EFFECTS OF INFORMATION AND COMMUNICATION TECHNOLOGY IMPROVEMENT ON REVISIT INTENTION DURING COVID-19

Abstract

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Purpose- The present study aims to investigate the interrelationship between information and communication technology (ICT) improvement, destination brand image, destination satisfaction, and destination personality, and how ICT improvement influences tourists' intention to return during the pandemic COVID -19.

Design, methodology, approach- The statistical population consisted of Iranian tourists who had stayed in hotels in Iran during CPVID-19. A questionnaire was developed and distributed, and 310 usable questionnaires were received. To test the hypotheses, confirmatory factor analysis was performed using Smart PLS3.

Findings- Our results showed that ICT improvement had a significant, positive impact on tourists' revisit intentions and destination brand image during the pandemic COVID -19. Destination brand image also had a significant influence on revisit intention, destination satisfaction, and destination personality. In addition, destination satisfaction and destination personality were significantly related to revisit intention during the pandemic.

Originality of the research- This study pioneered the evaluation of ICT in the tourism industry, focusing on the hospitality industry during the pandemic COVID -19. It also examined the direct impact of ICT improvements on revisit intentions during the pandemic. In addition, this study provides evidence for managers to more effectively leverage ICT potential to improve destination brand image and encourage customers to revisit during a pandemic.

Keywords ICT improvement, Revisit intention, Destination brand image, Destination satisfaction, Destination personality

INTRODUCTION

The intention to revisit tourist destinations has been an essential tourist behavioural factor within tourism research (Khan et al., 2019). Tourism researchers have been seeking to understand how tourists could be persuaded to make revisits to a particular destination and recommend others to do so. The COVID-19 pandemic negatively affects tourism destinations in the hotel industry and has led to significant financial losses (Anguera-Torrell et al., 2021). This could be related to travellers' negative feeling and risk perception of tourism destinations. As a result, in this situation changing travellers' mental images of destinations is one of the most effective measurements to reduce risk perception of travellers and convince them to revisit (Ahmad et al., 2021). In this way, ICT instruments have always been a key factor to salvage and develop the tourism industry, especially in the pandemic situation (Ide, 2021). Hence, it is essential to identify and analyses how ICT improvement has the potential to be a solution to enhance destination image and revisit travel intentions during the pandemic.

The tourism industry has been encountering one of its largest risks during COVID-19 pandemic, and many researchers have suggested that the tourism industry is the largest victim of COVID-19 pandemic (Rather, 2021). The loss imposed by the pandemic on the tourism industry in 2020 was several times higher than the losses experienced by the tourism industry during the 2009 great recession (Altuntas & Gok, 2021). Based on the latest global legal restrictions, the pandemic is estimated to impose a loss of 1700-2400 billion USD on the tourism industry in 2021 (UNWTO, 2020a). Hotels and accommodation centers,

airlines and transportation companies, tourism companies, tourism employees, restaurants, and recreational centers are among the most important damaged sectors of the tourism industry (Rather, 2021). More particularly, the hospitality sector in the tourism industry has experienced severe losses during the pandemic (Anguera-Torrell et al., 2021). Tourists and passengers account for the majority of hotel service consumers. Thus, the demand for hotels and stay centers has dramatically declined due to the substantial reduction in domestic and international travel (Hao et al., 2020). This has imposed devastating losses on all hospitality reliant industries, leading to a large number of employees losing their jobs (Bakar & Rosbi, 2020). Apart from these direct effects, the negative processing within tourist minds (i.e., creating negative mental images of hotels and stay centers as places with the potential for disease infection) has posed a negative intangible effect. Negative feelings associated with the perceived risk of the COVID-19 pandemic in hotels have led to an intense decline in demand. This could worsen conditions in the hotel industry in the near future (Hao et al., 2020). However, some tourists are forced to confront the risk of coronavirus and return to hotels and stay there for work, medical, health, educational, and other purposes.

The pandemic has induced distrust and negative feelings in the minds of tourists, which may persist into the future (Rather, 2021). This has added to the necessity to develop policies and solutions to enhance satisfaction and retain tourists during COVID-19 pandemic (Abbas et al., 2021). The marketing of tourist destinations is a candidate solution. It provides a method for distinguishing a destination from its competitors by emphasizing its unique characteristics. Tourism destination marketing is considered to be a key instrument to improve the competitiveness of such destinations (Qu et al., 2011). As a result, marketing researchers emphasize the study of destination brand image and its effects on tourist behavior, such as revisit intentions (Chen et al., 2020). In particular, the pandemic has challenged tourists' mental images of destinations, and the recovery and improvement of such mental images can significantly contribute to tourism success during the pandemic (Ahmad et al., 2021). Tourists' mental image of a destination is a key factor that strongly influences the tourists' attitude toward the destination. This can be much more important than the tangible realities of the destination. In fact, tourists travel to visit their mental images of destinations rather than visiting the tangible realities (Prayag & Ryan, 2012). Despite numerous studies, the relationship between destination brand image and destination personality and their effects on the attitudes and behavior of tourists remain to be clarified (Chen & Phou, 2013).

Information and communication technology (ICT) is a key instrument required for the survival and development of the tourism industry. Today, ICT has a significant influence on the tourism industry and has essentially changed effectiveness, business practices, and tourist interactions (Berné et al., 2015). In other words, ICT is a key driver in the tourism industry. Today, the development of tourism is inevitably dependent on the utilization of IT. To realize the vision of the tourism industry and grow in tourism, it is necessary to improve ICT and exploit its capabilities (Anguera-Torrell et al., 2021). There are many tourism fields where ICT can be used, the most important of which is creating a good brand image of the destination in order to enjoy the consequential benefits (Álvarez-García et al., 2020). ICT is a new and innovative approach and could be useful in providing suitable images of tourism destinations and creating a distinctive, excellent destination personality. In other words, ICT improvement can be considered to be a key instrument for presenting a suitable image of tourism destinations (Chia et al., 2021). Since pre-pandemic tourism circumstances are not expected to be revived before 2023, tourism practitioners have the opportunity to provide a positive mental image of their companies and their destinations to tourists through ICT improvement (Ranasinghe et al., 2020).

In addition, many researchers have noted that ICT brings about some changes in the behavior of tourists towards a brand, such as changing their mindset, raising their awareness, promoting their level of engagement, and increasing their satisfaction (Dung et al., 2022; Ndou et al., 2022; Nguyen & Van Nguyen, 2022). Furthermore, in studies conducted during and after COVID-19 pandemic, researchers have found that ICT tools are important customer recovery factors in the tourism industry. They have advised tourism industry managers to invest heavily in ICT infrastructure during and after the pandemic because the use of ICT tools along with appropriate strategies can substantially speed up the recovery process and reduce the perceived risk of COVID-19. This can dramatically improve brand image and destination (product) personality, which in turn increases repurchase/revisit rates (World Bank, 2020; Sigala, 2020; Vu et al., 2022).

Therefore, the current study seeks to evaluate the effects of ICT on the revisit intentions of tourists during COVID-19 pandemic, considering roles of destination brand image, destination satisfaction, and destination personality as mediators. Hence, it is required to find an answer to the question "how does ICT improvement affect tourist revisit intention during COVID-19 pandemic?" This work has two aspects of novelty. Firstly, it pioneers the evaluation of the importance of ICT improvement in the tourism industry from a particular perspective during COVID-19 pandemic and the direct effects of ICT improvement on the revisit intention of tourists. The pandemic has contributed strongly to tourists' negative attitudes toward traveling and staying in other cities and countries (Rather, 2021). In other words, a negative mental image of hotels and stay centers as places with a high infection probability could lead to critical hotel and tourism circumstances in the future (Hao et al., 2020). Such a negative attitude may be an essential risk or challenge for tourism stakeholders and practitioners, prompting the need to develop detailed plans to improve the attitudes of tourists (Bakar & Rosbi, 2020). The present study assumes that ICT can play a key role in eliminating negative mental images induced by the pandemic, encouraging tourists to revisit tourism destinations and advertising such destinations. Therefore, it is essential to examine the effects of ICT improvement on the improvement of mental images and thus revisit intention during the pandemic. Secondly, the present study was conducted in Iran as a developing

country in the Middle East with a high natural and historical potential for tourism. The tourism industry of Iran has been dramatically affected by COVID-19 pandemic (Abbas et al., 2021). The destructive impacts of COVID-19 pandemic on Iranian tourism include: 15,000 tour guiding jobs lost, 2500 traveling agencies shut down, an 80% reduction in online tourism services, a 65% reduction in flight passengers, and only 10% of the capacity of Iranian hotels in use. Thus, Iran has experienced a sharp effect of the pandemic in terms of tourist arrival declines and needs to implement essential schemes, such as ICT improvement, to improve tourists' attitudes toward Iranian tourism destinations as Iran has many tourist attractions and a strong potential for tourism revival.

The remainder of the study is organized as follows: Section 2 Theoretical and Hypotheses development; Section 3 describes the methodology; Section 4 provides the results; and, Section 5 concludes the work and makes future research suggestions.

1. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

1.1. Tourism and hospitality during COVID-19 pandemic

The World Health Organization (WHO) announced a global pandemic resulting from the incidence of COVID-19 on March 11, 2020, leading to unexpected conditions far worse than World Wars I and II (Sanabria-Díaz et al., 2021). Most industries in the world have experienced massive damage caused by COVID-19 (Yarovaya et al., 2021). As a major economic element, the tourism industry is a major global victim of COVID-19 because of its high sensitivity to environmental, political, social, and natural factors (Liu et al., 2022; Park et al., 2022). During the COVID-19 pandemic, all sections of the global tourism industry, including recreational and leisure places, hotels, and airlines experienced a sharp drop in demand. Studies have revealed that the severity and scope of the influence of the COVID-19 pandemic on the tourism industry are absolutely different and more intense as compared to other pandemics and catastrophic events (Bakar & Rosbi, 2020). The negative consequences on the tourism industry have been so large that practitioners in charge of tourism have to spend numerous years to successfully restore the previous normal conditions (i.e. prior to the pandemic) (Liu et al., 2022).

As a major element of the tourism industry, hotels have experienced a sharp drop in demand during the COVID-19 pandemic; therefore, many hotels throughout the world could not provide services to travelers due to the high rate of deaths and the COVID-19 quarantine on some days and months of 2020 (Sanabria-Díaz et al., 2021; UNWTO, 2020b). For example, revenue per available room (RevPAR) reduced by 95% in Europe in April (Luty, 2020). Different reasons led to negative feelings and risky conditions in tourists staying in hotels, including the travelers' perception of hotels as potential centers for transmission of COVID-19 disease, health requirements, compliance with social distancing, and so forth. Some travelers had to accept the risk of the disease and stay in hotels during the pandemic for work, medical, health, educational and other reasons. Thus, many hotels provided services to them (Niestadt, 2020a, 2020b).

The word tourist in this study refers to travelers accepting the risk of COVID-19 during the pandemic and staying in hotels for the so-called reasons.

1.2. Hypotheses development

Effects of ICT improvement on the revisit intention

ICT is a set of technological tools and associated applications used to communicate, create, disseminate, store, manage, process, and transmit information to a wide range of users (Popkova & Ostrovskaya, 2018). In other words, ICT refers to a set of tools and methods used to collect, store, recover, process, and distribute information in different forms through the interaction of computers, information, and telecommunication (Mo, 2021). The tourism industry represents one of the most important applications of ICT. ICT provides effective tools and facilities and plays a significant role in helping tourists to identify destinations. In turn this facilitates destinations to offer better services to tourists, represent a better image, and better introduce their tourism attractions (Berné et al., 2015).
Revisit intention is a tourist's plan to revisit tourism destinations. The intention to visit a tourism destination can be predicted by purchasing a travel package whilst on vacation (Chew & Jahari, 2014). Tourism researchers have been attempting to explain the tendency of tourists to recommend and revisit particular tourism destinations (Chen & Phou, 2013). An explanation could be the fact that the intention to revisit a tourism destination is an indicator of tourist loyalty (Abbasi et al., 2021). Loyalty to a tourism destination is often reflected in the intention to recommend and revisit the destination (Shabankareh et al., 2022; Tosun et al., 2015). Revisit intention is an important behavior factor that has become a key aspect in tourism research (Abbasi et al., 2021). This concept refers to visitors' probability of repeating an action as visitors or revisiting a destination (Chew & Jahari, 2014). Also, word-of-mouth advertising and brand loyalty are benefits obtained from repeat consumers (Abubakar et al., 2017). Hence, revisit intention has long been addressed in tourism and marketing.

ICT has evolved infrastructures, destination tourism flows, and tourism markets and investment. Through advertising and marketing, ICT helps attract more tourists and enables the growth and development of the tourism industry (Kumar et al., 2019).

ICT applications in tourism can be divided into internal networks, external networks, and the internet (Adeola & Evans, 2020). The contributions of ICT to tourism development can be classified into (1) ICT in informing and offering tourism services (i.e., the comprehensive utilization of the potential of the technology industry to develop tourism infrastructures) and (2) virtual tourism (i.e., online traveling with electronic tourism resources) (Kumar et al., 2019). According to research studies, many scholars believe that the use of ICT (Information Communication Technology) tools is one of the most effective solutions to decrease the perceived risk during a pandemic or natural and unnatural disasters (Sarkady et al., 2021). To pursue their work activities or treatment, many travelers had to travel to other destinations during the COVID-19 pandemic. Hence, they had to ignore the risk of the pandemic and stay in hotels. Thus, an ideal opportunity to be used by hotels was the efficient application of their ICT capacities for reducing the perceived risk of travelers. Many of them get informed of the news and statistics related to the disease through the respective websites and platforms and therefore are always worried about their lives. Consequently, their concerns could be reduced using ICT tools.

Hence, ICT improvement seems to encourage tourists that have visited a particular destination to revisit the same destination during COVID-19. As a result, the present study hypothesizes that:

H1: ICT improvement has a significant, positive effect on tourists' revisit intention during COVID-19

Effects of ICT Improvement on destination brand image

Brand researchers believe that brand image accounts for a significant portion of brand strength (DAM & DAM, 2021). Despite its significant role in marketing, brand image has not been sufficiently addressed (Heding et al., 2020). Some researchers defined brand image as equivalent to brand personality (Singh, 2016), while others interchangeably used the terms "business name" and "brand identity" to measure consumers' perception of a brand (Heding et al., 2020). Despite such disagreements, researchers have a consensus on two aspects of brand image in the tourism industry: (1) brand image has a significant effect on the future behavior of tourists (Chen & Phou, 2013) and (2) it is not easy to create a positive image of tourism destinations as it would require infrastructures and efforts of destinations (Khan et al., 2019). Destination brand image is an important factor for successful tourism development and destination marketing. Potential customers personally create images of destinations based on their tourism experiences of those destinations (Rasoolimanesh et al., 2021). Tourists travel to visit their mental images of a destination rather than visiting the tangible realities of the destination. Hence, destination brand image is much more important than tangible realities (Schwaighofer, 2013). A solid, clear image can significantly influence destination satisfaction, revisit intention, and family and friends recommendations to visit the destination (Chi et al., 2020). Also, tourists with a positive overall image are expected to have a greater intention to revisit and recommend the destination (Loi et al., 2017). Thus, destination brand image can strongly contribute to understanding the selection process of tourists (Veasna et al., 2013).

ICT seems to be an essential infrastructure. ICT can play an effective role by informing, advertising, offering tourism services, and implementing virtual tourism through internal and external networks and the internet (Kumar et al., 2019). The comprehensive utilization of ICT capacities seemingly can have a significant, positive effect on the growth and prosperity of tourism, to create an appealing image of tourism destinations (Sarkady et al., 2021). In other words, ICT infrastructure improvement can be assumed to be a crucial factor in the creation of a positive image of a tourism destination (Adeola & Evans, 2020).

Furthermore, travelers who utilize hotel services during the pandemic and are affected by negative news about the pandemic suffer a high perceived risk and occasionally a negative image of their destination. Since they are obliged to travel during the pandemic, they urgently need a positive image of their destination. ICT tools could significantly affect the creation of a positive image of destinations. Given a positive image of the tourist destination (e.g., hotels), travelers further intend to revisit the destination and even recommend the destination to other people. Thus, it can be said that ICT improvement has a significant, positive effect on the brand image improvement of tourism destinations during COVID-19. Therefore, it is hypothesized that:

H2: ICT improvement has a significant, positive effect on destination brand image during COVID-19

Effects of destination brand image on the revisit intention

Tourism literature has discussed destination brand image as a determinant of revisiting a destination (Rather et al., 2020). However, some characteristics, e.g., multidimensionality and intangibility, make it complex and difficult to measure the destination construct to a great extent (Khan et al., 2019). Nevertheless, the relationship between destination brand image and behavioural objectives remains to be discussed. A good image can influence the repetition of support (Dick & Basu, 1994). Destination brand image affects revisiting a destination in the future (Khan et al., 2019). Zhang et al. (Zhang et al., 2018) demonstrated that destination brand image could predict the revisit intention of tourists. Tourists who have a higher perception of a destination (e.g., sincere people and beautiful natural landscape) will have greater and memorable experience of the destination. This enhances the revisit intention. Thus, it is hypothesized that:

H3: Destination brand image has a significant effect on tourists' revisit intention during COVID-19

The relationship between destination personality and revisit intention

Theoretically, brand image is defined as equivalent to brand personality (Singh, 2016), however, some other researchers interchangeably use the terms "business name" and "brand personality" to measure consumers' perception of a brand (Heding et al., 2020). Destination personality is a set of human characteristics associated with a destination. Brand personality is conceptualized across five dimensions, including: sincerity (honesty), excitement, competence, sophistication, and ruggedness (Ekinci & Hosany, 2006). These dimensions have frequently been utilized in different cultures for various products as a lens to understand consumer behavior (Kumar & Nayak, 2018). Tourists assume at least three personality dimensions of the destinations: sincerity, excitement, and pleasure. The concept of destination personality is used to describe and distinguish the characteristics of tourism destinations (Chen & Phou, 2013). Hence, additional characteristics and suggestions such as destination personality can significantly help to distinguish tourism places and encourage tourists (Baloglu et al., 2014). Also, destination satisfaction is directly affected by destination personality, and tourists need to refer to information on the brand image of a destination to evaluate whether to revisit the destination or not (Li et al., 2021). In recent years, findings of tourism studies showed that perceived destination personality might lead to a higher probability that the destination will be revisited and recommended (Chen & Phou, 2013; Liu et al., 2012). Therefore, we hypothesized:

H4: destination personality has a significant effect on revisit intention during COVID-19

The relationship between destination satisfaction and revisit intention

Customer satisfaction could be evaluated by comparing the consistency between customer expectations and experiences, and services fail when they cannot meet such expectations (Yussoff & Nayan, 2020). In tourism, tourist satisfaction is a major variable to maintain a competitive business since it influences destination selection, product consumption, and service consumption (Prentice et al., 2021). Therefore, satisfaction measurement and management are crucial for the survival, development, and success of tourism destinations (Khan et al., 2019). Tourist satisfaction is a construct that defines tourists' overall evaluation of their experience of a travel destination. Destination satisfaction is considered to be the utilitarian value of a tourism destination and appears when the basic demands have been met (Azis et al., 2020). The satisfaction of a tourist could impact their selection of a destination, intention to purchase and consume products, and intention to revisit the destination (Prayag & Ryan, 2012). Satisfaction positively affects loyalty through the revisit and recommendation objectives (Srivastava & Sharma, 2013). Tourist satisfaction is assumed to be a crucial factor for revisiting destinations. It is evaluated by destination characteristics (e.g., attractions, stay place, facilities, and activities) and meeting the expectations of tourists (Kim et al., 2016). Also, previous studies in tourism showed that destination satisfaction is a key prerequisite of success for tourism destinations (Khan et al., 2019; Prentice et al., 2021; Zhang et al., 2018). Moreover, destination satisfaction could have a significant, positive effect on the revisit intention (Loi et al., 2017). According to (Stylos et al., 2016) travellers intention to revisit a destination is determined by the extent to which they perceive that the hotel attributes are compatible with their needs and they believe that these attributes will meet their expectations in the best way. In other words, tourists that experience higher satisfaction with a tourism destination are more likely to make a revisit have less tendency to switch to other brands (Azis et al., 2020). Based on the above, we hypothesised:

H5: Destination satisfaction has a significant effect on revisit intention during COVID-19

The relationship between destination brand image and destination personality

A review of previous studies suggests that the relationship between destination brand image and destination personality and their effects on the attitudes and behaviour of tourists remains to be further studied despite numerous works on destination brand image (Khan et al., 2019). Destination marketers utilise destination personality to describe and distinguish their tourism destinations in a very competitive tourism market as destination personality is today becoming a sustainable metaphor in the location branding of tourism destinations (Chen & Phou, 2013). Research has shown that destination personality can potentially predict the post-purchase behaviour of tourists (e.g., revisit intention) (Salehzadeh et al., 2016). Moreover, Chen and Phou (2013) (Chen & Phou, 2013) demonstrated that destination brand image has a positive effect on destination personality. Therefore, destination brand image can seemingly result in a positive relationship with personality of tourism destinations. Hence, it is hypothesised that:

H6: Destination brand image has a significant effect on destination personality during COVID-19

The relationship between destination brand image and destination satisfaction

According to previous studies destination image affects travellers' decision making process and their behavior towards a destination, as well as, it influences significantly the tourists' satisfaction levels and recall of the experience (Martins, 2015). Therefore, perceived images are the basis of the evaluation or selection process and thus provide the link between motivations

and destination selection (O'leary & Deegan, 2003). Marquez et al. (Marques et al., 2021) studied destination brand image, destination satisfaction, and post-visit behaviors in emerging destinations. They found that an emotional image would affect tourist satisfaction and post-visit behavior. Additionally, there is strong evidence of the effects of destination brand image on destination satisfaction in the literature (Chen & Phou, 2013; Khan et al., 2019; Priporas et al., 2020; Zhang et al., 2018). Indicated that destination brand image and destination personality have positive effects on the tourist-destination relationship, which, in turn, influence destination satisfaction. Therefore, it is hypothesised that:

H7: Destination brand image has a significant effect on destination satisfaction during COVID-19

Figure1: **Conceptual model**
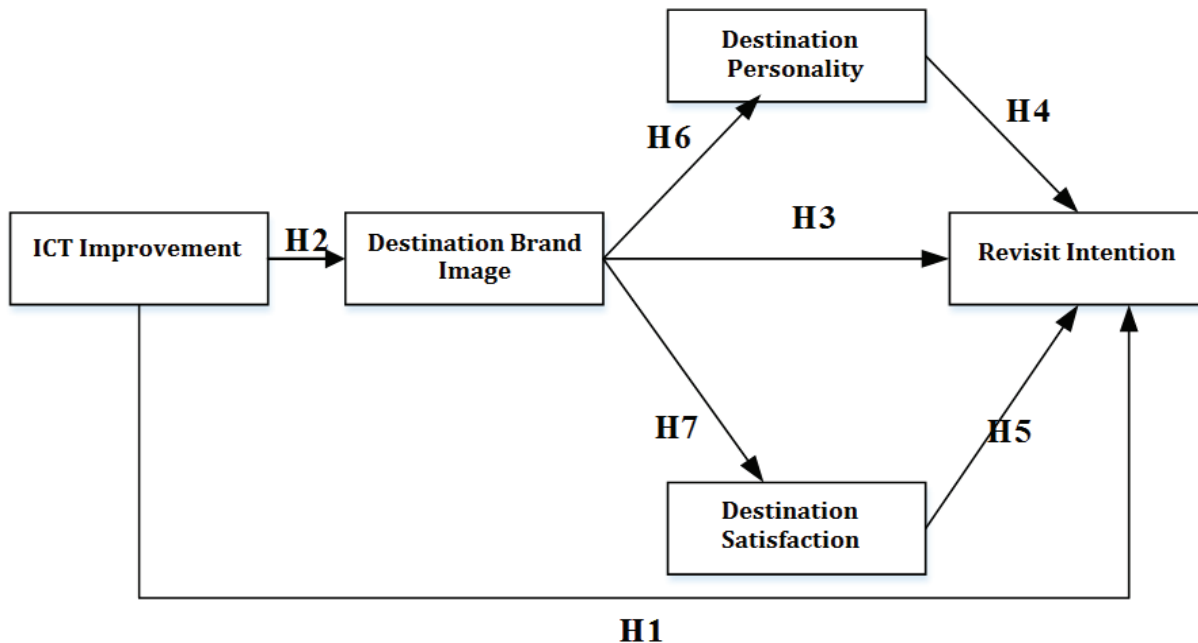
2. RESEARCH METHODLOGY

2.1. Sample and data collection

The present study was conducted in Iran due to its prominent characteristics. ICT improvement was selected as a key variable. Developed and industrial countries mostly have higher levels of ICT, with relatively few sections that need to be improved (Li et al., 2018). ICT development and growth have been a basic factor of industrial development in such countries. Research has shown a strong, effective relationship between ICT and economic growth in developed countries (Li et al., 2018). This initially appeared in most developed countries and later emerged in some developing countries, considering the behavioural characteristics of ICT (Papastathopoulou et al., 2007). However, most developing countries have insufficient tourism competitiveness, and their markets are under government control to a great extent. Thus, there is a substantial opportunity for the development of ICT in such countries (Li et al., 2018). As a developing country, Iran has relatively strong physical potential and infrastructures and good human resources. ICT development has enjoyed large investments in recent years in Iran (Asemi, 2006). However, there are still significant capacities to further improve ICT in Iran (Farhangi et al., 2018). Therefore, Iran represents a suitable case in terms of ICT development capabilities to investigate the contributions of ICT improvement in the industry and economy. Considering the substantial potential of Iran, Iranian tourism can be developed by tackling such obstacles. Thus, Iran represents a suitable case to evaluate the effects of improving infrastructures (i.e., ICT) on retaining and increasing tourist arrival.

Hotels are essential places to stay for tourists. Thus, this study invited Iranian tourists staying at three- to five-star hotels in Isfahan and Shiraz to participate in the work. Isfahan and Shiraz are among the most important and well-known tourism cities in Iran and offer not only numerous historical attractions but also natural and artificial attractions. These cities host a large number of tourists every year. For example, Isfahan hosted over 178,000 tourists, and Shiraz had almost 350 tourist arrivals in 2019.

The tourists staying at 12 three- to five-star Hotels in Isfahan and Shiraz were selected as the respondents since they were directly and tangibly involved in tourism services and facilities and had firsthand experience of tourism services. Thus, they

would be the best candidates to express views on the effects of ICT improvement on these variables. Also, they were aware of the conditions of tourism destinations during COVID-19 pandemic and may have had mental images of the pandemic and its impact. They would be able to judge more precisely the influences of ICT improvement on the behavioural factors of a tourist during the pandemic. Thus, the objectives of the study were explained to the respondents prior to the questionnaire.

Due to delayed vaccination in Iran, our country has experienced a completely different condition to cope with the Covid-19 disease compared to other countries, in particular, the United States of America and Europe. The highest rate of death from this pandemic was observed from April 2021 to October 2022 in Iran, leading to a critical condition in the country, though many countries showed a significant reduction in the death rate in this historical interval, and most of the people were vaccinated (worldometers, 2023).

The respondents were aged between 20-70 years and had different occupations, such as teacher, staff member, student, and self-employed. This facilitated a broach collection of views, regardless of age, gender, and occupation. Shiraz has 29 three- to five-star hotels, and Isfahan has 25. Twelve of the fifty-four hotels agreed to cooperate with the study, seven of which were in Shiraz, and five were in Isfahan. Thus, the statistical population consisted of all Iranian tourists staying at these twelve hotels. A total of 350 tourists agreed to participate in the study and received the questionnaire from April 10 to June 20, 2021 (200 in Shiraz and 150 in Isfahan). Many hotels, in particular in the mentioned cities, were providing services to travelers who accepted the risk of the disease on the above interval. 310 complete questionnaires were returned (88% return rate). Table 1 reports the demographic characteristics of the respondents.

Table1: **Demographic characteristics of the respondents**

Education							
Diploma		Associate		Bachelor	Master		Ph.D.
41		64		118	51		36
Gender							
Male				Female			
168				142			
Age							
23-30	31-35	36-40	41-45	46-50	51-55	56-60	>60
30	59	72	53	34	25	21	16
Occupation							
Student		Teacher		Staff Member		Other	
122		79		56		53	

2.2. Research instrument

The questionnaire was designed based on the literature, with the variables of ICT improvement (independent variable), revisit intention (dependent variable), destination brand image, destination personality, and destination satisfaction (mediating variables). As mentioned, the present work measured how ICT improvement affected the revisit intention through destination brand image during Covid-19.

The factors of destination brand image were extracted from Qu et al. (Qu et al., 2011) and Zhang et al. (Zhang et al., 2018). The destination satisfaction and destination personality factors were obtained from Chen and Phou (2013) (Chen & Phou, 2013), while the revisit intention factors were extracted from Zhang et al. (Zhang et al., 2018) and Liu et al. (Liu et al., 2012). To design the questionnaire, a review of the literature and the key factors in previous studies was undertaken. The questionnaire measured indexes based on theoretical and practical evidence to keep a proper content validity level.

The items were measured on a five-point Likert scale, with the responses of "completely disagree," "disagree," "neutral," "agree," and "completely agree." The questionnaire was developed in English and then translated into Persian before being delivered to respondents. To verify the terms, the suggestions of Ageeva et al. (2019) were used to translate and transcript the items with a non-mechanical approach; that is, the items were distributed among a set of individuals that spoke both English and Persian to obtain a consensus on the items. As a result, some items were altered to be clearer for respondents. To improve the work and verify the acceptance level, validity, reliability, and dimensions of the questionnaire, it was delivered to 120 tourism and management students and graduates in a pilot phase. Then, some alterations were applied to the questionnaire, delivering the finalized questionnaire to the respondents. Table 2 shows the questionnaire.

Table2: **Questionnaire, Factor loadings, Means and St.D**

Variable & references	Item	Factor loading	Cronbach‚ alpha	means	St.d
ICT Improvement	Proper online information has been provided for tourist about the hotel during COVID-19.	.834	0.882	3.85	1.02
	Information about the hotel was available online during COVID-19.	.814			
	Many services, such as booking, payments, and travel services, were available online during COVID-19.	.767			
	There was effective advertising for the hotel on the internet and other media during COVID-19.	.841			
	ICT services were affordable and fast in the hotel during COVID-19.	.87			
	Internet and other communication services were available in the hotel during COVID-19.	.567			
	Virtual tourism was available on the internet during COVID-19.	.654			
Destination Brand Image (Ku et al., 2011; Zhang et al., 2016)	The hotel is a safe place for family recreation during COVID-19.	.706	0.921	3.78	1.3
	The hotel has a good perceived image during COVID-19.	.758			
	Good sports and recreational features are available in the hotel during COVID-19.	.734			
	The atmosphere of the hotel is good during COVID-19.	.819			
	The hotel staffs pay special attention to different cultures and nationalities of tourist during COVID-19.	.821			
	The staffs of the hotel help and cooperate with tourists during COVID-19.	.776			
	The hotel pays special attention to hygiene issues during COVID-19.	.793			
	Hygiene equipment is always available during COVID-19.	.639			
	The prices of the hotel are affordable during COVID-19.	.805			
	Different facilities and equipment are available during COVID-19.	.604			
	Different sections of the hotel are safe and secure during COVID-19.	.767			
Destination Personality (Chen and Fu, 2013)	The hotel is genuine during COVID-19.	.813	.731	3.66	.98
	The hotel is safe during COVID-19.	.714			
	The hotel is smart during COVID-19.	.708			
	The hotel is family-oriented during COVID-19.	.608			
	The hotel is peaceful and friendly during COVID-19.	.763			
	The hotel staffs are hospitable and kind during COVID-19.	.654			

	The hotel is trustworthy during COVID-19.	.637			
Destination Satisfaction (Chen and Fu, 2013)	I am happy to visit the hotel during COVID-19.	.684	.853	3.75	1.23
	I really enjoyed my stay in the hotel during COVID-19.	.738			
	This hotel is worth my cost and time during COVID-19.	.813			
	This visit is one of the most satisfying things I have ever done during COVID-19.	.654			
	Nothing made me regret this visit during COVID-19.	.850			
	Staying at this hotel has been a different and successful experience to me during COVID-19.	.786			
	I recommend more people to stay in this hotel during COVID-19.	.718			
	The pleasant feeling of this stay will stay with me for long during COVID-19.	.777			
Revisit Intention (Zhang et al., 2018; Li et al., 2012)	I would like to revisit this hotel during COVID-19.	.644	.863	3.83	1.7
	I think that I will come back to the hotel during COVID-19.	.739			
	This hotel is most probably my next choice to stay during COVID-19.	.816			
	I am likely to revisit the hotel within 12 months during COVID-19.	.565			
	Next time I will visit the hotel with more people of my family and friends during COVID-19.	.888			
	I feel that I need to come back later for a revisit during COVID-19.	.826			
	I feel that only one visit to this hotel is not enough for me during COVID-19.	.695			

3. Results

3.1. Reliability and validity of instruments

This section describes the findings in the form of tables and figures. To investigate the conceptual model, it was required to evaluate sequent and multivariable relationships. To maximize the return rate and minimize the non-response rate, the respondents were assured that their responses would be kept confidential. To evaluate reliability, Cronbach's alpha was employed. It is used to calculate the internal consistency of measurement tools that measure different characteristics. Cronbach's alpha was measured in SPSS. Table 2 provides the reliability of the questionnaire and the descriptive indexes of the variables.

To verify convergence, the average variance extracted (AVE) was found to be above 0.5. The variance index showed that each construct measured a separate concept. The variance index test was performed using AVE. According to Hair et al. (Hair et al., 2009), an AVE value of 0.5 or higher represents suitable variance. Table 3 reports the composite reliability (CR), AVE, and maximum shared squared variance results for the variables. As can be seen in Table 3, the correlation of the relationships between the variables was less than root square of each AVE(s). Thus, the constructs were distinct.

Table3: **CR, AVE, MSV and Discriminant validity**

Construct	CR	AVE	MSV	MaxR(H)	ICT Improvement	Destination Brand Image	Destination Personality	Destination Satisfaction	Revisit Intention
ICT improvement	0.910	0.594	0.412	0.914	**0.771**				
Destination Brand Image	0.934	0.563	0.424	0.938	0.747	**0.751**			
Destination Personality	0.790	0.586	0.408	0.796	0.583	0.742	**0.765**		
Destination Satisfaction	0.886	0.598	0.400	0.890	0.644	0.720	0.637	**0.706**	
Revisit Intention	0.896	0.557	0.411	0.901	0.756	0.716	0.720	0.644	**0.746**

3.2. Data analysis

Also, the non-response bias test was performed by excluding the 50 first responses and the 50 last ones. It was observed that the significance of no variable was acceptable. Thus, there was no significant difference between the first and last respondents. This confirmed the absence of non-response bias.

The present work adopted the two-step approach of Hair et al. (Hair et al., 2009). In the first step (i.e., model measurement), exploratory factor analysis (EFA) was undertaken to measure the relationships between the factors and investigate the factors based on their hidden variables. Also, previous studies recommended that EFA helps to evaluate internal reliability and understand constructs in large-dimensional sets when different items are used in different fields that have not already been studied (Tabachnick & Fidell, 2007). The EFA results showed the acceptable reliability of the research components. In the second phase, for insight into the various relationships between the constructs formulated in our hypotheses we used SEM (Ranjbaran et al., 2022).

To obtain desirable factor analysis outputs, the Kaiser-Meyer-Olkin (KMO) test was carried out to measure the adequacy of the data. The KMO statistic was found to be 0.75 (>0.6), verifying the data adequacy. Bartlett's test of sphericity (0.000) was performed to relate the measurement items. Construct reliability, divergent validity, and convergent validity were verified.

To evaluate the normality of the variables, the Kolmogorov–Smirnov test was performed. Variables would be normal at a significance level above 5% and abnormal below 5%. Also, the goodness-of-fit (GOF) index was employed to evaluate the overall fitness of the model. GOF was proposed by (Tenenhaus et al., 2004) and is calculated as:

$$GOF = \sqrt{\overline{communalities} \times \overline{R^2}}$$

Table 4 represents the Kolmogorov–Smirnov test and GOF results. Previous studies defined GOF values of 0.01, 0.25, and 0.36 as low, medium, and high fitness. Thus, the GOF was found to be high for the present model, verifying the overall model fit.

This study also adopted the structural equation modeling (SEM) approach and confirmatory factor analysis (CFA) in Smart PLS V.3 to analyze the data and examine the hypotheses. As shown in table 4, R^2 explains the variance in the endogenous variable explained by the exogenous variable(s) as previous researchers suggested that it should be more than zero $R^2 > 0$. Also we should consider Q^2 that is show the predictive relevance for a specific dependent construct and Q^2 also should be more than zero $Q^2 > 0$ (Hair et al., 2009). The following section presents the hypothesis testing results.

Table 4: **Kolmogorov–Smirnov test and GOF results**

Variable	Sig.	Communality	$\overline{R^2}$	$\overline{Q^2}$	GOF
ICT improvement	0.000	0.66288	0.000	0.000	1.1
Destination brand image	0.000	0.70114	0.654	.47	
Destination personality	0.061	0.74203	0.502	.4	
Destination satisfaction	0.008	0.72518	0.788	.36	
Revisit intention	0.057	0.71123	0.428	.411	

3.3. Hypothesis testing

In this section, the research hypothesis testing outcomes are described by using tables and graphs. The first hypothesis analyzes the relationship between ICT improvement and revisit intention (β: 0.451, T-value: 14.281, P-value: 0.000). The statistical results from H1 affirm that ICT improvement has a significant effect on revisit intention. The second hypothesis proposes the relationship between ICT improvement and destination brand image (β: .747, T-value:19.011 , P-value: 0.000). The results from H2 confirm that ICT improvement has a significant effect on destination brand image. The third hypothesis examines the relationship between destination brand image and revisit intention (β: .859, T-value:2.988 , P-value: 0.003). According to the statistical evidences from H3, destination brand image directly influence revisit intention. The fourth hypothesis examines the relationship between destination personality and revisit intention (β: .518, T-value:2.374 , P-value: 0.018). The statistical results from H4 confirm that destination personality has a significant positive effect on revisit intention. The fifth hypothesis examines the relationship between destination satisfaction and revisit intention (β: .414, T-value:2 .534, P-value: 0.000). The statistical results from H5 confirm that destination satisfaction has a significant positive effect on revisit intention. The sixth hypothesis

examines the relationship between destination brand image and destination personality (β: .742, T-value:17.226 , P-value: 0.000). The statistical results from H6 confirm that destination brand image positively influence Destination personality. The seventh hypothesis examines the relationship between destination brand image and destination satisfaction (β: .826, T-value: 22.015, P-value: 0.000). The statistical results from H7 confirm that destination brand image has a significant positive effect on destination satisfaction.

Table5: **Hypotheses test**

N	Hypotheses	Regression	T-value	P-value
H1	ICT improvement → revisit intention	.451	14.281	0.000
H2	IC improvement → destination brand image	.747	19.011	0.000
H3	Destination brand image → Revisit intention	.859	2.988	0.003
H4	Destination personality → Revisit intention	.518	2.374	0.018
H5	Destination satisfaction → Revisit intention	.414	2.534	0.000
H6	Destination brand image → Destination personality	.742	17.226	0.000
H7	Destination brand image → Destination satisfaction	.826	22.015	0.000

Figure 2 illustrates the final model with the construct path coefficients.

Figure2: **Validated model with path coefficients**
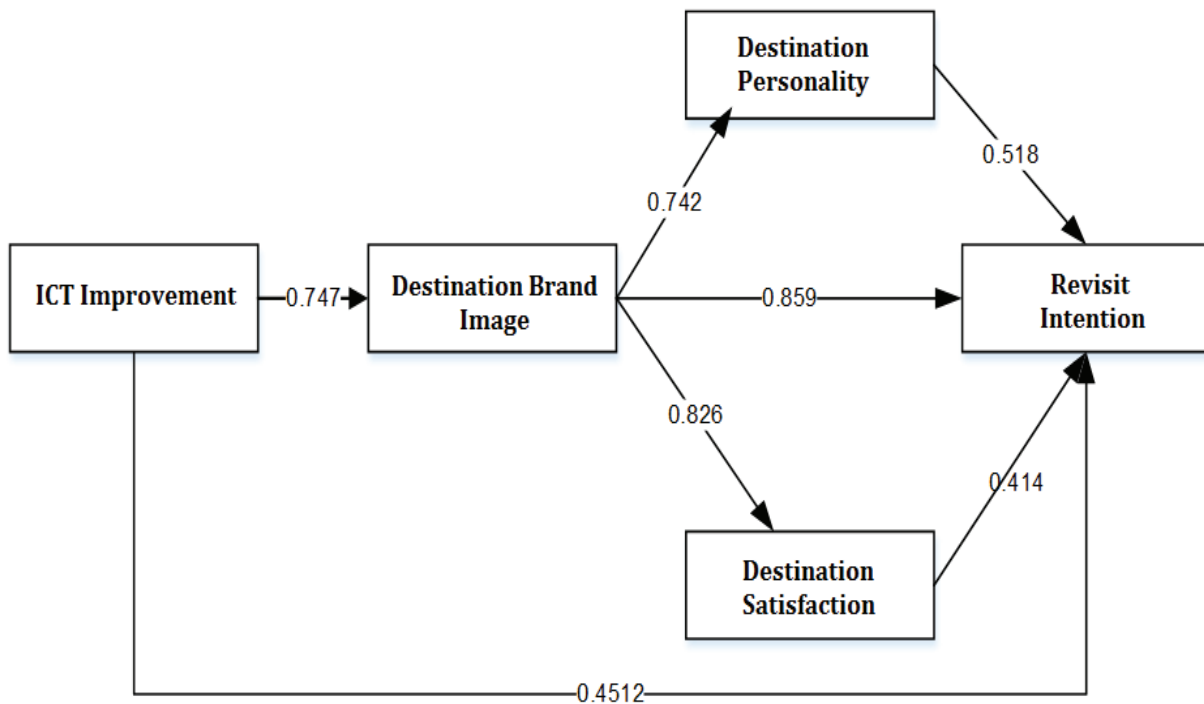
4. DISCUSSION AND CONCLUSION

The current study sought to investigate the interrelationship ICT improvement, destination brand image, destination satisfaction, destination personality, and how ICT improvement affects revisit intention of tourists in the hospitality industry during COVID-19 pandemic. This work pioneered the discussion of destination brand image improvement through ICT improvement among tourists who accept the risk of COVID-19, travel and stay in hotels during the pandemic. It investigated whether ICT improvement could significantly contribute to reducing tourists' perceived risk and thus improving their mental images of hotels during COVID-19. This helps to improve tourist satisfaction and revisit intention and encourages tourists (who accept the risk of COVID-19 pandemic and stay in hotels for various reasons such as business or work) to recommend the destinations to others by word-of-mouth advertising.

All seven proposed relationships of the variables were confirmed. The results showed that ICT improvement had a significant, positive effect on tourist revisit intention during COVID-19 pandemic. Also, ICT improvement was found to have a significant, positive effect on destination brand image. It was observed that destination brand image significantly and positively influenced revisit intention during the pandemic. Moreover, destination brand image showed a significant impact on the destination personality and destination satisfaction during the pandemic. Finally, the positive effects of destination personality and destination satisfaction on revisit intention were confirmed.

In sum, the authors' supposition of the effects of ICT improvement on destination brand image and tourists' perceived risk reduction, satisfaction improvement, and revisit intention was demonstrated. The proposed structural relationships were verified to a great extent in previous studies (Azis et al., 2020; Chen & Phou, 2013; Pai et al., 2021; Torabi et al., 2022; Zhang et al., 2018). However, no earlier work incorporated COVID-19 pandemic conditions. It was hypothesised that a higher destination brand image would lead to a greater revisit intention during the pandemic. This hypothesis was confirmed, as consistent with previous studies (Kim & Han, 2022; Rather et al., 2020; Souiden et al., 2017). Hence, since tourists' mental image of destinations and perceived risk are worsened by the pandemic, focusing on the improvement of ICT could be a good marketing strategy to increase competitiveness and distinguish destinations. Moreover, it was hypothesised that destination personality and destination brand image have a significant impact on tourist revisit intention. This hypothesis was confirmed, as affirmed by previous research (Chen et al., 2020; Pradhan et al., 2023). Thus, it can be said that destination brand image and destination personality are important factors for tourists' decisions and selection of destinations, and creating and developing a significant, valuable brand image and personality could substantially contribute to the success and distinguish of a tourism destination. As a result, it is required that tourism practitioners implement measures to improve destination image and destination personality during COVID-19 pandemic. It was also found that destination satisfaction could strongly impact on revisit intention during the pandemic. This finding concurs with previous studies (Acharya et al., 2023; Azis et al., 2020). Moreover, the effects of ICT improvement on destination brand image and revisit intention during COVID-19 pandemic had not previously been discussed in the literature.

Therefore, it can be claimed that ICT improvement could enhance tourist satisfaction during COVID-19 pandemic. Since the pandemic has negatively affected the tourism and hospitality industry, tourism practitioners need to enhance tourist satisfaction in this recovery stage by improving ICT and implementing measures such as advertising and sharing information. The improvement of destination satisfaction as a cognitive factor can induce a revisit intention during pandemic as a behaviour factor of tourists. Revisit intention not only provides tangible positive outcomes for the destination but can also serve as an advertisement to increase the intangible resources of the destination. Furthermore, revisit intention arising from improved perceived image and satisfaction could increase word-of-mouth advertising and consequently tourist arrivals. This is particularly important during a pandemic period and could substantially improve tourists' negative mental images, perceived risk, and lack of intention to visit a tourism destination, making a strong contribution to the tourism industry in the post-pandemic period following the significant damage imposed by the pandemic.

4.1. Theoretical implications

A novelty of the current study is the consideration of ICT improvement influences during COVID-19 pandemic. The pandemic has had a palpable negative impact on tourists' attitudes towards travelling to, and staying in hotels. Such negative attitudes towards hotels, as places with high disease likelihood, could harm the tourism and hospitality industry and associated sectors for years, accounting for an important perceived risk in these industries. The present study demonstrated that ICT could make a strong contribution to the improvement of tourists' negative mental images of tourism due to the pandemic and encourage tourists to revisit and recommend hotels during a pandemic. In this respect, tourism and hospitality practitioners should develop specific plans to improve tourist attitudes during COVID-19 pandemic, including the improvement of ICT. Therefore, it is essential to evaluate the effects of ICT improvement on the improvement of tourists' attitudes, destination personality, destination satisfaction, and revisit intention during a pandemic.

This study contributes to the development of existing literature on ICT and highlights the necessity of its use in the hospitality industry during a pandemic. The research also contributes to the development of existing literature on revisit intention of tourists, especially those visiting hotels. Moreover, the study offers managers and authorities of the hospitality industry new insights into the use and development of ICT potentials, particularly during COVID-19 pandemic.

The implementation of the study in Iran (as a developing Middle Eastern country) was another novelty. The tourism industry of Iran has sustained significant damage from COVID-19 pandemic, and robust schemes are required to improve tourists' mental images of Iranian destinations, perhaps via ICT improvement. Thus, the present study is a pioneer in the literature by suggesting to Iranian hotel managers to focus on development of some technology application directions to change the technology application level in the field of hospitality management significantly, in the post corona era. Nonetheless, the Government is required to eliminate the backlog points in order to improve the ICT impacts in Iranian hospitality industry, in particular: Increased investments in information and communication technology (ICT). Although a large number of studies in

the literature were conducted in Europe (Ekinci & Hosany, 2006), Southeast Asia (Azis et al., 2020; Chen & Phou, 2013; Kim et al., 2016; Pai et al., 2020; Yussoff & Nayan, 2020), North America (Qu et al., 2011), and Latin America (Baloglu et al., 2014), only a few studies have been conducted in the Middle East, particularly in Iran.

4.2. Managerial implications

Based on the findings, this study suggests a number of solutions that could be helpful to tourism and hospitality managers. Since tourists' images of health and safety in tourism and hotels have been negatively impacted by COVID-19 pandemic, it is required that tourism practitioners implement short, interim, and long-term measures to improve destination brand image. In particular, it is necessary to utilise ICT and relevant advertising to assure tourists of high safety at tourism destinations such as hotels. Thus, associated authorities could inform tourists of safety measures implemented in tourism and hotels through ICT, creating a positive mental image of tourism destinations and increasing tourist arrivals during COVID-19. Also, advertising plans and distribution of content through the internet, such as tourism platforms and social media applications, should be aimed at reducing perceived risk of the pandemic. Future and negative attitudes towards tourism and hospitality industry are essential risks during COVID-19 pandemic and need to be diminished through suitably, targeted ICT content. Apart from efforts to improve the constituents of destination brand image, it is required to improve ICT infrastructures and use suitable advertising and marketing to introduce a unique, appealing personality of the destination in terms of safety and health to tourists – i.e., the destination should be known for its safety and health characteristics. Furthermore, it is required to collect views and experiences of tourists during the pandemic through communication tools and explore these views to develop perceived risk reduction and brand image improvement plans. Reduced perceived risk and improved brand image help increase tourist satisfaction and promote revisiting tourism centers.

In addition, many researchers have recommended managers of all sectors of the tourism industry (e.g., hotels) to leverage their ICT potentials during COVID-19 pandemic to increase repurchase/revisit rates (Dung et al., 2022). For example, hotel managers can attract more and more tourists during pandemic by using new technologies such as artificial intelligence, blockchain, and virtual reality (Sarkady et al., 2021).

In addition, the post-COVID-19 period provides hotel managers with a great opportunity to revise some of their strategies. For example, they can optimally exploit their ICT potentials in order to accelerate the customer (tourist) recovery process. This includes utilization of communication and information technologies (Internet, development of television channels dedicated to tourism, advertising on popular TV channels, etc.) in the activities aimed at general hospitality promotion. Finally, they can invest more in ICT projects to develop smart customer communication systems, smart accounting systems, strengthened human resources of information technology, enhanced onsite information, and improved use of e-commerce and online marketing tools.

4.3. Limitations and Future Works

Despite our contributions, the authors faced some executive and operational limitations during this research. A large number of hotels in Shiraz and Isfahan were unable to cooperate with this study. This was a crucial limitation of the work. Since Iran has been affected by COVID-19 pandemic, hotels have implemented strict protective protocols, and this has imposed a substantial limitation on the study. Although the study was pitched to a larger sample size, the pandemic limited the number of participating hotels and tourists. Future studies could expand the present study in several aspects. The weighting and priorities of influential factors could be evaluated using multi-criteria decision-making approaches, accordingly prioritizing solutions. Also, contributions from other related variables to pandemics like safety and security, service quality to revisit intention in post corona era could be examined. Moreover, since demographic characteristics influence the relationships between the variables, future work could analyse the mediating role of demographic variables in revisit intention.

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

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