THE ROLE OF DIGITAL INFORMATION SOURCES IN THE TRAVEL PLANNING PROCESS

Kristine Berzina, University of Latvia

Ilze Medne, University of Latvia

Abstract. World Economic Forum's Digital Transformation Initiative emphasizes that digitalisation in tourism is transforming the industry at an exponential rate across the globe. Current tourist behaviour patterns are changing not so much in travel habits as in the ways of finding and using travel information. These digitalisation changes are evident at all travel stages starting from dreaming about the future trip, planning and booking necessary tourism services, as well as sharing information and evaluating experiences. Tourist destination organisations and companies need to make strategic decisions, when sharing information, to reach the target audience in a smart and efficient way. The purpose of the study is to analyse the current use of travel web sites and applications in different travel stages. The survey was chosen as the quantitative research method based on five travel stages in order to study digital tourism informatin usage patterns. A personal interview survey was conducted in 2019 with 437 tourists. Main findings indicate the major differences in the use of digital information sources at the planning stage of travel between age groups and depending on the intensity of travel. The results of this study can be applied by marketing organisations and company managers to make better decisions when submitting travel information on web sites and applications.

Keywords: *applications, digital information, travel planning, travel sites, travel stages.*

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Introduction

Many international tourism organisations, including World Economic Forum's Digital Transformation Initiative (World Economic Forum, 2017), emphasize that digitalisation in tourism is transforming the industry at an exponential rate across the globe. Models of tourist behaviour are changing nowdays not so much in travel habits as they are chaging in the ways of finding and using travel information. Information technologies make travelling today more affordable, accessible and convenient than ever before. These digitalisation changes are evident at all travel stages starting from dreaming about the future trip, planning and booking necessary tourism services, as well as sharing information and evaluating experiences. Tourists worldwide now have an abundance of localised and personalised options for where to stay, what to do and how to get around. Destination marketing organisations (DMOs) and tourism companies, for their part, need to make strategic decisions when sharing information to reach the target audience in a smart and efficient way. Mobile digital platforms allow DMOs to communicate with visitors through all stages of their experience, from awareness to interest, from interest to booking, visiting and post-visit.

The aim of the study is to analyse the current use of travel web sites and applications in different travel stages. Two research questions were raised:

- What digital information resources do travelers most often use in the dreaming and planning stages of travel?
- How does the use of digital information resources differ in the dreaming and planning stages of a trip in different segments of travelers?

The survey was chosen as the quantitative research method based on Robertson travel stages (2015) in order to study digital tourism informatin usage patterns. A personal interview survey was conducted in 2019 with 437 tourists. Main findings indicate the major differences in the use of digital information sources at the planning stage of travel, crosstabulations are applied for different age groups. The results of this study can be applied by marketing organisations and company practitioners to make better decisions when submitting travel information on web sites and applications.

Literature review

Already since the 1980s, Information Communication Technologies have been changing the tourism industry. Starting with the development of Computer Reservation Systems and later on in the 1990s with the use of Internet, it transformed tourism industry and travellers' behaviour, created opportunities for the tourism industry and facilitated continuous technological innovations (Buhalis, 1998; Buhalis, Law, 2008, Amaro, Duarte, 2015, Xiang, Magnini, Fesenmaier, 2015, Navío-Marco, Ruiz-Gómez, Sevilla-Sevilla, 2018). The emergence of the electronic market gave opportunity for travellers to easily compare products, get lower prices, save planning and buying time (Heung, 2003), in the second half of the 1990s, the evolution of the online travel agencies (OTAs) revolutionised the whole travel purchase process (Heung, 2003, Amaro, Duarte, 2015). Web 2.0 further transformed tourism industry and included new tools such as meta search engines, fare aggregators, new virtual communities that

enable travellers to compare a wide range of offers and prices conveniently (Xiang, Wang, O'Leary, Fesenmaier, 2015). Online sales, as a part of total tourism market sales, are constantly increasing (Sabanoglu, 2019).

Because of the wide range of information available, searching on the internet has become an increasingly dominant source of information for travellers (Tjostheim, Tussyadiah, Hoem, 2007; Xiang, Gretzel, 2010; No, Kim, 2015; Gyódi, 2019), mobile travel applications are the 7th most downloaded application as more than half of global smartphone users have downloaded travel applications on their devices (GoodWorkLabs, 2016).

Scholars outline that research on information technology is lacking the analysis of tourist behavior related to information technology development (O'Connor, Murphy, 2004) and only over the last dacade has gained more pronounced attention from reserachers (Dastjerdi, Kaplan, e Silva, Nielsen, Pereira, 2019). Researchers also indicate that travellers often use a combination of different sources of information (Money, Crotts, 2003; Gursoy, Umbreit, 2004), therefore marketing specialists need to analyse not only the frequency of use of information sources, but also the particular combination of information sources used by travellers (Tjostheim, Tussyadiah, Hoem, 2007; Medne, Berzina, 2020).

New digital information sources require tourism companies to innovate the travel selling process. Amadeus (2017) indicates the main trends in tourism digitalisation - exponential increase of data and information related to traveller behaviour, their spending patterns; as well as the increasing scale of computing power, enabling assimilation and processing of complex data sources.

Current tourist behaviour patterns are changing not so much in travel habits as in the ways of finding and using travel information. Digital information channel usage is determined by the customer's attitude, compatibility and perceived risk (Duarte and Amaro 2015, Huang, Li, Zhang, Zhang, Yan, 2020). Diffusion and assimilation of the tourism information technology innovation depends both on the readiness of consumers as well as practitioners (Tan, Ooi, 2018).

As the infrastructure of mobile networks evolved, mobile applications emerged as a new industry (Hoehle and Venkatesh, 2015; Chang, Chou, Yeh, Tseng, 2016). Digital information sources can be reasearhed by analyzing browsing, reservation, booking and reviewing patterns in tourism web sites, in online web applications (Wen, 2012); in social media (Ayeh, Au, Law, 2013; Chathoth, Ungson, Altinay, Chan, Harrington, Okumus, 2014; Book and Tanford, 2015), in mobile technologies like mobile applications and devices (Chang et al., 2016; Lai, 2015; Okazaki and Hirose, 2009; Ukpabi and Karjaluoto, 2017). Individualized marketing and travel decisions influenced by social networks are potentially powerful from the tourist behavior perspective, and gain rapid increase in use due to their competitive costs for decision makers and wide access to the general public of travellers (Dastjerdi, Kaplan, e Silva, Nielsen, Pereira, 2019).

Previous tourist behavior studies indicate that web applications remain as important tools for traveler engagement, and that mobile applications are the preferred channel due to their speed and additional functionality (MacHale, 2018).

Use of digital information sources in the five stages of travel

Adoption of the Internet for travel planning has brought digital information channels to be the number one source of information in trip planning, even creating such a situation that travellers become intensely technology dependent in all stages of travel (Xiang, Magnini, Fesenmaier, 2015). As one of the approaches that can be applied for analyzing digital information source usage in different stages of travel is Google's "five stages of travel" (Robertson, 2015):

- dreaming,
- planning,
- booking,
- experiencing,
- sharing.

Every trip starts with a dream, future travellers spend significant time thinking about their vacations and consult seemingly endless sources to find information, therefore it is important for marketers to reach the dreamer through social media by encouraging their followers to share their travel stories and interact with their online community.

For tourism web sites and other internet information technology applications, it is important to not only attract the attention of travellers, but also to convert lookers into bookers (Robertson, 2015).

In the travel planning stage, searching for information about the travel destination can be considered a fundamental component because of the need to obtain a substantial amount of information for future travel plans (Xiang, Wang, O'Leary, Fesenmaier, 2015). Pre-trip planning helps travellers to make decisions and build expectations for their future trip (Gretzel, Fesenmaier, O'Leary, 2006). Research as a part of the travel planning

process serves as a lens that allows to understand a potentially wide range of travel behaviours. Scholars have been analysing Internet users' travel planning taking into account general demographic profiles, gender, educational level, etc. (Xiang, Wang, O'Leary, Fesenmaier, 2015). Previous research (for example Tan, Ooi, 2018) indicates that there are differences in mobile travel application usage between different age groups as well as genders.

During the experiencing stage, tourists use the Internet to obtain information on trip details, share their experiences and compare services related to the trip. Tourists browse photos, videos and blogs, use online maps, compare customer ratings and evaluation systems in order to organize trips or contribute experiences and recommendations. This way of using the Internet for travel planning currently is becoming generalized as Travel 2.0 (Parra-López, Bulchand-Gidumal, Gutiérrez-Taño, Díaz-Armas, 2011)

Social media can be used during all travel stages starting from dreaming about the future trip, planning and booking necessary tourism services, as well as sharing information and evaluating experiences (Sigala, Christou, Gretzel, 2012, Chung, Koo, 2015). Tourism marketers need to make strategic decisions, when sharing information, to reach the target audience in a smart and efficient way.

Research results and discussion

In order to empirically test the use of digital information channels in different stages of travel, the survey was conducted using questionnaires in English, and was supervised in person while respondents were filling it in. The questionnaire included three parts, starting with the questions about the use of devices during travel; continuing with the patterns of digital tourism information usage; and finishing with the profile of the respondent.

The objectives of the study are:

- to identify the digital information sources used by travelers in the dreaming and planning stages of the trip,
- to identify the differences in the usage of digital information sources among different traveler segments based on age and frequency of travel.

The primary data was obtained by surveying foreign tourists in Riga (Latvia) in September-October 2019. The survey was conducted by a team of interviewers, a total of 437 questionaires with non-transit international visitors from 54 countries were collected. Tourist segmentation was carried out not based on motivation, but by grouping them based on frequesncy of travel – travelling once a year, 2 to 3 times a year, more then 3 times a year. The respondent profile is presented in the table 1.

Table 1

Profile of respondents

		Frequency	%
Gender	Male	214	49%
	Female	223	51%
Age	Up to 30	263	60.6%
	31 to 50	133	30.6%
	More than 50	38	8.8%
Travel frequency	Once a year	79	18%
	2 to 3 times a year	186	42.6%
	More then 3 times a year	172	39.4%

Source: Tourist survey data 2019

The study found out which devices travelers typically use while traveling. The smartphone is the unquestionable leader, both overall among all respondents and in individual segments. Depending on the segment, 90% to 98% of respondents use their smartphone while traveling (Table 2). In all segments, except travelers over the age of 50, the second device most commonly used while traveling is the laptop (travelers over the age of 50 prefer tablets). Other devices used, while traveling, include smart watches, GPS navigation devices and headphones.

Table 2

Using digital devices while traveling (%)

Devices	All respondents	Age			Travel frequency		
		Up to 30	31 to 50	More than 50	Once a year	2 to 3 times a year	More than 3 times a year
Smartphone	95%	94.3%	97.7%	89.5%	96.2%	91.9%	97.7%
Laptop	26.8%	27%	29.3%	15.8%	27.8%	28.5%	23.8%
Tablet	14.6%	15.2%	12%	18.4%	15.2%	17.7%	11.6%
Other devices	4.1%	5.7%	1.5%	2.6%	3.8%	2.7%	5.8%
		Smartwatch	Head-phones	GPS navig. device	Smartwatch	Smart-watch, GPS navig. device	Smartwatch, GPS navig. Device, Headphones

Source: author's calculations based on tourist survey data 2019

The most common web sites and applications on the smartphone of the respondentare tourist accommodation reservation platform Booking.com, tourist accommodation sharing platform Airbnb, travel platform TripAdvisor, and digital map platform GoogleMaps. (Figure 1)
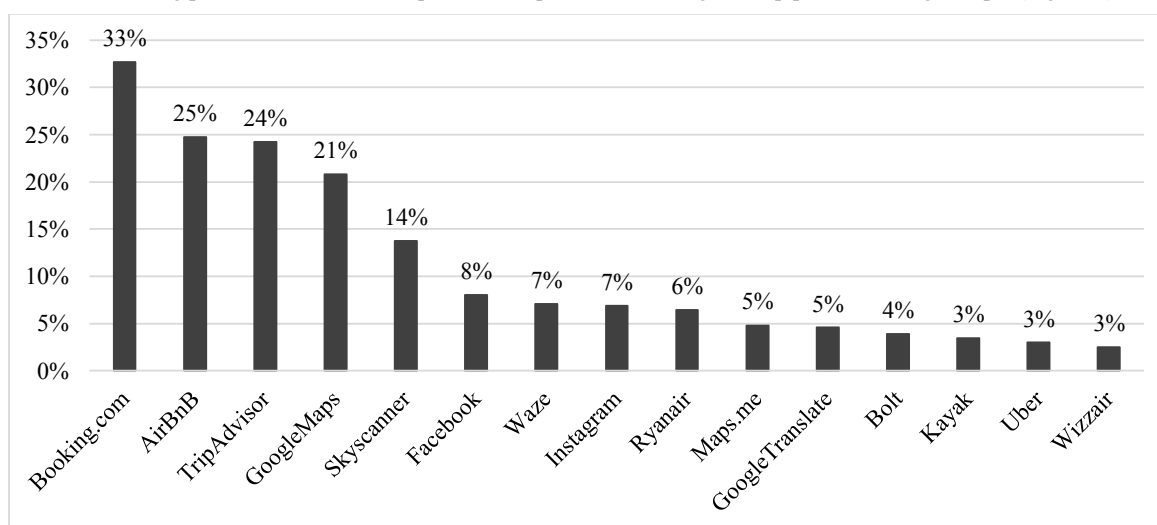
Source: author's construction based on tourist survey data 2019

Fig. 1. **The most common web sites and applications on the respondent's smartphone**

The number of travel related applications downloaded on smartphones ranges from 1 to 19. In total, 143 different applications were named in response to this survey.

Use of digital information sources in dreaming and planning stages of the trip

To determine a more detailed pattern of digital information source usage,n further research focus was directed towards the first three or pre-travel stages, respectuvely dreaming, planning, booking. Due to the similarity of sources, two of which are combined, thus the use of web sites and mobile applications in the 'dreaming' stage and the planning and booking stage were analyzed.

Several studies in recent years show that sites such as Facebook, YouTube, Instagram and TripAdvisor are the most used sites by travelers during trip planning, and Instagram is emerging as a popular social media site used not only for trip planning, but also when choosing the destination. (Matikiti-Manyevere, Kruger, 2019)

The results of this study confirm that digital information sources such as Instagram, TripAdvisor and Facebook are the most used s in the dreaming stage before the next foreign trip (Table 3). Younger travelers under 30 prefer the social networking platform Instagram, at the same time, travelers over the age of 30 prefer the world's largest travel platform TripAdvisor. During the pre-trip stage, the travel platform TripAdvisor is also used more frequently by travelers, who travel more often, among travelers, who travel less frequently, the social networking site Instagram is more popular. Travel blogs are less popular in all age groups, however, for travelers, who travel less frequently, travel blogs are used as inspirations as often as the travel platform TripAdvisor.

Table 3

Travel web sites and applications used by travelers when dreaming about the future trip to any foreign destination

	All respondents	Age			Travel frequency		
		Up to 30	31 to 50	More than 50	Once a year	2 to 3 times a year	More than 3 times a year
Instagram	59.3%	71.1%	49.6%	7.9%	67.1%	62.4%	53.5%
TripAdvisor	53.3%	50.6%	58.6%	55.3%	32.9%	52.2%	64%
Facebook	46.9%	47.1%	52.6%	23.7%	44.3%	49.5%	44.8%
Travel blogs	35%	38.8%	33.8%	15.8%	32.9%	34.9%	36%
	11.9%	11.4%	11.3%	18.4%	12.7%	10.8%	12.8%
Other		Google, Booking.com, Pinterest, Youtube	Google	Google, Booking.com	Pinterest, Google, Airbnb, Youtube	Google, Pinterest, Booking.com	Google, Pinterest

Source: author's calculations based on tourist survey data 2019

For all respondents in each of the segments, the social networking site Instagram is most commonly used during the 'dreaming' stage, and it is most often combined with another social networking site Facebook. (Table 4) In all of these segments, the travel platform TripAdvisor comes in second, while travel blogs rank third.

Table 4

The most used web sites and applications combined with the social networking site Instagram in 'dreaming' stage

(in individual segments)

Rank	All respondents n=259	Age group up to 30 n=187	Travel frequency: once a year n=53	Travel frequency: 2 – 3 times a year n=116
1	Facebook (56.8%)	Facebook (52.4%)	Facebook (50.9%)	Facebook (62.1%)
2	TripAdvisor (51%)	TripAdvisor (51.3%)	TripAdvisor (35.8%)	TripAdvisor (49.1%)
3	Travel blogs (39%)	Travel blogs (41.7%)	Travel blogs (32.1%)	Travel blogs (39.7%)

Source: author's calculations based on tourist survey data 2019

Respondents in the age groups over 30, who most often use the travel platform TripAdvisor during the pre-trip 'dreaming' stage, most often combine it with the social networking site Facebook. (Table 5) Respondents, who travel abroad more than 3 times a year, are more likely to combine TripAdvisor with Instagram.

Table 5

The most used web sites and applications combined with the travel platform TripAdvisor in 'dreaming' stage

(in individual segments)

Rank	Age group: 31 to 50 n=78	Age group: more than 50 n=21	Travel frequency: more than 3 times a year n=110
1	Facebook (50%)	Facebook (28.6%)	Instagram (51.8%)
2	Instagram (43.6%)	Travel blogs (9.5%)	Facebook (40%)
3	Travel blogs (32.1%)	Instagram (4.8%)	Travel blogs (33.6%)

Source: author's calculations based on tourist survey data 2019

Unlike the 'dreaming' stage, a variety of service booking platforms are used more often during the travel planning stage. (Table 6) The most popular digital platform by far for all age groups regardless of travel intensity is a travel metasearch engine for accommodation reservations Booking.com.

Airbnb, a sharing platform, has become increasingly popular among young people in recent years. This study also shows that Airbnb is the next most popular digital platform in the travel planning and booking stage, both in the age group under 30 and in the age group 31 to 50. Over the age of 50, the second most popular digital platform in this travel planning stage is travel platform TripAdvisor. Travel platform TripAdvisor is also more intensively used by frequent travelers. Unlike other digital information sites included in the study, only the flight search platform Skyscanner shows a high frequency of use similar to the other digital platforms mentioned above. However, this digital platform is not popular in the segment over 50, where high usage rates are indicated for web sites Hotels.com and Expedia.

Table 6

Web sites and applications used by travelers when planning and booking the future trip to any foreign destination

	All respondents	Age			Travel frequency		
		Up to 30	31 to 50	More than 50	Once a year	2 to 3 times a year	More than 3 times a year
Booking.com	78%	74.9%	86.5%	71.1%	62%	80.1%	82.6%
Airbnb	56.3%	62.7%	52.6%	28.9%	59.5%	54.3%	57%
TripAdvisor	54.7%	57.4%	52.6%	44.7%	35.4%	54.8%	63.4%
Skyscanner	45.3%	52.9%	39.8%	13.2%	30.4%	47.3%	50%
Hotels.com	20.6%	17.1%	23.3%	31.6%	17.7%	19.4%	22.7%
Kayak	13.3%	12.2%	17.3%	5.3%	12.7%	15.6%	11%
Trivago	13%	13.3%	12%	15.8%	5.1%	10.8%	19.8%
Expedia	12.4%	9.9%	12.8%	28.9%	7.6%	12.4%	14.5%
Lonely Planet	8.2%	6.5%	11.3%	10.5%	2.5%	6.5%	12.8
Priceline	6.4%	6.5%	6.8%	5.3%	7.6%	8.6%	3.5%
Yahoo!Travel	5.3%	5.3%	6.8%	0%	0%	6.5%	6.4%
Viator	4.3%	3%	6%	7.9%	2.5%	6.5%	2.9%
Orbitz	3.7%	4.2%	3%	2.6%	2.5%	4.8%	2.9%
Travelocity	3.2%	1.9%	3.8%	10.5%	3.8%	3.2%	2.9%
HomeAway	2.1%	1.1%	2.3%	7.9%	0%	3.2%	1.7%
Travel Zoo	1.8%	1.1%	3%	2.6%	1.3%	3.2%	0.6%
Hotwire	0.9%	0%	3%	0%	0%	0%	2.3%
Travel blogs	21.1%	22.4%	21.8%	10.5%	12.7%	26.9%	18.6%
Other	8.9%	9.5%	8.3%	7.9%	6.3%	10.8%	8.1%

Source: author's calculations based on tourist survey data 2019

For all age groups, as well as for those segments that travel abroad more than once a year, during the travel planning and booking stage the booking platform Booking.com is most often combined with a travel platform TripAdvisor. (Table 7) The second place is taken by the sharing platform Airbnb, Skyscanner ranks third in most segments. Unlike most segments, digital platform combinations are common to those who travel rarely and those over the age of 50.

Table 7

The most used web sites and applications combined with the booking platform Booking.com in planning and booking stage (in individual segments)

Rank	All respondents n=341	Age		
		up to 30 n=197	31 to 50 n=115	more than 50 n=27
1	TripAdvisor (57.2%)	TripAdvisor (60.4%)	TripAdvisor (53.9%)	TripAdvisor (51.9%)
2	Airbnb (54.5%)	Airbnb (59.9%)	Airbnb (53%)	Airbnb (25.9%)
3	Skyscanner (50.4%)	Skyscanner (59.4%)	Skyscanner (45.2%)	Hotels.com (22%) Expedia (22%)
Rank	Travel frequency			
	once a year n=49	2 – 3 times a year n=149	more than 3 times a year n=142	
1	Airbnb (59.2%)	TripAdvisor (57.7%)	TripAdvisor (65.5%)	
2	Skyscanner (34.7%)	Airbnb (52.3%)	Airbnb (54.9%)	
3	TripAdvisor (32.7%)	Skyscanner (51.7%)	Skyscanner (54.2%)	

Source: author's calculations based on tourist survey data 2019

It can be concluded that only 3 to 4 most popular web sites and applications dominate in all tourist segments, the only difference between segments is the way these 3 to 4 most popular web sites and applications are combined during the travel planning and booking stage.

Conclusions, proposals, recommendations

The following conclusions outline the most important research findings, as well as proposals and recommendations.

1. Survey results show that travelers in the pre-travel 'dreaming' stage tend to use only a small number of web sites and applicationss. Especially for small and medium size tourism companies, it is important the identify and focus only on the most important web sites and applications of their travel segment and not invest resources in a large number of digital information channels.

2. The results of the study showed that there are differences in the use of digital information sources in the pre-travel stages, both between age groups and depending on the frequency of travel. Younger travelers are more likely to use social networking and sharing platforms. Older

travelers are less likely to use social networking platforms, and are more likely to use more traditional information and booking platforms. This should be taken into account in the promotion and communication of tourism products to different age groups.

3. The weakness of the study is that it does not identify which devices (smartphones or PC) are used in the travel planning process (dreaming – planning – booking) to obtain digital information from web sites and carry out booking activities, so further refining research is needed to develop recommendations for tourism destination and business professionals, who develop digital information and reservation platforms.

4. The study should be continued to understand what changes may occur in the use of devices and digital information in pre-travel stages, as well as in the sharing of information during and after travel, evaluating the services used.

5. Based on the results of this study recommendations on decisionmaking process for marketing organisations and company managers have been developed. Tourist marketing organizations (DMOs) must strive to make the right strategic decisions on which digital platforms to use for disseminating information and communicating with potential visitors to reach the target audience in a smart and efficient way. DMOs must use mobile digital platforms to reach and communicate with their visitors during all stages of the journey.

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