

Functionality and usability features of ubiquitous mobile technologies: The acceptance of interactive travel apps

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Purpose: Customers are increasingly utilizing mobile applications (apps) to compare prices of travel and hospitality services and to purchase their itineraries, tours and stays. This study explores key factors influencing the individuals' perceptions about the usefulness of travel apps and sheds light on the causal paths predicting the individuals' dispositions to utilize them.

Design/methodology/approach: Quantitative data was gathered from 1,320 subscribers of social media groups. They were analyzed through a composite-based partial least squares (PLS) approach.

Findings: The results indicate that information quality, source credibility and the functionality of travel apps are significantly affecting the individuals' perceptions about their usefulness as well as their intentions to use them. They also confirm that there are highly significant indirect effects within the proposed model.

Practical implications: This study suggests that there is scope for the travel service providers to enhance the quality and functionality of their mobile apps, in order to improve their consumers' perceptions about the utility of these ubiquitous service technologies.

Theoretical implications: The study integrates information quality and source credibility factors with a functionality construct. It examines their effects on the technology acceptance model (TAM)'s perceived usefulness and behavioral intentions.

Originality: This contribution incorporates a functionality construct in an information technology adoption model to shed light on the individuals' dispositions to avail themselves of online content and/or to adopt interactive innovations. In this case, it implies that certain functionality features of travel apps

including their responsiveness and technical capabilities can trigger users to increase their engagement with these mobile technologies on a habitual basis.

Keywords: functionality; technology acceptance model, information adoption model, perceived usefulness; travel apps, Information Technology Adoption Model.

1. Introduction

Customers are increasingly using mobile apps for different purposes, to access a wide array of information about businesses and brands, to compare prices and/or to purchase products and services. Many travelers book itineraries, tours and accommodation requirements through their tablets and smart phones. Previous studies indicated that in many cases, mobile users are perceiving the usefulness of travel apps, as they consider them as functional, quick and convenient to purchase tourism and hospitality services (Dorcic *et al.*, 2019; Law *et al.*, 2018). Evidently, consumers are using ubiquitous devices, that enable seamless connectivity with service providers. They are becoming acquainted with the use of apps with responsive designs and fast loading screens, particularly with those that offer them an appropriate set of high-quality image resolution and appealing graphics, that look professional and stylish (Kumar *et al.*, 2018; Lei and Law, 2019; Wong *et al.*, 2020).

The developers of the travel apps ought to adapt their content to different mobile operating systems (including iOS, Android, and Windows). Their features have to be customized to various screen sizes of tablets as well as of smartphones (Butler *et al.*, 2021; Hadjarian *et al.*, 2021). Some of the best apps offer specific services like allowing their users to log in with their contact information, and/or to keep a track record of their previous requests, interactions and past transactions. They may include advanced search options that enable users to access a vast database of content. Most of them can even send push notifications that could feature textual and visual information to their users, based on their past searches (Choi *et al.*, 2019; Law *et al.*, 2018).

Customers are increasingly utilizing travel apps like Booking.com and Expedia, among others, before and after they make their sales transactions. They evaluate their functionality, layout and content before laying their credit cards to shop online (Camilleri, 2021). After their purchase, they may still have to interact with these technologies to modify their reservations, to cancel their bookings or to request refunds. They may access their frequently answered questions (FAQs) on issues relating to ancillary services like insurance products, loyalty points etc. At times, they utilize their live chat facilities that are usually operated via artificially intelligent (AI) chatbot technologies (Adam *et al.*, 2020; Camilleri, 2019), through social networking services (SNSs) (Albayrak *et al.*, 2021; Buhalis and Moldavska, 2022; Camilleri and Troise, 2022; Lee *et al.*, 2020; McLean and Osei-Frimpong, 2019), to resolve their queries or complaints.

More individuals are using the digital media to search about the products or services, compare prices, to shop online, et cetera (Hajarian *et al.*, 2021; Troise and Camilleri, 2021; Troise *et al.*, 2020). For example, Camilleri and Kozak (2022a) sought to explore the antecedents affecting intentions to use travel websites. This contribution builds on their interactive technology adoption model (ITAM). In this case, the researchers integrate ITAM's key measures with a functionality construct to examine the travel apps' technical capability, instrumental utility and efficiency aspects in addition to their information quality, source credibility as plausible antecedents of information usefulness and intentional behaviors. Currently, there are still limited studies on well-designed mobile technologies in the hospitality and tourism industry context (Ali *et al.*, 2021; Wong *et al.*, 2020). There are even less studies focused on the functionality and usability features of travel apps.

Specifically, the focused research question(s) of this empirical study are the following: [RQ1] How and to what extent is the information quality of online content, source credibility and the functionality elements of travel apps are affecting the individuals' perceptions on their usefulness? [RQ2] Which factors are

having direct and indirect effects on the persons' behavioral intentions to continue using them? [RQ3] To what degree is the usability of the travel apps (in terms of perceived usefulness) mediating the relationship between the individuals' perceptions about their functionality attributes and their intentions to engage with these ubiquitous technologies, in the future.

This study puts forward a research model that can be used to investigate perceptions about the use of mobile apps . This framework hypothesizes that the quality of travel apps' designs (in terms of their content and layout), their functionality features, as well as their curators' credibility, can have a significant effect on perceived usefulness and intentions to continue using them on a habitual basis.

The methodology integrates reliable measures, namely; source credibility and information quality, drawn from IAM (Sussman and Siegal, 2003) with a technical functionality construct associated with eSERVQUAL (Pénard and Perrigot, 2017; Tandon *et al.*, 2018). The researchers hypothesize that these three factors are the exogenous constructs of Davis' (1989) perceived usefulness and behavioral intentions (from TAM).

2. Conceptual framework and the formulation of hypotheses

Previous research on information adoption suggests that the individuals' perceived usefulness of specific information could influence their intentions toward its adoption (Camilleri, 2020; Cheung *et al.*, 2008; Sussman and Siegal, 2003). Similarly, TAM presumes that the persons' intentions to engage in specific behaviors or to use certain technologies is dependent on their perceptions and beliefs about their usefulness.

The individuals' perceptions about consumer reviews that are featured in virtual platforms, can have an effect on their information adoption (Cheung *et al.*, 2008). In a similar vein, online word of mouth publicity can have an impact on the individuals' purchase behaviors (An and Ozturk, 2022; Chen and Chang, 2018). Many authors including Erkan and Evans (2016) relied on IAM frameworks (Cheung *et al.*, 2008; Sussman and Siegal, 2003) to explore information adoption. In this case, they investigated the effects of IAM factors on the individuals' purchase intentions. Erkan and Evans (2016) found that information usefulness is a precursor of information adoption, and that information adoption predicted purchase intention.

Other researchers including Mehra *et al.* (2021) also reported that there were significant correlations between perceived usefulness and behavioral intentions to engage with mobile apps. Huang and Ren (2020) as well as Yan *et al.* (2021) clearly indicated that there was a positive association between perceived usefulness and continuance intention to use fitness mobile apps. Similarly, customers may perceive that mobile apps could be a useful technology to check and compare prices of travel and hospitality services, to purchase flights or accommodation, to request refunds, cancellations, and/or to make changes in their bookings. Hence the authors hypothesize:

H1: The individuals' perceptions about the usefulness of travel apps can significantly affect their behavioral intentions to use them.

Most individuals tend to evaluate the quality of the content that is presented in websites and in their mobile apps (Amin *et al.*, 2021). The information that is featured in them can be useful and relevant for them, particularly if it exceeds their expectations. Past studies confirmed that the quality of the information that is transmitted via emails can significantly affect the receivers' perceptions about their usefulness (Sussman and Siegal, 2003).

The individuals' evaluations on online content can also influence their confidence on it (Salehi-Esfahani *et al.*, 2016). Many businesses, including travel and hospitality firms are increasingly presenting high quality information to raise awareness about their services, to enhance their image, and to trigger their consumers' purchase dispositions.

Customers will usually scrutinize the content of websites or travel apps in terms of accessibility, relevance or richness of their data (Camilleri and Kozak, 2022a). They would probably perceive them as useful if their electronic information is understandable, reliable and clear (Cheung *et al.*, 2008; Salehi-Esfahani *et al.*, 2016). If it is, they may use them again in the future (Erkan and Evans, 2016).

On the other hand, they will probably ignore websites or travel apps, if they are of a poor quality. In this case, their online content may result in negative repercussions on the businesses' reputation and image, among customers (Gu *et al.*, 2007). The authors hypothesize that:

H2: The information quality of travel apps can significantly affect the individuals' perceptions about their usefulness.

The users' perceptions about information quality can affect their attitudes toward the content (Petty and Cacioppo, 1986). However, the sources' credibility can also have an impact on the persons' opinions on the content that is presented to them, particularly, if it is curated by knowledgeable, honest and truthful communicators (Camilleri, 2018). Very often, the persons beliefs might be influenced by the sources' credentials (Cheung *et al.*, 2008). Many authors, including Sussman and Siegal (2003) indicated that the

sources' trustworthiness and their expertise could have an impact on their beliefs about the credibility of the communicated content.

Arguably, the source expertise is related to the persons' perceptions about the communicators' skills in formulating and transmitting their messages to others (Salehi-Esfahani *et al.*, 2016). On the other hand, the source trustworthiness is associated with the degrees of dependability and reliance on the persons or businesses communicating the content (Fileri *et al.*, 2018; Ismagilova *et al.*, 2020). The information that is conveyed from marketing and public relations experts is often believed to be reliable and convincing (Camilleri and Kozak, 2022a).

Source experts are usually considered as proficient in their fields by the receivers of information. Arguably, the recipients of information will take heed of the communicated messages if they believe that the source is credible. Hence, the sources credibility could affect the perceptions on the usefulness of the communicated content. The authors hypothesize that:

H3: The sources' credibility in curating travel apps can significantly affect the individuals' perceptions about their usefulness.

Content curators are expected to be knowledgeable and experienced as they have to develop high quality websites and travel apps, that are useful in terms of their functionality and usability for their users. Their design is an important aspect of the technology's service quality (Li *et al.*, 2017). The way how the apps are organized in terms of their structure and layout as well as the presentation of their content, including their layout, can have a significant effect on their users' dispositions to use them. Conversely, if they may opt to use the competitors' apps if they are not satisfied by their service quality (King *et al.*, 2016).

Relevant theoretical underpinnings suggest that users engage with information technologies because they perceive their ease of use and believe that they are useful to access information (Camilleri and Kozak, 2022b), and/or to purchase the services they want, with minimal efforts (Erkan and Evans, 2016; Nguyen *et al.*, 2020). Individuals may usually evaluate the functionality technologies in terms of their technical capability instrumental utility, and efficiency (Tandon *et al.*, 2018; Wong *et al.*, 2020). They will probably appreciate their usability features if they allow them to navigate seamlessly and uninterruptedly, through the Internet, via their desktop computers, laptops, tablets and/or smartphones (Mercan *et al.*, 2020). They ought to be able to access and browse through online information, to find all the details they need on different services. They should be in a position to skim through the products' attributes and features, and to sort them, according to price, review score, hotel class, distance from point of attraction, etc., as quickly and as easily as possible. The responsiveness and interactivity features are key dimensions of electronic service quality (Capriotti *et al.*, 2021; Wong *et al.*, 2020).

Mobile users should find it easy to engage with travel apps. They would appreciate if they could quickly browse through their content in an effortless manner, as they assess and compare different prices of a wide variety of products. The functionality of the technology can have an impact on the customers' perceived usefulness and on their behavioral intentions to use them (Negahban and Chung, 2014; Yu *et al.*, 2017).

Past contributions on this topic that is related to wireless technology adoption indicated that there is a fit between the characteristics of task and technology along with perceived usefulness (Wang *et al.*, 2021). Likewise, Pagani (2004) contended that hardware/software functionality could influence the individuals' perceptions about multimedia mobile services.

Other researchers including Yu *et al.* (2017) noted that the functionality features of (mobile) tablets, with intuitive interfaces and their innovative touch screens, enable users to search for information, read documents, enjoy different forms of media, and to recreate themselves through entertainment services. They went on to suggest that these functionality features had a positive influence on the individuals' perceived usefulness and can even affect their behavioral intentions to use them. The authors hypothesize that:

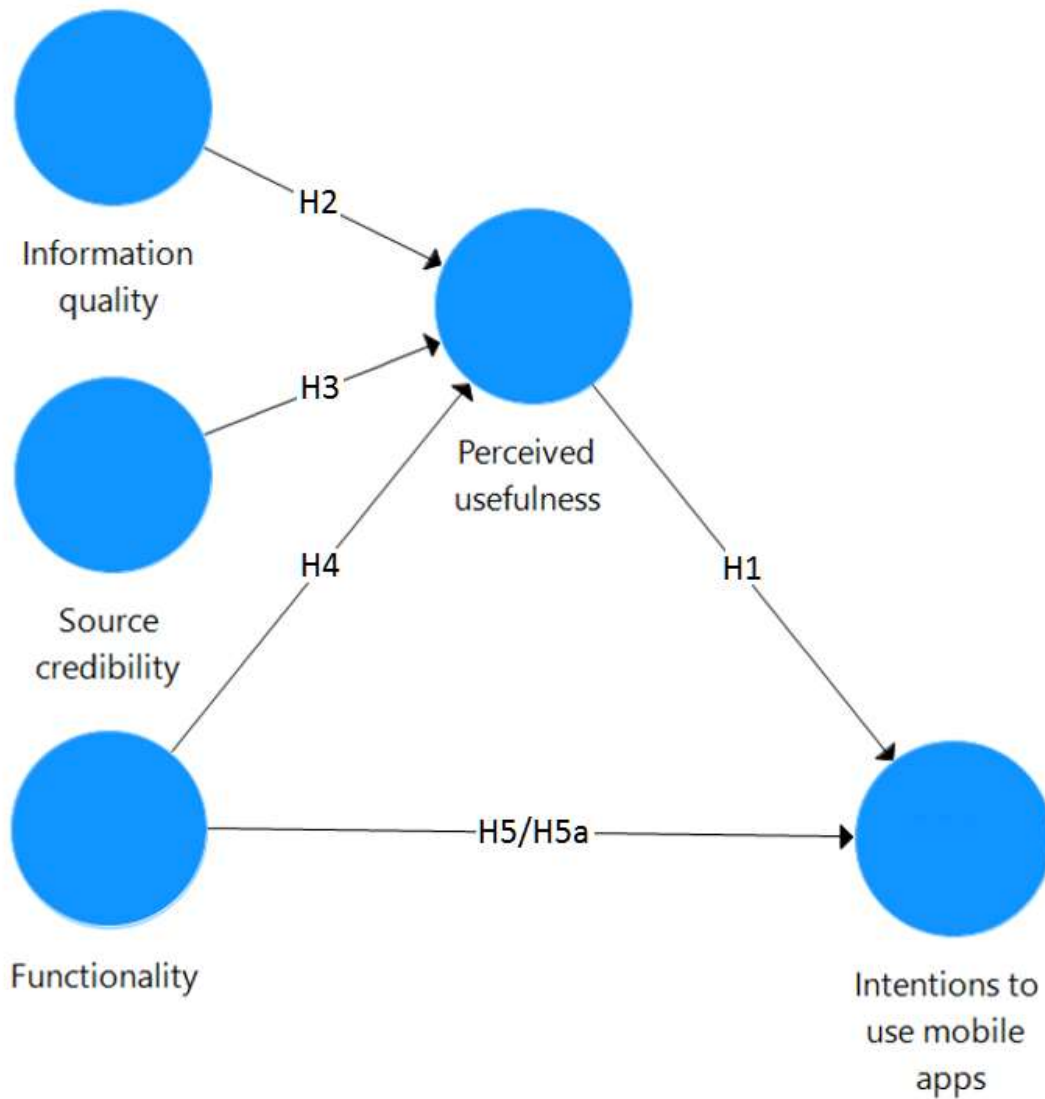
H4: The travel apps' functionality can significantly affect the individuals' perceptions about their usefulness.

H5: The travel apps' functionality can significantly affect the individuals' intentions to use them.

H5a: The perceived usefulness significantly mediates the functionality – intentions link.

Figure 1 sheds light on the hypotheses of this research model. In short, this research investigates the factors affecting the individuals' perceived usefulness of travel apps and their intentions to continue using them. This study presumes that there are direct effects between functionality, source credibility and information quality on perceived usefulness. At the same time, it hypothesizes that these three exogenous constructs indirectly affect behavioral intentions.

Figure 1. An information technology adoption model



3. Methodology

The survey instrument has integrated a technical functionality construct (Pénard and Perrigot, 2017; Tandon *et al.*, 2018) with measures from ITAM (Camilleri and Kozak, 2022a), IAM (Sussman and Siegal, 2003; Wang and Scheinbaum, 2018) and TAM (Davis, 1989), to examine the individuals' perceived usefulness of travel apps.

The survey questionnaire was pilot tested among academic colleagues, before the formal collection of data through large-scale quantitative research. The survey's measures and their corresponding items were featured according to MacKenzie and Podsakoff's (2012) guidelines in order to reduce the plausibility of common method bias. They were written in plain English language and could be easily understood by all respondents. Table 1 provides a list of the measures and the corresponding items that were used in this research. It also indicates their sources and provides a definition for each construct.

Table 1. The measures of this study

Construct	Sources	Definition	Items
Information quality (the quality of the online content)	Information adoption model (Camilleri & Kozak, 2022b; Cheung <i>et al.</i> , 2008; Sussman and Siegal, 2003).	This construct refers to the individuals' perceptions about the completed-ness, accuracy and timeliness of (online) information.	<p>IQ1 The information in the travel apps is complete.</p> <p>IQ2 The information in the travel apps is timely.</p> <p>IQ3 The information in the travel apps is correct.</p>
Source credibility (the credibility of the curator of online content)	Information adoption model (Camilleri & Kozak, 2022b; Newell and Goldsmith, 2001; Sussman and Siegal, 2003).	This construct refers to the individuals' perceptions about the trust-ability and expertise of the information source.	<p>SC1 I trust the content that is presented in the travel apps.</p> <p>SC2 The content that is featured in the travel apps is truthful.</p> <p>SC3 The curators of the travel apps are skilled in developing online content.</p>
Functionality of the technology	Electronic Service Quality (Nguyen <i>et al.</i> , 2020; Tandon, Kiran and Sah, 2018; Wong <i>et al.</i> , 2020).	This construct refers to the individuals' perceptions about the design and technical capabilities of information technologies, in terms of their instrumental utility, efficiency and ease of use.	<p>Funct1 The travel apps offer a good selection of products.</p> <p>Funct2 The travel apps are organized and work well.</p> <p>Funct3 It is quick and easy to use the travel apps.</p>
Perceived usefulness of the technology	Technology acceptance model (Cheung <i>et al.</i> , 2008; Davis, 1989).	This construct refers to the individuals' beliefs about the utilitarian value of technologies.	<p>PU1 The travel apps are useful.</p> <p>PU2 The travel apps are informative.</p>
Intentions to use technology	Technology acceptance model (Davis, 1989; Erkan and Evans, 2016).	This construct refers to the individuals' willingness to perform specified behaviors (like using technologies).	<p>INT1 I will continue using the travel apps in the future.</p>

The research participants were expected to reveal whether they used travel apps (in a filter question) and had to specify the frequency of their usage. Hence, only individuals who utilized these interactive technologies could take part in the questionnaire. The respondents were requested to disclose their agreement to the survey items, in a 5-point Likert scale, where 1 signaled great disagreement and 5 represented the highest level of agreement. The demographic questions including age and gender, were presented in the last section of the questionnaire.

The researchers distributed their survey questionnaire via two popular social media groups during autumn of 2021, in a time when the Coronavirus (COVID-19) pandemic's social distancing measures were eased. The subscribers of these groups were following them as they were interested in past consumer experiences with service businesses (including travel, tourism and hospitality service providers). These groups comprised more than 62,000 members who could have participated in this study.

Their subscribers were provided with a link to the questionnaire and were kindly invited to take part in a survey that investigated the use of travel apps. After a month, there were 1,320 respondents who completed their questionnaires.

Most of the respondents were females (n=751, 56.89%). There were 568 males (43.03%), and a missing value, representing 0.08%. The majority of respondents (n=468, 35.45%) were in their thirties, and the second largest group (n=358, 27.12%) were in their forties. The results demonstrated that a large number of respondents have utilized travel apps for more than 3 times in 2021. Table 2 describes the profile of respondents who participated in this study.

Table 2. A descriptive profile of the survey participants

Variable	Range	N	%	Variable	Range	N	%
Gender	Female	751	56.89	Usage of travel apps	Yes	1286	97.42
	Male	568	43.03		No	32	2.42
	Missing	1	0.08		Missing	2	0.15
	Total	1320	100.00		Total	1320	100.00
Age		N		Frequency of usage of travel apps	Never	30	2.27
	18-29	299	22.65		1-2 times a year	448	33.94
	30-39	468	35.45		3-5 times a year	564	42.73
	40-49	358	27.12		1-2 times a month	174	13.18
	50-59	129	9.77		More than 3 times in a month	103	7.80
	Over 60	62	4.70		Missing	1	0.08
	Missing	4	0.30		Total	1320	100.00
	Total	1320	100.00				

4. Results

The research participants revealed that they were agreeing with the survey’s statements. The mean (M) scores were close to 5. The perceived usefulness constructs indicated the highest scores (with PU1: M = 4.075 and PU2: M = 4.2). Conversely, with an M score of 3.375, source credibility (SC3) has registered the lowest mean score. The standard deviations (SD) were relatively low. The values were less than 1.1, as reported in Table 3.

4.1 Construct reliability and validity

A composite-based Smart partial least squares (SmartPLS 3.3.3) statistical software was used to examine the constructs’ reliability and validity, as well as the robustness of the proposed empirical model (Ali *et al.*, 2018; Ringle *et al.*, 2014). The PLS algorithm reported that the loadings were acceptable as they were

more than 0.7. Rho_A, cronbach's alpha as well as the composite reliability values were above the recommended threshold.

Moreover, the findings confirmed that the convergent validity values were acceptable as the average variance extracted (AVE) values were above 0.718. The square root value of AVE exceeded the correlation values in the same columns, as per Fornell and Larcker's (1981) criterion for discriminant validity. SmartPLS' heterotrait-monotrait (HTMT) reported that all values were lower than 0.9 (Henseler *et al.*, 2015), in the right-hand side of Table 3

Table 3. The descriptive statistics, reliability and validity values

Construct	Items	Mean	Deviation	Loadings	Alpha	rho_A	CR	AVE	1	2	3	4	5
1 Information quality	IQ1	3.4	1.091	0.92	0.849	0.857	0.909	0.769	0.877	0.457	0.866	0.671	0.368
	IQ2	3.65	1.014	0.887									
	IQ3	3.975	1.012	0.82									
2 Intentions	INT1	4.025	0.724	1.000	1.000	1.000	1.000	1.000	0.420	1.000	0.615	0.547	0.824
3 Functionality	Funct1	3.725	0.922	0.857	0.824	0.834	0.894	0.737	0.714	0.573	0.858	0.657	0.623
	Funct2	3.7	0.9	0.894									
	Funct3	3.8	0.843	0.823									
4 Perceived usefulness	PU1	4.075	1.034	0.981	0.964	0.970	0.982	0.965	0.613	0.537	0.600	0.982	0.524
	PU2	4.2	0.9	0.984									
5 Source credibility	SC1	4.025	0.689	0.884	0.803	0.822	0.884	0.718	0.313	0.761	0.518	0.467	0.847
	SC2	3.775	0.851	0.881									
	SC3	3.375	0.886	0.771									

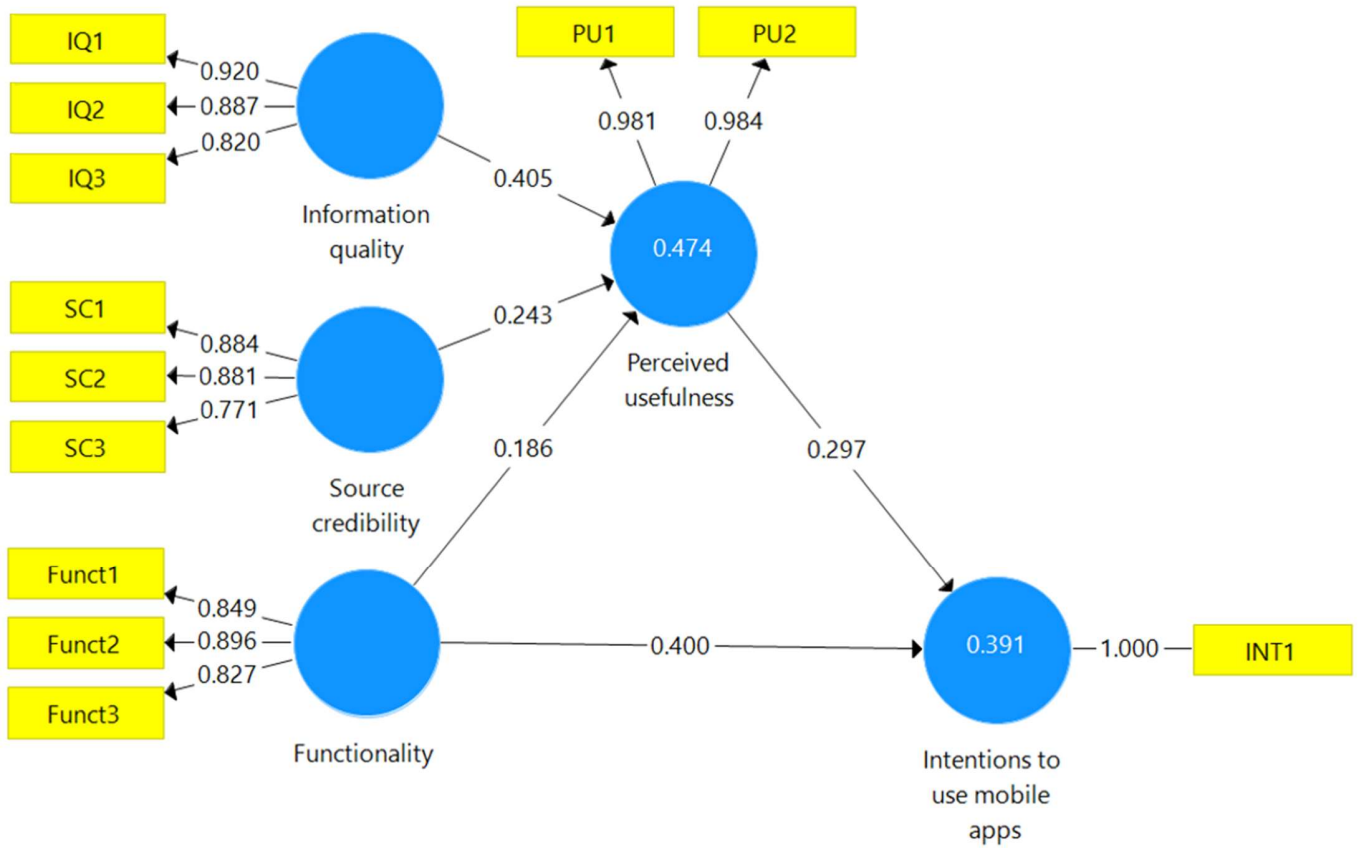
Note: The discriminant validity was confirmed through Fornell-Larcker’s criterion and via the HTMT procedure (Henseler *et al.*, 2015)

4.2 An assessment of the structured model

The PLS results indicated that the variance inflation factors (VIFs) were lower than 3.3, thereby confirming that there were no collinearity issues. They reported that the antecedents predicted 47.4% of the participants' perceived usefulness of interactive travel apps ($R^2 = 0.474$) and 39.1% of their intentions to continue using them ($R^2 = 0.391$).

The functionality construct affected the participants' intentions to continue using the technology ($f^2 = 0.167$). There were other effects between information quality - perceived usefulness ($f^2 = 0.153$), perceived usefulness - intentions ($f^2 = 0.092$), source credibility - perceived usefulness ($f^2 = 0.081$) and functionality - perceived usefulness ($f^2 = 0.026$). Figure 2 depicts the empirical findings from PLS algorithm.

Figure 2. The findings from PLS algorithm



The bootstrapping procedure was utilized to investigate the hypotheses. Table 4 summarizes the findings, including the original sample (O), the standard deviations (STDEV), the confidence intervals (bias corrected), t statistics ($|O/STDEV|$), as well as the P values. Table 5 presents the results of the mediated relationships between the functionality - behavioral intentions causal link. Table 6 illustrates the indirect effects within the proposed model.

Table 4. Hypothesis testing

Path Coefficient	Original Sample (O)	Standard Deviation (STDEV)	Confidence Intervals Bias Corrected		T statistics ((O/STDEV))	P Values	Outcome
			2.50%	97.50%			
H1 Perceived usefulness -> Intentions	0.297	0.029	0.237	0.349	10.292	0.000	Supported
H2 Information quality -> Perceived usefulness	0.405	0.028	0.353	0.464	14.391	0.000	Supported
H3 Source credibility -> Perceived usefulness	0.243	0.028	0.185	0.296	9.250	0.000	Supported
H4 Functionality -> Perceived usefulness	0.186	0.034	0.119	0.246	5.605	0.000	Supported
H5 Functionality -> Intentions	0.400	0.027	0.343	0.446	14.985	0.000	Supported

*****Critical Values P<0.001, T>1.96**

Table 5. The mediation analysis

Path Coefficient	Original Sample (O)	Standard Deviation (STDEV)	Confidence Intervals Bias Corrected		T statistics (O/STDEV)	P Values	Interpretation
			2.50%	97.50%			
Direct effect: Functionality -> Intentions	0.400	0.027	0.343	0.446	14.985	0.000	Partial Mediation
Indirect effect: Functionality -> Perceived usefulness -> Intentions	0.055	0.000	0.036	0.073	5.236	0.000	
Total Effects: Functionality -> Intentions	0.455	0.025	0.408	0.503	17.914	0.000	

***Critical Values P<0.001, T>1.96

Table 6. Other indirect effects

Path Coefficient	Original Sample (O)	Standard Deviation (STDEV)	Confidence Intervals Bias Corrected		T statistics (O/STDEV)	P Values
			2.50%	97.50%		
Information quality -> Perceived usefulness -> Intentions	0.120	0.000	0.092	0.151	8.243	0.000
Source credibility -> Perceived usefulness -> Intentions	0.072	0.000	0.049	0.096	5.761	0.000

***Critical Values P<0.001, T>1.96

4.3 Discussion

The individuals' perceptions about the usefulness of travel apps were highly significant antecedents of their behavioral intentions to use them in the future ($\beta = 0.297, t = 10.292, p < 0.001$). The findings from H1 are congruous with other findings associated with TAM research (Camilleri, 2019; Huang *et al.*, 2019; Mehra *et al.*, 2021; Yan *et al.*, 2021). H2 indicated that information quality was a significant precursor of perceived usefulness ($\beta = 0.405, t = 14.391, p < 0.001$).

H3 revealed that source credibility significantly affected perceived usefulness ($\beta = 0.243, t = 9.250, p < 0.001$). Evidently, the respondents were influenced by central as well as by peripheral routes to persuasion. Again, this finding was also mirrored in other academic contributions, where other researchers implied that individuals' communicative processes were influenced by both argument quality (i.e. highly elaborated content) as well as by source credibility (i.e. peripheral and heuristic factors) (see Camilleri, 2022; Petty *et al.*, 1983; Petty and Cacioppo, 1986; Salehi-Esfahani *et al.*, 2016).

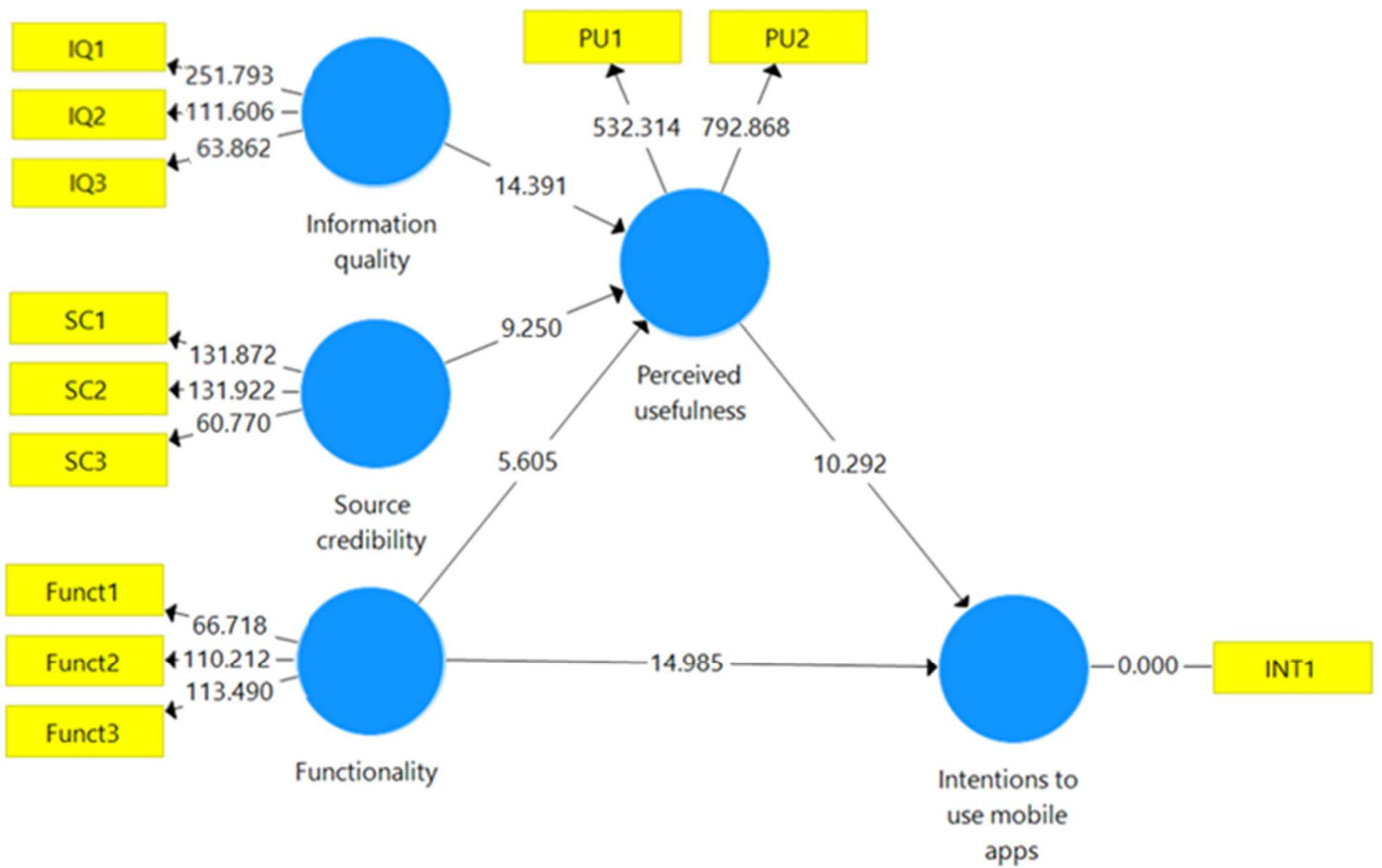
Other academic researchers postulated that in many cases, persons are influenced by heuristic inferences like source expertise, brand image and/or source attractiveness, among others. Online users could be influenced by the extensive clutter they come across whilst browsing through the Internet domains, word-of-mouth publicity like consumer reviews or testimonials and recommendations, among other cues. The results from this study confirm that information quality and source credibility were strongly affecting the individuals' perceptions about the usefulness of travel apps (in fact these effects were more significant than the functionality - perceived usefulness link).

Many commentators pointed out that in many cases, several individuals would still perceive the usefulness of the content, that is communicated to them, whether they receive it through high elaboration methods or

via peripheral inferences. Moreover, previous researchers suggested that information usefulness can ultimately result in intentional behaviors (Erkan and Evans, 2016; Salehi-Esfahani *et al.*, 2016), like utilizing travel websites or mobile apps, to compare prices of different service providers, and may even lead them to book travel itineraries and/or accommodation requirements (Chen and Chang, 2018).

H4 confirmed that the functionality construct was significantly influencing the individuals' perceived usefulness of the travel apps ($\beta = 0.186$, $t = 5.605$, $p < 0.001$) and predicted their behavioral intentions ($\beta = 0.400$, $t = 14.985$, $p < 0.001$). This result is similar to previous results that were reported in other empirical studies, where other researchers found that the technical functionality was a significant factor that predicted the customers' perceived usefulness of mobile technologies (like tablets) and could influence their intentions to use them in the future (Yu *et al.*, 2017). Figure 3 provides a graphical illustration of the results from SmartPLS' Bootstrapping procedure.

Figure 3. The findings from the bootstrapping procedure



5. Implications and conclusions

5.1 Theoretical contribution

Prior studies relied on specific theoretical frameworks like the ITAM (Camilleri and Kozak, 2022a), IAM (Erkan and Evans, 2016; Filieri *et al.*, 2018; Rihova *et al.*, 2018) and/or TAM (Huang and Ren, 2020; Mehra *et al.*, 2021; Parvez *et al.*, 2022; Yan *et al.*, 2021), among others, to better understand which factors are having an impact on the individuals' engagement with digital media or information technologies.

In this case, this research identifies the factors that are influencing the adoption of travel apps, in the aftermath of COVID-19. It examines the effects of information quality and source credibility (these

measures are drawn from IAM framework) (Cheung *et al.*, 2008; Sussman and Siegal, 2003), as well as of technical functionality (relating to eSERVQUAL) (Nguyen *et al.*, 2020; Pénard and Perrigot, 2017; Tandon *et al.*, 2018; Wong *et al.*, 2020; Yu *et al.*, 2017), on the individuals' perceptions about the usefulness of these mobile technologies and on their intentions to continue using them on a habitual basis (the latter two factors are used in TAM models), to shed light on the consumers' beliefs about their usability and functionality features.

This study suggests that mobile users are valuing the quality of the digital content that is presented to them through these mobile technologies. Apparently, they are perceiving that the sources (who are curating the content) were knowledgeable and proficient in the upkeep and maintenance of their apps. Moreover, they are appreciating their functional attributes including their instrumental utility and appealing designs. Evidently, these factors are influencing their intentions to use the travel apps in the future. They may even lead them to purchase travel and hospitality services. Furthermore, they can have an impact on their social facilitation behaviors like positive publicity (via electronic word of mouth like online reviews, as well as in-person/offline), among other outcomes.

In conclusion, this contribution implies that there is scope for future researchers to incorporate a functionality factor in addition to ITAM, IAM and/or TAM 'usability' constructs to investigate the individuals' dispositions to utilize technological innovations and to adopt their information. It confirms that the functionality features including their ease of use, responsiveness, organized layout and technical capabilities can trigger users to increase their app engagement on a habitual basis.

5.2 Practical considerations

The results from this study reveal that the respondents hold positive perceptions toward interactive travel apps. In the main, they indicate that these mobile technologies feature high quality content, are organized, work well, offer a good selection of products and are easy to use.

This research posits that mobile users appreciate the quality of information that is presented to them through the travel apps, in terms of their completed-ness, accuracy and timeliness of information. Yet, the findings show that there is room for improvement. There is scope for service providers (and for the curators of their travel apps) to increase their credentials on source trustworthiness and expertise among consumers.

The results imply that information quality had a more significant effect on the respondents' perceived usefulness of travel apps than source credibility. Moreover, they also suggest that consumers are willing to engage with travel apps as they believe that they offer seamless functionality features, including customization capabilities and fast loading screens (Kumar *et al.*, 2018; Wong *et al.* 2020). Most probably, the respondents are cognizant that they offer differentiated pricing options on flights, hotels and cars, from various service providers. They may be aware that many travel apps also enable their users to access their itineraries even when they are offline and allow them to keep a track record of their reward points (e.g. of frequent flyer programs) on every booking.

In this day and age, online and mobile users can utilize mobile devices to access asynchronous content in webpages, including detailed information on tourism service providers, transportation services, tours to attractions, the provision of amenities in tourist destinations, frequently answered questions, efficient booking engines with high resolution images and videos, quick loading and navigation, detailed maps, as

well as with qualitative reviews and quantitative ratings. Very often they can even be accessed through different languages.

A number of travel apps allow their users to log in with a secure, random password authentication method, to keep a track record of their credit card details and past transactions. Most of them are also sending price alerts as well as push notifications that remind consumers about their past searches (Choi *et al.*, 2019). These services are adding value to the electronic service quality as opposed to unsolicited promotional messages, that are not always related to the consumers' interests (Lei and Law, 2019).

Generally, customers expect travel and tourism service providers to respond to their online queries in an instantaneous manner (Buhalis and Moldavska, 2022). They are increasingly demanding web chat services to resolve their queries as soon as possible, preferably in real time (Camilleri and Troise, 2022; McLean and Osei-Frimpong, 2019).

Tourism and hospitality service providers are already using augmented reality (AR) and virtual reality (VR) software, to improve their consumers' online experiences and to emphasize their brand positioning as high-quality service providers. In the foreseeable future, it is very likely that practitioners could avail themselves of Metaverse technologies that could teleport consumers in the cyberspace, to lure them to book their flight, stays, car rentals or tours. Online (and mobile) users may be using electronic personas, called avatars to move them around virtual spaces and to engage with other users, when they are in the Metaverse.

This interactive technology is poised to enhance its users' immersive experiences, in terms of their sensory inputs, definitions of space and points of access to information, particularly those that work with VR

headsets. Hence, travel and hospitality businesses could avail themselves of such interactive technologies to gain a competitive advantage.

5.3 Limitations and future research avenues

The findings from research confirm that the reliability and validity of ITAM's key measures (Camilleri and Kozak, 2022a). Prospective researchers could validate the measures that were used in this study in other contexts to examine the effects of the individuals' perceptions about technical functionality on the acceptance and use of a wide array of information technologies (including travel apps). They may consider using ITAM's scales to investigate the users' engagement with Internet-of-Things (IoT), AR, VR and Metaverse technologies in other scenarios. Perhaps, they may explore the persons' uses and gratifications from these interactive media. Other research designs, methods and sampling approaches could be employed to gather primary data from users of tourism technologies.

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