Research Article

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Impact of Mobile Applications in Changing the Tourist Experience

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Abstract: This exploratory study investigates the impact of technology on the tourist experience. This research analyzed the effect of new technologies on the behaviour of new tourism consumers, the importance of mobile technology in the tourism industry, and the phenomenon of mobile tourism in the change of the tourism experience. It also studied the spillover effect that these changes have had on the use of mobile applications in tourism, trying to understand their impact on the tourism experience. A quantitative and qualitative analysis supported this investigation through a survey of 110 Portuguese tourists using applications and two interviews with administrators of mobile application development companies, and, finally, through the analysis of four case studies. The main conclusion is that smartphones and mobile travel applications can substantially alter the tourist experience. Tourists assume that smartphones have motivated changes in the activities and emotions experienced, especially in social applications that allow them to maintain contact with their friends and families and increase security levels.

Keywords: Tourism; Tourist experience; Apps; Mobile applications

1 Introduction

Smartphones are the newest phenomenon in the tourism sector and a reality of the 21st century (Malmir et al., 2017), as mobile systems have become vital tools enabling tourists to navigate an uncertain world. They are an integral part of the industry, bringing several changes that are also affecting many businesses, namely tourism, which has been significantly affected by the phenomenon of mobile tourism, which represents a relatively new trend in the field of tourism (Kenteris et al., 2009).

For this reason, there is a need to understand better the impact of smartphones and mobile travel applications (MTAs) on the tourist experience, as well as the primary motivations for the use of travel apps and the perceived utility and value (facilitating activities at the destination such as buying tickets, restaurants, guides, and maps).

This research is an exploratory study, supported by a literature review that allows an analysis of the evolution of the tourism market in recent years and studies the impact of the most recent technological developments in this market. Thus, through this research we analyzed the impact of new technologies on the behaviour of new tourism consumers, the importance of mobile technology in the tourism industry, and the phenomenon of mobile tourism in the change of the tourism experience, understanding the specific behaviour of Portuguese tourists. Next, we studied the spillover effect that these changes have had on the use of mobile applications in tourism, trying to understand their impact on the tourism experience.

2 Literature Review

Information and communications technologies (ICTs) have had a significant impact on the entire tourism industry (Buhalis & Law, 2008), giving rise to a new generation of tourism consumers (Buhalis & Costa, 2006). Technological advances have transformed how tourism products and services are produced and consumed (Stamboulis & Skayannis, 2003). ICTs have become an integral part of the whole journey along which tourists use technologies to design richer experiences (Gretzel & Jamal, 2009) and co-create more personal experiences (Prahalad & Ramaswamy, 2004).

By exploiting the potential of technology, it is possible to create more attractive tourist experiences for new travellers who are always searching for a purpose in their

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travels (Buhalis and Costa, 2006). Experiences have always been an essential concept in academic research on tourism and, more specifically, in identifying the motivations and meanings that tourists attribute to their experiences in the light of everyday life in advanced industrialised societies (Uriely, 2005). The travel experience is 'an individual's subjective evaluation and undergoing (i.e., affective, cognitive, and behavioural) of events related to his/her tourist activities which begins before (i.e., planning and preparation), during (i.e., at the destination), and after the trip (i.e., recollection)' (Tung & Ritchie, 2011, p.1369).

Technologies have transformed the world into a global village, playing an increasingly crucial role, and these changes are also affecting tourism. The new ICT era has opened new avenues for the tourism industry. Because the tourism industry is one of the well-suited sectors where information technology is extensively used from an operational and business perspective, it is not surprising that the idea of smart tourism destinations has developed rather quickly (Koo et al., 2016).

How consumers interact today forces tourism businesses and destinations to rethink and redefine their relationship with this new 'species' of customers, forcing the development of tools to respond to their individual preferences.

2.1 The Importance of Mobile Technology in the Tourism Industry

The trend toward the use of mobile devices in the tourism industry is very marked. According to Mobile Travel Trends 2019, 61% of travellers 'nearly always' or 'sometimes' use a smartphone app to book a flight, and 62% of travellers agree that being able to book hotels on travel apps is essential. E-tourism was born precisely from this trend of bringing ICT and tourism together and can be defined as digitising all processes and value chain inherent to tourism (Werthner & Klein, 1999). E-tourism thus represents a changing paradigm in the sector that has revolutionised business processes, the value chain, and strategic relations between the different actors in the process.

Smartphones have transformed consumers' behaviours (Emek, 2014), as they are now more connected, anytime and anywhere. The capabilities of the new smartphones support thousands of applications and extend their functionality widely (Wang et al., 2012). They quickly were used as a travel tool and in tourism information research and travel planning (Hsu & Lin, 2015; Tan, 2017).

As they contain many of the same components as personal computers, it is possible to customise and update smartphones to meet diverse individual needs (Rakestraw et al., 2013). It is also possible to access a wide range of services, such as personalised information search, networking, and navigation (Wang et al., 2012). For users, smartphones are not only communication devices, but a continuation of their personality and identity as human beings (Persaud & Azhar, 2012).

2.2 The Phenomenon of Mobile Tourism

By 2011, it was anticipated that mobile services and applications, which were then emerging, would represent significant value in the digital market, and many predicted that they would quickly overtake the use of more traditional desktop applications (Portolan et al., 2011), with consumers emphasising the easy-to-use features from mobile apps (Tan, 2017).

In the following years, with the growth in the use of smartphones and mobile applications, this market segment became one of the greatest successes in the history of consumer technology (Kennedy-Eden & Gretzel, 2012), with the majority of the consumers being bold, venturesome, and willing to experiment with innovations (Tan, 2017).

This evolution was made possible because users of new technologies quickly took to new concepts and services as a reflection of their effectiveness in performing daily tasks. As such, the integration of smartphones into daily habits has produced a spillover effect. They become part of all spheres of consumer life, both professionally and personally, and are integrated into even the most routine tasks of daily life such as shopping, information search, or daily commuting. That has, therefore, also influenced tourist behaviour (Wang et al., 2014), bringing a wide range of changes to the industry (Mo Kwon et al., 2013).

Given the nomadic characteristics of tourism, mobile technology allows excellent flexibility for the industry and travellers themselves, beyond the reach of a mere information channel (Oh et al., 2009). The use of smartphones has made it possible to enjoy a wide range of services. The use of technology in all journey phases indicates that consumers are well informed and more involved, acting as their own travel agents to build individualised travel packages (Werthner & Ricci, 2004). Faced with this reality, the industry needs to understand the current state of the art of this market and identify possible business opportunities (Kennedy-Eden & Gretzel, 2012).

An example of this reality is the acceptance of MTAs, which is generating unprecedented changes in the func-

tioning of the travel industry and the way people travel (Lu et al., 2015). The applications are launching a new way of using mobile devices on the move, which has become known as *m-travelling* and is defined as the use of applications developed for mobile devices and supporting tourists in their travel and activities in a particular place (da Silva & da Rocha, 2012).

For this reason, mobile phones are changing the tourist landscape and the modus operandi of destinations, attractions, and traditional sources of tourist information, which seek to meet the evolving needs of tourists, requiring high-speed access to relevant information and multimedia content (de Pablos et al., 2011).

2.3 Motivations for the Use of Mobile Technologies in Travel

Among the many benefits of applications, access to exclusive services made possible by mobile technology, which allow for highly interactive user experiences, stands out (Yu, 2013). Smartphones also enable tourists to instantly access information on the different variables that affect their trip: weather, accommodations, attractions, and transportation (No & Kim, 2014). Through mobile applications, they have access to a wide variety of information, enabling them to solve problems effectively, share their experiences, and store memories (Wang et al., 2012). Access to these sources of information and research has led to changes in perceptions and behaviour, emphasising increased flexibility, more significant and less planning, and increased travel (Wang et al., 2016).

The feeling of (in)security is essential for smartphone and MTA users and several other needs and desires from the way they experience travel (depending on the experience). The value of time and money is also significant for these consumers, and there will be more emotional decision making when a consumer is under pressure (Buhalis, 2003).

In this sense, we can conclude that the needs of travellers regarding the use of smartphones, and therefore of MTAs, are closely related to perceived utility; that is, convenience, effectiveness, and productivity (Kim et al., 2008). Smartphones are travel companions that accompany and assist tourists, making their experiences more enjoyable (Tussyadiah & Wang, 2016).

There are other perspectives regarding smartphone usage motivations, including their ability to support tourists on the trip and at their destination (Höpken et al., 2010). Different authors have reached similar conclusions. Okazaki et al. (2015) concluded that the primary motivations for using MTAs are speed and access to information; finding engaging experiences, accommodations, and restaurants; and getting feedback or taking immediate action, as travellers need timely information. Wang et al. (2014) identified 12 motivations, where social interactions, fun, keeping in touch and keeping informed, finding restaurants, and staying safe were highlighted.

Buhalis and Costa (2006) systematised these motivations in line with the three stages of tourism consumption (Figure 1). In the preconsumption stage, the user wants to plan, format the expectations for the next trip, make decisions, make transactions, and make his or her anticipations. In the consumption phase, the most important factors are the connection, navigation, short-term decision-making process (e.g., finding a restaurant), and on-site transactions. Finally, in the postconsumption phase, which takes place right after the trip, the needs are to share and document experiences, activate the external memory, and relive the journey again.

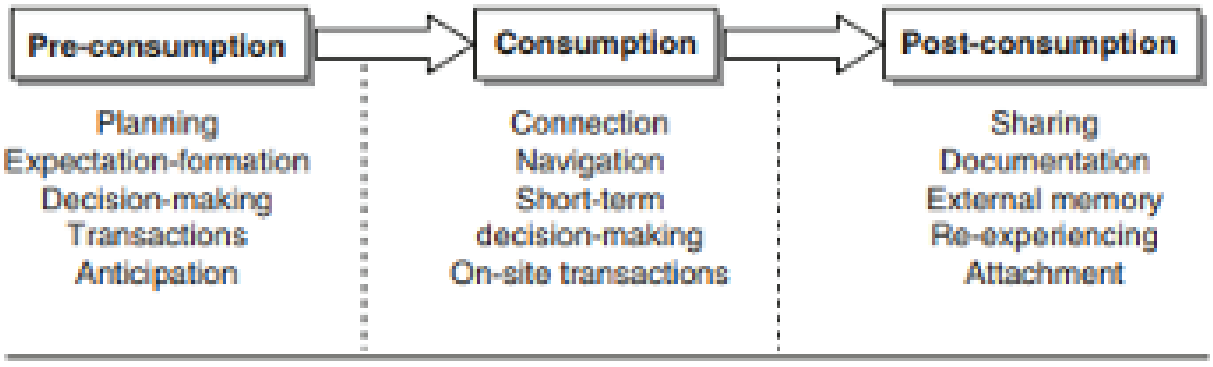

Figure 1: Motivations for MTA use in the three stages of tourism consumption
Source: Buhalis and Costa (2006)

3 Methodology

This study used a quantitative research methodology to understand the perceptions and attitudes toward MTAs. Between August and September 2018, a web-based survey ran, using closed-ended questions, and a total of 111 respondents participated in the survey, 110 of whom provided valid data. Given the mobile technology environment and the travel and tourism component of the Facebook groups where the survey was disseminated, it is assumed that participants represent a sample of people who travel and use mobile technology. Therefore, data analysis focused only on travellers using mobile technology.

Before the field work, the questionnaires were pretested with five travellers to improve the questions' sequence, perception and understanding. As a result, the order and sequencing of the questions were modified, so the sentence construction improved the clarity of the statement.

3.1 Sample Procedure and Data Collection

The study focused on Portuguese tourists who use or have already used mobile travel applications at one or more stages. Considering that there are no national data on the number of tourists using mobile travel applications, the sample was defined based on the total number of Portuguese using smartphones, according to the Marktest telecommunications barometer (Grupo Marktest, 2018). The Marktest telecommunications barometer counted 6.5 million individuals who own a smartphone (as of July 2017). Male individuals have the highest smartphone penetration rate, along with young people (96.6% between ages 15 and 24) and the upper and middle classes (91.4%).

Based on the population identified, the objective was to work with a 95% confidence level and with a margin of error of 9.34 concerning the population, defining a sample collected from the 110 respondents.

The method of data collection was the survey through a questionnaire distributed and answered online. The questionnaire was developed through the Google Forms platform and shared in several Facebook groups related to tourism and travel. The selection of respondents was by convenience, as they were recruited by asking people who are present in specific tourism groups on Facebook; therefore it is not guaranteed that those who are not in the Facebook groups have an equal opportunity to respond. The questionnaire had closed-ended questions, limited to the answer options presented, and questions sorted according to a Likert scale with five options.

Considering the intention to assess the perception and attitudes of the Portuguese population regarding the use of MTAs, the questionnaire was structured in four sections: (1) knowledge and use, (2) motivations for use, (3) moments of use, and (4) degree of satisfaction, impact on experience, and value.

Some questions were designed to collect demographic data from respondents and two exclusion questions were included to select only people who had undertaken a leisure trip and used MTAs.

4 Results

The sample consists of 110 participants. The distribution of gender was 87.3% female and 12.7% male respondents. The average age of the respondents was 37.78 years (median = 37.50), ranging from 22 to 73 years. The primary respondent's generation is therefore Generation X (ages 39–54). Regarding education level, 50.9% of respondents had a degree, and 32.7% had a master's degree.

The majority of respondents (92%) made at least one trip per year: 34.5% travelled once, 57.3% travelled two to five times, and 8.3% travelled more than five times. The most frequent number of trips, which can be checked by mode value (Mo = 2), is the range 2–5 trips per year. Ninety-seven out of 110 respondents (88.2%) knew some MTAs, and only four (2.7%) had never used any MTA. Of the 93 respondents who used MTAs, 20 (18.2%) had already used them between one and five times, 22 (20.0%) had already used them between five and ten times, and 51 (46.0%) claimed to have used them more than ten times (considering all the trips they had made since using MTAs).

The MTA types most recognised by respondents are flight and accommodation reservations (26%), restaurant recommendations and reservations (16%), ticket purchasing and entertainment (14%), and travel guides (11%). The ones that the respondents identified as the ones they use the most are accommodation reservations (25%), flight purchases (19%), flight check-in (18%), maps and navigation (13%), and critics and reviews (10%).

4.1 Main Motivations for Using MTAs

The main motivations for using travel apps (Table 1) are their performance (28%), satisfaction (23%), and perceived value (21%). These findings are also in line with

previous studies, which stated that the needs of travellers concerning the use of smartphones are closely related to perceived utility; that is, convenience, effectiveness, and productivity (Kim et al., 2008; Okazaki et al., 2015; Wang et al., 2014).

4.2 Main Benefits of MTAs

The main benefits of MTAs (Table 2) are ubiquity, or access from any location (23%), immediate availability (21%), access to information (20%), and convenience (15%). Another benefit is organisation and planning capacity (12%), which validates the motivations identified, as it is possible to conclude that travellers seek solutions with immediate and functional responses, as well as facilitating the tasks associated with the planning phase that can be done during the trip, such as finding a restaurant or purchasing entrance to a monument or attraction.

Table 1: Main motivations for the use of travel apps.

Motivations	Percentage
Performance	28%
Satisfaction	23%
Utility/perceived value	21%
Habit	10%
Price	7%
Rating of the app	6%
Management expectations	3%
Social value (everyone I know uses)	2%
Emotional value (feelings)	0%

Table 2: Main benefits associated with travel apps.

Benefits	Percentage
Ubiquity	23%
Immediate availability	20%
Access to information	20%
Convenience	15%
Organisation/capacity planning	12%
Price	6%
Pragmatism	3%
Personalisation	1%
Innovation	0%
Entertainment	0%
Security	0%

4.3 MTA Impact on the Tourist Experience

The majority of respondents recognised the impact of using MTAs on the travel experience (Table 3). Of the respondents, 60.3% (has changed little, 4.5%; amended, 41.4%; it has changed a lot, 14.4%) admitted that it affected the experience somehow, and only 23.4% believed it had no impact.

Table 4 shows that the impact on the travel experience comes from the fact that the MTAs allow for better planning during the trip (27%) and greater convenience (18%). Also noteworthy are the security and connectivity factors, both with 11%. These figures confirm data from previous surveys that concluded that MTAs foster greater connectivity and access to information and increase the sense of security, ensuring more fun, less uncertainty, and less stress (Wang et al., 2014). On the other hand, they offer tourists the opportunity to enhance the experience of a destination by providing relevant and personalised information anytime and anywhere (Kramer et al., 2007).

These results are consistent with the issues raised by Wang et al. (2016): Tourists assume that smartphones have brought changes in the activities and emotions experienced, especially in the use of social apps. They allow users to maintain contact with their friends and families

Table 3: Influence of the MTAs on the travel experience.

Influence	Percentage
Has not changed	0.9%
Has changed little	4.5%
It had no impact	22.5%
Amended	41.4%
It has changed a lot	14.4%
Does not use MTAs	16.2%

Table 4: How it affected the experience.

Influence	Percentage
Planning during trip	27%
More convenience	18%
Greater security	11%
Greater connectivity	11%
Greater productivity	9%
Greater quality	9%
Less previous planning	6%
Sharing experiences during travel	5%
More fun	4%

and increase levels of security. Another reason that leads tourists to use smartphones and directly affects their travel experience is the use of information services, such as Google Maps and Yelp, where mobile platforms are perceived as equivalent or even better performing than their website counterparts. This is also consistent with previous literature regarding the impact of technology and the potential that smartphones have to significantly influence the tourist experience (Yu et al., 2018). Neuhofer et al. (2013) indicated that over the past few years, experiences have considerably changed. Technology is an important factor in co-creating modern experiences in tourism and hospitality and a central element in adding a more personal touch, increasing interactions and engagement, building more meaningful relationships, and adding value to the global experience. For example, smartphones enable the tourism experience and the connection with locals, which offers tourists the opportunity to have meaningful and authentic experiences (Huang et al., 2017; Wang et al., 2012).

Mobile technology provides tools in a proactive, contextual, and personalised way, influencing tourist behaviour and improving their experiences (Tussyadiah & Wang, 2016). Thus, they play an essential role in helping tourists to manage their travel experiences more efficiently and effectively (Yu et al., 2018).

5 Conclusions

This exploratory study has examined how travel apps can affect travel experiences. This paper revealed that mobile phones are changing the tourist landscape, seeking to meet the evolving needs of tourists, who require high-speed access to relevant information and multimedia content (de Pablos et al., 2011). New travellers are their own travel agents, looking for individualised experiences, gaining access to services and information through their smartphones, anywhere and anytime (Werthner & Ricci, 2004). Mobile applications have changed the way tourists live and experience a destination (de Pablos et al., 2011). In this context, MTAs assume a determining role.

Mobile tourism is a relatively new trend (Kenteris et al., 2009) but it has paved the way for a wide range of services at all stages of the journey, keeping tourists informed and more involved. Smartphones have become the newest phenomenon in the tourism sector. New tourism services based on new technologies allow tourists greater flexibility (Oh et al., 2009) and they can manage their trips autonomously.

This paper also revealed that this evolution has taken place over the space of a decade. It is therefore expected that the same speed of development will be maintained in the future. The results highlight the importance and need to study the evolution of the travel apps' influence on the tourist experience and the importance of understanding the real use of MTAs by their users to understand the impact they are having on travel and tourism. For tourism, the MTA business is a real challenge because it is fundamental to keep up with the pace of customers' needs and desires.

Based on the study conclusions and the references mentioned previously, the following propositions were developed.

1. The main motivations for using travel apps are convenience, effectiveness, and productivity.
2. The main benefits of using travel apps are ubiquity, access to information, and convenience.
3. Travel apps are changing the tourism experience.
4. Smartphones have the potential to change tourist experiences by fostering greater connectivity and access to information and increasing users' sense of security.

5.1 Opportunities for further research

This study has several useful implications for researchers, application developers, travel organisations, and governments when rendering MTA services and disseminating information to their potential consumers. On the other hand, it also contributes to the growing literature on the MTA usage impact on tourism.

Several limitations warrant future research, however. First, this study was conducted before the COVID-19 pandemic, changing how people travel and, in many ways, the way people engage with new technologies. Thus, future research could consider the situation before and after COVID-19.

Also, this paper is focused mainly on issues related to the adoption of the technology and the impact on tourist experience. In carrying out a future study, it is suggested to consolidate, through the analysis in situ, the utilisation of travel apps and its implications for the travel experience locally. Future research should also seek to understand the interconnections between the interests of the tourism industry and the needs of customers, tourists, or tourism companies and organisations, an area of knowl-

edge where experiences related to MTA will be increasingly multifaceted.

Bionotes

Sónia Dias holds a master's degree in strategic management of tourism destinations from the Estoril Higher Institute for Tourism and Hotel Studies, and she is a researcher in the area of tourism, with published works and prsentations in international congresses. She has experience in marketing and communication, having worked for dozens of brands, small and medium-sized enterprises, and start-ups, from different sectors such as tourism, mass consumption, and retail in recent years. Currently she is the managing partner of a digital marketing agency.

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