Technology as a Catalyst of Change: Enablers and Barriers of the Tourist Experience and Their Consequences

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Abstract Information and communication technologies (ICTs) have had a major impact on the way people experience travel. Tourism research and management have been increasingly interested in exploring the role of ICTs as a potential catalyst of change that enhances tourist experiences. While generic technology adoption barriers are known, there is little knowledge about the specific technological enablers and barriers that determine the potential enhancement of tourist experiences. This paper thus addresses a timely matter as it identifies the key enablers and barriers as well as their implied consequences that shape the enhancement of tourist experiences. Through an exploratory qualitative approach, this study contributes by developing a two-factor model of experience enablers and barriers. Theoretical implications are discussed and strategic implications for tourism management and policy are provided on what actions need to be taken to convert existing ICTs insufficiencies into potential experience enablers.

Keywords Tourist experience • ICTs • Enablers • Barriers • Experience management and policy

1 Introduction

In recent years ICTs have caused a massive impact by changing not only consumer society and various industries, but also by transforming the nature of travel and tourist experiences. For businesses it has become a central endeavour to exploit the potential of technology and instrumentalise it for the creation of meaningful tourist experiences (McCabe et al. 2012; Wang et al. 2012). With the proliferation of ICTs, social platforms, mobile devices, the opportunities of supporting tourist activities, providing and exchanging information and solving need situations have become amplified. A large body of work has drawn attention to the impact, role and value of

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ICTs in the tourist experience (Kim and Tussyadiah 2013; Neuhofer et al. 2013; Tussyadiah 2014). Most recently, studies have advanced knowledge about the adoption and role of smartphones in the tourist experience (Wang et al. 2014a) and the use of smartphones in relation to everyday life (Wang et al. 2014b). As a common tenet, studies recognise numerous benefits of ICTs, as to enrich communications, gather information, share, co-construct and augmented experiences (Tussyadiah and Fesenmaier 2009; Wang et al. 2012; Yovcheva et al. 2013). What however appears to receive less attention are the existing ICTs insufficiencies that can provide potential barriers limiting the creation and enhancement of tourist experiences. Such barriers can include restrictions in telecommunication bandwidth, Internet accessibility, hardware and software functionality, equipment, usage and connection costs as well as privacy, security and legal concerns (Buhalis and Jun 2011; Eriksson 2014). Within technology adoption literature, barriers to the adoption of mobile technologies have been widely discussed (Pagani 2004; Pihlström 2008). For instance, Eriksson (2014) investigated barriers to mobile travel services and identified entry and usage costs as the factors that significantly affect usage behaviour. While these studies have uncovered barriers of mobile technologies in tourism, an exploration of specific enablers and barriers within the tourist experience is however missing. This paper thus bridges the gap and identifies the technological *enablers* that drive and foster, and *barriers* that limit the creation of tourist experiences. It also reveals the consequences caused by barriers. The paper first reviews the recent advances of ICTs in tourism and the tourist experience. The exploratory qualitative in-depth enquiry is outlined, before revealing findings and presenting the main contribution to knowledge, the two-factor experience enabler and barrier model. Last, theoretical, managerial and wider policy implications are discussed.

2 Theoretical Background

2.1 Technology as a Catalyst of Change in Tourism

In the twenty-first century society has undergone a number of fundamental changes. One of the most far-reaching transformations has been fostered by the proliferation of ICTs in everyday life and travel (Wang et al. 2014b). ICTs have long constituted a major driver for change that has altered operations, processes and structures of tourism organisations and become a central instrument for innovation (Buhalis and Law 2008; Hjalager 2010; Stamboulis and Skayannis 2003). Beyond transforming the structural dimensions of tourism, ICTs have been crucial to foster an increasing independence of consumers (Buhalis and Jun 2011), by empowering them to access and gather information, book as well as dynamically share and interact through social media online (Fotis et al. 2011; Sigala 2012; Xiang 2011; Xiang and Gretzel 2010). The recent advances in the mobile sector have brought an additional shift towards the mobility of services, people and the mobility of technology (Gretzel

and Jamal 2009). This shift has fostered a change from static retrieval to dynamic access to information and services in the tourist experience on the move (Tussyadiah and Zach 2011; Wang et al. 2012).

2.2 The Implementation of ICTs in the Tourist Experiences

Several studies have portrayed ICTs as central tools to connect and enable tourist experiences (Neuhofer et al. 2012; Tussyadiah and Fesenmaier 2009), promote increased social engagement and involve consumers to co-create experiences (McCabe et al. 2012; Sfandla and Björk 2013; Sigala 2012). Mobile technologies have been explored as key instruments amplifying these opportunities on the move (Wang et al. 2014a, b). Recent work has underlined the value of smartphone applications to gather information, enrich and construct experiences (Wang et al. 2012) and the use of social networks to support and share on-trip experiences (Kim and Tussyadiah 2013). Moreover, several studies have been leading the knowledge frontier in exploring how augmented reality applications (Yovcheva et al. 2013) and wearable computing devices through Google Glass (Tussyadiah 2014) can augment the physical surroundings and enhance tourist experiences. Despite these opportunities, several underlying issues of new technologies in the effective delivery of tourist experiences have been recognised (Eriksson 2014; Linaza et al. 2012). For instance, Yovcheva et al. (2013) highlight that the use of mobile applications can result in a positive or negative experience change, while Lamsfus et al. (2013) report that context in smartphone applications continues to be a challenging task that is yet to be addressed. As technologies are developing fast, issues in terms of content, design, functionality and usability represent main concerns (Yovcheva et al. 2013). It is therefore critical to capture and address existing issues that, at present, might hinder tourists' abilities to fully exploit the advantages of ICTs within the creation of their experiences.

3 Methodology

3.1 Data Collection

To identify the technological enablers, barriers and consequences of the tourist experience, an exploratory qualitative enquiry was employed by means of semi-structured in-depth interviews. The interviews were guided by an instrument that included a set of pre-defined questions, while allowing for the necessary flexibility to account for participant narratives individually. To extract the consumer perspective on the issue under investigation, a range of questions were asked, as outlined in Table 1. A purposive sampling approach was used, which represents an effective

Table 1 Sample questions experience enablers and barriers

What types of ICTs do you use in the three stages of travel for your experience?
What are the kind activities and situations for which you adopt ICTs in your tourist experience?
If any, what are the main advantages of using ICTs for your tourist experience?
If any, what are the main disadvantages of ICTs for your tourist experience?
Compared to tourist experiences without ICTs, can you describe how technology has positively changed/enhanced your experience?
Besides ICTs improving your experience, have you experienced any cases of ICTs negatively affecting/diminishing your experience?

method when a specific set of pre-defined criteria for selecting participants is required (Bryman 2008). Participants having used ICTs for tourist experiences had to be identified, as only technology users are able to report such experiences (Pihlström 2008). Two criteria were defined accordingly, including (a) technology-savvy consumers (daily social media users and smartphone owners) and (b) ICTs use for travel within the last 12 months to ensure the recollection of experiences. To allow for a profound exploration of narratives, a total of 15 in-depth interviews were conducted in May 2013 in the UK. All interviews were voice-recorded and manually transcribed verbatim to guarantee a rigorous coding and analysis process (Rubin and Rubin 2004). The interviews lasted an average of 1.5 h, leading to a total of 20.96 h of audio-recordings and 286 pages of qualitative transcription.

3.2 Data Analysis and Sample Profile

For the data analysis, Miles and Huberman (1994) approach of qualitative thematic analysis was adopted and supported by the analysis software QSR NVivo 10 for subsequent coding. A six-stage coding process was performed, encompassing a-priori framework coding (1), coding-on and hierarchy development (2), distilling, sorting and meta-coding coding (3), clustering and theme development (4), refining and validating themes (5) and theory building at last (6). By doing so, a rigorous coding procedure was followed, which allowed not only for reflexivity and prolonged engagement with the data, but also ensured a transparent and replicable approach to enhance the reliability of the research (Denzin and Lincoln 1994). Following the assumptions embedded within a qualitative paradigm, the study does not make claims of generalisability to the wider population, but rather seeks for transferability to similar contexts of the study (Holloway and Brown 2012). Table 2 presents the socio-demographic sample profile, which reflects a broad range of demographic factors for a balance of gender, age, education levels and nationalities.

Table 2 Socio-demographic sample profile

Nr.	Pseudonym	Gender	Nationality	Education	Age	Smartphone
1	Laura	Female	Dutch	A-Levels	20–29	Samsung
2	Jane	Female	German	Postgraduate	20–29	iPhone
3	Martha	Female	German	Undergraduate	20–29	iPod/iPhone
4	Veronica	Female	Chinese	Postgraduate	40–49	iPhone
5	Sam	Male	British	A-Levels	20–29	Samsung
6	Paul	Male	British	Postgraduate	60–69	iPhone
7	John	Male	Indonesian	Postgraduate	30–39	Blackberry
8	Sandra	Female	Greek	Postgraduate	20–39	HTC
9	Teresa	Female	Indonesian	Undergraduate	20–39	HTC
10	Andrew	Male	Pakistan	Postgraduate	30–39	Samsung
11	Dan	Male	Greek	Postgraduate	40–49	Blackberry
12	Aaron	Male	Italian	Postgraduate	30–39	iPhone
13	Steve	Male	Belarus	Postgraduate	30–39	Samsung
14	Rachel	Female	German	Postgraduate	20–29	Blackberry
15	Hanna	Female	Vietnamese	Postgraduate	30–39	iPhone

4 Findings

In exploring the possibilities and boundaries of enhancing tourist experiences through ICTs, understanding the underlying technological enablers and barriers is critical. The findings of the study are divided into three main sections. First, the technological *enablers* are presented, highlighting the key features of ICTs, which, when provided, foster and enable tourists to enhance their tourist experiences. The second part turns to revealing the technological barriers that currently represent a major concern in hindering the enhancement of tourist experiences. The third part highlights the consequences of these barriers, before synthesising the findings and developing the main contribution of the study, a two-factor experience enabler and barrier model.

4.1 Technological Enablers of the Tourist Experience

The findings reveal three main enablers, which can be divided into (1) *software*, (2) *telecommunication and infrastructure* and (3) *usage and usability* enablers.

Software Enablers This factor determines the functionalities of applications critical for experience facilitation. Tourists report the need for software to allow for accessing, gathering and managing a range of tourist-related information. Participants highlight that experiences significantly improve if applications allow for push information (automatically sent to the user without having to look for it)

and the personalisable information (filtered based on pre-defined preferences), such as interests, activities and points of interests. The value of push information is that it not only leads to seemingly more effortless but also to unplanned, but personally meaningful experiences:

> "NOW the information finds me... instead of you looking for the information the information is looking for you." (Dan); "Something that is interesting there and I didn't know that and I didn't get it from the map. Maybe for example if there is a drum shop, like I like music, and I can't get that from the map." (Sam)

With respect to content, tourists require a wide range of information based on their specific context and needs. A commonly mentioned enabler regards the functionality to access a variety of information in one place. Rather than using multiple devices, participants value gathering information from one device. Applications need to provide consumer reviews, directions, in-depth and location-relevant information on sights or places, or push and pull information based on current needs. The findings also indicate intelligent learning as a key feature to enable hassle-free and pleasant experiences. Participants report that the learning of personal preferences and the recognition of consumption patterns are highly useful to ease travel. Tourists welcome relevant suggestions that are automatically generated based on their current location and context. Moreover participants underline the importance of speed and one-click availability. Often tourists encounter situations, in which they need to have fast access to information. Thereby, speedy task completion was noted as a crucial feature to avoid distractions in the experience and address instantaneous needs on the go. One participant recalls how such a functionality has enhanced her experience:

> I can open the application and do one click and I'm in my flight because through this application I'm already checked in so with one click I can find out about my flight whereas with my computer I need to first start, then I need to start the internet explorer and then I need to find the website, then I need to log in, so it is so much longer. (Martha)

Telecommunication and Infrastructure Enablers The second factor regards the *telecommunication industry and infrastructure provision* as an essential prerequisite, that not only has a major impact on the potential enhancement, but most importantly, on the enablement of a range of tourist experiences. In fact, tourists report that the availability of 3G and 4G coverage, affordable and speedy Internet access, affordable roaming abroad and the anticipated elimination of roaming are key determinants that shape to what extent technology-enhanced experiences become possible. Moreover, the availability of Wi-Fi hotspots and free Wi-Fi provided by the tourism service providers (restaurants, bars, hotels, public transport), play a crucial role in shaping ICTs use, requiring Internet access, on the move. Only if these features are provided, tourists can undertake specific activities, such as connecting to networks, sharing experiences in real-time, getting directions and accessing information. One participant exemplifies the value of Wi-Fi and the implied ease of gathering information:

> For example if I'm in London and it is extremely good covered... so I jump from one bar to another to try to connect to the Cloud to try to find information. (Aaron)

Usage and Usability Enablers The third experience enabler regards *usage*, *ease of use*, *usability and usefulness*, highlighted as critical for tourists to use ICTs during travel. Participants express the need for ease of access to information, the ease of connecting to and participating in social networks, the ease of use of applications and devices as well as the pleasure and joy of using them. Easy usability was thereby reported as a critical factor to allow tourists a speedy and logical task performance, without investing extensive time during travel to figure out how travel applications work. The usefulness of applications has additionally been reported as essential to positively enhance the tourist experience. In fact, if ICTs applications convey high usefulness, they change the tourist experience by replacing traditional offline resources.

> Technology is more convenient because I click, I type and I will get the information instantly. So this is still my first choice, but of course I can still ask the people, stranger A, stranger B or just to go to ask friends, you know call for example. But it will be a lots of trouble. (Veronica)

4.2 Technological Barriers to the Tourist Experience

Technological barriers can be divided into four main factors, including (1) *hardware*, (2) *software*, (3) *telecommunication and infrastructure* and (4) *usage difficulties*.

Hardware Barriers This barrier describes the hardware issues that keep tourists from using devices during travel. The most dominant issues reported regard the availability of appropriate devices, the use of out-dated technology, battery deficiencies and battery-consuming travel applications. Moreover, the device and screen size has been noted as problematic on both, the lower (too small screens to read information) and the higher end (too large screens and devices to carry around during travel) of the spectrum. For tourists on the move, it has been reported as exhaustive to carry large and heavy smartphones, tablets together with cameras needed for travel. Participants thus emphasise the need for all-in-one devices with a range of functionalities to use during travel. Participants report that battery issues moreover limit their possibilities to use the applications for a long duration, which has been described as particularly problematic when exploring a destination for a whole day or going camping, in which cases tourists have to refrain from using applications to maintain battery life:

> "I like the phone and the possibility because it is very light but the problem is that I don't like really typing on the screen." (Steve); "It's an older phone, which means it is slow... I can download apps but... then my phone won't last even for a day." (Laura)

Software Barriers Software limitations represent a further key barrier factor that can significantly limit tourist experiences. Participants report that applications are often too slow, have incorrect and inconsistent functionalities or pose information

and content problems. Narratives indicate that tourists need to find information when walking through unknown places or visiting a place for the first time. The accurate functionality of maps is thereby essential to get tourists from point A to B. Frequently applications however fail to do so, which causes tourists to abandon ICTs and go back to traditional resources (asking people, road signs, paper maps). Additionally, tourists desire to use applications to gather information, but are commonly confronted with content hurdles. These are the overrepresentation of supplier-produced information (rather than user content and local insights), the problematic display of information (confusing, illogical content structures) and exaggerated frequencies of push notifications transmitted to the user. These software issues represent a major reason for tourists to stop using ICTs and rely on traditional resources instead.

> "An error and saying "oh no your location is actually not available". This is really distracting and then I shut down all the technology and go back to the roots." (Jane); "When you download a lot, sometimes it is so messy, so I also carry that book in case, like to find a list of restaurants." (Hannah)

Telecommunication and Infrastructure Barriers Issues in the telecommunication infrastructure represent a third main barrier, which relates to the lack of Internet connection abroad (international travel), lack of network (rural contexts, camping) and limitations of infrastructure in developing countries (network coverage, Internet availability). Additionally, the common lack of free Wi-Fi provision by tourism service providers (destinations, public transport, airports, hotels) are considerably limiting the opportunities to connect, access real-time information and share experience online. Participants also point to the significant financial burden associated with the need to purchase mobile Internet packages, pay for roaming abroad or acquire Wi-Fi access, which further restricts the extent to which tourists use ICTs during travel. The following two narratives provide insights into such scenarios:

> "There is the Eiffel Tower and then from the Louvre to Notre Dam, and then plan the route in the city. As there are roaming costs we didn't use it." (Jane); "I load it beforehand and then I just have to take it out. And I know where I have to go, so it is kind of just loading the map with the streets, in case I get lost." (Rachel)

Usage Barriers The fourth barrier identified concerns general *usage difficulties* of ICTs during travel. These primarily relate to the inefficiency of applications, slow speed of the system and difficulty of use, which can be problematic for tourists if support is needed from their devices. Participants also report limited usefulness of travel applications, due to the lack of offline availability (critical when Internet is unavailable), range of functionalities and reliable navigation. Usage issues also arise through the extensive use of mobile devices during travel, which can become obtrusive in activities. The physical effort required using ICTs has also been frequently mentioned as a major interference with the experience of places. For instance, carrying around multiple devices whilst on the move and pointing with technology imply usage barriers that limit the pleasure of adopting ICTs for tourist experience creation, as the following narratives underline:

> "There hasn't been something that I found that is EASY carry-able that I can take around with me to use." (Sam); "I mean with the mobile phone and you need to augment it. Holding in my hand, yeah that is annoying." (John)

Having identified four barriers, it appears that the creation of tourist experiences through ICTs is (still) characterised by major technological issues that have a significant effect on the extent to which ICTs can be effectively used for travel. The next section outlines the consequences caused by such experience barriers.

4.3 Barriers of the Tourist Experience and Their Consequences

Four consequences were identified, which are (1) *emotional responses*, (2) *missed opportunities and limitations*, (3) *behavioural consequences* and (4) *monetary burden*.

Emotional Responses The findings reveal that technological issues cause tourists to experience several adverse feelings, such as anger, disappointment and dissatisfaction as well as feelings of uncertainty and agitation. Anger is reported as a common response, which is manifested not only in annoyance and frustration with technology itself, but also in feeling upset because of the additional problems ICTs cause rather than resolve. Participants also report disappointment due to ICTs issues, including sadness (not being able to complete a specific task), emptiness (when ICTs are unavailable) and regret (not having access to information that could have been useful). Moreover, tourists feel dissatisfaction when accepting the state of the technological limitations (not having Internet, not being able to connect) boredom (wanting but unable to use ICTs) and unfulfilled expectations (having expected to be able to use ICTs). Additionally, a high level of uncertainty is reported, including the feeling of being in a crisis, feeling lost and scared, when not having technology as a backup in need situation and withdrawal, when ICTs or Internet access are not available to use. Two participants provide narratives capturing this consequence:

> "I was so upset when I was in China and I couldn't post any news because it was banned, IS banned, because it still is banned. I really want to 'I'm in China'." (John); "It's knowledge. The knowledge behind the history, diversity and the building of the city and the meaning of the city and the buildings. Yeah, so now we just don't know it, which is a pity I think." (Jane)

Missed Opportunities and Limitations The second consequence concerns the impacts ICTs cause on the tourist experience, primarily due to the lack of hardware availability and Internet connection. These include not being able to location-check-in online, share posts in real-time and being cut-off from conversations on social networking sites. The idea that ICTs limitations lead to potential missed opportunities constitutes one of the tourists' biggest concerns. Participants state that ICTs issues can cause missing chances of random social encounters (Facebook/Foursquare location check-ins), knowledge about the surroundings (points of

interests, small local hidden places), live offers and deals (real-time restaurants offers), and real time information (train/bus/flight delays and changes). The lack of ICTs thus not only implies limited opportunities for enhancement, but can effectively change the nature of experiences. One participant narrates a missed opportunity to meet people due to the lack of Wi-Fi.

> My friend was telling me that she was in the same restaurant but I was already at home. I had to check in at home because they told me that they don't give wifi to customers. (Martha)

Behavioural Consequences With technological barriers present, tourists not only show emotional responses but several emerge behavioural consequences. One of these is that tourists decrease their ICTs usage or stop it altogether by shifting to traditional sources. Participants state that if ICTs are restricted or absent, several alternatives come into play. These can include the use of desktop sources (instead of mobile technologies), reliance on free Wi-Fi hotspots (instead of mobile Internet access) and traditional offline information sources, such as asking locals, using guidebooks and paper maps (instead of mobile applications). Another behavioural outcome is complaint behaviour and non-visitation. The lack of Internet or free Wi-Fi forces tourists not only to complain, but also to avoid booking or even go as far as changing existing reservations. These findings provide evidence that ICTs barriers do not only negatively impact on the tourist experience, but also induce major consequences for tourism service providers if they fail to meet the desired technological standards. Recurring participant comments, reflecting such actions, were the following:

> "I'm a little bit concerned with roaming and how much it costs, so I will try to reduce how much I use data, so data-hungry applications, I wouldn't watch a video, unless I know that I'm in a wifi kind of situation." (Dan); "I would almost be inclined to swap hotels. I mean I feel that strongly about it. I think that it is now, a prerequisite really and I always check when I'm looking for a hotel, I always check that they have wifi, FREE wifi." (Paul)

Monetary Burden The final tangible consequence represents increased monetary implications caused by ICTs insufficiencies. These are primarily triggered by the lack of Internet availability provided, which results in roaming charges abroad, additional payments and the costly usage of alternative sources (buying a guidebook instead of using free travel applications). The frequently reported lack of Wi-Fi in public spaces, such as transport facilities, moreover causes an unavailability of real-time information access. This issue has been described as an indirect main cause for high costs as train or flight connections could be missed. Several participants highlight such issues:

> "They don't have free wifi at the airport and you have to pay for that so I'm not using that, so I can't use it YET." (Martha); "The only thing that is stopping me from using the iPhone a lot more abroad is the roaming charge. So it is the cost of it." (Paul)

Having examined the technological experience enablers, barriers and consequences, Fig. 1 provides a two-factor experience enabler-barrier model as the main theoretical contribution of this study. It conceptualises the identified enablers and barriers and their consequences on a horizontal and vertical axis. The horizontal

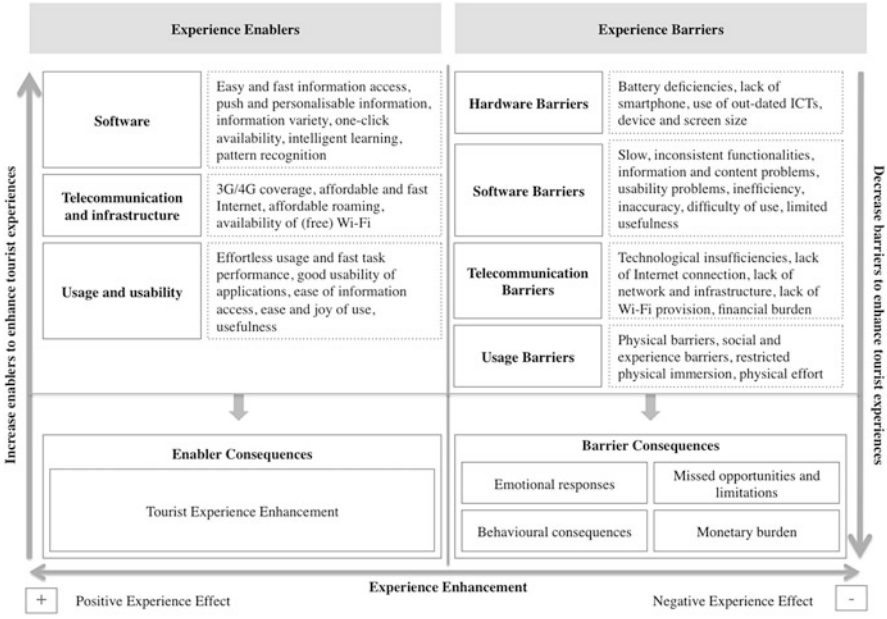

Fig. 1 Tourist experience enabler-barrier model

axis depicts potential experience enhancement, ranging from a ***positive experience effect*** (left side) due to enablers to a ***negative experience effect*** (right side) due to barriers. The vertical axis represents the actions needed to ***increase experience enablers*** and ***decrease experience barriers*** for experience enhancement respectively.

5 Conclusions and Implications

5.1 Theoretical Implications and Further Research

A large number of tourists use ICTs to ease travel, address need situations and enhance their overall experiences. The extent to which this process can occur is however primarily dependent on the possibilities that technology provides. While the impact of ICTs, as a catalyst of change, on the tourist experience has been widely acknowledged (Tussyadiah and Fesenmaier 2009; Wang et al. 2012), an understanding of the specific technological enablers and barriers has remained scarce. On theoretical grounds, this study thus makes a contribution to tourist experience and ICTs literature (Neuhofer et al. 2012; Tussyadiah and Fesenmaier 2009; Wang et al. 2014a, b), in that it has (a) identified the technological enablers, barriers and consequences of the tourist experience and (b) conceptualised these in an experience-barrier model for (c) a better understanding of how these factors

relate to experience enhancement respectively. Several limitations need to be acknowledged of this qualitative research, which has been carried out in the frame of a bigger study. Beyond uncovering the consumer perspective, a wider scope would be needed to assess supplier and stakeholder views to allow for a more holistic picture of how ICTs enablers and barriers are interdependent and can be conjointly managed from a multi-stakeholder perspective. Due to the qualitative nature and purposive sampling approach of this research, further quantitative research could build on this study. It could not only verify the findings and the developed model on a larger scale, but also test the correlation between specific enablers, barrier and consequence factors.

5.2 Managerial and Policy Implications

The findings offer several strategic implications for tourism management and policy. To better support tourists in the creation of their experiences, the facilitation of technological resources is critical on multiple levels. One of the primary roles of tourism providers is to build the '*experience resource environment*' that offers the necessary technological prerequisites that tourists need during the pre/during/post travel process. While tourists might use their own devices, it is the service providers who need to ensure that the technological capacities, through accessible services, applications and infrastructure are provided. If these prerequisites are fulfilled, important implications can unfold, as consumers can more effectively connect, engage, share and enjoy their experiences. By being interconnected through a plethora of platforms and devices, tourists can co-create their experiences, not only with their private social networks but also with service providers at large.

From a wider policy perspective, resource facilitation will be a key issue to be addressed in services contexts over the years to come. Services providers are only partially able to facilitate tourist experiences, but most importantly rely on the cooperation with a wider policy framework to provide the necessary macro-environments, infrastructural resources and facilities to allow for technology facilitation. For instance, while hoteliers and restaurants might provide eConcierges, social platforms and mobile solutions on a micro service-encounter level, DMOs are needed to provide Internet and Wi-Fi in public places and transport on a wider regional level. On a wider governmental scale, decision makers can influence the necessary laws, policies and regulations that determine the availability of technology networks and infrastructure. In fact, with recent considerations to regulate data roaming prices in the European Union, the use of mobile applications for travel can be predicted to increase in coming years (Eriksson 2014). Highlighting roaming issues, international phone and data charges and the consequent monetary burden as a core barrier of experience enhancement, one of the currently most critical issues regards the abolishment of these charges. This is a pressing concern that particularly affects international tourists who need and want to use their devices and applications abroad. It is thus the collaboration between multiple stakeholders

that plays a decisive role in a stronger facilitation of experiences on a service, destination and wider policy level.

References

Bryman, A. (2008). *Social research methods* (3rd ed.). New York, NY: Oxford University Press.

Buhalis, D., & Jun, S. H. (2011). E-tourism. *Contemporary tourism reviews*. Retrieved from http://www.goodfellowpublishers.com/free_files/fileEtourism.pdf

Buhalis, D., & Law, R. (2008). Progress in information technology and tourism management. 20 years on and 10 years after the internet. The state of eTourism research. *Tourism Management, 29*(4), 609–623.

Denzin, N. K., & Lincoln, Y. S. (1994). Introduction: Entering the field of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 1–17). Thousand Oaks, CA: Sage.

Eriksson, N. (2014). User categories of mobile travel services. *Journal of Hospitality and Tourism Technology, 5*(1), 17–30.

Fotis, J., Buhalis, D., & Rossides, N. (2011). Social media impact on holiday travel planning: The case of the Russian and the FSU markets. *International Journal of Online Marketing, 1*(4), 1–19.

Gretzel, U., & Jamal, T. (2009). Conceptualizing the creative tourist class: Technology, mobility, and tourism experiences. *Tourism Analysis, 14*(4), 471–481.

Hjalager, A.-M. (2010). A review of innovation research in tourism. *Tourism Management, 31*(1), 1–12.

Holloway, I., & Brown, L. (2012). *Essentials of a qualitative doctorate*. Walnut Creek: Left Coast Press.

Kim, J., & Tussyadiah, I. P. (2013). Social networking and social support in tourism experience: The moderating role of online self-presentation strategies. *Journal of Travel and Tourism Marketing, 30*(1), 78–92.

Lamsfus, C., Xiang, Z., Alzua-Sorzabal, A., & Martin, D. (2013). Conceptualizing context in an intelligent mobile environment in travel and tourism. In L. Cantoni & Z. Xiang (Eds.), *Information and communication technologies in tourism 2012* (pp. 1–11). Vienna: Springer.

Linaza, M., Marimon, D., Carrasco, P., Alvarez, C., Montesa, J., Aguilar, J., et al. (2012). Evaluation of mobile augmented reality applications for tourist destinations. In M. Fuchs, F. Ricci, & L. Cantoni (Eds.), *Information and communication technologies in tourism 2012* (pp. 260–271). Vienna: Springer.

McCabe, S., Sharples, M., & Foster, C. (2012, October). Stakeholder engagement in the design of scenarios of technology-enhanced tourism services. *Tourism Management Perspectives, 4*, 36–44.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). London: Sage.

Neuhofer, B., Buhalis, D., & Ladkin, A. (2012). Conceptualising technology enhanced destination experiences. *Journal of Destination Marketing and Management, 1*(1–2), 36–46.

Neuhofer, B., Buhalis, D., & Ladkin, A. (2013). A typology of technology-enhanced tourism experiences. *International Journal of Tourism Research*. doi:10.1002/jtr.1958.

Pagani, M. (2004). Determinants of adoption of third generation mobile multimedia services. *Journal of Interactive Marketing, 18*(3), 46–59.

Pihlström, M. (2008). *Perceived value of mobile service use and its consequences*. Doctoral Thesis, Swedish School of Economics and Business Administration, Helsinki, Finland.

Rubin, H. J., & Rubin, I. S. (2004). *Qualitative interviewing the art of hearing data*. London: Sage.

Sfandla, C., & Björk, P. (2013). Tourism experience network: Co-creation of experiences in interactive processes. *International Journal of Tourism Research, 15*(5), 495–506.

Sigala, M. (2012). Social networks and customer involvement in new service development (NSD): The case of www.mystarbucksidea.com. *International Journal of Contemporary Hospitality Management, 24*(7), 966–990.

Stamboulis, Y., & Skayannis, P. (2003). Innovation strategies and technology for experience-based tourism. *Tourism Management, 24*(1), 35–43.

Tussyadiah, I. (2014). *Expectation of travel experiences with wearable computing devices*. Paper presented at the ENTER2014, Dublin, Ireland.

Tussyadiah, I. P., & Fesenmaier, D. R. (2009). Mediating the tourist experiences: Access to places via shared videos. *Annals of Tourism Research, 36*(1), 24–40.

Tussyadiah, I. P., & Zach, F. J. (2011). The role of geo-based technology in place experiences. *Annals of Tourism Research, 39*(2), 780–800.

Wang, D., Park, S., & Fesenmaier, D. R. (2012). The role of smartphones in mediating the touristic experience. *Journal of Travel Research, 51*(4), 371–387.

Wang, D., Xiang, Z., & Fesenmaier, D. R. (2014a). Adapting to the mobile world: A model of smartphone use. *Annals of Tourism Research, 48*, 11–26.

Wang, D., Xiang, Z., & Fesenmaier, D. R. (2014b). Smartphone use in everyday life and travel. *Journal of Travel Research*. doi:10.1177/0047287514535847.

Xiang, Z. (2011). *Dynamic social media in online travel information search: A preliminary analysis*. Paper presented at the ENTER 2011, Innsbruck, Austria.

Xiang, Z., & Gretzel, U. (2010). Role of social media in online travel information search. *Tourism Management, 31*(2), 179–188.

Yovcheva, Z., Buhalis, D., & Gatzidis, C. (2013). Engineering augmented tourism experiences. In L. Cantoni & Z. Xiang (Eds.), *Information and communication technologies in tourism 2012* (pp. 24–35). Vienna: Springer.