Sibel Caglayan

The Future of Mobile Apps in Travel Booking

Which mobile solutions might shape organizations' mobile development?

Helsinki Metropolia University of Applied Sciences

Bachelor of Business Administration

International Business and Logistics

Thesis

4 June 2017

Author(s) Title	Sibel Caglayan The Future of Mobile Apps in Travel Booking
Number of Pages Date	38 pages + 1 appendix 4 June 2017
Degree	Bachelor of Business Administration
Degree Programme	International Business and Logistics
Specialisation option	International Business and Logistics
Instructor(s)	Kevin McIntire, Senior Lecturer

The objective of this Thesis was to dive into the world of mobile travel booking in order to find out which kinds of mobile technologies travel booking applications might adopt in the future. Furthermore, to find out whether or not there are mobile solutions coming up that might challenge the existence of apps. Travel booking is a versatile industry with many different aspects to it, especially in mobile booking solutions. The research was conducted by using primary and secondary research methods, and a big part of the research was conducted by arranging personal interviews with representatives from different travel companies both from business and leisure travel.

The key findings from the research suggest that mobile applications will most likely still be very widely used in the upcoming years, while at the same time apps will keep adopting different technologies, such as artificial intelligence or notification culture. On the other hand, integrated apps which mean combining the functions of different applications into one, could be a possible threat to traditional individual mobile applications. A good example of this is the Chinese application WeChat, which allows the user to do almost anything through the app, even book flights or hotel rooms. However, the research suggests that such severe changes will not be seen in the near future in the western world. Furthermore, the technologies that companies could integrate in their solutions are dependent on the companies developing them, and the companies providing the hardware, such as Apple or Google.

The study concludes that travel companies which do not yet have their own applications developed might want to look at alternative mobile solutions instead, such as optimizing their mobile web presence. Meanwhile, companies that already do have their applications in place should look into adopting new technologies in the app to make the travellers user experience more convenient and simple. Saying that, it is good to keep in mind that the findings presented are only assumptions of how the future might unfold.

Keywords	*Mobile Travel Booking, Mobile Application, Mobile Technology Adoption, Future of Mobile Applications*

Contents

List of Tables and Figures

List of Abbreviations

App Mobile Application
TMC Travel Management Company
OBT Online Booking Tool
EM Enterprise Mobility
OS Operating System
US United States
TOE Technological, organizational and environmental
TAM Technology Acceptance Model
AI Artificial Intelligence
ML Machine Learning

Introduction

Mobile integration is a technology trend the likes of which has not been seen since the rise of websites in the 1990s, with everyone trying to adapt to the new technology (Gowell and McWherter, 2012). Travel companies, including travel suppliers and enterprises contracting with travel suppliers, are all aware of the current trend of mobile applications. Travel suppliers are looking into, and investing time and effort in, finding out the best solution to go mobile; particularly on how to develop their own competitive mobile applications. Enterprise procurement, on the other hand, is using mobile applications as criteria in business travel solution tenders. Enterprise mobility has grown more and more demanding. All these factors show how the mobile industry had grown exceptionally quickly, which will be discussed in more detail in a later chapter. This makes it challenging for travel companies to keep up with the demand, while on the other hand the growth creates new opportunities. However, could it be that in 5 years, after having the newly developed app in use for a few years, the most demanded method for mobile booking of travels is something else? Is it too late to start developing a mobile travel app?

At this point is it clear that all companies need to have a mobile strategy, and at least a mobile website, in order to look professional and reliable. Without a mobile presence, companies will miss out on customers, as there are roughly 2 billion smartphone users in the world (Kissonergis, 2015). Especially the industry of travel booking has gone mobile quickly, as the whole product experience is about being mobile, travelling. Thus, mobile travel services are on demand more than ever. However, Apple's slogan "There is an app for that" might not best describe the future of mobile apps, as it is impossible for all 500 million plus websites to develop apps for themselves, and for customers to download each one of them.

1.1   Objectives

This Thesis will try to analyse several aspects of mobile applications in travel booking, including a look into the quick rise in popularity of apps, current trends in mobile application travel booking and the current and developed solutions. Finally, the conclusion will be discussed after carefully analysing results of the conducted research.

The Thesis will put together a sufficient amount of research in order to provide a guideline for future expectations. The second chapter as the literature review will provide definitions for a mobile application and travel booking, in order to understand the discussions in this thesis better. The chapter will also differentiate between business travel booking and leisure travel booking, as the needs for each category are very different. The chapter will present an overview into the quick rise in popularity of apps, in order to get an idea of the rapid growth in app adoption. Furthermore, the chapter will present some technology adoption models from both user and organizational perspective.

The third chapter will explain the methodology and limitations to the Thesis.
In the fourth chapter the current and future trends in mobile travel booking will be presented. This chapter will include both secondary research and introduce the results of company interviews conducted as primary research for the Thesis. This chapter has been divided into sub-categories of private travel booking and business travel booking. Finally, chapter six will provide the conclusion of the thesis.

1.2   Research Question

As discussed within the the first part of this chapter, the topic of this thesis is to better understand the future of mobile applications in travel booking. One of the first questions to rise when thinking about this topic is how the travel companies are planning to develop their mobile booking solutions in the future. Particularly, whether or not they should be investing the excessive amount of time in developing and maintaining mobile applications as the mobile solution. Research suggests that other mobile solutions such as updated mobile web pages with similar look and feel to mobile applications, or integrated applications "supper apps" are some solutions that are coming up in the future, and possibly challenge the existence of mobile applications. It is important for companies not yet owning their mobile applications to decide if there is another better mobile solution to look into.

Therefore, the research question this Thesis intends to answer is:

"How should travel companies manage their mobile strategy for the future; by further developing their applications or perhaps looking into alternative mobile solutions?"

As developing an app is a big decision, it is highly important for companies to outline what are the best investment options in mobile booking considering the future. Mobile technology keeps developing and brining in new start ups and innovations that challenge the existence of traditional mobile applications, as solutions with similar capabilities arise.

2   Literature Review

2.1   Definitions of Mobile Application and Travel Booking

As this Thesis will be discussing and analysing topics around mobile applications in travel booking, it is important to first gain a good understanding how to define the topics. This part will define what a mobile application is, after which it will take a look at the definition of business and leisure travel booking.

2.1.1   Definition of a Mobile Application

In 1936 Alan Turing, an English computer scientist, mathematician, logician, cryptanalyst and theoretical biologist, wrote "It is possible to invent a single machine which can be used to compute any computable sequence" (Leavitt, 2006). This is one of the most foreseeing observations of the twentieth century. Mobile Applications have gained the patterns of complexity that Turing anticipated almost a hundred years ago.

An app is an abbreviated software application. Apps are small programs, they are pieces of software designed to apply the power of a computing system for a particular purpose (Matviyenko and Miller, 2014). An app requires particular OS specifications in order to function properly. The OS operates between hardware and apps by system interfaces. This enables apps to run on devices with different hardware capabilities. As most of the real information processed id going through a cloud, and not the hardware device, the app on the smartphone is really just an interface to the real application, which is located in a hidden database.

There are different kinds of mobile applications from a programming perspective. A native mobile app is a smartphone application that is coded in a specific programming language. They provide fast performance and a high degree of reliability (Gowell and McWherter, 2012). They are locked within the hardware and OS, such as IOS or Android. This means that a company would need to make a separate native app for IOS, and a separate one for Android (Lau, 2017). Native apps can access a smartphone's various devices and functions such as the camera or contact list, which gives the app the full use of the hardware and OS. Additionally, some of the native apps can be used without an

internet connection, if offline content is provided in the app. However, a company will need two different development staffs for different OS platforms, as the programming requires specific OS related knowledge (Lau, 2017). The second type is hybrid apps, these applications do not need to be specially programmed for each OS, but they are also limited within hardware capabilities.

Most travel supplier's mobile apps are native apps, as they are commonly tied to external databases linking to customer profiles and data. In travel booking, security is highly important and thus apps can provide the highest amount of security, compared to a mobile web page. In comparison with a mobile web browser, an app is a short-cut that guarantees direct and immediate access to the information stored in the database (Matviyenko and Miller, 2014).

Mobile apps can be available in different app stores, such as Apple App Store or Google Play store, and they can be compatible with only one or multiple operating systems. Travel booking apps are usually free of charge to download, as they are not the product itself but an interface to the product. This is an example of enterprise mobility, which we will discuss in another section. Mobile apps are different from mobile web sites as mobile websites take the content of a normal web site and render the information to be easily consumed on a mobile device. This mainly means the change in layout.

2.1.2   Understanding Travel Booking

The concept of travel booking includes lots of different categories and topics within it. In order to understand the needs of travel companies, it is first necessary to understand all the different aspects of travel booking. The types of travel booking that was included in the research of this thesis consist of the following categories: flight booking, hotel booking and ground transportation booking, such as car rental or train. In addition, travel management companies provide booking options for multiple categories. The process of booking consists of searching for options, selecting an option, booking the option and receiving confirmation. The steps vary slightly depending on the travel category.

In this Thesis travel is divided into two main types: leisure and business travel. Leisure travellers make their booking decisions based on their personal wants and needs. However, in business travel there are many other aspects affecting the booking decision.

This could mean the company policy of certain suppliers, hotels, flights, prices, locations etc. Thus the traveller has to follow certain guidelines when making a booking. Furthermore, usually corporates have their own booking channels, and booking outside of these channels are not allowed. This is referred to as "open booking". These kinds of bookings are not usually appreciated within the company; as this way the traveller is not recorder or tracked which can cause security issues in an emergency situation. The reason behind booking outside the official booking channels is often that the traveller has found a better price.

Most organizations have contracts with TMCs, Travel Management Companies, which are similar to traditional travel agencies. A travel management company is a business travel agent that manages an organization's business travel requirements. In addition to making reservations, a travel management company will help an organization gain control and visibility of their business travel spend. Services such as an online booking tool (OBT), management information, strategic account management, crisis management, traveler tracking and supplier negotiation are all commonplace amongst business travel agents. Many TMCs utilize a third party software and resell it to their customers. However, there are some innovative TMCs that develop their own software, which can deliver an improved user experience. An OBT is used by organizations to manage their business travel online. In addition to making bookings, online booking tools usually allow organizations to view real-time data on their business travel spend, track their travelers online and enforce business policy. Enforcing business policy can be seen in the options the booking tool recommends, as the recommendations should match the travel policy of maximum price, location or so on. OBTs were introduced to TMCs as an add-on as technology developed. The needs of business travel limit the booking technologies. As security is a big priority within companies, an encrypted app is very important to businesses.

In this Thesis the term "Travel company" is used to generally describe companies that provide any service of travel from transportation to accommodation.

2.2   Technology Adoption Models

The technology acceptance model (TAM) was first introduced in 1986. It is an adaptation of the theory of reasoned action that is specifically tailored for explaining user acceptance

of information technology (Talukder, 2014). This theory provides an explanation of the determinants of technology acceptance. The theory is capable of explaining user behaviour across broad range of technologies, while at the same time being both parsimonious and theoretically justified. This applies to decision to adopt an innovation. A key aim of TAM is to provide a basis for tracing the impact of two fundamental variables dealing with cognitive and affective determinants of technology acceptance (Talukder, 2014).

Among the many variables that may influence system use, previous research suggested two determinants that are especially important. The first determinant is that individuals tend to use an application to the extend they believe it will help them perform their job better. This variable is referred to as perceived usefulness. In addition, usage is theorized as being influenced by ease of use (Talukder, 2014). The technology acceptance model is showcased in the figure below.
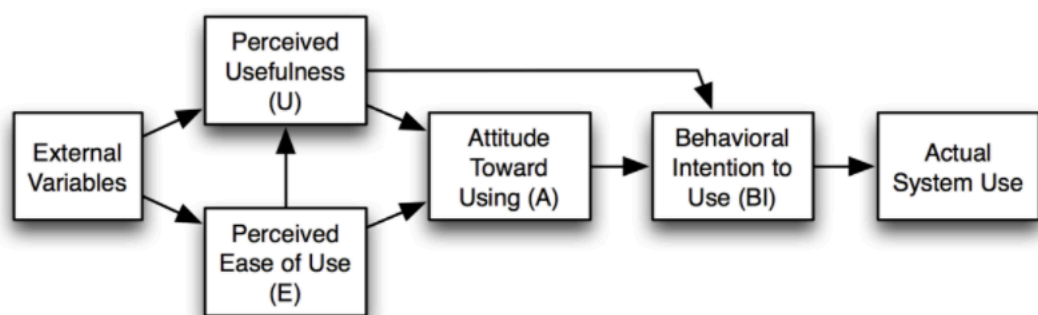
Figure 1. Technology Acceptance Model (Talukder, 2014).

The model above discussed the acceptance model from a user perspective. From a more organizational perspective, the technological, organizational and environmental framework was developed in 1990. It identifies three aspects of an enterprise's context that influence in which it adopts and implements a technological innovation; technological context, organizational context, and environmental context. Technological context describes both the internal and external technologies relevant to the firm. This includes current practices and equipment internal to the firm, as well as the set of available technologies to the firm. Organizational context refers to descriptive measures about the organization such as scope, size, and managerial structure. Environmental context is the

arena in which a firm conducts its business – its industry, competitors, and dealings with the government (Tornatzky et al., 1990). This framework can be seen from the figure below.
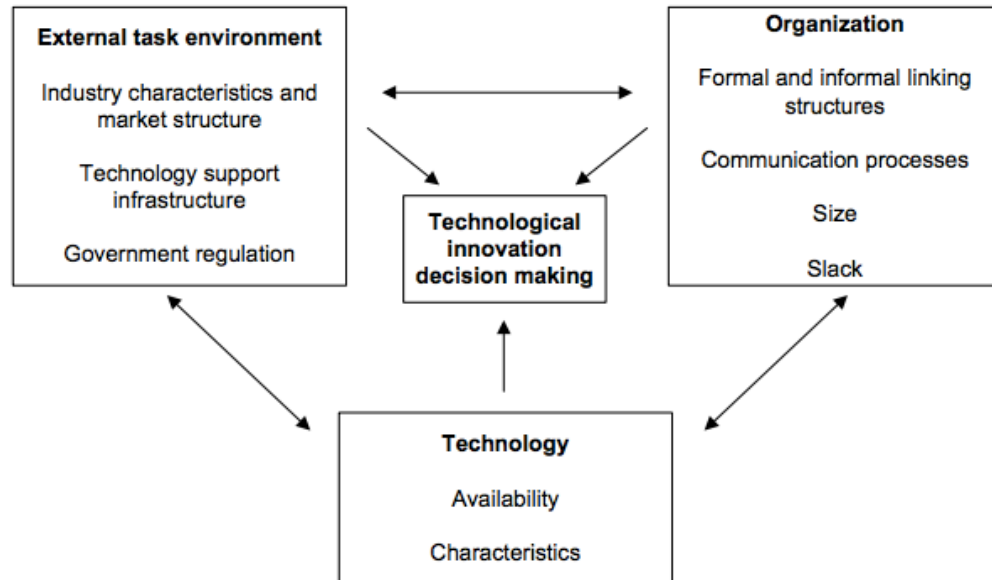
Figure 2. TOE framework (Tornatzky et al., 1990)

The TOE framework gives a good idea of technological innovation decision making. To make it specific for mobile applications, Mr. McWherter and Mr. Gowell (2012) suggest a list of scenarios in which developing an app would be the best solution for a company:

1. *If graphics and processing power is required*
2. *If the use of device's camera is required*
3. *If the use of device's microphone is required*
4. *If access to address book is required*
5. *If access to media library is required*
6. *If it will be used for payment*
7. *If push-out notifications are required*
8. *If it is needed to run as a background service*
9. *If you want to design a game*

For travel booking, quite a few of the points above are fulfilled. Points one, two, six, seven and eight are found in most travel applications. Mobile applications can offer a way for customers to connect with a brand, if done correctly. An app with no value will be rated poorly in the market. The main question to ask when developing a mobile application is whether or not people will want to purchase the app on their device (Gowell and McWherter, 2012). Although users visit hundreds of websites in a day, they will install only a few apps. The app needs to provide enough value that the user is going to take the time to download it and keep it in the list of installed apps. The average smartphone user has only 26 apps installed (Statista, 2013).

2.3   Look into the quick rise of popularity in apps

Mobile telephony has been on of the most quickly adopted technologies of all time. 128 years passed before fixed telephone lines reached 1 billion users, and mobile networks achieved that milestone in just over 2 decades. Mobile network usage roughly doubled every two years since 2002 (World Bank, 2012), as can be seen from figure 1 below.
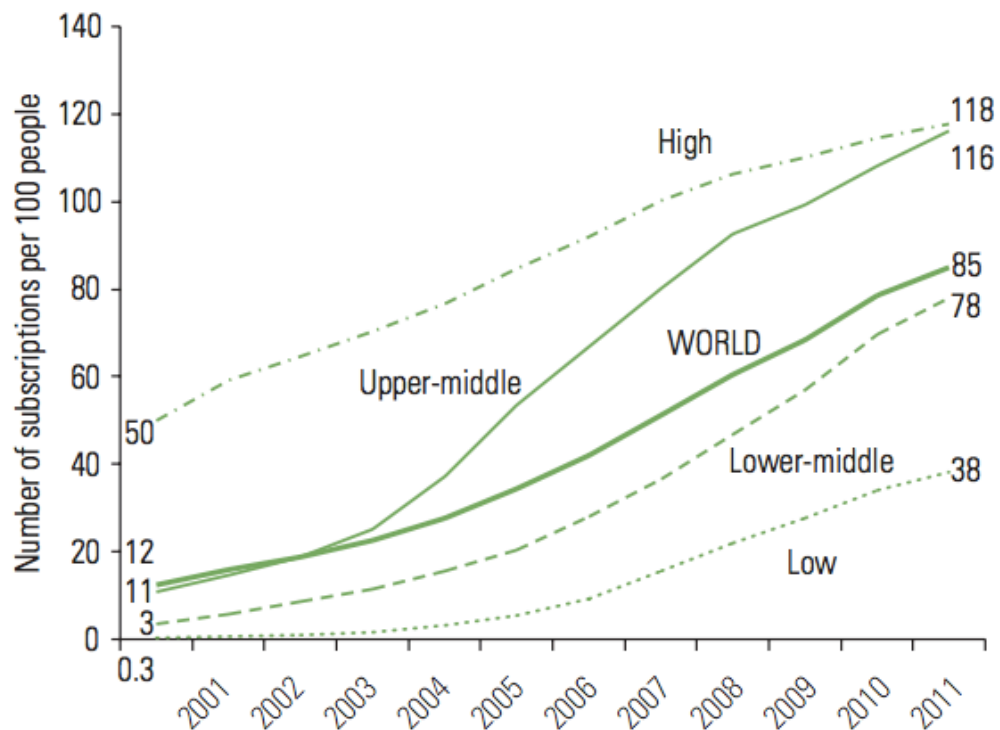
Figure 3. Mobile network penetration increased rapidly in 10 years (World Bank, 2012)

Not only did the mobile networks gain popularity quickly, but also the technologies that developed with it. The Apple store launched in July 11th 2008 with roughly 550 apps designed for the iPhone. In 3 days, the number of apps increased by 40% with 10 million downloads. By August 2008 the number of downloads reached 60 million and the top developers earned 9 million dollars from their apps (McCann, 2011).

Considering these facts, the Apple Store was growing exponentially. During the next months, the numbers kept getting doubled. In early 2009, the App Store reached half a million downloads and included more than 15 000 apps. In April 23, 2009 the 1 billionth download was made. At that time nearly two thirds of all iPhone users downloaded at least 16 to 20 apps (McCann, 2011). This is a relatively large adoption rate, considering how quickly it was reached. Looking at the current numbers, in 2014 apps represented over 50% of the time spent with digital media (Frommer, 2014). The number of app downloaded in 2016 is 140 billion (Statista, 2016), and there are over 2,2 million apps in the Apple App Store, and 2,8 apps in Google Play Store (Statista, 2017a).

These figures really highlight how quickly the app "boom" has made its way to be the most popular mobile solution of today. Applications quickly dominated the mobile web browser. In 2015 in the US, the percentage of time spent on mobile web was as low as 10%, while the time spent on mobile apps was 90% (Statista, 2017b). This shows how much more time consumers really spend on apps rather than browsing the mobile internet. It needs to stated, however, that social media apps do take up a lot of that time. The figure below showcases how rapidly the travel app category has been growing from 2014 to 2015. The graph also showcases the exponential growth of app category called "personalization", as this seems to be a future topic in travel applications as well. Providing more and more personalized content to the app user, and making the experience tailored for each user through artificial intelligence is a topic that comes up both in research and in the interviews conducted for this Thesis.
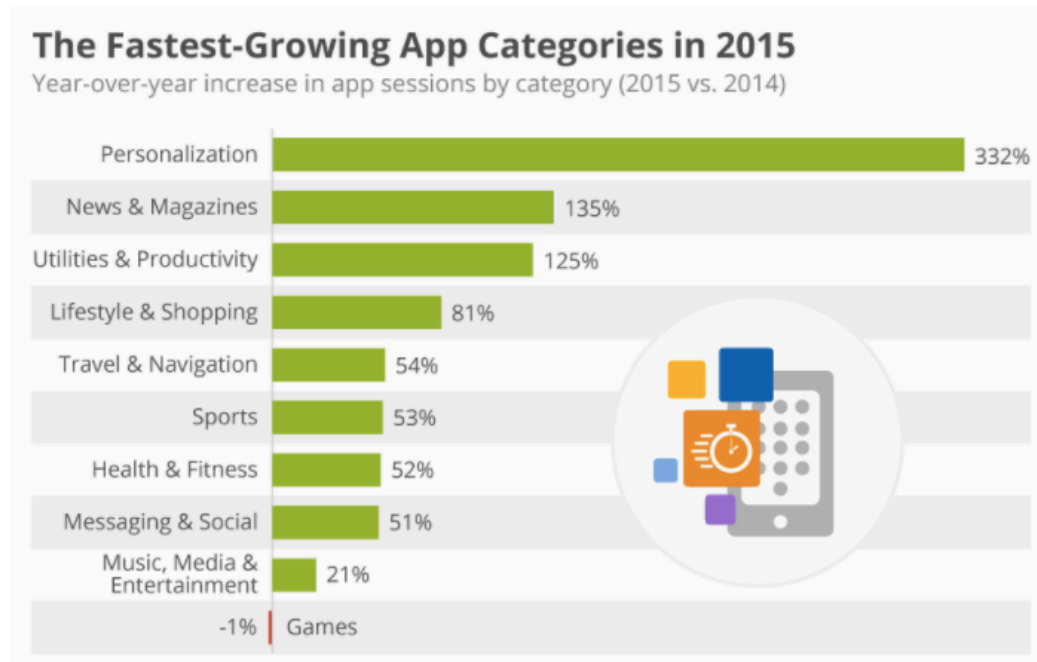
Figure 4. Travel app category grew by 54% from 2014 to 2015 (Richter, 2016)

3 Methodology

The research methodology in this Thesis consists of two types of research: primary and secondary research. Secondary research includes researching already existing material and information and providing the summary of the most relevant findings to to support the Thesis conclusion. Primary research is new research, and the data is collected primarily by the researcher by methods such as interviews or surveys.

The secondary research for this Thesis was carried out by researching online and offline publications, such as books, reports and articles. The main fact-based information has been collected from books and reports written by experts in their fields, and newspaper articles have been used to back up certain arguments and display the most recent announcements from organizations.

Primary research has also played a big part in the overall research, as travel companies themselves have the best motives for doing research and gathering opinions regarding this particular Thesis topic. Thus, interviews have been conducted with 11 different travel companies from different fields of travel. These fields include business travel companies such as business travel management companies (TMC) and business online booking tool (OBT) providers, and leisure travel booking providers such as meta-search engines, airlines and hotel chains. The companies participating in the Thesis interviews are the following:

Business travel:

TMC:
- o Carlson Wagonlit Travel
- o Egencia
- o American Express Global Business Travel

OBT:
- o Onesto
- o iFao Cytric

Other:
- o Hotelzon International
- o Tourist Mobile

Leisure (and business) travel:

- o Booking.com
- o Marriott Hotel Holding
- o Hilton International
- o Lufthansa & SWISS Airlines

All the interviews were conducted by contacting each company individually with an interview request and then conducting interviews personally through calling. The interviews consisted of 8 questions, which can be seen in the appendix 1. Each interview lasted 30 to 45 minutes. The interviewed representatives from each company were in a high enough position to have a good overview of the operations of the company and had the authority to disclose the information given. Any confidential information was not asked for nor provided, as the purpose of this Thesis is to be public. However, getting an idea of each company's position in the mobile solution world was possible without any confidential information being disclosed.

There are several reasons behind conducting personal interviews instead of e.g. a web survey. Personal interviews tend to encourage a high degree of co-operation by participants. The Thesis writer especially thought this was the case when interviewing high-position employees from different companies. In personal interviews people are more likely to answer the interviewer's questions rather than leave some questions unanswered. It is difficult to skip or ignore a question when another person asks it directly. In addition, personal interviews allow the interviewer to ensure that the participant understands the questions and can ask follow-up questions to clarify participants' responses. These factors can help in producing rich information (Pittenger et al., 2012).

In order to prevent participant biases from affecting the data, it is desirable to use at least a semi-structured interview format. In this format the interviewer ask the same questions in the same order, and records responses in a structured manner (Pittenger et al., 2012). This was the case for the primary research in this Thesis. Out of 8 questions, 3 were closed-ended, and 5 were open-ended questions. The primary advantage of an open-ended question is that it can allow the interviewer to obtain very rich and complex information that could not be gathered with a closed-ended question format. The responses to open ended questions are often more informative. However, in order to

prevent vague answers, the interviewer can provide further follow-up questions (Pittenger et al., 2012), which was the case in the interviews for this Thesis. In some situation, open-ended questions can be difficult to evaluate objectively. The closed-ended questions in the questionnaire for this Thesis consisted of the yes or no format. The interviewee would answer the questions with yes, no, or it depends, and then provide further explanations of this answer.

In order to minimize any kinds of biases, the questions were structured as neutrally as possible, without implying a correct answer or trying to manipulate the response. For example, instead of structuring a question such as: "It seems that different mobile solutions will overpower mobile apps in the future, do you agree?" a question format of "What do you think will be the next trend in travel booking mobile solutions?" was asked. Furthermore, another factor that might effect the replies is the order of the questions (Pittenger et al., 2012). Thus, the interview was structured in a manner to first discuss the current solutions, then ask the interviewees opinions of the future, and only then bring up some examples the interviewer had prepared from research in order to discuss them without affecting the replies.

3.1   Qualitative analysis

The interviews were recorded by taking notes electronically on a keyboard, and in few cases with pen and paper, during the interview. These notes were used to analyse the replies in this thesis. In analysis stage the replies of the interviewees were compared to the the other replies in other to find similarities and differences in replies and present findings. Furthermore, the key points of each reply was analysed. Any replies that were not answering the question were eliminated from the analysed replies. By doing this any out-of-topic data was avoided. The figure below shows how the steps of qualitative analysis, which are rather interconnected. David E. Gray (2004) states that while collecting data, it is necessary to cull excessive information at all stages to focus on certain findings. Additional research is done based on those in order to investigate a hypothesis further.
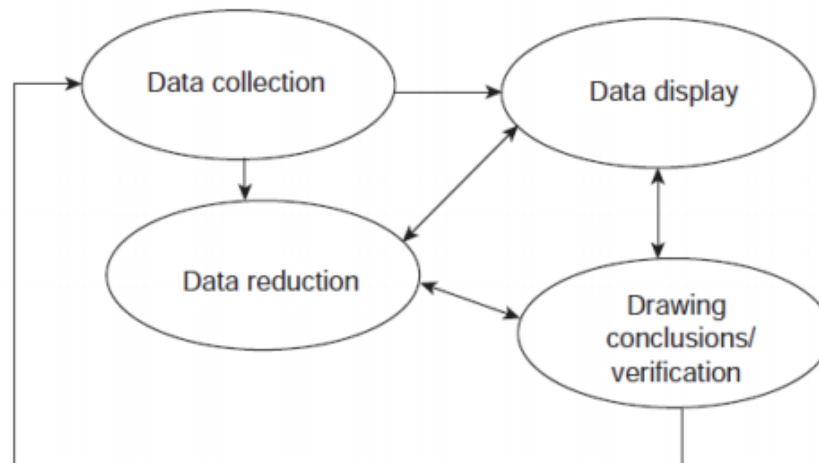
Figure 5. Interactive processes of qualitative data analysis (Gray, 2013)

Furthermore, there are certain details that apply for analysing and interpreting the qualitative data. First, the general shape of the analysis is to start from a comprehensive range of data that needs to be altered into a bigger consolidated picture for a conclusion. The process of interpretation and data collection commonly occurs simultaneously during the analysis of qualitative information. In quantitative research, the steps of collection and analysis of data are clearly separated processes. Simultaneously, the stages of qualitative interpretation are iterative, where the researcher skips back and forth between data collection and analysis. This is necessary, for example, when open issues need to be clarified. Most of the time it is advisory to read through and examine the collected material several times in order to gain a thorough understanding of the research results (Creswell, 2012).

3.2   Limitations

As this Thesis topic is mainly about predicting the future, it cannot be expected to gain a 100% knowledge on it. While the conclusion can be backed up with adequate research, it cannot be said for sure how the future will turn out. Thus this Thesis should be considered as a combination of information from multiple sources with the conclusions and thoughts made by the writer of the thesis.

It is also not the purpose of this thesis to give advice on the best mobile solution of the future, as the writer is not majoring in computer science. The purpose is purely limited to providing conclusions regarding the positions of mobile applications as an interface for travel booking, and if it is likely for another solution to dominate in the future. Furthermore, when conducting research on such a fresh topic as mobile solutions is, it cannot be expected to be able to provide references from several decades back. The research timeframe has been limited to the years of 2007 to 2017 in this Thesis, especially trying to highlight references from 2012 to 2017. This is done to be able to provide the most relevant conclusion for today. Some exceptions may occur, however, older references will not be serving a critical role in conclusion-making but rather add some colour to the thesis by comparing the future to the history.

For this particular topic it can be said that finding appropriate research material was relatively challenging, as mobile applications are a new technology, and not a lot of printed research is available. Travel is a niche business category which requires subject related knowledge. Therefore, speaking to experts with years of experience in the field seems to have been the best way to find out the current and future expectations of the industry. The persons interviewed were familiar with the current history of their field and were able to analyse what kind of changes might happen in the near future. In addition, mobile solution technologies develop very quickly, and sometimes finding up to date information requires searching for most recent newspaper articles on the particular topic. With a combination of traditional published research, expert thoughts and opinions and up to date articles, the overall quality of the research is good.

Another challenge was conducting the primary research. In primary research, it is important not to let personal biases affect the conclusion of the research. While interviewing subject matter experts give a good overview, it should be stated that a person responsible for their products and having a newly developed mobile app solution in place, might not be eager to agree to upcoming mobile solutions challenging apps, as this is not beneficial for the company. Some participants in the interviews seemed a bit annoyed of having to think about yet another technological solution the company has to work with. After all, developing applications or other mobile solutions is an investment, and most companies prefer doing long-term investments to see the maximum profit from it. The factor slowing down the shift from application to other, more consumer friendly options, could in fact be the companies themselves. This, however, is the reason why this topic needs to be brought up and investigated.

4   Results

4.1   Current Trends in Mobile App Travel Booking

This first part of the chapter "Current trends in mobile app travel booking" will provide an overview of what is currently available in the mobile travel booking industry based on the secondary and primary research conducted. The interview results are discussed by dividing he interviewees into categories leisure and business travel depending on if the company offers leisure travel as well. The chapter will first discuss leisure travel findings followed by business travel. After going through the results for current trends, the future trends will be discussed in the same manner.

4.1.1   Leisure Travel Booking

Mobile phones are the number one item travellers bring on holiday (Rezdy, 2017). Traveling is all about mobility, and it has been a natural change in the travel industry to go mobile. All out of the 5 leisure travel companies interviewed provide an application with booking functions. These 5 companies include Lufthansa Group, Swiss International Airlines, Booking.com, and Marriott and Hilton International hotel chains.

From Lufthansa and Swiss International Airlines, Ms. Stefanie Schweikart was interviewed. She is the Team Lead for mobile apps at Swiss, and the Mobile Coordinator at Lufthansa. Because of a matrix between these airlines, Mrs. Schweikart was able to provide an inside to both companies' mobile booking solutions. From the online hotel booking service Booking.com, Ms. Jamie Hu and Ms. Shang Hsin Tsai were interviewed. They are both product owners at Booking.com for Business, and working closely on the operations regarding the Booking.com mobile application. From Hilton International hotels, the Account Manager for Business Travel at Hilton Worldwide Sales, Mr. Jan Werner was interviewed. From Marriott International hotels, the Director of Corporate Sales, Mr. Kai-Heinrich Kohl was interviewed. The replies from all these participants regarding the current mobile solutions will be discussed in this chapter.

Of all direct online bookings in the US, 30% are made on mobile devices (tablets and smartphones), and it is increasing at a rate of 1% per quarter. Millennials touch their

phones 43 times per day (Rezdy, 2017). These current facts imply that having a mobile app for booking can be beneficial for a company. When the participants of the interviews were asked what the reasons behind developing a mobile application for booking were, the replies were quite similar. One reason for Swiss was to be up to date with the market, as there was a feeling an app was needed. Additionally, when thinking about the needs of the customer, statistics of customer behaviour and mobile traffic growing backed up the decision (Schweikart, 2017). Furthermore, airlines seem to be one of the first travel companies to really adapt to mobile. Swiss launched their first app back in 2008, and Lufthansa even earlier. For Booking.com, there were a few main points behind the decision. As there was more and more mobile usage, the needs of the traveller in booking and at the destination had to be rethought. For example, travellers did not always have a laptop at hand, but they always had a mobile phone. Booking.com first developed a mobile website, after which they developed their own app for booking (Hu and Shang, 2017).

As for the hotel chains, a long term strategy for Hilton is to get travellers to book directly via Hilton. As app bookings were increasing, Hilton decided to include this service for their customers as well (Werner, 2017). Marriott on the other hand based their decision on the results from their research centre. Marriott wanted to focus in the x-generation bookers' behaviour. According to Mr Kohl, it is all about the customer journey (Kohl, 2017). The replies from the interview participants showcase the cycle of adaptation, which in this case is the adaptation to mobile. Companies have to adapt to consumer behaviour.

Travel mobile applications come with different functions depending on the category. The Lufthansa app offers several functions, of which the main are booking, check-in, boarding pass and flight status. In addition, the app enables the user to get information on the next gate even when they are still flying. The Swiss app is slightly different from the Lufthansa app. For Swiss the main function of the app is to import a booking to the app. As the Swiss app is a native app, the booking information is available both online and offline. The Lufthansa app however is not a native app, thus an internet connection s needed to access the data. In both apps, the bookings made in the app are also visible in the normal web-site (Schweikart, 2017). In the Booking.com app, the main functions include booking and offline confirmation and offline information. The Booking.com app is a native app. In addition, the user can benefit from other side functions such as a the travel guide with

destination tips, and a messenger for communication with Booking.com (Hu and Shang, 2017).

Hilton International launched their updated app last year in 2016. There was an app before, but according to Mr. Werner it had very little functionality. The new app provides quite a few additional services on top of the usual booking. In the Hilton app, the user can also globally handle their check in, and in the US even use it for unlocking the room door. For check-out they are currently developing an invoice request function. Furthermore, you can use the app to order room service (Werner, 2017). The Marriott app also provides similar functions for booking, and ordering room service via in-app messaging. In selected hotels the user is also able to unlock their room door with the app. The functions provided by Marriott and Hilton apps show how travel apps can be creative and useful as an interface, and provide more than just a website. According to Ms. Schweikart from Lufthansa, customer convenience is the key in travel booking. The more convenient the experience is, the more likely the customer is to use the service again.

When the participants were asked whether or not they think it is currently essential for travel companies to have their own apps for booking in order to be competitive in the market, the replies varied. 2 participants answered it depends, and 2 thought it is essential. Ms. Schweikart from Lufthansa and Swiss was one of the participants responding "it depends". According to her, the demand depends on the customer category. If the targeted customers are travelling regularly, then providing an app will bring value. Ms. Schweikart also implied that the purpose of travel apps should be ore about companionship during the travel, rather than booking. This is because it is challenging to display all information of a complex product on a smartphone screen. On the other hand, if the target customers do not include regular travellers, then it does not make sense to have an app. Currently 14% of smartphone users in the US secure a booking on their mobile device (Rezdy, 2017). This supports Ms. Schweikart's claim, as the percentage of customers booking mobile is not very high. Of course this number will vary when divided into different categories.

Ms. Hu and Ms. Shang had similar thoughts with Ms. Schweikart. According to them, the necessity of a booking app depends on the sector and geography. If the target group is travel managers, then desktop is a better solution. However, if a company wants to have a global reach, then an app is essential. Both participants from the hotel chains, Mr. Kohl

and Mr. Werner agreed that a booking app is essential. According to Mr. Werner, at the current stage every travel company should have their own app. Similar to Hilton's strategy, many travel companies are targeting direct bookings (bookings made through the company's own booking channels), and direct booking requires its own app. Mr. Werner added that currently travel agencies seem to be the category that is a bit behind on changing to mobile solutions. Mr. Kohl from Marriott simply stated that at the present point of time, it is essential to provide a booking mobile application.

Hotel booking will most likely become more and more mobile, as currently 65% of tourists in the US book hotel reservations for the same day on a mobile device (Rezdy, 2017). While in airline bookings the young generation does prefer mobile boarding cards in an increasing manner, there is still a high amount of travellers who do not connect flying and mobile devices together. Furthermore, over 50% of today's travellers will rush to the keyboard, rather than the smartphone to make their travel bookings (Rezdy, 2017). This percentage brings forward the thought of mobile travel booking still having a long way to go. What can be concluded from the current state of leisure travel booking is that main booking functions are available in mobile in most travel companies, and there is slowly a switch to more personalized functions mirroring the customers' needs.

4.1.2 Business Travel Booking

Enterprise mobility has always been a fundamental part of business. It emerged through concepts such as mobile phones, internet communication and portable computers. As apple entered the mobile phone market with innovations it completely changed the market situation and EM (Mordhorst, 2014). The emerging importance of EM in companies changes all roles shifted in the last years towards changed revenue models, new business models, but also new risks and opportunities.

One of various categories of EM is business travel. Business travel booking can differ very much from leisure booking, as the traveller have to follow possible corporate travel policies, and the travel agency and/or booking engine has to offer options according to the policy. This also applies to business travel booking mobile applications. In order to find out the current trends and future expectations of business travel, 7 different business travel suppliers were interviewed. The suppliers vary from TMCs to OBT providers and mobile solution providers. 3 different TMC providers were interviewed: Egencia,

American Express Global Business Travel (AMEX GBT) and Carlson Wagonlit Travel (CWT). From Egencia the Senior Director of Global Product Marketing, Jean Noel Lau Keng Lun was interviewed and from AMEX GBT Helena Shearer, the Director of Global Sales was interviewed. CWT's participant was Martina Eggler, Vice President of Global Strategic Accounts and responsible for global strategic clients. The OBT providers interviewed were i:FAO Group and Onesto. From i:FAO the Manager of Strategic Relations, Christian Rosenbaum was interviewed and from Onesto, the Key Account Manager Thilo Franz participated in the interview. In addition, a business hotel booking tool TravelPort Hotelzon, and mobile solution provider Tourist Mobile were interviewed. The representative of Hotelzon was Christian Schultz, who is the Head of New Sales. The Managing Director of Tourist Mobile, Martina Hegemann, was able to represent their company.

Firstly, it will be discussed why each supplier decided to include a booking app within their services. Even though Mr. Jean Noel Lau Keng Lun from Egencia has not been working in the company long enough to remember the reasoning behind this decision, he was able give an overall reason of the internet consumption outreaching the desk top, which has let Egencia, and many other companies, to develop their own app interface (Lau, 2017). AMEX GBT's strategy is to have the product roadmap a copy of client demand. This was the case also back when the decision of creating an app was made. According to their research, mobile technology was the number 2 trend for business travellers after security (Shearer, 2017). Mrs. Eggler from CWT pointed out that there had been a large hype in apps, but no proper examples of integration at the time. Firstly, CWT thought and app would add value, and secondly, it would help with differentiation from competitors. Therefore, CWT had intensive exchange with a mobile app start-up regarding the topic, and finally CWT decided to acquire the whole start-up to exclusively work for CWT's solution (Eggler, 2017).

OBT provider i:FAO had big discussions 5 years ago with big customers about using apps. All of them had said that they do not want to have single apps but rather a solution where everything is consolidated. At the time, a mobile booking function was not demanded, but it was important to have mobile access to the trip plan. Thus, i:FAO does not currently have the ability to book available in their mobile application. However, according to Mr. Rosenbaum the demand has changed and mobile usage increased in the past few years. Therefore they have decided to introduce a booking function in the app as well (Rosenbaum, 2017). Mr. Franz from Onesto stated that in general a booking

app is an extension of the portfolio of the OBT. The decision to include the app in the portfolio was made by internal research in the topic. Also it was important to create a mobile solution in which the data is encrypted and secure. A native app provided these qualities (Franz, 2017). Mr. Schultz from Hotelzon indicated on of the reason for creating a boking app to be the increasing needs in travel. For example, travellers were not always carrying a computer with them. Furthermore there had been an increase in the market trend and requirement to be more and more mobile (Schultz, 2017). Tourist Mobile is a company which's whole concept is being mobile. The reasons for going this direction are clear to Managing Director Mrs. Hegemann. According to her, mobile will be the platform for everything in the future. A company has to be mobile friendly in order to make it. Tourist Mobile's concept is "mobile first", and they created their mobile strategy following this slogan.

The reasons behind developing booking applications are relatively similar both in business and leisure travel, and that is to listen to the market demand. Regardless, the functions provided in the apps vary. Egencia currently provides air and hotel bookings globally, and also cancellation and exchange functions in the US. The app also showcases ground transport booking options such as Uber or train, however, it is not currently possible to book (Lau, 2017). AMEX GBT provides all booking categories except for ground travel. The app also includes offline information, chat function and a call function through which the customer service team sees the travellers profile when calling (Shearer, 2017). Currently CWT only offers hotel bookings globally, and a flight booking pilot in the US, which will be coming also to Europe in Autumn. In addition, the app provides offline information regarding the trip.

As mentioned earlier, i:FAO's travel app does not allow bookings at the moment. It does include the trip plan, and all information regarding the trip. Booking functions will be integrated slowly, starting from hotel bookings, then car rental, followed by rail and lastly flights, as it is the most complex category. Onesto's app consists of 2 parts, offline and online. Offline there is access to itinerary, addresses, links and check in info. Its purpose is to be a travel companion which includes information of all the next steps in the trip. For example, the app will show the next gate for a flight. The online part of the app consists of booking and changing bookings. It is possible to book all 4 categories of flights, car rental, rail and hotel (Franz, 2017). The Hotelzon app's main functionality is booking and managing the bookings. The app is a limited version of the normal website. In the app it is possible to do booking, cancelling and changing bookings (Schultz, 2017).

The Tourist Mobile application includes booking options for hotels, cars and taxi. Air will be coming soon (Hegemann, 2017).

As a conclusion out of all the business travel suppliers interviewed, Onesto is the provider which allows the booking of all categories. When the interviewees were asked whether or not they think it is currently essential for travel companies to have their own apps for booking in order to be competitive in the market, the responses varied. Mr. Lau from Egencia stated that it is definitely necessary. He also added: "If you do not have a team doing research and looking into the developing technologies, you are dead". Mrs. Shearer from AMEX GBT thought, on the other hand, that it is not necessary. She implied that having some kind of a mobile tool is important, but it does not necessarily have to be an application. This thought from Mrs. Shearer was shared by other participants as well. Application is just an interface to the product which is the database, and access to that can possibly be accomplished via another interface than an app. CWT's Mrs. Eggler's opinion was that having an app is necessary. According to her, when looking at the user numbers, the demand is there. She also mentioned that CWT will investigate different solution options in the upcoming years. I:FAO's Mr. Rosenbaum thought that it is necessary to have an app that provides a trip plan, but not necessarily booking functionality. However, he said that the answer might be different next year. Mr. Franz from Onesto said it is not essential to have an app. According to him, an app is just a brick in the wall, though it is already a question in some RFPs. He thinks apps will change from "nice to have" into a must in the future. He also added that when looking at the booking figures, the app booking ratio is not very high, but it is growing. Mr. Franz pointed out that at the moment, Onesto is the only provider with a fully integrated solution into the OBT. Hotelzon's Mr. Schultz agreed to the app being essential, as there is an increasing traffic in apps. Mrs. Hegemann from Tourist Mobile brought up a different opinion. She pointed out how the app market is crowded already, and if a company has not started their app development, the game seems to be lost. She mentioned that Lufthansa was the first company to have mobile activity in the form of not having to print out boarding cards. Airlines understood the power of mobility very early, while according to her, OBT's are very late in the mobile trend. Also TMC's understood the importance of a mobile companions quite early, but only CWT invested in app development, while the other TMCs just partnered with app providers (Hegemann, 2017).
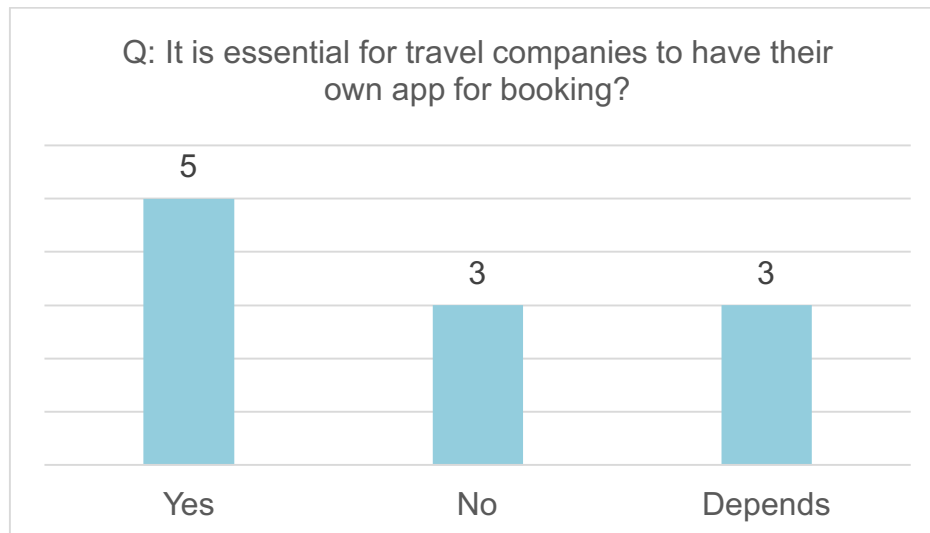
Figure 6. Interview results on if travel apps are currently a necessity for travel companies.

It can be concluded that the opinions of the interviewees differ a lot. Some think a mobile application is a must, and some think it is not, but rather a mobile solution is a must. As can be seen from the graph above, the most common opinion was that currently it is a must to have an app for booking, as five out of 11 interviewees thought so. It can also be mentioned that the current technologies implemented in business travel apps are not as advanced as for leisure travel. In the next chapter the replies regarding the future of mobile applications in travel booking will be discussed.

4.2   Look into the Future Trends in Mobile Solutions

Last section discussed the current trends in the mobile travel booking app world. This chapter will take a look at what kinds of mobile solutions might be coming in the future. Opinions on this matter differed person to person, but similarities also occurred. Firstly, this chapter will discuss the results of the interviews, after which the most popular future solutions that came up in the results will be discussed.

The main points from this part of the interview was to find out which kinds of solutions the participants thought would be coming up in the future, and whether or not the participants thought mobile applications would be the number one mobile platform in 5 years. As with the current trends chapter, this chapter is also divided into leisure and

business travel. Before discussing the interview results in a narrative, from the figure below can be seen the topics that came up during the interviews.

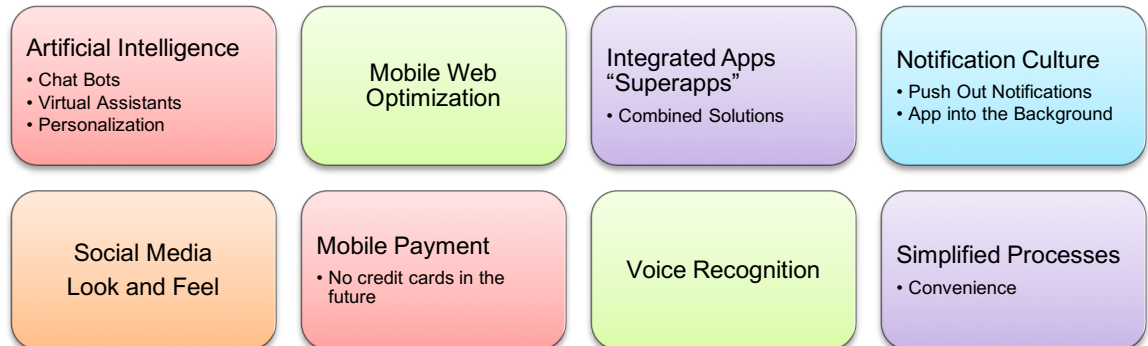|			
Artificial Intelligence • Chat Bots • Virtual Assistants • Personalization	**Mobile Web Optimization**	**Integrated Apps "Superapps"** • Combined Solutions	**Notification Culture** • Push Out Notifications • App into the Background
Social Media Look and Feel	**Mobile Payment** • No credit cards in the future	**Voice Recognition**	**Simplified Processes** • Convenience

Figure 7. Future solutions topics mentioned in interviews.

As the figure shows, there are many different technologies that could add value to the product in the future. The three most popular out of these technologies were artificial intelligence, integrated "superapps", and notification culture. These topics will be individually presented with a deeper understanding of them at the end of this chapter in "key findings". Before that, the thoughts of the interviewees below bring a deeper understanding of what companies think is possible and what is looked into currently.

4.2.1   Leisure Travel Solutions

Mrs. Schweikart from Lufthansa and Swiss stated that they are currently looking into several future solutions. They had a workshop this year February on future mobile trends. These include selling tickets via chat bot applications such as Facebook chat and other messenger applications. They are looking into how they could cooperate with Siri or WhatsApp. They also think an interesting option is WeChat, which is a very popular multi-function application from China. Utilizing chat bots and Siri is already in trial within the company. Mrs. Schweikart also added that they are looking into how to optimize their mobile website. The mobile website is already accessible through Google Home. She stated that centralization seems to be the direction the future solutions are going into. Companies need to collaborate with the big players, which are the technology providers

such as Google. This, however, might cause customers to suffer from the user experience, and it might end up causing decentralization in the long run. There will need to be balance between what is required from the big players and what can be offered by the company. (Schweikart, 2017).

Mrs. Hu and Mrs. Shang from Booking.com thought that currently mobile applications are a good way to engage people. The question is how to integrate the use of mobile applications more into people's daily lives, when convenience is the key. At the moment a user has to have multiple applications for different kinds of functions, but integration of applications is coming. Integration meaning multiple applications' functions coming together in one app. Also personalization is a key topic for the future. They agree with Mrs. Schweikart on being dependent on the big players and having to see how the hardware technology develops. Booking.com sees application users and mobile web users as a different target group (Hu and Shang, 2017). Mr. Werner from Hilton agreed that integration will possibly be the future trend, as everything is getting more and more connected. He stated that if there is an app which "sits on top of every app", they will have to see what is in the market and how they could contribute. However, currently the idea of integrated apps is not very aligned with Hilton's strategy, which is to get customers to book directly via channels Hilton provides (Werner, 2017). Mr. Kohl from Marriott hotels believes that alternative solutions to mobile apps are coming. The driver for the new solutions is the new generation. One example is mobile payment, which will gain popularity in the next years. Mobile payment is payment without a physical credit card. Mr. Kohl stated that in 30 years time there will be no credit cards anymore (Kohl, 2017).

When the interviewees were asked whether or not they believe mobile applications will be the number one mobile platform in 5 years, the opinions varied. Mrs. Schweikart, Mrs. Hu and Mrs. Shang agree that mobile applications will not be the number one platform in 5 years, while Mr. Kohl and Mr. Werner think it will be the number one platform. Mrs. Hu and Mrs. Shang added that mobile solutions will definitely be the number one platform, but it might not be specifically mobile applications anymore. Mr. Werner pointed out that mobile application still is no the number one platform, but will grow to be in 2 to 3 years. Mr. Kohl thinks that in 5 years mobile applications will dominate but not necessarily anymore in 10 years.

4.2.2 Business Travel Solutions

As with current travel booking trends, the future trends vary slightly from leisure travel trends. However, the overall technology trends seem to follow a similar flow. Mr. Lau stated that the next trend in mobile solutions will be responsive design. The idea is that when an app is downloaded, the person downloading the app is committed to it. People will either use the app or surf the web. Therefore, apps that do get downloaded and are a part of the phone are trying to become a part of the user's life. Instead of the user having to take actions, the app will reach out to the user. This is an example of notification culture. In addition, Mr. Lau added that businesses are going where businesses are. An example of this is instant messaging and chat bots. Also, it seems that social media companies such as Facebook and WhatsApp are trying to make themselves the way to access the web (Lau, 2017). There are more and more adds, offers and different links accessible to the user. Clicking these links makes Facebook the tool to access the data in this case. Mrs. Shearer points out that it is good to be careful before jumping into new solutions "hype". She thinks artificial intelligence might play a role in business travel booking in the future, as travellers do not want to reinvent their trip each time they book a trip. The tool would learn the travellers preferences and recommend options based on that (Shearer, 2017). Mrs. Eggler says they have been looking into integrating voice recognition functionalities into their app. Furthermore, she thinks key key in mobile applications will be notification culture, meaning not having to open the app for every use. Apps will more proactively send out notifications to the user, instead of the traveller having to open the app and look (Eggler, 2017). One example of this could be the app sending out the gate number for the next flight proactively as a notification when the traveller approaches the terminal. This function could also utilize GPS functions.

Mr. Rosenbaum believes the key for mobile applications in the future will be simplification. At i:FAO they want to make it as simple as possible to the traveller without having to push several buttons. Furthermore, it could be an option to integrate OBTs into other applications through chat bots. For example, the traveller could simply ask for an offer through the chat and receive an offer. In addition, concepts such as augmented systems and machine learning might be coming up for business travel booking as well. Integrating Siri or Alexa is being prototyped at the moment. He says convenience is important, thus processed are getting simplified. He thinks it is possible that systems such as Siri or Alexa will handle everything to do with travel bookings. He agrees with Mr. Kohl on not having any credit cards in the future, as there is a new standard in

payment card industry with mobile payment. Finally, Mr. Rosenbaum believes integrated applications belong to the futuristic picture as well, however staying within the travel policy must be ensured (Rosenbaum, 2017). Mr. Franz points out that there it is already possible to have a mobile web page with the same look and feel as a mobile application. However, it does not have all the security functions as an app. In addition, in business use there are sometimes restrictions with policies such as only being able to access the tool through a company IP address. He says the mobile adaption in OBTs is not yet very high, but the access will increase in the next years. He adds that currently Onesto is the only OBT provider that has a fully integrated version as an application (Franz, 2017).

Mr. Schultz says he does not believe there is a need for native apps anymore, and thus Hotelzon's app is not a native app. He also thinks "superapps", integrated applications are coming in the future. There are companies integrating several applications into one. From an overall perspective he says apps are getting more social and more interactive. Apps will become more similar to social media with personalization and localization (Schultz, 2017). Mrs. Hegemann agrees with Mrs, Shearer on not jumping into new trends too quickly, and says companies should be careful. She states that conversational interfaces such as chat bots are a good add to the app. However, she points out that the actual app is just 5 to 10 percent of the effort, and the main product is the interface system behind the app. She mentions notification culture and artificial intelligence as solutions changing applications in the future. Regarding integrated application, Mrs. Hegemann states that they are in the process of developing a "superapp". Tourist Mobile sees themselves as the umbrella interface for the traveller. They follow the traveller over the whole trip through different methods of transportation and accommodation. Otherwise the traveller is left with multiple apps to use for different stages of the trip. Enterprises need to start thinking about how to serve the traveller better other than just finding the cheapest rate available. The important point should be building a united interface for the traveller. She does also point out that Google is a threat. However, currently Siri is not as developed as it would need to be for certain kinds of use. It is lacking in different language comprehension. Amazon Echo, Google Home, and different artificial intelligence products and solutions will come up. Mrs. Hegemann also agrees with many of the interviewees that apps will go more and more to the background through notification culture (Hegemann, 2017).

Mrs. Eggler, Mr. Rosenbaum and Mrs. Hegemann all agree that mobile applications will be the number one platform in 5 years. Mr. Lau, Mr. Franz and Mr. Schultz are not quite

sure whether it will be or not. Mr. Franz says the number one platform will for sure be mobile, but he is not sure whether or not it will be mobile applications. He also points out that the progress in business travel technologies is not as quick as with the leisure side. Mrs. Shearer also thinks mobile in general will be the number one platform, but cannot quite say for sure for applications. As can be seen from the Figure 2 below, overall 5 out of 11 interviewees think apps will be the number one booking platform in five years. 3 interviewees think it will not be, and 3 were unsure of their opinion.
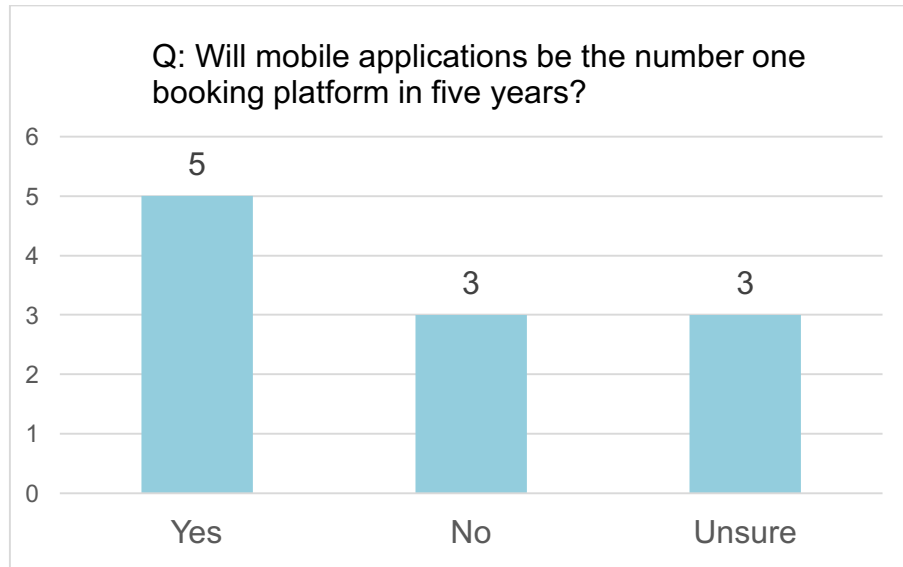

Figure 8. Five out of eleven interviewees believe mobile applications will be the number one booking platform in five years.

4.3 Key Findings

In the sections below the three most popular future trends will be discussed in more depth. These are artificial intelligence, superapps, and notification culture,

4.3.1 Artificial Intelligence and Personalization

Artificial Intelligence (AI) and personalization are one of the topics that were brought up most frequently during the interviews. These topics seem to be of interest of many travel app providers. This section takes a look at what artificial intelligence and personalization are and can mean in travel apps in the future.

AI a topic is not as new as the hype around it makes it sound, as the first person to bring it up was Alan Turing in 1955. AI is a machine with the ability to solve problems that are usually done by humans in their natural intelligence (Wilson, 2011). The idea of having a personal assistant to help with everyday tasks seems to be becoming more and more appealing to users everywhere. Especially within the travel industry, simplification and personalization are concepts which AI can help build. The varying personalization capabilities is what makes mobile an ideal platform to artificial intelligence, as the technologies can be used to learn users' behavioural patterns to make each app session more valuable than the last, making the user return to the app.

In today's technology AI showcases itself in various forms such as chat bots, which were mentioned several times within the research interviews. Chat bots are computer programs designed to simulate a conversation with a human over the internet using AI. Companies are trying to make themselves more interactive, and chat bots are a way of doing that. They could even replace an individual app, as rather than closing Facebook messenger and opening Uber, the user can simply message Uber through the chat and ask for a ride. Chat bots can be thought of as applications without the user interface. (Wong, 2016).

Another type of a chat bots are virtual assistants. Instead of working via chat messages, virtual assistants use audio as the way of communication. Several companies have already come up with their own virtual assistants such as Apple's Siri, Amazon's Alexa, Microsoft's Cortana and many more. These assistants technically understand speech and should be able to keep up a human-like conversation with the user, and solve any requests or problems. However, as Mrs. Hegemann mentions, virtual assistants are weak considering language diversity and understanding.

Integrating chat bots or virtual assistants into travel booking interfaces seem to match as an idea. The user could message a chat bot through Facebook messenger for instance, and ask it to book a flight. Then an airline's chat bot would reply with possible options and any further recommendations. This sort of a solution would make it easier for the user to access the service, without possibly having to download an entire application. Messaging applications are widely used, which would make user access even more convenient. As travel suppliers interviewed are currently investigating and piloting chat bots, it seems to be only a matter of time before the first examples are accessible to a large amount of people. In some other industries chat bots are already widely in use.

4.3.2   Integrated apps: "Superapps"

A clear disadvantage of mobile application is the fact that each application needs to be individually downloaded and then opened each time the user wants to use the app. This, in the times of simplification, does not seem like a long-term solution. Another popular reply from the interviewees was integrated apps, which means an application with several different applications' functions combined. Currently Facebook and WeChat are goof examples of the superapp technology.

With Facebook, the customer is able to log into other applications by using their Facebook account. They are also recommended connections in the other application based on their Facebook friend base. Facebook also allows the user to access, view and shop various retailers all in one platform. A good example of Facebook's commercial power is, that when a user cannot find a business' website, they will check if the business has a Facebook page instead (Owen, 2017)

An even more elaborated example of superapps is the Chinese WeChat. It is a messaging application operated by a Chinese web giant Tencent. However, instead of just a messaging application such as WhatsApp, WeChat is more of its own mobile operating system. It combines e-commerce and real world services in one application. It not only allows the user to send instant messages, but also request a ride, send and receive payments, shop online, book doctor's appointments and even flight tickets. It combines all major western applications such as WhatsApp, Facebook, Skype, Uber, Amazon, Instagram and much more in one interface (Wall Street Journal, 2016).

Integration of different functions in one single application is something travel booking could widely benefit from. In leisure travel booking these types of integrations are not yet as widely seen. Meta search companies for hotels, flights, or both exist. However, each supplier from different travel categories have their own individual applications for booking purposes. In fact, each supplier interviewed had their own app. In business travel, integrating several functions is more relevant. Online booking tools allow the travellers to book tickets from multiple categories of travel, all in one application, without having to download Turkish Airlines' own application for instance. The user has their whole trip itinerary from start to finish in one application, in most cases. In a sense, these are the superapps of the travel industry.

As most of the research suggested that integration of different functions in apps will be coming in the future, in can be expected that this same trend might spread to private travel booking as well. Instead of having to download a Hilton app for the hotel, a Lufthansa app for the flight and an Uber app for the ride, the user would only have to download one app for all. Furthermore, it does not seem to be a far fetched idea to be able to do all that through a messaging app, perhaps via a chat bot.

4.3.3 Notification culture

The third popular topic that research suggests is notification culture. Notification culture means that instead of users having to open an application to check something, the application would instead reach out to the customer in the form of notifications. For example, the traveller would get a notification when approaching the terminal with their gate number. The actual application would go more and more in the background. Technically, the idea of the user first booking the trip via a chat bot with mobile payment, and then getting a notification with all the relevant information as the trip goes on without having to open the application one single time does not seem as such a far fetched idea, which is also what many of the interviewees suggested in their comments. Proactive apps are not only a topic of the future, as many business travel providers already utilize some version of this technology.

Of course, notification culture finds its weakness in the hardware, as in most cases the user has to enable the notifications for a particular application in order for the notifications to work.

5   Conclusion

After analysing different aspects of travel booking mobile applications, some key findings can be concluded. Research suggests that individual travel booking applications will not be disappearing at least in the near future or the next 5 years, or lose a large amount of market share to other mobile solutions. Having said that, after the 5-year mark, it seems possible that the mobile booking technology trend will have switched to something very different. It can be expected that this technology will develop and quickly spread across different companies. Above all, enterprise mobile strategies and expectations might be significantly different than they are today. Furthermore, it can be advised that if a company is yet to develop their own application, it might be beneficial to instead look into other possibly more cost-effective solutions for the future. Technology, and especially mobile technology changes rapidly, thus it is good to think ahead of time.

Currently each company's mobile booking applications are used individually, and require travellers to download the applications and open them in order to use them. Some companies already provide notifications to lessen the travellers' effort in the process. In business travel booking some suppliers provide more functions and booking categories than others. Some suppliers are already conducting a large amount of research to find out the future trends, and some are holding back from jumping into trends. However, research suggests that leisure booking applications have to develop and keep up to date with the technologies available much more than business travel providers. This seems to be caused by a few reasons. In leisure travel there is more competition, thus in order to keep up with the competition companies need to make sure their solutions are up to date. Globally speaking, the amount of business TMC's is not very high. Secondly, corporate travel policies slow down the process of integrating new technologies, thus demotivating business travel suppliers to push forward new solutions. The competition does not seem as much of a threat as in leisure travel.

The study concludes that the main future trends in travel booking will consist of artificial intelligence, personalization, function integration, and notification culture. These trends mirror the current trends in social media applications, which are currently the most popular kinds of applications. Making the user interface more personalized will make it more comfortable for the user, as it reminds them of their daily used applications. In addition, cooperation with different applications through chat bots or virtual assistants seems likely. Travellers will be able to access booking functions from more channels

than they currently are. They will be able to connect with their co-travellers more actively, and get proactive notification of the next travel steps, which all helps make the trip a more comfortable experience.

To answer to original research questions, if a company currently has a mobile application they are developing, it does seem to be worth the effort at this point in time. However, as many of the interview participants pointed out, it might be too late to start developing an application from the beginning. If a company is considering starting to develop their own app, it could be recommended to first look in to other mobile solutions instead.

A suggestion for any further research on this topic would be to analyse the app adoption rates in online booking in the upcoming years and get deeply into the customer behaviour. It could be a good idea to conduct a traveller survey, in which the purpose is to find out the pain points of mobile booking, and what the future looks like from the traveller's point of view. While the service providers might be able to tell what kinds of solutions are out there, the consumer will be able to tell what is demanded.

6   References

Canaani, A., 2016. *The evolution of mobile apps today and in the future.* Mobile Business Insights. Available at:<http://mobilebusinessinsights.com/2016/03/the-evolution-of-mobile-apps-today-and-in-the-future/> [Accessed 6 May 2017]

Creswell, J.W., 2012. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. London: Sage.

Eggler, M., 2017. *Current Solutions and the Future of Mobile Applications in Travel Booking*. Interview with S. Caglayan on 3 May 2017, Bonn.

Eining, A., 2016. *WeChat: The Future of Super Apps*. KeyMedia Solutions. Available at: <https://keymediasolutions.com/news/new-technology/future-of-super-apps/> [Accessed 6 May 2017]

eMarketer, 2015. *By 2016, Most Digital Travel Bookers Will Use Mobile Devices*. Available at: <https://www.emarketer.com/Article/By-2016-Most-Digital-Travel-Bookers-Will-Use-Mobile-Devices/1013248> [Accessed 7 May 2017]

Franz, T., 2017. *Current Solutions and the Future of Mobile Applications in Travel Booking*. Interview with S. Caglayan on 3 May 2017, Bonn.

Golmack, S., 2017. *Current Trends and Future Prospects of the Mobile App Market*. Smashing Magazine. Available at: <https://www.smashingmagazine.com/2017/02/current-trends-future-prospects-mobile-app-market/> [Accessed 10 May 2017]

Gowell, S., McWherter, J., 2012. *Professional Mobile Application Development*. John Wiley & Sons, Incorporated.

Gray, D.E., 2013. *Doing Research in the Real World*, 3 ed. London: Sage.

Hegemann, M., 2017. *Current Solutions and the Future of Mobile Applications in Travel Booking*. Interview with S. Caglayan on 8 May 2017, Bonn.

Hu, J., Shang, H.T., 2017. *Current Solutions and the Future of Mobile Applications in Travel Booking*. Interview with S. Caglayan on 12 May 2017, Bonn.

Kissonergis, P., 2015. *Smartphone Ownership, Usage and Penetration by Country.* Available at: <http://thehub.smsglobal.com/smartphone-ownership-usage-and-penetration> [Accessed 7 May 2017]

Kohl, K.-H., 2017. *Current Solutions and the Future of Mobile Applications in Travel Booking*. Interview with S. Caglayan on 4 May 2017, Bonn.

Lau, J.N.K.L., 2017. *Current Solutions and the Future of Mobile Applications in Travel Booking*. Interview with S. Caglayan on 11 May 2017, Bonn.

Leavitt, D., 2006. *The Man Who Knew Too Much: Alan Turing and the Invention of the Computer (Great Discoveries).* W. W. Norton & Company.

Matviyenko, S., Miller, P., 2014. *The Imaginary App*. MIT Press.

McCann, T., 2011. *Art of The App Store: The Business of App Development*, 1st ed. Wiley.

Mordhorst, M., 2014. *How to help enterprises going mobile: Investigation on influences and requirements of business apps within Enterprise Mobility*, 1st ed. Diplomica Verlag.

Murphy, K., 2014. *Machine Learning, Adaptive Computation and Machine Learning*. MIT Press.

Owen, D., 2017. *"SuperApps" and the future of communication*. Reckon Blog. Available at: <https://blog.reckon.com/apps-superapps-integrations-future-communication/> [Accessed 20 April 2017]

Pittenger, D., Cunningham, C., Weathington, B., 2012. *Understanding Business Research*. Wiley.

Rezdy, 2017. *Travel Statistics for Tour Operators*. Available at: <https://www.rezdy.com/resource/travel-statistics-for-tour-operators/> [Accessed 15 April 2017]

Richter, F., 2016. *The Fastest-Growing App Categories in 2015*. Statista Infographics. Available at: <https://www.statista.com/chart/4267/fastest-growing-app-categories-in-2015/> [Accessed 23 April 2017]

Rosenbaum, C., 2017. *Current Solutions and the Future of Mobile Applications in Travel Booking*. Interview with S. Caglayan on 16 May 2017. Bonn.

Savitz, E., n.d. Gartner, 2012: *Top 10 Strategic Technology Trends for 2013*. Forbes. Available at: <http://www.forbes.com/sites/ericsavitz/2012/10/23/gartner-top-10-strategic-technology-trends-for-2013/> [Accessed 6 May 2017]

Schultz, C., 2017. *Current Solutions and the Future of Mobile Applications in Travel Booking*. Interview with S. Caglayan on 10 May 2017. Bonn.

Schweikart, S., 2017. *Current Solutions and the Future of Mobile Applications in Travel Booking.* Interview with S. Caglayan on 12 May 2017. Bonn.

Shearer, H., 2017. *Current Solutions and the Future of Mobile Applications in Travel Booking*. Interview with S. Caglayan on 4 May 2017. Bonn.

Shontell, A., 2014. *Don't Get Used to Mobile Apps — Their Days Are Very Obviously Numbered*. Business Insider. Available at: <http://www.businessinsider.com/the-future-of-mobile-apps-2014-10> [Accessed 23 April 2017]

Statista, 2017a. *Apple App Store: number of available apps 2017*. Statistic. Available at: <https://www.statista.com/statistics/263795/number-of-available-apps-in-the-apple-app-store/> [Accessed 25 April 2017]

Statista, 2017b. *App stores: number of apps in leading app stores 2017*. Statistic. Available at: <https://www.statista.com/statistics/276623/number-of-apps-available-in-leading-app-stores/> [Accessed 25 April 2017]

Statista, 2017c. *Percentage of time spent on mobile web and apps on connected devices in the United States from 2013 to 2015.* Statistic. Available at: <https://www.statista.com/statistics/280014/distribution-of-time-spent-on-mobile-web-and-apps/> [Accessed 28 April 2017]

Statista, 2016. *Apple store downloads 2016* | Statistic. Available at: <https://www.statista.com/statistics/263794/number-of-downloads-from-the-apple-app-store/> [Accessed 18 May 2017]

Statista, 2013. *An Average Smartphone User Has Installed 26 Apps.* Statstic. Available at: < https://www.statista.com/chart/1435/top-10-countries-by-app-usage/> [Accessed 8 April 2017]

Talukder, M., 2014. *Managing Innovation Adoption: From Innovation to Implementation*, New edition. ed. Routledge, Farnham, Surrey, UK. Farnham Gower.

The New York Times, 2016. *How China Is Changing Your Internet* | The New York Times. [Video] Available at: <https://www.youtube.com/watch?v=VAesMQ6VtK8> [Accessed 2 May 2017]

Tornatzky, L.G., Fleischer, M., Chakrabarti, A.K., 1990. *The processes of technological innovation.* Lexington Books, Lexington, Mass.

Wall Street Journal, 2016. *The Future of Messaging Apps: Commerce.* Wall Street Journal. [Video]. Available at: <http://www.wsj.com/video/the-future-of-messaging-apps-commerce/8C359F71-E63B-48DC-9EDC-1BBCE036638F.html> [Accessed 10 April 2017]

Werner, J., 2017. *Current Solutions and the Future of Mobile Applications in Travel Booking*. Interview with S. Caglayan on 10 May 2017. Bonn.

Wilson, E., 2011. *Affect and Artificial Intelligence*. University of Washington Press.

Wong, J.C., 2016. *What is a chat bot, and should I be using one?* The Guardian. Available at: <https://www.theguardian.com/technology/2016/apr/06/what-is-chat-bot-kik-bot-shop-messaging-platform> [Accessed 18 May 2017]

World Bank, 2012. *Information and Communications for Development 2012: Maximizing Mobile*. World Bank Publications.

Interview Questions

All eleven interviews were conducted during the month of May 2017.

1. Does your company have their own mobile application for travel booking?

2. Which functions does the app provide?

3. What factors lead your company to the decision of developing an app?

4. Which other mobile solutions do you think might challenge mobile applications in the future?

5. Do you believe mobile applications will be the number one booking platform in 5 years?

6. Do you think it is essential for travel companies to have their own applications for booking today?

7. Any additional comments?