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Uses and practices of digital services in a situation of mobility: evolution versus revolution? The case of the Champs Elysées

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ABSTRACT

The ongoing digital revolution is transforming economic production systems as well as our daily lives. If the expectancies in terms of innovation and opportunities are very high on the supply side, little is known about the effective uses of digital tools by customers and the impact on them and their consumption patterns, especially in a situation of mobility. Tourism for example has been tremendously impacted by the digital transformation. It has changed the way people plan, book and travel, but also the way the stakeholders communicate on their destination. But it is also expected that mobile and wireless technologies change the tourist experience of the destination. Mobile devices could induce change in tourist behaviour at the last minute *in situ*. By using an analysis in terms of services, we suggest that suppliers and tourists in territories coproduce M-tourism services. These services depend on the tourist behaviour but also on the supply, which is available in the destination. Drawing on a survey conducted on the Champs Elysées in Paris in 2018, this paper analyses how different types of people (tourists, residents, workers, etc.) are using these digital services.

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1. Introduction

The use of computer has progressively changed the whole tourism sector since 1950s (Buhalis 2020) and the subsequent development of digital tools has totally altered tourist practices (Buhalis and Law 2008; Gretzel, Fesenmaier, and O'Leary 2006; Law, Chu Chan, and Wang 2018). First, the digital transformation that occurred in this sector fundamentally changed the way people plan their travel. Online collaborative platforms (hospitality, transport, etc.) challenged the way tourism is produced and organized. Social media and customer reviews have had a powerful impact on tourist information and, through a knock-on effect, on the organization of production promotion and advertisement. More recently, mobile and wireless technologies

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(smartphones and connected tablets) have become ubiquitous, and with them the proliferation of apps designed to promote and enrich the tourist experience (from extra information to augmented reality). As Buhalis and Law pointed out already in 2008, these mobile technologies have opened new avenues for development through the potential they offer. Actors in the tourist sector are now developing such tools (virtual tours, virtual reality, etc.). New tools will also be created in the future, with the 5G technology (immersive visits, ultra-smooth augmented reality and virtual reality, etc.) (Chen et al. 2021). While there have been numerous studies on the spread of these technologies and the promise they offer on the supply side (see Chen et al. 2021 for a recent review), there has been little research on how they are actually used by tourists (Dorcic, Komsic, and Markovic 2019; Law, Chu Chan, and Wang 2018) especially *in situ*. In addition, tourist destinations are also places that are used by people, whether to live, for temporary activities or for work. What then are the respective activities of these populations? Do the mobile technology practices of tourists differ from those of the other users? How far does-it change the experience of any destination?

The purpose of this article is to analyse how these devices and the associated services (geolocation, augmented or overlap reality, instant messaging about destinations on social media, immediate feedback on experiences, etc.) are actually used by the different types of users. Do these uses have an impact on the activities pursued *in situ*? Which services are actually used?

By using an analysis in terms of services, we suggest that suppliers and tourists coproduce M-tourism services in the destination. These services depend on the tourist behaviour but also on the supply, which is available in the destination. Drawing on a survey conducted on the Champs Elysées in Paris with different types of users (tourists, residents, workers, etc.), the aim is more specifically to see whether these uses are specific to tourism or whether they are simply an extension of ordinary digital practices (Wang, Xiang, and Fesenmaier 2016).

In the first section, we provide a literature review on the topic. Then, we draw on the survey to identify how these tools are used and by whom. Finally, we show that if the digital devices, contrary to the expectations of the tourist operators, affect these practices they ultimately remain conventional, with regard to the Champs-Elysées where supplying conventional experiences seem to be already sufficient.

2. The issue of the appropriation of innovation linked to M tourism

2.1. Mobile revolution and tourism

Tourism is a sector in which many authors have looked at the impact of digital technology. It is widely recognized as one of the sectors in which the digital transformation has happened the fastest (McKinsey 2014). Profoundly affected since the 1990s (Buhalis and Law 2008), the tourism sector is also in many respects a pioneer (Cabrespines and Wargnie 2017) in the adoption of these new tools. In 2019, the leading use of online shopping worldwide was related to travel (including accommodation), with an estimated expenditure in that year of $750.7 billion.[1] This digital transformation grew with the development and spread of mobile technologies, where the smartphone can be considered, according to Liang et al. (2017) 'as the symbol of this technological superstorm'

(732). Applications, tablets and mobile Internet have become ubiquitous in our day-to-day experiences and practices. Since the early 2000s, therefore, much research has been done into the implications of these technologies for tourism and the hospitality industry (Dorcic, Komsic, and Markovic 2019; Kim and Law 2015; Law, Chu Chan, and Wang 2018; Liang et al. 2017). By facilitating access to the information needed before (organization, preparation, decision-making, purchases, etc.), during (connection, browsing, decision-making, local transactions) and after (sharing, documentation, re-experiencing, attachment) the travel, these technologies are transforming the tourist experience (Gretzel and Jamal 2009). The spontaneity and ubiquity they offer have changed our relations to time and space (Dickinson et al. 2014; Tussyadiah and Wang 2014). They make it possible to perform tasks on the spot that were previously done before or after: deciding here and now what activities to choose (with less advance planning), revising an itinerary, sharing experience, information and opinions in real time with friends and family on social media (Tussyadiah and Wang 2014; Wang, Xiang, and Fesenmaier 2016). They can also help to resolve problems and to increase our sense of security (Schroeder et al. 2013; Wang, Xiang, and Fesenmaier 2016). Armed with these technologies, tourists are better informed and more autonomous. They become coproducers of the content of their journeys, but also and increasingly, of their destinations (Dorcic, Komsic, and Markovic 2019; Molz 2014; Naramski and Herman 2020). As Sundbo, Rubalcaba, and Gallouj (2021) put forward in the case of creative and cultural industries 'experiences via social media and the internet, mobile phones, etc., have turned the power toward users'. As a result, their practices are evolving. Mourtazina (2019) explains, for example, that digital photography is today 'a form of being-in-the-world and of making the world around with these elements' (own translation, 3), and no longer just as a way of seeing it. On the other hand, these technologies (e.g. digital tourist guides) can also standardize or mark out the tourist experience in the sense that they can recommend 'the best location for capturing the best view with one's mobile phone' (Bideran and Fraysse 2015, 84).

While many articles look at the effects of these technologies on demand, and in particular at the factors that drive or inhibit it (Law, Chu Chan, and Wang 2018), it should be noted that not much is known on the way they are effectively used and how practices are impacted. In other words, have tourist practices deeply changed?

Visitors of a destination are using digital tools to plan the journey, to find a hotel and so on. But when they are in the destination, they can also use new services we call M-tourism services.

2.2. M-tourism, an analysis in terms of services

2.2.1. The characteristics-based definition of services

Besides their intangibility, what distinguishes services from goods is their relational character, i.e. the interaction between the provider and the user (Howells 2010).

Taking into account these specificities and using previous analysis (De Vries 2006; Gallouj and Weinstein 1997; Lancaster 1966), Gallouj and Savona (2010) present a theoretical representation of a service. A service can be presented as a mapping of interlinked vectors of characteristics: a vector of technical characteristics [T] behind the vector of services characteristics [Y] which describes the utilities provided to the user; a vector of

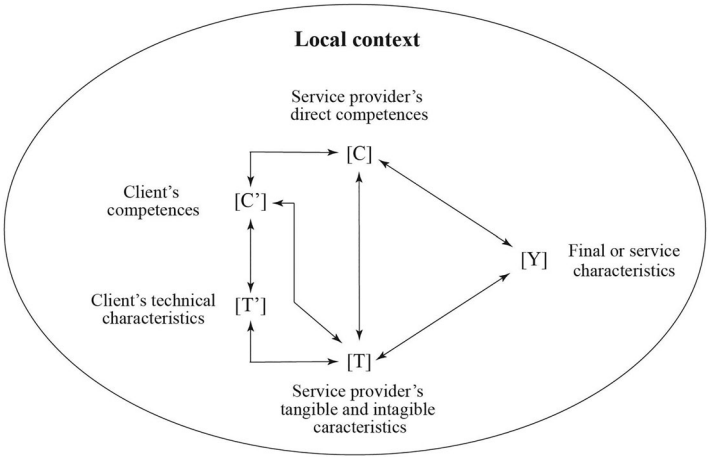

Figure 1. M tourism services. Source: the authors based on Gallouj and Savona (2010).

competencies of the provider(s) [C]; a vector of competencies of the client [C'] and lastly a vector of technical characteristics [T'] for the client (see Figure 1).

Like other services, M-tourism is coproduced by the interaction between the provider(s) and the client. In the case of M-tourism, various types of agents can handle the M-tourism services: the different developers of the applications, but also the city, a museum; etc.

For M-tourism, the technical characteristics [T] involve the technical components of the destination (infrastructures, museums, wifi terminal, etc.). The vector of final or services characteristics [Y] corresponds to distance communication, finding a restaurant, a theatre, etc. Each type of provider mobilizes its own vector of competencies [C]. Clients also need some competencies (a vector of competencies [C']) to coproduce M tourism services. Indeed, they must be able to use their smartphone or their tablets, to take a picture, to see the augmented reality provided by an application, etc. Moreover, as suggested by De Vries (2006), the co-production of the service also requires adding a vector of technical characteristics for the clients themselves [T']. Indeed, especially in the pervasive digital economy, clients will need to use their own technical tools in order to interact with the technical characteristics of the service provider(s). This is the case, for example, when clients are using their phone to book their museum tickets.

Last, because the service relationship characterizing M-tourism takes place in time and in places, M-tourism services, also heavily depend on the local contexts. M tourism services are coproduced in territories (Figure 1). Digitalization of practices and the servitization of tourism depends on the way the territory and its actors allow it.[2]

2.2.2. M tourism services as co-produced services in territories

As mentioned above, new services have been developed to be used on digital tools. The first concerns geolocation applications. These applications are already present in mobile terminals but must be activated by the user. They allow users to geolocate themselves in real time, to find a shop, a monument, a place and to define how to get there. Google Maps is the best-known example. The advantage of these applications is that they identify places to visit *in situ* and display additional information on the terminal more or less

automatically (location of nearby amenities, tourist sites, sometimes illustrated with photos, videos, etc.).

The second type corresponds to the QR codes (Quick Response Code) which appeared in Japan in 1994. This square pictogram gives access to information when scanned by a mobile terminal with a previously downloaded application. In the field of tourism, QR codes can be attached to a monument to indicate, for example, practical information (opening hours, prices, etc.).

The third type corresponds to dedicated applications offering specific information *in situ* (practical information, images, explanatory texts, user recommendations, etc.). For example, Foursquare allows users to recommend places (restaurants, hotels, shopping, nightlife, etc.) and in so doing, earn points to benefit discount or gift. Among dedicated applications, the augmented reality allows information to be displayed on a terminal, added to reality: for example, images of old buildings that no longer exist appear in their original location. Numerous museums have developed such applications since 2012 (Lesaffre, Watremez, and Flon 2014).

Finally, superimposed reality applications allow the viewing of videos or archive images, which can be considered as a second reality, superimposed on the reality you are looking at. Sky Boy, for example, adds virtual information on the image wherever it is available. Arromanches with the D-Day beach has also developed this type of application. After downloading the application and activating the geolocation, the tourist can, by pointing the terminal towards a spot indicated on the ground, be immersed in an action taking place where he is standing. The action can be to take a virtual tour of the place, to visit the place following a guide that appears on the screen … ; these applications are often supplied in several languages.

But are these new technical characteristics that are sometimes developed by providers used by the clients?

2.3. M tourism services in act

In 2013 Brittany's Regional Tourism Committee (CRT Bretagne – FNCRT 2013) published a study – the only one existing in France to our knowledge – on the uses of smartphones by European tourists. The study shows that tourist's practices are quite conventional in the region. Smartphones are mainly used to do actions previously done with a tourist guide, or, at other times, through tourist information services (obtain practical information, look for nearby restaurants, hotels, shops, etc.). The next most commonly used function was the sharing of opinions and photos on social media. This study also suggests that other uses, in particular those associated with applications, apart from GPS, seem not to have developed far. For example, QR code scanning is not much used (5% regularly and 14% fairly often). Likewise, virtual tours of cultural sites are used regularly by less than 5% of the respondents and fairly often by 18%. Only few tourist have used digital tools such as augmented and virtual reality. Nevertheless, it should be noted that at the time of the study, the level of smartphone ownership were lower than today, according to the CREDOC (French research centre for the study and observation of living conditions) (Albérola et al. 2017) and the supply in Brittany was also lower than today.

Moreover, the study focused on tourists only. It did not consider the other users of the destination. In order to understand the way mobile tools are effectively used *in situ* by

tourists and if these uses are specific to tourism, one should take into consideration the other users of the place and not only the tourists category.

The survey conducted on the Champs Elysées in Paris shed light on these issues.

3. Uses of mobile technologies on the Champs Elysées: background and methodology of the survey

3.1. Background of the survey

A survey was conducted in 2018[3] in order to identify how mobile devices are used on the Champs Elysées. Avenue des Champs Elysées is located in the 8th arrondissement of Paris, between Place de la Concorde and the Champs-Élysées-Marcel-Dassault roundabout where the Arc de Triomphe stands (see Figure 2).

Avenue des Champs Elysées is a major spot of Paris. According to the Paris Convention and Visitors Bureau,[4] it attracts 300,000 visitors per day. It is a prestigious area frequented by international high society since the 1900s (Aufrère 1950): The Champs Elysées is home to well-known shops (luxury boutiques, many flagship stores), restaurants, culture and leisure sites (cinema, theatre, exhibitions) as well as a plethora of events, official (a military parade to celebrate the National Day) and festive.

As it is increasingly the case in numerous large cities and at tourist sites, the avenue enjoys good digital coverage. In 2016, the Champs-Elysées Committee,[5] who is in charge of promoting the avenue installed a free and unlimited high-speed Wi-Fi connection via 58 Wi-Fi access points placed along the whole length of the avenue.[6]

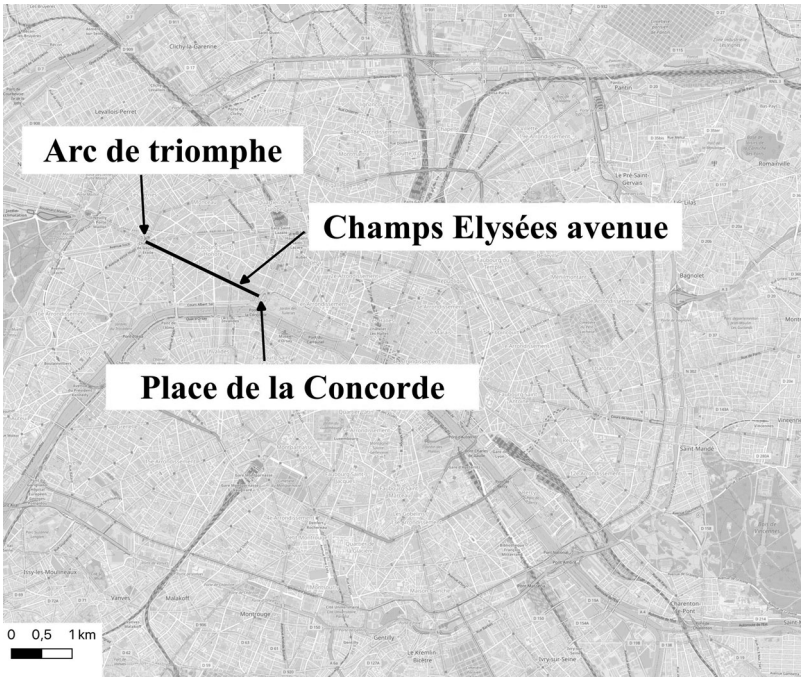

Figure 2. Location of avenue des Champs Elysées. Source: Google Maps modified by the authors.

However, few applications specifically linked with the Champs Elysées exist. For example, out of the 20 practical applications for Paris included in July 2018 in the SortiraParis.com guide,[7] one of them the 'Welcome to Paris' mobile app,[8] developed by the Tourist office and Congrès de Paris organization, in cooperation with the mobile phone operator Orange, referred to the Champs Elysées. On the other hand, other apps, like 'Paris au fil de la Seine' developed by Paris Musées[9] or Foxie[10] did not include the Champs Elysées. With regard to shopping, to the best of our knowledge no retail outlet or institution offered specific services based on QR codes at the time of the research. The last store offering this type of service closed in 2013.

3.2. Methodology

The survey was conducted on Avenue des Champs Elysées during the last two weeks of May 2018 and during the second and third weeks of June 2018. Were excluded the days with special events on the Avenue or in Paris. The questionnaires were administered face-to-face at different times of day, and to a lesser extent in the evening up to 9 pm and sometimes 11 pm, every day of the week, including weekends. The interviewers were positioned on specific spots, on both sides of the Avenue. People were interviewed randomly, without any criteria for age, sex, social category or nationality. Each questionnaire took approximately 10 min. Once the questionnaire was completed, the next new person who passed the interviewer was asked to participate. 408 questionnaires were completed (in some cases partially) in English or in French.

Information was collected on the respondent's characteristics (age, sex, gender, socio-economic category, place of residence). They were asked about the duration and the main purpose of their presence on the Champs Elysées. Six main reasons were considered: 'tourism', 'leisure', 'on the way to another place', 'work', 'shopping' and 'other reason'. We consider as tourists those who declared being in the Champs Elysées for tourism purpose.

Next, respondents were asked several questions about their smartphone and Internet use before coming to the Champs Elysées (did they search for information online before coming? If so, what was the nature of the information? Had they made any reservations?) and *in situ* (did they access the Internet while on the Champs-Elysées? Did they use an online app? Did they share information?).

Statistical analyses were carried out in order to understand which different digital practices were used and the links between these practices and the characteristics of the respondents, in particular their reason for being on the Champs-Elysées. The data were analysed using the entire sample (with a few exceptions). In order to identify whether the personal characteristics of the visitors determined their use of ICT, bivariate analyses[11] were conducted. Gender, age, place of residence and purpose of presence[12] were associated to Internet use before arrival and *in situ*. Then a linear discriminant analysis was used to identify different digital profiles. Finally, a multiple correspondence analysis was conducted to examine to which extent the reason for presence and/or the place of residence were associated with specific digital practices and, if so, which ones.

3.3. Characteristics of the sample

Out of the 408 people interviewed, more than the majority (69.4% of visitors) were residents in France (Figure 3). 26.7% were from Île-de-France (the Paris region, but outside

the city of Paris), 28.4% from Paris (including 3.2% from the Champs Elysées) and 13% from other French cities (0.5% of the interviewees did not answer). International visitors accounted for only 30.6% of the sample, with a majority from European countries, then from the U.S., Brazil, China and Morocco.[13]

The majority of the population present was less than forty, with 29.9% aged between 25 and 39, and 21.8% between 20 and 24. The extreme age groups were less represented, with 7.4% of respondents aged between 15 and 19, and 7.6% aged over 65. As regards the socio-economic categories (SEC), the majority were office workers (25.2%) and students (23.8%), followed by people from higher managerial/administrative/professional categories (16.7%) and then from intermediate occupations (13%). 30.6% of interviewees were present on their own. The others were accompanied mainly by family (23%), friends (18.4%), their partner (16.6% were in a couple) or by colleagues (5.9%).

The reason for being on the Champs Elysées, was, first tourism (30.6%),[14] and then work (20.3%), shopping (16.4%) and leisure (15.7%). As might be expected, people who lived on the Champs Elysées and in the city of Paris were present for reasons other than tourism (mainly work, leisure and shopping). Almost all the people present for tourism come from other French regions or from abroad (on 125 coming for tourism only 3 came from Île-de-France). In contrast, some non-resident people were on the Champs not for tourism (leisure, work, shopping, passing through).

In order to establish links between personal characteristics and to determine the profiles of individuals present on the Champs Elysées, we conducted a multiple correspondence analysis on variables such as gender, age, place of residence, SEC, being alone or in company, and the reason for being there. Three main profile types can be identified (Figure 4):

- Senior tourists: the first type consists of people aged over 50, present for purposes of tourism. Travelling in tour groups, in families or in couples, they are retired, self-

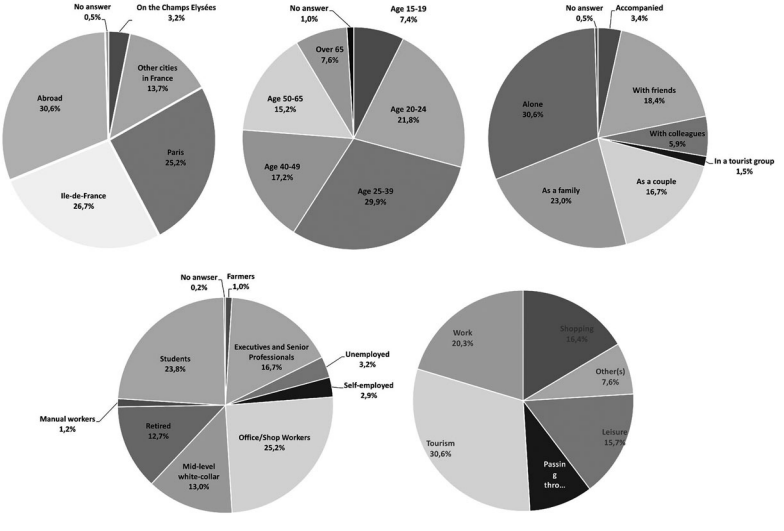

Figure 3. The characteristics of the sample (a: residence; b: age; c: accompaniment; d: socio-economic category; e: reason of presence).

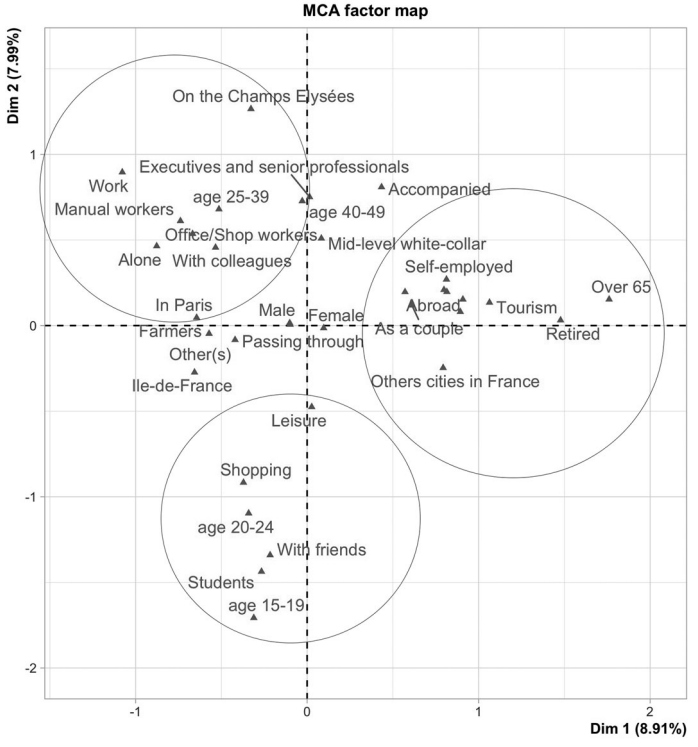

Figure 4. Profiles of the people interviewed.

employed or unemployed, and come from the rest of France (excluding Île-de-France – the Paris region) or from abroad.

- Young shoppers from Île-de-France: the second profile consists of people aged under 25, often students, in the company of friends and present for shopping.
- Parisian workers: the third group corresponds to people aged between 25 and 50, present for work purposes, often alone or with colleagues, and resident in Paris.

The diversity of the visitors and their reasons for being there are a reminder that, while the Champs Elysées is a tourist destination, it is also a district in the city of Paris. As must-see and much visited tourist destination, it is nevertheless a multifunctional and iconic space (Deroy and Clegg 2012; Gravari-Barbas and Violier 1998) that brings together a wide variety of people.

4. Results

The survey enabled us to construct broad digital profiles that we compared with the different types of people present, especially according to their residence and their reasons for being there. Then we specifically analysed their use of the Internet before coming to the Champs Elysées, then the use of these technologies *in situ*.

The first question we had was: could we identify digital profiles among the visitors of the Champs Elysées[15]? We conducted a linear discriminant analysis[16] and then we used

confusion matrix[17] (see also Appendix, Figures A1 and A2, and Tables A1 and A2) to evaluate the predictability of these profiles. Two indicators appeared relevant to determine profiles: the place of residents (in the Paris region, in other French regions or abroad) and the reason for being on the Champs Elysées (Shopping, Leisure, Passing Through, Tourism, Work or other). The analysis showed that international and regional visitors (Ile de France and Paris) have specific and predictive digital profiles. The same is true for individuals present for tourism (main activity of international visitors) and work (main activity of regional visitors).

4.1. Use of digital tools to prepare the venue

184 visitors (45.1%) used the Internet to prepare their visit to the Champs Elysées. The Internet was the only source of information for most of them (121 visitors[18] including 52 international visitors and 14 people from French regions excluding Île-de-France). The analysis (Table 1) unsurprisingly shows that there is no correlation between Internet use before visiting and gender. On the other hand, there is a correlation with age and a stronger correlation with place of residence and reason for visiting.

The extreme age brackets (15–19, over 65) and the 40–49 age group used the Internet less than the other age groups. It was the 50–65 age group (55%) and the 20–24 age group (51%) that used it the most (49% on average for the sample as a whole). People who were not resident in France also used the Internet more before visiting that the others (73% compared with 45% of the sample on average). This was the case for 39% of people resident in Île-de-France (outside the city of Paris) and 45% of visitors from other French cities. People present for reasons of tourism (69%), and to a lesser extent for leisure (48%), also used the Internet more than people present for other reasons (Shopping, Passing Through, Work).[19]

To investigate further if the practice of preparing a venue using digital tools is related to the place of residence and the reason for visiting the Champs Elysées, we conducted a multiple correspondence analysis on the 184 visitors who did prepared their venue. We chose the following variables likely to characterize these digital practices prior to visiting the Champs Elysées: search for information on transport, accommodation, eating out, weather, shopping, leisure, to which we added the reason for visiting as an additional variable (Figure A3 in Appendix) then the place of residence (Figure A4 in Appendix).

People present for reasons of tourism and leisure tend to prepare their visit notably on transport, restaurants/food, leisure and tours, weather and shopping. Non-residents have similar behaviour. This result is not surprising as tourists, people coming for leisure purpose, and non-residents have, a priori, less knowledge on the place than others.

Table 1. Links between individual characteristics and Internet use before visiting.

	Individual characteristic	Dependency of variables	Intensity of the association[a]
Internet use before visiting	Gender	Not significant	/
	Age	Significant	Low
	Place of residence	Significant	High
	Reason for visiting	Significant	Moderate

[a]As measured by Cramer's *V*, the square of which measures the proportion of variability of one variable that is explained by another. The intensity here was qualified as 'low' for $V < 0.2$, 'moderate' for $0.2 < V < 0.4$, and 'high' for $V > 0.4$.

Visitors present for other reasons tend not to prepare their venue, alongside people resident in France, whether in the Paris region or outside.

Dedicated websites (32% respondants) are most consulted, then to a lesser degree are complemented by – consultation of online guides (14%), and finally Facebook, Twitter, forums and/or blogs (17%). When accommodation websites were consulted (20%), visitors looked more for hotels (65%) than other types of accommodation such as AirBnB (39%).

It should be noted that international visitors favoured the former (21 hotel searches) and visitors from other French regions looked almost exclusively for AirBnB accommodation (six searches as compared with 0 for hotels). This is probably largely explained by the cost of hotels in Paris. 18% of the visitors who prepared their visits looked for restaurant, 50% were residents (Paris Region), 42% international visitors, 8% domestic visitors. The subject that generated the most searches was unsurprisingly transport beginning with itineraries by public transport (115), then by car (63), then on foot (23). However, there was very little use of the Internet to book a transport solution. Only 12 visitors made reservations before coming.

4.2. *The use of digital tools* in situ

The use of mobile technologies depends first of all on ownership of a device (smartphone or tablet) and secondly on the possibility of connection.

85.0% of the individuals interviewed said that they had a smartphone or tablet. The only variable associated with ownership seems to be the age of the individuals, with the highest level of ownership among the youngest (Table 2).

Among the individuals with mobile devices (85.0% of the sample), 71.5% used their web connexion during their visit to the Champs Elysées. There is no correlation between connection and either gender or reason for presence (Table 3). There is, however, a (very small) correlation with the place of residence and a greater one with age. Connection rates were lower among the people over 50. As for the link with the place of residence, the incidence of people connecting on the Champs Elysées was greater for people non-resident in Île-de-France: 66.7% of international visitors went online there and 63.6% of French visitors living in other parts of France (as compared with 62.8% on average for the sample as a whole).

The large majority of the respondents, whether international or French, connected using their own phone data. The free Wi-Fi services available on the Champs Elysées or in the particular places visited (restaurants, shops) were also used, but to a lesser degree.

Table 2. Links between individual characteristics and ownership of a mobile device.

	Individual characteristic	Dependency of variables	Intensity of the association[a]
Ownership of a mobile device	Gender	Not significant	/
	Age[c]	Significant	Moderate
	Place of residence[b]	Not significant	/
	Reason for visiting	Test not valid	

[a]As measured by Cramer's *V*, the square of which measures the proportion of variability of one variable that is explained by another. The intensity here was qualified as 'low' for $V < 0.2$, 'moderate' for $0.2 < V < 0.4$, and 'high' for $V > 0.4$.
[b]For the test to be valid (enough theoretical subjects), the place of residence 'On the Champs Elysées' was combined with 'In Paris'
[c]For the test to be valid (enough theoretical subjects), the 50–65 and the over-65 age group were combined.

Table 3. Links between individual characteristics and Internet connection on the Champs Elysées.

	Individual characteristic	Dependency of variables	Intensity of the association
Internet connection on the Champs Elysées	Gender	Not significant	/
	Age	Significant	Moderate
	Place of residence[a]	Significant	Very low
	Reason for visiting	Not significant	/

[a]For the test to be valid (sufficient theoretical numbers), the place of residence 'On the Champs-Elysées' has been grouped with 'In Paris'.

Finally, some people used both their phone data and the free Wi-Fi. Neither device ownership nor connection facilities, therefore, seem to inhibit the use of mobile devices.

4.3. Sharing information: the main practice on the champs

About 60% of the visitors connected themselves to the Internet with their mobile device when visiting the Champs. Among them, 40% shared information and only 3% downloaded applications.

4.3.1. Digital tools: not the drivers for in-situ change of plans

Among the visitors who used their mobile device, very few said that they had used it to look for information *in situ* with specialised/dedicated applications.[20]

Whereas Wang, Xiang, and Fesenmaier (2016) showed that the smartphone offers greater flexibility when travelling and helps people to alter their plans if the trip does not live up to expectations, none of the visitors said that they had changed their tour programme on the basis of information obtained *in situ*. So the use of a mobile device is not associated with a last-minute *in situ* change to the visit to the place.

4.3.2. Sharing information main digital practice

While the visitors' experience seems to have been little changed by searching for information *in situ*, what may on the other hand have changed is the sharing of photographs, information, etc.

More than 25% of the visitors (129) declared having done this. 67% of them had exchanged only photos or videos, 17% had shared photos or videos and opinions or impressions and 12% had posted opinions and localization (4% didn't indicate what they had shared). These interchanges, and in particular photos and videos, are carried out *in situ* and, with a few exceptions, after the visit.

Sharing information via an online application is not related to gender nor to place of residence. There is however a strong relationship with age and the reason for visiting the Champs (Table 4).

Considering age, younger respondents, i.e. those in the 15–19 and 20–24 age groups, use more their mobile devices to share information than older age groups. 60.7% of the 15–20 age group and 47.5% of the 20–24 age group have declared having done it, although it was the case 33% of the 25–39 age group and around 28% for the 40–49 age group and over 50s.

As for the reason for being on the Champs, the people present for leisure and to a lesser degree for tourism, used their mobile devices to share information more than

Table 4. Links between individual characteristics and sharing information on mobile devices on the Champs Elysées.

	Individual characteristic	Dependency of variables	Intensity of the association
Sharing of information on apps	Gender	Not significant	/
	Age[a]	Significant	Moderate
	Place of residence[b]	Not significant	/
	Reason for visiting	Significant	Moderate

Notes: For a more detailed analysis, a second MCA was conducted based on variables that may characterize digital practices during presence on the Champs Elysées: application downloads, sharing of photos or videos, sharing of opinions, sharing of location or other information, time of sharing. To answer our research questions, we added reason for presence and then place of residence as additional variables. Here again, only individuals who said that they had gone online on the Champs Elysées were included ($N = 245$). Three individuals who did not answer all the questions included in the analysis were withdrawn.

[a]For the test to be valid (enough theoretical subjects), the 50–65 and the over-65 age group were combined.

[b]For the test to be valid (sufficient theoretical numbers), the place of residence 'On the Champs-Elysées' has been grouped with 'In Paris'.

the others. 57.9% of the visitors present for leisure purposes did this, and 37.6% of the visitors present for tourism (which is a few more than the average of the sample). In comparison, 36% of visitors passing through, 35% of visitors present for shopping and 22% of visitors present to work did it.

5. Discussion and conclusion

There is an abundant literature which takes the view that digital technology and mobile devices, insofar as they alter practices, offer numerous opportunities for rethinking tourist destinations, for innovating in order to build the destinations of tomorrow, smart destinations (Chen et al. 2021; Gretzel et al. 2015). As a result, some stakeholders in the tourist sector are investing in these technologies by creating apps, being present on social media, interacting with tourists. Others do not do much or don't need to do much, perhaps because the proposed experience is already fulfilling. It doesn't necessary worth the investments. As the service analysis shows M tourism in act depends on the supply of digital tools and on the use made by people. M tourism services are coproduced in place. Both ends must be taken into consideration. However, excepted for social networks, the literature on the effective uses of these technologies, and the conditions for it, is much sparser. The example of the Champs Elysée is, in that sense, instructive.

Our question, therefore, was: whether the people present in a tourist location use M tourism and, if so, in what ways? In particular, we wanted to identify in the case of Champs Elysées whether these practices were specific to the reasons for visiting (leisure, tourism, work, etc.) or to the status of the visitor (a resident of Paris or the Paris region, international tourists or tourists from other French regions). More broadly we intend to identify whether ultimately the mobile technologies were simply an extension of standard digital practices, as argued by Wang, Xiang, and Fesenmaier (2016).

The different statistical analyses (bivariate analyses, discriminant analyses, multiple correspondence analyses) that we conducted, based on the survey carried out on the Champs Elysées, produced several findings that provide answers to these questions.

First, our results confirm part of the analysis advanced by De Reuver, Nikou, and Bouwman (2016): there is no link between gender and the use of digital technologies, at any given moment, but age influences uses.

However, the lack of significant statistical associations between income levels and socio-economic category, and digital practices, prevent us drawing conclusions on this point.

We identified whether the reason for presence (tourism or others) and/or the place of residence were associated with specific digital practices and, if so, which ones, distinguishing between uses before and after arrival on the Champs Elysées.

Before arrival on the Champs Elysées, the places of residence and the reasons for visiting explain the use of the Internet to search for information of different kinds. They also influence the type of information sought. We showed therefore that the Internet was above all a tool used to plan the visit before arriving on the Champs Elysées in particular for international tourists. International visitors and individuals present for tourism (two categories that partly overlap) went online before coming and searched for information about accommodation.

In situ, our research also shows – if it needed proof – the spread of the smartphone as a tool. Most of the people present on the Champs Elysées were equipped with a mobile device, regardless of age. Nonetheless, it confirms that age still plays an important role in their use of digital tools *in situ*. So the mobile digital divide exists here *in situ*. On the other hand, place of residence has little or no impact on *in situ* practices. For its part, the reason for visiting has a modest influence on the sharing of information through online applications, but not at all on the *in situ* use of digital tools. More fundamentally, whether international or from other French regions, tourists go online *in situ* no more than individuals present for work purposes when visiting this major tourist site, the Champs Elysées. Nor do they seem to demonstrate specific uses of their mobile devices there. Whatever the reason for being present on this site, smartphones and the Internet are used to exchange videos and photos, i.e. to share a view on an experience. So *in situ* digital practices do not seem to be mostly specified by the reason for being there (tourism, work, etc.).

This absence of a link between Internet connection, *in situ* practices and the reason for visiting is a surprising result. Whereas an abundant literature is developing on tourist use of mobile phones at tourist destinations, our study shows that use of a mobile device is ultimately not specific to the status of being a tourist in a tourist location. It corroborates the findings of Wang, Xiang, and Fesenmaier (2016). Behind the reasons for presence, there are individual characteristics, especially age, which influence digital practices. And, while some reasons for presence are very different (tourism and work), others are more similar (tourism and leisure) and blur the associated digital practices. In addition, Facebook access, bookings for transport, hotels, restaurants or tours, are not very much used, neither are the most innovative possibilities (dedicated apps, QR code, etc.). In the end, mobile devices seem not to be a tool of behavioural change. If, as the literature reveals, smartphones enrich people's experience by enabling them to exchange photos and pictures remotely *in situ*, they do not alter the activities that people plan before reaching their destination. Ultimately, digital practices on the Champs Elysées remain fairly conventional.

This raises the question of the reasons for the lack of specific digital practices on the Champs Elysées. As we show before M tourism services are coproduced between users and providers. If Wi-Fi connexion is available on the Champs Elysées avenue, the services supplied on the Champs Elysées are scarce limiting the possibility to coproduce M-

Tourism services. The reputation of what has been called the world's most beautiful street perhaps makes the development of specific applications superfluous. In addition, because tourists prefer to discover the Champs Elysées and their atmosphere as a total experience, tools of this kind could be less useful in this specific context: it is less important to have information about the Champs Elysées or to discover it with an augmented reality, than it is at other tourist sites.

If Chen et al. (2021) argue that the number of related studies (Mobile Communication Technology Research in Hospitality and Tourism) 'is predicted to continue to increase in the future', research should therefore be focused on less well-known places or places where extensive information is needed to appreciate them in all their dimensions. This will allow to explore whether more innovative digital practices are developed and used more on such sites. The research must focus on the way users actually experience the mobile technology and in particular its new tools in different types of places. This will allow to identify the type of places where mobile technology and its new tools add value and are useful to enhance the tourism experience.

Notes

1. Source: https://datareportal.com/reports/digital-2019-global-digital-overview, consulted on the 10 March 2020, 15h20, page 196.
2. See servitization analysis of creative and cultural industries by Sundbo, Rubalcaba, and Gallouj (2021).
3. This survey is part of a research programme conducted by the Ville Tourisme Transport et Territoires cross-disciplinary group of the Labex Urban Futures at the University of Paris-Est and the University Gustave Eiffel.
4. https://www.parisinfo.com/decouvrir-paris/balades-a-paris/tout-savoir-sur-les-champs-elysees, consulted on the 22 August 2020, 18h20.
5. Created in 1916, it is responsible for the promotion, the development and the international reputation of Avenue Champs-Elysées and its district in Paris.
6. https://www.lesechos.fr/2016/06/du-wifi-gratuit-sur-les-champs-elysees-208323, consulted on the 20 March 2020.
7. https://www.sortiraparis.com/arts-culture/balades/guides/25144-top-20-des-applications-pratiques-pour-votre-sejour-a-paris.
8. This app helps visitors to plan a tour programme by providing addresses, events, itineraries and practical information. It can also be used to buy a museum ticket and to find out about nearby events or places.
9. Which prompts visitors to discover GPS located paintings and photographs from different museums, thereby retracing the surroundings of the River Seine through history.
10. Which suggests visits to quirky and lesser-known streets.
11. A Pearson's chi-square test was applied. For each of the analyses, we chose a significance level of 5%. Cramer's V tells us about the intensity of the association between the two variables under consideration.
12. The socio-economic category and accompaniment variables could not be studied here because the numbers in the contingency table were too low.
13. However, as is the case with all face-to-face surveys, the true number of international visitors is likely to be greater. Indeed, the number of responses from international visitors is probably lower than from others, as they are reluctant to respond to a face-to-face questionnaire, in particular people from Asian countries who often travel in group.
14. Only one answer was allowed.
15. These profiles were built from scores on 16 quantitative binary predictive variables: Internet connection before visiting, searching for information on transport, searching for

accommodation, a restaurant, weather information, climate information, information on shopping, on leisure, on tours, or other information, searching for information off-line, ownership of a connected device, connection on the Champs Elysées, application downloads, the time of information sharing, and information shared (photos, videos, on the one hand, opinions on the other hand, sharing of location information, and finally sharing of other types of information). The analysis was made over 406 individuals (two individuals for whom answers were missing were withdrawn from the analysis). Then we analysed how far the distribution of these digital profiles differed according to the type of people present, looking first at their residence and secondly their reasons for being there.

16. The differences in profile between the three groups are very significant. Pillai trace, the multivariate analogue of the proportion of variance explained by the groups (the 'eta-squared' coefficient), is .51, with a p-value $< 2.2 \times 10^{-16}$. The digital profile of the respondents can, conversely be used to predict their origin by the standard linear discriminant procedure.
17. With a kappa index (measuring the improvement from a random assignation) of .47.out of 125 individuals from abroad, 74 (i.e. 59%) are correctly classified as being from abroad on the basis of their digital profile. This rate of correct classification even rises to 90% (203 out of 225) for people coming from Île-de-France: their digital profile can be used to identify them very accurately. Conversely, this is not the case for individuals from other French regions, who are similar in profile to the respondents from Île-de-France.
18. 23.1% of visitors also use other sources of information (word-of-mouth, family, friends, the press and guidebooks).
19. The average use of internet before visiting is 45% in the sample.
20. 11 of them, 6 international, 2 from Île-de-France (the Paris region excluding Paris) and 3 Parisians. Those who did had calculated routes for getting from one place to another and/or to download GPS maps (9), look for a restaurant, a bar or a cafe on the Champs Elysées (6), check the weather (6 foreigners and 2 Parisians). Four international visitors had also looked for practical information (police station, doctor, post office and bank), two had looked at the Champs Elysées Calendar and checked for recommendations. The visitors were not interested in searching for special offers available in the shops on the Champs Elysées or for feedback on places to visit.

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References

Albérola, E., I. Aldeghi, L. Brice-Mansencal, P. Croutte, R. Datsenko, N. Guisse, and S. Hoibian. 2017. *Baromètre Du Numérique 2017*, Rapport du CREDOC réalisé pour le compte du Conseil Général de l'Economie, de l'Industrie, de l'Energie et des Technologies (CGE), l'Autorité de Régulation des Communications Electroniques et des Postes (Arcep) et l'Agence du numérique.

Aufrère, L. 1950. "Introduction à l'étude morphologique et démographique de l'Avenue des Champs Élysées." *Annales de Géographie* 59 (313): 13–37. https://doi.org/10.3406/geo.1950.12858

Bideran, J., and P. Fraysse. 2015. "Guide numérique et mise en scène du territoire, entre médiation patrimoniale et stratégie de communication touristique." *Études de communication* [En ligne], 45. consulté le 28 juin 2020. http://journals.openedition.org/edc/6464.

Buhalis, D. 2020. "Technology in Tourism-from Information Communication Technologies to eTourism and Smart Tourism Towards Ambient Intelligence Tourism: A Perspective Article." *Tourism Review* 75 (1): 267–272. doi:10.1108/TR-06-2019-0258.

Buhalis, D., and R. Law. 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. doi:10.1016/j.tourman.2008.01.005.

Cabrespines, J., and R. Wargnie. 2017. "Tourisme et numérique." Les avis du CESE, 26 décembre 2017.

Chen, S., R. Law, M. Zhang, and Y. Si. 2021. "Mobile Communications for Tourism and Hospitality: A Review of Historical Evolution, Present Status, and Future Trends." *Electronics* 10: 1804. doi:10.3390/electronics10151804.

CRT Bretagne – FNCRT. 2013. *M-Tourisme et réseaux sociaux: les pratiques des clientèles européennes*. Rennes: CRT Bretagne FNCRT.

De Reuver, M., S. Nikou, and H. Bouwman. 2016. "Domestication of Smartphones and Mobile Applications: A Quantitative Mixed-Method Study." *Mobile Media & Communication* 4 (3): 347–370. doi:10.1177/2050157916649989.

De Vries, E. 2006. "Innovation in Services in Networks of Organizations and in the Distribution of Services." *Research Policy* 35: 1037–1051. doi:10.1016/j.respol.2006.05.006.

Deroy, X., and S. Clegg. 2012. "Contesting the Champs-Elysées." *Journal of Change Management* 12 (3): 355–373. doi:10.1080/14697017.2012.673075.

Dickinson, J., K. Ghali, T. Cherrett, C. Speed, N. Davies, and S. Norgate. 2014. "Tourism and the Smartphone App: Capabilities, Emerging Practice and Scope in the Travel Domain." *Current Issues in Tourism* 17 (1): 84–101. doi:10.1080/13683500.2012.718323.

Dorcic, J., J. Komsic, and S. Markovic. 2019. "Mobile Technologies and Applications Towards Smart Tourism – State of the art." *Tourism Review* 74 (1): 82–103. doi:10.1108/TR-07-2017-0121.

Gallouj, F., and M. Savona. 2010. "Towards a Theory of Innovation in Services: A State of the Art." In *The Handbook of Innovation and Services, a Multi-Disciplinary Perspective*, edited by F. Gallouj and F. Djellal, 27–48, Cheltenham (GB): Edward Elgar Publishing.

Gallouj, F., and O. Weinstein. 1997. "Innovation in Services." *Research Policy* 26 (4–5): 537–556. doi:10.1016/S0048-7333(97)00030-9.

Gravari-Barbas, M., and P. Violier. 1998. Les espaces. Norois, n°178, Avril-Juin. *Villes et tourisme*. 171–173. https://www.persee.fr/doc/noroi_0029-182x_1998_num_178_1_6862.

Gretzel, Ulrike, Daniel R. Fesenmaier, and Joseph T. O'Leary. 2006. "Chapter 2 - The Transformation of Consumer Behaviour." In *Tourism Business Frontiers*, edited by Dimitrios Buhalis and Carlos Costa, 9-18. Oxford: Butterworth-Heinemann. https://doi.org/10.1016/B978-0-7506-6377-9.50009-2

Gretzel, U., and T. Jamal. 2009. "Conceptualizing the Creative Tourist Class: Technology, Mobility, and Tourism Experiences." *Tourism Analysis* 14 (4): 471–481. doi:10.3727/108354209X12596287114219.

Gretzel, U., M. Sigala, Z. Xiang, and S. Koo. 2015. "Smart Tourism: Foundations and Developments." *Electronic Markets* 25 (3): 179–188. doi:10.1007/s12525-015-0196-8.

Howells, J. 2010. "Services and Innovation and Service Innovation: New Theoretical Directions." In *The Handbook of Innovation and Services, a Multi-Disciplinary Perspective*, edited by F. Djellal and F. Gallouj, 68–83. Cheltenham (GB): Edward Elgar.

Kim, H., and R. Law. 2015. "Smartphones in Tourism and Hospitality Marketing: A Literature Review." *Journal of Travel & Tourism Marketing* 32 (6): 692–711. doi:10.1080/10548408.2014.943458.

Lancaster, K. 1966. "A New Approach to Consumer Theory." *Journal of Political Economy* 74 (2): 132–157. doi:10.1086/259131

Law, R., I. Chu Chan, and L. Wang. 2018. "A Comprehensive Review of Mobile Technology Use in Hospitality and Tourism." *Journal of Hospitality Marketing & Management* 27 (6): 626–648. doi:10.1080/19368623.2018.1423251.

Lesaffre, G., A. Watremez, and E. Flon. 2014. "Les applications mobiles de musées et de sites patrimoniaux en France: quelles propositions de médiation?" *La Lettre de l'OCIM* [on line] 154. doi:10.4000/ocim.1423. http://ocim.revues.org/1423.

Liang, S., M. Schuckert, R. Law, and L. Masiero. 2017. "The Relevance of Mobile Tourism and Information Technology: An Analysis of Recent Trends and Future Research Directions." *Journal of Travel & Tourism Marketing* 34 (6): 732–748. doi:10.1080/10548408.2016.1218403.
McKinsey France. 2014. *Accélérer la mutation numérique des entreprises: un gisement de croissance et de compétitivité pour la France*.
Molz, J. 2014. *Travel Connections: Tourism, Technology and Togetherness in a Mobile World*. London: Routledge.
Mourtazina, E. 2019. "Photographier Zermatt: les pratiques photographiques des touristes à l'épreuve du numérique." *Mondes du Tourisme* [En ligne], 15. mis en ligne le 01 juin 2019, consulté le 26 juin 2020. doi:10.4000/tourisme.2148. http://journals.openedition.org/tourisme/2148
Naramski, M., and K. Herman. 2020. "The Development of Mobile Tourism in the Upper Silesian Metropolitan Area of Poland." *Sustainability* 12 (1): 44. doi:10.3390/su12010044.
Schroeder, A., L. Pennington-Gray, H. Donohoe, and S. Kiousis. 2013. "Using Social Media in Times of Crisis." *Journal of Travel & Tourism Marketing* 30 (1–2): 126–143. doi:10.1080/10548408.2013.751271.
Sundbo, J., L. Rubalcaba, and F. Gallouj. 2021. "Servitization in the Creative and Cultural Industries." *International Journal of Quality and Service Sciences* 14 (1): 65–85. doi:10.1108/IJQSS-01-2021-0017.
Tussyadiah, I., and D. Wang. 2014. "Tourist's Attitudes Towards Proactive Smartphone Systems." *Journal of Travel Research* 55 (4): 493–508. doi:10.1177/0047287514563168.
Wang, D., Z. Xiang, and D. Fesenmaier. 2016. "Smartphone Use in Everyday Life and Travel." *Journal of Travel Research* 55 (1): 52–63. doi:10.1177/0047287514535847

Appendix

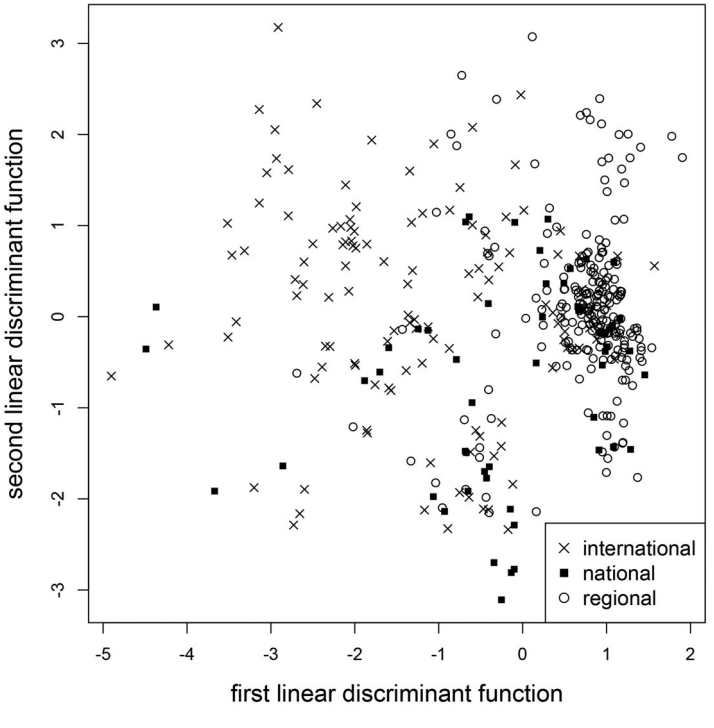

Figure A1. Linear discriminant analysis on the origins of the visitors.

The digital profiles, therefore, differ according to the place of residence. The confusion matrix (see Table A1) confirms the existence of this link by indicating the level of predictability of digital behaviour that can be expected on the basis of people's place of residence.

Table A1. Confusion matrix.

	Origin predicted by digital profile		
Actual origin	International	National	Regional
International	**74**	13	38
National	13	**13**	30
Regional	12	10	**203**

The confusion matrix (see Table A2) shows that the established digital profiles can be used

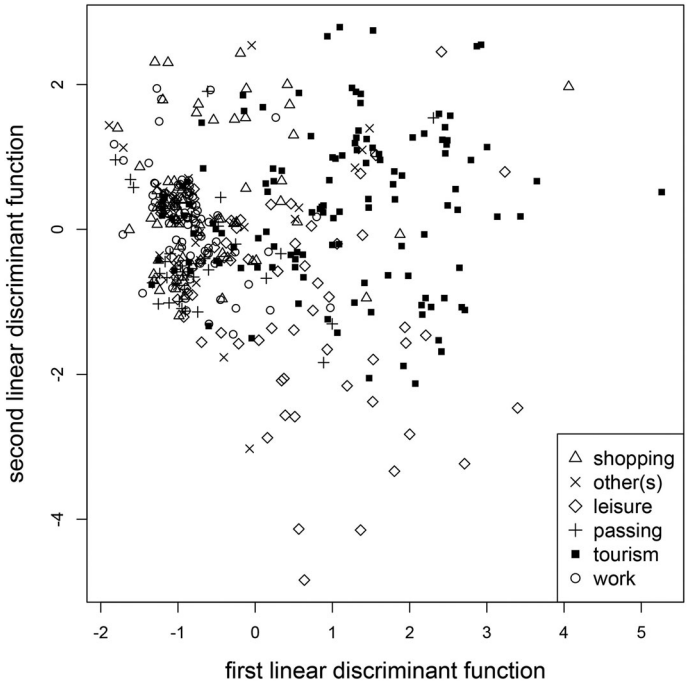

Figure A2. Linear discriminant analysis on respondent's reasons for visiting.

effectively to identify people present for Tourism (66% correctly classified) and for Work (74%), whereas the other categories are more difficult to identify. Unlike the other categories, the people present for Work and those present for Tourism are quite easy to identify from their digital profile.

Table A2. Confusion matrix.

	Predicted reason from the digital profiles					
Actual reason	Shopping	Other	Leisure	Passing through	Tourism	Work
Shopping	13	1	4	11	9	29
Other	2	1	2	5	5	16
Leisure	2	1	17	7	21	16
Passing Through	3	0	7	10	3	15
Tourism	4	2	13	6	**83**	17
Work	4	1	6	6	5	**61**

Figure A3. Biplot: digital practices before visiting versus reason for visiting.

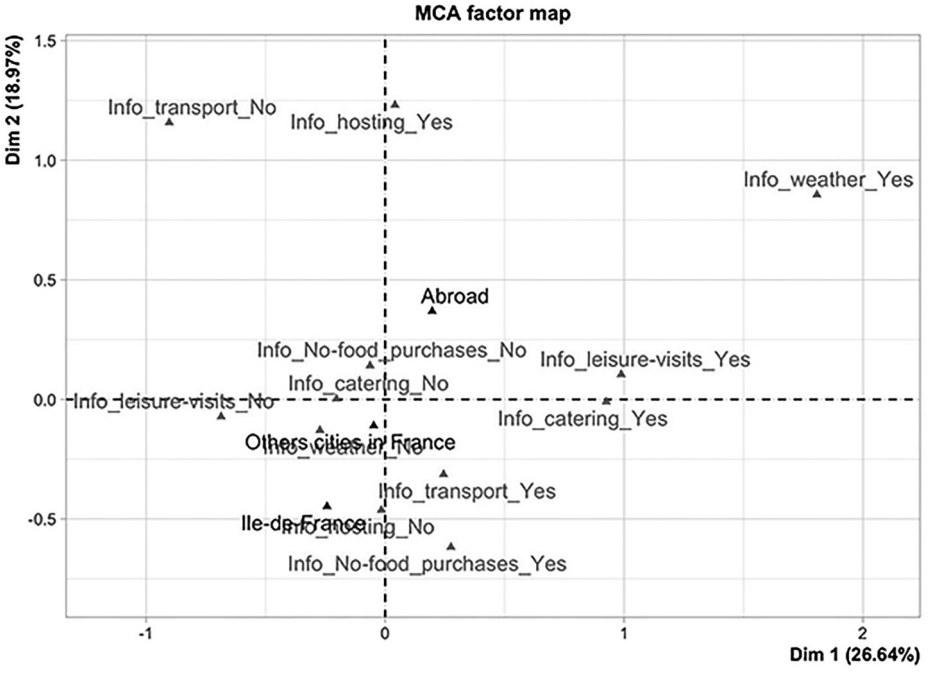

Figure A4. Biplot: digital practices before visiting versus place of residence.