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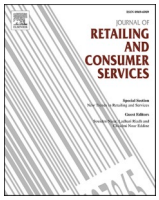

Which trust layer better counterbalances the risk impact on travel intentions in a crisis scenario?

Sandro Castaldo [a,*], Andrea Ciacci [a], Lara Penco [b], Giorgia Profumo [b]

[a] Bocconi University, Italy
[b] University of Genoa, Italy

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ABSTRACT

The severe impact of the COVID-19 pandemic on the tourism industry has revived academic interest in evaluating the strategic role of trust in crises. As a force able to mitigate uncertainty and vulnerability, trust can influence people's travel decision-making process. Extant tourism crisis literature concentrates on individual trust levels in isolation, neglecting its multi-faceted nature. Therefore, a research gap emerges in identifying trust layers that most effectively enhance the intention to travel. In order to address this gap, this study adopts a multi-layered trust perspective rooted in the protection motivation theory (PMT). This study aims to analyze the effectiveness of multi-layer trust as a coping mechanism to enhance intention to travel in the cruise industry. This study uses survey data from 661 cruisers and applies structural equation modeling to test hypotheses empirically. Results highlight that trust in the company and interpersonal trust are the most effective antecedents of the intention to travel, effectively mitigating the perceived health risk. Conversely, trust in the vaccine and trust in the certification show no significant influence on the intention to travel. Therefore, in times of crisis, cruise lines should leverage trust in the company and interpersonal trust as strategic tools to counterbalance the perceived health risks and stimulate travel intentions.

1. Introduction

The COVID-19 pandemic has severely influenced the tourism sector due to the heightened risk of mass gatherings associated with travel (Gunter et al., 2022; Zhang et al., 2021). This perceived danger has resulted in potential tourists abstaining from travel to safeguard their health (Villacé-Molinero et al., 2021; Williams et al., 2022a). Within the tourism sector, the cruise industry is a relevant setting for studying the impact of health risks on the intention to travel because of the restricted environment of the cruise ship and the crowded facilities that can promote the transmission of infectious diseases. This makes it an ideal setting in which to gather insights from the lessons learned during the COVID-19 pandemic that can be used in the service industries (Su et al., 2023; Zheng et al., 2021). Recent events, such as the double outbreak of COVID-19 and gastroenteritis on a cruise ship docked in Adelaide in the middle of November 2023 (after another severe event in Sydney in November 2022), confirm the ongoing relevance of the issue (*The Guardian*, 2023). Despite progress in vaccination efforts, the risk of new variants persists, impacting tourists' purchasing intentions even beyond the peaks of the pandemic (Pappas, 2023).

Current literature indicates that trust plays a crucial role in offsetting the escalating perception of health risk. Trust is a critical factor in overcoming vulnerabilities during crises as evidenced by the reliance of customers on companies, other individuals, and institutional measures (Castaldo et al., 2010; Huete-Alcocer and Hernandez-Rojas, 2022; Prentice et al., 2020; Yuan et al., 2022). Concerning the body of knowledge on trust research, trust emerges as a positive force in shaping customers' intentions to travel. Extant literature characterizes trust as a complex, multi-layered concept (Ahn and Back, 2019; Castañeda-García et al., 2023; Seçilmiş et al., 2022; Stefaniak et al., 2022). These layers of trust are categorized as endogenous or exogenous depending on their characteristics and the degree of control of the focal actor. For instance, from the perspective of a cruise company, trust in the company and interpersonal trust represent distinct layers of endogenous trust since they fall within the direct influence and control of the cruise company and its cruisers. Trust in the company directly depends on the actions taken by the company. To enhance customer trust, firms can actively engage in responsible tourism practices by employing specific measures such as enforcing distancing norms and ensuring compliance with established protocols. Companies may also invest in brand promotion

* Corresponding author.
E-mail address: sandro.castaldo@sdabocconi.it (S. Castaldo).

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and communication strategies to bolster trust levels (Ahn and Back, 2019; Castañeda-García et al., 2023; Hakim et al., 2021). In the context of the COVID-19 era, interpersonal trust is linked to the expectation that fellow tourists will responsibly contribute to the overall preservation of the entire tourism community (Chen et al., 2021; Stefaniak et al., 2022). In contrast, trust in the vaccine and trust in its certification are exogenous layers of trust as they originate outside the investigated system and are not directly under the control of the entity in focus. Within the context of a pandemic crisis, endogenous and exogenous layers of trust both play a relevant role, simultaneously influencing customer perceptions (Seçilmiş et al., 2022; Stefaniak et al., 2022).

Among the research exploring the different layers of trust, a relevant gap arises in terms of identifying the trust layers that most effectively enhance the intention to travel amid a crisis (Holland et al., 2021). While prior research has concentrated on trust within the context of health crises (Castaldo et al., 2021; Yuan et al., 2022), the existing literature has predominantly focused on examining individual layers of trust in isolation, neglecting its multi-layered nature. Thus, the aim of this study is to fill this gap by anchoring trust research to the protection motivation theory (PMT) (Floyd et al., 2000; Morgan and Hunt, 1994). According to PMT, when crises unfold, consumers tend to engage in protective behaviors driven by the cognitive processes of threat appraisal and coping appraisal. During the process of threat appraisal, individuals assess the likelihood and intensity of a threatened event, which shapes their risk perception. Simultaneously, in the coping-appraisal process, individuals gauge their ability to manage the threat by deploying mechanisms to prevent or diminish its impact (Zheng et al., 2021).

Amid these cognitive processes, trust emerges as a pivotal factor (Castaldo et al., 2021). Extensive research has demonstrated that trust positively influences consumers' purchasing intentions, acting as a counterbalance to perceived risk due to its capability of instilling certainty even in situations marked by uncertainty and vulnerability (Roh et al., 2022a; Zheng et al., 2022). This perspective aligns with the conceptualization that trust represents a dynamic and influential force in shaping consumer behavior. Going beyond a singular focus on perceived risk and introducing a layered perspective on trust, the present study considers trust a foundational coping mechanism capable of influencing individuals' intentions. Thus, the true novelty of this study lies in its conceptualization of trust as a foundational element of coping strategies devised to counterbalance risk perception.

To fill the above-mentioned research gap, this study aims to analyze the threat appraisal-related antecedents of intention to travel and the effectiveness of multi-layer trust as a coping mechanism in shaping customers' intention to travel. This study begins by focusing on the crowding-related determinants of perceived risk (Castañeda-García et al., 2023; Kaplan et al., 2022), specifically spatial and human crowding, which are relevant in the tourism context (Kim et al., 2022; Popp, 2012). Next, the concept of multi-layer trust is introduced to assess which layers of trust are most effective in increasing intention to travel (Fulmer and Dirks, 2018).

The present study, testing its hypotheses on a sample of 661 cruisers through a structural equation model, makes several contributions to the literature. First, we analyze the effectiveness of multi-layer trust in increasing intention to travel. This is done through a comparative assessment of the different types of trust (trust in the company, interpersonal trust, trust in the vaccine, and trust in the certification) that can affect cruisers' intention to travel during a pandemic era. Second, the study extends the analysis of perceived risk in the tourism sector during a pandemic, specifically exploring the effects of spatial and human crowding in the cruise service landscape. The evaluations of crowding, based on the available spaces and the presence of other travelers, affect cruisers' perceptions of risk (Zheng et al., 2021). Understanding cruisers' evaluations of crowding-related risk factors can inform cruise companies about the measures that can mitigate perceived crowding risk. Third, a post-hoc analysis distinguishes between two groups of cruisers—first cruisers and repeaters—to discover within-group patterns and between-group significant differences. In summary, the multi-layer trust analysis shows that different types of trust affect the intention to travel diversely. From a competitive perspective, cruise companies can leverage trust to pursue differentiation strategies and find a better strategic positioning.

This paper is organized as follows. Section 2 presents the theoretical background, articulating the key concepts and their distinctive characteristics. Section 3 outlines the development of the hypotheses. Section 4 describes the data collection and methodology used in the research design. Section 5 offers insights into the research results. Subsequent sections present the Discussion (Section 6) and explore implications and future research directions (Section 7).

2. Theoretical background

Travel intentions have been an important research area in the tourism literature for decades. Increasing knowledge of the factors that influence the decision to travel and destination selection can contribute to the strategic planning and marketing of tourism companies. Studying the drivers of intention to travel during a crisis is essential, as such drivers are at the base of the industry's recovery trajectory. At the same time, in a health-related crisis like a pandemic, comprehending consumers' fears or anxiety is critical to mitigating the negative effects on demand. Scholars have previously reported that contagious diseases pose threats that affect cruisers' decision-making processes and undermine consumers' intention to travel, especially in the cruise industry, which is why extensive literature has proliferated on the theme (Castaldo et al., 2021; Holland et al., 2021; Liu et al., 2016; Penco et al., 2019). Extant literature has been aimed at understanding how consumers' uncertainty and increasing perceived risk during health crises impact the intention to cruise and the role of various factors that can mitigate the negative effects of a health crisis. Among these factors, trust can be pivotal in situations characterized by high risks, such as the COVID-19 pandemic, as it positively impacts consumers' purchasing intentions, acting against the perceived risk (Castaldo et al., 2021). For instance, endogenous trust layers pertain to the relationships between the focal actor (e.g., company) and customers or among customers. However, during a health crisis where vaccines become essential for the recovery of the situation, other levels of trust emerge such as trust in vaccination programs or certifications, which can lower the perceived risk and increase the willingness to travel (Gursoy et al., 2022; Seçilmiş et al., 2022).

Despite the multi-level nature of trust, the research exploring trust along different layers remains limited (Fulmer and Dirks, 2018). The recent pandemic crisis and the subsequent vaccination period represent an ideal context in which to study the role of multi-layer trust in a crisis scenario characterized by higher levels of risk. To understand the richness of studies focusing on trust in the COVID-19 post-vaccination scenario, we conducted a literature review on the relationship between risk, trust, and intention to travel during this health crisis. The literature review was aimed at identifying the different levels of trust already explored in order to investigate whether the vaccine played a role in these relationships. The literature review helped to highlight the key contents of the literature and the research gap and thus facilitated the formulation of a comprehensive model that would effectively integrate the previous variables. Data were drawn from published articles via different databases (ABI Inform, EBSCO, and Scopus) using the keywords "risk" AND "vaccin*" AND "covid-19" AND "trust" AND "intention". The research terms could appear in the abstract, title, or keywords (and in the body of the text for ABI/Inform). Table A and Table B in the Appendix show the research protocol and the total sample of 33 articles, with the research dimensions already explored by extant studies. A content analysis was also performed to explore the relationship among the constructs and variables emerging from the literature review results on the abstracts of the selected papers using Nvivo12, the results of

which are reported in the Appendix (Figure A). Table 1 provides the sample/context, theoretical approach, variables, method, key results, conclusions, and implications for the most significant contributions.

A review of the key contents of the principal contributions reveals that studies investigating all the previous issues (risk, trust, intention) in a post-vaccination pandemic period are limited. Prior studies confirm the central role of risk perception that stimulates adverse emotions such as insecurity, fear, and stress during the purchase process in a crisis scenario (Fuchs, 2022; Profumo et al., 2021; Williams et al., 2022a). Health troubles related to disease, viral illness, and worldwide pandemics are, in fact, considered some of the most important sources of risk in the tourism sector (Liu et al., 2016). Interestingly, in the post-vaccination period, the risk is also associated with the vaccine itself, impacting the likelihood of getting vaccinated (Gursoy et al., 2022; Suess et al., 2022; Zhu et al., 2022).

During a pandemic, crowding may cause concern as the disease is highly contagious and the infection is transmitted through human-to-human contact (Chan et al., 2020). Crowding can also elicit negative emotions associated with consumers' health risk perceptions since social distancing is one of the principal strategies for containing the spread of the virus (Kim and Liu, 2022). Despite the relevance of this topic, the current literature review revealed that the effects of crowding/social distancing appear in only two of the selected studies (Castañeda-García et al., 2023; Profumo et al., 2021) and with controversial results.

The relation between perceived risk and intention to travel (*et similia*) is recognized as negative, but the massive COVID-19 vaccination program may have influenced tourists' travel intentions (Kırlar-Can and Ertaş, 2022; Shah Alam et al., 2023; Williams et al., 2022b). For instance, Kırlar-Can and Ertaş (2022) concluded that COVID-19 vaccines decreased health risk perception and increased behavioral intention. In fact, vaccination affects risk perceptions, behavioral intentions, and the travel behaviors of travelers resulting in intention and travel behavior increasing after vaccination.

Concerning trust and the current COVID-19 situation, the examined literature revealed that previous empirical work has predominantly examined trust through a single level of analysis, fundamentally ignoring trust's multi-level role, with the exception of one contribution (Profumo et al., 2021). Research on multi-level trust also remains limited (Fulmer and Dirks, 2018) in the tourism domain. The studies focus on the following.

- trust in the vaccine (e.g., Shah Alam et al., 2023; Williams et al., 2022b; Zhu et al., 2022);
- trust in the government/sanitary system (Gursoy et al., 2022; Suess et al., 2022; Woosnam et al., 2022; Zheng et al., 2021);
- information credibility concerning the vaccine (Williams et al., 2022b).

Existing studies predominantly concentrate on the macro-level of trust and often overlook the investigation of micro-level trust, specifically trust in the company and interpersonal trust. To the best of our knowledge, no scholars have explored the role of trust at different layers of analysis in the relationship between risk and intention to travel. However, considering the various types of trust independently and ignoring the combined effect that may emerge from jointly analyzing these trust layers creates non-trivial gaps in understanding the concept, with little cross-fertilization. The analysis presented in Table 1 reveals the main theoretical approaches that were employed to explore the relationships among risk, trust, and intention to travel in crisis scenarios. Firstly, several studies use protection motivation theory (PMT) deriving from the seminal work of Rogers (1975) to analyze the relationship between risk and intention to travel (for instance, Castañeda-García et al., 2023, Kim et al., 2023a, Kırlar-Can and Ertaş, 2022, Shah Alam et al., 2023, Williams et al., 2022b, Zheng et al., 2021). Among them, some contributions (Kaplan et al., 2022; Shah Alam et al., 2023; Williams et al., 2022b) insert trust in the PMT, demonstrating the positive role of trust in mitigating risk and shaping intention to behave. Trust is also applied in other studies that adopt other theoretical approaches, such as the health belief model (Suess et al., 2022), social exchange theory (Woosnam et al., 2022), and prospect theory (Zhu et al., 2022). For the aim of this paper, the present authors encapsulate multi-layer trust into PMT to explore its role in shaping risk and intention. The following subsections illustrate the resulting perspective.

2.1. PMT and risk

PMT (Rogers, 1975) has been commonly applied to represent consumers' behavioral changes in risky and threatening situations that cause fear and anxiety, like during health or disaster crises (Shah Alam et al., 2023) or IT privacy-related threats (Oh et al., 2023). When such situations occur, consumers need to protect themselves by adopting protection measures related to a set of cognitive processes (threat appraisal and coping appraisal). In the threat appraisal process, individuals evaluate the likelihood of a threatened event occurring and its intensity. Threat appraisal processes embrace the individuals' risk perception. In the coping appraisal process, people estimate their ability to cope with the threat by leveraging mechanisms to prevent or reduce it. Thus, PMT theory suggests that in risky situations, such as health-related crises in the tourism and hospitality sectors, individuals will engage in protective behaviors that limit their exposure to the threat, which diminishes their intention to travel (Kırlar-Can and Ertaş, 2022; Shah Alam et al., 2023; Zheng et al., 2021). Health issues threaten the personal health and well-being of travelers, staff members, and even local residents, increasing consumers' perceived health risks. Consequently, travelers will protect themselves by limiting their intention to travel. Many factors might impact the perception of the seriousness of the threat and vulnerability at the base of risk perceptions. During a pandemic, such as the COVID-19 health crisis, perceived crowding can represent one of the most significant factors, as the virus can be easily transmitted through human-to-human interactions.

2.2. Trust and intention to travel

Trust is generally related to uncertain or risky environments, like health crises (Castaldo et al., 2021), online platforms (Roh et al., 2022b), or self-service technologies (Kim et al., 2023b), in which the trustor, by trusting the trustee, "voluntarily puts himself in a vulnerable situation" (Castaldo et al., 2010, p. 663). In trust research, trust serves as a means for the reduction of complexity and risk (Luhmann, 1979; Luhmann, 1991). Trust is considered a mitigating force capable of generating certainty even in situations characterized by uncertainty and vulnerability, and it influences people to choose a specific behavior (Roh et al., 2022a). Specifically, trust implies substituting an external risk that is difficult to manage (such as a health risk) with a relational risk, which is more intellectually manageable.

During a health crisis, trust is crucial to maintaining and promoting consumers' purchasing intentions (Profumo et al., 2021), acting as a mitigating factor of perceived risk in crisis scenarios (Zheng et al., 2022). Limited research emerging from the literature review has, in fact, framed trust in the PMT (Kaplan et al., 2022; Shah Alam et al., 2023). Hence, there is a relevant gap in perspectives that consider trust as a variable with the potential to mitigate perceived vulnerability or influence individual protective behaviors. In this vein, trust serves as a countervailing power against risk, positively influencing the intention to travel. As a foundational element within mechanisms to mitigate risk perception, trust plays a crucial role in fostering coping strategies that encourage travel intentions. In other words, while risk may diminish the intention to travel, trust may positively impact the intention to travel.

Table 1
Exemplary studies of the sample articles.

Paper	Sample/context	Theoretical approach	Variables	Method	Main results and conclusions	Implications
Al-Hattami (2021)	222 Indian customers (online shopping)	Expectation-confirmation model (ECM), task-technology fit (TTF), and **trust**	Outcome: intention to continue usage of online shopping under COVID-19. Other variables: confirmation, perceived usefulness, **trust**, perceived TTF. Mediator: satisfaction towards continuous using online shopping.	Quantitative (PLS-SEM)	Confirmation affects perceived usefulness and satisfaction. Perceived usefulness influences satisfaction and intention to continue usage. Satisfaction enhances continuance usage, such as perceived TTF. Higher levels of trust enhance satisfaction and continued usage.	The paper combines ECM and TTF with trust and explains predictors of the intention to continue the usage of online shopping. Practically, the challenge for online shopping service providers is to stimulate consumers by powering satisfaction, usefulness, TTF, and trust.
Bremser et al. (2021)	Sample for quantitative research: 605 travelers. Sample for qualitative research: 20 interviews.	Health belief model, risk, and **trust**	Outcome: willingness to travel domestically/internationally. Other variables: perceived susceptibility, severity, self-efficacy, and risk. Moderator: experience, contact with the disease.	Mixed methods: quantitative and qualitative	Despite COVID-19, people were willing to travel during the time of on and off travel restrictions and perceived the benefits of wearing masks, social distancing, and other containment measures. In the qualitative analysis, the role of **trust** in government emerges.	The study focuses on the psychological factors that affect travel decisions and behavior (self-protective behavior). Understanding these factors can help organizations, health institutions, and governments in framing COVID-19 safety strategies.
Castañeda-García et al. (2023)	250 Spanish tourists, 47 destination managers, and 29 public healthcare managers	PMT	Outcome: Intention to travel to Spain. Other variables: 15 NPIs (non-pharmaceutical interventions) then grouped in social distancing, public healthcare-system improvements, tourist controls, and capacity and opening-hours regulation.	Quantitative analysis (regression + semi-qualitative technique – fuzzy set comparative) and qualitative analysis	Social distancing and public healthcare-system improvements increase intention to travel. For destination managers, tourist controls support tourism recovery. Public healthcare-system improvement effects are positive in the case of tourists and negative in the case of destination managers. Destination managers and healthcare managers identify the relevance of tourist controls.	Analyzing the three stakeholder groups helps identify the perceptions and risks/benefits of NPI for tourism recovery. In this vein, policymakers should work with other stakeholders to provide effective interventions. **Trust** in public authorities and information is important.
Fuchs (2022)	38 foreign visitors from Europe who were visiting Phuket	**Trust**/risk	Perceived travel risk during COVID-19	Qualitative (interviews)	Four themes emerge, i.e., the status of COVID-19 in the destination country, visibility and **trustworthiness** of information, healthcare facilities, and responsible tourism development.	Implications for policymakers for post-pandemic travel policy consideration: **trust** in public information influences the travelers' perceived travel risk.
Gursoy et al. (2022)	Two studies - same US respondents (n. 1021 in the first round and n. 266 in the second round)	Secondary risk theory (extension of the protection motivation theory) and **trust as a risk absorber**	Outcome: Changes in vaccination intention. Other variables: Message frame (gain/loss); message appeal (rational/emotional); information (objective/subjective) about vaccine X message appeal; information (objective/subjective) about vaccine X message frame. Mediator: Vaccine risk. Moderator: Travel desire	Quantitative (experiment and a longitudinal research design)	Loss-framed messages reduce risk perceptions more than gain-framed and emotional-rational messages, changing vaccination intentions. Travel desire moderates vaccine risk perception (secondary risk). **Trust** is not inserted in the quantitative model but is part of the secondary risk model: trust reduces risk.	The main implications are in terms of communication aimed at increasing vaccination intention and reducing the secondary risk (vaccination). Loss-framed message is more effective.
Kaplan et al. (2022)	856 transit users	PMT and **trust**	Outcome: Transit use reduction after the first lockdown. Other variables: Maladaptive denial beliefs (personal immunity to health effects, skepticism regarding potential health consequences, and normalizing the risk); threat appraisal (risk, general fear, personal fear); personal vulnerability; personal	Quantitative (probit structural equation model - multiple indicators and multiple causes (SEM-MIMIC))	a) Skepticism, risk ubiquity, and personal immunity beliefs drive maladaptive threat appraisal; b) mask-wearing and social distancing contribute to the fear of infection; c) perceived threat reduces transit use, but trust in transit operators encourages it; d) trust in	The implications focus on communication. Transport and health authorities should inform the public about transit use during the pandemic.

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Table 1 (*continued*)

Paper	Sample/context	Theoretical approach	Variables	Method	Main results and conclusions	Implications
			coping appraisal; organizational coping appraisal **(trust** in authorities, trust in transport operators, quality of transport operators).		transit operators in a franchised system hinges on perceived service quality and confidence in government regulation.	
Kim et al. (2023a)	Study 1: Systematic literature review on COVID-19, Coronavirus, and hotel; Study 2: experiment on 219 adults in hotel industry	PMT	Price discount, crisis communication, and service delivery (human, contactless). Mediator: Coping appraisal (consumer confidence, response efficacy).	Systematic literature review and experiment	Study 1 - Crisis response strategies for the hotel industry: revenue management, communication, service delivery, HRM, CSR. Study 2 - Communication and contactless services stimulate consumer confidence and response efficacy, creating positive consumer attitudes and booking intentions. Crisis communication and price discounts are able to influence consumers' attitudes and booking intentions directly. **Trust** is not a variable but a goal of communication strategy.	Identification of the most effective crisis response strategies for the hotel industry. Crisis management response strategies are inserted in the PMT model, focusing only on coping appraisal.
Kırlar-Can and Ertaş (2022)	485 Turkish outbound travelers	PMT	Outcome: travel behavior. Antecedent: vaccination. Mediators: Behavioral intention (coping appraisal), risk (threat appraisal).	Quantitative (partial least squares-structural equation modeling)	Vaccination impacts travel risk perception, behavioral intention, and travel behavior. Travel risk perception significantly impacts behavioral intention and travel behavior. Behavioral intention also significantly impacts travel behavior.	Vaccination will help tourism recovery. Considering the role of vaccination on intentions and risk perceptions, implications for communication, advertising, and marketing activities are based on the importance of getting vaccinated.
Profumo et al. (2021)	447 individuals in the Italian cruise context	**Trust**/risk	Dependent variable: Risk. Independent variable: Crowding. Control variables: **Multilayer trust,** health risk.	Quantitative (stepwise regression model)	Human crowding and spatial crowding increase the perceived health risk. The effect of corporate reputation does not reduce the cruisers' perceived risk. Trust is not significant.	Managers need to educate customers, thus preventing the risk of future infections. In terms of institutional communication, the image of crowding can be used in order to reduce the usage of irresponsible behaviors. Debate on global mass tourism is stimulated.
Salesi et al. (2022)	Air transport and tourism sectors. 159 papers	**Trust**/risk	Dependent variables for the meta-analysis = Effectiveness of policies and measures. Independent variables: explanatory factors derived from the literature (e.g., types of sanitary measures, public policies).	Literature review (descriptive analysis, content analysis, thematic analysis, and a meta-analysis)	The descriptive analysis underlined the lack of research and focus on the South Pacific Region. The content and thematic analysis showed the factors contributing to the effectiveness of travel-related policies and measures.	Short-term policies and measures (e.g., travel restrictions, social distancing) and a long-term strategy (e.g., vaccination) should be implemented to address future pandemics. Customer trust is a key factor in stimulating the recovery. Policymakers may observe other regions' successful strategies for gaining public **trust** in the vaccination.
Shah Alam et al. (2023)	320 Malaysians who would normally travel frequently outside the country	PMT and **trust**	Outcome: travel intention. Other variables: Protection motivation, fear appraisal (perceived threat vulnerability, perceived threat vulnerability, perceived threat severity), coping appraisal (response efficacy, cost efficacy, self-	Quantitative (cross-sectional survey method – SEM)	Protection motivation positively impacts the tourists' travel intention, trust is negatively related, and perceived risk is not related. Threat severity, threat vulnerability, fear, response efficacy, response cost, and self-	The research extends PMT by inserting cognitive factors on protection motivation and travel intention. Identifying scenarios reflecting the COVID-19 pandemic and post-vaccination differences in risks, fear,

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Table 1 (*continued*)

Paper	Sample/context	Theoretical approach	Variables	Method	Main results and conclusions	Implications
			efficacy), **trust** in vaccination, and perceived risk		efficacy are strong predictors of protection motivation. Trust is negatively related to perceived risk, threat vulnerability, and threat severity.	and motivation to travel is significant for travel crisis management (recovery) and for communication strategies.
Suess et al. (2022)	1478 travelers	Health belief model, risk and **trust**	Outcome: Support for COVID-19 vaccination requirement prior to travel. Other variables: Perceived susceptibility to COVID-19, perceived severity of COVID-19, perceived protection benefit of vaccine for travel, **trust** in the information provided by the government, media, and scientists, and belief that others should be vaccinated for COVID-19 prior to any travel. Moderators: travel frequency and prior infection with COVID-19.	Quantitative (multistep group structural equation model analysis)	The factors influencing vaccination intention are a strong belief in the protection benefits of the vaccine and a higher level of perceived susceptibility to COVID-19. Trust in the information provided by the government and scientists affects the perceived severity of COVID-19 and perceived susceptibility to COVID-19.	The main implications are the relevance of the role of the government, imposing vaccination mandates, and marketing communications of vaccine benefits.
Williams et al. (2022a)	8962 respondents from China, the USA, Germany, the UK, and France	Risk/crisis	Dependent variable: Timing of next intended trip. Key independent variables: General, travel (domain-specific), and COVID-19-related situational risk, tolerance and perceived competence to manage these risks, intolerance of uncertainty (**distrust**). Control variables: Sociodemographic variables.	Quantitative (ordinal logistic models)	The study emphasizes that intentions to travel during COVID-19 (intra- and inter-continental scenarios) are influenced by risk, uncertainty, ambiguity tolerance, and perceived competence in risk management. Key factors include tolerance of COVID-19 situational risk, tolerance of general risk, and perceived competence in managing COVID-19 situational risk. Similarities characterize the two scenarios, with notable national differences, especially between China and the US.	It expands the theoretical framework of the impact of risk/uncertainty on tourism decisions by introducing the concept of intolerance of ambiguity. It explores the role of three levels of risk factors: general, domain-specific, and context-specific. Tourism operators should demonstrate how they address a range of perceived sources of risk and uncertainty.
Williams et al. (2022b)	3893 Italian residents interested in tourism activities (e.g., workers)	PMT and **trust**	Theoretical constructs from PMT, **vaccine confidence (trust)**, misinformation social media usage	Quantitative (cluster analysis)	The cluster analysis identified two segments (i.e., high confidence group and low confidence group) of Italian residents based on their COVID-19 vaccine confidence (trust) levels. Each segment presents differences between PMT segments of theoretical constructions of risk perceptions and coping perceptions along with social media engagement and travel behavior.	Implications for policymakers and destination marketers are provided, with the aim of planning institutional campaigns pro-vaccination for tourism recovery. It is necessary to focus on vaccine confidence (trust) not only for tourists but also for other stakeholders involved in the tourism industry.
Woosnam et al. (2022)	485 interviews from residents of the state of Georgia who work in the tourism industry	Social exchange theory and **trust**	Outcome: Pro-tourism behavior. Other variables: Residents' personal economic benefit, **trust** in government, risk, positive/negative impact of tourism (mediator).	Quantitative (structural equation model)	COVID-19 risk perception was not a significant predictor; positive and negative tourism impacts had the strongest influence. Trust in state government affects attitudes toward positive tourism impacts and pro-tourism behavior. According to social exchange theory, residents are likely to sustain support for tourism through pro-tourism behaviors.	Destination marketing organizations should monitor residents' attitudes toward tourism. Trust in the government is significant so that implications in terms of communication are provided. This monitoring should be implemented as more individuals receive the COVID-19 vaccination.

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Table 1 (*continued*)

Paper	Sample/context	Theoretical approach	Variables	Method	Main results and conclusions	Implications
Yang et al. (2021)	249 papers from 76 academic journals in and outside tourism	**Trust**/crisis	Search keywords for the literature "coronavirus tourism", "pandemics tourism", "pandemic tourism", "COVID tourism", "coronavirus tourist", "pandemics tourist", "pandemic tourist", and "COVID tourist"	Systematic literature review	Five key themes are analyzed, i.e., (1) psychological effects and behavior, (2) responses, strategies, and resilience, (3) sustainable futures, (4) impact monitoring, valuation, and forecasting, and (5) technology adoption.	Implications for future research frame psychological effects and behavior (e.g., fear), corporate response strategies (crisis management, **trust**), sustainability and inclusion, monitoring, valuation, forecasting analysis for strategy, and new technology adoption.
Zheng et al. (2021)	1208 respondents across mainland China	Protection motivation theory, coping, and resilience theories + **trust**	Outcome: Travel avoidance, cautious travel, travel fear, threat severity, threat susceptibility, response efficacy, self-efficacy, protection motivation, resilience, problem-focused coping, self-supported emotional coping, social-support emotional coping, disengagement coping.	Quantitative (PLS-SEM)	Threat severity and susceptibility provoke 'travel fear', stimulating protection motivation and protective travel behaviors. 'Travel fear' evokes different coping strategies, enhancing psychological resilience and cautious behaviors.	Communication and policies must alleviate public fear and enhance tourist safety post-COVID-19 in tourism. Emphasizing the role of protection motivation is crucial to communicating adopted sanitary measures.
Zhu et al. (2022)	Adult Australian. I wave: 755 respondents. II wave: 247 (positive attitude toward vaccinations)	Prospect theory and **trust**	Willingness to get vaccinated, **trust** that the vaccine works, trust that the vaccine is safe, attitude toward travel.	Quantitative (decision tree + experiment)	The decision tree analysis identifies the role of "Trust that vaccine works" and "Trust that vaccine safe" and the role of personal characteristics in shaping vaccine willingness. Building on prospect theory, the efficacy of a gain/loss-framed message was demonstrated (experiment).	Governments should reduce vaccine hesitancy and people's skepticism. Building trust and gain/loss-framed messages are important tools.

3. Main constructs and hypotheses development

3.1. Crowding

COVID-19 has accentuated the importance of crowding in the tourism sector as an element capable of increasing the perceived vulnerability of tourists and, consequently, their perceived health risk (Kock et al., 2020; Lim, 2021; Park et al., 2021). Crowding indicates an assessment or appraisal of perceived density arising from the interplay between sociological, spatial, and individual factors (Eroglu and Harrell, 1986; Rapoport, 1975; Stokols, 1972). Previously investigated as a significant factor in the retail context (Eroglu and Machleit, 1990; Machleit et al., 2000), crowding has been classified in the literature into two distinct components: "spatial crowding," denoting confinement within a limited physical space, and "human crowding," which indicates an abundance of individuals (Machleit et al., 2000, p. 30). The literature also highlights that spatial crowding has an adverse impact on individuals' perceptions and behaviors (Kock et al., 2020). Conversely, the effects of human crowding exhibit variability and reliance on different factors (Blut and Iyer, 2020). Dense situations can trigger the neuro-psychological avoidance system and elicit responses such as coping strategies (Maeng et al., 2013; Pearlin and Schooler, 1978). However, in contexts like sporting events, concerts, or bars, human crowds play a pivotal role in stimulating social motivation (Thomas and Saenger, 2020). Since human-to-human transmission of diseases amplifies during a pandemic, crowding environments may increase individuals' perceptions of risk. Therefore, aligned with the PMT framework, this study suggests that human crowding and spatial crowding increase risk perception, especially in the pandemic context where crowding is perceived as a relevant health threat. Therefore, it is expected that.

H1. The perceived human crowding enhances the perceived health risk.

H2. The perceived spatial crowding enhances the perceived health risk.

3.2. Risk

Risk in the tourism sector has been studied extensively. This stems from the inherent characteristics of the tourism and hospitality domains that make them susceptible to various crises and disasters associated with diverse factors, including political events, natural occurrences, epidemics, terrorism, and wars (Valeri, 2022). Recent years have witnessed a heightened acknowledgment of health-related challenges arising from diseases, viral illnesses, and global pandemics, marking them as significant risk factors in the tourism sector (Mizrachi and Fuchs, 2016; Liu et al., 2016). In alignment with PMT, consumers' perceived risk triggers negative emotions such as insecurity, fear, and stress during decision-making (Jonas et al., 2011; Kozak et al., 2007), leading to protective behaviors that diminish travel intentions. The emergence of the COVID-19 pandemic has further emphasized the relevance of perceived risk in the tourism sector, with a particular impact on the cruise industry. According to the PMT framework, risk assumes significance in the cruise context due to the complex decision-making process it involves (Holland et al., 2021) as cruising is not a standalone service but a combination of interconnected services that collectively shape a distinctive and personalized experience. In the COVID-19 scenario, the intention to travel is affected by the heightened perception of health risks related to the confined environment of a ship and the resulting challenges in maintaining social distance. Decision-making for cruise passengers during a pandemic becomes fraught with uncertainty, with factors like the potential for cabin quarantine, cruise termination due to onboard outbreaks, and the risk of

being unable to visit planned destinations introducing elements of hesitation and prompting delays in purchasing cruise packages, often culminating in booking cancellations (Castaldo et al., 2021). The perceived vulnerability of travelers to such events will lead to protective behaviors, which in turn influence the intention to travel. Therefore, the following hypothesis is proposed.

H3. Perceived health risk diminishes the intention to travel.

3.3. Multi-layer trust

In contexts characterized by uncertainty and high risk, trust is crucial in mitigating threats and absorbing risk, thereby reducing uncertainty levels (Luhmann, 1979, 1991; Mishra, 1996). The literature has established a positive relationship between trust and behavioral intentions (Singh and Sirdeshmukh, 2000). Scholars have observed that trust helps to promote consumers' purchasing intentions even during critical events (Castaldo, 2007; Castaldo et al., 2021; Laroche et al., 2004). Trust acts as a counterbalance, directly opposing the perceived risk. While existing studies consider various types of trust independently, this research focuses on the interplay among different trust layers and the intention to travel. Drawing from PMT principles, this research explores both endogenous (trust in the company and interpersonal trust) and exogenous trust (trust in vaccine and trust in the certification) within a crisis context, thereby exploring the dynamics of trust in the face of vulnerability and threat perceptions related to health risk.

3.3.1. Trust in the company

In the broader context of service sectors, previous research has identified the pivotal role of trust in the company, particularly within the tourism and cruise spheres (Wu et al., 2018). Trust in the company is a critical element of the quality of relationships between the company and its customers. It establishes the foundation for maintaining stable and loyal connections even in the face of crisis events. Indeed, trust is a determining factor in preserving long-term relationships (Grosso et al., 2020). During a health crisis, consumer perception of safety is key in shaping intentions to travel. As a result, adopting sanitary measures is crucial to creating customer trust (Stanca et al., 2023). For this reason, to ensure the safety and hygiene of passengers during the pandemic, cruise lines have implemented rigorous sanitary protocols and created "bubble" holidays aboard and on the mainland to prevent contagions. Cruise lines are considered responsible for the health preservation of a large community composed of thousands of guests and crewmembers.

Companies promote responsible tourist behaviors by disseminating information to ensure that customers understand, adhere to, and share sound medical recommendations while implementing correct procedures. Moreover, companies stimulate trust through pricing strategies featuring flexible cancellation policies, provision of medical assistance for onboard disease, and the introduction of innovative and safer entertainment facilities and medical centers (Quintal et al., 2022). Within the PMT framework, trust in a specific cruise company can be considered a mitigating factor, absorbing the perceived risk associated with potential crowding situations and consequently increasing consumers' intention to travel again. Previous research encapsulated trust as a factor capable of activating coping appraisal mechanisms (Kaplan et al., 2022). When individuals trust that the company has implemented effective preventative measures and is transparent in its communication, they are more likely to overcome apprehensions and maintain a positive attitude toward travel, reinforcing their intention to travel. This leads to the following hypothesis.

H4. Consumers' trust in the company enhances the intention to travel.

3.3.2. Interpersonal trust

Interpersonal trust is the general predisposition of an individual to trust others (Rotter, 1980). Interpersonal trust "refers to an individual's positive expectation that others will contribute to overall well-being without causing harm" (Yuan et al., 2022, p. 2). Such trust is critical during emergencies and their recovery phases because it allows people to coexist and collaborate (Righetti and Finkenauer, 2011). Compliance with COVID-19 precautionary measures is indeed relevant for the recovery of the tourism and hospitality sectors and is related to trust in the government (Shanka and Menebo, 2022).

Interpersonal trust assumes a relevant significance, especially within communities characterized by intense interpersonal relations (Borgonovi and Andrieu, 2020), given the nature of COVID-19 as a viral infection that can be transmitted even during a symptomless or peri-symptomatic phase (Bai et al., 2020). The adherence to non-pharmaceutical interventions (e.g., testing, isolation, and contact tracing), personal preventative measures (e.g., face mask use, hand sanitization), and social distancing measures depends on individual behaviors aimed at curbing viral transmission. According to the PMT framework, interpersonal trust emerges as a potential predictor of responsible behaviors and influences the inclination of individuals to follow prescribed measures and norms to limit the diffusion of the virus (Stefaniak et al., 2022). In this vein, trust in other community members stimulates participation in social activities since the community is considered safer and more protective. Interpersonal trust dynamics strengthen mutual reliance and activate mechanisms of participation. This leads to a renewed intention to behave, effectively counterbalancing the vulnerability and threat perceptions associated with the spread of the virus.

Cruisers, especially repeaters, create a strict community where social interactions are integral to the vacation (Huang and Hsu, 2009). They also are used to foster online communities to share information, advice, and comments. Based on PMT-related concepts, as individuals' levels of interpersonal trust grow, the intention to travel tends to increase. This is driven by the notion that heightened interpersonal trust stimulates increased engagement in social activities, fostering a sense of security within the community. Therefore, the following hypothesis is proposed.

H5. Consumers' interpersonal trust enhances the intention to travel.

3.3.3. Trust in the vaccine

The increasing vaccination rates across numerous countries may have lowered consumers' perceived risk concerning the current pandemic. This shift in risk perception, in turn, might have increased consumers' willingness to travel, playing a significant role in the recovery of the hospitality and tourism sectors (Gursoy et al., 2022; Seçilmiş et al., 2022). Individual beliefs regarding the necessity of vaccination are relevant to understanding tourists'' decision-making processes (Suess et al., 2022; Williams et al., 2022b). From a broad perspective, previous research has shown that people with lower trust in the vaccine express reduced desires to travel internationally (Zhu et al., 2022). In the PMT context, the literature presents a more nuanced perspective on the relationship between trust in the vaccine and travel intentions. While some studies argue that effective vaccination campaigns help to revive the tourism industry (Gössling et al., 2020), others contradict these findings. For instance, Seçilmiş et al. (2022) did not find a moderating effect of trust in the vaccine on visit intentions, and Ram et al. (2022) found that vaccination was not a direct predictor of the intention to travel. Despite the diverging findings in the literature, prior research on the cruise industry indicates a preference to wait for a COVID-19 vaccine before embarking on a new journey (Holland et al., 2021). The decision to consider cruising is contingent upon the assurance that a vaccine will provide enhanced immunity and safety against potential health threats during the cruise. Therefore, it can be assumed that.

H6. Consumers' trust in the vaccine enhances the intention to travel.

3.3.4. Trust in the certification

COVID-19 certification, encompassing proof of vaccination, recent negative test results, or evidence of recovery, was introduced to

facilitate safer participation in various activities (Mills and Rüttenauer, 2022). COVID-19 certification is a factor that enables safer access to a range of activities, encouraging customers to buy and use services again (Shin et al., 2023). From a PMT standpoint, trust in the certification is critical in influencing individuals' intentions and behaviors. Cultivating trust in the certification can significantly reduce the perceived threat of contracting or spreading COVID-19. Trust in the certification acts as a crucial element in the coping appraisal process, influencing individuals' belief in the effectiveness of the recommended response (utilizing the certification) to mitigate the sense of vulnerability. In this way, trust in the certification promotes positive behavioral responses by offering individuals an accessible way to safely engage in various activities (Mills and Rüttenauer, 2022). In other words, COVID-19 certification is not merely a facilitator of safer access but also a psychological tool that directly influences individuals' intention to travel. Despite the certification itself involving issues intertwined with privacy and apprehensions about the utilization of tracking data, as well as the risk of counterfeiting (Adepoju, 2019; Lewandowsky et al., 2021), the positive elements from reliance on certification may prevail in situations of health risks, leading individuals to shape their cognitive and behavioral responses accordingly. In this vein, the following hypothesis is proposed.

H7. Consumers' trust in certification enhances the intention to travel.

Fig. 1 provides a visual representation of the conceptual framework of the hypotheses formulated in this research. Rooted in the PMT, the interconnected constructs in this research suggest that human and spatial crowding likely exert incremental influences on perceived risk (H1 and H2). Subsequently, heightened risk is expected to negatively impact individuals' attitudes towards travel engagement (H3). Various layers of trust are hypothesized to activate coping mechanisms, leading to a counterbalance of the risk's adverse effects on travel intention. Specifically, endogenous trust layers, including trust in the company (H4) and interpersonal trust (H5), alongside exogenous trust factors, such as trust in the vaccine (H6) and trust in the certification (H7), are posited as positive determinants of the intention to travel.

4. Research design

4.1. The research context

This empirical study concentrates on the Italian cruise market. At the national level, Italy's cruise market generates a substantial revenue of 456 million USD, with 791,000 cruise passengers sourced from the country (Statista, 2024). These statistics underscore the pivotal role of the cruise sector as one of the foremost contributors to Italy's tourism industry, solidifying its significance within the broader economic landscape. Italy is also a significant player in the global tourism industry. Based on Cruise Lines International Association data, Italy represents the third-largest source market in the European landscape (CLIA, 2022b). Therefore, investigating this market can provide valuable insights into a sizable segment of the cruise industry.

Italy was one of the first countries to experience a severe COVID-19 outbreak in the early stages of the pandemic. The cruise sector, being highly interconnected with global travel, faced immediate disruptions, and cruise ships became early focal points for the spread of the virus. The situation in Italy underscored the susceptibility of the cruise sector to the rapid spread of infectious diseases and the subsequent need for robust measures and strategic interventions to manage the complexities of public health crises on a global scale. In 2020, which had been anticipated as a remarkable year for the Italian cruise industry, with projections of approximately 5000 calls and handling of over 13 million passengers at domestic ports (Risposte Turismo, 2020), the sudden onset of the pandemic drastically altered the industry landscape. The epidemiological situation prompted the Italian government to implement measures, including the suspension of cruise activities. This led to a substantial decline in the sector's contribution to overall passenger volumes at Italian ports. The resumption of the industry proved to be challenging due to the cautious approach necessitated by the complex health scenario, limitations on free movement, and heightened operational costs.

As the cruise sector experienced the disruptions caused by the pandemic, the resumption of cruise activities post-COVID-19 became largely a matter of trust for customers. Customers' intentions to cruise were influenced by a complex interplay of multi-layer trust, reflecting a nuanced response to the altered landscape and a heightened awareness of health-related considerations in the post-pandemic cruise environment.

4.2. Data collection and sample

This research adopted a survey-based quantitative research approach. Before the survey was administered to cruisers, measures were taken to mitigate the risk of biased responses due to common method bias, social desirability, and acquiescence (Hulland et al., 2018). Respondents were guaranteed anonymity to uphold the privacy principles and adhere to the data protection requirements outlined in the GDPR. This commitment to confidentiality was aimed to instill trust and to ensure compliance with privacy regulations within the cruising community. The questions were formulated to avoid double-barreled and leading questions and care was taken to use neutral wording and

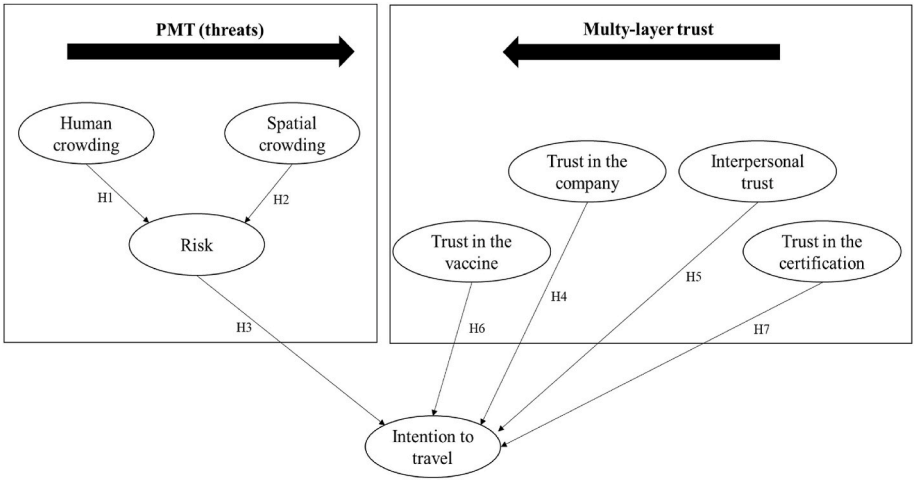

Fig. 1. Research model.

inclusive language. These precautions were intended to reduce the likelihood of socially desirable and unreliable responses (MacKenzie and Podsakoff, 2012).

Before the comprehensive data collection process began, preparatory steps were taken to enhance the comprehension of the phenomenon under investigation and validate the measurement scales employed in this research. These preparatory steps involved pilot testing through structured interviews with cruisers. A questionnaire was administered to a smaller sample of 12 participants, including first-time cruisers and repeaters. This allowed us to identify and address potential issues and refine the wording of the questions. Throughout this phase, participants were encouraged to review and confirm the relevance and completeness of the questionnaire items. Participants' feedback guided the adjustments made to specific items, ensuring improved clarity and reliability in the finalized questionnaire.

The final questionnaire is divided into seven sections. Section 1 focuses on cruising and explores the respondents' familiarity with this type of vacation and their previous experience. Section 2 focuses on interpersonal trust. Section 3 concentrates on trust in the company. The subsequent parts of the questionnaire focus on perceived human and spatial crowding (section 4), perceived risk (section 5), and the intention to cruise (section 6). The final section of the questionnaire concentrates on trust in the vaccine and trust in the certification (section 7). The survey ends with some questions on sociodemographic information.

A professional company was instructed to curate the sample, aligning it with the Italian population of cruisers' age. This step was aimed at creating a sample that authentically mirrored the heterogeneous population of individuals engaged in cruising, thus bolstering the reliability and validity of the findings. In this regard, the average age of Italian cruise passengers (40 years and 7 months) is in line with the average age of the obtained sample (CLIA, 2022a). At the same time, the distribution of sampled respondents across age groups reflects that of cruise passengers on a national basis. The fundamental requirement for identifying suitable interview targets was participation in at least one cruise. As a result, the sample encompasses both first-time cruisers and repeaters, ensuring a balanced representation of varying levels of cruising experience among respondents. The proportion of first-time cruisers and repeaters in the sample was aligned with that observed in a prior study (Castaldo et al., 2021).

The sample size was not predetermined, and the research strategy involved establishing a narrow "time window" for data collection. This study used an online structured questionnaire conducted via Google Forms. The rationale for using Google Forms is that it is easily accessible to a wide range of respondents and does not require any software installations or access keys, making it user-friendly for individuals with varying levels of technical proficiency. In addition, Google Forms allows the organization of survey responses in Google Sheets, enhancing data collection efficiency.

A total of 731 responses were received. In the phase of dataset cleanup before the analysis, respondents who did not meet the predefined criteria were removed, specifically respondents without prior cruise experience (N = 70) and those who did not complete the interview (N = 1). This yielded a total of 661 (90.4%) useable answers. Table 2 provides the sociodemographic and behavioral characteristics of the respondents.

Table 2
Sample characteristics.

	Absolute frequency	Percentage frequency (%)
Gender		
Female	286	43.3
Male	374	56.6
Not disclosed	1	0.2
Total	661	100.0
Age		
18–24	6	0.9
25–34	80	12.1
35–49	310	46.9
50–64	209	31.6
>64	55	8.3
Not disclosed	1	0.2
Total	661	100.0
Income		
<25,000	184	27.8
25,000–50,000	275	41.6
50,000–75,000	82	12.4
>75,000	41	6.2
Not disclosed	79	12.0
Total	661	100.0
Employment		
Entrepreneur/self-employed	97	14.7
Employee	316	47.8
Teacher/professor	28	4.2
Healthcare profession	7	1.1
Workman	50	7.6
Student	12	1.8
Retired/housekeeper/ unemployed	151	22.8
Total	661	100.0
Education		
Post Lauream/PhD/postdoc	101	15.3
Bachelor/master	182	27.5
High school	334	50.5
Primary school	44	6.7
Total	661	100.0
Past experiences		
First cruiser	312	47.2
Two cruises	166	25.1
Three cruises	71	10.7
Four cruises	48	7.3
Five cruises	22	3.3
From 6 to 10 cruises	28	4.2
More than 10 cruises	14	2.1

4.3. Measurements

The items for measuring the different variables were obtained from relevant studies to guarantee content validity (Castaldo et al., 2021). This study mainly employs scales previously validated in the literature, adapting their presentation to align with the specific context of the cruise industry. The responses were measured using a seven-point scale (1 = strongly disagree; 7 = strongly agree). The items for the measure of cruise motivation were adapted from Hung and Petrick (2011). The crowding-related items are based on Machleit et al. (2000) and have been consistently utilized in subsequent studies (Hyun and Kim, 2015). The health risk perception scale was created based on Novelli et al. (2018) and subsequently applied to the tourism industry during a pandemic (Castaldo et al., 2021). Measures of trust in the company and interpersonal trust from Bart et al. (2005) and Guenzi et al. (2009) were adopted. Trust in the vaccine and trust in the certification scales were constructed based on the building blocks provided by Lewicki et al. (1998): hope, faith, confidence, assurance, and initiative. Beginning with the theoretical framework proposed by Lewicki et al. (1998), the building blocks were operationalized into corresponding items. Subsequently, the measurement scale was rigorously tested and validated.

4.4. Measurement assessment

In alignment with the literature, the constructs were operationalized as multi-item scales and modeled as first-order reflective common factor constructs (Crocetta et al., 2021). A factor analysis was first performed based on the principal component analysis (PCA) extraction method separately on each construct to assess the structure of the scales. PCA confirmed the reliability of the different constructs. However, PCA suggested removing two items from the "spatial crowding" scale because of low factor loadings. The remaining items show adequate values of factor loadings for all the scales (Table 3). The total variance explained

Table 3
Descriptive statistics.

Factors	Items	PCA coefficients	CFA coefficients	Mean	SD	Skewness	Kurtosis
Human crowding	1. There are too many cruise passengers on the ship.	0.940	0.962	4.74	1.713	−0.539	−0.519
	2. The queues for using the ship's various facilities tend to be too long.	0.934	0.890	4.81	1.651	−0.636	−0.326
	3. The cruise is too crowded for me.	0.936	0.940	4.66	1.761	−0.494	−0.711
Spatial crowding	1. I often feel "constrained" on the cruise ship.	0.962	0.979	4.05	1.940	−0.063	−1.162
	2. The cruise ship provides very limited space for passengers.	0.962	0.938	4.04	1.893	−0.076	−1.156
Risk	1. I am very scared about COVID-19.	0.861	0.890	4.58	1.857	−0.383	−0.915
	2. Compared to SARS, avian flu, and swine flu, COVID-19 is much more dangerous.	0.806	0.789	5.01	1.734	−0.748	−0.362
	3. It is dangerous to take a cruise because of COVID-19.	0.925	0.916	4.47	1.843	−0.383	−0.839
	4. In my opinion, because of COVID-19, cruises should be avoided.	0.882	0.870	4.15	1.947	−0.188	−1.095
	5. In my opinion, people close to me are reluctant to take a cruise because of COVID-19.	0.869	0.865	4.66	1.830	−0.485	−0.808
Trust in the company	1. I trust my cruise line of choice.	0.957	0.947	5.32	1.608	−0.838	−0.172
	2. Customers, in general, can trust my cruise line of choice.	0.966	0.977	5.30	1.587	−0.836	−0.183
	3. My cruise line of choice keeps its promises.	0.964	0.944	5.35	1.539	−0.931	0.158
	4. My cruise line of choice has my best interests at heart.	0.954	0.964	5.27	1.572	−0.904	0.054
	5. My cruise line of choice is trustworthy.	0.962	0.949	5.36	1.581	−0.886	−0.013
Interpersonal trust	1. Cruise passengers can be trusted.	0.954	0.952	4.97	1.575	−0.529	−0.533
	2. Cruise passengers have the best interests of others at heart.	0.967	0.932	4.79	1.667	−0.446	−0.643
	3. Cruise passengers are trustworthy.	0.971	0.935	4.85	1.631	−0.469	−0.618
	4. Cruise passengers are responsible.	0.964	0.985	4.89	1.651	−0.479	−0.693
Trust in the vaccine	1. I trust the vaccine for COVID-19.	0.968	0.935	5.13	1.866	−0.875	−0.312
	2. The population can trust the vaccine for COVID-19.	0.967	0.930	5.13	1.818	−0.873	−0.266
	3. The vaccine for COVID-19 keeps its promises.	0.964	0.967	5.08	1.806	−0.878	−0.226
	4. The vaccine for COVID-19 is reliable.	0.966	0.930	5.12	1.802	−0.917	−0.141
	5. I place hope in the vaccines for COVID-19.	0.941	0.968	5.24	1.872	−0.949	−0.171
Trust in the certification	1. I put my hopes in the Green Pass	0.960	0.966	4.96	1.997	−0.773	−0.617
	2. I put my faith in the Green Pass.	0.975	0.986	4.91	2.000	−0.729	−0.696
	3. I place hope in the Green Pass.	0.980	0.972	4.94	1.954	−0.761	−0.582
	4. The Green Pass gives me confidence.	0.964	0.915	4.93	1.966	−0.774	−0.571
	5. I support the Green Pass.	0.963	0.891	5.02	2.003	−0.802	−0.588
Intention to travel	1. I will still take a cruise as soon as possible.	0.865	0.781	4.51	1.819	−0.365	−0.806
	2. I will say good things about cruises to other people.	0.922	0.982	5.00	1.591	−0.598	−0.349
	3. I will recommend the cruise to acquaintances and friends.	0.946	0.934	4.98	1.695	−0.623	−0.488
	4. I will encourage friends and relatives to take a cruise.	0.947	0.894	4.82	1.752	−0.601	−0.562

by each construct exceeded the minimum standard for reliability suggested by the literature (>0.70) (Nunnally and Bernstein, 1994). Following this, a confirmatory factor analysis (CFA) was conducted to validate the underlying structures of latent variables. CFA confirms the measurement properties of the abovementioned constructs (Table 3). Skewness and kurtosis served as measures to assess the distribution's characteristics. These measures, providing information on the distribution's asymmetry and tail behavior, showed no significant deviations from the values expected under a normal distribution (Table 3). Table 3 also provides the descriptive statistics of the items (i.e., mean, standard deviation, and distributional measurements).

Table 4 presents the inter-correlations among the latent variables alongside Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), the square root of AVE, and the Heterotrait-Monotrait (HTMT) ratio (Chae et al., 2024). The AVE measured the variance captured by a construct (Table 4). All constructs show AVE values above the suggested threshold (AVE >0.5), ranging from a minimum of 0.756 to a maximum of 0.938. The CR of constructs is higher than the recommended value of 0.6, ranging from 0.939 to 0.987. This result suggests that the latent factors are reliable (Table 4). Cronbach's alpha confirms the reliability of the constructs, exceeding the level of 0.7 (Nunnally and Bernstein, 1994). Collectively, AVE, CR, and Cronbach's alpha confirmed the convergent validity of the constructs. The square root of the AVE for each construct exceeded its correlations with each

Table 4
Inter-construct correlations, convergent and discriminant validity, HTMT, Cronbach's alpha, composite reliability (CR), and AVE.

	Human crowding	Spatial crowding	Risk	Intention to travel	Trust in the company	Trust in the vaccine	Trust in the certification	Interpersonal trust
Human crowding	**0.936**	0.730	0.670	0.220	0.302	0.371	0.343	0.238
Spatial crowding	0.682	**0.922**	0.567	0.146	0.082	0.205	0.236	0.147
Risk	0.623	0.526	**0.869**	0.182	0.278	0.463	0.428	0.235
Intention to travel	0.219	0.110	0.190	**0.921**	0.687	0.418	0.362	0.657
Trust in the company	0.271	0.079	0.251	0.684	**0.961**	0.459	0.378	0.825
Trust in the vaccine	0.354	0.192	0.431	0.417	0.441	**0.961**	0.827	0.399
Trust in the certification	0.314	0.215	0.389	0.365	0.375	0.793	**0.969**	0.328
Interpersonal trust	0.228	0.144	0.221	0.629	0.804	0.382	0.330	**0.964**
Cronbach's alpha (α)	0.930	0.918	0.919	0.938	0.979	0.979	0.983	0.974
Composite reliability (CR)	0.955	0.961	0.939	0.957	0.984	0.984	0.987	0.981
AVE	0.877	0.850	0.756	0.848	0.923	0.924	0.938	0.929

Notes: The bolded diagonal indicates the square root of AVE. Below the diagonal is the correlation between the reflective second-order latent constructs. Above the diagonal is HTMT.

other construct, meeting the requirements for discriminant validity. HTMT of the correlations served to assess construct validity. As shown in Table 4, all HTMT coefficients are lower than the threshold of 0.85, indicating feasible discriminant validity (Henseler et al., 2015). Overall, these assessments affirm the constructs' internal consistency, discriminant validity, and reliability for structural analysis.

4.5. Common method bias test

This research applies three methods to show that there is little chance of a common method bias between latent variables. First, in accordance with the recommendation of Podsakoff et al. (2003), Harman's one-factor analysis was conducted to evaluate potential common method variance (CMV) concerns within our dataset. If no single factor emerges as predominant, explaining a percentage of the variance exceeding 50%, it suggests that CMV is unlikely to pose a significant issue. Exploratory factor analysis (EFA) with items was applied for all multiple-item variables. The one-factor analysis results revealed that the initial unrotated factor accounted for approximately 44% of the variance in the data. This outcome implies that CMV did not emerge as a substantial concern in our dataset. Second, the variance inflation factor (VIF) used to detect multicollinearity between latent variables was determined to be less than 10, ranging from a minimum of 1.028 to a maximum of 1.770 (Petter et al., 2007). Lastly, as reported in Table C (Appendix), the current authors tested for the presence and influence of CMV by applying the three-phase CFA marker-variable technique (Roh et al., 2022b; Williams et al., 2010). According to the instructions provided by Williams et al. (2010), a CFA model with a marker variable was run to examine method effects. A baseline model, fixing correlations and setting indicator loadings based on the CFA model, was then tested. Subsequently, a constrained model (Method-C) with equal factor loadings from the latent marker variable to substantive indicators was examined. An unconstrained model (Method-U) allowed free estimation of these loadings. Lastly, a model fixing covariances at estimates from the baseline model (Method-R) was tested. Results showed the constrained model (Method-C) did not significantly improve fit over the baseline model, indicating minimal common method variance (CMV) between substantive variables and the latent marker variable ($\Delta\chi2 = 11.362$, df = 8, p = 0.182). Comparisons between unconstrained (Method-U) and constrained (Method-C) models ($\Delta\chi2 = 11.364$, df = 16, p = 0.787) and between restricted (Method-R) and unconstrained models ($\Delta\chi2 = 0.002$, df = 36, p = 1) revealed no significant differences, supporting a low likelihood of CMV. Overall, the CFA marker approach confirmed minimal CMV concern in the data.

5. Results

To test the hypotheses, we developed a structural equation model ("lavaan" package of R software) (Rosseel, 2012). Preliminarily, fitness checks were performed to ensure the reliability of the measurement model. The results provide an adequate fit to the data because all the indicator thresholds are in line with those suggested by the literature (chi-square = 2023.741, DF = 473.000, p-value = 0.000, SRMR = 0.079, CFI = 0.952, TLI = 0.946, RMSEA = 0.070, NFI = 0.938) (Hooper et al., 2008). Concerning the hypotheses testing, the results show that most of the hypotheses are supported (Table 5).

As a first step, the risk as an outcome variable was focused on to describe the effects produced by the hypothesized crowding-related drivers (i.e., human and spatial crowding) (see Fig. 2). In detail, the model confirms that human crowding significantly and positively affects risk (β = 0.504, z-value = 9.472, p-value = 0.000***), supporting H1. At the same time, spatial crowding significantly and positively influences risk, with a lower intensity than human crowding (β = 0.225, z-value = 4.406, p-value = 0.000***). Therefore, H2 is confirmed. Based on the double human-spatial configuration of crowding, human crowding is perceived as a source of risk stronger than spatial crowding.

Table 5
Hypotheses validation.

Relational paths	Standardized β	z-value	p-value	Hypotheses validation
Human crowding → Risk	0.504 ***	9.472	0.000	H1 → Supported
Spatial crowding → Risk	0.225 ***	4.406	0.000	H2 → Supported
Risk → Intention to travel	−0.073 *	−2.365	0.018	H3 → Supported
Trust in the company → Intention to travel	0.435 ***	7.717	0.000	H4 → Supported
Interpersonal trust → Intention to travel	0.237 ***	4.432	0.000	H5 → Supported
Trust in the vaccine → Intention to travel	0.097	1.770	0.077	H6 → Not supported
Trust in the certification → Intention to travel	0.064	1.225	0.220	H7 → Not supported

Note: ***p < 00.001, **p < 00.01, *p < 00.05.

The second structural part of the model, where the intention to travel is the outcome variable, was then considered (Fig. 2). The risk and different layers of trust (e.g., trust in the company, interpersonal trust, trust in the vaccine, and trust in the certification) simultaneously affect the intention to travel. The results show that H3 is supported since the perceived health risk significantly and negatively impacts the intention to travel (β = −0.073, z-value = −2.365, p-value = 0.018*). Risk is a significant mediator between crowding and the intention to travel. However, the effect produced by the risk on the intention to travel is slight. Therefore, the risk weakly appears to be a detrimental factor of the intention to travel.

In contrast, trust in the company effectively shapes the intention to travel. The relationship between trust in the company and the intention to travel shows high significance and an intense positive link (β = 0.435, z-value = 7.717, p-value = 0.000***). This finding confirms H4. A comparison of the influence of the different layers of trust reveals that trust in the company is the layer that mainly affects the intention to travel. In addition, interpersonal trust significantly and positively influences the intention to travel (β = 0.237, z-value = 4.432, p-value = 0.000***). Therefore, H5 is supported. Conversely, trust in the vaccine (β = 0.097, z-value = 1.770, p-value = 0.077) and trust in the certification (β = 0.064, z-value = 1.225, p-value = 0.220) do not significantly affect the intention to travel. Therefore, H6 and H7 are not supported.

These results indicate that the layers of trust outside the firm's sphere of influence do not play a relevant role in shaping the intention to travel of a potential cruiser. These findings encourage cruise companies to improve their attractiveness by directly strengthening the trust relationships with their customers.

A post-hoc analysis was then conducted to evaluate the influence of the experience factor. In this step, a multi-group analysis was performed, discriminating between the first cruiser and repeater groups (first cruisers = low experience, as they have experienced only one cruise; repeaters = high experience). Table 6 summarizes the results of the multi-group analysis. The results show that both groups perceive human crowding as the most relevant driver of risk (first cruisers: β = 0.538, z-value = 7.241, p-value = 0.000***; repeaters: β = 0.538, z-value = 7.241, p-value = 0.000***). The spatial crowding effect on risk decreases in intensity and significance in the group of first cruisers (β = 0.145, z-value = 2.270, p-value = 0.023*).

Based on the chi-square difference test (χ^2), the relationship between risk and intention to travel shows an evident difference between groups ($\chi^2 = 0.030$). For first cruisers, this relationship is not significant (β = 0.001, z-value = 0.020, p-value = 0.984), whereas for repeaters, the relationship assumes significance and increases in intensity (β = - 0.140, z-value = - 3.237, p-value = 0.001*). Therefore, repeaters seem to have a higher sensitivity in assessing potential risk situations than do first cruisers because of repeaters' enhanced knowledge of the cruise

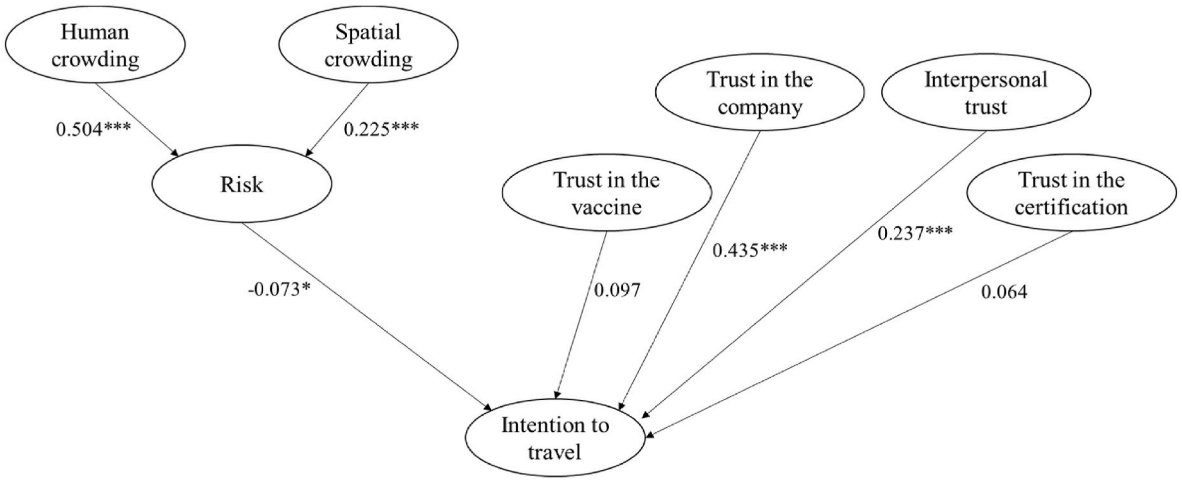

Fig. 2. Results of the structural model.

Table 6
Multi-group analysis results.

Relational paths	First cruiser			Repeater			χ^2
	Standardized β	z-value	p-value	Standardized β	z-value	p-value	
Human crowding → Risk	0.538***	7.241	0.000	0.423***	6.491	0.000	0.254
Spatial crowding → Risk	0.145*	2.270	0.023	0.185***	3.571	0.000	0.630
Risk → Intention to travel	0.001	0.020	0.984	−0.140**	−3.237	0.001	0.030*
Trust in the company → Intention to travel	0.417***	5.149	0.000	0.362***	5.018	0.000	0.611
Interpersonal trust → Intention to travel	0.238**	2.913	0.004	0.249***	3.613	0.000	0.919
Trust in the vaccine → Intention to travel	0.025	0.424	0.672	0.145*	2.216	0.027	0.175
Trust in the certification → Intention to travel	0.062	1.164	0.244	0.015	0.259	0.796	0.555

Note: ***p < 00.001, **p < 00.01, *p < 00.05.

environment and related risks. Multi-group analysis reveals that trust in the company, interpersonal trust, and trust in the certification follow the same path in shaping the intention to travel in both the first cruiser and repeater groups. Accordingly, no significant results of χ^2 emerge for these relationships, except for the relationship between risk and intention to travel, which is significant (p-value = 0.001) only for the repeaters' segment (Table 6).

6. Discussion

Can any lessons be learned from the COVID-19 pandemic that are also applicable to current and future crisis scenarios within the tourism and hospitality sectors? Using the right levers, a company can counterbalance the negative effect of increased perceived health risks and attract customers and thus differentiate itself from competitors. Trust in the company is an effective lever that is capable of absorbing the negative impact of risk deriving from a pandemic and is one of the most effective antecedents of the intention to travel. In this sense, the results of this study strengthen those of prior literature, which focused on the role of trust in risky situations and its positive impact on buying behaviors in the cruise industry (Castaldo, 2007; Castaldo et al., 2021; Laroche et al., 2004). Building trust relationships is pivotal to overcoming crises that can negatively impact intentions to travel.

On the other hand, trust in the vaccine and trust in the certification do not significantly affect the intention to travel. In this context, customer intentions appear to be more sensitive to the layers of trust that are directly under the control of the cruise company than to external types of trust. Concerning trust in the vaccine, the results of this study align with those of previous authors (Ram et al., 2022; Seçilmiş et al., 2022), who did not find vaccination to be a predictor of the intention to travel. This might be attributed to the mutating nature of viruses, which causes cruisers to harbor reservations and lack trust in the vaccine's efficacy in influencing their travel intentions (Seçilmiş et al., 2022). By contrast, in the case of trust in certification, it is likely that issues related to privacy concerns or the risk of forged certificates may have influenced the outcome (Adepoju, 2019).

In a pandemic era, where following sanitary rules is key to preventing the spread of the virus, interpersonal trust positively affects the intention to travel. Cruisers create communities, including online communities, that are characterized by a high level of social interaction and the sharing of information, advice, and comments. If members of these communities trust each other, they expect that others will contribute with their actions to a safe cruise environment and overall well-being without causing harm (Yuan et al., 2022), and this increases the intentions to travel. Therefore, in line with the previous literature (Castaldo et al., 2021; Seçilmiş et al., 2022), cultivating trust relationships becomes a strategic imperative for overcoming crises and reinvigorating travel intentions, particularly in closed environments and socially interactive communities like those found among cruisers.

In addition, the results reveal that, during the COVID-19 pandemic, the perceived health risk negatively affected the intention to travel, and human crowding increased the perceived risk more than spatial crowding did. The first finding follows the mainstream literature (i.e., Castaldo et al., 2021; Holland et al., 2021), while the second finding stresses the importance of crowding as a driver of perceived health risk during a pandemic. Notwithstanding the importance of social interactions in the cruise experience, cruisers appear more worried about human crowding than spatial crowding and this is where the results of this study differ from those of the retailing industry, where the impact of human crowding on buying behaviors was mixed (Blut and Iyer, 2020).

Finally, the multi-group analysis also shows that both first cruisers and repeaters are worried about human crowding, which is the most relevant antecedent of risk. The repeaters, who know the cruise environment well, show a more intense relationship between risk and

intention. It is also noteworthy that trust in the company is the most relevant driver of the intention to travel, especially for first cruisers. Given that repeaters form a community of people with the same passion for cruise vacations, interpersonal trust plays a larger role in shaping the intention to travel.

7. Implications

7.1. Theoretical implications

The novel aspect of the present study is its contribution to the theoretical knowledge about the role of multi-level trust in shaping the intention to travel during a health crisis. To the best of our knowledge, this is the first study to use the environment created by the vaccination against COVID-19 to investigate which layers of trust are more effective in shaping the intention to travel. While the literature has revealed that trust plays a crucial role in risk situations, positively impacting consumers' purchasing intentions and willingness to travel (Castaldo et al., 2021; Gursoy et al., 2022; Seçilmiş et al., 2022), this paper explores this perspective in more depth. The findings suggest that different dimensions of trust play varying roles in shaping travel intentions. Moreover, this research discovered that trust serves as a buffering mechanism to counterbalance the negative impact of perceived risk on travel intentions (Laroche et al., 2004). This finding implies that trust can function as a resilience factor (Zheng et al., 2022), aligning with theories of risk perception and crisis management.

The lack of a significant impact of trust in the vaccine and trust in the certification on the intention to travel suggests that these factors might not be a primary driver of travel intentions (Ram et al., 2022). This finding challenges assumptions that higher trust in the vaccine and trust in the certification, compared to other layers of trust, translate into a greater willingness to travel (Seçilmiş et al., 2022). Theoretical discussions around the influence of health-related trust in specific interventions may need to consider the nuanced nature of travel decisions influencing decision-making processes and other individuals' psychological factors.

In addition, this paper analyzed the crowding-related drivers of the perceived risk, which is crucial during a pandemic. The significant relationship between human crowding and perceived risk in a pandemic context offers theoretical insights into the role of environmental factors in shaping risk perceptions during crises (Chan et al., 2020; Kim and Liu, 2022). This finding extends current knowledge of the crowding concept by unveiling its detrimental effect on individuals' perceptions of health risks. Such a result also improves our understanding of the built environment and risk perceptions (Kock et al., 2020). Specific service contexts, such as the cruise industry, may enhance perceived risk more than others (Blut and Iyer, 2020). This consideration raises the prominence of theoretical models that recognize the contextual variations in risk perception within different service industries.

Regarding tourism studies, our findings contribute to understanding tourists' responsible and health behaviors, demonstrating the central role of trust in the company (Grosso et al., 2020) that is stronger than external layers of trust depending on the sanitary and institutional environment. This result could inspire future studies that explore travel health issues or more deeply explore the relationship between trust and the adoption of responsible behaviors. Moving beyond tourism, it seems evident that exploring the countervailing power of micro-level and macro-level trust in a context of crisis can be relevant for theory building. This is especially true in the service industry, where products cannot be tested in advance and the individual-company relationship is crucial (similar to the individual-others relationship).

7.2. Practical implications

The results of this study also provide some valuable practical implications. For the cruise industry, the relationship between crowding (especially human crowding) and the intention to travel will push companies to modify the concept of cruise ships and the cruise experience to reduce strict social contacts without hampering the idea of being together and having fun. Architectural interventions and innovations in materials and design can reduce highly trafficked areas, thereby facilitating social distancing (e.g., pubs, buffets and restaurants, discos). Moreover, a new idea of cruises is emerging: cruise companies are now investing in new and smaller ships that are oriented to emphasize life on board and the organization of uncrowded excursions to novel destinations.

However, the most relevant practical implication is that the recovery of the business primarily depends on the capacity of cruise companies to create trust. In the context of pandemic risk, internal trust (e.g., trust in the company), rather than external trust (e.g., trust in the vaccine and trust in the certification), plays a relevant role in increasing the intention to travel (Pappas, 2023). In a context where the vaccine, as an exogenous factor, puts everyone on an equal footing, the individual company is what makes the difference. In this light, the fate of the cruise industry appears to be in the hands of companies and their ability to build trust.

7.3. Limitations and future research

This study presents several limitations that may stimulate future research. Firstly, only Italian respondents form the sample. In light of such a limitation, future research may adopt a cross-country design to discern the differences and similarities across various countries and regions. Additionally, future research can extend this cross-country methodology to compare service contexts beyond cruises, such as malls, entertainment parks, and touristic resorts, where the concept of packages prevails, but the brand architecture and control levels over service components differ.

Experimental design and qualitative approaches represent appropriate methods to investigate the antecedents of trust further and identify potential levers for companies. Lastly, tracing the consumer journey, an exploration of how these antecedents evolve across the pre-purchase, purchase, service use, and post-purchase phases will add valuable insights to the research. Moreover, this study analyses only the perceived health risk, but not other types of risk that might affect the intention to travel (e.g., the likelihood of being quarantined in a cabin, the cruise being concluded in advance due to an outbreak on the ship, and the possibility of not being able to visit a destination). Also, future research may consider additional kinds of behaviors due to the pandemic and evaluate their effects in this scenario. For example, panic behaviors can play a relevant role in the context of perceived health risks during crises (Prentice et al., 2020), eroding trust, affecting decision-making processes, and amplifying risk perceptions. Lastly, this research only focused on the demand and does not investigate marketing policies (e.g., price discounts) and corporate communication's role in shaping customers' attitudes to travel.

CRediT authorship contribution statement

Sandro Castaldo: Writing – original draft, Supervision, Conceptualization. **Andrea Ciacci:** Writing – original draft, Validation, Methodology. **Lara Penco:** Writing – original draft, Conceptualization. **Giorgia Profumo:** Writing – original draft, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jretconser.2024.103883.

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