Developing and validating a framework to explain cruise travel intention in the United States: a crisis management perspective

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Abstract

Purpose – This study aims to extend the cognitive appraisal theory by developing and validating a conceptual framework to illustrate how travelers' behavioral intention is generated via a multi-stage evaluation of health-related variables.

Design/methodology/approach – SEM and moderator analysis were conducted to examine the theoretical framework (post-intervention event travel intention) and to investigate how the appraisal process differs across travelers with various attitudes toward vaccination.

Findings – This study found that cruise travel intention was positively influenced by the perceived hedonic value and perceived trustworthiness and negatively influenced by perceived infection risk. Furthermore, whereas perceived hedonic value, perceived trustworthiness and perceived risk of infection were all predicted by crisis management, the dimensions of crisis management operated differently. In addition, vaccination attitudes amplified the unfavorable effect of perceived risk on intention.

Originality/value – Drawing on the CAT, this study developed and validated a conceptual framework to integrate crisis management with customers' behavioral intentions. This study extends existing cruise travel intention theory by demonstrating how post-pandemic travelers' behavioral intention is generated via a multi-stage appraisal-reappraisal process based on the evaluations of infection risks and cruise line crisis management.

Keywords Travel intention, Crisis management, Cognitive appraisal, Cruises, Recovery

Paper type Research paper

1. Introduction

The cruise industry has contributed considerably to both local and worldwide economies through rapid expansion over the past several decades (CLIA, 2020). However, the cruise sector has also been susceptible to numerous threats, such as health-related risks, political unrest, and terrorism (Pan, Shu, Kitterlin-Lynch, & Beckman, 2021). Individuals are

particularly concerned about infection risk due to the lack of cabin ventilation, the older demographic of the cruise market, the popularity of onboard group activities, and the relatively limited medical staff (Liu & Pennington-Gray, 2017). In 2020, COVID-19, a highly contagious virus, expanded globally and nearly wiped out the cruise industry. While the industry has recently emerged from the previous pandemic in 2020 and 2021, the outbreak of Monkeypox gives the industry and cruise travelers a new health-related challenge to worry about (Public Health Communication Collaborative, 2022).

Even though vaccines for these infectious diseases are now widely accessible in the US and have been shown to reduce the risk of severe illness, hospitalization, and death from infection (CDC, 2022), cruise travelers' perceptions of vaccine effectiveness, health safety, and travel policies are still varied. On the one hand, people understand that vaccination cannot completely prevent the spread and infection of the virus since vaccinated individuals still contract the virus, particularly subvariants (Machingaidze & Wiysonge, 2021). Moreover, the US Centers for Disease Control (CDC) warned that cruise travel might facilitate the transmission of infectious diseases due to limited space aboard cruise ships (CDC, 2020a, b). Consequently, health-related concerns present the most significant barrier to cruise-averse travelers (Pan *et al.*, 2021).

On the other hand, a cruise ship is also a controlled environment that could be very safe with proper crisis management (Martinez, 2021). A survey from early 2021 documented that 29.6% of U.S. cruise enthusiasts planned to take a cruise within the next few months, and 30% of tourists would consider traveling within the next year if health-related issues were handled appropriately by cruise lines (Clark, 2021). Furthermore, tourists who embarked on cruises both before and after the pandemic discovered that cruises were much more convenient and safer than in the pre-pandemic era since cruise lines now often operate at about one-third of capacity to facilitate social distancing (Levine, 2021). Chen, Zhang, and Wang (2022) investigated how travelers instinctively and effectively enact the scene of a crisis in their concurrent discourse using the unique scenario of the quarantine of the Diamond Princess in early 2020 and demonstrated that travelers took the cruise line's crisis management guidelines into account when forming a general judgment of their current circumstances.

Travelers' mixed perceptions of post-pandemic cruise travel indicate the salient role of health-related evaluations (e.g. infection risk or crisis management) in developing behavioral intentions. Previous research on cruise travel intention has primarily focused on the influence of perceived experience, service quality, and traveler satisfaction on booking behavior (Li & Kwortnik, 2017; Petrick, 2004; Hyun & Han, 2015). Moreover, recent cruise tourism studies in the COVID-19 pandemic context have investigated the patterns of cruise travelers' social media posts (Chen *et al.*, 2022), the influences of travel constraints and perceived crisis management (Pan *et al.*, 2021), the sentiments about and perception of cruise travel during the outbreak and its impacts (Muritala, Hernández-Lara, Sánchez-Rebull, & Perera-Lluna, 2022), and how online culture (post themes, group member solidarity, group administration) influences cruise tourism (Roth-Cohen & Lahav, 2022). However, the mechanism of health-related evaluations and its role in generating comprehensive cruise travel intentions has rarely been investigated, pointing to a need for extending the existing theory to capture changes in cruise travelers' decision-making process in the post-pandemic era.

To fill this gap, this study aims to develop and validate a conceptual framework to illustrate how travelers' behavioral intention is generated via a multi-stage process based on evaluating infection risks and cruise line crisis management. The study then validates the framework's generalizability to two groups of customers (pro-vaccination versus anti-vaccination). It examines the moderating effect of vaccination attitude on the relationship between perceived risk of infection and intention.

The remaining sections of this paper are structured as follows. Section 2 provides a comprehensive literature review in which the theoretical background is discussed, and the conceptual model is proposed. Section 3 explains the methodologies employed in this study, including sampling and data collection methods, measurement instruments, and data analyses. Section 4 elaborates on the study's results, while the final section (Section 5) provides theoretical and practical implications and discusses limitations and potential directions for future study.

2. Literature review and hypotheses development

2.1 Cognitive appraisal theory (CAT)

The CAT (Lazarus, 1991a, b, c) holds that people's behavioral intentions are caused by their evaluation process, meaning that a person's response to an object is predictable if the evaluation mechanism is known. This theory plays an essential part in current psychology literature in explaining the elicitation of individual emotions (Li, Zhan, Cheng, & Scott, 2021) and is often used in marketing studies to explain consumers' decision-making processes (e.g. Kumar & Garg, 2010; So, Achar, Han, Agrawal, Duhachek, & Maheswaran, 2015; Winterich & Haws, 2011).

Hospitality and tourism research has widely adopted the CAT to examine tourists' diverse responses to service products, events, or experiences, as well as their coping mechanisms in response to unpleasant occurrences or disappointing encounters. Drawing on this theory, scholars have explored how tourists' appraisals of an experience are based on combinations of assessment dimensions (Roseman, 2001). The majority of studies in this research stream have focused on destination marketing and management (Jiang, 2020; Jordan & Prayag, 2022; Hossain, Oppewal, & Tojib, 2022; Assiouras, Skourtis, Giannopoulos, Buhalis, & Karaosmanoglu, 2023), and only a few have examined travelers' behavioral intention toward a service product (Suess, Woosnam, Mody, Dogru, & Sirakaya Turk, 2021; Ribeiro, Gursoy, & Chi, 2022; Pan & Fu, 2024).

This study utilizes CAT as the overarching theoretical framework to validate how cruise travelers' behavioral intention is generated via a multi-stage process based on health-related appraisals. The CAT (Lazarus, 1991a, b) suggests that people's behavioral intention toward a stressful event (stressor) is generated through a series of cognitive appraisal steps. The first step is the primary appraisal, which refers to the initial evaluation of a situation. In this stage, people assess the impact of a stressor (e.g. being exposed to COVID-19 while on a cruise) and determine the extent to which the stressful event threatens them. The secondary appraisal is activated if the stressor is considered important and relevant. The second step is the secondary appraisal, which involves the assessment of potential resources (e.g. crisis management of cruise lines) that can help address the situation. The third step is the reappraisal stage, in which people re-evaluate the stressor based on the perceived effectiveness of resources (e.g. how the current crisis management of cruise lines influences the cruise service) and generate behavioral intention accordingly.

Drawing on the CAT, this study proposes that travelers' intention to take a cruise in the post-pandemic era is generated through a three-stage process (Figure 1). In the primary appraisal stage, travelers' concerns were evoked by the potential threat of exposure to the virus while taking a cruise. In the secondary appraisal stage, travelers evaluate cruise lines' crisis management practices that serve as resources/measures to reduce travel risk. Afterward, in the reappraisal stage, travelers re-evaluate the stressor and develop a set of perceptions (e.g. perceived hedonic value, perceived trustworthiness, perceived risk of infection) that tend to be direct antecedents of travelers' intention to take a cruise.

2.2 Primary appraisal: risk perceptions in cruise travel

Haddock (1993) distinguished between absolute (actual) and perceived (subjective) hazards. Humans cannot evaluate absolute risk, typically managed by commercial providers who apply safety protocols to mitigate risk (Reisinger & Mavondo, 2006). In contrast, perceived
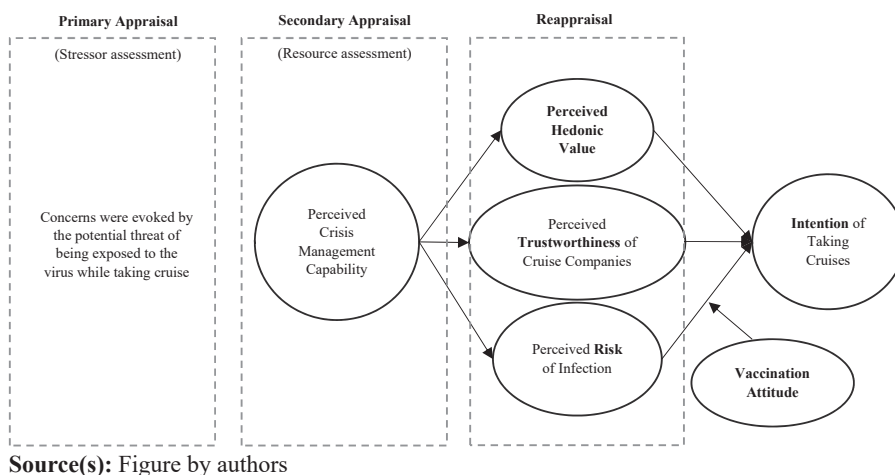
Figure 1.
Conceptual model

Source(s): Figure by authors

risk is assessed by persons who measure context-specific risk levels (Haddock, 1993). In consumer psychology research, perceived risk has been described as "consumers' perceptions of both the uncertainty and the magnitude of the possible adverse consequences" (Tsaur, Tzeng, & Wang, 1997, p. 797). Thus, the perceived risk of tourism can be described as tourists' uncertainty and possible hazards while utilizing travel services (Reisinger & Mavondo, 2006). During a trip, passengers frequently perceive financial, time, satisfaction, social, physical, and psychological risks as potential uncertainties (Jacoby & Kaplan, 1972; Roehl & Fesenmaier, 1992).

Moreover, Reisinger and Mavondo (2006) offered other risk categories in tourism, including crime, culture, health, and politics. Two fundamental aspects influence consumers' perception of risk: the amount at stake and their subjective sense of security throughout a transaction (Cox & Rich, 1964). In cruise tourism, "perceived risk" refers to the nature and degree of danger potential tourists perceive when considering cruise travel. Typically, potential cruise travelers (people who have never traveled on a cruise) are driven to plan a trip to achieve their purchasing goals, and their risk perception frequently correlates with these goals (Cox & Rich, 1964). To increase sales orders, businesses must lower customers' perceptions of the risk of obtaining their desired product (Pan et al., 2021).

Among different types of risk, health-related issues are one of the most severe cruise travel concerns. The term "health risk" refers to "the possibility of becoming sick while traveling or at the destination" (Reisinger & Mavondo, 2006, p. 15). The limited spatial environment on a cruise ship makes it easy for passengers to be exposed to infectious diseases (CDC, 2020a, b). The recent outbreak of the COVID-19 pandemic boosted travelers' anxiety about health risks to an unprecedented level (Chen et al., 2022). Furthermore, one recent study has demonstrated the long-term effect of the COVID-19 pandemic on travelers' cruise travel intention, suggesting that the threat of being exposed to the virus while taking a cruise tends to be a major factor that alters travelers' service evaluation process in the post-pandemic era (Kim, Seo, & Choi, 2021).

2.3 Secondary appraisal: perceived crisis management capability
Previous studies have highlighted the role of cruise lines in mitigating health risks and reducing travelers' health concerns. For example, Minooee and Rickman (1999) studied and

summarized infectious diseases on cruise ships and offered vessel cleanliness techniques for various pathogens. Liu-Lastres, Schroeder, and Pennington-Gray (2019) assessed cruise passengers' responses to health-related risks, providing marketers with numerous insights for designing effective health-related risk and crisis communication messages and plans.

Given the significant impact of crises on the hospitality and tourism industries, crisis management and recovery techniques have attracted the attention of both academia and businesses. Crisis management is "the actions and communications that organizations undertake systematically to lessen the possibility of a crisis, alleviate crisis impact, and restore order after a crisis" (Leta & Chan, 2021, p. 2). The majority of studies to date have focused on crisis management at the organization/firm level (Bundy, Pfarrer, Short, & Coombs, 2017; Leta & Chan, 2021; Bundy & Pfarrer, 2015), whereas few researchers examined the problem from the consumer's perspective (Hsiu-Ying Kao, Wang, & Farquhar, 2020; Pearson & Mitroff, 2019).

Organizations typically have a standard operating procedure (SOP) for handling crises that follows these three phases: (1) pre-crisis: planning; (2) mid-crisis: executing management plans; and (3) post-crisis: recovery (Bundy *et al.*, 2017). However, a disconnect exists between firms' management and consumers, demonstrating that consumers' perceptions of a company's crisis management capabilities may differ from its actual capabilities (Hsiu-Ying, Kao *et al.*, 2020). This gap has important implications for businesses' branding, sales tactics, and marketing management. Hsiu-Ying, Kao *et al.* (2020) developed a cause-and-effect model to examine the relationship between perceived crisis management capabilities, brand attitude, brand credibility, and intention in airline operations. This study highlighted four crisis management skills for airlines: Command and Information, Coordination and Integration, Management and Learning, and Providing Assurance. Cruise lines and airlines have a few similarities, including cramped common spaces, susceptibility to weather, limited medical resources, etc. As a result, this study utilized Hsiu-Ying, Kao *et al.*'s (2020) four factors of perceived crisis management capability for the secondary appraisal stage in the model.

First, *Management and Learning* indicates a company's capacity to develop comprehensive crisis management and training strategies based on experience-based learning. This component includes enhancing resiliency, gaining knowledge from experience, and developing solutions (Pearson & Clair, 1998). Second, *Command and Information* establishes the flow of authority, responsibility, and accountability inside an organization during a crisis. In addition, it evaluates whether a corporation shares crucial information accurately and promptly during a crisis. Hsiu-Ying, Kao *et al.* (2020) stated that "command should cover clear authority and full authorization of senior management, the emergency response of operating units, clear command chain, decentralization, duties, and responsibilities of senior management, implementation of standard operating procedures, crisis response management team, regular crisis management training programs, crisis drills, and preparedness drills, and links to external rescue and medical services" (p. 2).

Thirdly, *Coordination and Integration* entails internal and external emergency coordination, crisis management plan assessment, and media exposure. The final aspect, *Providing Assurance*, describes how a corporation provides clients with high-quality products and dependable services. The findings of Hsiu-Ying, Kao *et al.* (2020) demonstrated that the above factors directly affected brand attitude and credibility but indirectly affected customers' purchase intentions through brand attitude and credibility. The following hypotheses were therefore proposed:

H1. Management and learning promote (a) perceived hedonic value and (b) perceived trustworthiness and reduce (c) perceived risk of infection

H2. Command and information promote (a) perceived hedonic value and (b) perceived trustworthiness and reduce (c) perceived risk of infection.

H3. Coordination and integration promote (a) perceived hedonic value and (b) perceived trustworthiness and reduce (c) perceived risk of infection.

H4. Providing assurance promotes (a) perceived hedonic value and (b) perceived trustworthiness and reduces (c) perceived risk of infection.

2.4 Reappraisal

2.4.1 Perceived hedonic value. Marketing scholars have typically divided product consumption into hedonic and utilitarian dimensions (Batra & Ahtola, 1991). Individuals purchasing a product or service based on their emotional, aesthetic, and sensory experience of pleasure and enjoyment constitute hedonic consumption (Hirschman & Holbrook, 1982). According to studies, customers' perceptions of a product or service's hedonic value significantly and positively affect their purchasing decisions (Dhar & Wertenbroch, 2000; Roggeveen, Grewal, Townsend, & Krishnan, 2015; Li, Abbasi, Cheema, & Abraham, 2020; Chung, Lee, Lehmann, & Tsai, 2022). Dedeoglu, Bilgihan, Ye, Buonincontri, and Okumus (2018) evaluated the relationships among the servicescape, hedonic value, behavioral intention, and the moderating effect of previous customer experiences in the hotel setting. Their results showed that the more hedonic value consumers perceive, the greater behavioral intention they will have, and this impact is most pronounced among first-time travelers. Nevertheless, our study is the first to examine the link between perceived hedonic value and behavioral intention in a crisis. Therefore, H5 was formed.

H5. Perceived hedonic value promotes the intention to take a cruise.

2.4.2 Perceived trustworthiness. The trustworthiness of a company can be described as the reliability of the information provided by a company to the extent that customers believe the company can deliver on the promise it makes (Erdem & Swait, 2001). Consumers' perceptions of a company's trustworthiness substantially influence their sentiments about a product or service. Numerous studies have demonstrated that a customer's attitude can significantly affect his or her buying intent and final choice (Hsiu-Ying Kao *et al.*, 2020; Pan *et al.*, 2021). Erdem, Swait, and Valenzuela (2006) discussed the consequences of uncertainty on consumers' brand perceptions, including attitudes, trustworthiness, and information costs. Strong brands are typically connected with greater perceived trustworthiness, and there are variations in customer attitudes regarding their psychological evaluation process and decision-making when evaluating the perceived risk of acquiring a product or service, as revealed by Erdem's study (risk-seeker vs. risk-averse). H6 was proposed to investigate how customers' perceptions of trustworthiness influence their behavioral intentions during times of uncertainty.

H6. Perceived trustworthiness promotes the intention to take a cruise.

2.4.3 Perceived risk of infection. The literature on risk perception has been thoroughly examined in Section 2.2, and a large body of this research indicates that a higher level of risk perception might negatively impact consumer behavior (Roselius, 1971; Tsiros & Heilman, 2005; Petersen & Kumar, 2015; Gürhan-Canli & Batra, 2004). The term "health risk" refers to "the possibility of becoming sick while traveling or at the destination" (Reisinger & Mavondo, 2006, p. 15). On a cruise ship, travelers are more likely to be exposed to infectious diseases, which can be transmitted from person to person (Liu-Lastres *et al.*, 2019). Due to the confined or semi-closed settings of cruise ships, the CDC recommends that everyone avoid cruise ship travel since the risk of contracting COVID-19 remains high. Minooee and Rickman (1999) studied and summarized infectious diseases on cruise ships and offered vessel cleanliness techniques for various pathogens. Using the risk perception attitude framework, Liu-Lastres *et al.* (2019) assessed cruise passengers' responses to health-related

risk and crisis communication in the context of norovirus infections. Liu's paper provided marketers with numerous implications for designing effective health-related risk and crisis communication messages and plans. In order to evaluate the relationship between the perceived risk of infection and behavioral intention, H7 was developed.

H7. Perceived risk of infection reduces the intention to take a cruise.

2.5 Moderation effect of vaccination attitude

Vaccines are regarded as one of the most significant developments in human history (Allen, 2007). Vaccines such as those for influenza, HPV, and COVID-19 have contributed to protection against viruses in daily life. However, vaccine education has only recently emerged as a public health concern, and the issue of vaccine refusal has a significant impact on our society (Cuesta-Cambra, Martínez-Martínez, & Niño-González, 2019). Vaccination attitudes are typically characterized as pro-vaccination and anti-vaccination (Shelby & Ernst, 2013).

Pro-vaccination refers to persons who have been vaccinated or are prepared to comply with the standard immunization schedule, while anti-vaccination is the polar opposite (Maciuszek, Polak, & Stasiuk, 2022). Understanding the psychological mechanism underpinning the pro-vaccination and anti-vaccination groups' behaviors is essential to explaining their actions. Science is the backbone of modern society's medical and technological achievements; nonetheless, many people have lost faith in science, and a powerful anti-scientific counterculture has formed (Holton, 1993; Lu & Sun, 2022).

Anti-scientific individuals base their decisions on their sources of knowledge and beliefs rather than on established scientific facts (Nichols, 2017). Skepticism of vaccines is an example of anti-science. Despite scientific evidence proving the safety and efficacy of vaccines, anti-vaccination advocates refuse to receive any vaccines due to their beliefs or biased information. During the COVID-19 pandemic, the anti-vaccination group put their lives at risk by opposing vaccines, which significantly accelerated illness outbreaks and strained the US healthcare system (Maciuszek, Polak, Stasiuk, & Doliński, 2021).

Protection motivation theory (Rogers, 1975) was initially developed to explain individuals' self-protective behaviors toward health threats. The theory suggests that threat appraisal and coping appraisal drive an individual's self-protective action (e.g. objection to taking a cruise due to the risk of being exposed to COVID-19). The former refers to evaluating the threat to health (e.g. COVID-19 causes significant health issues); the latter is described as assessing the effectiveness of prevention measures (e.g. avoiding public gatherings to reduce the spread of COVID-19). However, drawing on the CAT discussed previously (see Section 2.1), threat appraisal tends to activate coping appraisal. In other words, there is no reason to cope if the risk is minor. Conversely, when people perceive considerable health risks, they will likely show more protective behavioral intentions to avoid risks. Drawing on this logic, people with a positive attitude toward vaccination will likely perceive a high health risk caused by COVID-19.

In the cruise tourism context, if there is a high perceived risk of COVID-19 infection, people who perceive a high level of health risk are more likely to exhibit protective behaviors (e.g. avoiding taking cruises) in order to reduce that risk (Holland, Mazzarol, Soutar, Tapsall, & Elliott, 2021). For this reason, compared to anti-vaccination travelers, pro-vaccination travelers' intention to take a cruise is more dependent on the level of the perceived risk of infection. For this reason, the following hypothesis was developed:

H8. Vaccination attitude boosts the negative effect of the perceived risk of infection on intention.

3. Methodology

3.1 Structural equation modeling (SEM)

3.1.1 Sampling and data collection. SEM aims to validate the proposed post-intervention event travel intention (PIETI) model. To ensure the theoretical model's generalizability, the target population was identified as all potential cruise line travelers from the US traveler panels were used via Qualtrics, a well-known online survey platform commonly used in social science studies that require reaching a wide range of populations with diverse demographic profiles (e.g. Holt & Loraas, 2019; Shin, Perdue, & Kang, 2019; Tse & Tung, 2020).

Participants completed the study in three steps. First, the purpose of the study and the background information regarding cruise line tourism were provided. A message was presented to notify participants of the potential risks of exposure to COVID-19 during the cruise trip to prompt participants' primary appraisal of the risk (stressor assessment). Afterward, they were asked to complete a Qualtrics questionnaire that captured latent variables in this study. Lastly, their demographic information was collected. Participants who completed all survey questions received a $4.50 incentive. Two rounds of data collection were performed in the SEM analysis for model validation purposes.

3.1.2 Measurement instrument. This study borrowed well-established measurement instruments (Appendix A) from previous research articles to measure latent variables included in the proposed framework. Items of crisis management were adapted from Hsiu-Ying Kao *et al.* (2020) to capture travelers' perception of a cruise line's level of crisis management in four dimensions: *Management and Learning* (5 items), *Command and Information* (5 items), *Coordination and Integration* (3 items), and *Providing Assurance* (3 items). Items to measure *Perceived Hedonic Value* (3 items), *Perceived Trustworthiness* (3 items), *Perceived Risk of Infection (COVID-19)* (3 items), and *Intention* (3 items) were borrowed from Chi, Gursoy, and Chi (2020), Erdem and Swait (2004), Chertok (2020), and Pan *et al.* (2021), respectively. Participants rated All items using a 5-point Likert scale (1: Strongly disagree – 5: Strongly agree). In addition, ten multiple-choice questions were used to collect information on respondents' cruise experiences, cruise preferences, and demographics (including age, sex, race, household income, state of residence, and level of education).

3.1.3 Data analysis. A three-step data analysis approach validated the proposed structural model utilizing SPSS v.24 and Mplus 7.11 software. First, exploratory factor analysis (EFA) was conducted to examine the factor structure of the measurement instrument. Harman's one-factor test was adopted to examine the common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Second, the reliability and validity of the measurement model were tested through confirmatory factor analysis (CFA) using a newly collected dataset. Finally, the structural model was assessed via structural equation modeling (SEM). Model fit indices were used to evaluate the theoretical appropriateness of the proposed model, and path coefficients were assessed to examine hypotheses H1 to H7.

3.2 Moderator analysis

With the SEM analysis demonstrating the mechanism of the generation process of customers' intention to take a cruise at the risk of being exposed to COVID-19, this moderator analysis concentrated on investigating how the framework works differently across travelers with different vaccination attitudes. This examined the moderation effect of vaccination attitude on the relationship between perceived risk of infection and intention to take a cruise. Similar data collection procedures and measurement instruments were used in the SEM analysis. To measure travelers' vaccination attitudes, a 6-item 5-point disagree-agree Likert scale was adopted from Adongo, Amenumey, Kumi-Kyereme, and Dubé (2021). It was placed at the end of the questionnaire to mitigate the potential prime effect caused by the survey design.

3.2.1 Data analysis. To test H7 about the moderation effect of vaccination attitudes, this study performed a Johnson-Neyman analysis using SPSS PROCESS v3.0. Johnson-Neyman analysis provides in-depth evidence of a moderation effect by indicating the significant zone of the primary predictor based on changes in the level of the moderation variable. In addition, the Johnson-Neyman moderation points produced by this analysis provide helpful information that helps interpret the moderation effect of vaccination attitudes. Moreover, potential confounding factors such as perceived trustworthiness, perceived hedonic value, household income, age, and gender were statistically controlled for in the analysis.

4. Results
4.1 SEM
4.1.1 Results of EFA. Three hundred and sixty-three responses ($n = 363$) were collected in February 2021 and used in the EFA (see demographic profile in Appendix B). The examination of measurement item normality indicated that all variables had skewness and kurtosis values of less than 2, suggesting that they were appropriate for EFA. A group of evaluation criteria was used in the factor analysis process. More specifically, the number of factors in the variable set was determined based on the rule of eigenvalue being greater than 1; an item remained if the factor loading is greater than 0.60, the cross loading is less than 0.40, and the commonality value is greater than 0.50; the deletion of an item should not influence the scale's content validity. Furthermore, the first factor accounted for 11.76% of the variance, which is below the threshold 50%. The eight-factor model explained a significant portion (79.05%) of the total variance. Thus, the common method bias in this study is teeny.

The EFA (Table 1) results suggested that all items were retained, revealing a 33-item 8-factor measurement model. The Kaiser-Meyer-Olkin (KMO) value of the dataset was 0.94, and the *p*-value of Bartlett's Test of Sphericity was significant ($p < 0.001$), supporting the validity of the dataset. In addition, all factor loadings were greater than 0.60, and all factors' Cronbach alphas were greater than 0.70, indicating substantial internal consistency at the item level. The evidence above demonstrated the statistical reliability of the 8-factor structure.

4.1.2 Results of CFA. A newly collected dataset in April 2021 that included four hundred and twenty ($n = 420$) valid responses (see demographic profile in Appendix B) was used in the CFA. The results of CFA (Table 2) revealed that all measurement items were substantially and meaningfully loaded on their corresponding latent factors (factor loading >0.60), and all composite reliabilities were more than 0.70, indicating internal consistency. Furthermore, all average variance extracted (AVE) values were higher than 0.50, demonstrating convergent validity. All factors' squared roots of AVEs (Table 3) were greater than their corresponding factor correlations, indicating the discriminant validity of the measurement model.

The assessment of the measurement model also demonstrated an acceptable model fit. More specifically, the χ^2 to degrees of freedom ratio was 1.38; the RMSEA was 0.03; the CFI and TLI were 0.98; and the SRMR was 0.04. All these indices confirmed that the 8-factor measurement model fitted the dataset well.

4.1.3 Results of SEM. With the CFA pointing to the reliability of the measurement model, the proposed PIETI model was further examined via SEM analysis. The acceptable model fit indices of the structural model ($\chi^2 = 715.29$, df $= 474$, χ^2/df $= 1.51$; RMSEA $= 0.04$, CFI $= 0.97$, TLI $= 0.97$, SRMR $= 0.05$) provided solid empirical evidence of the validity of the hypothetical framework, suggesting that the PIETI model can be used to explain customers' intention to take a cruise at the risk of being exposed to COVID-19.

	Factor loadings	Eigenvalues	% of variance	α
Crisis management (CM)				
Management and learning		13.87	11.76	0.90
CM1	0.805			
CM2	0.802			
CM3	0.744			
CM4	0.740			
CM5	0.738			
Command and information		2.33	10.76	0.89
CM6	0.824			
CM7	0.771			
CM8	0.721			
CM9	0.673			
CM10	0.605			
Coordination and integration		1.00	6.77	0.86
CM11	0.777			
CM12	0.767			
CM13	0.708			
Providing assurance		1.13	7.23	0.85
CM14	0.819			
CM15	0.780			
CM16	0.741			
Perceived hedonic value (H)		3.20	11.23	0.97
H1	0.877			
H2	0.855			
H3	0.845			
H4	0.845			
Perceived trustworthiness (T)		1.86	10.73	0.93
T1	0.756			
T2	0.737			
T3	0.729			
T4	0.715			
T5	0.662			
Perceived risk of infection (R)		1.19	9.97	0.90
R1	0.891			
R2	0.878			
R3	0.847			
R4	0.738			
Intention (I)		1.51	10.71	0.94
I1	0.863			
I2	0.832			
I3	0.811			
I4	0.795			

Table 1.
Results of
EFA ($n = 363$)

Note(s): KMO = 0.942. Bartlett's Test of Sphericity = 10251.546, $p < 0.001$
Source(s): Table by authors'

Moreover, the results of SEM (Figure 2) supported most hypothetical factor relationships. Interestingly, this study found that although perceived hedonic value, perceived trustworthiness, and perceived risk of infection were all predicted by crisis management, different dimensions of crisis management worked differently. More specifically, the results revealed that perceived hedonic value was promoted by providing assurance ($\beta = 0.33$, $p < 0.001$) but not by management and learning ($\beta = 0.10$, $p = 0.37$), command and information ($\beta = 0.08$, $p = 0.50$), or coordination and integration ($\beta = 0.10$, $p = 0.46$). Thus, H4a was supported, whereas H1a, H2a, and H3a were not. Perceived trustworthiness is

	Factor loading	AVE	CR
Crisis management (CM)			
Management and learning		0.63	0.90
CM1	0.820		
CM2	0.822		
CM3	0.770		
CM4	0.766		
CM5	0.795		
Command and information		0.63	0.89
CM6	0.758		
CM7	0.826		
CM8	0.832		
CM9	0.811		
CM10	0.721		
Coordination and integration		0.65	0.85
CM11	0.813		
CM12	0.856		
CM13	0.746		
Providing assurance		0.69	0.87
CM14	0.846		
CM15	0.895		
CM16	0.735		
Perceived hedonic value (H)		0.88	0.97
H1	0.935		
H2	0.959		
H3	0.931		
H4	0.932		
Perceived trustworthiness (T)		0.74	0.94
T1	0.865		
T2	0.898		
T3	0.858		
T4	0.870		
T5	0.816		
Perceived risk of infection (R)		0.67	0.89
R1	0.849		
R2	0.824		
R3	0.824		
R4	0.782		
Intention (I)		0.78	0.94
I1	0.904		
I2	0.884		
I3	0.897		
I4	0.856		

Note(s): χ^2 = 643.41, df = 467, RMSEA = 0.03, CFI = 0.98, TLI = 0.98, SRMR = 0.04
Source(s): Table by authors'

positively predicted by command and information (β = 0.47, p < 0.001) and providing assurance (β = 0.33, p < 0.001) but was not influenced by management and learning (β = −0.04, p = 0.73) or coordination and integration (β = 0.11, p = 0.34). Hence, H2b and H4b were supported; H1b and H3b were not. Perceived risk of infection was mitigated by command and information (β = −0.42, p = 0.001) and providing assurance (β = −0.19, p = 0.05) but was not affected by management and learning (β = 0.20, p = 0.13) or coordination and integration (β = −0.01, p = 0.95). These findings supported H2c and H4c. However, H1c and H3c were not supported.

	Factors	1	2	3	4	5	6	7	8
1	Management and Learning	(0.795)							
2	Command and Information	0.716	(0.791)						
3	Coordination and Integration	0.733	0.782	(0.806)					
4	Providing Assurance	0.660	0.626	0.535	(0.828)				
5	Perceived Hedonic Value	0.451	0.402	0.399	0.477	(0.939)			
6	Perceived Trustworthiness	0.602	0.729	0.626	0.646	0.577	(0.862)		
7	Perceived Risk of Infection	−0.231	−0.383	−0.282	−0.307	−0.314	−0.416	(0.820)	
8	Intention	0.413	0.521	0.460	0.389	0.586	0.551	−0.387	(0.885)

Table 3.
Correlation table and square roots of AVE

Note(s): The values on the diagonal are the square roots of average variance extracted (AVE)
Source(s): Table by authors'
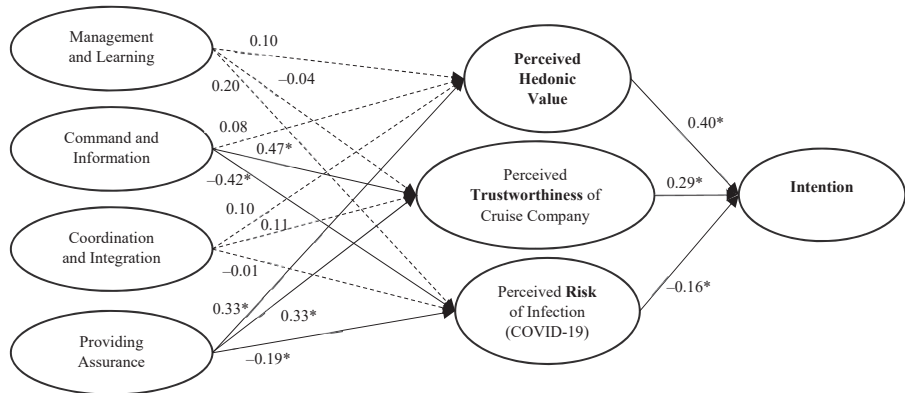
Figure 2.
Results of SEM ($n = 420$)

Note(s): *Path coefficient is significant at $p < 0.05$
$\chi^2 = 715.29$, df = 474; RMSEA = 0.04, CFI = 0.97, TLI = 0.97, SRMR = 0.05
Source(s): Figure by authors

Furthermore, the results of SEM suggested that travelers' intention to take a cruise was positively influenced by perceived hedonic value ($\beta = 0.40$, $p < 0.001$) and perceived trustworthiness ($\beta = 0.29$, $p < 0.001$) and weakened by the perceived risk of infection ($\beta = -0.17$, $p < 0.001$). Therefore, H5, H6, and H7 were all statistically supported.

4.2 Moderator analysis

This moderator analysis examined the moderation effect of vaccination attitude on the relationship between the perceived risk of infection and the intention to take a cruise. Seven hundred and seventy-five ($n = 775$) participants were recruited in this study (see demographic profile in Appendix B). The results of the Johnson-Neyman analysis (Figure 3) supported the proposed interaction effect. The results indicated that when the level of
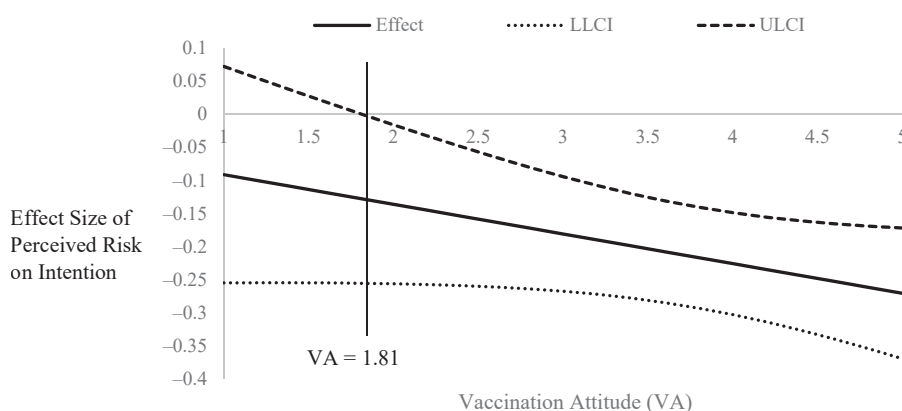
Effect Size of
Perceived Risk
on Intention

VA = 1.81

Vaccination Attitude (VA)

Source(s): Figure by authors

vaccination attitude is lower than 1.81 (based on a 5-point Likert scale in which "1" refers to the lowest positive attitude and "5" refers to the highest), the perceived risk of infection did not predict intention. In contrast, when the level of vaccination attitude was greater than the Johnson-Neyman moderation point (1.81), vaccination attitude significantly boosted the negative effect of perceived risk on intention. These results supported H8.

5. Discussion

The first study in this research validated the mechanism underlying the genesis of customers' intention to embark on a cruise, notwithstanding the risk of exposure to infectious disease. This study constructed a theoretical framework to explain consumers' post-pandemic travel intentions, as well as test and validate its multi-stage appraisal model. The linkages among perceived crisis management capability, perceived hedonic value, perceived trustworthiness, perceived infection risk, and intention to travel had been established.

Moreover, the results of this study suggested that in the context of post-pandemic cruise services, *Command and Information* contribute to an increase in the perceived trustworthiness of cruise firms and a decrease in the perceived risk of infection. *Providing Assurance* significantly predicts three perception components, indicating that consumers build their trust and form favorable opinions based on the level of transparency regarding vital industry information and how companies ensure the quality of their products and services. However, this study found that two perceived crisis management capability factors, *Management and Learning* and *Coordination and Integration*, had no significant impact on perceived hedonic value, perceived cruise company trustworthiness, or perceived infection risk.

These results partially confirmed the findings of previous studies in other service settings. For example, Hsiu-Ying, Kao *et al.* (2020) found that all four perceived crisis management capability factors significantly affect consumers' attitudes toward branding and brand credibility in the aviation business. Even though the airline and cruise line industries share some similarities, the results of this study demonstrated that customers had diverse perspectives on cruise travel. More specifically, consumers are less likely to rely on perceptions of the developing strategies of crisis management plans and the evaluations of how businesses coordinate internally and externally during their cruise service appraisal

process. One possible explanation is that the protocol developing process and business coordination are often non-transparent from consumer perspectives in the cruise line industry. As a result, customers may not have sufficient information to have a concrete perception of them, resulting in non-significant effects.

The second study examined the moderating influence of vaccination attitude on the association between perceived risk of infection and intention to embark on a cruise. The results indicated that vaccination attitude significantly amplified the negative effect of perceived risk on behavioral intention when the level of vaccination attitude was greater than 1.81. This indicates that people with a more positive vaccination attitude tend to perceive a higher risk of COVID-19 infection and thus have a lower intention to travel by cruise.

Additionally, gender and regional differences in behavioral intention, perceived risk, and immunization attitude were investigated. Southwest inhabitants had the strongest inclination to embark on a cruise, Northwest residents perceived the most considerable risk in general, and Northeast residents displayed the most positive attitude regarding receiving vaccinations, as shown in Figure 4. These phenomena may be explained by the well-developed cruise culture in the South, home to the headquarters of three world-renowned cruise lines (Royal Caribbean, Carnival, and Norwegian) and six of the busiest ports in the United States. These consumers are typically more accepting of cruise travel and willing to invest time and money. The Northeast had the highest number of COVID-19 infections and was severely impacted by the epidemic, with multiple lockdowns in New York City in 2020 (The *New York Times*, 2022). As a result, residents of the Northeast are the most receptive to vaccinations and perceive a significantly greater risk overall. Moreover, males had considerably higher intentions than females ($t = 3.60$, p 0.001). There were no substantial gender variations in perceptions of risk or immunization practices (Figure 5).

5.1 Theoretical implications
This research makes three contributions to academia. First, it contributes to the crisis management and recovery literature by reflecting the changes in post-pandemic consumer behaviors. Drawing on the CAT, this study developed and validated a conceptual framework to integrate crisis management with customers' behavioral intentions. This study extends existing cruise travel intention theory by demonstrating how post-pandemic travelers'
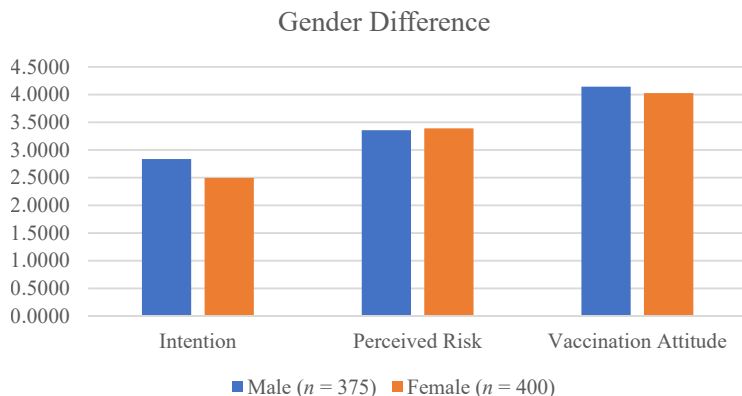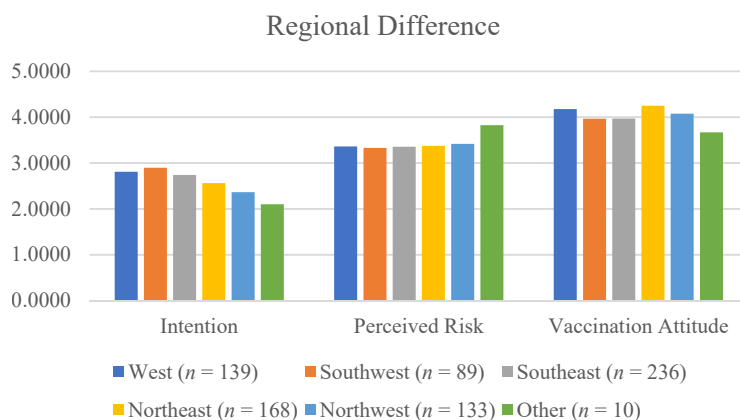

Figure 4.
Results of gender difference

Source(s): Figure by authors

Regional Difference

■ West (*n* = 139)   ■ Southwest (*n* = 89)   ■ Southeast (*n* = 236)
■ Northeast (*n* = 168) ■ Northwest (*n* = 133) ■ Other (*n* = 10)

Source(s): Figure by authors

behavioral intention is generated via a multi-stage appraisal-reappraisal process based on evaluating infection risks and cruise line crisis management.

Second, this study contributes to the hospitality and tourism literature by offering a framework that can be applied to different sectors within the tourism industry, such as hotel, transportation, and food and beverage services, to explain post-pandemic consumer behaviors when infection risk is relevant. Thus, this study enriches the literature on crisis management for hospitality and tourism.

Third, this study investigated the moderating effect of travelers' vaccination attitudes and demonstrated that customers with different vaccination attitudes may generate behavioral intentions via different appraisal mechanisms. These results provide a novel perspective for future tourism research and highlight potential traveler behavioral polarization caused by their health attitude that requires further exploration.

Moreover, while COVID-19 has significantly impacted the cruise industry, it is important to recognize that viruses, in general, have been a perennial issue for the cruise line industry. Incorporating insights from the long-standing challenges posed by Norovirus, which has historically plagued cruise lines, this study underscores the broader applicability and longitudinal relevance of its findings. By framing the research through the lens of persistent viral threats, this study, offers a comprehensive understanding of crisis management in the cruise industry, extending beyond the immediate context of the COVID-19 pandemic.

5.2 Practical implications

5.2.1 For marketers. The findings of this study have significant implications for marketers who desire to promote products and services in the cruise industry, such as online travel agencies (OTA), cruise companies, and government organizations.

First, to attract more customers, marketers should boost media exposure of the firm's established flow of authority, obligations, accountability, and transparency and emphasize how the company will provide superior products and reliable services.

Secondly, marketers can adjust strategic plans based on the characteristics of regional consumers, as mentioned in this article. According to the total number of COVID-19 cases, the central region has far fewer cases than the other regions, and locals are generally unconcerned about the seriousness of COVID-19 infection (The *New York Times*, 2022). The primary economic activities in the central region are manufacturing and agriculture, and

cruise tourism is not a popular pastime among its residents (Saidel-Baker, 2019). Additionally, the western region includes the West Coast of the United States and has greater ethnic and cultural diversity (Wolf, 2018). This region establishes a cruise culture, and locals are more likely to sail on a cruise if offered a substantial discount (Pan *et al.*, 2021). Thus, advertisements for the southern and northeastern regions, for example, should promote the company's crisis communication and coordination capabilities, COVID-19 information transparency, and sanitation practices. For the central and western regions, businesses should emphasize discounts and the convenience and benefits of cruise travel.

Thirdly, our research revealed that vaccination attitudes are crucial in cruise travel decisions. Vaccination histories and intentions can be ethically collected through a user's registration webpage and reservation engines, which helps marketers establish effective strategies for targeting distinct consumer segments.

Despite noticeable global health intervention challenges in the past two years, cruise businesses have received significantly increased bookings in recent months (Pfalz, 2022). Cruise lines are investing in new vessels, enhancing their entertainment programs, and improving accessibility through more effective communications, infrastructure, and communication channels to enhance customer experiences and strengthen customer loyalty. Using artificial intelligence (AI), cruise lines may monitor their customers' preferences. For example, many hospitality and tourism businesses have been adopting wearable bracelets, gadgets, and pins that can capture frequencies of laughter (Tennessee Tourism, 2022), heart rate, and photo-taking duration times to assess their visitors' enjoyment level. Similar multifunctional devices might be developed by cruise lines to monitor consumers' onboard expenditures, activity, and enjoyment. In addition, cruise firms can offer consumers "cruise *plus* destination experience" packages such as "cruise *plus* beach getaway" and "cruise *plus* local attractions."

5.2.2 For managers and decision makers. The results of this SEM analysis demonstrated that various aspects of crisis management function differently. Even though Management, Learning, Coordination, and Integration do not substantially impact consumers' perceptions, businesses should not disregard any crisis management factors from a management standpoint. These four components are interdependent in providing effective crisis management, as shown in Figure 6. The crisis management operating mechanism can be considered as a four-stage crisis management model.

In the first stage, the company would need to establish a detailed management plan based on lessons learned from past crises and present events and then address how the plan would be implemented. To ensure the plan's implementation, roles and authorities would need to be assigned in the second phase, followed by assigning duties for each role. The corporation would then need to establish emergency units to manage unforeseen circumstances.

In the third stage, internal (inside the business) and external (government agencies, third parties) coordination would occur, and the plan would be evaluated based on the present implementation status. The company could change the plan depending on the current supply and demand if necessary. The corporation would then collaborate closely with the media to share pertinent information.

At the final stage, the company would evaluate its current products and services and make any necessary adjustments. Then, a formidable customer care team should be assembled to address client concerns. Companies would benefit from adopting this model for their crisis management procedures.

6. Limitations and future research

This research has certain drawbacks. First, this survey's respondents are individuals who live in the United States. Given the cultural diversity described by Cox and Blake (1991),
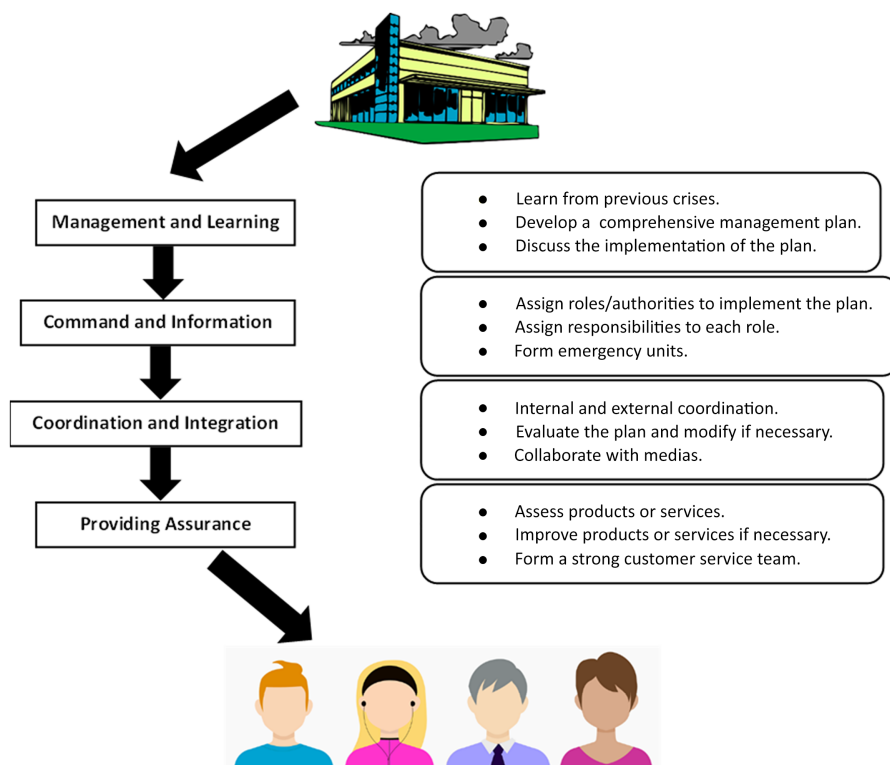
Source(s): Figure by authors

it would be interesting to see how this model functions in other countries. Second, this study was conducted in the context of the COVID-19 pandemic, and the applicability of this model to other crises requires more investigation, as the model could be adopted and applied to other crises and disasters in future research. Third, this study examined the overall perceptions of cruise travelers. Future research could study model differences between potential and experienced travelers. Finally, the results of this study revealed that consumers were less likely to rely on their impressions of the emerging tactics of crisis management plans and evaluations of how firms coordinate internally and externally during the cruise service review process. The function of each perceived crisis management capability component in the evaluation process of customers has been acknowledged, but the specifics of how these aspects influence consumers' decisions remain unclear. Future research could include psychological experiments to investigate the aforementioned possible consequences.

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Supplementary material
The supplementary material for this article can be found online.

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