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MOBILE IMPACT ON PORTUGUESE MILLENNIALS TOURIST EXPERIENCE

Turismo e Desenvolvimento de Negócios

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Acronyms

CP- Comboios de Portugal

CPA- Cost per Acquisition

CPC- Cost per Click

CPM- Cost per Thousand Impressions

DD & GNPT- Desenvolvimento de Destinos e Gestão de Novos Produtos Turísticos

EIS- European Innovation Scoreboard

ESOMAR- European Society for Opinion and Marketing Research

ETC- European Travel Commission

IATA- International Air Transport Association

ICT- *Information and communications technology*

INE- Instituto Nacional de Estatística

IPDT- Instituto de Planeamento e Desenvolvimento do Turismo

ISCET- Instituto Superior de Ciências Empresariais e do Turismo

OTA- Online Travel Agency

SITA- Société Internationale de Télécommunications Aéronautiques

TAP- Transportes Aéreos Portugueses

UNWTO- United Nations World Tourism Organization

USA- United States of America

WYSETC - World Youth Student & Educational Travel Confederation

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Abstract

It is widely recognised in the literature that all the steps of the tourism journey, from inspiration to the post-travel phase, are being influenced by mobile technologies. The characteristics of mobile and its several Apps have revolutionised how tourists plan, experience and share feedback on their trip. Due to the fact that millennials are very comfortable with technology and devices, this research explores how Portuguese millennials use their mobile Apps before, during and after their trip. Data were obtained through an online survey and analysed by means of a descriptive technique, resulting in 342 valid questionnaires.

The main results indicate that, in the pre-trip stage, Portuguese millennials search with a mobile device, however, when the final booking process occurs, they opt for their personal computers. Further in the following phase, this generation uses mobile Apps known already from home such as Google Maps or Uber and they are not interested in the ones provided by local tourism organizations. In the last stage, re-experiencing the destination does not change how an App is used when compared to first-time visitors. Lastly, in terms of privacy and security, they seem to not have confidence in any type of organization when entering personal information and are not able to discern between public, private or public-private companies from a data transference standpoint.

Keywords: mobile technologies; Portuguese millennials; trip stages; millennial generation; mobile App; privacy and security

1. Introduction

Currently, mobile technology plays a central role in outlining tourist behaviour (Kim & Kim, 2017). They have been changing travellers' attitudes, from the approach on ways to collect and process information, to communication among other travellers and service providers (Wang, Park and Fesenmaier, 2012). It is pivotal to understand how consumers are actually using their mobile devices for traveling because, according to Neuhofer et al. (2014), mobile technology is able to significantly boost interaction between businesses and consumers within this context, thus leading to a more personalised experience.

A consumer demographic characteristic, such as age, influences the adoption of mobile technologies (Morosan & DeFranco, 2014). Since cohort members share similar values, experiences and preferences, the generational cohort is a great market segmentation tool (Parment, 2013).

Today, young generations like the millennials, have needs which are rather different from those of their parents or grandparents within the context of tourism (Glover, 2010). Despite the financial restrictions and time constraints in comparison to other generations, they reveal a high predisposition to travel (Santos et al., 2016). Millennials constitute a challenge for the tourism sector due to their characteristics, with the possibility of causing real disruption in the manner the industry is structured and its *modus operandi* (Pendergast, 2010; Santos et al., 2016). Given the above, the different players in the tourism sector must gain a better understanding of the profile and demands of such segment and, according to Soares et al. (2017), this generation needs to be considered a priority on the agenda of business managers.

Taking the above into account, the main objective of this research was to study the impact that mobile technology has on Portuguese millennial travellers in all phases

of the tourist experience and to contribute to the academic literature. Considering country-specific factors such as the Portuguese market, there is a lack of information and investigation regarding these topics and Menezes (2016) states that future research may entail the study of the "before" and "after" the experience. This work will allow a better understanding of how Portuguese millennial travellers use mobile technology when experiencing a trip, not only during, but also before and after. In the 3 stages of a trip, how can a technology associated with mobile devices change the way the tourist experiences a destination?

The exploration of mobile technology as a driver to better understand the market, especially in the case of Portuguese millennials, is of particular personal and professional interest to the researcher. The relationship between mobile technology and tourism is very dynamic and provides the researcher with a valuable opportunity to leverage knowledge. This expertise allows a relevant advantage in the application of the acquired knowledge within professional activities, as well as in the pursue of a career path in this field.

In terms of structure, this dissertation is organized in 5 sections. In section 1, the introduction is presented. Section 2 is dedicated to the review the literature on the key concepts (technology, millennials, Portuguese millennials, mobile, privacy and security) (Wang, D., & Xiang, Z. (2012); Wang, D., Xiang, Z., & Fesenmaier, D. R. (2014); Fong, L. H. N., Lam, L. W., & Law, R. (2017); Lu, J., Mao, Z., Wang, M., & Hu, L. (2015); Tussyadiah, I. P., & Wang, D. (2016)). Subsequently, in section 3, the research methodology to be used in the dissertation is described. This study features an exploratory-descriptive trait and it was conducted firstly as exploratory in the review of the literature, followed by a descriptive one. The questionnaire is used as a research tool with a non-probability sample. In section 4, the results of the 342 valid

questionnaires are analysed and discussed and, finally, section 5 presents the conclusions and contributions, recommendations, and limitations of the dissertation.

2. Literature Review

This literature review is arranged in two parts. The first presents the characteristics of the Portuguese tourism market, its familiarity with technology and its positioning within a global framework. In addition, it presents a tracing of a millennial generation member's profile in Portugal and around the world, in order to better and deeply understand these concepts and the behaviour of this mobile consumer.

The second and most extensive part of this chapter covers the dynamic nature of mobile technology and travel, as well as its concepts and variables such as Apps and Biometrics. Since mobile technologies are always changing, a reviewed and current literature is necessary for this study so as to address the research question and its objectives.

2.1 The Portuguese Market

Over the decades, tourism has experienced continued growth and deepening diversification thus becoming one of the fastest growing economic sectors in the world (UNWTO, 2018). International tourist arrivals grew by 6% to 1.4 billion, in 2018, and international tourism generated US$ 1.7 trillion in export earnings (UNWTO, 2019a; UNWTO, 2019b). Modern tourism is closely associated with the development and these dynamics have turned tourism into a key driver for socio-economic progress, in which 1/10 jobs worldwide and 10% of the world's GDP (direct, indirect and included) are related to the industry (UNWTO, 2018).

Portugal is integrated in the most visited region in the world (UNWTO, 2018). In 2017, Europe accounted for 672 million international tourist arrivals, which represents more than half of the arrivals in the world (51%), and international tourism generated US$ 519 billion (UNWTO, 2018). In 2018, the European tourism sector presented a stable performance of 6% growth (UNWTO, 2019a) because of the recovery of

destinations previously avoided due to safety concerns and also emerging destinations which are increasingly showing that they can be valid alternatives to congested areas (ETC, 2019).

The Portuguese market is no exception, especially in a country that won, in 2017 and 2018, an award from the World Travel Awards for World's Best Destination (Turismo de Portugal, 2018). According to the INE (2018), the arrivals in the country are growing and, in 2017, Portugal welcomed 12.71 million foreign tourists. In that same year, the national residents made 21.2 million tourist trips, which corresponded to an increase of 5.0% and are in line with the increase of 5.4% registered in 2016 (INE, 2018). Traveling abroad accounted for 10.4% of the total and this is equivalent to 2.2 million trips, thus reflecting an increase of 13.1%. Our neighbour, Spain, is the destination to which the Portuguese travel the most, followed by France, the United Kingdom, Italy and Germany (INE, 2018). Within national territory, 19.0 million trips were made (89.6% of the total), resulting in an increase of 4.1% (INE, 2018).

According to the INE (2018), Portuguese residents' leading reason for traveling in 2017 was "leisure, recreation or vacations", totalling 9.6 million trips (45.2% of the total), which presented a significant growth of 8.4%; "visit family or friends" became the second most important reason, with 9.3 million trips (44.0%), registering an increase of 4.8%, and travel for "business or professional" reasons (1.5 million) had a share of 7.1% (-1.1 p.p.).

In 2017, each trip of the Portuguese residents logged an average duration of 4.03 nights (4.05 in 2016). Traveling abroad registered an average duration of 7.8 nights, an increase when compared to the 7.6 nights of 2016, while domestic travels continued to have the same average of 2016 with 3.6 nights (INE, 2018).

2.1.1. The Portuguese and technology

Regarding technology, 78% of Portuguese inhabitants are connected to the internet, while just 69% of the total population does it with their mobile phones (Kemp, 2019). 85% uses the internet every day for personal reasons and the average speed of mobile internet connections is 30.19MBPS (Kemp, 2019). Portugal is thus highly connected, ranking 3rd in the EU28 in terms of "Broadband penetration", according to the European Innovation Scoreboard 2018 (EIS, 2018), and occupies the 13th position in the "Quality of overall infrastructure" out of 137 nations (World Economic Forum, 2017). Large companies like Uber, Fujitsu, Microsoft, Mercedes or Huawei are already operating in the country and other giants like Google are yet to come (Econews, 2018). The investments are occurring not only in the capital city Lisbon but also in cities like Porto, Braga and Sintra (Econews, 2018).

Compared to the global average, the numbers demonstrate that Portugal is a country familiar with technology and this reassures the importance of studying these topics within the context of this market. A determinant factor to be successful in this market is the level of security of such technology based on the fact that 94% of the Portuguese say that data privacy and data protection are very important to them (Google, 2017b).

2.2. The Millennials

The sociologist Karl Mannheim (1970) developed the generational theory and proposes a cohort analysis to study societies and the different generations composing them. Solnet and Hood (2008) consider that a generation is a group of people who were born between a certain year-range and therefore, have gathered life experience within the same sociocultural, political, and economic context. Although there is no general agreement on the exact age range for a generation (Zhang, Omran, & Cobanoglu, 2017), Howe and Strauss (1991) suggest that Generation Y, the most educated generation so

far in terms of formal education (McDonald, 2015), includes individuals born between 1977 and 2003 and Pendergast (2010) defined the timeframe as being from 1982 to 2002. For Butcher et al. (2017), Soares et al. (2017) and Bento et al. (2018), Generation Y, or the well-known as millennial generation, consists of those born between 1981 and 2000 and, for the purposes of this research, the latter timeframe shall be used to study this generation. This range was chosen based on Bento et al. (2018), who study not only the millennial generation but also the Portuguese millennial market as well, which is similar to the approach used in this research.

Based on Cavagnaro et al. (2018), young tourists like the millennials today are essential for the future of tourism for, at least, three reasons: (1) the amount of young tourists travelling nowadays (UNWTO and WYSETC, 2016); (2) the fact that their original choices may lead to new approaches towards tourism by the rest of society (Fermani et al., 2011; Leask et al., 2013) and (3) the anticipation that young tourists will continue to travel in the future (Barton et al., 2013).

The middle-aged tourist in the 2020s and 2030s will, just like the young tourists of today, have different needs and desires when compared to the contemporary middle-aged tourist (Cavagnaro et al, 2018). Therefore, changes and developments in tourism behaviour can be foreseen by describing the present travel behaviour of millennials (Leask et al., 2013). Eastman et al. (2014) argue that the singularity of millennial consumption behaviours is primordially related to mobile technology and social networking. Tourism research has begun to focus relatively late on young travellers in general, plus still little is known about millennials' attitude and behaviour at their chosen destinations, although they are the market spending core of tomorrow (Kim, Xiang, & Fesenmaier, 2015; Vukic et al., 2015) and are willing to pay more to have new products first-hand (Tode, 2013). The majority of research on generation Y has

been done in Anglophone countries (Cohen et al., 2014; Fyall et al., 2017), so knowledge on other regions is still lacking and that is why the Portuguese situation can input valuable content to this topic.

Previous studies on millennials state that, to them, traveling is a synonym for novelty: the possibility to escape the quotidian, to try a different lifestyle, to engage in new experiences, to visit new places and to acquire new knowledge (UNWTO and WYSETC, 2016). The self-transcendent nature of meaning is confirmed by studies pointing that the young traveller travels with a purpose and believes in making a difference in the world (UNWTO and WYSETC, 2016). Additionally, they want to live like locals and that is why, when looking for places, they prefer to go to areas not usually perceived as touristic destinations, because the word “tourist” often loads a negative connotation (Leasket al., 2014).

The diffusion of innovations displays itself in different ways and is extremely subjective to the type of adopters and innovation-decision process (Xiang, Wang, O'Leary, & Fesenmaier, 2015). Adopters may be labelled according to five categories including innovators, early adopters, early majority, late majority, and laggards (Xiang, Wang, O'Leary, & Fesenmaier, 2015). As tourism demand, millennials have been described as new technologies 'early adopters' (Benckendorff et al., 2014). They are even classified as ‘digital natives’ due to their natural acceptance of technology as part of their lives (Cohen et al., 2014; Pendergast, 2010). Besides, they use ICTs intensively for trip planning and try to obtain from different channels as much information as possible (Xiang, Tussyadiah, & Buhalis, 2015), while leaving behind the Generation X’ers and Baby Boomers (Mangold and Smith, 2012).

Millennials are depicted as natural travellers: over 60% of them see traveling as an important part of their lives, make 4-5 trips per year and are expected to keep seeking

tourism experiences also when older (Ovolo Hotels, 2013; Barton et al., 2013). According to the Millennial Traveller Expedia report (2016), 72% of the millennial generation prefers to go on a dream holiday than to buy a brand-new car (65%), which represents a change from previous generations' paradigms.

2.2.1. The Portuguese Millennials

In Portugal, although there are many studies on the young population, there is no clear delimitation and designation regarding the different generational categories (Duarte, 2014). According to the INE (2019a), in 2018, Portugal accounted for 1,670 million people aged 20-34, with more females than males in such age range (INE, 2019b) and their behaviour was described similar to their international peers (Duarte, 2014).

Portuguese young population has technology as a constant in their lives, as revealed by the Consumer Barometer with Google (2017b): in 2017, the percentage of people (aged 25-34) who accessed the internet was 96% and 92% were doing it on a daily basis, in comparison to the general population (73% and 62%, respectively). In this segment (aged 25-34), the smartphone usage increased to 92%, versus 84% in 2016, and has already surpassed the usage of the computer at 86% in 2017. This generation is multi-device: the average number of connected devices per person is 3.4 (aged 25-34), 3.6 when aged under 25, while being superior once again when compared to the rest of the population with only 2.4 per person (Google, 2017b).

2.3. Mobile Technology and Travel

Nowadays, the widespread use of mobile devices, especially of the smartphone and its numerous Apps, is akin to an era of unprecedented connectivity and ubiquitous access to the Internet (Wang and Xiang, 2012). The instantaneous feature of mobile

technologies empowers tourists to access and share information with no spatial and temporal limits (Wang et al. 2014). However, this information will only positively influence the tourist experience should it be adequate to the contextual awareness of place, time and activity in which the tourist is integrated and to the profile of each tourist (Ferdiana & Hantono, 2014). Consumers tend to adopt mobile technologies because they find these technologies useful and convenient when conducting travel related tasks, such as information search (Buhalis and Law 2008; No & Kim, 2014), booking and payment for services (Fong, Lam, & Law, 2017; Ozturk, Nusair, Okumus, & Hua, 2016) and moving around a destination (Lu, Mao, Wang, & Hu, 2015).

Tussyadiah and Wang (2016) found that tourists perceive their mobile devices as a guide or travel companion, while making travellers, according to Wang, Xiang, & Fesenmaier (2016), feel better informed, socially connected, more entertained and safer, among other benefits. With the increasing number of users and greater incursion into people's lives, smartphones have the potential to significantly influence the touristic experience (Wang, Park, Fesenmaier 2012). For companies, mobile technologies also considerably influence the services offered, which results in higher revenue and higher occupancy rates for hotels (Jung, Kim, & Farrish, 2014; Makki, Singh, and Ozturk, 2016). Embracing these technologies may even trigger higher stock prices of hotels and airlines (Qin, Tang, Jang, & Lehto, 2017).

The study "Mobile in Spain and in the World 2018", conducted by Ditrendia (2018), refers that the number of mobile phone users in the world is 5.135 million people, which represents 68% of the global population. In Portugal this penetration of mobile technology is even higher with 79% and, in 2019, the number of smartphone users in the country is 67% of the total population (Kemp, 2019). According to Globalwebindex's summary report (2018), 66% of the respondents state that

smartphones are the most important device in going online, instead of the laptop/desktop pc/tablet, which is revealing of the relevance of mobile technology, Particularly when focusing on younger generations, those numbers rise up to 76% (16-24 years old) and 73% (25-34 years old).

Wang et al. (2014) refer that the use of smartphones in everyday life is replacing the laptop/desktop computer for small tasks. Within this context, Wang et al. (2014) mention that the development of mobile technology has turned mobile devices, such as smartphones, into an important tool supporting tourists before, during and after the trip. According to the report 'The Future is Personal' from SITA (2015), 98% of travellers now carry their smartphone with them throughout their entire journey. Supporting this idea, Wang et al. (2014) state that mobile technologies and associated Apps change travel activities from the pre-trip stage, to experiences and consumption onsite, to the post-trip stage.

Travel planning as a specific type of consumer information search can be considered a crucial component of trip experience because, in order to develop a travel plan, a traveller generally needs to obtain a substantial amount of information (Xiang, Wang, O'Leary, & Fesenmaier, 2015). Travel plans are made in a number of stages, non-sequential, with the former stages conditioning the latter ones (Huang et al., 2017).

According to Hyde (2008) and Smallman and Moore (2010), the travel decision-making process can include the following phases: designing of the idea, searching for information, evaluation of alternatives for final decision, and booking. The process can be iterative with the four phases repeating in a loop or even running in parallel for each decision such as destination, itinerary and things to do (Fesenmaier and JiannMin, 2000).

Table 1 represents the claim of Gretzel et al. (2006) that the general functions of ICT tools produce significant and differing roles in shaping the tourist experience within all the three stages of a trip. This is a structural view of the tourist experience where traveling is seen as a process that includes pre-trip, during-trip and post-trip stages.

Pre-Consumption	• Planning • Expectation-design • Decision-making • Transactions • Anticipation
Consumption	• Connection • Navigation • Short-term decision-making • On-site transactions
Post-Consumption	• Sharing • Documentation • External memory • Re-experiencing • Attachment

Table 1. The three stages of touristic experience (adapted from Gretzel et al. 2006)

Analysing Table 1, the first step is identified as the pre-trip stage. Pre-trip planning helps the traveller to make decisions and build expectations for the upcoming trip (Gretzel, et al., 2006). Tourists may plan less before the trips as they are aware that

information is readily accessible with mobile devices as long as they are provided internet access (Wang et al., 2014). At the same time, the usages or tasks performed by tourists while on the pre-trip phase are increasingly varied and the barriers for their use are decreasing (Xiang, Wang, O'Leary, & Fesenmaier, 2015). As a result, consumers rely on smartphones more than other devices in the search process and smartphone users are more likely to search for information with friends and family than to use OTA websites (Murphy et al., 2016).

Murphy et al. (2016) also studied the usage behaviours of different technological devices and concluded that consumers tend to switch to their personal computers in the final booking process, despite using their mobile devices during the search process. In the global digital report 2018 of Travelport (Travelport, 2018a), the same argument is presented when referring to India, a country where, according to this report, the travellers are more digital savvy. This behaviour would not be so apparent in a country with this type of characteristics, but still over 85% of Indian travellers book their travel online by using their computer, rather than mobile technology (48%) or tablet (28%).

According to Wang et al. (2014), the main reasons pointed out for pre-trip planning with a smartphone were the lack of access to a desktop/ laptop, the feeling at ease with using the device and the sporadic nature of travel planning, for example casual conversations with friends or when taking the train, bus or underground.

The second planning stage is designated as the during-trip stage or consumption. Mobile technologies empower tourists to efficiently adjust their itinerary and plans in response to unexpected circumstances that occur during their trips (Lamsfus et al, 2015; Wang, Xiang, & Fesenmaier, 2016). Travelers are also more likely to delay their secondary decision-making like restaurant reservations or hotel bookings from the pre-trip stage to the during-trip stage (Lamsfus et al., 2015). Should they be unsatisfied with

the original plan, tourists are more likely to change their plans and initiate on-site decision-making. Consequently, travel activities may become more spontaneous, thus resulting in more unplanned trips, and smartphones enable tourists to take advantage of last-minute deals[1] (Wang et al., 2014). Millennials are more receptive to this type of deals with over 1 in 3 agreeing that they "often make holiday plans at the last minute" compared to only 1 in 4 of older consumers, despite all associated costs with last-minute booking (Expedia/Future Foundation, 2016). Seven extrinsic motivations such as obtaining food, finding directions, arranging transportation, finding accommodation, planning or re-planning trips, seeking things to do, arranging for shows and two intrinsic motivations (to kill time and habit) rise from these unplanned trips or activities and are considered during this stage (Wang et al., 2014).

Smartphones offer access to location-based services, recognising the current location of tourists and providing relevant suggestions based on tourists' inquiries like restaurants or souvenir shops (Wang, Park, & Fesenmaier, 2012). The use of location-based technology plays an essential role in the acquisition of geographic knowledge and contributes to the different components that affect the tourist experience (Tussyadiah, 2012).

Tourists are also more likely to document and share their experiences during-trip because of the convenience of the smartphone, the instant feedback and reward from online social activities (Wang et al., 2014). For this research, it is, thus, extremely relevant to clarify whether Portuguese millennials are behaving according to Wang et al. (2014) or to the model of Gretzel presented earlier.

The last stage proposed by Gretzel et al. (2006) is also known as the post-trip stage or post-consumption. Instead of sharing their experiences or providing feedback to

[1] This topic shall be addressed more thoroughly in the sub-chapter concerning the Apps

the service providers upon return, tourists are more likely to share their experiences during their trip, in order to ensure that their social circle is updated in real time (Wang et al., 2014). Therefore, the activities that used to be taken in the post-consumption stage of travel are now moved to the consumption stage. Consequently, in the during-trip experience stage, the feedback received from others may influence the tourists' emotions and behaviours (Wang et al., 2014). Furthermore, storing and retrieving their memories have become more common when consumers use mobile technologies in their travel (Law, Chan, & Wang, 2018).

2.4. Mobile Apps and Travel Apps

Mobile travel Apps provide travel-related companies a direct channel to create and maintain the conversation with their customers before, during, and after a trip (Ostdick, 2016). On average, the number of mobile Apps per user during the course of searching, booking and traveling is between 10-12 Apps (Travelport, 2018a). Along with the smartphone penetration growth, mobile applications are also increasing in popularity and usage, and more and more smartphone owners use these Apps for travel-searching purposes, thus expanding the core function of mobile (Wang & Xiang, 2012; Wang et al., 2015; Agrebi and Jallais, 2015). With growing numbers of companies and organizations investing in travel-related Apps (Lu, Mao, Wang, & Hu, 2015), there is the need to know how many Apps Portuguese millennials are using for searching purposes.

Mobile Apps are part of the customer experience and consumers use Apps not only to provide information on destinations and attractions, but also for various roles in travel, such as travel agencies, translators, entertainment devices, checking-in for their airline flights (Wang, Park, & Fesenmaier, 2012; Wang & Xiang, 2012; Steven Leon, 2018). In order to reinforce the importance of the check-in, a survey made by SITA

(2016) found that 12% of passengers checked-in via a mobile App in 2015 and airlines expect to see this percentage increase to 31% by 2019.

For hotels, a survey conducted by Criton studied the requirements of today's guests and concluded that 62% respondents were likely or very likely to check-in to a hotel via an App, had they the opportunity to use this method (Hertzfeld, 2019). This know-how is already available and used in big hotel chains like Hilton or OTA as Hotels.com for check-in and check-out (O'Neil, 2016) procedures. According to the research conducted by J. D. Power (2016), only 3% of guests used this method, though the levels of satisfaction were higher for those who check-in/check-out with a mobile App, by avoiding possible queues at the front desk of the hotel. With this emerging trend impacting traveller satisfaction, based on the authors referred above (J. D. Power, 2016; O'Neil, 2016; Hertzfeld, 2019), this research considers that it is relevant to analyse how the numbers of check-in/out using this method are progressing and if the Portuguese millennials are on track with this development.

Like Morell (2013) empirically demonstrated in theme or amusement parks, smartphone Apps could improve the quality of customer service through the display of the exact location of rides, checking on wait times at different attractions, and reserving a place in line at a ride among other. This type of information helps tourists to have a better adaptation to the destination they are at, while personalising the experience (Agrebi and Jallais, 2015).

The characteristics of the tourists such as familiarity with a destination (for example, first-time in comparison to the tourist who revisits) have the possibility to affect how technology can be used (Rivera et al., 2016). Previous research indicated mixed results with Fodness and Murray (1999) showing that first-time visitors and repeat visitors had displayed diverse behaviours when it came to the use of technology

while searching for information. McKercher et al. (2012) also found that repeat visitors were likely to be less exploratory than first-time visitors, when using technologies during their vacation, as the former usually tended to limit the amount of participation in activities and attractions. Nevertheless, Chen and Gursoy (2000) found that first-time and repeat visitors were similarly motivated to use public information sources for their trip. Lu et al. (2015) state that there is the need to better understand country specific factors that influence the consumers' intention to use travel Apps, which justifies the importance of drawing on this research for the Portuguese market and, in this case, the Portuguese millennials consumers' intent.

The use of mobile applications increased by 111% in the period between 2015 and 2017 (Ditrendia, 2017). In 2017, more than 80% of the time spent using mobile phones in the world was already assigned to Apps (Ditrendia, 2018). In the same year, 178.1 million Apps were downloaded worldwide and this figure is expected to reach 258.2 billion by 2022 (Ditrendia, 2018). According to Lu et al. (2015) travel applications are mobile applications that target travellers specifically, for example Airbnb or Tripadvisor, and also those that are used within the context of travel such as Google Maps. Following the data of the global mobile market report by Newzoo (2017), 59.5% of the Apps generate revenue from the sale commission and download of the application, 30.9% are financed through purchases within the application itself, and 9.6% through advertising under contracting models such as CPC, CPM or CPA.

Table 2 was built considering the data available at SimilarWeb (2019a; 2019b) in which the ranking of the top free Apps in mobile tourism is structured, based on application stores of Google and Apple, Google Play and Apple Store, respectively, on 31st March 2019, in Portugal.

Ranking	Apple Store	Category	Google Play Store	Category
1	Uber	Transport	FlixBus: Smart Bus Travel	Transport
2	Lime - Your Ride Anytime	Transport	Lime - Your Ride Anytime	Transport
3	Kapten (ex-Chauffeur Privé)	Transport	Booking.com	OTA
4	Booking.com	OTA	eDreams	OTA
5	Bolt (Taxify)	Transport	Google Earth	Other
6	Flash-Electric Scooters	Transport	Ryanair	Airline
7	eDreams	OTA	Mytaxi	Transport
8	FlixBus:Smart Bus Travel	Transport	Airbnb	Accommodation Booking
9	Airbnb	Accommodation Booking	TAP	Airline
10	Ryanair	Airline	Trivago	OTA

Table 2. Ranking of tourist Apps in Portugal from application stores Google Play and App Store, respectively, on 31st March 2019, Source: SimilarWeb (2019a,2019b)

This ranking reflects the work produced by Thakran and Verma (2013) and Okazaki et al. (2015). The most used Apps are the ones that respond to the demand for information in real time and location-based services such as accommodation, transportation, restaurants and other leisure activities. In addition, McCarthy et al., (2012) assert that transportation-related searches are becoming especially relevant with

both application stores having in the first two positions, an App that belongs to the category of transportation. The focus of OTA Apps is mainly on reservations and information search and their users are more likely to use the Apps to search for hotels, deals and customer reviews (Wang et al., 2015). A database of different hotels allows users to choose accommodation by comparing hotels (Wang et al., 2015).

Millennials possess much more travel Apps on their smartphones than non-millennials and it is more expected of them to use Google Maps, Yelp, Expedia than non-millennials, with the exception of hotels (Barton et al., 2013; Kwon et al., 2013). They do not use mobile applications and services provided by local tourism organizations, instead those they are already familiar with such as Google Maps (Gotardi et al., 2015). In this research, it will be clarified whether Portuguese millennials reproduce the same behaviours regarding Apps from local tourism organizations and the ones they are already familiar with.

2.4.1. Downloading and uninstalling a travel App

Given the importance of Apps (Wang, Park, & Fesenmaier, 2012; Wang & Xiang, 2012; Morell, 2013; Wang et al., 2015; Agrebi and Jallais, 2015), the following paragraphs intend to analyse the process associated with downloading and uninstalling an App during the travellers' journey.

When in need of an App for an upcoming trip, feedback like good App store rating and recommendations from friends/family have huge impact on a traveller's decision to download an App (Travelport, 2018b). According to the same report drawn by this company, the top reasons for downloading travel Apps are: searching and booking, checking flight status, getting a boarding pass, offers/promotions, keeping the traveller updated with notifications, hotel check-in, loyalty (reward points), feature only

available to App and it is the favourite App. Many Apps have the features of integration with the company websites and with the loyalty programme (Wang et al., 2015). Hui et al. (2013) have found that using mobile promotions, such as coupons, could increase unplanned spending on the part of mobile technology users. For example, more than 60% of United States travellers would consider an impulse trip based on a good hotel or flight deal (Google, 2017a). As seen before, millennials are keener on "holiday plans at the last minute" (Expedia/Future Foundation, 2016), therefore it is important to study this feature. Couponing is less discussed in literature but has been used for a long time now as a popular promotional tool in the tourism industry and it is relevant in creating a value-added mobile tourism App (Rivera et al., 2016). Mobile couponing is a convergence of traditional coupon promotions and mobile technology: it can be context-sensitive, by delivering the preferred types of coupons to tourists who are near or inside stores (Rivera et al., 2016). Tourists are pressed to purchase in real time when they are making decisions (Wehmeyer and Muller-Lankenau, 2005). Also, according to the latter authors, the three types of discounts used are: cash rebate (e. g. 20% off, 20 Euro off), rebate in kind (e. g. buy-one-get-one-free), bonus points (e.g. points in a loyalty scheme). Rivera et al. (2016) refer that the tourists' preferences indicate a trend towards discounts that include cash value and not a percentage discount, when considering cash rebate coupons.

Downloading an App over mobile web is only conceivable because mobile Apps diverge from traditional websites in several ways (Lu, Mao, Wang, & Hu, 2015). Only Apps that are valuable to consumers make users search for them in App stores, where they have to install the App, wait for the download and even pay if the App is not free (Lu, Mao, Wang, & Hu, 2015). According to the research of Travelport (2018b), the reason for this is that Apps can do more than mobile web like getting a boarding pass,

check-in, receive relevant push notifications or even access what travellers require offline. Real-time accurate travel notifications are on the top of services that could improve the travelling experience (IATA, 2018).

According to the report of Travelport Digital's 'How travellers are using mobile in 2019', the main reasons for deleting an App are: takes up too much space on phone; it was only needed for that specific trip; receiving too many notifications, having a poor user experience. The latter can be crucial for booking again with a travel brand: 65% of travellers would be unlikely to do it (Travelport, 2018b). In order to guarantee a good experience in these applications, the hardware features of mobile devices must be considered during the App development stage (Rivera et al., 2016). Commonly, mobile devices are restricted in terms of battery life, screen size and processing power (Zarmpou et al., 2013). Limited screen size could disturb user experience, thus requiring App developers to adjust the presentation of information (Hammond, 2013; Zarmpou et al., 2013).

2.5. Privacy and Security

Privacy and security are defined by the Oxford English Dictionary as: "A state in which one is not observed or disturbed by other people" and "The state of being free from danger or threat", respectively (privacy, 2019; security, 2019). Even though privacy and security issues are ignored in previous App adoption studies, they should not be disregarded due to the fact that several organizations and individuals are trying to collect user's personal data through App security weaknesses and use them illegally (Fang et al., 2017).

Worldwide, 42% of internet users believe that their data is being misused (Kemp, 2019) and, according to the 2015 travel app security study conducted by Bluebox Security (2015), all of the top 10 most popular mobile travel Apps for Android

and iOS devices have serious privacy and security issues, which jeopardise sensitive user information. During the installation of an application, the Apps will be able to access all information users granted permission, while the consumers are not aware of what exactly the application does with that permission, thus giving rise to some privacy and security risks that they may not consider (Gretzel, 2011; Fang et al., 2017). Users must reveal their personal sensitive data such as location and billing information to travel-related companies in order to gain high quality, on-demand and context-aware services, hence threatening their privacy and security (Pentina, Zhang, Bata, & Chen, 2016). While ethical and legal messages warn users of the possibility of their devices transmitting personal data to the Internet, consumers of any new App are encouraged to agree to the terms and conditions without reading them and their consequent implications due to the desire to connect to places, people and things (Dickinson et al., 2014). Companies and destinations have assumed that tourists agree to share their activity with them and generate data without truly asking for their view (Gretzel, Sigala, et al., 2015) even though tourists are generally open to share their personal information in exchange of better services and a more personalised travel experience (Neuhofer et al., 2015). In the case of airports, in 2018, 65% of passengers were willing to share additional personal information like travel purpose, in order to speed up their processing (IATA, 2018). If compared to 2017 (there were 70% of them), there is a lesser predisposition to share data because 2018 was a year with a lot of scandals regarding this topic, with the Facebook scandal, Google+ and the Marriott hack on top of everyone's mind (Grothaus, 2018).

Based on the "Global Passenger Survey" study conducted by IATA (2018), 45% of air travellers choose biometric identification as a replacement of their passport, thus reducing the need to wait longer in security lines. Biometric identity recognition can

provide easier access to information, more personalised services and more efficient operations through self-service and, at the same time, it reduces fraud and identity theft (European Association for Biometrics, 2019). Biometrics are automated methods of recognising an individual based on behavioural and biological characteristics (Biometrics Institute, 2019). Biometrics is typically used for two purposes: identification and verification. In these systems, identification is the process of examining one individual's characteristics and selecting the individual from a group of stored images, therefore positively identifying that person from the group. Verification, on the other hand, occurs when an individual claims his/her identity by presenting documentation that can verify who they are (Kang et al., 2007). The most recognised biometric technologies are fingerprinting (most widely used biometric technology), retinal scanning, hand geometry, signature verification, voice recognition, iris scanning and facial recognition (Bhatia, 2013). Nowadays, on average, biometrics are not much more expensive than most other secure second factors and many biometric systems work from relatively inexpensive sensors, such as cameras or mobile phones (European Association for Biometrics, 2019). Even fingerprint sensors may currently be made cheaply enough that they are starting to become normal on laptops (European Association for Biometrics, 2019).

According to the study "Biometrics Institute Industry Trend Tracker" (2018), 71% of the respondents reported using a biometric frequently in their everyday life with only 4% claiming never to do so. Unlocking a mobile phone was the leading usage (80% of those using a biometric in their everyday lives), with e-gates and accessing bank accounts/other services on a mobile phone also mentioned by 40% or more. With the use of smartphones in the tourist experience reflecting how we use devices in our everyday life (Wang, Xiang, & Fesenmaier, 2016), this underlines the importance of

biometrics in our lives and, especially in this case, in the tourism industry. In 2019, 71% of airlines and 77% of airports are currently investing in either researching or implementing biometric programmes (WTTC, 2019).

Anuar and Gretzel (2011) and Kuperus (2016) state that the benefits for tourists, for instance, more personalised experiences, might mediate their privacy concerns together with other factors such as their age, familiarity with ICTs, travel experience or even different nature of stakeholders with possible access to such data (public/mixed destination marketing organizations or private companies operating at the destination), among other personal characteristics.

In terms of the nature of the stakeholder, Femenia-Serra et al. (2018) state there is no substantial difference in the predisposition to share data with public agents or private companies.

For a factor like age, travellers from all generations are uncertain to reveal sensitive personal data but, in general, millennials are less cautious than other age groups with their personal information online, such as household composition, where they live, brand preferences, hobbies, where they go, vacations (Barton et al., 2013). According to the study conducted by Expedia/Future Foundation (2016), over 1 in 3 of non-millennials would be unwilling to give up personal data to an online travel agent for any reason, but, for the millennial generation, it is less than 1 in 4. These numbers reinforce the importance of studying the millennials' relationship with data and related topics.

3. Methodology

As it is indicated in the title, this chapter includes the research methodology of the dissertation. This research is motivated by the main purpose of raising insights on the impact that mobile technology has on the Portuguese millennial generation in all phases of its tourist experience. Furthermore, this section presents the subjects involved to collect information as follows, based on Pizam (1994): formulation of research problem; review of literature; concepts and variables; selection of research design, selection of data collection technique, the selection of subject, planning of data coding and analysis.

3.1. Formulation of research problem

Research questions imply the creation of new knowledge (Smith, 2017). A research question is a question that provides a clear statement of what the researcher wants to learn about (Bryman and Bell, 2012). For Kumar (2011), the formulation of a research problem is the first but also the most crucial step in the research process because everything that follows in the research process, such as research design, is significantly influenced by the way the research problem is formulated.

In tourism, a variety of practical topics are presented as issues to be investigated (Pizam, 1994). For this study, the research question is: What impact does mobile technology have on the Portuguese millennial generation in all phases of its tourist experience? In this context, the general objective of this research is to study the impact that mobile technology has on the Portuguese millennial generation in all phases of its tourist experience. The specific objectives of this research are:

1. The study of Portuguese millennials and their relation with mobile technology before, during and after their tourist experience;
2. The importance of travel Apps for Portuguese millennials;

3. The importance of privacy and security for Portuguese millennials.

Regarding the objectives of this study, the research objectives allow the researcher to operationalise the research questions and also the objectives that are usually more relevant to the research community as evidence of the researcher's purpose and direction due to the fact that they require more arduous thinking (Saunders, Lewis and Thornhill, 2016).

Objective 1: The study of Portuguese millennials and their relation with mobile technology before, during and after their tourist experience

More specifically:

- The reasons for planning their trip with mobile technology;
- Their usage when booking.

Objective 2: The importance of travel Apps for Portuguese millennials

Precisely:

- Identification of how many and which Apps they are using for searching;
- App usage and situations in which they are consuming it;
- The reasons for downloading and uninstalling a Mobile Travel App;
- Which factors influence to the App downloading decision-making process;
- The consequences, or lack thereof, of the user experience on an App on the usage of a brand.

Objective 3: The importance of privacy and security for Portuguese millennials

Particularly:

- The willingness to share additional information for more personalised experiences;
- Portuguese millennials' perception of how their data is being used;
- The preference for biometrics technology when compared to traditional methods of security;
- The different levels of trust regarding organizations (differences between public, private or public-private mix).

3.2. Review of literature

"No study starts *de novo*" (Pizam, 1994). Looking at what other researchers have done on a topic related to this research is valuable because it can offer ideas on how to approach the study in question, including data collection, definition of terms and conceptualisation of the problem (Smith, 2017). Another significant reason for conducting a literature review is that it helps to understand how the findings of the new study fit into the existing body of knowledge (Martin, 1985). There are several sources of information that can be used for reviewing the literature such as academic journal articles (most common source used by academic researchers), books, government or agencies' reports like UNWTO (Smith, 2017). This study used all of the referred above.

3.3. Concepts and Variables

A concept is a commonly accepted collection of meanings or characteristics associated with certain events, objects, conditions, situations, and behaviours (Cooper and Schindler, 2014). The major difference between a concept and a variable is measurability (Kumar, 2011). A concept cannot be measured while a variable can be subjected to measurement (Kumar, 2011). Operationally defined concepts become variables (Pizam, 1994).

For this research, the selected concepts were technology, millennials, Portuguese millennials, mobile, privacy and security. In terms of variables, age, Apps, biometrics, were carefully chosen.

3.4. Research design

Research design can be categorised in three types: exploratory, descriptive and casual (Pizam, 1994). This research bears an exploratory-descriptive character and it was conducted in two distinct phases: first, an exploratory, and, then, a descriptive one. Gomes (2002a) states that it is currently normal practice to begin a market research with an exploratory research, which clarifies the problem, hypotheses, concepts, alternative solutions and, after this initial phase, a descriptive research ensues.

3.4.1. Exploratory research

An exploratory study serves mainly to familiarise the researcher with the characteristics of the research problem and one of the main characteristics is flexibility (Pizam, 1994). Adams and Schvaneveldt (1991) emphasise this point by arguing that flexibility is intrinsic to an exploratory research but that does not mean lack of direction, just that the focus is firstly broad and then becomes progressively narrower as the research progresses. Gomes (2002a) describes an exploratory study as an essential first step in determining market information on competition, existing products, trends and specific market segments, while contributing to underline the importance of studying a specific market like the Portuguese millennials.

Within the qualitative exploratory techniques classified by Cooper and Schindler (2014), the analysis of secondary data was used in order to carry out a review on the recent literature addressing the researched topic. Secondary data are data collected for any purpose other than the problem at hand, whereas primary data are originated by the

researcher for the specific purpose of addressing the research problem (Malhotra, 1999). Primary data were collected in the descriptive research.

3.4.2. Descriptive research

Descriptive research is utilised when the objective is the systematic and accurate description of the facts and characteristics of a given population or area of interest (Pizam, 1994). The two main types of descriptive research are case studies and surveys (Gomes, 2002a). In the tourism industry, a survey is commonly used (Smith, 2017) and it is considered the dominant methodology of the quantitative research (Cooper and Schindler, 2014). Surveys are productive when the researcher wants to gather factual information relating to population groups: who they are, what they think, what they do (Denscombe, 2014).

Online surveys, in which respondents use a device connected to internet, have become massively optimised with regards to speed and cost as well as broader geographical reach (Denscombe, 2014; Poynter, Williams and York, 2014). The results of the survey are accessible in real time so it is possible to observe the content and the number of responses (Smith, 2017). According to ESOMAR (2014), online surveys are the most widely used data collection mode in terms of expenditure. If, initially, this tended to mean that online surveys were associated with PCs alone, recent reports are suggesting that about 25–30% of online surveys are being completed by people using mobile devices, which relates to the investigation of this research.

Descriptive studies can also be classified as cross-sectional studies or longitudinal studies (Gomes, 2002a). Due to time constraints latent in academic projects, the first classification has been selected for this research. Cross-sectional are those in which the data is obtained in a single moment in time and are also the most

regularly used in social sciences (Saunders, Lewis and Thornhill, 2016). Furthermore, this type is the best option for studies aimed at discovering the occurrence of a phenomenon, situation, problem, attitude or issue (Kumar, 2011).

3.5. Selection of data collection technique

There are three possible ways of collecting data: observation, direct communication and secondary data (Pizam, 1994). This research selected direct communication and the questionnaire as techniques for obtaining data. A questionnaire can be defined as an instrument in which a series of questions are formalised in order to obtain information from the respondents in a complete, reliable and accurate manner (Gomes, 2002b). A questionnaire is inherent to a survey strategy (Saunders, Lewis and Thornhill, 2016) and is adopted in this research because the potential respondents are dispersed over a wide geographical area (Kumar, 2011). Also, this technique is one of the most broadly used in terms of data collection (Saunders, Lewis and Thornhill, 2016) and interviewing would stand as extremely expensive under these circumstances (Kumar, 2011). Other factors that led this research to adopt web-based questionnaires involve the characteristics of the selected population, which are the millennials, and the timeframe available to carry out this study.

In the table below, Pizam (1994) describes the advantages and disadvantages of the implementation of a questionnaire.

Advantages	• Relatively inexpensive; • Requires almost no skills to administer; • Can assure respondents anonymity, if it is properly

	designed; • Possibility of administering to a large number of respondents at the same time; • Eliminates interviewer bias; • Enables standardisation and uniformity.
Disadvantages	• Has a low response rate; • Is restricted to verbal behaviour; • Lacks control over the research setting.

Table 3: Advantages and disadvantages of a questionnaire (adapted from Pizam 1994)

A common rule in this technique is that, in many aspects, respondents' views on the characteristics under study are best captured using a scale of five to seven categories (Gomes, 2002b). This research uses the five-point Likert scale, with one representing "strongly disagree" and five "strongly agree". With this scale, the respondent is being asked to agree or disagree with statements that express either favourable or unfavourable attitudes towards the object of interest, thus reflecting its strength in the assigned score (Cooper and Schindler, 2014).

The first questions are usually of selection and serve to verify if the respondents approached are qualified for the study, by eliminating the individuals that are not part of the target population (Gomes, 2002b). To filter the individuals for the research, there is one open-ended question in this questionnaire ("Year of birth?") and the rest are closed-ended. In an open-ended question the potential responses are not given, while in a closed-ended the possible answers are set out in the questionnaire and the respondent

ticks the category that best describes the respondent's opinion (Kumar, 2011). The selection of closed-ended questions was based on the style of the questionnaire implemented because, according to Saunders, Lewis and Thornhill (2016), this style works better with straightforward closed-ended questions. Closed-ended questions are well-liked among respondents because are quite easy to complete and can be answered in greater quantity than open-ended questions within a given period of time and budget (Smith, 2017).

The review of the questionnaire produced was held by the student supervisor and also by two professors of ISCET. This cooperation helped to change its formulation, with the introduction of the Likert scale in some questions that were previously only answered by the selection of "yes" and "no", thus enriching the questionnaire.

It is divided in four sections and, before enquiring the respondents, there is a small introduction to identify the purpose of this study, to introduce the author and the institution where the work was executed, to assure confidentiality and to thank for the participation. The first section, consisting of six questions, seeks to eliminate individuals that are not part of the population as said before, and also to collect demographic information, which includes gender, age, level of education, and job position. The second section, organised into four questions, studies Portuguese millennials and their relations with mobile technology before, during and after their tourist experience. The third section, structured in eleven questions, dwells on the importance of travel Apps, such as how many and which Apps Portuguese millennials are using, their usage and in which situations they are consuming it, the reasons underlying their download and uninstall an App, which factors can influence the decision to download an App and if user experience on an App can have consequences

on the usage of a brand. Lastly, the final section, comprised of four questions, measures the role that privacy and security have in the respondents' mindset.

3.5.1. Pre-test questionnaire

Before collecting actual data, in order to reduce the measurement error, the validity of the content was verified by a pre-test, which took place in ISCET, on 23rd May 2019. 21 bachelor students of Tourism, participating in the DD & GNPT class, at 1:45 pm, answered the questionnaire to identify ambiguous definitions or questions which may be difficult to answer. This sample was chosen because, according to Kumar (2011), a pre-test should be carried out on a group of individuals that gather the same characteristics as the study population. The participants did not report any problems understanding and answering the questions, so the same questionnaire was used afterwards for data collection.

3.6. Selection of subjects

After selecting the technique for collecting data, the next step in the research process is the selection of the elements from which the information will be collected.

According to Pizam (1994), there are two possible ways to do it: to study all elements of the population, census; another way is to gather information on a part of the population, by sampling it. This research adopts the second strategy and there are numerous reasons for choosing sampling over census, including lower cost, greater accuracy of results, greater speed of data collection and availability of population elements (Cooper and Schindler, 2014). Sampling is the process of selecting a subgroup of the population you are interested in from a larger group to become the basis for estimating or anticipating an outcome regarding that same population (Kumar, 2011). Sampling methods may be defined as probability or non-probability (Pizam, 1994).

Probability sampling contains an equal known chance of each case to be chosen, thus allowing a statistic estimation on the characteristics of the whole population from the sample, while a non-probability sampling representativeness and selectiveness level of each case is not known, henceforth, it is not practicable to draw statistical inferences on the whole population (Saunders, Lewis and Thornhill, 2016). Additionally, non-probability designs are applied in cases where the total number of members of the population is impossible to be individually identified or just unknown (Kumar, 2011). Despite its limitations, Saunders, Lewis and Thornhill (2016) state that it is still possible to generalise on the target population from non-probability samples, but not on statistical grounds. Since a probability sampling is too costly, time-consuming and impractical (Gomes, 2002a), for this research, a non-probability sampling is used.

Non-probability samples can be divided into three main techniques: judgmental, quota and convenience sampling (Pizam, 1994). This research uses a convenience sampling, which comes from the liberty of the researcher to choose the sample, since it is the cheapest and quickest to conduct (Cooper and Schindler, 2014). However, Kumar (2011) points out that, due to the characteristics of a convenience sample, similar to non-probability as a whole, the results might not be accurately representative of the target population. Although it is vulnerable to bias and influences that are beyond the control of the researcher, this sampling technique is frequently used (Saunders, Lewis and Thornhill, 2016). Even though a convenience sample has no control to ensure precision, it may still be a valuable procedure (Cooper and Schindler, 2014). Saunders, Lewis and Thornhill (2016) suggest that samples often selected for convenience usually meet suitable requirements relevant to the research goal.

The sampling process also implies the definition of the sample size (Gomes, 2002a). According to Smith (2017), there is a positive relationship between the number

of questions in a questionnaire and the sample size. Ryan (1995) advocates a ratio of at least ten respondents per item. The questionnaire has 24 questions, so the sample must be, at least, 240 respondents. With 342 valid answers, the present questionnaire has largely surpassed the minimum number of respondents.

3.7. Planning of data coding and analysis

The pre-determined answers selected by the participants in order to express their opinions to the questions were processed by Google docs and later analysed with the same software. To avoid the issue of duplicated answers from the same person, an available filter termed "limit to one person" was applied, so each email address can only answer once.

Questionnaires were administered within the period of one week, from 24th May to 30th May 2019. These dates were chosen because, for a significant part of the sample, the students, it would be very difficult to collect data after these days, since in the month of June they are studying and finishing their exams..

In terms of analysis, in order to improve accuracy of the measurement for question number 8, not only the percentage in the sample but also the relative percentage were used. This is a question with possibility to select more than one option, which means the percentages can be higher than 100%, but, fundamentally, because of the significant number of people that do not plan to travel with their mobile device, it was relevant to see how relevant each reason is for the people that use these devices for planning a trip.

In question 15, only a final ranking of the most used free tourism-related Apps is presented. Despite the fact that in the reviewed literature there were two rankings, one from Google Play and another one from Apple, to simplify the answers for the respondents, due to questionnaires posing questions that the participant can answer

without having to consult their personal records (Smith, 2017), it was not asked from which App store they downloaded the Apps.

Finally, for question number 20, the present research draws a comparison in terms of order and not percentage, because, on Travelport's report (Travelport, 2018b), the percentages are relative and here the researcher measures the overall weight of the sample. In order to make the relative percentage in this study comparable, the options had to be the same as the ones in the Report but they are not.

4. Analysis and discussion of the results

The question structure was developed to associate specific research objectives and sub-objectives with the purpose of addressing the research questions. Each section of this chapter presents the quantitative data collected through the questionnaires. As referred in the methodology chapter, the research findings represent the analysis of the data compiled from 342 valid questionnaires distributed online and completed by Portuguese millennials.

4.1. Respondent profile

In this section, the respondent profile is presented with information such as nationality, age, gender, level of education and occupation. Besides that, it intends to eliminate individuals that are not part of the population studied with a filter used in the beginning of the questionnaire.

4.1.1. Nationality

For the questionnaire to be valid, the respondents had to be of Portuguese nationality and that is why, in question 1, 100% have this nationality.

4.1.2. Age

Question 2: Year of birth?

The age group selected for this sampling is restricted to people born between 1981 to 2000 (18/19 to 38 years old), depicted in Table 4, because, according to Butcher et al. (2017), Soares et al. (2017) and Bento et al. (2018), the millennial generation is defined within this timeframe. The mean of the year of birth is 1995, the median is 1996 and the mode is 1996, with 51 respondents. These results can be explained by the

population from whom a substantial part of data were collected: university students. At the time of this research, bachelor students with a 3-year degree were generally born between 1998 and 2000 and master's students between 1996 and 1997, which influence the mean, median and mode of the sample.

1981	1 (0.3%)	**1991**	9 (2.6%)
1982	2 (0.6%)	**1992**	11 (3.2%)
1983	2 (0.6%)	**1993**	43 (12.6%)
1984	2 (0.6%)	**1994**	31 (9.1%)
1985	4 (1.2%)	**1995**	26 (7.3%)
1986	0 (0%)	**1996**	51 (14.9%)
1987	7 (2%)	**1997**	42 (12.3%)
1988	9 (2.6%)	**1998**	29 (8.5%)
1989	8 (2.3%)	**1999**	38 (11.1%)
1990	4 (1.2%)	**2000**	23 (6.7%)

Table 4: Age of respondents

4.1.3. Types of mobile devices

Question 3: What type of mobile device do you use to connect to the Internet?

The type of mobile device used by the participants to connect to the internet is illustrated in Figure 1. The results express an almost unanimous use of smartphone, with 339 respondents selecting this option (99.1%), and only 3 marked the standard mobile phone (0.9%). The sample of this study is undeniably integrating mobile devices into their lives. These results corroborate literature observations from Eastman (2014), Wang et al. (2014) and Google (2017b) on millennial behaviours as heavy mobile and particularly smartphone internet users. The faster processors, increased memory,

operating system that can run multiple Apps and familiarity of use (Miller, 2012) make this device the favourite to use.

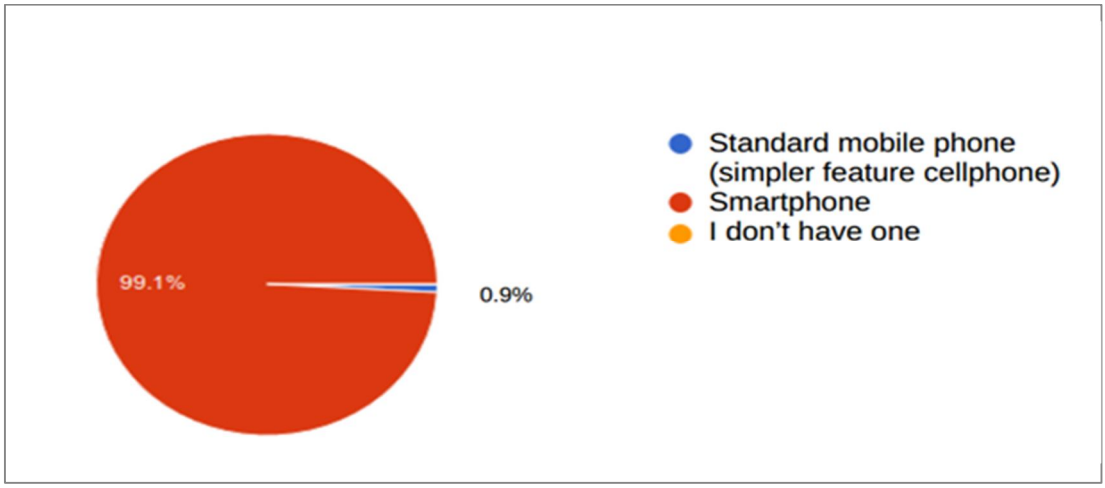

Figure 1: Types of mobile devices of the respondents

4.1.4. Gender

Question 4: What is your gender?

A total of 249 female and 93 male respondents took part in the questionnaires distributed online, which represents a percentage of 72.8% and 27.2%, respectively. This is in line with the INE (2019b) which states that there are more females than males in the age range of 20 to 34 years old.

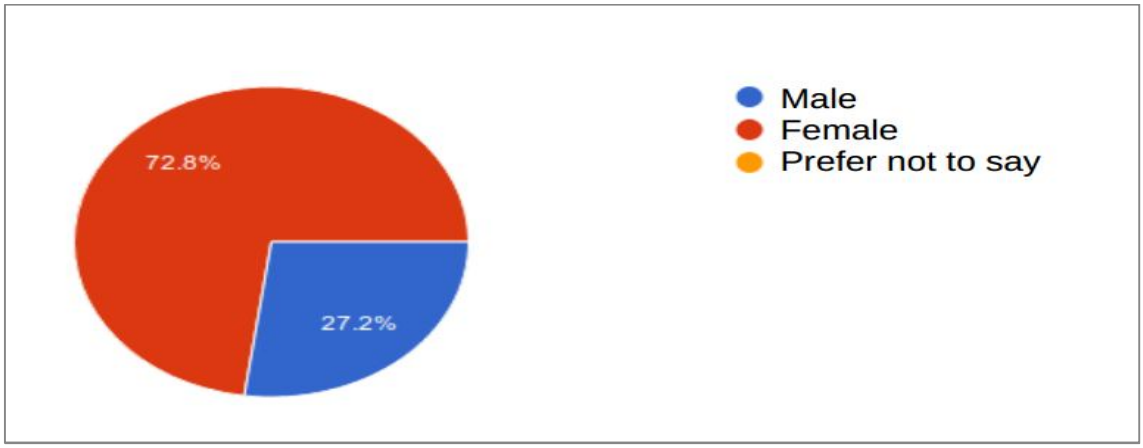

Figure 2: Gender of respondents

4.1.5. Level of Education

Question 5: What is the highest degree or level of education you have completed?

The level of education of the participants is illustrated in Figure 3. The results express a majority of 128 university undergraduates (37.4%), 117 master's degree graduates (34.2%), 83 high school graduates (24.3%), 10 postgraduate diploma holders (2.9%), and 4 respondents marked a PhD degree (1.2%). Considering McDonald's (2015) statement on how this generation is the most educated in terms of formal education, this sample shows it to be highly educated with 75.7% possessing a university degree.

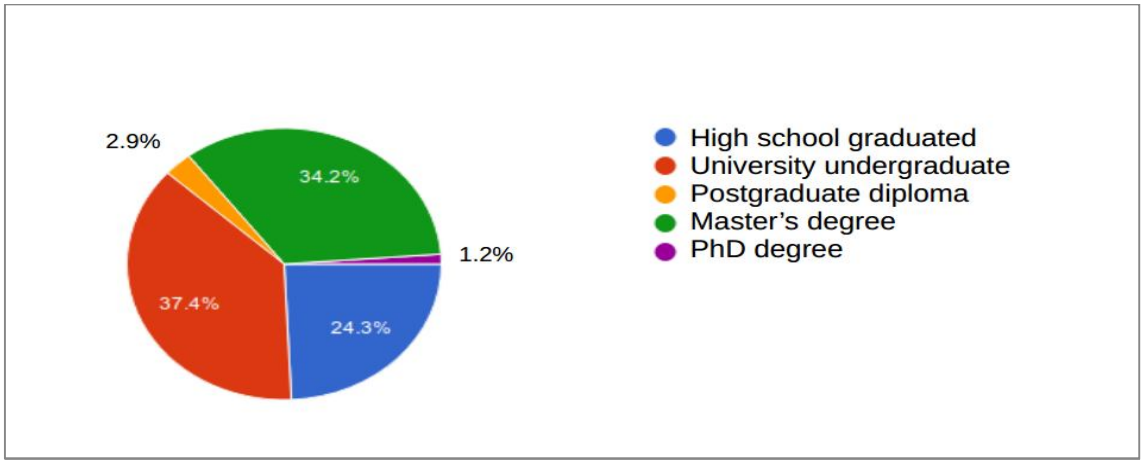

Figure 3: Level of education

4.1.6. Occupation

Question 6: Are you currently…?

The current employment status of the participants is shown in Figure 4. A vast majority of millennials who responded the online survey are students, i.e. 225 people (65.8%), followed by 83 employed for wages (24.3%).

Finally, 16 selected Other(s) (4.6%) as the most suitable option, describing themselves as: (A) 14 are currently studying and working simultaneously (4%); (B) 1 Investigator (0.3%); (C) 1 Stage for the Order (0.3%), and finally, 12 self-employed (3.5%) and 6 unemployed (1.8%).

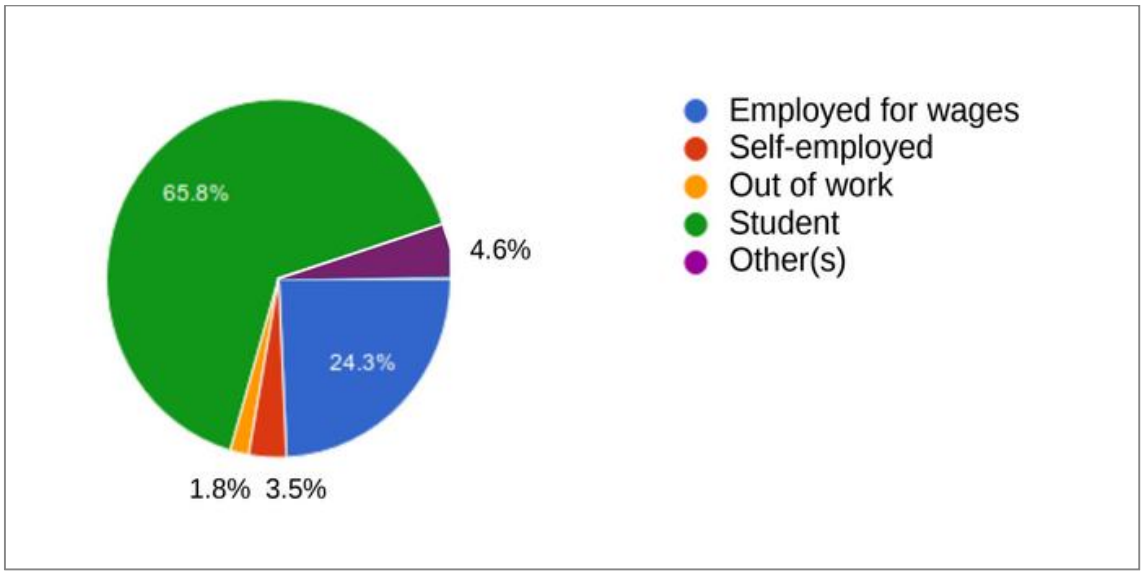

Figure 4: Occupation of respondents

4.2. Objective 1: The study of Portuguese millennials and their relations with mobile technology before, during and after their tourist experience

In this section, each of the answers to questions 7, 8, 9 and 10 are analysed, highlighting the most relevant aspects of objective 1.

4.2.1. Booking with mobile or computer

Question 7: Do you tend to switch to your personal computer in the final stage of the booking process, despite using a mobile device during the search process?

According to Murphy et al. (2016), consumers tend to switch to their personal computers in the final stage of the booking process, although they use mobile devices during the search process. The results shown in Figure 5 uphold such claim for Portuguese millennials, with 257 people (75.1%) saying "yes" and 85 people answering "no" (24.9%). In other words, approximately 3 out of 4 Portuguese millennials shift devices in the final stage of the booking process. These numbers demonstrate that, for

the majority of the generation, the customer journey is still not completed with mobile technology alone but with multiple devices.

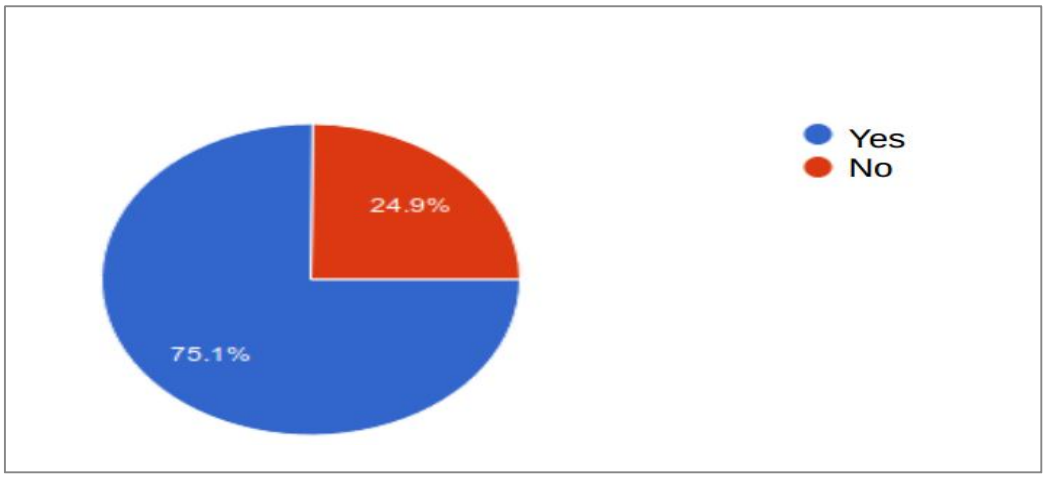

Figure 5: Respondents that switch to their personal computer in the final stage of the booking process

4.2.2. Reasons for planning a trip with a mobile device

Question 8: What is the main reason for planning with a mobile device? (Please select all that apply)

Figure 6 shows the number and percentage of respondents that do not plan their trips with a mobile device (110 people, 32.2%) and the ones that do it (232 people, 67.8%). The results display that 157 people plan their travels with this device in sporadic moments (45.9%), followed by 92 respondents who lack access to a desktop/laptop (26.9%), 79 people that feel more comfortable using their device (23.1%).

Finally, 10 selected Other(s) (3%) as the most suitable option, (A) 4 practicality (1.2%); (B) 4 easiness (1.2%); (C) 2 quickness (0.6%).

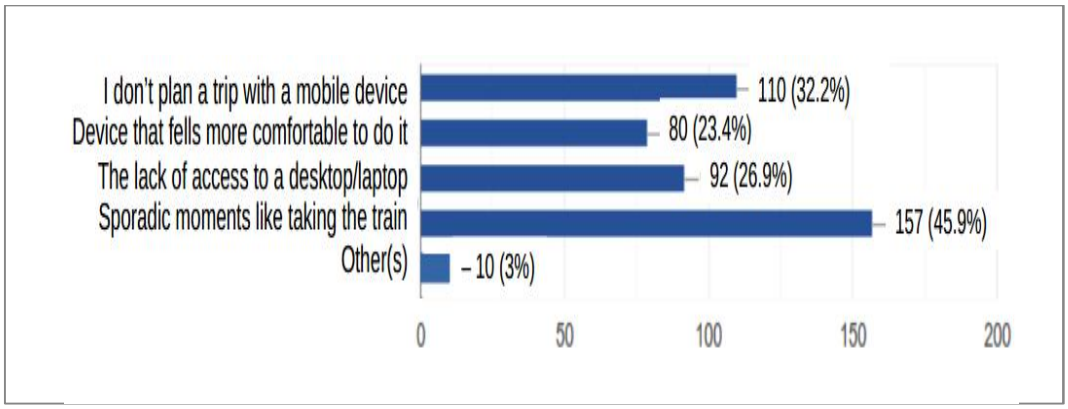

Figure 6: Reasons for planning with a mobile device

From the 232 participants that plan their trip with a mobile device, table 5 below, represents the percentage of each reason and their importance in planning with a mobile device (relative percentage).

Reasons	Percentage in the sample	Relative percentage
Sporadic moments	67,7%	46,3%
Lack of access to a desktop/laptop	39,7%	27,1%
Device that feels more comfortable with	34,5%	23,6%
Other (s)	4,3%	3%

Table 5: Reasons for planning with a mobile device

Table 5 was prepared following what is indicated in section 3.7 regarding to question 8[2]. These numbers are in line with Wang et al. (2014). They validate the nature of travel planning and other main reasons for pre-trip planning with a smartphone such as lack of access to a desktop/ laptop or people feeling more comfortable with it. This reflects that not just travel planning is occasional, but pre-trip planning with a mobile device is sporadic as well.

[2] Page 44

4.2.3. Promotions/last minute deals

Question 9: Promotions/last minute deals, encourages you to travel more?

Figure 7 shows that 27 respondents (7.9%) marked they strongly agree that promotions/last minute deals can encourage them to travel more, but the majority 137 (40.1%) just agrees. 93 people (27.2%) neither agree nor disagree, 70 respondents (20.5%) disagree and 15 (4.4%) strongly disagree. An average agreement of 3.27 shows a modest tendency to "neither agree nor disagree" and "agree".

These results allow the researcher to infer that they seem to be partially consistent with the report of Expedia/Future Foundations (2016), by suggesting that millennials are enthusiastic towards this type of deals. When compared to other markets like the United States, these types of deals do not encourage as much, with Google (2017a) referring that more than 60% of USA travellers would consider an impulse trip based on a good hotel or flight deal. For Portuguese millennials, according to figure 7, just 164 of the participants (48%) would be prompted to do it.

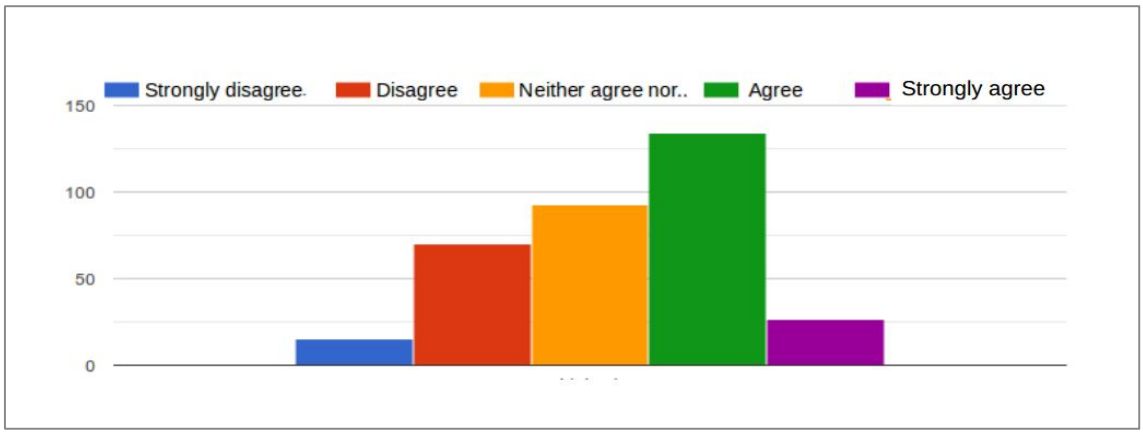

Figure 7: Opinion of promotions/ last minute deals

4.2.4. Sharing and documenting the tourist experience

Question 10: Do you document and share your experiences, during-trip or after the trip?

Figure 8 shows that 292 (85.4%) Portuguese millennials document and share their touristic experiences versus 50 (14.6%) who do not.. The majority of the sample, 185 (54.1%), document and share their experience during and after the trip, followed by 55 (16.1%) respondents that do it only during the trip and 52 (15.2%) who do it just after the trip.

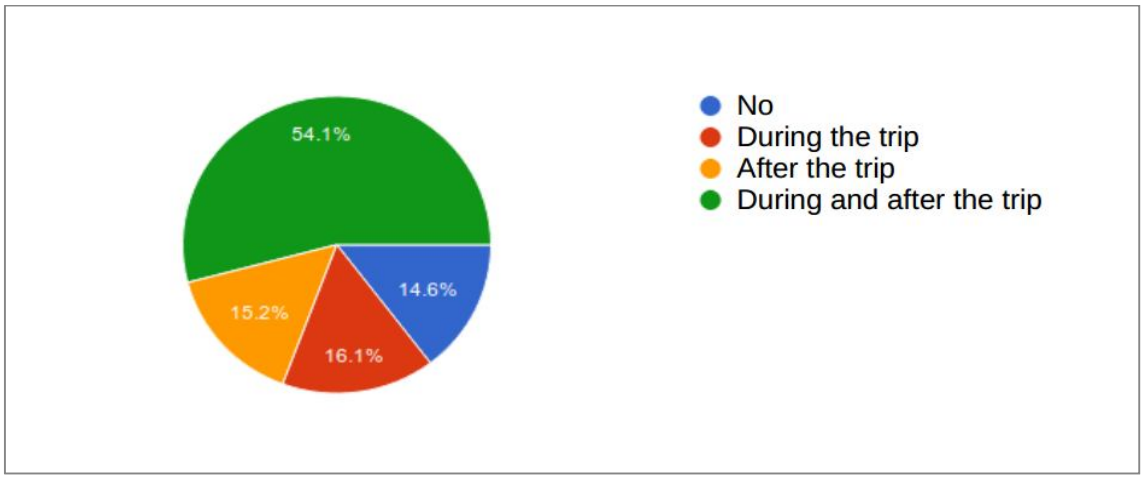

Figure 8: The phase when the documentation and share of the tourist experience occurs

The findings on this research clearly indicate that the documentation and sharing are no longer just in the post-consumption stage, as Gretzel et al. (2006) indicate, but in the consumption stage as well. Wang et al. (2014) state that tourists are more likely to do it during-trip, hence what used to be done post-consumption, now is done in real time. The results do not point in that direction also and still reveal that, for Portuguese millennials, these activities are done after the trip, but now also during-trip. Table 6 below represents the three stages of touristic experience after this analysis. The yellow part shows what was added to the original table (table 1[3]).

Pre-Consumption	• Planning • Expectation-design • Decision-making

[3] Table 1, page 21

	• Transactions • Anticipation
Consumption	• Connection • Navigation • Short-term decision-making • On-site transactions • **Sharing** • **Documentation**
Post-Consumption	• Sharing • Documentation • External memory • Re-experiencing • Attachment

Table 6: Three stages of touristic experience after analysis (source: own elaboration (2019))

4.3. Objective 2: The importance of travel Apps for Portuguese millennials

In this section, each of the answers of question 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 and 21 are analysed, underlining the most relevant aspects of objective 2.

4.3.1. Number of mobile Apps used for searching

Question 11: On average, the number of mobile Apps per user during the course of searching is…

Figure 9 reveals that only a small number of Apps are used for searching, from 0 to 5. From 342 respondents, 177 participants use 0 to 2 Apps (51.8%) and 151 people

use 3 to 5 (44.2%). A residual percentage (4.1%) uses more than 6 Apps: 9 respondents use between 6 to 9 (2.6%), 2 people use between 10 and 12 (0.6%) and 3 people use more than 12 Apps (0.9%).

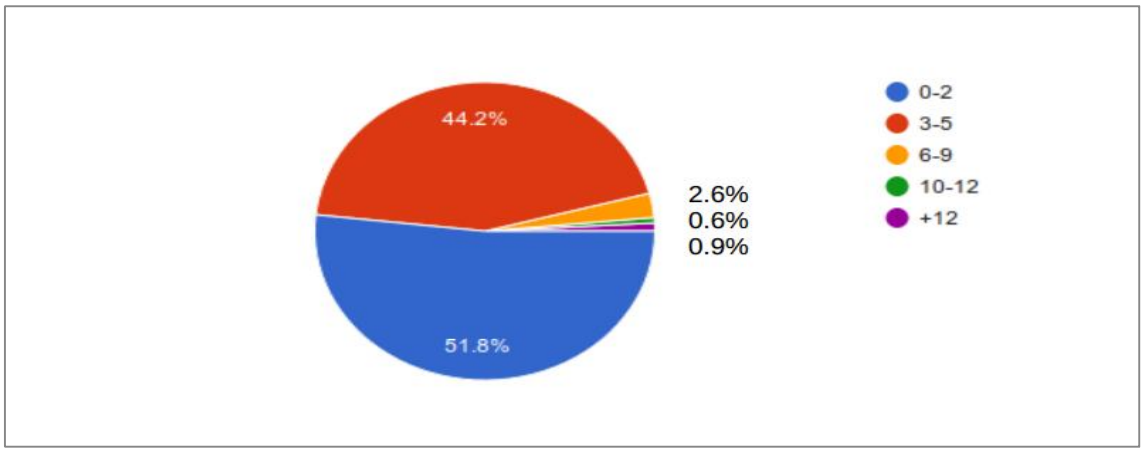

Figure 9: Number of Apps used per user for searching

4.3.2. Airline flights via a mobile App

Question 12: Is the check-in for airline flights done via a mobile App?

Figure 10 shows that 93 participants (27.2%) strongly agree with this technique for checking in on a flight, a majority of 120 people (35.1%) agrees, 40 participants (11.7%) neither agree nor disagree, 47 (13.7%) disagree and 42 (12.3%) strongly disagree. The average agreement of 3.51 shows that most respondents tend to agree with the considerations risen by Wang, Park, & Fesenmaier (2012), Wang & Xiang (2012) and Steven Leon (2018), that mobile Apps are used for checking-in.

The percentage of concordance (62%) reveals that Portuguese millennials have high levels of acceptance of this method regarding their check-in process, which largely surpasses 31% of SITA's prediction to the general population for 2019. These results indicate that this technology is being adopted much faster than expected and is now standard for this generation.

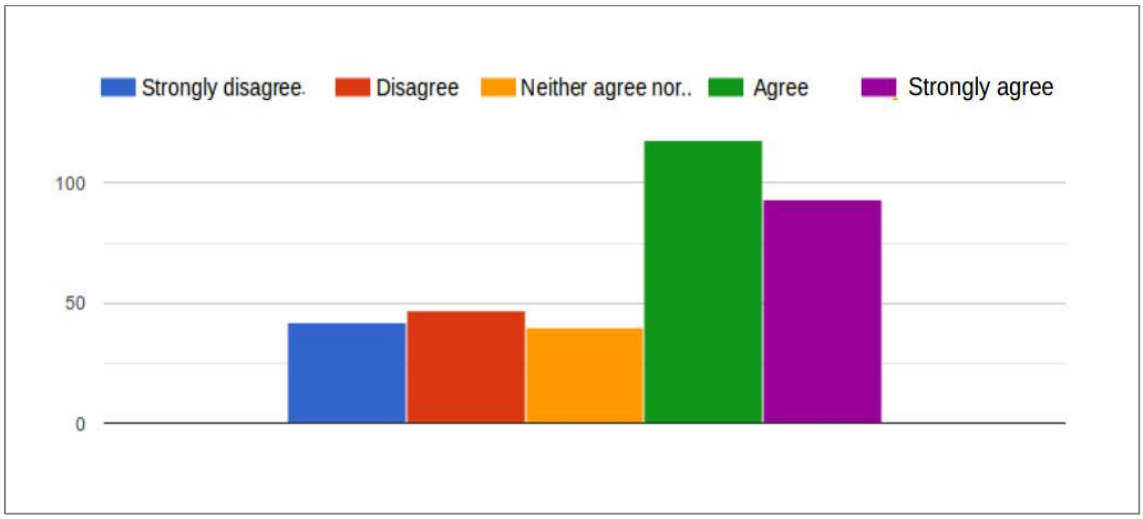

Figure 10: Check-in for airline flights is done via a mobile App

4.3.3. Hotel/Hostel/Apartment rooms via a mobile App

Question 13: Is the check-in/check-out for hotel/hostel/apartment rooms done via a mobile App?

Figure 11 shows 47 participants (13.7%) strongly agree with what was asked, a majority of 100 people (29.2%) agrees, 73 participants (21.3%) neither agree nor disagree, 73 (21.3%) disagree and 49 (14.3%) strongly disagree. The average agreement of 3.07 expresses a weak tendency to "neither agree nor disagree" and "agree" to do it via mobile App.

Despite the percentage of concordance (42.9%) largely surpassing J. D. Power's research in 2016 of only 3% of guests checking-in using this method, it is still far from the percentage of respondents in Criton's survey, which stated that should the technology be available to them, 62% would likely or very likely check-in to a hotel via an App (J. D. Power, 2016; Hertzfeld, 2019). These numbers show how far this method of check-in/check-out have come in a short period of time, but also that there is still room for growth so as to reach everyone who would be interested in using this technology.

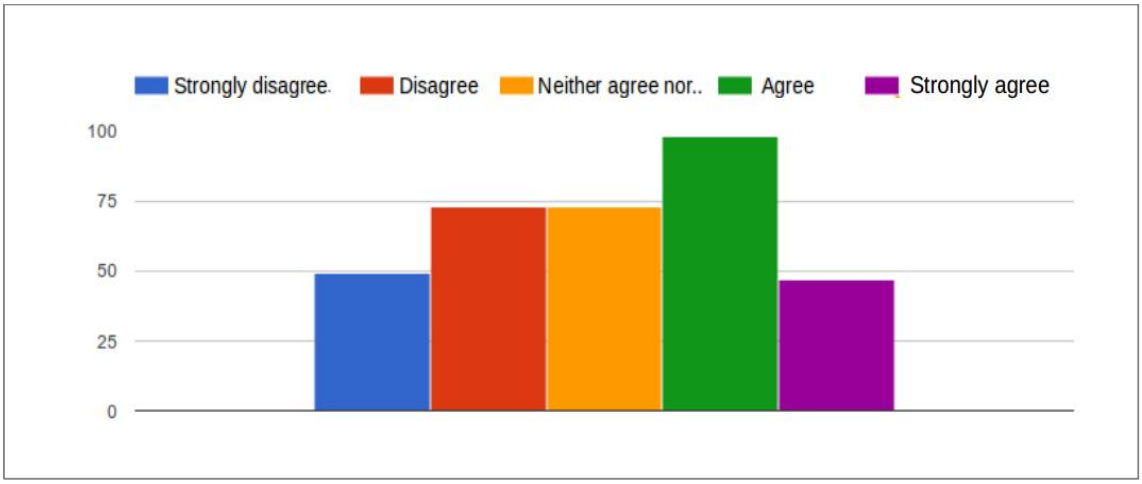

Figure 11: Check-in/Check-out for hotel/hostel/apartment rooms done via a mobile App

4.3.4. Familiarity with the destination

Question 14: The frequency with which I use an App is influenced by my familiarity with the destination (first time visiting the place or repeating the visit)

Figure 12 shows that, for question 14, 21 participants (6.1%) strongly agree with the statement, a majority of 122 people (35.7%) agrees, 102 participants (29.8%) neither agree nor disagree, 59 (17.3%) disagree and 38 (11.1%) strongly disagree. The average agreement of 3.08 indicates a small tendency to "neither agree nor disagree" and "agree". The percentage of agreement (41.8%) is higher than disagreement (28.4%), nonetheless, because of the value of average agreement that is very close to "neither agree nor disagree", it is not possible to strongly support McKercher et al.'s (2012) statement. The results allow the researcher to infer that the characteristics of tourists like familiarity with a destination do not affect technology usage (in this case the technology referred is mobile travel App).

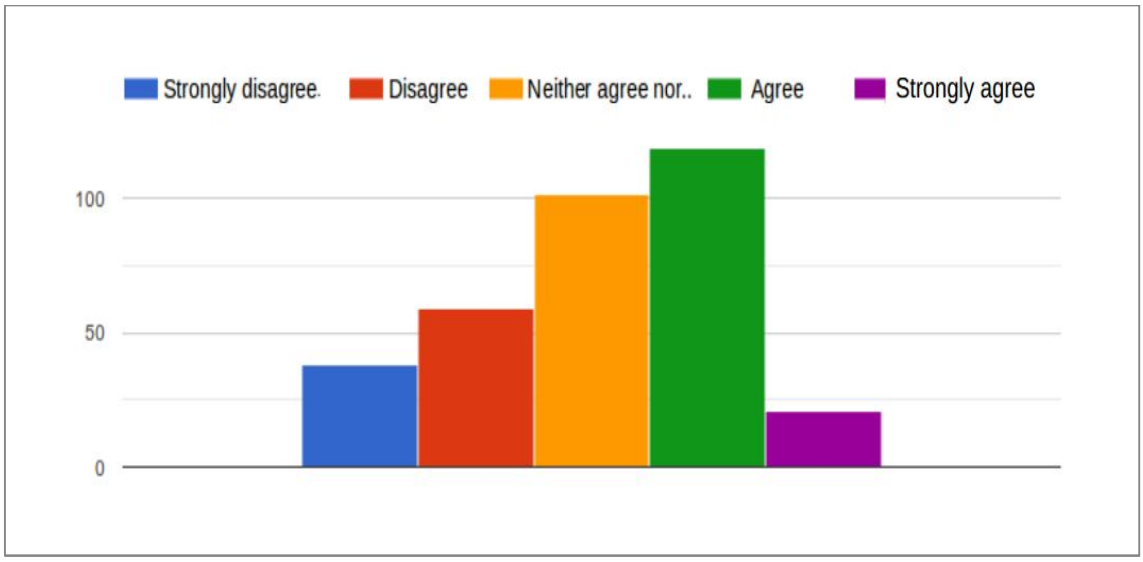

Figure 12: Familiarity with the destination

4.3.5. Most used tourism Apps

Question 15: What tourism-related Apps do you use? (Please select all that apply)

Figure 13 displays the most used tourism-related Apps by Portuguese millennials and Table 7 represents the ranking of the top free Apps in mobile tourism, based on this study.

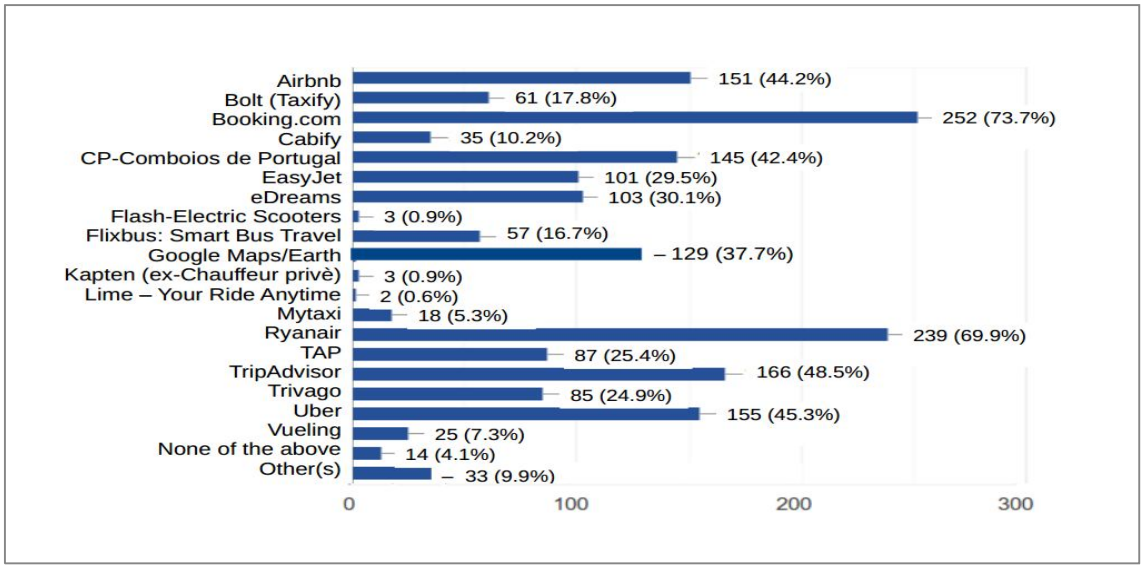

Figure 13: Tourism-related Apps

App		Category	App		Category
1	Booking.com	OTA	6	CP-Comboios de Portugal	Transport
2	Ryanair	Airline	7	Google Maps/ Earth	Other
3	TripAdvisor	OTA	8	eDreams	OTA
4	Uber	Transport	9	EasyJet	Airline
5	Airbnb	Accommodation Booking	10	TAP	Airline

Table 7: Ranking of tourism-related Apps for Portuguese millennials (source: own elaboration)1

The findings on this research also reflect the work produced by Thakran and Verma (2013) and Okazaki et al. (2015) with the most used Apps being the ones that respond to the demand for information in real time, location-based services, such as accommodation (Booking.com and Airbnb), transportation (Uber and CP- Comboios de Portugal); airlines (Ryanair, EasyJet and TAP), restaurants (TripAdvisor) and other leisure activities. Apps that millennials use at home like Google Maps/Earth are very popular, which is in line with Gotardi et al. (2015).

Transportation-related ones are relevant, but they are not as relevant as presented in the reviewed literature by McCarthy et al. (2012). Apps like Lime, Kapten, Mytaxi or Flash have no significance within Portuguese millennials and even transportation Apps like Cabify or Bolt do not belong to the top10 of the most used tourism-related Apps.

4.3.6. Local tourism organizations

Question 16: Do you use Apps of local tourism organizations when you are travelling in that destination? Example: I am in London, so I download the VisitLondon App.

Millennials do not use mobile Apps provided by local tourism organizations (Gotardi et al., 2015). The results shown in Figure 14 confirm the previous statement for Portuguese millennials, with 243 people (71.1%) saying "no" and 99 people answering "yes" (28.9%). In other words, approximately 7 in 10 Portuguese millennials do not use Apps of local tourism organizations.

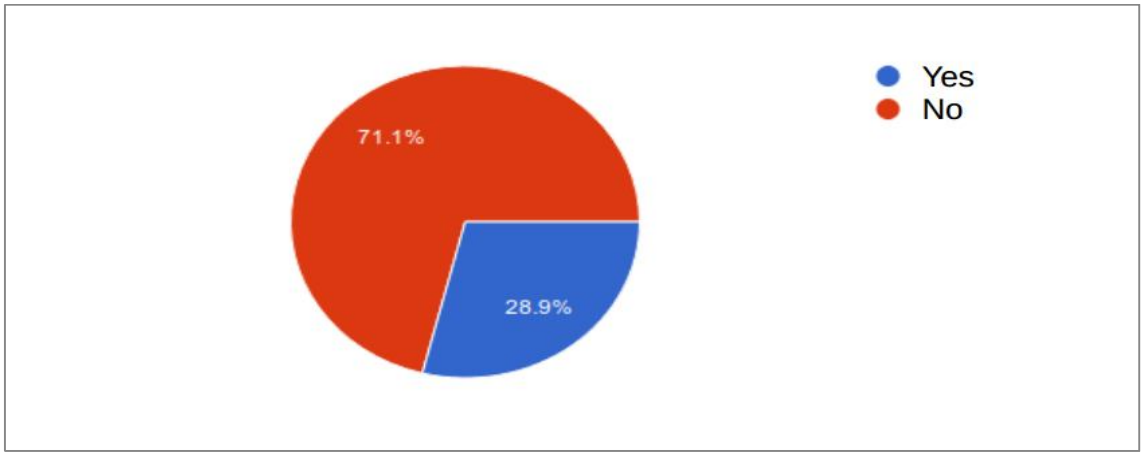

Figure 14: Portuguese millennials who use local tourism organizations' Apps

4.3.7. Reasons for downloading *a tourism-related App*

Question 17: What is the reason for downloading an App related to tourism? (Please select all that apply)

Figure 15 shows that "needing the App" and "searching and booking trips" are the most important reasons for downloading a travel App with 184 people (53.8%) selecting these two options, followed by offers/promotions with 142 people (41.5%), and getting a boarding pass with 134 people (39.2%). Hotel check-in was selected by 120 people (35.1%), checking flight status by 95 people (27.8%), keep me updated with notifications by 76 people (22.2%) and feature only available to App by 67 people

(19.6%). Finally, with less than 10%, loyalty (reward points, etc) marked by 33 people (9.6%), and it is my favourite App was selected just 24 times (7%).

These results are in line with the numbers presented on Travelport's report (2018b) and confirm, once again, the relevance of Apps and their fundamental actions for travellers such as boarding pass or hotel check-in, which were studied previously in this chapter in points 4.3.2. and 4.3.3.. It is also pivotal to highlight such aspect because approximately 2 in 5 Portuguese millennials see Offers/Promotions as a reason to download an App, which gives marketers clear indication of a strategy on how it is possible to increase the number of downloads of a travel App. On the other side of the spectrum, loyalty programmes are not popular between the members of this generation.

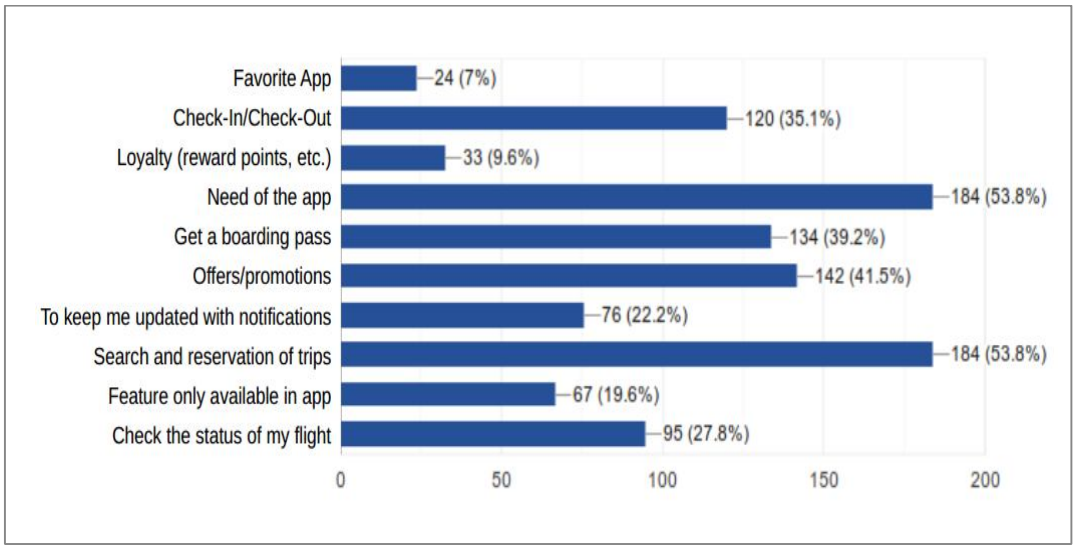

Figure 15: Reasons for downloading a tourism-related App

4.3.8. App store rating

Question 18: Does feedback like good App store rating impact on the decision to download an App?

Figure 16 shows that, for question 18, 88 participants (25.7%) strongly agree that App store rating is important when it comes to downloading an application. The most popular option is to "agree" with 182 people (53.2%), 38 participants (11.1%)

"neither agree nor disagree", 28 (8.2%) "disagree" and 6 respondents (1.8%) "strongly disagree". The average agreement of 3.93 indicates a trend in agreeing with the statement by Travelport (2018b) that feedback like good App store rating is relevant to the decision of downloading an App.

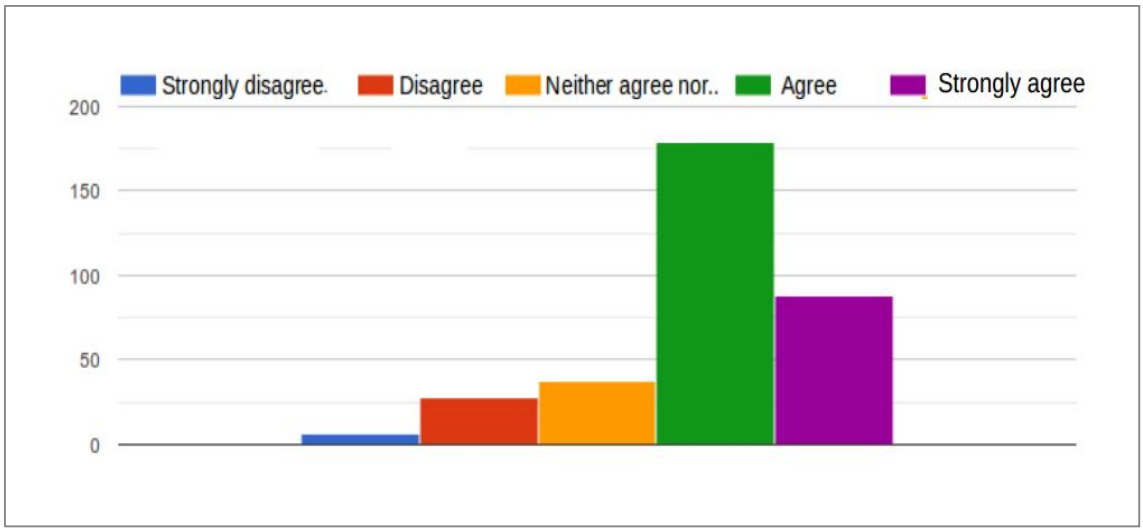

Figure 16: Relevance of feedback on the decision to download an App

4.3.9. Friends and family

Question 19: Do family/friends influence the decision to download an App?

Figure 17 shows 52 participants (15.2%) strongly agreeing with what was asked, while the most selected choice was "agree" with 152 people (44.4%), 70 participants (20.5%) neither agree nor disagree, 45 (13.2%) disagree and 23 respondents (6.7%) strongly disagree. Approximately 3 in 5 Portuguese millennials at least agree with the statement made by Travelport (2018b) that family and/or friends impact on the decision to download an App. Although there is a high percentage of agreement (59.6%), the average agreement is 3.48, thus placing the results in the middle of "neither agree nor disagree" and "agree". Nonetheless, the researcher concludes that family and friends do impact on the decision to download an App, much as in other decisions regarding the trip such as choosing the destination (IPDT, 2019).

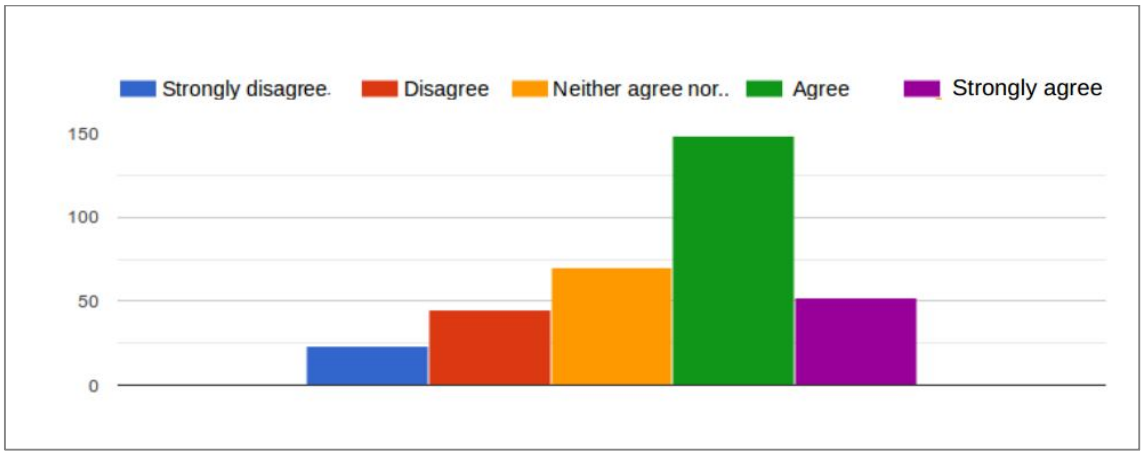

Figure 17: Relevance of friends and family on the decision to download an App

4.3.10. Reasons for uninstalling *a tourism-related App*

Question 20: What is the reason for uninstalling a tourism-related App? (Please select all that apply)

Figure 18 indicates that the vast majority of the respondents uninstall a travel App because it was only necessary for a specific trip, with 296 people (86.6%) selecting this option. Also, a popular reason for deleting an App, but with a large gap in relation to the top reason, is taking too much space on the devices, with 152 people (44.4%) choosing this option. 94 individuals (27.5%) state that receiving too many notifications and having a poor user experience, with 87 (25.4%) qualify as reasons for uninstalling a travel App (in other words, approximately 1 in 4 Portuguese millennials select these two options). Finally, just 1 person chose Other, claiming there were too many advertisements on the App.

The high percentages presented in each alternative validate that these options are, in fact, reasons to uninstall an App for Portuguese millennials. What is not in line with Travelport (2018b) is the order of relevance of each reason and not the reasons themselves.

With an extremely high percentage (86.8%), "it was only necessary for a specific trip, no longer useful after" is, by far, the most important reason to eliminate an App. This presents a challenge/opportunity for App developers to create more value for the post-consumption stage, in order to retain customers, but, of course, also considering the large amount of space that an App occupies on a device (44.4%). Too many notifications are also pertinent reason for uninstalling an App (27.5%). This problem could be solved if marketers consider not only the relevance of the content written in the message, but also the number of notifications sent and their timing. Real-time accurate travel notifications can improve the travelling experience (IATA, 2018).

Lastly, to assure a good user experience, the hardware features of mobile devices have to be considered during the App development stage (Rivera et al., 2016), thus avoiding, for example, hanging the phone (Jain, 2016).

Table 8 depicts the differences between Travelport's report and the results obtained in this research.

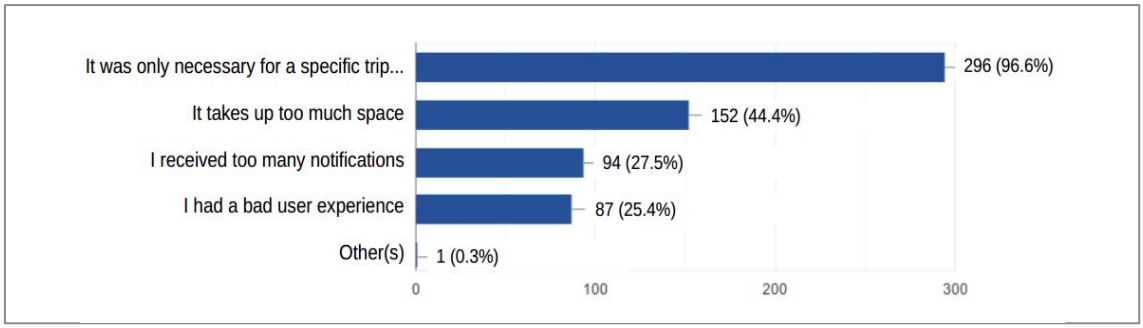

Figure 18: Reasons for uninstalling *a tourism-related App*

	Research	Travelport report
1º	Only needed for that specific trip, not useful after	Takes too much space on phone
2º	Takes too much space on phone	Only needed for that specific trip, not useful after

3º	Too many notifications	Poor user experience
4º	Poor user experience	Too many notifications

Table 8: Comparison between Travelport's and this research regarding reasons for uninstalling *a tourism-related App* (Source: own elaboration)

This research and Travelport's report present for positions 1 and 2 the same reasons, but in a different order. This research exhibits as the number 1 reason for uninstalling *a tourism-related App* "Only needed for a specific trip, not useful after", whereas for the report is "Takes too much space on phone". Not only this occurs for the two positions referred above, but the same happens for positions 3 and 4 on table 8.

4.3.11. Poor user experience

Question 21: Having a poor experience as an App user influences my perception of the App-holding company?

Figure 19 establishes that, for question 21, 62 participants (18.1%) strongly agree with what was asked, the most of the respondents agree, with 181 people (52.9%), 74 participants (21.6%) neither agree nor disagree, 21 (6.1%) disagree and 4 respondents (1.2%) strongly disagree. The average agreement of 3.80 shows that most respondents tend to agree with the statement made by Travelport (2018b), so a poor user experience is not just a reason to uninstall an App, as seen in the last question, but can also influence the user's perception of the App-holding company.

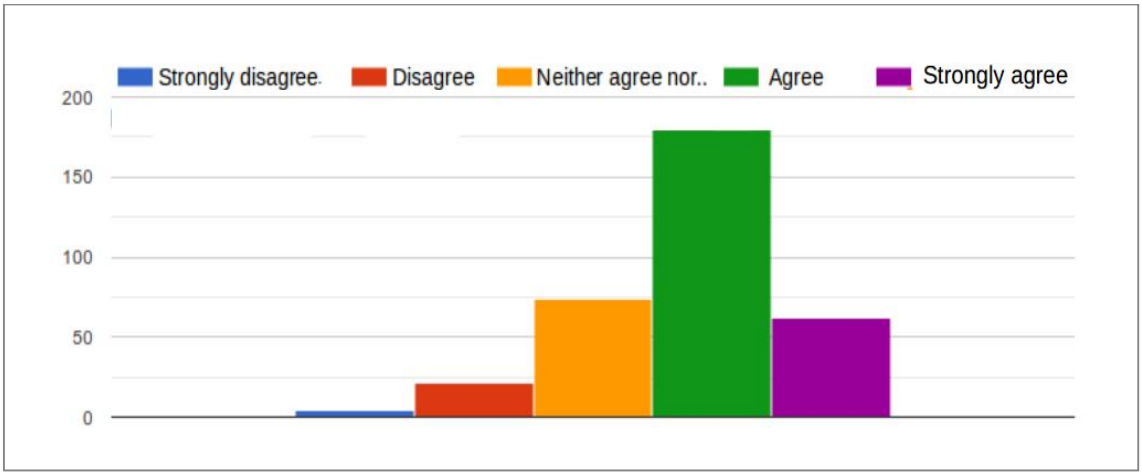

Figure 19: Influence of a poor App experience on the perception of the App-holding company

4.4. Objective 3: The importance of privacy and security for Portuguese millennials

In this section, each of the answers of question 22, 23, 24 and 25 are analysed, while emphasising the most relevant aspects of objective 3.

4.4.1. Sharing personal information for better services/ more personalised experience

Question 22: Are you open to share your personal information in exchange of better services and a more personalised travel experience?

Figure 20 shows that, for question 22, 16 participants (4.7%) strongly agree with what was asked, most of the respondents agree, with 112 people (32.7%), 95 participants (27.8%) neither agree nor disagree, 84 (24.6%) disagree and 35 respondents (10.2%) strongly disagree. The average agreement of 2.88 indicates a modest tendency to "neither agree nor disagree" and "disagree", thus contradicting Neuhofer et al. (2015) and Travelport's research (2018b). Even with more participants at least agreeing rather than "disagreeing" and "strongly disagreeing", due to the average, the results indicate that Portuguese millennials do not share personal information in exchange of better

services and a more personalised travel experience. However, based on Barton et al. (2013) and Expedia/Future Foundation (2016), millennials are less cautious with their data than other/older generations and only less than 1 in 4 would not be willing to provide personal data to an online travel agency for any reason. The percentage for Portuguese millennials is 34.8% (approximately 1 in 3), which is not in line with the previous studies. These results might be explained with the security scandals of 2018 with the Facebook scandal, Google+ and Marriott hack (Grothaus, 2018), which have created fear in this generation but have also raised more awareness on these topics.

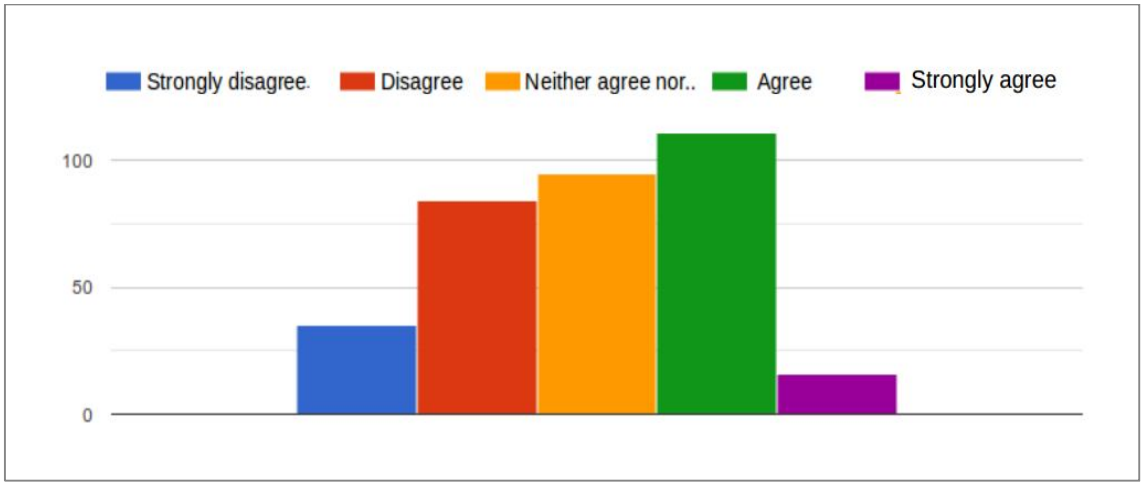

Figure 20: Openness to share personal information in exchange of better services and a more personalised travel experience

4.4.2. Data usage

Question 23: Do you think the data you provide is correctly used?

Figure 21 shows that, for question 23, 4 participants (1.2%) strongly agree with the statement, 95 people (27.8%) agree, a majority of 181 participants (52.9%) neither agree nor disagree, 48 people (14%) disagree and 14 (4.1%) strongly disagree.

In this research, the percentage of participants who believe that their data is being misused (18.1%) is not as high as the one in the study presented by Kemp (2019), with 42% of internet users worldwide disbelieving in the correct use of their data. The

average agreement of 3.08 exhibits that Portuguese millennials are not so suspicious, even showing a modest tendency between "agree" and "neither agree nor disagree". Gretzel (2011) and Fang et al. (2017) state that consumers do not have an accurate idea of what exactly the App does with their permission. The awareness created by the security scandals (Grothaus, 2018) could have made consumers more aware of some privacy and security risks that they would never consider before. This may explain why more than half of the participants chose "neither agree nor disagree".

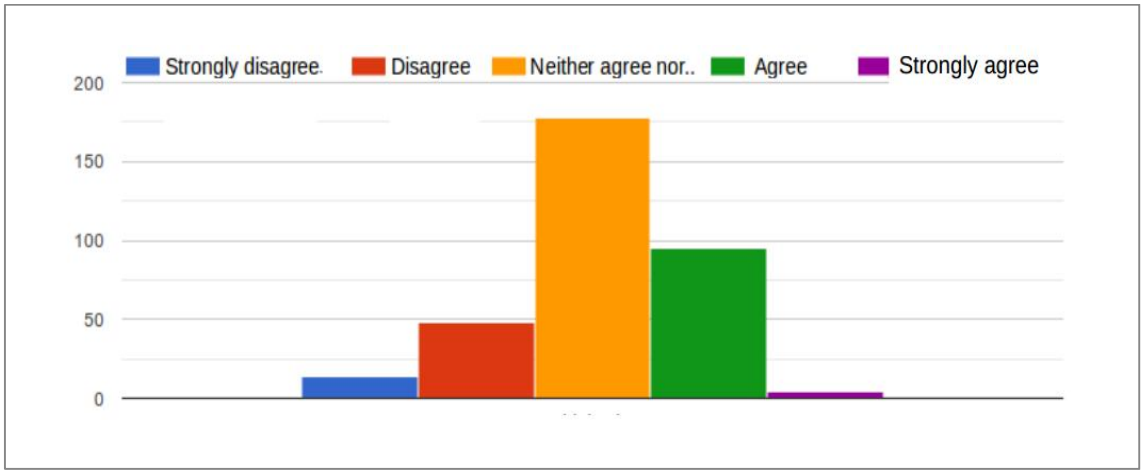

Figure 21: Perception on how the data is used

4.4.3. Biometrics

Question 24: Would you choose to use biometric identification as substitute for your passport? Examples of biometric identification: fingerprints, voice recognition, facial recognition

Figure 22 shows that 35 participants (10.2%) strongly agree with what was asked, a majority of 122 people (35.7%) agrees, 71 participants (20.8%) neither agree nor disagree, 62 (18.1%) disagree and 52 (15.2%) strongly disagree. The average agreement of 3.08 depicts a shy tendency to "neither agree nor disagree" and "agree". The percentage of people that, at least, agree (45.9%) is almost identical (45%) to the one in the study "Global Passenger Survey", conducted by IATA (2018). These similar

numbers illustrate Portuguese millennials as supporters of a paperless experience as it is concluded in the survey carried out by the association.

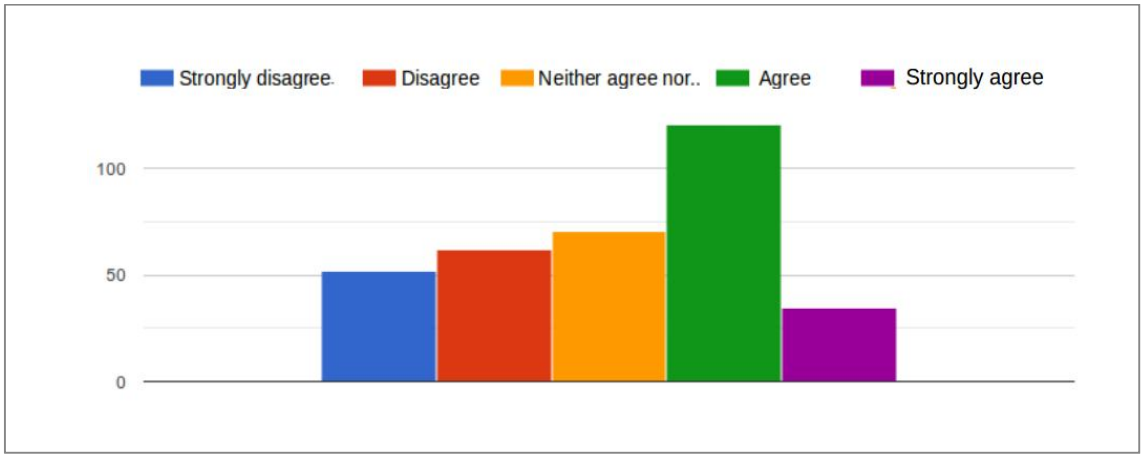

Figure 22: Confidence levels in biometric identification as substitute for passport

4.4.4. Differences in the levels of trust regarding the nature of the stakeholders

Question 25: Do I have confidence in the transmission of my personal data to organizations?

This question was asked based on the nature of the stakeholders (public, private and public-private organizations), leading to three statements:

Statement 1: I have confidence in the transmission of personal data to public organizations

Figure 23 shows that 14 participants (4.1%) strongly agree, 87 participants (25.4%) agree, a majority of 124 people (36.3%) neither agree nor disagree, 94 (27.5%) disagree and 23 (6.7%) strongly disagree with the statement. The average agreement of 2.93 depicts a slight tendency to "neither agree nor disagree" and "disagree", demonstrating that Portuguese millennials do not feel confident when transmitting their data to public organizations.

Statement 2: I have confidence in the transmission of personal data to private organizations

Figure 23 shows that 5 participants (1.5%) strongly agree with the statement, 73 participants (21.3%) agree, a majority of 133 people (38.9%) neither agree nor disagree, 104 (30.4%) disagree and 27 (7.9%) strongly disagree. The average agreement of 2.78 shows a tendency to "neither agree nor disagree" and "disagree", thus indicating that Portuguese millennials do not feel confident when disclosing their data to private organizations.

Statement 3: I have confidence in the transmission of personal data to public-private organizations

Figure 23 shows the confidence levels in the transmission of personal data to public-private organizations. 5 participants (1.5%) "strongly agree", 63 participants (18.4%) "agree", a majority of 154 people (45%) chose "neither agree nor disagree", 95 selected (27.8%) "disagree" and 25 (7.3%) "strongly disagree". The average agreement of 2.79 shows a slight tendency to "neither agree nor disagree" and "disagree", thus demonstrating that Portuguese millennials do not trust public-private organizations with their data.

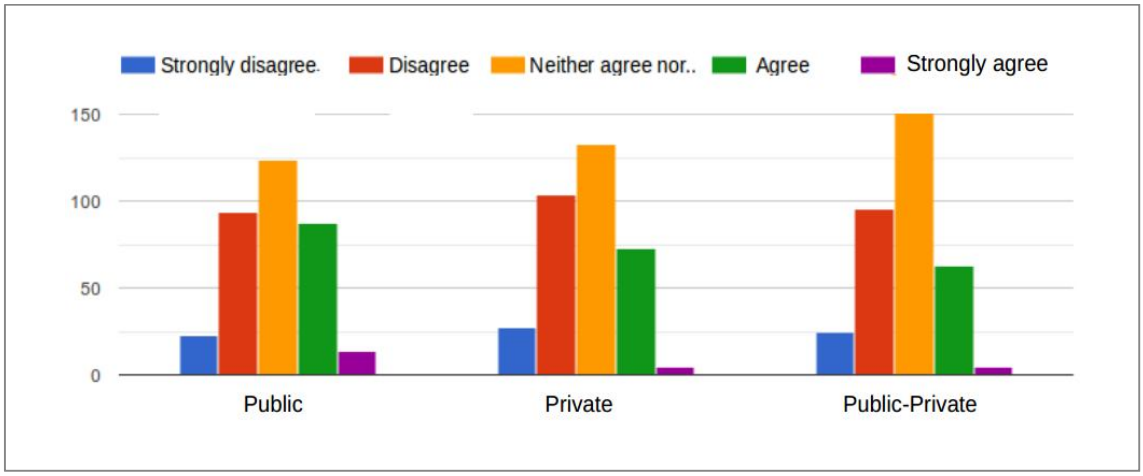

Figure 23: Confidence levels in the transmission of personal data to organizations

Despite the fact that no single type of stakeholder receives confidence by Portuguese millennials, when it comes to transmitting their personal data there is a small difference in the average agreement between public (2.93) and private/public-

private (2,78; 2.79, respectively) but not relevant enough to conclude that there are differences between them. This is in line with Femenia-Serra et al. (2018), but not with the considerations stated by Anuar and Gretzel (2011) and Kuperus (2016) who state that the benefits for tourists like more personalised experiences might mediate their privacy concerns with factors such as the different nature of stakeholders.

5. Conclusion

The main objective of this research was to study the impact that mobile technology has on Portuguese millennial travellers in all phases of the tourist experience. This objective started with the review of the current literature, which allowed to deepen the concepts (technology, millennials, Portuguese millennials, mobile, privacy and security) and identify the variables (age, Apps, biometrics). Subsequently, data were obtained through an online survey and analysed through a descriptive technique, resulting in 342 valid questionnaires.

This chapter presents the conclusions of the investigation and further contributions, its limitations and, finally, it provides directions for future research.

5.1. Conclusions and Contributions

The present study, with the objective of studying the impact that mobile technology has on Portuguese millennial travellers in all phases of the tourist experience, concludes and contributes to the literature in 5 levels. Each one of these levels contributes to a better understanding of this research.

Firstly, in the pre-trip stage, the searching process occurs with mobile technology and only with a small number of Apps (0 to 5). In the final booking process, the device is already different because users tend to switch to their personal computers. From these behaviours, the researcher infers that Portuguese millennials still do not feel comfortable enough to have a 100% mobile planning experience, which identifies them as mobile users in general, but not in every component of their trip. This result contributes to raise awareness towards this conduct and presents a challenge for tourism App holding-companies and mobile developers, regardless of their size, to construct a simpler pre-trip stage for their customers.

Secondly, the during-stage is getting increasingly relevant. Millennials are enthusiastic for offers like promotions/last minute deals, so planning and decision-making are nearer to this phase or even at this stage. This result reflects that short-term decision-making, classified by Gretzel et al. (2006) as part of the consumption stage, is increasing in popularity amongst the members of this generation.

Not only the first stage, but also the last one, are being affected by the growing relevance of the during-stage. The findings on this research show that, for Portuguese millennials, documentation and sharing are done both in the post-consumption and in the consumption stages, which does not support what was previously argued by Gretzel et al. (2006) and Wang et al. (2014). Also, in the second stage, while checking-in/-out via a mobile App for airline flights is already a common procedure for this generation, the same does not apply to hotel/hostel/apartment rooms.

Thirdly, in the post-trip stage, re-experiencing the destination does not affect App usage in comparison to the ones visiting for the first time. This outcome contributes to existing technology-related tourism literature regarding technology preference and usage between first-time and repeat visitors, which, according to Rivera et al. (2016), have not yet reached a consensus.

Fourthly, Portuguese millennials' relationship with Apps is the same as identified in previous researches (Gotardi et al., 2015; Thakran and Verma, 2013; Okazaki et al., 2015). They do not use mobile Apps provided by local tourism organizations; instead, this generation uses the ones they are already familiar with such as Google Maps or Uber. Due to the indifference of millennials in relation to tourism local Apps, this type of organizations should take in account which factors lead to this disengagementand how tourism organizations can improve the experience, in order to create meaningful relations with this cohort.

Should the millennial go through a poor user experience with an App, that is not only a reason for uninstalling it but it also influences the perception they have of the App-holding company. This impact of an App on the holding-company highlights the importance of the topic, not only in this research, but in all the studies related to it.

Finally, in terms of privacy and security, Portuguese millennials appear to have particularly high awareness regarding these topics. Even though they do not trust any type of organization with their data, upon possession of their information by these companies, this cohort does not think it is misused. This generation seems reluctant to share personal information in exchange of better services and a more personalised travel experience and does not discriminate between public, private or public-private interests.

5.2. Recommendations

In order to encourage advancements in this field, there is the need to develop longitudinal studies due to the existing use of mobile technologies and the predisposition of tourists to share their data will evolve in the next years.

In the future, it would also be beneficial to extend this study into Generation Z because they are the next generation of consumers who will dominate the focus of companies and entities. This is bound to occur not only in tourism, but also in the other industries.

Based on the findings on this research, tourists document and share during and after the trip. Future research may include measuring whether the content of what is shared or the levels of satisfaction are different when tourists share during, after or both.

On this study, only the impact of a poor user experience on the App-holding company was analysed. A different approach, such as how beneficial is it for the company to own an App that provides a good user experience, would further deepen this topic.

Additionally, in terms of applications, future research should investigate if there is a relation between the use of an App and the stages of the trip. This would allow to identify which Apps are actually used for which phase of the trip and verify if the applications present in all stages of a trip are more used than others.

Finally, on the questionnaire of this research and also on the reviewed literature, there is no distinction between the influence of family and friends on the decision to download an App. This is also applied to checking-in and checking-out of hotel/hostel/apartment rooms done via a mobile App. For future research, the adequacy of this approach made by academics or the potential differences between them should be investigated.

5.3. Limitations

Apart from the aforementioned contributions, this study is not free of limitations. Throughout the review of the literature, opportunities for further investigation were identified, but not explored, since they fell outside of the scope defined for this study. Despite the importance of social media for millennials (Eastman et al., 2014), which provide instant feedback from online social activities (Wang et al., 2014), this research does not focus on this topic due to time constraints and the fact that it is already the topic of numerous academic research projects in Portugal and abroad (McCarthy et al., (2012); Gotardi et al., 2015; Zhang, Omran, & Cobanoglu, 2017; Bento et al., 2018).

Within this context of possibilities to deepen the topic, it is worth noting that millennials' income was not taken into consideration. For example, high spenders are more likely to adopt mobile technologies than low spenders (Morosan & DeFranco, 2014). It was also not possible to analyse some variables that would influence the tourist experience such as duration of the trip, travel companions, travel frequency.

Regarding to the sample, despite the correct use of the sampling technique which obtained the necessary number of participants to validate the findings on this research, it was challenging for the researcher to collect data of participants born in the 80s, due to their availability to participate (or lack thereof) in the questionnaire. Nevertheless, this limitation does not put into question the main conclusions.

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Appendices

Appendix 1: Questionnaire (English version)

Dear participant,

In the scope of the Master's Dissertation in Tourism and Business Development, I would like to request your collaboration for a study on the impact that the mobile has on the Portuguese millennials (1981-2000), in all phases of its tourism experience.

This is a small survey, with an average response time of 5 minutes, but extremely important for the study in question. The answers and all data collected through this questionnaire will be treated anonymously and used only for the purposes of this research project.

Thank you very much for participating.

Duarte Nuno Brochado Pinto Castro Fernandes

Instituto Superior de Ciências Empresariais e do Turismo

* Required answers

Mark the answers with an X

1. Are you Portuguese?*

( ) Yes

( ) No

If you answered No to this question your participation is over, thank you very much.

2. Year of birth? *

_____

If you answered a value lower than 1981 or higher than 2000 your participation has ended, thank you very much.

3. What type of mobile device do you use to connect to the Internet? *

( ) Standard mobile phone (simpler feature cellphone)

( ) Smartphone

( ) I don't have one

( ) Other (please specify) _____

If you answered "No" or "Other" to this question your participation is over, thank you very much.

4. What is your gender? *

( ) Male

( ) Female

( ) Prefer not to say

5. What is the highest degree or level of education you have completed? *

( ) High school graduated

( ) University undergraduate

( ) Postgraduate diploma

( ) Master's degree

( ) PhD degree

( ) Other _____

6. Are you currently…?*

( ) Employed for wages

( ) Self-employed

( ) Out of work

( ) A student

( ) Other _____

Mobile Tourism

7. Do you tend to switch to your personal computer in the final booking process, although you use a mobile device during the search process? *

( ) Yes

( ) No

8. What is the main reason for planning with a mobile device? (Please select all that apply)*

( ) I don't plan a trip with a mobile device

( ) Device that feels more comfortable to do it

( ) The lack of access to a desktop/ laptop

( ) Sporadic moments like taking the train

Other _____

9. Promotions/ last minute deals, encourages you to travel more? *

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
□	□	□	□	□
1	2	3	4	5

10. Do you document and share your experiences, during-trip or after the trip? *

( ) No

( ) During the trip

( ) After the trip

( ) During and after the trip

Apps

11. On average, the number of mobile Apps per user during the course of searching is….*

( ) 0 – 2

( ) 3 - 5

( ) 6 - 9

( ) 10 - 12

( ) +12

12. Is check-in for airline flights done via a mobile App? *

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
□	□	□	□	□
1	2	3	4	5

13. Is check-in/ check-out for hotel/hostel/apartment rooms done via a mobile App? *

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
□	□	□	□	□
1	2	3	4	5

14. The frequency with which I use an App is influenced by my familiarity with the destination (first time to visit the place or repeat the visit) *

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
□	□	□	□	□
1	2	3	4	5

15. What tourism related Apps do you use? (Please select all that apply) *

( ) Airbnb

( ) Bolt (Taxify)

( ) Booking.com

( ) Cabify

( ) CP- Comboios de Portugal

( ) EasyJet

( ) eDreams

( ) Flash- Electric Scooters

( ) FlixBus: Smart Bus Travel

( ) Google Maps/ Earth

( ) Kapten (ex-Chauffeur Privé)

( ) Lime - Your Ride Anytime

( ) Mytaxi

( ) Ryanair

( ) TAP

( ) TripAdvisor

( ) Trivago

( ) Uber

( ) Vueling

( ) None

( ) Other: _____

16. Do you use Apps of local tourism organizations when you are travelling in that destination? Example: I'm in London so I download the VisitLondon App*

( ) Yes

( ) No

17. What is the reason for downloading an App related to tourism? (Please select all that apply) *

( ) Favorite App

( ) Check-In / Check-Out

( ) Loyalty (reward points, etc.)

( ) Need of the App

( ) Get a boarding pass

( ) Offers / promotions

( ) To keep me updated with notifications

( ) Search and reservation of trips

( ) Feature only available in App

( ) Check the status of my flight

18. Does feedback like good App store rating have importance on the decision of downloading an App? *

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
□	□	□	□	□
1	2	3	4	5

19. Do family/friends have importance on the decision of downloading an App? *

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
□	□	□	□	□
1	2	3	4	5

20. What is the reason for uninstalling an App related to tourism? (Please select all that apply) *

( ) It was only necessary for a specific trip, no longer useful after

( ) It takes up too much space

( ) I received too many notifications

( ) I had a bad user experience

Other: _____

21. Having a bad experience as an App user influences my perception of the App-holding company? *

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
□	□	□	□	□
1	2	3	4	5

Privacy and Security

22. Are you open to share your personal information in exchange of better services and a more personalized travel experience? *

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
□	□	□	□	□
1	2	3	4	5

23. Do you think the data you provide is correctly used? *

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
□	□	□	□	□
1	2	3	4	5

24. Would you choose to use a biometric identification as a substitute for your passport? Examples of biometric identification: fingerprints, voice recognition, facial recognition *

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
□	□	□	□	□
1	2	3	4	5

25. I have confidence in the transmission of my personal data to organizations *

	Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**

Public					
Private					
Public-private					

Appendix 2: Questionnaire (Portuguese version)

Caro Participante,

No âmbito da Dissertação do Mestrado em Turismo e Desenvolvimento de Negócio, venho solicitar a sua colaboração num estudo que pretende avaliar o impacto que o "mobile" tem sobre a geração millennial Portuguesa (1981-2000), em todas as fases da sua experiência turística.

Trata-se de um inquérito de pequena dimensão, com um tempo médio de resposta de 5 minutos, mas de extrema importância para o estudo em questão. As respostas e todos os dados coletados por meio deste questionário serão tratados de forma anónima e utilizados apenas para os fins deste projeto de pesquisa.

Muito obrigado pela participação.

Duarte Nuno Brochado Pinto Castro Fernandes

Instituto Superior de Ciências Empresariais e do Turismo

*Respostas de carácter obrigatório

Assinale as respostas com um X

1. Tem nacionalidade portuguesa? *

( ) Sim

( ) Não

Se respondeu Não a esta pergunta a sua participação terminou, muito obrigado.

2. Ano de nascimento *

Se respondeu um valor inferior a 1981 ou superior a 2000 a sua participação terminou, muito obrigado.

3. Que tipo de dispositivo móvel usa para se conectar à Internet? *

( ) Telefone padrão (telefone mais simples)

( ) Smartphone

( ) Não tenho

Outra: _____

Se respondeu Não tenho ou Outra a esta pergunta a sua participação terminou, muito obrigado.

4. Qual é o seu género? *

( ) Masculino

( ) Feminino

( ) Prefiro não dizer

5. Nível de escolaridade *

( ) Secundário

( ) Licenciatura

( ) Pós-graduação

( ) Mestrado

( ) Doutoramento

Outra: _____

6. É/Está atualmente… *

( ) Trabalhador por conta de outrem

( ) Trabalhador por conta própria

( ) Desempregado

( ) Estudante

Outra: _____

Turismo móvel

7. Tende a usar o computador no processo final de reserva, embora use um dispositivo móvel durante o processo de pesquisa? *

( ) Sim

( ) Não

8. Qual é a principal razão para planear uma viagem com um dispositivo móvel?* (Por favor, selecione todas as que se aplicam)

( ) Não planeio uma viagem com um dispositivo móvel

( ) É o dispositivo em que me sinto mais confortável

( ) Falta de acesso a um desktop / laptop

( ) Momentos esporádicos (p. ex. como viajar de comboio, metro, autocarro)

Outra: _____

9. Uma promoção/oferta de última hora, incentiva a que eu viaje mais. *

Discordo totalmente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente
□	□	□	□	□
1	2	3	4	5

10. Regista e partilha as suas experiências durante a viagem ou após a viagem? *

( ) Não

( ) Durante a viagem

( ) Após a viagem

( ) Durante a viagem e após a viagem

Apps

11. Em média, qual é o número de Apps que usa durante a pesquisa quando está a planear uma viagem? *

( ) 0 – 2

( ) 3 - 5

( ) 6 - 9

( ) 10 - 12

( ) +12

12. Realiza o check-in / check-out de voos de companhias aéreas através de uma App?*

Discordo totalmente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente
□	□	□	□	□
1	2	3	4	5

13. Realiza o check-in/check-out do seu hotel/hostel/apartamento através de uma App? *

Discordo totalmente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente
□	□	□	□	□
1	2	3	4	5

14. A frequência com que uso uma App é influenciada pela minha familiaridade com o destino (primeira vez a visitar o local ou repetição da visita) *

Discordo	Discordo	Nem concordo	Concordo	Concordo

totalmente		nem discordo		totalmente
□	□	□	□	□
1	2	3	4	5

15. Qual é a App relacionada com turismo que utiliza? (Por favor, selecione todas as que se aplicam) *

( ) Airbnb

( ) Bolt (Taxify)

( ) Booking.com

( ) Cabify

( ) CP- Comboios de Portugal

( ) EasyJet

( ) eDreams

( ) Flash- Electric Scooters

( ) FlixBus: Smart Bus Travel

( ) Google Maps/ Earth

( ) Kapten (ex-Chauffeur Privé)

( ) Lime - Your Ride Anytime

( ) Mytaxi

( ) Ryanair

( ) TAP

( ) TripAdvisor

( ) Trivago

( ) Uber

( ) Vueling

( ) Nenhuma

( ) Outra: _____

16. Utiliza Apps de organizações de turismo locais quando está nesse destino?

Exemplo: Encontro-me em Londres e descarrego a App VisitLondon *

( ) Sim

( ) Não

17. Qual é o motivo que o leva a descarregar uma App relacionada com turismo?

(Por favor, selecione todas as afirmações que se aplicam) *

( ) App favorita

( ) Check-in / Check-out do hotel

( ) Lealdade (ex: pontos de recompensa)

( ) Necessidade da App

( ) Obter um cartão de embarque

( ) Ofertas / promoções

( ) Para me manter atualizado com as notificações

( ) Pesquisa e reserva de viagens

( ) Recurso disponível apenas na App

( ) Verificar o estado em que se encontra o meu voo

18. Feedback como uma boa classificação numa App store, tem importância na decisão de descarregar uma App? *

Discordo totalmente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente
□	□	□	□	□
1	2	3	4	5

19. A família e os amigos têm importância na decisão de descarregar uma App? *

Discordo totalmente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente
□	□	□	□	□
1	2	3	4	5

20. Qual é o motivo que o leva a desinstalar uma App relacionada com turismo? (Por favor, selecione todas as afirmações que se aplicam) *

( ) Foi apenas necessário para uma viagem específica, deixando de ter utilidade depois

( ) Ocupa demasiado espaço

( ) Recebi demasiadas notificações

( ) Tive uma má experiência como utilizador

Outra: _____

21. Ter uma má experiência como utilizador numa App influencia a minha percepção da empresa detentora da App? *

Discordo totalmente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente
□	□	□	□	□
1	2	3	4	5

Privacidade e segurança

22. Estaria disposto (a) a partilhar informações pessoais em troca de melhores serviços e uma experiência de viagem mais personalizada? *

Discordo totalmente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente

□	□	□	□	□
1	2	3	4	5

23. Acha que os dados que fornece são corretamente utilizados? *

Discordo totalmente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente
□	□	□	□	□
1	2	3	4	5

24. Escolheria utilizar uma identificação biométrica como substituto do seu passaporte? Exemplos de identificação biométrica: impressões digitais, reconhecimento de voz, reconhecimento facial *

Discordo totalmente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente
□	□	□	□	□
1	2	3	4	5

25. Tem confiança na transmissão dos seus dados pessoais a organizações *

	Discordo totalmente	**Discordo**	**Nem concordo nem discordo**	**Concordo**	**Concordo totalmente**
Públicas					
Privadas					
Público-privadas					

Appendix 3: Screenshots

Impacto que o mobile tem sobre a geração millennial Portuguesa, em todas as fases da sua experiência turística

Caro participante,
No âmbito da Dissertação do Mestrado em Turismo e Desenvolvimento de Negócio, venho solicitar a sua colaboração para um estudo sobre o impacto que o mobile tem sobre a geração millennial portuguesa (1981-2000), em todas as fases da sua experiência turística.
Trata-se de um inquérito de pequena dimensão, com um tempo médio de resposta de 5 minutos, mas de extrema importância para o estudo em questão. As respostas e todos os dados coletados por meio deste questionário serão tratados de forma anónima e utilizados apenas para os fins deste projeto de pesquisa.
Muito obrigado pela participação.

Instituto Superior de Ciências Empresariais e do Turismo
Duarte Nuno Brochado Pinto de Castro Fernandes

*Obrigatório

Tem nacionalidade portuguesa? *

- ◯ Sim
- ◯ Não

Ano de nascimento? *

A sua resposta

Que tipo de dispositivo móvel usa para se conectar à Internet? *

- ◯ Telefone padrão (telefone mais simples)
- ◯ Smartphone
- ◯ Não tenho
- ◯ Outra:

Qual é o seu género? *

- ◯ Masculino
- ◯ Feminino
- ◯ Prefiro não dizer

Nível de escolaridade *

- ◯ Secundário
- ◯ Licenciatura
- ◯ Pós-graduação
- ◯ Mestrado
- ◯ Doutoramento
- ◯ Outra: _____

É/Está atualmente... *

- ◯ Trabalhador por conta de outrem
- ◯ Trabalhador por conta própria
- ◯ Desempregado
- ◯ Estudante
- ◯ Outra: _____

SEGUINTE

Página 1 de 5

Turismo móvel

Tende a usar o computador no processo final de reserva, embora use um dispositivo móvel durante o processo de pesquisa? *

- ◯ Sim
- ◯ Não

Qual é a principal razão para planear uma viagem com um dispositivo móvel? (Por favor, selecione todas as que se aplicam) *

- ☐ Não planeio uma viagem com um dispositivo móvel
- ☐ É o dispositivo que me sinto mais confortável
- ☐ Falta de acesso a um desktop / laptop
- ☐ Momentos esporádicos como viajar de comboio
- ☐ Outra: _____

Uma promoção/oferta de última hora, incentiva a que eu viaje mais. *

	Discordo totalmente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente
Linha 1	◯	◯	◯	◯	◯

Regista e partilha as suas experiências durante a viagem ou após a viagem? *

- ◯ Não
- ◯ Durante a viagem
- ◯ Após a viagem
- ◯ Durante a viagem e após a viagem

ANTERIOR SEGUINTE Página 2 de 5

Nunca envie palavras-passe através dos Google Forms.

Apps

Em média, qual é o número de Apps que usa durante a pesquisa quando está a planear uma viagem? *

Selecionar

Realiza o check in / check out de voos de companhias aéreas através de uma App? *

	Discordo completamente	Discordo	Nem discordo nem concordo	Concordo	Concordo completamente
Linha 1	◯	◯	◯	◯	◯

Realiza o check in / check out do seu hotel/hostel/apartamento através de uma App? *

	Discordo totalmente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente
Linha 1	◯	◯	◯	◯	◯

A frequência com que uso uma App é influenciada pela minha familiaridade com o destino (primeira vez a visitar o local ou repetição da visita) *

	Discordo totalmente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente
Linha 1	◯	◯	◯	◯	◯

Qual é a App relacionada com turismo que utiliza? (Por favor, selecione todas as que se aplicam) *

- [ ] Airbnb
- [ ] Bolt (Taxify)
- [ ] Booking.com
- [ ] Cabify
- [ ] CP- Comboios de Portugal
- [ ] EasyJet
- [ ] eDreams
- [ ] Flash- Electric Scooters
- [ ] FlixBus: Smart Bus Travel
- [ ] Google Maps/ Earth
- [ ] Kapten (ex-Chauffeur Privé)
- [ ] Lime - Your Ride Anytime
- [ ] Mytaxi
- [ ] Ryanair
- [ ] TAP
- [ ] TripAdvisor
- [ ] Trivago
- [ ] Uber
- [ ] Vueling
- [ ] Nenhuma
- [ ] Outra: _____

Utiliza Apps de organizações de turismo locais quando está nesse destino? Exemplo: Encontro-me em Londres e descarrego a app VisitLondon *

- ◯ Sim
- ◯ Não

ANTERIOR SEGUINTE Página 3 de 5

Nunca envie palavras-passe através dos Google Forms.

Apps

Qual é o motivo que o leva a descarregar uma App relacionada com turismo? (Por favor, selecione todas as afirmações que se aplicam) *

- ☐ App favorita
- ☐ Check-in / Check-out do hotel
- ☐ Lealdade (ex: pontos de recompensa)
- ☐ Necessidade da App
- ☐ Obter um cartão de embarque
- ☐ Ofertas / promoções
- ☐ Para me manter atualizado com as notificações
- ☐ Pesquisa e reserva de viagens
- ☐ Recurso disponível apenas na App
- ☐ Verificar o estado em que se encontra o meu voo

Feedback como uma boa classificação numa App store, tem importância na decisão de descarregar uma App? *

	Discordo completamente	Discordo	Nem discordo nem concordo	Concordo	Concordo totalmente
Linha 1	◯	◯	◯	◯	◯

A família e os amigos têm importância na decisão de descarregar uma App? *

	Discordo completamente	Discordo	Nem discordo nem concordo	Concordo	Concordo totalmente
Linha 1	◯	◯	◯	◯	◯

Qual é o motivo que o leva a desinstalar uma App relacionada com turismo? (Por favor, selecione todas as afirmações que se aplicam) *

- [ ] Foi apenas necessário para uma viagem específica, deixando de ter utilidade depois
- [ ] Ocupa demasiado espaço
- [ ] Recebi demasiadas notificações
- [ ] Tive uma má experiência de usuário
- [ ] Outra: _____

Ter uma má experiência como utilizador numa App influencia a minha percepção da empresa detentora da App? *

	Discordo completamente	Discordo	Nem discordo nem concordo	Concordo	Concordo totalmente
Linha 1	◯	◯	◯	◯	◯

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Nunca envie palavras-passe através dos Google Forms.

Privacidade e segurança

Estaria disposto (a) a partilhar informações pessoais em troca de melhores serviços e uma experiência de viagem mais personalizada? *

	Discordo completamente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente
Linha 1	◯	◯	◯	◯	◯

Acha que os dados que fornece são corretamente utilizados? *

	Discordo completamente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente
Linha 1	◯	◯	◯	◯	◯

Escolheria utilizar uma identificação biométrica como substituto do seu passaporte? Exemplos de identificação biométrica: impressões digitais, reconhecimento de voz, reconhecimento facial *

	Discordo completamente	Discordo	Nem concordo nem discordo	Concordo	Concordo totalmente
Linha 1	◯	◯	◯	◯	◯