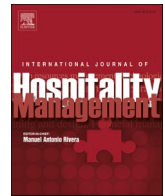




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Research paper

# The gloom of the COVID-19 shock in the hospitality industry: A study of consumer risk perception and adaptive belief in the dark cloud of a pandemic

Pantea Foroudi<sup>a</sup>, S. Asieh H. Tabaghdehi<sup>b,\*</sup>, Reza Marvi<sup>c</sup><sup>a</sup> Middlesex University London, UK<sup>b</sup> Brunel University London, UK<sup>c</sup> Middlesex University London, UK

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## ABSTRACT

As the new coronavirus (COVID-19) spreads globally, the hospitality industry is at the heart of implementing social distancing, a measure demonstrated to be effective in flattening the epidemic curve. Informed by the perceived risk theory, this research examines how the customer's perception of the shock of the coronavirus pandemic impacts on their beliefs, and how their beliefs could influence their anticipated emotions (negative and positive) which could affect their future desire towards visiting restaurants. Structural equation modelling was used to understand the research constructs' associations. This study provides two key suggestions: (i) that the hospitality industry is built on trust from their customers by supporting and resourcing consumers' self-protection behaviour and adoptive belief, and (ii) that the economic influence and the continuous uncertainty and transformation of the restaurant business need the enhancement of localisation strategies, practices and performance.

## 1. Introduction

The recent major pandemic coronavirus outbreak (COVID-19) and the ensuing global recession has caused extraordinary uncertainty and risk in the hospitality and tourism sector. The pandemic outbreak spread on a global scale through international tourists who were returning to their homelands after being in the infected areas. The quick spread of COVID-19 caused substantial damage to the UK hospitality industry in the week prior to the government's caution regarding the increasing threat of COVID-19. On 16th March 2020, the UK Prime Minister, Boris Johnson, suggested that the public should avoid places such as restaurants and bars; however, no ban was yet obligatory. Restaurant groups experienced a significant reduction in sales (21 %) in the week previous to the announcement, compared to bar dropped sales (14 %). Restaurant sales declined 52 % on 17 March 2020, and a few days later went down to 82 % when the restaurants were forced to close. However, later on, restaurants were allowed to open for delivery or takeaway (Statista.com, 2020a,b).

Following the global health pandemic and its devastating impact on every industry, in particular, the hospitality industry, there are calls to

carry out a theoretically driven, and systematic research into customers' perceived health risk, so that hospitality managers can develop and apply health-related risks. The COVID-19 pandemic is known as a substantially negative issue in an extraordinarily challenging year for global hospitality and tourism. However, there is a lack of studies on how previous customers and potential new customers behave when they are considering using hospitality services during and after the COVID-19 pandemic. Also, it is essential to investigate how the flow of affective meanings from the pandemic narrative is reshaping the consumption landscape and the desire of consumers, with profound and long-lasting implications for both consumers and producers alike. Understanding the customers' beliefs and behaviour would benefit hospitality managers in coping with a crisis more efficiently. In accordance with the importance of the topic, our research aims to explore the influences of COVID-19 on the performance of the hospitality sector through consumers' perception behaviour and resilience, to support policymakers to develop prompt and actionable policies applicable in this harshly affected industry.

We investigate how the individual customer's perception of the shock of the coronavirus pandemic impacts on their beliefs, and how

\* Corresponding author.

E-mail addresses: [P.Foroudi@mdx.ac.uk](mailto:P.Foroudi@mdx.ac.uk) (P. Foroudi), [Asieh.Tabaghdehi@brunel.ac.uk](mailto:Asieh.Tabaghdehi@brunel.ac.uk) (S.A. H. Tabaghdehi), [r.marvi52@gmail.com](mailto:r.marvi52@gmail.com) (R. Marvi).<https://doi.org/10.1016/j.ijhm.2020.102717>

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their beliefs could influence their anticipated emotions (negative and positive) which could affect their future desire towards visiting restaurants. Will this global transformation be the start of a dark cloud in the hospitality sector or is there an imminent recovery ahead? There are extensive studies that have investigated the impact of a crisis on tourism in different contexts such as hospitality (Chien and Law, 2003; Israeli and Reichel, 2003; Kim et al., 2019; Morakabati et al., 2017; Rittichai-nuwat, 2013) or with specific reference to travel agents (Perl and Israeli, 2011). Other researchers have focused on the economic crisis or terrorism as a form of crisis (Corbet et al., 2019; Karl, 2018; Khalid et al., 2020; Papatheodorou and Pappas, 2017; Walters et al., 2019; Zopiatis et al., 2018) in tourism. However, as mentioned earlier, limited studies have examined the impact of health-related epidemics on hospitality and tourism, such as the influence of swine flu on tourism and hospitality demand (Page et al., 2012), the influence of SARS on tourism demand in Asia (Kuo et al., 2008), the effect of H1N1 influenza on travel intention (Lee et al., 2012) or bed bug crisis management (Liu et al., 2015). During the past two decades, there has been a wide range of health-related crises that have caused irreparable damage to the tourism industry (Kuo et al., 2008; Henderson, 2004). As tourists and travellers can easily spread an epidemic and turn it into a pandemic, different global organisations (e.g., World Health Organization, UN World Tourism Organization) are becoming particularly interested in applying and employing precautionary strategies and actions to sharply decrease the health-related crises affecting hospitality and tourism (Sunstein, 2005) across the globe.

We draw on prior research (e.g., Han and Ryu, 2012; Lee et al., 2012) to theorise customers' desire with a company as a selective and active act anticipating emotional needs. In doing so, this study adopts a consumer-centric viewpoint. It contributes to the rising research on the impact of customers' perception of the shock of the coronavirus pandemic, integrated belief variables (behavioural, normative and control) and emotions (negative and positive) on consumers' future desires towards the hospitality sector. By employing the perceived risk theory, this study provides a comprehensive and coherent model on how the perception of the global COVID-19 outbreak impacts on consumers' beliefs, emotions and desires towards the hospitality sector and its long-term implication on this very fragile industry. In addition, in this study, we investigate how the non-pharmaceutical intervention, perceived health risk and lockdown restriction could influence the research relationships. This value enriches the significance of the association and consequences in certain customer-company directed behaviours which are distinct from those characteristically achieved previously.

In the subsequent sections, a review of earlier research on perceived health risk, belief, emotion and desire is provided in the first section. Then, the research methodology is outlined in the second section. Discussion and findings in the light of prior studies are undertaken in the next section. Lastly, we conclude with theoretical and managerial implications, limitations and future research.

## 2. Theoretical Background of the COVID-19 pandemic in the hospitality sector

### 2.1. The global shock of the COVID-19 disaster and consumers' perceptions

The recent worldwide coronavirus pandemic demonstrates another global disaster like the 1918 'Spanish Flu' disease, which has caused a significant shock in the international economy, especially in the tourism industry. In December 2019, the Chinese government informed the World Health Organization that an epidemic of pneumonia of an unknown source had been detected in the city of Wuhan in China (WHO, 2020). Then in February 2020, the WHO acknowledged the virus as the new coronavirus disease of COVID-19 (WHO, 2020). On a daily basis, the COVID-19 cases swiftly increased internationally (WHO, 2020).

Then by 19 June 2020, the confirmed cases approached 8.55 million with over 4.75 K deaths worldwide (ECDC, 2020); this increased global economic anxiety (Fetzer et al., 2020) which could impact the hospitality industry dramatically. In a similar scenario, the 2003 SARS outbreak caused a \$20 billion decline in GDP in Vietnam, Singapore, Hong Kong and China, and a 70 % decline in tourism flow in the Far East (McKercher and Chon, 2004). The current situation under the new pandemic is unknown and full of challenges and uncertainty. However, there is some evidence that COVID-19 is different to the previous outbreak crises, and it will be followed by an enormous transformation in the tourism sector (Gössling et al., 2020). Hence, the future implication of the current disaster could be unavoidable from a consumer's perception.

Consumer perception (of the shock of the coronavirus pandemic) represents a person's information and involvement which are receptive to their understanding of matters, behaviours and procedures (Anderson, 2004; Lee et al., 2012). Pandemic crises have carried wider ambiguity and negative perception for hospitality, tourism and travel destinations. In the case of the Ebola 2014 epidemic, there was evidence of broader ambiguity and adverse insights for travel to those parts of Africa that were not even affected by the Ebola disease (Maphanga and Henama, 2019; Novelli et al., 2018). Therefore, when a global disaster requires worldwide quarantine and severe movement restriction, then the consumer perception of the disease and its implication in the New Normal hospitality industry needs further investigation.

### 2.2. Perception of the shock of the coronavirus pandemic and consumers' belief

People's beliefs inform their behavioural intentions (Ajzen and Fishbein, 1980). Therefore, consumer belief is an important factor to help the hospitality industry to recover from the shock of the COVID-19 disaster. Consumers' beliefs depend on three belief-based measures; behavioural, normative and control belief. Normative beliefs can be considered as perceived behavioural prospects of an individual's beliefs and incentive to indicate a person's desire to obey with individual wishes (Ajzen, 1991; Ajzen and Fishbein, 1980). Control beliefs denote an individual's perceived occurrence or absence of aspects that enable or deter the performance, and the perceived control refers to the review of the implication of these issues (Ajzen, 1991; Ajzen and Fishbein, 1980). During an epidemic outbreak, consumers believe that non-pharmaceutical intervention reduces the risk of contagion when travelling (Lee et al., 2012). They indicated that for forecasting visitors' intentions, some factors such as desire, perceived behavioural control, the regularity of previous behaviour and non-pharmaceutical intervention play a crucial role. Thus, it is important to hypothesise the influence of the non-pharmaceutical intervention on the association between the shockwave of the COVID-19 pandemic and consumers' beliefs in the hospitality industry.

The risk theory is seen as a strong theory in explaining tourist behaviour during a global pandemic (e.g., the outbreak of Ebola) (Cahyanto et al., 2016). According to the risk theory, tourists are always seeking to maximise their satisfaction and avoid any negative experiences. In other words, a high perceived health risk will lead customers to lower buying behaviours (Lim, 2003). Previous studies significantly support that travel intention is directly influenced by traveller perceived risk (Al-Ansi et al., 2019; Olya and Al-Ansi, 2018; Reisinger and Mavondo, 2005; Yüksel and Yüksel, 2007). Risk was initially introduced by Bauer (1960) in marketing, by indicating that consumers' behaviour encompasses risk and uncertainty since the consequences of their actions are inevitable, and some are unpleasant. In this regard, the notion of uncertainty and risk resulted in two distinctive streams of study for future researchers. The first stream studied risk and uncertainty as two identical research constructs (Shimp and Bearden, 1982), in which risk is identified as a personal customer feeling of ambiguity in which the outcome of a potential decision can be positive and favourable. This

research stream is still present in recent marketing and tourism-related studies (Béjaoui and Karaa, 2020; Mohseni et al., 2018; Tseng and Wang, 2016; Wu and Cheng, 2018). The second part of the study argues for a discrepancy between uncertainty and risk. In this research stream, the risk is seen as a measure of probability by indicating the ratio of occurrence to the total possible outcome (Stone and Grønhaug, 1993), while uncertainty specifies the circumstances in which the outcome could be anything where there is not any hint of it. Here, it is important to justify whether the uncertainty or perceived health risk would lessen the impact of the disaster shock on consumers' beliefs due to the current pandemic outbreak, where the future is very ambiguous.

Researchers (e.g., Stone and Grønhaug, 1993) have defined perceived risk in terms of a probable future loss that occurs when a decision has been made. Based on the definition of perceived risk, it seems that there is a distinction between uncertainty and perceived risk in marketing and tourism literature. Perceived risk is often shown as the anticipation of a possible loss in which profitability is attached to the possible consequences (Dowling and Staelin, 1994). Consequently, people perceive different types of risks which are associated with the outcome. However, according to Becker and Knudsen (2005), uncertainty is referred to as the expiration of a potential loss which can be attached to a possible outcome. Furthermore, as perceived risk is viewed as a kind of possible loss, researchers (e.g., Dholakia, 2001) have suggested that there are diverse forms of potential risk in terms of performance, financial, psychological, social, health and finally time risk (loss) aspects.

Performance risk is linked to a purchase that does not deliver the expected or desired outcome (Horton, 1976; Huang et al., 2020; Kim et al., 2020; Marder et al., 2019; Olya and Al-ansi, 2018; Park and Tussyadiah, 2017). Financial risk is seen as possible financial loss including the probability that services or goods need to be replaced, fixed or compensated for altogether (DeFranco and Morosan, 2017; Matzler et al., 2019; Park and Tussyadiah, 2017). Psychological risk shows the individual's psychological discomfort resulting from a post-purchase emotional reaction (e.g., regret, worry) (Björk and Kauppinen-Räsänen, 2012; Chew and Jahari, 2014; Fuchs and Reichel, 2011; Roehl and Fesenmaier, 1992). Social risk reflects the likelihood of an individual's buying behaviour that can affect another buyer's opinion (Choi et al., 2018; Dayour et al., 2019; Lee and Oh, 2017; Murray and Schlacter, 1990). Health risk is associated with the fact that the purchase can pose an unprecedented hazard to the individual's health (Huang et al., 2020; Sarman et al., 2016; Sheng-Hsiung et al., 1997; Wang et al., 2010; Weber, 2001). Finally, time risk shows the likelihood that a purchase time will be too lengthy or waste the individual's time (Fennell, 2017; Michaelidou and Micevski, 2019; Roselius, 1971; Solanki, 2011; Thapa et al., 2013).

In addition, in the case of a global pandemic, consumer behaviour in the tourism industry is impacted by some key factors including household income, perceived health risk and reformed measurements of consumption due to epidemic constraint (Lee and Chen, 2011). All indicated factors are important in driving the consumers' beliefs in the tourism sector. Therefore, the shock of the COVID-19 disaster reflects significantly on a range of risks, explicitly on perceived risk, and as a result on the relationship between perception of the shock of the pandemic and consumers' beliefs, leading us to the following hypothesis: although previous behaviour is a decent tool to estimate behavioural purpose in the future (Lam and Hsu, 2006), this may not be an appropriate tool after a pandemic outbreak since the consumer's belief is strongly influenced by the shock of the epidemic disaster. Accordingly, when consumers' beliefs are affected by the pandemic outbreak, their behaviour could be biased. Therefore, the next hypothesis is suggested:

**Hypothesis 1.** Attributes of the perception of the shock of the coronavirus pandemic impact on consumers' beliefs, which depend on behavioural belief, normative belief and control belief in the hospitality industry.

**Hypothesis 1a.** Non-pharmaceutical intervention strengthens the relationship between the shock of a disaster and consumers' beliefs, which depends on behavioural belief, normative belief and control belief in the hospitality industry.

**Hypothesis 1b.** Perceived health risk strengthens the relationship between the shock of a disaster and consumers' beliefs, which depends on behavioural belief, normative belief and control belief in the hospitality industry.

### 2.3. Consumers' beliefs and anticipated emotions

COVID-19 has significantly impacted consumers' physiological perspectives, such as emotion. Emotion refers to the mental state of an individual which has consequences on one's happiness and achievement (Johnson and Stewart, 2005). People in their decision-making process regularly anticipate their feelings about upcoming results, which as a consequence affect their choice (Mellers and McGraw, 2001). There are two types of anticipated emotions; positive anticipated emotion and negative anticipated emotion, where positive anticipated emotion refers to success in achieving a goal (Perugini and Bagozzi, 2001) and negative anticipated emotion refers to failure in achieving a target (Perugini and Bagozzi, 2001). Under the current pandemic circumstances, there is a significant rise in people's negative emotions and a relative decline in their positive emotions (Li et al., 2020). They discovered that people are not interested in their vacations and relaxation to any further extent, as their main attention and worries are focused on their own and their family's health. People's negative emotions rise when they try to protect themselves (Mortensen et al., 2010). The long-term rise in negative emotion has a destructive impact on people's immune systems (Kiecolt-Glaser et al., 2002) and is damaging to societies and economies. Recent research by Li et al. (2020) indicated that due to the COVID-19 pandemic outbreak, people's negative emotions such as anxiety and depression amplified noticeably, and comparatively their positive emotions diminished. On top of the escalation of negative emotion, the movement restriction could have a very harsh implication on consumers' behaviour and consequently, on the global economy, especially the hospitality industry. This led us to hypotheses 2a and 2b.

**Hypothesis 2ab.** Attributes of perception of customers' beliefs impact on anticipated negative emotion (H2a) and anticipated positive emotion (H2b)

**Hypothesis 2cd.** Perceived health risk strengthens the relationship between consumers' beliefs and negative anticipated emotion (H2c) and positive anticipated emotion (H2d).

### 2.4. Anticipated emotion and future desire

The anticipated emotional response is an influential factor in an efficient decision-making procedure (Pligt and De Vries, 1998; Triandis, 1977). A later study specifies that the positive and negative anticipated emotions have an effect on consumers' desires (Perugini and Bagozzi, 2001). The ongoing COVID-19 implications on peoples' emotions and cognition are observable (Li et al., 2020). It is very likely that people progress to negative emotion to protect themselves (Mortensen et al., 2010) in this very uncertain time. This long-term negative emotion could cause serious damage to the immune system (Kiecolt-Glaser et al., 2002). Desire is a crucial explanatory aspect to forecast tourist behavioural intention for their visit (Lee et al., 2012). Hence, it is vital to investigate how the anticipated emotions could impact on consumers' desires in the hospitality sector.

Moreover, some non-pharmaceutical intervention plays a crucial role in developing anticipated emotion and forms consumer future desire during this pandemic outbreak (See Fig. 1). With the lack of medical intervention due to the nature of the disease, it becomes very challenging to stop the pandemic spread. Most countries followed a

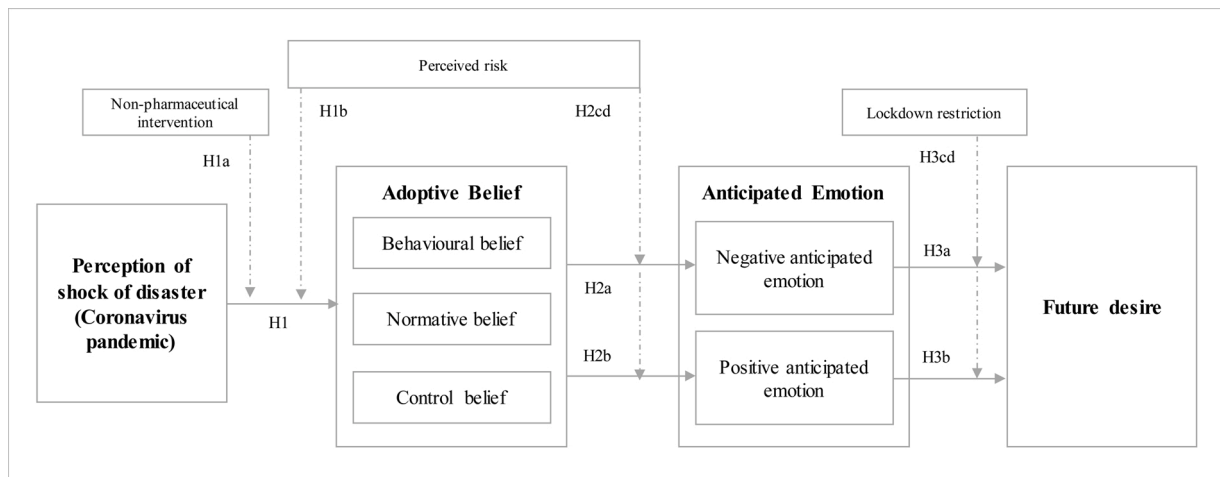


Fig. 1. The research conceptual model.

range of non-pharmaceutical interventions, predominantly lockdown and social distancing. This immediately impacted the global economy, specifically the hospitality sector such as events, accommodation, catering and restaurants significantly, where the return to normal life is very uncertain and unpredictable (Gössling et al., 2020). Many customers are struggling to figure out what the hospitality sector will be like after the lockdown is released. COVID-19 caused a global downturn in the tourism sector, and it will consequently transform the industry (Gössling et al., 2020). It is essential to examine how the lockdown policy could provide some assurance for consumers' self-protection and increased desire, or whether it will impact negatively on consumers' anticipated emotion. Thus,

**Hypothesis 3ab.** Attributes of negative anticipated emotion (H3a) and positive anticipated emotion (H3b) impact on future desire.

**Hypothesis 3cd.** Lockdown restriction strengthens the relationship between negative anticipated emotion (H3c), positive anticipated emotion (H3d) and future desire.

## 2.5. Method

### 2.5.1. Data collection and sample characteristics

To understand how the individual's perception of the shock of the coronavirus pandemic impacts on their beliefs, and how their beliefs could influence their anticipated emotions (negative and positive) which could affect their future desire towards visiting restaurants, the survey (instrument) was distributed via social media and web-link. The survey was supplemented by the aim of the research and guaranteed the confidentiality of data. In addition, to decrease the likelihood of the respondent guessing, the items were counterbalanced based on a

suggestion by Malhotra et al. (2006). Also, the items were examined by five scholars and two restaurant managers. Based on their advice, the language of the items was kept clear, specific and simple.

A total of 521 usable surveys were collected from those individuals who were a regular customer of various restaurants in London (UK) before the pandemic, for additional analysis. As illustrated in Table 1, the participant's profiles demonstrated that most of the contributors were male (57.1 %), aged between 45 and 54 (29.6 %), highly educated with postgraduate degrees (54 %) and used to visit restaurants more than ten times per month. However, they prefer not to visit any restaurant in the next three months (52 %).

To diminish the possible risk of common-method-bias in the data collection procedure, we followed the statistical and procedural remedies suggested by Podsakoff et al. (2003). In addition, we employed Harman's single-factor assessment to inspect if the data were biased by common-method-variance (Podsakoff and Organ, 1986). All latent constructs were inserted into an un-rotated factor solution to control the number of factors which are essential to account for the variance in the constructs. However, no factors emerged from the factor analysis. Therefore, the amount of common-method-variance was not considered to be significant in this research.

### 2.5.2. Measurement and analysis

This research used measurement items and validated scales adopted from the reviewed literature. As illustrated in Table 2, the perception of the shock of the disaster was examined using 5 items adapted from Lee et al. (2012). The belief was assessed using three components: (i) behavioural belief (e.g., Han and Ryu, 2012; Han et al., 2010; Lam and Hsu, 2004), (ii) normative belief (e.g., Han and Kim, 2010; Han and Ryu, 2012) and (iii) control belief (e.g., Han and Kim, 2010; Han and Ryu,

Table 1  
Demographic profile (N = 415).

	Frequency	Percent		Frequency	Percent
Gender			Used to visit restaurant		
Male	237	57.1	Once per month	35	8.4
Female	178	42.9	Twice per month	53	12.8
Age			Three times per month	81	19.5
Under 25	38	9.2	Between three to six times per month	52	12.5
25–34	58	14.0	Between six to ten times per month	90	21.7
35–44	116	28.0	More than ten times per month	104	25.1
45–54	123	29.6	Are you planning to visit restaurant within the next three months		
55 and over	80	19.3	No	216	52.0
Education			Yes	161	38.8
PhD	24	5.8	Maybe	38	9.2
Postgraduate	224	54.0			
Undergraduate	167	40.2			



2012). To assess anticipated emotion, we employed positive anticipated emotion (e.g., Han and Ryu, 2012) and negative anticipated emotion (Lee et al., 2012). Perceived health risk (Hwang and Choe, 2020), future desire and non-pharmaceutical intervention (Lee et al., 2012) were employed grounded on the validated scales from the previous studies. Finally, lockdown restriction was tested by borrowing items from Lee et al. (2012). All items were answered on a 7-point Likert scale (1 = “strongly disagree” and 7 = “strongly agree”). To evaluate the causal hypothesised associations and model fit, we employed structural equation modelling in AMOS25.

## 2.6. Results

### 2.6.1. Reliability and validity analysis

To examine the factorial validity, we used maximum likelihood estimation, and the original model displayed a good fit to the data (comparative fit index = .955; Tucker–Lewis index = .948; Incremental Fit Index = .922; The Normed Fit Index = .933; root mean squared error approximation = .066; Chi-square = 849.110; Degrees of freedom = 303). Due to poor factor loadings for some constructs, some items were removed (Table 2). Table 3 shows that the factor loading is greater than the suggested threshold ranging from .808 to .942 > .50. As Table 3 shows, the composite reliability (CR) values for the research constructs range from .922 to .959 > .70 and the average variance extracted (AVE) constructs range from .715 and .853 > .70, which are higher than the thresholds of .70 and prove sufficient discriminant and convergent validity (Fornell and Larcker, 1981; Hair et al., 2006).

### 2.6.2. Hypothesis analysis results

The proposed framework was designed to scrutinise the relationship between the proposed variables. The structural model presented a good fit to the data (RMSEA = .073; CFI = .943; TLI = .937; IFI = .943; RFI = .910; NFI = .919; Chi-square = 1017.338; Degrees of freedom = 316). Thus, this model was used to examine the propositions. Table 4 illustrates a schematic representation of the results of the structural research model. The results exhibited that the perception of the shock of the coronavirus pandemic (H1:  $\beta = .363$ ,  $t = 8.577$ ) had a positive impact on consumers' beliefs. Furthermore, belief had a significant impact on both negative anticipated emotion (H2a:  $\beta = .818$ ,  $t = 7.432$ ) and positive anticipated emotion (H2b:  $\beta = 1.201$ ,  $t = 9.683$ ). Therefore, both hypotheses H1 and H2 were supported. By contrast, the negative anticipated emotion had a non-significant effect on future desire (H3a:  $\beta = .058$ ,  $t = 1.418$ ,  $p.156$ ). Thus, hypothesis 3a was rejected. Furthermore, the association between positive anticipated emotion and future desire was found to be substantial (H3b:  $\beta = .604$ ,  $t = 11.181$ ).

We employed interaction effect analysis to further investigate the role of different moderators such as non-pharmaceutical intervention, perceived health risk, lockdown and social distancing, on the implication of the COVID-19 pandemic disruption in the hospitality sector. The pattern of the moderating effects is shown in Fig. 2. We studied the moderation effect of the non-pharmaceutical intervention on the associations between the perception of the shock of the coronavirus pandemic and belief, and the results illustrated that the non-pharmaceutical intervention strengthens the positive relationship between perception of the shock of the coronavirus pandemic and belief (H1a:  $\beta = -.052$ ,  $t = -14.068$ ).

Next, we inspected the moderation effect of the perceived health risk on the relationship between the shock of the disaster and belief, and the results displayed that perceived health risk dampens the positive relationship between perception of the shock of the coronavirus pandemic and belief (H1b:  $\beta = .027$ ,  $t = 8.566$ ). Perceived health risk strengthens the positive relationship between belief and positive anticipated emotion (H2c:  $\beta = -.031$ ,  $t = -7.644$ ). Surprisingly, perceived health risk dampens the positive relationship between belief and negative anticipated emotion (H2d:  $\beta = .063$ ,  $t = 11.000$ ). Finally, we considered the moderation effect of the lockdown restriction on the relationship

between anticipated emotion and future desire, and the outcome demonstrated that the lockdown restriction implication reduces the positive relationship between negative anticipated emotion and future desire (H3c:  $\beta = -.038$ ,  $t = -8.742$ ), and dampens the relationship between positive anticipated emotion and future desire (H3d:  $\beta = -.060$ ,  $t = -12.943$ ).

## 3. Discussion

The ongoing COVID-19 pandemic disruption and global economic decline, especially in the tourism and hospitality sector, require a fast-moving transition and adoption strategy to the New Normal. The consumers' perceptions, future expectations and spending are seriously threatened by a high level of uncertainty. This study facilitates a better understanding of perceived health risk and non-pharmaceutical intervention associated with the future desire of consumers in the hospitality sector. Furthermore, it establishes a framework that links the perception of the shock of the coronavirus pandemic and consumers' beliefs and anticipated emotions with future desire. This study collected data in relation to consumers' behaviour and responses in the hospitality sector, and conducted structural equation modelling analysis to analyse consumers' performance and the dramatic damage of the COVID-19 pandemic to the hospitality industry over time.

The findings reveal that the perception of the shock of the coronavirus pandemic positively influenced consumers' beliefs, supporting previous studies that demonstrated the association between perception of disease, attitude and intention (Reisinger and Mavondo, 2005; Sonmez and Graefe, 1998), although these findings were inconsistent with the work of Lee et al. (2012), which indicated that there was an insignificant relationship between the perception of the 2009 H1N1 influenza pandemic and desire. It is notable that the consumers' beliefs positively impacted anticipated emotion and as a result, future desire. Where the study indicates that there is significant interaction between perception of the shock of the coronavirus pandemic and consequently, consumers' beliefs through perceived health risk and also non-pharmaceutical intervention, this is consistent with Lee et al. (2012), who proposed that the perception of the 2009 H1N1 pandemic significantly affected international travel intention through non-pharmaceutical intervention. Finally, the lockdown and social distancing restrictions requested by WHO and governments had the most dominant effect on anticipated emotion, future desire and consequently on consumers' demand of hospitality-related services and products. This supports the results of Lee et al. (2012) and Setbon and Raude (2009) that the personal non-pharmaceutical intervention is an adoptive belief which reduces the infection risk and emphasises desire.

### 3.1. Theoretical implications

Due to the outbreak of the COVID-19 disease, which resulted in many psychological, economic and socio-cultural influences on numerous hospitality internal and external stakeholders, of which some of the impacts will remain for many years, individual action is impacted by their beliefs and perceptions patterns. Humans behave differently based on their socio-demographic individualities which play an essential role in dealing with and responding to their daily behaviours and health threats. Occasionally, individual beliefs and perceptions could yield responses related to the epidemics, which is crucial to study. To date, only a few researchers have investigated the individual perception towards the coronavirus which has been a disaster and global shock for the world (Carnevale and Hatak, 2020; Sharma et al., 2020; Sheth, 2020a; Woodside, 2020). However, there is no published article to examine the effect of the pandemic on the hospitality sector (based on the authors' knowledge).

Based on the outcome of the COVID-19 pandemic as a *transformational* evaluation for global crises, our study aimed to scrutinise how the individual customer's perception of the shock of the

**Table 2**  
The domain and items of the construct in the extant literature, factor loadings, descriptive statistics and reliabilities.

Construct and item measurement	Factor loading	Mean	Std. Deviation	Cronbach @	
<b>Perception of shock of disaster (Coronavirus pandemic)</b>				@.957	
Coronavirus is a very frightening disease.	.818	5.6265	1.43381		Lee et al., 2012; Reisinger and Mavondo, 2005; Sonmez and Graefe, 1998
Compared to SARS, avian flu, or Influenza, Coronavirus is more dangerous.	.880	5.7301	1.43269		
I am afraid of coronavirus.	.840	5.7807	1.40483		Removed: I have much information about coronavirus.
People around me seem to refrain from visiting any restaurants due to coronavirus.	.875	5.6940	1.49567		
<b>Behavioural belief</b>				@.958	
Due to the outbreak of coronavirus, going to any restaurants would not enable me to enjoy my meal	.899	5.5060	1.35109		Han and Ryu, 2012; Han et al., 2010; Han and Kim, 2010; Lam and Hsu, 2004; Oh, 2000
Due to the outbreak of coronavirus, going to any restaurants would not enable me to enjoy the high-quality atmosphere of the restaurant.	.888	5.5036	1.40199		
Due to the outbreak of coronavirus, going to any restaurants would not enable me to enjoy good value for the price.	.845	5.4795	1.43925		Removed: Due to the outbreak of coronavirus, going to any restaurants would not enable me to enjoy such benefits as special treatment and attention from employees.
Due to the outbreak of coronavirus, going to any restaurants would not enable me to have comfortable interactions with others.	.882	5.5422	1.33244		
<b>Normative belief</b>				@.937	
Due to the outbreak of coronavirus, my family (or relatives) think I should not go to any restaurants.	.951	5.6145	1.35696		
Due to the outbreak of coronavirus, my friends think I should not go to any restaurants.	.942	5.6819	1.36733		Han and Kim, 2010; Han and Ryu, 2012; Lam and Hsu, 2004
Due to the outbreak of coronavirus, my co-workers (or colleagues) think I should not go to any restaurants.	.909	5.7470	1.28390		
<b>Control belief</b>				@.921	
Due to the outbreak of coronavirus, going to any restaurants would not be expensive.	.824	5.5759	1.39820		
Due to the outbreak of coronavirus, any restaurants would be inconvenient.	.886	5.5711	1.44434		Han and Kim, 2010; Han and Ryu, 2012; Lam and Hsu, 2004
Due to the outbreak of coronavirus, Family/friends/co-workers/others who frequently accompany with me when going to restaurants do not encourage me to go to the restaurant.	.885	5.4675	1.53801		
<b>Positive anticipated emotion</b>				@.935	
Due to the outbreak of coronavirus, If I succeed in achieving my goal of (going to any restaurants) over the next 3 months, I will feel positive.	Removed				
Due to the outbreak of coronavirus, If I succeed in achieving my goal of (going to any restaurants) over the next 3 months, I will feel Delighted	.788	5.6434	1.44398		
Due to the outbreak of coronavirus, If I succeed in achieving my goal of (going to any restaurants) over the next 3 months, I will feel glad	.799	5.6940	1.43636		Carrus et al., 2008; Han and Ryu, 2012; Lee et al., 2012; Perugini and Bagozzi, 2001, 2001; Prestwich et al., 2008
Due to the outbreak of coronavirus, If I succeed in achieving my goal of (going to any restaurants) over the next 3 months, I will feel comfortable	.780	5.6675	1.39366		
<b>Negative anticipated emotion</b>				@.957	
Due to the outbreak of coronavirus, If I succeed in achieving my goal of (going to any restaurants) over the next 3 months, I will feel angry	.874	5.1639	1.55173		
Due to the outbreak of coronavirus, If I succeed in achieving my goal of (going to any restaurants) over the next 3 months, I will feel frustrated	.908	5.1325	1.62090		
If I succeed in achieving my goal of (going to any restaurants) over the next 3 months, I will feel – Not at all (1)/Very Much (7) Disappointed	.873	5.1614	1.54340		Carrus et al., 2008; Lee et al., 2012; Perugini and Bagozzi, 2001; Prestwich et al., 2008
Due to the outbreak of coronavirus, If I succeed in achieving my goal of (going to any restaurants) over the next 3 months, I will feel depressed	.906	5.2193	1.55964		
Due to the outbreak of coronavirus, If I succeed in achieving my goal of (going to any restaurants) over the next 3 months, I will feel Uncomfortable	.861	5.1494	1.57481		
<b>Future desire</b>				@.950	
Despite the outbreak of coronavirus, I want to go to any restaurants in the near future.	.762	5.5663	1.41756		Carrus et al., 2008; Lee et al., 2012; Perugini and Bagozzi, 2001
Despite the outbreak of coronavirus, I wish to go to any restaurants in the near future.	.800	5.7687	1.42933		Removed: Despite the outbreak of coronavirus, my wish to go to any restaurants in the near future can be described desirably.
Despite the outbreak of coronavirus, I am eager to go to any restaurants in the near future.	.786	5.5518	1.48148		
	.824	5.6771	1.42335		

(continued on next page)

Table 2 (continued)

Construct and item measurement	Factor loading	Mean	Std. Deviation	Cronbach @	
Despite the outbreak of coronavirus, my desire for going to any restaurants in the next 3 months is very strong.					
<b>Non-pharmaceutical intervention</b>				@.945	
I will cover my mouth and nose with a tissue when sneezing while going to any restaurants.	.840	5.3181	1.46951		Lee et al., 2012
I will frequently wash my hands while travelling internal going to any restaurants.	.845	5.2675	1.47385		Removed: I will check the information of on coronavirus by visiting the government website before going to any restaurants; I will read and check precautions about coronavirus through doctors or health centres before going to any restaurants; I will get the information about local medical facilities for preparing for an emergency because of coronavirus before going to any restaurants; I will restrain from meeting people for a while after going to any restaurants; I will carefully keep an eye on my health condition after going to any restaurants.
I will restrain from touching my eyes, nose, and mouth while going to any restaurants.	.867	5.2217	1.52087		
I will keep away from those who have symptoms of coronavirus while going to any restaurants.	.879	5.3133	1.47710		
<b>Perceived health risk</b>				@.939	
Due to the outbreak of coronavirus, I worry that going to and restaurants are harmful.	.822	5.5398	1.48185		
Due to the outbreak of coronavirus, I worry about my health after going to any restaurants.	.844	5.5325	1.49824		Hwang and Choe, 2020
Due to the outbreak of coronavirus, I worry that going to any restaurants is unhealthy.	.836	5.4819	1.52564		
<b>Lockdown restriction</b>				@.906	
Despite government restriction and lockdown, I wish to go to any restaurants in the near future.	.877	5.3422	1.45580		
Despite the government restriction and lockdown, my desire for going to any restaurants in the next 3 months is very strong.	.910	5.3494	1.49099		Lee et al., 2012
It is dangerous to go to any restaurants because of Coronavirus pandemic and government lockdown policy.	.808	5.1060	1.50950		

Table 3

Discriminant validity.

	CR	AVE	MSV	MaxR (H)	Negative anticipated emotion	Perception of shock of disaster	Behavioural	Normative	Control	Positive anticipated emotion	Future desire
Negative anticipated emotion	0.957	0.817	0.250	0.962	0.904						
Perception of shock of disaster	0.922	0.715	0.265	0.962	0.500	0.845					
Behavioural belief	0.959	0.853	0.255	0.962	0.235	0.355	0.923				
Normative belief	0.938	0.834	0.092	0.954	0.014	0.019	0.080	0.913			
Control belief	0.924	0.802	0.199	0.946	0.214	0.208	0.425	0.066	0.895		
Positive anticipated emotion	0.936	0.831	0.349	0.951	0.357	0.446	0.505	0.303	0.437	0.912	
Future desire	0.951	0.828	0.349	0.957	0.273	0.515	0.481	0.100	0.446	0.591	0.910

Note: Average variance was extracted from the square roots of average variance extracted.

Table 4

Results of Hypothesis Testing.

	Standardized Regression Path		Estimated β	SE.	CR.	P
H1	Perception of shock of disaster	Belief	.363	.042	8.577	***
H2a	Belief	Negative anticipated emotion	.818	.110	7.432	***
H2b		Positive anticipated emotion	1.201	.124	9.683	***
H3a	Negative anticipated emotion	Future desire	.058	.041	1.418	.156
H3b	Positive anticipated emotion	Future desire	.604	.054	11.181	***

Notes: Path = Relationship between independent variable on dependent variable; β = Standardised regression coefficient; S.E. = Standard error; p = Level of significance. \*\*\* represents the p < 0.05.

coronavirus pandemic impacts on their beliefs, and how their beliefs could influence their anticipated emotions (negative and positive) which could affect their future desire towards visiting restaurants. We examined whether this global transformation will be the start of a dark cloud in the hospitality sector or whether there is an imminent recovery ahead. The result of this study has significant implications for

hospitality, tourism and marketing literature.

Prior studies have investigated the effect of a pandemic after the crisis was over. For example, Lee et al.'s (2012) study was related to the concept of non-pharmaceutical intervention for influenza, which happened in 2009, and its relation to post behavioural intention for international tourists. In this study, we look at the concepts during the



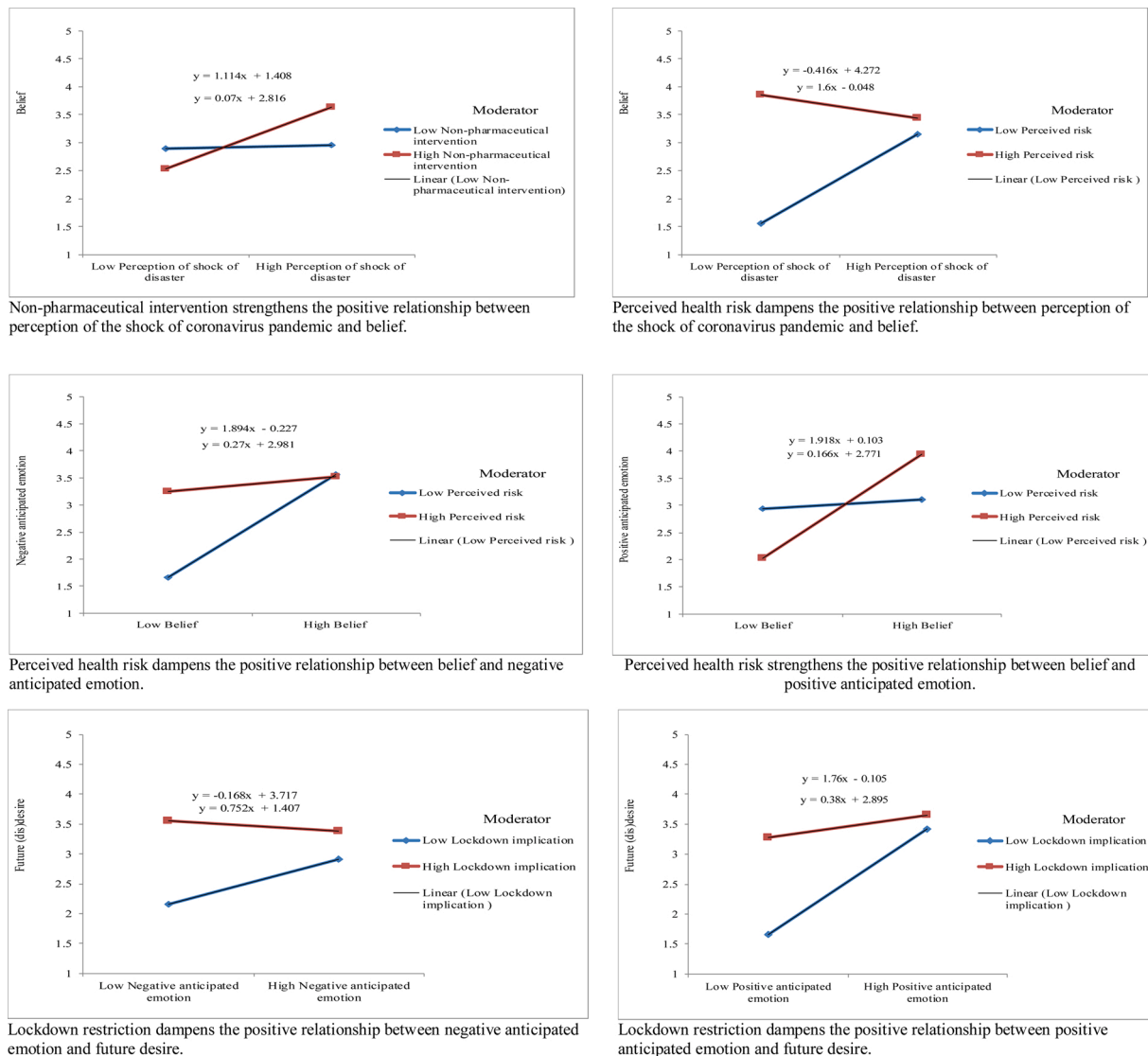


Fig. 2. The pattern of the moderating effects.

pandemic. Therefore, it is clear that the concepts of customers' beliefs and perceptions are related to the specific context; hence, this advances present knowledge. Specifically, our study is the first research to consider the relationships between the perception of the shock disaster, belief (behavioural, normative and control), anticipated emotion and future desire, with the moderating effect of the non-pharmaceutical intervention, perceived health risk and lockdown restriction. So, our analysis offers a more comprehensive understanding than preceding research, and also advances the literature in the field.

Our study has conducted a reality assessment of the impacts, forecasting hospitality demand, and bench-marking worthy practices which are contextually motivating to measure the pandemic's influences on many geographies' segments and stakeholders. By linking the customers' perception of the shock of the coronavirus pandemic towards the hospitality industry and their future desire, our study provides original visions and theoretical contributions by proposing an updated measurement and a conceptual framework. Our results offer scope to progress our understanding of the perception of crisis management; in addition, based on the increase of power of the pandemic's affordance, our study explains how the hospitality literature is changing, and scholars should reset their agenda frontiers. The results of our study add knowledge to the literature in hospitality, marketing and tourism.

### 3.2. Managerial implications

This study's framework indicates that the hospitality sector's future in this unprecedented time depends on the perception of the shock of the disaster, consumers' beliefs, anticipated emotions and future desires. Consumers' behaviour has been reformed to adapt to the new lifestyle very quickly. The high level of social uncertainty caused by the COVID-19 outbreak leads customers to a higher risk judgement and to develop a high level of negative emotion. The vast level of guidelines available by WHO and governments such as hygiene advice, lockdown and social distancing has an enormous impact on consumers' behaviour, perception, quality of life and reaction towards their interaction and spending particularly in the hospitality industry. The hospitality sector, such as restaurants, needs to be innovative to reassure their customers that they will do everything to provide safe products and services for them. The sectors need to pass the message to their customers that they will support customers' self-protection by providing easily accessible hygiene products to their customers. They need to assure customers that the destination or place of visit is safe, which could help the sector to build trust and relationships with their customers. On the other hand, local businesses such as restaurants, accommodation providers and local attractions need to come together and promote their products and services through discounted packages to residents and communities to attract

more visits to local businesses.

For policymakers, taking the right action at the right time plays a crucial role in society and the economy. There is a connection between consumer risk perception and economic stimulus policy by the government. Consumer risk perception will decrease when the government implements an economic policy to stimulate tourism. Accordingly, this article explored the influence of economic stimulus policy on consumer risk perception and adaptive belief. In addition, the consumer's beliefs connect to economic factors, such as a decrease in household income. The decreased household income caused by the increased consumer risk perception may derive from the economic factor. This may be different from the epidemic fear. The article explained that consumers' perceived risk derived from epidemic fear and economic factors separately.

Transparent information plays a vital role in consumers' behaviour, whereas the limitation and restrictions guidelines are more adaptable for people if they understand clearly the information provided by the authority. Furthermore, if the government enforces local lockdowns with restricted hygiene regulation, this could assist consumers in their emotion control and risk management more efficiently. The local lockdown offers virtuous confidence to customers and business holders to perform and manage the crisis more effectively locally. The result of this study has significant implications for tourism and hospitality marketers, hospitality services and government agencies, which increase the chances for practical recommendations.

#### 4. Limitations and directions for future research

Our study is subject to some limitations and, therefore, delivers some opportunities for further research. The research constructs relationships were apprehended at a single point in time; further study could include longitudinal studies and strengthen the research approach to examine the effects of global pandemics on customers' desires and their approach to their perception of the worldwide shock of disaster levels in different time periods. In addition, we focused on UK consumers, and a new study could concentrate on different countries and compare the results with our study to understand customers' beliefs globally, in order to generate greater generalisation. In addition, the culture in different countries may cause different levels of perceived risk. This could be investigated by future researchers to employ cross cultural data for further generalisability.

Due to the importance of the topic and time limitations, we collected data by employing a convenience sample and different collection points. Therefore, future researchers are invited to assess the proposed model by using different methodologies, such as interviews and focus groups in which the results will be triangulated. An additional suggestion would be collecting data from developing countries which had fewer restrictions and non-pharmaceutical interventions. It might influence more comprehension into the validated model by comparing developed countries with developing countries. In addition, based on individual behaviour and belief, future studies might add some more compounds to belief construct or add more items which reflect their samples, attitudes and beliefs. In addition, due to lockdown and social distancing, it is essential to recognise whether the consumers permanently modified their consumption habits or whether they will return to their old behaviours once the international catastrophe is ended.

#### References

- Ajzen, I., 1991. The theory of planned behavior. *Organ. Behav. Hum. Decis. Process.* 50 (2), 179–211.
- Ajzen, I., Fishbein, M., 1980. *Understanding Attitudes and Predicting Social Behavior*. Prentice Hall, Englewood Cliffs, NJ.
- Al-Ansi, A., Olya, H.G., Han, H., 2019. Effect of general risk on trust, satisfaction, and recommendation intention for halal food. *Int. J. Hosp. Manag.* 83 (Oct), 210–219.
- Anderson, J.R., 2004. *Cognitive psychology and its implications*. NY: Worth Pub. *Tour. Manag.* 49 (Aug), 99–108.
- Bauer, R.A., 1960. *Consumer Behavior as Risk Taking*. Chicago, IL, pp. 384–398.

- Becker, M.C., Knudsen, T., 2005. The role of routines in reducing pervasive uncertainty. *J. Bus. Res.* 58 (6), 746–757.
- Béjaoui, A., Karaa, A., 2020. An integrated model of perceived risk and risk-reducing strategies in the Tunisian stock market: risk-behavior model. *Foreign Direct Investments: Concepts, Methodologies, Tools, and Applications*. IGI Global, pp. 132–176.
- Björk, P., Kauppinen-Räsänen, H., 2012. A netnographic examination of travellers' online discussions of risks. *Tourism Manage. Perspect.* 2 (April), 65–71.
- Cahyanto, I., Wiblishauser, M., Pennington-Gray, L., Schroeder, A., 2016. The dynamics of travel avoidance: the case of Ebola in the US. *Tourism Manage. Perspect.* 20 (Oct), 195–203.
- Carnevale, J.B., Hatak, I., 2020. Employee adjustment and well-being in the era of COVID-19: implications for human resource management. *J. Bus. Res.* (Just published).
- Chew, E.Y.T., Jahari, S.A., 2014. Destination image as a mediator between perceived risks and revisit intention: a case of post-disaster Japan. *Tour. Manag.* 40 (Feb), 382–393.
- Chien, G.C., Law, R., 2003. The impact of the severe acute respiratory syndrome on hotels: a case study of Hong Kong. *Int. J. Hosp. Manag.* 22 (3), 327–332.
- Choi, M., Law, R., Heo, C.Y., 2018. An investigation of the perceived value of shopping tourism. *J. Travel. Res.* 57 (7), 962–980.
- Corbet, S., O'Connell, J.F., Efthymiou, M., Guiomard, C., Lucey, B., 2019. The impact of terrorism on European tourism. *Ann. Tour. Res.* 75, 1–17.
- Dayour, F., Park, S., Kimbu, A.N., 2019. Backpackers' perceived risks towards smartphone usage and risk reduction strategies: a mixed methods study. *Tour. Manag.* 72 (Jun), 52–68.
- DeFranco, A., Morosan, C., 2017. Coping with the risk of internet connectivity in hotels: perspectives from American consumers traveling internationally. *Tour. Manag.* 61 (Aug), 380–393.
- Dholakia, U.M., 2001. A motivational process model of product involvement and consumer risk perception. *Eur. J. Mark.* 35 (11/12), 1340–1362.
- Dowling, G.R., Staelin, R., 1994. A model of perceived risk and intended risk-handling activity. *J. Consum. Res.* 21 (1), 119–134.
- European Centre for Disease Prevention and Control (ECDC), 2020. *COVID-19 Situation Update Worldwide*. [https://covid19.who.int/?gclid=Cj0KCQjw3Nv3BRCSARIsAPh8hgIONXfjgsbXg5EOQTdt1g24rDl2T8S23xc9B-x1rnmVtkHTYdHQIRQaAhGG EALw\\_wcB](https://covid19.who.int/?gclid=Cj0KCQjw3Nv3BRCSARIsAPh8hgIONXfjgsbXg5EOQTdt1g24rDl2T8S23xc9B-x1rnmVtkHTYdHQIRQaAhGG EALw_wcB).
- Fennell, D.A., 2017. Towards a model of travel fear. *Ann. Tour. Res.* 66 (Sep), 140–150.
- Fetzer, T., Hensel, L., Hermle, J., Roth, C., 2020. Coronavirus perceptions and economic anxiety. *Rev. Econ. Stat.* 1–36.
- Fornell, C., Larcker, D.F., 1981. Evaluating structural equation models with unobservable variables and measurement error. *J. Mark. Res.* 18 (1), 39–50.
- Fuchs, G., Reichel, A., 2011. An exploratory inquiry into destination risk perceptions and risk reduction strategies of first time vs. Repeat visitors to a highly volatile destination. *Tour. Manag.* 32 (2), 266–276.
- Gössling, S., Scott, D., Hall, C.M., 2020. Pandemics, tourism and global change: a rapid assessment of COVID-19. *J. Sustain. Tour.* (April), 1–20.
- Hair, J.F., William, C.B., Barry, B., Rolph, J., Anderson, E., Tatham, R.L., 2006. *Multivariate Data Analysis*. Pearson, New Jersey.
- Han, H., Kim, Y., 2010. An investigation of green hotel customers' decision formation: developing an extended model of the theory of planned behavior. *Int. J. Hosp. Manag.* 29 (4), 659–668.
- Han, H., Ryu, K., 2012. The theory of repurchase decision-making (TRD): identifying the critical factors in the post-purchase decision-making process. *Int. J. Hosp. Manag.* 31 (3), 786–797.
- Han, H., Hsu, L., Sheu, C., 2010. Application of the theory of planned behaviour to green hotel choice: testing the effect of environmental-friendly activities. *Tour. Manag.* 31, 325–334.
- Henderson, J.C., 2004. Managing a health-related crisis: SARS in Singapore. *J. Vacat. Mark.* 10 (1), 67–77.
- Horton, R.L., 1976. The structure of perceived risk: some further progress. *J. Acad. Mark. Sci.* 4 (4), 694–706.
- Huang, H., Liu, S.Q., Kandampully, J., Bujisic, M., 2020. Consumer responses to scarcity appeals in online booking. *Ann. Tour. Res.* 80 (Jan). Just published.
- Hwang, J., Choe, J.Y., 2020. How to enhance the image of edible insect restaurants: focusing on perceived risk theory. *Int. J. Hosp. Manag.* 87 (May), 102464.
- Israeli, A.A., Reichel, A., 2003. Hospitality crisis management practices: the Israeli case. *Int. J. Hosp. Manag.* 22 (4), 353–372.
- Johnson, A.R., Stewart, D.W., 2005. A reappraisal of the role of emotion in consumer behavior. *Rev. Market. Res.* 1 (1), 3–33.
- Karl, M., 2018. Risk and uncertainty in travel decision-making: tourist and destination perspective. *J. Travel. Res.* 57 (1), 129–146.
- Khalid, U., Okafor, L.E., Shafiqullah, M., 2020. The effects of economic and financial crises on international tourist flows: a cross-country analysis. *J. Travel. Res.* 59 (2), 315–334.
- Kiecolt-Glaser, J.K., McGuire, L., Robles, T.F., Glaser, R., 2002. Emotions, morbidity, and mortality: new perspectives from psychoneuroimmunology. *Annu. Rev. Psychol.* 53 (1), 83–107.
- Kim, M., Roehl, W., Lee, S.K., 2019. Effect of hotels' price discounts on performance recovery after a crisis. *Int. J. Hosp. Manag.* 83 (Oct), 74–82.
- Kim, M., Roehl, W., Lee, S.K., 2020. Different from or similar to neighbours? An investigation of hotels' strategic distances. *Tour. Manag.* 76 (Feb) (Just published).
- Kuo, H.I., Chen, C.C., Tseng, W.C., Ju, L.F., Huang, B.W., 2008. Assessing impacts of SARS and Avian Flu on international tourism demand to Asia. *Tour. Manag.* 29 (5), 917–928.

- Lam, T., Hsu, C.H., 2004. Theory of planned behaviour: potential travellers from China. *J. Hosp. Tour. Res.* 28 (4), 463–482.
- Lam, T., Hsu, C.H., 2006. Predicting behavioral intention of choosing a travel destination. *Tour. Manag.* 27 (4), 589–599.
- Lee, C.C., Chen, C.J., 2011. The reaction of elderly Asian tourists to avian influenza and SARS. *Tour. Manag.* 32 (6), 1421–1422.
- Lee, S.A., Oh, H., 2017. Sharing travel stories and behavioural outcomes: a case of travel. *Tour. Manag.* 62 (Oct), 147–158.
- Lee, C.K., Song, H.J., Bendle, L.J., Kim, M.J., Han, H., 2012. The impact of non-pharmaceutical interventions for 2009 H1N1 influenza on travel intentions: a model of goal-directed behaviour. *Tour. Manag.* 33 (1), 89–99.
- Li, S., Wang, Y., Xue, J., Zhao, N., Zhu, T., 2020. The impact of COVID-19 epidemic declaration on psychological consequences: a study on active Weibo users. *Int. J. Environ. Res. Public Health* 17 (6), 2032.
- Lim, N., 2003. Consumers' perceived risk: sources versus consequences. *Electron. Commer. Res. Appl.* 2 (3), 216–228.
- Liu, B., Kim, H., Pennington-Gray, L., 2015. Responding to the bed bug crisis in social media. *Int. J. Hosp. Manag.* 47 (May), 76–84.
- Malhotra, N.K., Kim, S.S., Patil, A., 2006. Common-method-variance in IS research: a comparison of alternative approaches and a reanalysis of past research. *Manage. Sci.* 52 (12), 1865–1883.
- Maphanga, P.M., Henama, U.S., 2019. The tourism impact of Ebola in Africa: lessons on crisis management. *Afr. J. Hosp. Tour. Leisure* 8 (3), 1–13.
- Marder, B., Erz, A., Angell, R., De Plangger, K., 2019. The role of photograph aesthetics on online review sites: Effects of management-vs. traveller-generated photos on tourists' decision-making. *J. Travel. Res.*
- Matzler, K., Teichmann, K., Strobl, A., Partel, M., 2019. The effect of price on word of mouth: first time versus heavy repeat visitors. *Tour. Manag.* 70 (Feb), 453–459.
- McKercher, B., Chon, K., 2004. The over-reaction to SARS and the collapse of Asian tourism. *Ann. Tour. Res.* 31 (3), 716–719.
- Mellers, B., McGraw, A., 2001. Anticipated emotions as guides to choose. *Curr. Dir. Psychol. Sci.* 10 (6), 210–214.
- Michaelidou, N., Micevski, M., 2019. Consumers' ethical perceptions of social media analytics practices: risks, benefits and potential outcomes. *J. Bus. Res.* 104 (Nov), 576–586.
- Mohseni, S., Jayashree, S., Rezaei, S., Kasim, A., Okumus, F., 2018. Attracting tourists to travel companies' websites: the structural relationship between website brand, personal value, shopping experience, perceived risk and purchase intention. *Curr. Issues Tour.* 21 (6), 616–645.
- Morakabati, Y., Page, S.J., Fletcher, J., 2017. Emergency management and tourism stakeholder responses to crises: a global survey. *J. Travel. Res.* 56 (3), 299–316.
- Mortensen, C.R., Becker, D.V., Ackerman, J.M., Neuberg, S.L., Kenrick, D.T., 2010. Infection breeds reticence: the effects of disease salience on self-perceptions of personality and behavioral avoidance tendencies. *Psychol. Sci.* 21 (3), 440–447.
- Murray, K.B., Schlacter, J.L., 1990. The impact of services versus goods on consumers' assessment of perceived risk and variability. *J. Acad. Mark. Sci.* 18 (1), 51–65.
- Novelli, M., Burgess, L.G., Jones, A., Ritchie, B.W., 2018. No Ebola... still doomed—the Ebola-induced tourism crisis. *Ann. Tour. Res.* 70 (May), 76–87.
- Olya, H.G., Al-ansi, A., 2018. Risk assessment of halal products and services: implication for tourism industry. *Tour. Manag.* 65 (April), 279–291.
- Page, S., Song, H., Wu, D.C., 2012. Assessing the impacts of the global economic crisis and swine flu on inbound tourism demand in the United Kingdom. *J. Travel. Res.* 51 (2), 142–153.
- Papatheodorou, A., Pappas, N., 2017. Economic recession, job vulnerability, and tourism decision making: a qualitative comparative analysis. *J. Travel. Res.* 56 (5), 663–677.
- Park, S., Tussyadiah, I.P., 2017. Multidimensional facets of perceived risk in mobile travel booking. *J. Travel. Res.* 56 (7), 854–867.
- Perl, Y., Israeli, A.A., 2011. Crisis management in the travel agency sector: a case study. *J. Vacat. Mark.* 17 (2), 115–125.
- Perugini, M., Bagozzi, R., 2001. The role of desires and anticipated emotions in goal-directed behaviors: broadening and deepening the theory of planned behaviour. *Br. J. Soc. Psychol.* 40 (1), 79–98.
- Pligt, J.V.D., De Vries, N.K., 1998. Expectancy-value models of health behaviour: the role of salience and anticipated affect. *Psychol. Health* 13 (2), 289–305.
- Podsakoff, P.M., Organ, D.W., 1986. Self-reports in organizational research: problems and prospects. *J. Manage.* 12 (4), 531–544.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y., Podsakoff, N.P., 2003. Common-method-biases in behavioral research: a critical review of the literature and recommended remedies. *J. Appl. Psychol.* 88 (5), 879–903.
- Reisinger, Y., Mavondo, F., 2005. Travel anxiety and intentions to travel internationally: implications of travel risk perception. *J. Travel. Res.* 43 (3), 212–225.
- Rittichainuwat, B.N., 2013. Tourists' and tourism suppliers' perceptions toward crisis management on tsunami. *Tour. Manag.* 34 (Feb), 112–121.
- Roehl, W.S., Fesenmaier, D.R., 1992. Risk perceptions and pleasure travel: an exploratory analysis. *J. Travel. Res.* 30 (4), 17–26.
- Roselius, T., 1971. Consumer rankings of risk reduction methods. *J. Market.* 35 (1), 56–61.
- Sarman, I., Scagnolari, S., Maggi, R., 2016. Acceptance of life-threatening hazards among young tourists: a stated choice experiment. *J. Travel. Res.* 55 (8), 979–992.
- Sharma, P., Leung, T.Y., Kingshott, R.P., Davcik, N.S., Cardinali, S., 2020. Managing uncertainty during a global pandemic: an international business perspective. *J. Bus. Res.* 116 (Aug), 188–192.
- Sheng-Hsiung, T., Gwo-Hsiung, T., Kuo-Ching, W., 1997. Evaluating tourist risks from fuzzy perspectives. *Ann. Tour. Res.* 24 (4), 796–812.
- Sheth, J., 2020a. Impact of Covid-19 on consumer behaviour: will the old habits return or die? *J. Bus. Res.* Just published.
- Shimp, T.A., Bearden, W.O., 1982. Warranty and other extrinsic cue effects on consumers' risk perceptions. *J. Consum. Res.* 9 (1), 38–46.
- Solanki, S., 2011. Consumer involvement for durable and non-durable products: key indicators and their impact. *Indian J. Mark.* 41 (3), 51–59.
- Sonmez, F., Graefe, A.R., 1998. Determining future travel behaviour from past travel experience and perceptions of risk and safety. *J. Travel. Res.* 37 (2), 171–177.
- Statista.com (2020a) <https://www.statista.com/statistics/1104991/coronavirus-restaurant-visitation-impact-united-kingdom-uk/> (Assessed by 18 May 2020).
- Statista.com (2020b) <https://www.statista.com/statistics/1105174/uk-pub-and-restaurant-sales-fall-due-to-covid-19/> (Assessed by 18 May 2020).
- Stone, R.N., Grønhaug, K., 1993. Perceived risk: further considerations for the marketing discipline. *Eur. J. Market.* 27 (3), 39–50.
- Sunstein, C.R., 2005. *Laws of Fear: Beyond the Precautionary Principle*, Vol. 6. Cambridge University Press, UK.
- Thapa, B., Cahyanto, I., Holland, S.M., Absher, J.D., 2013. Wildfires and tourist behaviours in Florida. *Tour. Manag.* 36 (Jun), 284–292.
- Triandis, H., 1977. *Interpersonal behavior*. Monterey, CA: Brooks/Cole. Design Sustain. Behav. Change Consumer Behav. 14 (4), 427–445.
- Tseng, S.Y., Wang, C.N., 2016. Perceived risk influence on dual-route information adoption processes on travel websites. *J. Bus. Res.* 69 (6), 2289–2296.
- Walters, G., Wallin, A., Hartley, N., 2019. The threat of terrorism and tourist choice behavior. *J. Travel. Res.* 58 (3), 370–382.
- Wang, K.C., Jao, P.C., Chan, H.C., Chung, C.H., 2010. Group package tour leader's intrinsic risks. *Ann. Tour. Res.* 37 (1), 154–179.
- Weber, K., 2001. Outdoor adventure tourism: a review of research approaches. *Ann. Tour. Res.* 28 (2), 360–377.
- WHO.int/emergencies (2020) <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen> (Assessed by 10 June 2020).
- Woodside, A.G., 2020. Interventions as experiments: connecting the dots in forecasting and overcoming pandemics, global warming, corruption, civil rights violations, misogyny, income inequality, and guns. *J. Bus. Res.* 117 (Sep), 212–218.
- Wu, H.C., Cheng, C.C., 2018. Relationships between technology attachment, experiential relationship quality, experiential risk and experiential sharing intentions in a smart hotel. *J. Hosp. Tour. Manag.* 37 (Dec), 42–58.
- Yüksel, A., Yüksel, F., 2007. Shopping risk perceptions: effects on tourists' emotions, satisfaction and expressed loyalty intentions. *Tour. Manag.* 28 (3), 703–713.
- Zopiatis, A., Savva, C., Lambertides, N., McAleer, M., 2018. Tourism stocks in times of crisis. *J. Travel. Res.*