

Chapter 5

The Mediating Effect of Destination Image on Intention to Use a Tourism App: The “Visit Saudi” App



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Abstract This study investigates the influence of tourists’ perceptions of destination image on their intention to use a tourism app. It examines the roles played by tourists’ perceptions of app/website usability, information quality and risk in shaping tourism destination image and subsequently on their app use intention. Using an online questionnaire, the study surveyed 194 international tourists in Saudi Arabia. Results were analysed using PLS-SEM. All the proposed hypotheses were supported and significant. Perceived risk had the strongest influence, followed by the influence of tourists’ perceptions of information quality and then app usability. The perceived risk was found to have a strong effect on the application use intention. Additionally, destination image mediates the influence on the use intention of the antecedents to the destination image. The study contributes to the tourism website/application literature; its implications provide practical insights and recommendations for destination marketers and managers to improve their online and social media presence in terms of enhancing e-platform usability, quality of provided information and most importantly creating a destination strategy to manage tourists’ risk perceptions.

Keywords Saudi tourism app · Destination image · Perceived risk · Use intention · Information quality

5.1 Introduction

In the current times, online tourism marketing has received high attention and has become a valuable alternative to other types of promotional media. Reading and reviewing the destination information and details on websites or applications (apps)

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before traveling is, for most tourists, an important part of their travel preparation process. Concurrently, social commerce has become all but indispensable for organizations with products or services to sell. Social commerce has been defined as the “use [of] social networking platforms for doing business” (Lal, 2017, p. 70). As such, a number of studies have examined behavioural intention in the context of social commerce (e.g. Hajli (2013), Hajli (2015), Chen and Shen (2015), Lal (2017)).

Many countries have recognized the increasing importance of online information in the tourism and hospitality sector and made efforts to support their tourism e-marketing strategies, such as offering new features in tourism websites, redesigning travel booking websites and providing and launching various social media apps. Recently, Saudi Arabia has made remarkable efforts towards supporting its online information tourism industry. Since the announcement of Vision 2030, the country has made a massive improvement in terms of e-platforms. It offers tourism websites and apps with easy access and in multiple languages, the e-visa and bookings for tourism trips. One of the most well-known apps is “Visit Saudi” (Fig. 5.1).

Tourism offers services and experiences, both of which are intangibles; they are also high-involvement (Park et al., 2007). This means that tourism consumers (i.e. tourists) may perceive a number of financial, physical and psychological risks (e.g. pandemics, terrorist attacks, extreme weather events) as well as the commitment associated with these purchases (Loda et al., 2009). Therefore, destinations that have become associated perceptually with risk factors such as health, safety and security threats, or even poor infrastructure and services, can find that their image has been negatively affected (Chew & Jahari, 2014; Perpiña et al., 2019). Thus, considering tourists’ perceived risk is essential in assessing their behavioural intention. Indeed, the perception held by tourists of a destination (the destination image) has been shown to be a key factor in their intention to visit that place (Beerli & Martin, 2004; Nazir et al., 2021).

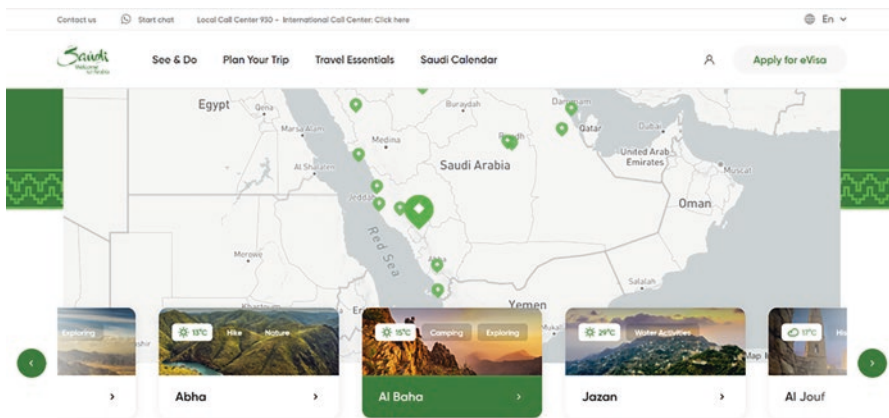


Fig. 5.1 Visit Saudi welcome page. (Source: <https://www.visitsaudi.com/en>)

Additionally, information quality has been found to influence destination image and to shape tourists' behavioural intention within e-platforms such as applications. Research has found positive associations between comprehensive information and both perceived usefulness and information adoption (Cheung et al., 2008; Kim et al., 2017; Alhemimah, 2019). Thus, including this variable is meaningful in order to gain a fuller understanding of how tourists can be influenced by online applications.

Moreover, research has found that information quality impacts the destination image as perceived by tourists (Beerli & Martin, 2004; Kim et al., 2017; Ali & Liu, 2021). Several of these studies indicate that tourism consumers construct a destination's image by drawing information from numerous and diverse sources (Loda et al., 2009; Abodeeb et al., 2015; Foroudi et al., 2018). Therefore, perceived information quality is an important variable to consider in assessing tourists' destination image. Furthermore, information quality has been found to influence behavioural intention. In particular, online information quality in the tourism context has been shown to influence visit intention (Park et al., 2007; Cheung et al., 2008; Alhemimah, 2019).

This study contributes to tourism marketing literature by looking at a tourism app called "Visit Saudi" (visitsaudi.com/en) and examining how tourists' perceptions of destination image are affected by their perceptions of the app usability, information quality and risks and how perceived destination image in turn influences tourists' intention to use the app. Its theoretical contribution to tourism literature is to propose a new model in which perceived website/app usability, perceived information quality, perceived risk and perceived destination image are considered as antecedents of app use intention.

The objective of this study is to examine the ways in which tourism apps, through destination image, influence tourists' intention to use these apps. To achieve this objective, the following questions are posed:

1. What is the influence of perceived website/app usability on perceived destination image?
2. What is the influence of perceived website/app usability on app use intention?
3. What is the influence of perceived information quality on perceived destination image?
4. What is the influence of perceived information quality on app use intention?
5. What is the influence of perceived risk on perceived destination image?
6. What is the influence of perceived risk on app use intention?
7. What is the influence of perceived destination image on app use intention?

As mentioned earlier, destination image influences tourists' visit intention and behaviour. In the literature, destination image is generally considered to be a critical instrument for tourism organizations (Beerli & Martin, 2004; Kim et al., 2017; Ali & Liu, 2021; Nazir et al., 2021), and when a destination's image is convincingly positive, it provides competitive advantage, as tourists choose to visit that destination in preference to others (Foroudi et al., 2018).

Although the relationship between destination image and behavioural intention has received increasing attention from tourism researchers, very little has been published about this relationship within the e-platforms context; thus, the current paper aims to cover this gap by exploring the role of how destination image shapes tourists' behavioural intention within the tourism e-platforms context.

The current study contributes to the existing tourism literature on destination image by assessing how perceived app usability, perceived information quality and perceived risk influence destination image, which in turn influences application use intention. This paper utilizes elements of the technology acceptance model (TAM2; Venkatesh & Davis, 2000) to gain a comprehensive understanding of the mediating role of destination image on tourists' intention to use a tourism app, while considering tourists' perceptions of app usability, information quality and risk.

5.2 The Role of E-Platforms in Promoting Tourism

Prior to their trip, travellers and tourists seek information about the destination, and they look online for sources that they consider credible and reliable (Kim et al., 2017; Alhemimah, 2019, 2022). As with any other consumer-oriented industry, websites and other forms of online presence are crucial for tourism promotion. Studies have pointed to the vital function of tourism websites for marketing tourism destinations (Loda et al., 2009; Liu & Park, 2015; Martínez-Sala et al., 2020). Moreover, it has been argued that governmental and industry tourism organizations need to ensure that their official websites are able to perform promotional/marketing and, in the case of tourism providers, e-commerce functions (Kim et al., 2009; Martínez-Sala, 2018), especially considering that they are perceived by consumers to be credible sources of information (Kim et al., 2009).

Official websites of tourism companies have made use of user-generated content (UGC) such as online consumer reviews (OCRs) to encourage engagement and increase perceived credibility of their products and services (Kim et al., 2009, 2017; Ayeh, 2015; Alhemimah, 2019). In addition to the businesses themselves, entities that are not direct providers of tourism products and services, such as those of governmental and industry tourism organizations, are increasingly turning to UGC and OCR to drive engagement and improve destination image branding (Liu & Park, 2015; Kim et al., 2017).

Despite the importance of online information in the tourism sector, there is a lack of understanding about the role of information in e-platforms such as apps. That is, little has been known about the most relevant antecedents of perceived destination image in tourism within an online information context and what factors of these antecedents influence tourists' decision-making. The following section introduces and describes the app that is the focus of the survey conducted for this study.

5.3 Visit Saudi App

The “Visit Saudi App for Mobile phones and Smart Devices” is the Saudi Tourism Authority’s official interactive platform. It was launched on February 16, 2014. The Visit Saudi website explains that the app “works as a tourist guide for all the tourism sites, restaurants, shopping malls, theme parks, hotels, beaches, museums, and gardens, supported by photos” (VisitSaudi.com, 2021a). Via the Visit Saudi app, tourists can make bookings for flights, cruises, hotel accommodation, car rental, events and attractions. The app also provides features such as contact lists of authorized tour operators and guides.

The app offers a 24/7 tourism telephone hotline and the option to get help from customer service via WhatsApp chat. It also offers a country-by-country list of national consulates in Saudi Arabia and their respective phone numbers. Additionally, it provides other useful local contact numbers, such as police and ambulance. Recently the Visit Saudi app has begun displaying a Saudi “festival calendar”, where users can review event dates and location, along with brief details about each event. The app features are offered in eight languages: Arabic, Chinese, English, French, German, Japanese, Russian and Spanish (VisitSaudi.com, 2021b). The Saudi Ministry of Tourism website reported that for 2018, “The number of users of the Saudi tourism Mobile Apps has reached 117,772, in addition to an active presence on social media platforms, including Twitter, Facebook and Snapchat, which ensure direct interaction with the followers and offer timely and up-to-date information about festivals and other tourist events in the country” (Ministry of Tourism, 2019).

5.4 Hypothesis Development and Study Model

In examining how tourists’ perceptions of destination image are affected by their perceptions of website/app usability, information quality and risks and how perceived destination image in turn influences tourists’ intention to use a website or app, this study proposes a model based on elements from the Technology Acceptance Model (TAM2; Venkatesh & Davis, 2000), taking into account the influence of perceived app usability, perceived information quality and perceived risk, through perceived destination image on use intention.

5.4.1 *Perceived Usability of App and Destination Image*

Perceived usability of a website or app means that the app has certain features and is designed in such a way that users find it easy to use (Alcántara-Pilar et al., 2018). Perceived usability has been found to be an antecedent of technology acceptance

and adoption (Huang & Yuan, 2017) and is therefore salient to studies involving website/app quality (Huang & Yuan, 2017; Alcántara-Pilar et al., 2018; Martínez-Sala et al., 2020). Alcántara-Pilar et al. (2018) reported a strong association between website usability and user satisfaction, which in turn influenced attitude towards the destination (image).

Usability is also negatively associated with perceived risk and positively associated with perceived trustworthiness and use intention (Green & Pearson, 2011). Green and Pearson (2011) found that “website usability does influence several outcomes that are important for businesses to attract and retain customers” (p. 181). Moreover, just as improvements to their customer-facing website have been shown to improve a company’s image (Flavián et al., 2006), improvements to websites that promote destinations can also result in enhancing the image of those destinations (Foroudi et al., 2018).

H1: Perceived app usability positively influences perceived destination image.

5.4.2 Perceived Usability and App Use Intention

On the above point, Ayeh (2015) recommended that managers of tourist-focused websites/apps that use UGC enhance the usability of these platforms. Indeed, research has shown that perceived usefulness of an app or website is a predictor of app/website use intention (Kim et al., 2010; Lal, 2017; Aji et al., 2020). Thus, it is hypothesized as follows:

H2: Perceived app usability positively influences app use intention.

5.4.3 Perceived Information Quality and Destination Image

Information quality has been defined differently in various fields such as communications, information systems and marketing. The current study examines information quality from tourists’ viewpoints. In tourism, Wang and Strong’s (1996/2015) four dimensions of information quality have been adopted in a number of studies, including Kim et al. (2017) and Ali and Liu (2021). The current study adopts Wang and Strong’s (1996/2015) conceptualization as well. That is, information quality (IQ) has four dimensions, in which the information is intrinsic, accurate, believable, trustworthy and from a credible source; contextual, which adds value and is relevant, timely, complete and sufficient; representational, consistent and concisely presented; and accessible, which can be accessed and is usable (adapted from Ali and Liu (2021, p. 248)).

In the tourism industry, eWOM in websites and other online platforms plays an important role in marketing (Ayeh, 2015; Liu & Park, 2015; Alhemimah, 2019).

The role of social media has taken on particular importance in destination image creation and curation. Destination image creation and curation depend in part on the four dimensions of information quality (Kim et al., 2017). In turn, destination image influences tourists' decision-making and visit intention (Ali & Liu, 2021). Thus, it is hypothesized as follows:

H3: Perceived information quality positively influences perceived destination image.

5.4.4 Perceived Information Quality and App Use Intention

As described in earlier, official websites and apps provide details and information about the destination that tourists want and need to know. Moreover, research has shown that information quality influences information adoption and behavioural intention (Roy et al., 2001; Kim et al., 2017; Alhemimah, 2019; Ali & Liu, 2021). Therefore, examining the quality of this information is key for tourism purposes.

In their study of knowledge-sharing platforms, Pang et al. (2020) found that perceived information quality indirectly influenced the use intention. In comparison to a general knowledge-sharing website, the Visit Saudi app has a specific focus and purpose. The latter is a "one-stop shop" for tourists considering or intending to visit Saudi Arabia. Therefore, it is posited that users' motivation to use the app would be directly impacted by the quality of the information they find there. Hence, it is hypothesized as follows:

H4: Perceived information quality positively influences app use intention.

5.4.5 Perceived Risk and Destination Image

Perceived risk refers to an individual's subjective evaluation of a threat, whether that threat is real or not (Ropeik, 2011). People tend to perceive risks that are new and not well understood as more concerning than risks that are more familiar and better understood (Godovykh et al., 2021). As explained in the introduction, when considering booking a trip, tourists are likely to associate various perceived risks with the destination, and these risks may be financial, physical, psychological or even social in nature. In the travel and tourism literature, studies have shown that higher and more numerous perceived risks negatively impact a destination's image (Chew and Jahari, 2014; Perpiña et al., 2019). But this relationship is bidirectional, too: a meta-analysis by Carballo et al. (2017) found that negative destination image can increase the perceived risk associated with that destination. Thus, it is hypothesized as follows:

H5: Perceived risk is negatively related to perceived destination image.

5.4.6 Perceived Risk and App Use Intention

The research on perceived risk and app use intention indicates that this relationship very much depends on the purpose of the app in relation to the type of risk. If the perceived risk is associated with the use of the app itself, rather than with the services that the app is meant to facilitate access to, the relationship is negative (Aji et al., 2020). For example, consumers are less likely to use a mobile payment or banking app that is viewed as unsecure or unreliable. In contrast, if the app is portrayed as a way to mitigate risk (such as a method of contactless transaction during a pandemic), the relationship between perceived risk and app use is positive (García-Milon et al., 2021). The Visit Saudi app provides a number of services designed to reduce risk and reassure users of comprehensive assistance and support, such as a 24/7 tourism telephone hotline and other instant response features, a directory of national consulates in Saudi Arabia, police and ambulance 999 numbers and other useful local contact numbers. Therefore, it is hypothesized as follows:

H6: Perceived risk is negatively related to app use intention.

5.4.7 Destination Image and App Use Intention

Destination image has been found to mediate between perceived risk and visit intention (Chew and Jahari, 2014). *Destination image* can be described as a representation of the venue (e.g. a region, a country, a city, a tourist attraction, etc.) that has been constructed cognitively through the four dimensions of information quality (Kim et al., 2017) as well as affectively in the would-be tourist's imagination (Martín-Azami & Ramos-Real, 2019; Xie et al., 2020). Mental construction of the destination image combines beliefs, evaluations and previous experiences (Nazir et al., 2021); thus it has a subjective component and can be influenced by cultural values (Abodeeb et al., 2015).

Similarly, destination image influences attitude towards the destination which in turn influences behavioural intention, such as visit intention (Alhemimah, 2019; Nazir et al., 2021). In particular, a positive visual representation of the destination image through media such as film has been found to positively influence attitude towards that destination (Quintal & Phau, 2015). The Visit Saudi app employs photos and other visual graphics in its presentation of Saudi Arabia and its touristic sites as an attractive destination. Moreover, expectancy of a pleasant experience has been found to influence tourists' intention to use technology (García-Milon et al., 2021). Thus, it is hypothesized as follows:

H7: Perceived destination image influences use intention.

The present study proposes that the factors of perceived website usability, perceived information quality and perceived risk each influence app use intention

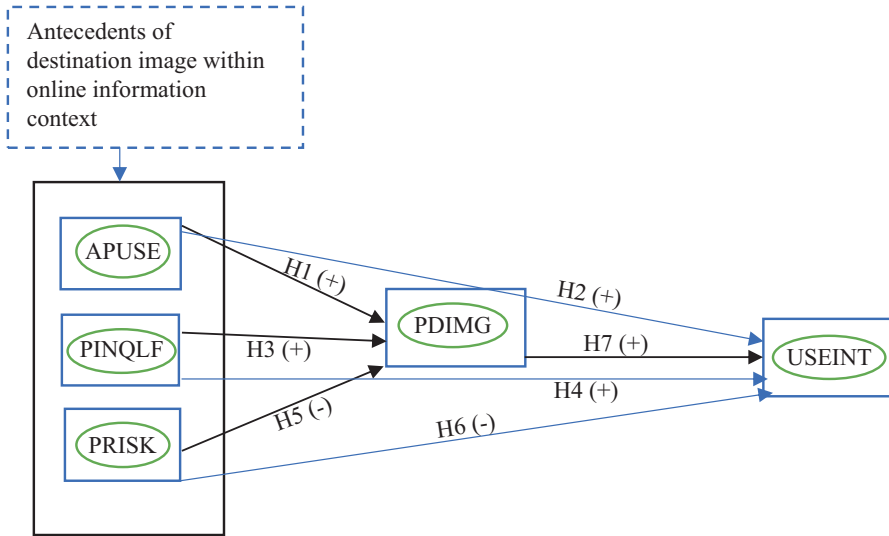


Fig. 5.2 Model of effect of destination image on intention to use a tourism app. (Source: Author's work)

through perceived destination image. The constructs of the research model are shown below in Fig. 5.2.

5.5 Study Methodology

The current study aimed to assess international tourists' use intention for the Visit Saudi app. Thus, international tourists in Saudi Arabia were the target population. Optimally, participants would have been randomly selected from a sampling frame. However, in this study, the sampling frame would be a comprehensive list of all adult (aged 18+ years) international tourists present in Saudi Arabia at the time of data collection. No such sampling frame could be accessed; therefore, this research relied on purposive sampling.

The data was collected through online questionnaires. To determine an appropriate sample size in survey research, this study relied on the rule of thumb of a minimum of 30 participants for each variable in the model (Cohen et al., 2007, p. 101). There are five variables in this study model; therefore the minimum number of participants in the sample should be 150. Therefore, the actual number of valid questionnaires collected (194) is greater than the recommended minimum number of cases and is deemed sufficient.

The targeted responses were from international tourists in Saudi Arabia, mainly in the city of Jeddah. The characteristics of the survey sample are presented in Table 5.1.

Table 5.1 Sample characteristics

Characteristics	Group	Overall sample <i>N</i> = 194	
		<i>n</i>	%
Gender	Male	79	40.4%
	Female	115	59.6%
Age	18–24	20	9.8%
	25–34	27	14%
	35–44	36	18.7%
	45–54	76	34.7%
	55–64	33	17.1%
	>65	11	5.7%
Income	\$1–\$9999	43	22%
	\$10,000–\$24,999	16	8.3%
	\$25,000–\$49,999	4	2.1%
	\$50,000–\$74,999	38	13.9%
	\$75,000–\$99,999	10	5.2%
	\$100,000–\$149,999	25	13%
	\$150,000 and greater	31	16.1%
Prefer not to answer	33	17.1%	
Marital status	Single	56	29%
	Married	119	61.7%
	Divorced	18	9.3%

Source: Author’s work

5.6 Research Design

The study design is cross-sectional and intended to be time-saving, cost-effective and as efficient as possible in obtaining the needed data. The data was collected from October 1, to 27, 2021. A cover letter, explaining the survey’s purpose and providing assurance of anonymity, was included with the survey questionnaire. A total of 213 questionnaires were returned; however, only 194 passed the screening question (*Did you use Visit Saudi app previously?*). Participants who responded with *No* were directed to the end of the questionnaire. For those who responded *Yes*, completing all other questions was mandatory in order to submit and process the questionnaire, so there were no missing values in the questionnaires.

As mentioned in the previous section, the study model is based on TAM2 (Venkatesh & Davis, 2000). It includes three independent variables, perceived app usability, perceived information quality and perceived risk, a mediating variable (perceived destination image); and its dependent variable is use intention (see Fig. 5.2).

5.7 Measures

To measure perceived app usability (APUSE), seven items were borrowed from Flavián et al. (2006) and Roy et al. (2001). Perceived information quality (PINFQL) was measured using three items from Hsu et al. (2012) and Lin and Lee (2006). Perceived risk (PRISK) was measured using six items from Parrey et al. (2018). To capture the many dimensions of perceived destination image (PDIMG), 11 items were borrowed from Khan et al. (2017) and Park et al. (2017). Finally, use intention (USEINT) was measured using four items developed by Kim et al. (2010). A five-point Likert-type scale (strongly disagree–strongly agree) was used to capture responses for all items.

5.8 Control Variables

This study controlled for gender, age, income and marital status. About 6 in 10 respondents were women (59.6%). The largest age group was between 45 and 54 years (34.7%). Over 60% of participants were married. The study sample self-reported a wide range of yearly incomes (Table 5.1).

5.9 Data Analysis and Results

A measurement model and structural model were measured using partial least squares structural equation modelling (PLS-SEM), and the software used for this analysis was WarpPLS 7.0 (Kock, 2019). PLS-SEM employs regression and multivariate factor analyses to test a network of related effects in models that are often complex. It is suitable for hypothesis testing in the development of theories (Hair et al., 2016). PLS-SEM is commonly used in marketing and management studies, as well as in tourism research (e.g. Ayeh et al. (2013), Nazir et al. (2021), Alhemimah (2022)). PLS-SEM is also appropriate for relatively small samples, such as this study's sample of 294 participants. Additionally, with PLS-SEM, the means and standard deviations for individual indicators do not need to be reported (Hair et al., 2016).

5.10 Reliability and Validity

To check internal consistency, Cronbach's alpha and composite reliability (CR) were used. For this purpose, a Cronbach's alpha value of .7 and CR value of .8 are acceptable thresholds (Hair et al., 2016). As shown in Table 5.2, Cronbach's alpha

Table 5.2 Cronbach’s alpha, CR values, indicator loadings and AVE

Constructs and items	Item symbols	Indicator loading	CR	AVE	Cronbach’s alpha
<i>Perceived app usability (APUSE)</i>					
Q1: Everything on this application is easy to understand.	APUSE1	0.463	0.851	0.457	0.794
Q2: This application is simple to use even for the first time.	APUSE2	0.482			
Q3: The content structure on this application is easy to understand	APUSE3	0.704			
Q4: Finding the information I need on this application is simple	APUSE4	0.779			
Q5: It is easy to find your way around this application.	APUSE5	0.750			
Q6: The way in which the content on this application is organized enables me to know where I am when I browse through the different pages.	APUSE6	0.745			
Q7: When I am browsing this application, I feel in control of what I can do.	APUSE7	0.729			
<i>Perceived information quality (PINFQL)</i>					
Q8: The information provided on this application is accurate.	PINFQL1	0.852	0.884	0.717	0.827
Q9: The information provided on this application is reliable.	PINFQL2	0.899			
Q10: The information provided on this application is well formatted.	PINFQL3	0.785			
<i>Perceived risk (PRISK)</i>					
Q22: You feel overall the experience of vacation will not be a good value for money.	PRISK1	0.535	0.816	0.427	0.729
Q23: You feel the threat of becoming sick while traveling or at the destination.	PRISK2	0.681			
Q24: You feel psychological trauma because of others’ negative comments about the destination.	PRISK3	0.698			
Q25: You feel there is a chance of physical danger to your health while on vacation.	PRISK4	0.699			
Q26: You perceive language barriers while vacationing.	PRISK5	0.684			
Q27: You feel that you will not receive enough personal satisfaction from this vacation.	PRISK6	0.608			
<i>Perceived destination image (PDIMG)</i>					

(continued)

Table 5.2 (continued)

Constructs and items	Item symbols	Indicator loading	CR	AVE	Cronbach's alpha
Q11: Saudi Arabia has a quality tourism infrastructure.	PDIMG1	0.521	0.881	0.404	0.851
Q12: Saudi Arabia has a good climate.	PDIMG2	0.634			
Q13: Saudi Arabia is safe and stable.	PDIMG3	0.616			
Q14: Saudi Arabia has a good quality of life.	PDIMG4	0.688			
Q15: Saudi Arabia has appealing local cuisine.	PDIMG5	0.673			
Q16: Saudi Arabia has a variety of unique attractions.	PDIMG6	0.668			
Q17: Saudi Arabia is rich in cultural heritage.	PDIMG7	0.618			
Q18: Saudi Arabia is a good place for shopping.	PDIMG8	0.675			
Q19: Saudi Arabia people are interesting and friendly.	PDIMG9	0.688			
Q20: Saudi Arabia is a pleasant place to visit.	PDIMG10	0.615			
Q21: Saudi Arabia has several events.	PDIMG11	0.571			
<i>Use intention (USEINT)</i>					
Q28: Now I intend to use the application to book my tourism trip.	USEINT1	0.694	0.830	0.550	0.726
Q29: Assuming that I have access to the application, I intend to use it.	USEINT2	0.787			
Q30: During the next six months, I intend to use the application for booking.	USEINT3	0.782			
Q31: I intend to use the application for booking after five years.	USEINT4	0.698			

Source: Author's work and calculations

and CR values are above the respective thresholds for all variables, meaning that the study constructs have internal consistency reliability. To ensure indicator reliability and convergent validity, factor loadings, average variance extracted (AVE) and CR values were analysed. The recommended threshold value for indicator loading is .708. AVE should have values higher than .5 (Hair et al., 2016). With factor loadings ranging from .463 to .899, AVE values of variables between .404 and .717, and CR values ranging from .816 to .884, convergent validity is established (see Table 5.2).

Discriminant validity means that none of the constructs or measurements reflect any other construct or measurement. For this study, discriminant validity was measured using cross-loadings, in which indicator loadings on each latent construct are compared with the loadings of all other constructs. If the indicator values exceed the loadings of the other variables, discriminant validity is established. The cross-loadings displayed in Table 5.3 are indicative of discriminant validity.

Table 5.3 Cross-loadings of variables

	APUSE	PINFQL	PRISK	PDIMG	USEINT
APUSE1	(0.463)	-0.062	-0.039	0.068	0.233
APUSE2	(0.482)	0.079	0.162	-0.110	-0.067
APUSE3	(0.704)	0.008	0.070	-0.025	-0.196
APUSE4	(0.779)	-0.193	0.094	0.133	-0.032
APUSE5	(0.750)	-0.197	0.084	0.024	-0.051
APUSE6	(0.745)	0.143	-0.163	-0.121	0.183
APUSE7	(0.729)	0.242	-0.170	0.010	-0.015
PINFQL1	0.071	(0.852)	-0.032	-0.061	0.115
PINFQL2	-0.032	(0.899)	0.021	-0.032	0.022
PINFQL3	-0.040	(0.785)	0.010	0.103	-0.150
PRISK1	-0.096	0.126	(0.535)	0.193	-0.014
PRISK2	0.012	0.094	(0.681)	0.005	-0.135
PRISK3	-0.031	0.176	(0.698)	-0.244	-0.052
PRISK4	-0.007	-0.019	(0.699)	-0.024	0.083
PRSK5	-0.028	-0.236	(0.684)	0.027	0.006
PRISK6	0.145	-0.131	(0.608)	0.103	0.121
PDIMG1	-0.146	0.375	-0.050	(0.521)	0.124
PDIMG2	0.057	0.165	-0.019	(0.634)	0.089
PDIMG3	-0.004	0.137	0.006	(0.616)	-0.111
PDIMG4	0.073	-0.060	0.033	(0.688)	-0.169
PDIMG5	0.124	-0.040	-0.016	(0.673)	0.052
PDIMG6	0.056	-0.005	-0.275	(0.668)	0.064
PDIMG7	0.039	0.027	-0.212	(0.618)	0.191
PDIMG8	0.047	-0.056	0.024	(0.675)	0.000
PDIMG9	-0.055	-0.149	0.152	(0.688)	-0.095
PDIMG10	-0.023	-0.265	0.281	(0.615)	0.010
PDIMG11	-0.233	-0.047	0.077	(0.571)	-0.128
USEINT1	0.042	0.043	0.132	-0.014	(0.694)
USEINT2	0.053	-0.124	0.069	-0.043	(0.787)
USEINT3	-0.013	-0.032	0.064	-0.005	(0.782)
USEINT4	-0.088	0.133	-0.279	0.068	(0.698)

Source: Author’s calculations

5.11 Structural Relationships: Path Analysis

This section presents the data analysis results for the study sample. The construct relationships hypothesized and proposed in this study are depicted by the path model shown in Fig. 5.3, in which β stands for path coefficients.

Figure 5.3 illustrates that perceived risk (PRSK) had the strongest impact on perceived destination image (IMG) ($\beta = .34, p < .01$), followed by the effect of perceived information quality ($\beta = .22, p = .01$) and then perceived app usability ($\beta = .14, p > .05$). The effect of perceived destination image on use intention was

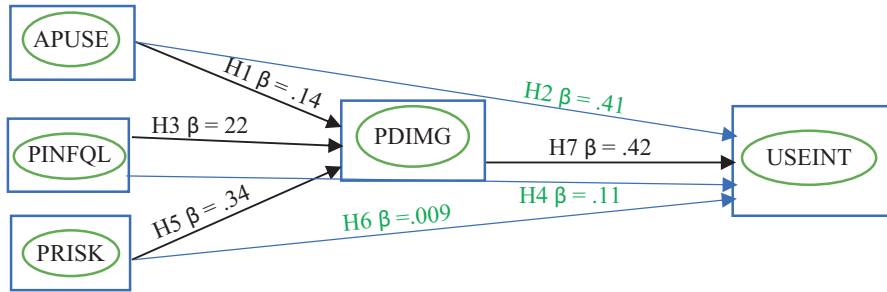


Fig. 5.3 Results of hypothesis testing for four relationships in the study model. (Source: Author's work and calculations)

($\beta = .42, p < .01$). As for the direct influence on use intention, perceived information quality found to have significant positive influence ($\beta = .11, p > .01$), perceived usability has non-significant influence ($\beta = .41, p = .26$) and perceived risk has non-significant influence ($\beta = .009, p = .31$). The results of the analysis indicated that perceived app usability, perceived information quality and perceived risk together explain 24% of perceived destination image; perceived destination image explains 15% of use intention. In marketing research, a commonly accepted rule is that R2 values of .25, .50 and .75 are considered, respectively, weak, moderate and substantial (Sarstedt & Mooi, 2014).

To assess the model's predictive capability, R2 values were measured. The effect size explains how well the independent variables predict the other constructs. Effect size has been described as "the increase in R2 relative to the proportion of variance that remains unexplained in the endogenous latent variable" (Peng & Lai, 2012, p. 473). Table 5.4 reports the values for the effect sizes.

Large, medium and small effect size values might typically be .35, .15 and .02 (Hair et al., 2016; Peng & Lai, 2012). As can be seen from Table 5.4, the effect size for perceived app usability, perceived information quality and perceived risk were all small, and the effect size for perceived destination image on use intention was also small.

Regarding the mediating effect, only app usability had any significant indirect influence on use intention ($p < .001$), in addition to the significant direct relationship between perceived app usability and perceived destination image. A significant indirect relationship indicates a mediating effect (Hair et al., 2016; Kock, 2019). Thus, app usability had a positive significant effect on use intention, without the influence of destination image.

Moreover, to assess discriminant validity, the Heterotrait–Monotrait (HTMT) ratios were measured (see Table 5.5). HTMT values were lower than the recommended maximum (0.90) for comparable constructs (Henseler et al., 2015), such as perceived app usability with app use intention and perceived information quality. All other HTMT values fell far below the more stringent threshold of 0.85. The HTMT ratio, together with the cross-loading, point to the discriminant validity of all constructs. Assessment of the measurement model indicates reliability and validity of the study constructs.

Table 5.4 Effect sizes of correlations

Correlations	Effect size
APUSE → PDIMG	.025
PINFQL → PDIMG	.018
PRISK → PDIMG	.026
PDIMG → USEINT	.084

Source: Author’s work and calculations

Table 5.5 Heterotrait–Monotrait (HTMT) ratios

	APUSE	PINFQL	PRISK	PDIMG	USEINT
APUSE					
PINFQL	.822				
PRISK	.433	.564			
PDIMG	.532	.401	.657		
USEINT	.087	.149	.117	.355	

Source: Author’s work and calculations

Additionally, according to Hair et al. (2016), sample size adequacy should be established by taking into account the following: the statistical power, the R2 value, the number of predictor variables, the sample size and the *p*-value of .05. From reviewing all the mentioned values, the sample size has been found to meet the level of statistical power. Hence, the sample size is acceptable.

5.12 Discussion and Conclusion

This study assessed the relation between perceived app usability, perceived information quality, perceived risk, perceived destination image and use intention. The study also analysed the mediating role of perceived destination image between perceptions of website usability, information quality and risk, with use intention. All the relations were significantly supported.

The results highlight the importance of international tourists’ perceptions of website usability, information quality and risks in developing their destination image. Thus, the study recommends providing a simple, easy-to-use app with accessible information, understandable content, easily navigated, well-organized content and well-controlled browsing. This is key for forming international tourists’ positive images of destinations (Rodríguez-Molina et al., 2015). Additionally, the app’s information should be accurate, reliable and well formatted. Moreover, enhancing destination image should be achieved by improving tourists’ risk perceptions of the destinations (Xie et al., 2020).

The current study found perceived destination image to significantly influence app use intention. Enhancing destination image is crucial for international tourists' behavioural intentions. Thus, tourism managers should improve their destination's e-platform environment. In particular, they should keep track of the updated app features, in terms of providing online information, safety, security and value of services/products (Rodríguez-Molina et al., 2015).

Moreover, app useability was found to impact use intention without the influence of destination image, which indicates the important role of application usefulness and how useful features such as easy installation, access and use might play a critical role in forming tourists' perceptions of a destination image and their perceptions related to using the app.

Additionally, destination image was found to have a significant role in the relationships between tourists' perceptions of information quality and risk and their use intentions related to the tourism application/website. These findings imply that even if the destination has a "positive" risk level, and its application/website offers reliable and accurate information, tourists would still be influenced by the destination image.

This study investigates the role of destination image as a mediating between international tourists' perceptions of app usability, information quality, risks and use intention. The study provides a significant contribution to the tourism and online information literatures in several ways.

This study's findings regarding the significant influence of perceived app usability on perceived destination image are in line with previous research, for example, Alcántara-Pilar et al. (2018), who found that positive perceptions of website usability indirectly predicted a more positive destination image, and García-Milon et al. (2021), who reported that positive expectations influenced tourists' smartphone use intention. The results indicate that the way in which the app is used may form tourists' image of the destination, which in turn influences their app use intention. As Alcántara-Pilar et al. (2018) suggested, the strong association between destination image and behavioural intention implies that tourism managers need to pay attention to the design and functionality of the websites/apps they rely on to market to tourists.

Regarding the significant influence of tourists' perceptions of information quality on destination image, this result is not surprising, as prior research has found that information quality influences information adoption and behavioural intention (Kim et al., 2017; Alhemimah, 2019), and in particular, that destination image influences tourists' decision-making and visit intention (Ali & Liu, 2021). This result suggests that when tourists perceive the information provided by the app as accurate, reliable and well formatted, they may intend to use that app and thus be more likely to purchase the services offered via the app/website.

Additionally, the study found a significant negative relationship between tourists' perceptions of risk and destination image. These results indicate that international tourists may not intend to use the app if they perceive the destination to be risky. As reported in previous studies, tourists tend to associate various perceived risks (whether physical, psychological, financial or social) with a destination, and

the higher the perceived risk, the more negative the destination image (Chew and Jahari, 2014; Perpiña et al., 2019; Nazir et al., 2021).

The findings of this study have theoretical implications as well. The study proposes a new model which contributes to tourism literature, although perceived website/app usability, perceived information quality, perceived risk and perceived destination image have been assessed in the tourism literature; this paper provides a new perspective by proposing them as antecedents of app use intention. Finally, the online tourism destination marketing industry in Saudi Arabia is in its early stages, and more online marketing should be considered by tourism organizations in order to attract tourists.

5.13 Limitations of the Study and Suggestions for Future Studies

There are a few limitations of this study which may provide interesting opportunities for future research. First, the study followed a cross-sectional study approach, to assess the variables that influence the intention to use a tourism app through perceived destination image. A longitudinal design comparing destination image prior to and after actual app use could provide useful insights. Another promising use of longitudinal data would be collecting eWOM (electronic word-of-mouth) such as online consumer reviews (OCRs; Alhemimah, 2019) of destinations to study changes in destination image over time.

A second limitation of the study is that it considered tourists' risk perceptions but did not take into account social influence (subjective norms) on perceived risk. Future studies can assess the impact of social influence as well as other factors related to using e-platforms. Another dimension of using e-platforms such as tourism websites and apps is information seeking. Future studies could examine the relationships between risk perception, information seeking and destination image.

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