al., 2021). This stimulates greater engagement in leisure activities, increases trust, and enhances guest satisfaction. Providers may make sure that leisure activities match guest preferences and risk perception by regularly reviewing and adjusting their offers based on customer input, thereby improving the overall visitor experience in the hotel business (Salem et al., 2021).

1.1. Indonesian Tourism Amidst the Pandemic

Tourism has been one of the priority sectors in Indonesia for the past decade. This sector is considered to have a sizeable economic linkage to contribute significantly to the national economy (Haryana, 2020). Based on the data in 2019, among the top industries in Indonesia, tourism contributes around 5.8% to the national GDP (Gross Domestic Product). It is a labor-intensive sector that provides a wide range of employment, from small business enterprises to multinational corporations (Pham & Nugroho, 2022). However, Indonesia's tourism industry has been fragile since the mobility restriction to prevent the COVID-19 outbreak in March 2020. A few weeks after the social distancing and mobility restriction policy, several hotels and restaurants started to reduce their operating budget and even lay off their employees to keep the business running. Tourism is dying and facing the fatal impact of the pandemic.

Bali, one of the most popular tourist destinations in the world, has had the most significant impact on the pandemic in the country. Since the primary GDP of the Bali island relies on tourism, the

business in Bali and other areas of Indonesia are also experiencing high turbulence by the COVID-19 pandemic (Japutra & Situmorang, 2021). Ministry of Tourism and Creative Economy (MTCE) in Indonesia records that the number of international tourist arrival during 2020 is decreasing to -74% compared to the data in 2019. This condition continues where the international visit is still unfavorable, with only 140.845 arrivals in June 2021 and slowly increasing to 212.332 arrivals in May 2022. Meanwhile, in May 2020, the first quarter of the COVID-19 outbreak in Indonesia, the international tourist arrival was 161.842.

In early 2022, the Indonesian government started to reduce the mobility restriction since the COVID-19 vaccination program has widely distributed across the country. The local authorities are permitting public gatherings and social events in public spaces. Moreover, in March 2022, Indonesia was also hosting the Mandalika MotoGP Grand Prix, attracting more than 100.000 audiences from all over the world. Furthermore, not long after the international event, Indonesia also started hosting several pre-events as part of the G20 summits that has been held in Bali in December 2022. Starting mid-year, ministeriales meetings and conferences with international dan domestic participants have been held in several cities in Indonesia. Since then, the tourism sector has been rapidly growing amidst the ease of the pandemic. The number of foreign tourists arriving in Indonesia is increasing. Although the health protocol is still mandatory (temperature check, mask-wearing policy in public spaces, and a minimum of three doses of COVID-19 vaccination), the tourism sector shows positive signs of better condition.

In order to motivate people to engage in leisure activities, it is essential to comprehend these psychological elements and deal with them through efficient communication and risk management techniques. Thus, this study proposes the following research questions; *does tourist has different kind of risk perception in the post-pandemic era? What kind of tourist segmentation can be resulted based on those risk perception dimensions?*

It is necessary to categorize tourists depending on their perceived risk in the post COVID-19 pandemic context. It allows tourism practitioners to develop a targeted marketing strategy and travel choice prediction, the creation of efficient risk mitigation methods, the management of capacity and resources, the creation of crisis response plans, and an improvement in safety and satisfaction levels. Destinations and companies may better meet their demands, boost engagement, and produce a happy and secure leisure experience by comprehending and resolving the different risk perceptions of tourists in the different cluster of segmentation.

This study is aimed to develop an understanding of hotel consumer behavior in the context of customer decision-making. During the COVID-19 pandemic, the author argues that several factors influence hotel customer decision-making, such as health risk perception toward the pandemic crisis. Hence, in understanding hotel customer decision-making, it is crucial to cluster them into several groups to investigate their preferences. Hence, following those key concepts, this study would elaborate more on the hospitality decision-making behavior and the tourist perception that influences their travel behavior.

2. Literature Review

2.1. Risk Perception in Tourism Study

Understanding risk in the tourism and hospitality context is essential to propose a new paradigm for boosting tourism development amidst the global crisis. However, defining risk in tourism is challenging in the literatures. Yang & Nair (2014) investigated the literature development toward risk, safety, and security in the past two decades and summarized an overlapping definition among those three terminologies in risk-related publications. Some scholars refer to tourist safety and security as a subset of risk, while other scholars define security as the concept of being free from risks (E. C. L. Yang & Nair, 2014). The study also defines security in tourism as related to the uncontrolled situation such as riots, terrorism, war, criminals, and civil/political turmoil. Meanwhile, safety in tourism is related to the health issue, diseases, accidents, natural disasters, and other non-human induced incidents. In this paper, both security and safety are defined as part of the risk in tourism and hospitality in the broader context.

Since actual risk is challenging to measure, most research focuses on risk perception or perceived risk as the main topic of analysis. The process of perceiving risk is multifaceted and is subject to the effect of diverse elements, including personal experiences, emotions, and societal influences. According to Slovic, risk perception is not exclusively determined by objective knowledge, but is also influenced by individuals' innate instincts and emotions, which have developed over the course of evolution to efficiently evaluate situations with significant hazards (Slovic, 1987). Moreover, He also underscores the notion that emotions possess a high level of complexity as a kind of intelligence and hold significant importance in the process of making decisions pertaining to health and safety issues (Peters et al., 2006). Slovic's research also highlighted the intricate nature of risk perception and reveals that individuals' assessments of risks are frequently shaped by psychological and emotional elements that extend beyond a purely rational examination of statistical

data. The aforementioned findings have substantial ramifications for the manner in which risks are conveyed to the general public and the approach policymakers choose in dealing with risk-related matters. The research highlights the significance of comprehending and tackling these psychological variables in order to communicate risks and make well-informed decisions in an effective manner.

In some veins, the study of Plog (2002) regarding risk perception and venturesomeness may also important to be discussed in understanding this topic. Venturesomeness is one personality characteristic that affects how people perceive and react to risks, especially those associated with tourism (Plog, 2002). Highly adventurous people may be more likely to partake in risky activities while traveling, such as extreme sports, exploring foreign locales, or trying novel and unexpected experiences. In this context, the situation of venturesomeness in purchasing leisure activities amidst the global pandemic situation may be related. The relationship between venturesomeness and risk perception is complicated and individualized. It's also important to note that new research or advancements might be important to investigate the current context of this topic.

However, several studies have measured the role of risk perception toward tourist purchase intention in this pandemic context. For example, the study on risk perception and revisiting intention toward a specific destination (Wadhar et al., 2023), the analysis of perceived risk in hotel booking (Pham Minh & Ngoc Mai, 2021), Xenophobic tourism after the pandemic (Abadi et al., 2021; Matiza, 2023), the change of travel habit among domestic tourist in Thailand (Prommakhot et al., 2023), and also the study on the at home impacts health risk perception of an international destination and a public venue based on psychological aspects (Chan, 2023). Those articles investigated the role of risk perception in tourist behavior in various contexts and research objects during and the post pandemic situation. Nevertheless, interestingly, in each publication, the authors propose various approaches to defining risk perception factors and dimensions.

Risk perception refers to the negative consequences or impact that may occur during travel or tourism activities, and it consisted of multiple dimensions. Cui et al (2016) argued that there are three approaches to understanding the dimension of risk perception, whether implementing five, six, or even seven dimensions of risk perception. The five dimensions of perceived risk consist of Psychological risk, Financial risk, Performance risk, Health risk, and Social risk. Meanwhile, six dimensions of perceived risk are Performance risk, Physical risk, Financial risk, Psychological risk, Social risk, and Time risk. The last approach adopts seven dimensions of risk perception; Physical

risk, Economic risk, Equipment risk, Social risk, Psychological risk, Time risk, and Opportunity loss. Various approaches to measuring risk perception in the context of tourism increase the variety of schools of thought in understanding risk in the tourism crisis (Cui et al., 2016). However, the multidimensional approach to risk perception implementation still needs to be improved, especially in the various context of the tourism crisis. In this study, the authors investigate the implementation of risk perception as the basis of tourist segmentation after the global crisis during the COVID-19 pandemic.

2.2. Risk Perception Measurement Model

The authors summarized several risk items from previous publications based on the literature review. Zhan et al (2022) identified and categorized thirteen risk items across four distinct dimensions of risk (health risk, financial risk, social risk, and performance risk). The dependability of all risk dimensions within each group of items has been shown to be satisfactory, as evidenced by a Cronbach alpha value exceeding 0.9. This indicates a high level of consistency in the ability of these dimensions to describe tourist risk perception during the initial phase of the pandemic (Zhan et al., 2022).

In another study, Yildirim and Guler introduced the COVID-19 Perceived Risk Scale (CPRS) as a psychometric tool designed to evaluate individuals' susceptibility to the COVID-19 pandemic. The study provided a concise overview of eight risk perception items, which were classified into two distinct dimensions: the Cognitive Dimension and the Emotional Dimension (Yıldırım & Güler, 2020). In contrast to the CPRS, Zenker (2021) has introduced the Pandemic Anxiety Travel Scale (PATS) as a tool for researchers to assess the level of risk perception associated with COVID-19 among individuals who engage in travel. The study presents a novel approach to assessing the impact of the pandemic on individuals' anxiety related to travel, utilizing a five-point scale measurement instrument (Zenker et al., 2021).

Further literature review shows that several studies proposed factors of risk perception toward COVID-19 pandemic with a single risk factor (Ertaş & Kırlar, 2022; Zenker et al., 2021), and other studies proposed multi-dimensional factors of risk perception (Chan, 2023; Chua et al., 2021; Zhan et al., 2022). Thus, most studies focus on the health risk factors in their investigation, and other factors are still not yet elaborated on sufficiently. The author also found a study that proposes a deeper analysis of tourist risk perception amidst the pandemic. That study investigated the risk perception among tourists to visit Wuhan after the COVID-19 outbreak and concluded 13 items of

risk factors in four risk dimensions. Hence, this study argue that multidimensional risk perception in the post-pandemic context will propose another perspective. Thus, the gap on the investigation of multidimensional risk perception toward post COVID-19 pandemic will be elaborated in this research.

2.3. Risk Perception as Basis of Segmentation

This study is one of the few papers on customer risk perception in tourism and hospitality. There are various kinds of research on the impact of risk perception on customer behavior in the context of COVID-19 (Guo et al., 2021; Pham Minh & Ngoc Mai, 2021). However, to the best of our knowledge, there are no studies to segment the hotel customer based on the risk perception toward COVID-19. The study on risk perception in the COVID-19 pandemic is still limited. The experimental research on technology innovation for social distancing and cleanliness at the hotel could be found as one of the earliest studies of risk perception in the context of the COVID-19 pandemic (Shin & Kang, 2020).

Moreover, a study on investigating the perceived susceptibility and severity of COVID-19 among Slovenian travelers is also one of the few studies of health risk perception in the context of the COVID-19 pandemic (Turnšek et al., 2020). In a similar theoretical approach, the research on perceived susceptibility and severity toward COVID-19 among Brazilian revealed the population's demographic profile toward the health risk perception. Based on the survey of 7430 respondents, the research concluded that economically active populations are more susceptible to COVID-19. Those in the older age group are highly affected when infected by the COVID-19 virus (Giordani et al., 2021).

Meanwhile, in studying tourist segmentation in the context of COVID-19, the study of Sanchez-Perez et al. (2021) is one of the few studies on clustering tourists based on risk-related COVID-19 variables. Their study provides novel evidence that the new approach linking health risk and tourist behavior could be applied as the new behavioral segmentation base (Sánchez-Pérez et al., 2021). Their study identified three segments of travelers with different decision-making approaches toward COVID-19. The first segment is called 'the true believer,' which are those tourists who do not intend to change their tourism consumption and continue their traveling plan as usual. The second group is called 'cautious travelers' who will change their traditional travel patterns and adapt to the changes due to pandemics. Meanwhile, the third group is called 'prophets of doom' since they will change all their travel patterns as they see COVID-19 will affect their lives and travel

behavior. But, this segmentation análisis is limited based on the implementation of multidimensional risk perception as cluster variate.

Another study on segmenting the tourist regarding the COVID-19 pandemic was conducted by Adam et al. (2021). It investigated the role of tourists' emotional response toward the pandemic and its influence on travel intention. Based on the two-step cluster analysis, the study creates three segments based which called 'deeply depressed' (strong negative sentiment toward COVID-19 and future travel), 'depressed' (moderate negative sentiment), and 'phlegmatic' (in different positive and negative sentiments toward COVID-19 and future travels) (Adam et al., 2021). However, this study is still lack of the elaboration on multidimensional risk perception as cluster variate.

In various approaches, both studies are some kinds of literature investigating the segmentation analysis based on the COVID-19 pandemic. While the first study uses health crisis response and travel behavior as the cluster variates, the second study uses emotional response as the cluster variate. Although both studies applied the segmentation analysis of tourists regarding the COVID-19 pandemic, the use of health risk perception as the cluster variate still needs to be explored. Therefore, the authors argue that this research gap could be further investigated in this research.

3. Methodology

3.1. Research Design

This study applies mix-method approaches to the analysis. The qualitative method is used to investigate the risk perception items through focus group discussion (FGD) among travelers in Indonesia. Eleven travelers from various backgrounds and travel styles participated in two separate FGDs conducted virtually through Zoom meeting application. This FGD is aimed to validate the risk item measurement that has been collected from previous literature review conducted by the authors.

The FGD protocol was structured into four iterative phases to ensure methodological rigor as shown in figure 1. Participants were purposively selected from domestic tourists who had engaged in travel and accommodation stays during the study period, with ethical protocols such as informed consent and confidentiality strictly observed. The first FGD phase employed semi-structured questions to explore emergent themes, probing participants on their motivations for traveling despite pandemic risks (*"Why did you choose to travel…?"*), their perceptions of travel-related risks (*"How did you perceive risks…?"*), and specific risk factors encountered (*"What risk factors did you experience…?"*). Discussions were transcribed and anonymized for analysis. A second

validation FGD was conducted with a subset of participants to refine preliminary findings, resolve ambiguities, and confirm thematic relevance.

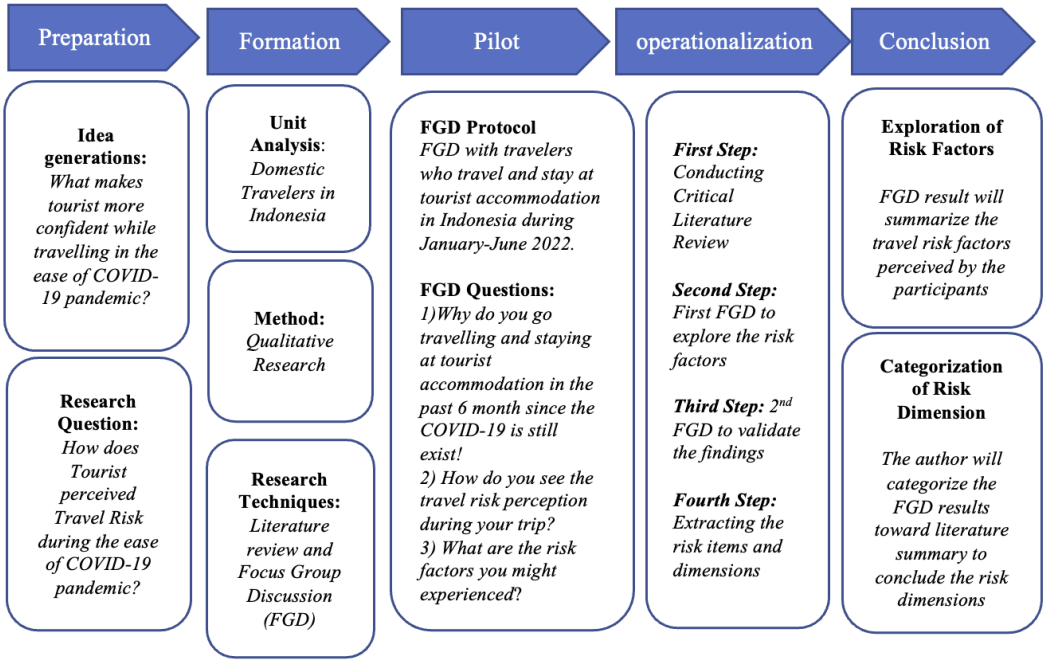

Figure 1. FGD Protocol in the qualitative study

The analytical process began with inductive thematic analysis of transcripts from the exploratory FGD, where open coding identified risk-related themes such as health concerns, financial uncertainties, and logistical disruptions. These themes were then triangulated with existing literature on travel risk perception, ensuring alignment with established frameworks (e.g., pandemic-related risks) while highlighting context-specific factors unique to Indonesian tourists, such as trust in tourism health infrastructure. The final synthesis integrated universal risk constructs (e.g., financial risks) and culturally nuanced factors into a cohesive framework, contextualized within Indonesia's post-pandemic tourism recovery. Methodological rigor was reinforced through member checking during validation, intercoder reliability assessments, and the iterative design combining exploratory and confirmatory phases. This approach not only strengthened the credibility of findings but also ensured theoretical relevance and practical applicability, offering insights into how risk perceptions shape travel behavior during health crises. Meanwhile, a quantitative approach is used through a cross-sectional study by surveying travelers who visited tourist destinations and perform their leisure activities in Indonesia during the ease of COVID-19. Five hundred target respondents were decided according to the minimum sample required in the segmentation study (Dolnicar et al., 2014).

Hierarchical Cluster Analysis is conducted to determine the appropriate number of segments through an agglomerative dendrogram. According to Hair et al. (2014), the final cluster should be determined by seeking the significant changes in the coefficient values in the agglomerative schedule in each clustering step. Split sample analysis should also be implemented to test the validity of cluster results. If the resulting clusters show a similar number to the complete sample analysis, the resulting cluster could be accepted (Hair et al., 2014).

Once the hierarchical analysis results in the number of clusters based on the dendrogram, the non-hierarchical cluster analysis (K-Means) will also be conducted in the study, and the total cluster number from the hierarchical will be tested in the K-means analysis to investigate the member on each cluster. Then, based on the final cluster results, several ANOVA, Kruskal-Wallis, and Chi-Square tests were also conducted to profile segments based on socio-demography and travel behavior variables. SPSS 26 is used as the statistical software for the entire analysis in this study.

3.2. Item Measurement

In this study, the authors validate the risk items collected from literature review with two different focus group discussion. The risk items that validated from FGD will be further measured through questionnaire to target respondents. All risk items in the questionnaire later will be measured with five Likert Scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree). Meanwhile, several socio-demographic variables and travel-related behavior are also investigated to profile resulting segments in the end of the study. In tourism and hospitality studies, the impact of socio-demography variables has been researched among the scholars, such as the differences in health risk perception between groups of age and gender in Korea (Kim et al., 2018), and the relations of social status toward the hotel purchase behavior among the customer (Khoo-Lattimore & Prayag, 2015). In another research on risk perception, Jarumaneerat (2021) applied seven socio-demographic variables in their study. Those variables consist of Age group, Gender, Nationality, Marital status, Occupation, Education level, and Monthly income. However, only age and gender significantly differ among the resulting clusters (Jarumaneerat, 2021).

In this study, the authors assess seven socio-demographic variables, which are gender, age group, educational background, monthly expenses, nationality, COVID-19 vaccination status, and comorbidity status. Meanwhile, regarding travel-related behavior, the study assessed seven variables: staying motivation, trip member category, travel style, length of stay, booking

preferences, the reason for booking, and accommodation preferences. Those variables will enhance the understanding of the profile in each resulting segment in the study.

3.3. Data Collection and Respondent

The authors conduct online and offline data collection methods in this study. Since the majority of people in Indonesia are using Google services, the online questionnaire is created in Google Form. This web-based survey platform provides easy and free access for public users. Then, the link of the google form is distributed to target respondents through social media and text message applications such as Whatsapp, Line, and Facebook messenger. Meanwhile, offline questionnaire is also printed to be distributed directly to the target respondent. On the first page of the questionnaire, the authors asked for consent from each respondent before continuing their participation in the study.

The primary objective of this study is to examine the perception of risk associated with staying at tourist accommodations in a particular location in Indonesia, taking into consideration the prevalence of COVID-19 cases. Therefore, the study's target participants includes travelers (minimum 18 years old) who visit at least one city out of their hometown of Indonesia between March to July 2022, and decide to lodge at least a tourist accommodations such as hotels, villas, resorts, homestays, apartments, and other similar establishments throughout their visit.

The study used the purposive sampling technique. Therefore, in accordance with the specified criteria, both international and domestic tourists are eligible to participate in this study, provided that they engage in travel activities and reside in tourist accommodations within the designated timeframe. Purposive or judgmental sampling is a sampling technique that is based on the researcher's discretion rather than employing random selection methods. The efficacy of judgemental sampling is contingent upon the researcher's discernment, expertise, and ingenuity. Despite its rapidity and ease of use, purposive sampling does not facilitate direct generalizations to a specific group due to the lack of clear specification of the population (Malhotra & Birks, 2007).

Therefore, given the challenges associated with accurately measuring the total population of interest, the authors have chosen to employ the infinite population approach in determining the appropriate sample size for this study. The study's target demographic comprises both foreign and domestic visitors who engage in travel and reside in tourist accommodations during the period from March to July 2022. This time frame corresponds to the initial phase of the relaxation of COVID-19 travel restrictions in Indonesia. It is reasonable to estimate that the whole population of

tourists during that specific timeframe amounted to around 20 million individuals. This estimation is derived from the average of 500 visits each month, as reported by the Ministry of Tourism and Creative Economy of Indonesia. The use of the Taro Yamane formula is imperative in ascertaining the suitable sample size in this scenario (Bixley & Yamane, 1965). It suggests a straightforward method for computing sample sizes based on the maximum variability (p = 0.5) and a 95% confidence level. The Yamane sampling formula is stated as follows; $n = N/k + [N \times (e)^2]$.

Where n = sample size; N = population; k = constant (1); and e = degree of error. Hence, a minimum of 400 respondents was required for this analysis. This sampling procedure also follows previous works, such as the study on factor analysis and travel behavior in Thailand (Chansuk et al., 2022), and the study of emotional experiences regarding behavioral intention in halal tourism (Ratnasari et al., 2020). Thus, to obtain the target respondents, the first author distributed questionnaires personally in some popular tourist destinations in Indonesia, such as Jakarta, Bali, Lombok, Yogyakarta, and Bogor as the top five tourist destination in Indonesia during the pandemic.

4. Result and Analysis

4.1. Focus Group Discussion

After the aggregation of pertinent literature on risk perception, the authors initiated two Focus Group Discussions (FGDs) to distil the risk items requisite for the study. A total of eleven travellers, exhibiting diverse travel styles (solo, group, and family trip) and preferences in accommodation (hotel, homestay, and resorts), actively participated in these two distinct FGD sessions. The primary objective of this methodological approach was to authenticate the suitability of the risk perception items within the context of the post-pandemic era. To maintain objectivity and accuracy, an impartial administrator was enlisted to transcribe the FGDs and systematically categorize the discussions into several risk dimensions, following the content analysis method. Following the administrative process, the authors engaged in discussions to finalize the categorization, ultimately yielding a set of risk perception items. These finalized items served as the foundation for constructing the questionnaire, aligning with the outcomes of the literature review.

The authors divided FGD in two separated sessions to collect the risk perception among the travelers during this COVID-19 pandemic. First FGD involved eight participants with various ages, gender, profession, and travel style. Meanwhile second FGD invited three travelers with three category of risk behavior; travelers with high, medium, and low travel risk perception to see the

consistency of the findings of the first FGD. Some participants traveled with their families and children, while others traveled with groups and friends. Likewise, some participants travel for workcation (work and vacation) and for social activities. Others travel for hobbies, visit family and friends, and enjoy a romantic day with their partner. Detail of FGD participants are shown in Table 1.

Table 1. List of FGD Participants

Name Code	Age	Sex	Professional Background	Accommodation Type	Travel Styles Category
Resource 1	33	F	University Lecturer	Hotel	Couple Traveller
Resource 2	30	F	Employee of State Owned Electricity Company	Hotel	Travelling with Kids
Resource 3	32	M	Pilot for National Airlines	Hotel	Travelling with Team
Resource 4	32	F	Self-employed/Housewife	Hotel	Travelling with Family
Resource 5	32	F	Employee of a Private Corporation	Hotel	Travelling with Group
Resource 6	31	M	HR Staff of a National Bank	Resort	Travelling with Friends
Resource 7	31	M	Commerce Manager of a Pharmacy Corp	Villa	Solo Traveller
Resource 8	36	M	Medical Doctor (Internist)	Hotel	Couple Traveller
Resource 9	36	F	High School teacher and Mountaineering Activist	Homestay	Backpacker/Solo traveler *(low risk perception)*
Resource 10	35	F	Public Relations at Energy Corporation	Hotel	Travelling with Family *(high risk perception)*
Resource 11	34	F	Media Agency/Journalist	Villa	Traveling with Friends *(medium risk perception)*

The FGD began with the introduction of each participant, led by the first author as the facilitator. After the introductions, the facilitator explains the mechanism of the discussion. The discussion was divided into three sections according to the three FGD's questions. Each session runs for approximately 25 minutes, with a total duration of 75 minutes. This duration is considered adequate to discuss the main topics of the FGD, apart from other durations used to build rapport between participants before the main session is carried out. Participants were quite enthusiastic about participating in this session. Although some of the participants only knew each other during this FGD, building a rapport at the beginning of the session was seen as practical in making the FGD atmosphere more comfortable and friendly. As an appreciation for the FGD participants, the author also provides complimentary food for consumption and souvenirs delivered after the session.

The process of FGD is recorded, and an independent analyst is hired to transcribe all recorded conversations. The result of transcribed FGD is discussed among the authors to seek the codes related to the risk factors and categorize the codes into several themes (risk dimension categories) and sub-themes according to the risk dimension in the critical literature review. *Health risk, Financial Risk, Social Risk, Psychological risk* are decided to become our main themes for the

analysis. Meanwhile, the sub-themes related those categories are also identified. For the example, severity, susceptibility, comorbidity, and quarantine are the sub-themes of health risk. Meanwhile, stress, anxiety, shock, and mental health are the sub-themes for the psychological risk. Based on the transcribed text, the authors discussed the code to be categorized in to specified themes and sub-themes to extract the resulted risk factors as shown in Table 2.

All the risk perception factors resulted in the FGD then developed to become the risk perception measurement for primary study. Hence, before conducting cross-sectional survey for the main study, a pilot test to validate the item measurement is conducted.

4.2. Pilot Testing

A preliminary examination, known as a pilot test, was undertaken to assess the validity and reliability of the items incorporated in the questionnaire (Hair et al., 2014). The pilot test enlisted fifty eligible respondents to gauge the robustness of the Risk Perception measurement comprising 23 items. Reliability testing was subsequently executed to scrutinize the consistency of these 23 items. However, upon subjecting the items to a validity test, it was observed that two items, specifically R16 and R17, exhibited factor loadings below the accepted threshold of 0.5. Consequently, these items were deemed unsatisfactory and were consequently excluded from the primary investigation. In the conclusive analysis, the authors proceeded with a refined set of 21 risk items for further comprehensive investigation.

Table 2. Risk Items from FGD

No	Item Code	Risk Item Measurement
1	Risk 1	**(R1)** I feel worried about contracting the COVID-19 virus while staying at tourist accommodation during my trip in Indonesia
2	Risk 2	**(R2)** If I got infected by the COVID-19 virus while travelling to Indonesia, it will have a serious impact on my health
3	Risk 3	**(R3)** I will feel worried if I have to undergo self-isolation because I contracted COVID-19 while staying in tourist accommodation in Indonesia.
4	Risk 4	**(R4)** I am worried that I will transmit the COVID-19 virus to my closest friends (friends/relatives/family/coworkers) after staying in tourist accommodation during that trip)
5	Risk 5	**(R5)** I still feel worried that I have to stay in tourist accommodation during my trip in Indonesia
6	Risk 6	**(R6)** I find it difficult to enjoy my stay in tourist accommodation in this transition period in Indonesia
7	Risk 7	**(R7)** I feel uncomfortable if I have to be in a public location (lobby, restaurant, swimming pool, garden, parking lot) in the tourist accommodation where I stayed
8	Risk 8	**(R8)** I feel uneasy if I have not checked the implementation of health protocols in the accommodation where I stayed
9	Risk 9	**(R9)** Because the threat of COVID-19 is still exist, I'm worried about what other people think when I stay at tourist accommodations on my trip
10	Risk 10	**(R10)** I am worried that if I stay at tourist accommodation on that trip, it will cause a conflict of opinion with my closest friends (friends/relatives/family/coworkers)
11	Risk 11	**(R11)** As much as possible, I will reduce direct interaction with other people while staying in tourist accommodation on that trip
12	Risk 12	**(R12)** I chose accommodation that is less crowded during my last trip in Indonesia
13	Risk 13	**(R13)** In my opinion, staying at tourist accommodation on that trip cost more than before the COVID-19 pandemic
14	Risk 14	**(R14)** It cost more for me to choose the safest accommodation on that trip
15	Risk 15	**(R15)** I prepared for unexpected expenses when I stayed in tourist accommodation on that trip
16	Risk 16	**(R16)** I am worried that the benefits I receive while staying at the tourist accommodation during this transition period in Indonesia is not worth the money I spent
17	Risk 17	**(R17)** When staying at tourist accommodation during the trip, there is a possibility that I will lose potential additional income
18	Risk 18	**(R18)** Due to the rules during the pandemic transition period, I cannot enjoy the various facilities at the tourist accommodation on this trip
19	Risk 19	**(R19)** Due to the pandemic situation, I have to make some backup plans so that I can have a memorable time on the trip
20	Risk 20	**(R20)** Travel regulations during this pandemic transition made my experience less memorable
21	Risk 21	**(R21)** I had to change my accommodation plan during the trip due to the changes in the government's regulations regarding COVID-19 prevention
22	Risk 22	**(R22)** The rapid changes in the regulation of COVID-19 prevention have affected my experience on this trip
23	Risk 23	**(R23)** Travel regulations during the COVID-19 pandemic in Indonesia made my stay on that trip less memorable

4.3. Respondent Profile for Primary Test

In the primary test phase, a total of 568 respondents actively participated and returned the questionnaires. However, after meticulous scrutiny, only 514 responses, accounting for 91% of the total, met the stipulated research criteria and were deemed eligible for subsequent in-depth analysis. The demographic composition of the respondent pool reveals a notable prevalence of female participants, constituting 62%, while male participants constitute the remaining 38%.

Within the age distribution, a significant proportion of respondents falls within the 21-40 years age bracket, encompassing 79% of the total respondents as described in Table 3. Regarding educational attainment, most of respondents hold bachelor's degrees (55%), with an additional 29.6% possessing master's degrees. It is noteworthy that most respondents, amounting to 80%, are identified as domestic tourists, with the remaining 20% representing foreign tourists hailing from various countries across the globe. In terms of accommodation preferences, most respondents opt for hotels, comprising 69.5% of the total, followed by villas (14.4%), Homestays (10.3%), and other miscellaneous types of accommodations.

Table 3. Descriptive Data of the Respondent

Item Description	Category	Frequency *(n: 514)*	Percentage
Gender	Male	194	37.7%
	Female	320	62.3%
Age Category	< 20 years	8	1.6%
	21 - 30 Years	194	37.7%
	31 - 40 Years	212	41.2%
	41 - 50 Years	67	13%
	51 - 60 Years	26	5.1%
	> 60 Years	7	1.4%
Education Level	High School and Below	24	4.7%
	Diploma/Academy	38	7.4%
	Bachelor Degree	224	55.3%
	Master Degree	152	29.6%
	Doctoral Degree (PhD)	16	3.1%
Type of Tourist Accommodation	Hotel	357	69.5%
	Villa	74	14.4%
	Apartment	10	1.9%
	Homestay/Hostel	53	10.3%
	Others	20	3.7%

4.4. Cluster Analysis

After completing factor analysis to categorize the risk items into distinct risk dimensions, the subsequent step in the research involves hierarchical cluster analysis. In this process, five

dimensions of Risk Factors serve as Cluster variables. Prior to the commencement of cluster analysis, the author conducts a thorough investigation into multicollinearity among the variates. The examination of multicollinearity issues is carried out utilizing variance inflation factors (VIFs), and all items exhibit VIF values below the designated cut-off point of 3.00.

Subsequently, hierarchical cluster analysis is implemented to elucidate potential cluster outcomes through an agglomerative approach. Ward Linkage is employed in conjunction with the squared Euclidean measure. The analysis involves the incorporation of 21 risk perception items derived from the factor analysis. Given the wide range of potential responses from the respondents, Z-score values for all 21 risk items are computed. These Z-scores then function as the cluster variate. The outcomes of the hierarchical cluster analysis, based on all risk perception items, are visually presented in Figure 2.

Notably, the results of the cluster analysis reveal a four-cluster solution, as depicted in the dendrogram. Subsequently, the author evaluates the coefficient matrix as the cut-off point for determining the final number of resulting clusters. The coefficient component matrix highlights a significant increase in the coefficient value, exceeding 500 points, in the transition from step 509 to 510 (refer to the table in the appendix). Consequently, a four-cluster solution is conclusively established based on the dendrogram and coefficient values in the second hierarchical cluster analysis.

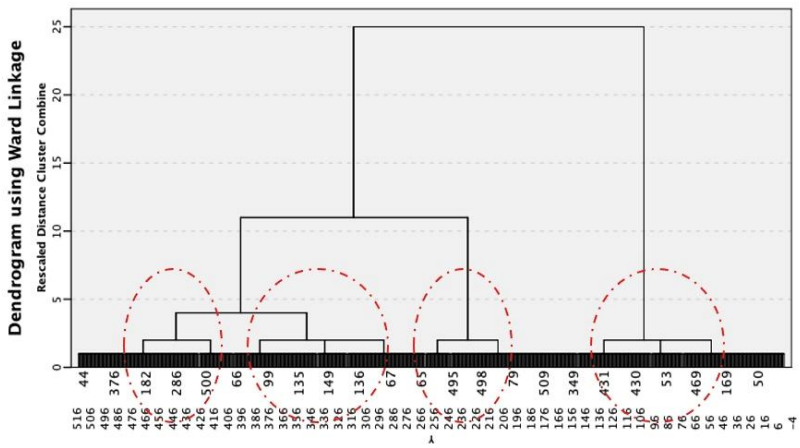

Figure 2. Dendrogram of Hierarchical Cluster Analysis

Given that the hierarchical analysis indicates a four-cluster solution in the study, a non-hierarchical cluster analysis (K-Means) is also employed to determine the optimal cluster solution. The resulting cluster solutions are then compared based on criterion validity and their relevance to the research question, with the aim of selecting a singular solution as the final cluster outcome (Hair et al.,

2014). The authors conducted K-means analyses with varying cluster solutions, including two, three, four, and five clusters. The ANOVA test for each K-cluster analysis revealed a broad range of F statistic values. Only the four-cluster solution exhibited a favourable F statistic and demonstrated significant differences in risk perception among the clusters.

The subsequent step involved calculating the total number of cluster members, resulting in Cluster 1 (140 respondents), Cluster 2 (100 respondents), Cluster 3 (103 respondents), and Cluster 4 (171 respondents). The final cluster centre values obtained from the K-Means analysis indicated the distinctions among the clusters. To validate the resulting segments, the authors performed discriminant analysis, designating the number of clusters as grouping variables and assigning all risk items as independent variables. The test of equality of group means revealed that all three variables were significantly different concerning the 21 risk perception variates ($p < 0.000$). Consequently, the conclusion of a four-cluster solution was accepted for further analysis.

Cluster 1 displayed a negative centre value toward opportunity-loss risk (R18, R20, R21, R22) predominantly. Thus, members of Cluster 1 exhibited the lowest perception of opportunity-loss risk related to their staying experiences in tourist accommodations during the early post-pandemic era in Indonesia. Consequently, Cluster 1 is denoted as "The Performer," representing tourists who perceive the lowest risk factors and confidently engage in their travel activities during the initial period of social distancing relaxation in Indonesia.

Cluster 2 demonstrated negative centre values for most risk items but exhibited positive centre values toward opportunity-loss risk (R19, R20, R21, R22, R23). In contrast to Cluster 1 members, tourists in Cluster 2 perceived opportunity-loss risk during their travel and staying experiences. Therefore, Cluster 2 is labelled as "The Valuator," representing tourists who evaluate the value for money of their trip and accommodation choices in relation to the perceived risk during leisure activities.

Cluster 3 exhibited a positive centre value toward psychological risk (R5, R6, R7, R9, R10) with a higher centre value than all other clusters. This indicates that tourists in this cluster perceived psychological risk to be higher than other risk factors and higher in magnitude compared to other cluster members. Consequently, Cluster 3 is labelled as "The Avoider," representing tourists who experience anxiety and stress while travelling during this post-pandemic era.

The final cluster, Cluster 4, displayed positive centre values toward Health Risk (R1, R2, R3, R4) and Social Risk (R8 and R12). This indicates that tourists in this cluster still perceived that COVID-19 would have a severe impact on their health. Consequently, Cluster 4 is labelled as "The

Hesitator," representing tourists who hesitate to engage in their leisure activities maximally during this post-COVID-19 pandemic period. For tourists in this cluster, the early stage of the endemic is still perceived as a threat to their health and immunity.

4.5. Segment Profiling

The final step in cluster analysis involves profiling the resulting segments according to several variables aligned with the study's objectives. Numerous ANOVA and chi-squared tests were executed to discern differences among the clusters concerning each socio-demographic and travel behaviour variable. However, a normality test was performed to assess data distribution across clusters. The one-sample Kolmogorov-Smirnov test indicated non-normal data distribution, prompting the use of non-parametric analysis.

Following the Chi-Square test on eight socio-demographic variables, only five exhibited significant differences between clusters: gender (X2=11.603, p=0.009), monthly expenses (X2=68.463, p=0.000***), COVID-19 tests (X2=6.474, p=0.091*), country of origin (X2=81.945, ˆp=0.000***), and comorbidity status (X2=8.855, p=0.031**). Conversely, other socio-demographic variables—age group (X2=11.938, p=0.289), education (X2=3.344, p=0,911), and COVID-19 vaccination (X2=13.252, p=0.152)—did not display significant differences across clusters. Notably, all significantly different variables had expected values exceeding the threshold value (cut-off point 5).

Examining gender distribution across clusters, an even distribution was observed, with female tourists outnumbering male tourists in each cluster. Age distribution, dominated by young tourists aged 20-30 (37%) and 31– 40 (41.2%), displayed nearly equal representation in each cluster. Higher education respondents slightly dominated Cluster 4, with 54 master's and 8 doctoral degree respondents. Monthly expense data revealed that most respondents had a monthly spending of around 10 million rupiahs, suggesting a predominantly middle-class social status among respondents.

Turning to travel-related behavior, four out of seven variables exhibited significant differences among clusters. These variables included staying motivation (X2=41.517, p=0,000***), length of stay (X2=31.739, p=0,000***), transportation preferences (X2=20.895, p=0.007***), and accommodation types (X2=35.258, p=0.084*). Conversely, other non-significant travel behaviour variables—number of trip members (X2=8.022, p=0.236), booking preferences (X2=9.822, p=0,132), tourism style (X2=33.375, p=0.003***), and reason for booking (X2=10.746, p=0.551)—

showed no significant differences among clusters. Concerning staying motivation, most tourists enjoyed their stay for family gatherings and fatigue relief from daily routines. Cluster 2 tourists also appreciated a romantic atmosphere with their partners, while Cluster 3 tourists mentioned enjoying accommodation facilities and engaging in staycations and workcations.

Staycation travellers dominated Cluster 3 and Cluster 4, while Cluster 1 was predominantly composed of beach travellers, and Cluster 2 consisted mostly of ecotourism travellers. Regarding the length of stay, most tourists stayed for two nights, though some in Cluster 3 and Cluster 4 opted for four nights, and some in Cluster 1 extended their stays beyond six nights. In terms of transportation preferences, private cars were preferred by most tourists in the early post-pandemic era, with some in Cluster 1 using aeroplanes and boats. Cluster 2 members also used boat transportation. Accommodation preferences varied across clusters, with some Cluster 1 tourists opting for hostels and Cluster 4 tourists preferring villas.

The author conducts further analysis to investigate the differences among clusters toward their preference on accommodation attributes. According to test of normality, the data of six accommodation attributes are not normally distributed. Hence, non-parametric analysis is conducted through Kruskal-Wallis test. Cluster number is grouping variable, meanwhile accommodation attributes are the test variables.

Based on the result of Kruskal-Wallis test, four accommodation attributes are significantly different between the clusters (*p<0.000***)*. Hygiene Factors, Check-in Process, Accommodation Location, and Public Facilities are the attributes that statistically different between the clusters. Hence, to investigate the differences in deeper insight, the author conducts independent sample non-parametric test (Dunn post-hoc analysis) to investigate the detail differences among the clusters.

Regarding hygiene attribute, post-hoc data shows that the total mean rank between the cluster has slightly differences; Cluster 1 (221.93), Cluster 2 (239.88), Cluster 3 (207.25), and Cluster 4 (266.96). Pairwise comparison between the clusters shows that cluster 1 has significant differences between cluster 4 and cluster 3. Also, Cluster 2 has significant differences between Cluster 3. Therefore, regarding hygiene factor, tourist in cluster 1 and cluster 2 has less concern toward hygiene factors rather than tourist in cluster 3 and cluster 4.

Based on second attributes, the check-in process, Kruskal-Wallis independent sample test shows that the total mean rank among the clusters are also slightly different; Cluster 1 (205.55), Cluster 2 (259.09), Cluster 3 (328.31), and Cluster 4 (256.45). Pairwise comparison also shows that Cluster

4 and Cluster 2 has no different toward electronic check in. But it has different mean with Cluster 1 and Cluster 3. The cluster 3 has higher concern toward check-in process.

Regarding accommodation location, Kruskal-Wallis independent sample test shows that the total mean rank among the clusters are also slightly different. Cluster 1 (262.68), Cluster 2 (268.39), Cluster 3 (286.17), Cluster 4 (229.62). Pairwise comparison also shows that only Cluster 4 and Cluster 3 that has statistically different. Regarding public facility attributes, the independent sample test shows that the total mean rank among the clusters are not that different; Cluster 1 (255.15), Cluster 2 (232.87), Cluster 3 (300.08), and Cluster 4 (248.14). Pairwise comparison shows that Cluster 2 and Cluster 3 is significantly different as well as cluster 4 and cluster 3. Therefore, regarding public facility, Cluster 3 has higher concern rather than Cluster 2, Cluster 3, and Cluster 4. Hence, the final profiling of resulted segment is summarized in the figure 3.

Table 4. Segment Profiling of Each Cluster

No	Variables	**Cluster 1**	**Cluster 2**	**Cluster 3**	**Cluster 4**
		The Performer	**The Valuator**	**The Avoider**	**The Hesitator**
1	Risk Perception Profiles	Perceiving very low level on all risk factors. They are confident enough to travel	Perceiving all risk factors and concern toward regulation implementation	Mostly Perceiving Psychological Risk *(feeling anxiety and stress to travel)*	Concerning about health risk, thinking about severe impact of the outbreak
2	Socio-demographic	Dominated by higher income tourist (more than IDR 25 million), almost equal number on gender, and most foreign tourist are grouped in this cluster	Dominated by middle income tourist (IDR 15 million), almost equal number on gender, Mostly domestic and Asian tourist.	Dominated by middle-lower income tourist (less than IDR 10 million), majority are female domestic travelers.	Middle-higher income tourist (IDR 15 – 20 million), most of the cluster members a female travelers.
3	Travel Behavior	Majority are ecotourism and beach travelers, average stays are more than 5 nights, beside hotel, also prefer stay at Villa, Homestay and Resort	Dominated by travelers who enjoy the beach walk and ecotourism, average stays are 2-4 nights, and prefer staying at starred hotel and villa	Dominated Culinary and staycation travelers, average stays are 2-4 nights, prefer stays at starred hotel, villa, and resort	Staycation and family gathering oriented travelers, average length of stays are for 2-4 nights, mostly stays at starred hotel, but also prefer villa and homestay
4	Accommodation Attributes	Less concerned toward Hygiene attributes, do not prefer electronic check-in process, less attracted toward public facilities	Less concerned about hygiene attributes, also concern on electronic check-in, and attracted to public facility existence in the accommodation	Concerned about hygiene attributes, highly preferred on electronic check-in and attracted to availability of public facilities in the accommodation	Concern about Hygiene attributes, also concern on the use of electronic check-in, and less attracted toward public facilities

5	Behavioral Loyalty	Satisfy enough toward accommodation, consider to revisit again, thinking about giving testimony (WoM)	Lowest satisfaction among the clusters, less interested to revisit, and low intention to giving testimony	less satisfy with the accommodation, less interested to revisit, and low intention to giving testimony	less satisfy with the accommodation, less interested to revisit, and do not intent to giving testimony

5. Conclusion

This study concluded several findings according to the study purposes. First, the study investigated several risk perception factors associated with staying in tourist accommodation during the travel restriction relaxation in Indonesia. From March to July 2022, data were collected using an online and offline survey of 514 domestic and international tourists, then summarized 21 risk perception items. Second, based on those risk items, the study categorized the respondents into four clusters solution of tourist based on their risk perception in the context of post COVID-19 pandemic in Indonesia. Those clusters are called The Performer (perceived no risk at all), The Valuator (perceived opportunity-related risks), The Avoider (perceived psychological risks), and The Hesitator (perceived health-related risks). Several variables of socio-demography and travel-related behavior are also investigated to profile the resulting segments.

From the perspective of tourism and hospitality literature, this study contributes to the study of risk perception of the tourist in the hospitality industry. Although several kinds of research have investigated the category of risk perception in tourism and hospitality, such as the critical review of risk perception and revisit intention (Hasan et al., 2017), the perceived risk of traveling during COVID-19 (Neuburger & Egger, 2021), and also the investigation of health risk in tourism in the context of pandemic (Golets et al., 2021; Turnšek et al., 2020), however, the use of multidimensional risk perception to understand the customer segment in tourism and hospitality study is still limited. Thus, this study can contribute to the development of literature in risk perception and the topics of tourist segmentation based on risk perception.

From the perspective of managerial implication, this study will contribute to the development of the marketing strategy of the hotel industry in the post COVID-19 crisis. The study of hotel customer segmentation could help hotel managers better understand customer needs and preferences in a similar group of homogeneous characteristics. Meanwhile, understanding risk perception will also become a concern among the hotel managers and staff to improve the guest's stay experience during and after the COVID-19 outbreak.

According to Raaij and Verhallen (1994), the need for segmentation is to make managers and marketing practitioners cope with a large number of customers with various evaluations and behaviors. The manager should understand the domain-specific segmentation to understand better the market and the benefit they are willing to achieve when consuming the products (Raaij & Verhallen, 1994). Therefore, for describing the resultant segments, this study also elaborates the importance of socio-demographic variables and travel behavior in profiling the segments.

From a theoretical point of view, this study contribute to the growth of risk perception theories in the post-pandemic era. Since the discussion on risk perception is still developing in validating the risk dimensions and factors, this study has proposed a novel finding and point of view by proposing 21 risk perception items in five specific risk dimensions. In future developments, more studies could validate those risk perception items in different study context.

6. Discussion and Limitation

This study is one of the few papers on tourist's risk perception in the hospitality industry. To the best of our knowledge, this is the first study in segmenting the travellers based on the risk perception through multidimensional approach. In the COVID-19 studies, most research investigate the variables' antecedents and outcomes of risk perception (Godovykh et al., 2021), but very few papers that investigate the risk perception dimension in the pandemic perspective. Meanwhile, this study is not only analyzing the factors of risk perception but also risk perception as the cluster variates to describe the tourist behavior in the post pandemic era.

Understanding how tourists act and make decisions will help the destination make better tourism policies regarding tourist's leisure activities (Feder et al., 2023). This study could help the tourism and hospitality industries develop marketing plans to help their businesses recover from the effects of COVID-19 pandemic and to mitigate any potential risk in the upcoming pandemic. By understanding tourist behavior in specific segments, the hotel manager and other tourism destination stakeholders shall target specific segments or even niche markets to optimize their services by considering the tourists' perception of risk. This study also benefit developing countries' local and national governments as they formulate a well-planned policy to recover the tourism industry in the post-pandemic era and manage a more sustainable future of tourism.

However, this study still has several limitations in conducting the research analysis. First, the respondents are still dominated by domestic tourists, which makes the generalization of the results more challenging, and also the language barrier might issue a misunderstanding in completing the

questionnaire. Second, the study period is in the early stage of post COVID-19 era in Indonesia, which might still dominated by the risk-taker tourists. Furthermore, although Dolnicar (2014) suggests the number of respondents for the segmentation study is 70 times the cluster variates, the samples of this study could be increased to have a better generalization in the cluster descriptions. This research also contributes to the tourism and hospitality industry's recovery strategy after the pandemic.

This research fills the gap in the study of risk perception toward customer decision-making of staying at tourist accommodation during COVID-19 pandemic. By understanding the risk perception among tourists, tourism industry practitioners might develop the segmentation process and describe the profile of each segment by investigating the customer push motivations, preferred accommodation attributes, and their travel behavior. Hence, to our knowledge, this study is the first approach to segmenting tourists based on risk perception in the post-pandemic era.

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