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THE USE OF SMARTPHONE APPLICATIONS FOR CUSTOMER SERVICE PURPOSES

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Abstract

The last years more and more hospitality firms invest on technology and smart tourism aiming at improving the customer service provided. Therefore, hoteliers have been persuaded to develop and launch mobile applications for guests.

To investigate the hotel smartphone apps, a questionnaire was conducted in 15 companies that develop hotel mobile apps. Additionally, data for the study was collected from a content analysis in 50 hotel mobile apps and companies that design hotel apps. The results of the questionnaire and the content analysis were analyzed and examined the available features and functions of mobile apps that companies and hotels provide. Moreover, the effectiveness of these features and the perspectives of hotel apps were tested through the study.

The results indicate that hotel apps offer mainly information services to guests and boost hotel sales and revenues, as well as the interaction with guests and the brand loyalty. From open-ended questions it became clear that more hotels will offer a mobile app to guests in the future and hotel apps will evolve and provide more significant features to guests.

Keywords: Mobile Smartphone Applications, Smartphones, Application, Tourism, Hotel, Technology

Acknowledgments

Abbreviations

App	Application
SMS	Short Message Service
MMS	Multimedia Messaging Service
CRM	Customer Relationship Management
eCRM	Electronic Customer Relationship Management
mCRM	Mobile Customer Relationship Management
OTA	Online Travel Agency

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Introduction

Due to the development of technology, the proliferation of smartphones is increasing. The rising popularity of smartphones is due to the fact that consumers use smartphones as the primary electronic device to connect to the internet anytime and anywhere (Mo Kwon, Bae, & Blum, 2013), as they have been the portable computers of this era (Kim & Adler, 2011). The increasing usage of smartphones led to the development of mobile applications (apps). The last years, in particular, consumers show a preference for mobile apps in comparison with mobile websites (Nielsen.com, 2014), as they have an easier format for a mobile device.

Smartphone apps are a significant, innovative and competitive marketing tool for the Hospitality sector, as they are a powerful asset for hospitality industry to make profit from (Wang et al., 2015). Undoubtedly, hotels focus on meeting the differentiated expectations and preferences of guests. Therefore, the rapid advancement of smartphone apps leads more and more hotel companies to launch mobile apps, so as to cater to needs of customers (Zhang et al., 2018). By using this innovative feature of hotel smartphone applications, hotels are trying to provide a more customized and personalized experience to guests. Hotel mobile apps play a crucial role regarding the customer service and customer experience not only during the guest's stay at the hotel, but also before and after their trip (Buhalis & Costa 2006).

Nevertheless, the studies concerning the mobile apps in hospitality and tourism industry are scarce. Therefore, this study aims at examining and analyzing the features and functionalities of hotel smartphone apps. This paper will also identify the current offer of companies of application features to hotels, their effectiveness and their perspectives in the near future.

1. Literature Review

1.1 The emergence of mobile technology

The widespread adoption of cellphones during the 21st century has turned mobile phones from a luxury gadget into a necessity. They are considered to be one of the most essential electronic devices of the last years. Studies identified that cellphones are possibly the biggest non-alcoholic addiction of the 21st century (Shambare, Rugimbana & Zhowa, 2012).

In today's technological era, with the evolution of cellphones into smartphones, the most important innovation is that users can connect to the internet anytime, anywhere (Kwon et al., 2013). According to Wang, Xiang, & Fesenmaier (2014), «a smartphone is a miniaturized computer that integrates an agglomeration of multiple digital devices such as camera, mp3 player, GPS, and an operating system that supports potentially thousands of mobile computing software applications (apps); thus, the use of smartphones can vary significantly depending on the specific functions and applications adopted and used».

As smartphones are a combination of mobile phones and computers, they give users the capability of broadband internet access, location-awareness and modern mobile operations systems and comprise an important part of the mobile market (Wang et al. 2015). Unlike ordinary cellphones, smartphones have larger, color screens with higher resolution, stronger input capabilities, built-in networking functions, and a wide array of features and functions like multimedia messaging, cameras, e-mailing and social networking (Dickinson et al., 2012; Chan, 2012).

Smartphones are rising in popularity worldwide and have become an integral part of our everyday life, as they provide users a wide range of possibilities such as communication, entertainment and mobile working. It is said that a smartphone is not only a communication device, but also a continuation of the personality of their users (Persaud & Azhar, 2012).

The adoption of smartphones in the hospitality sector is a relatively new phenomenon. The increased connectivity, communication, content consumption and content creation that smartphones offer to travelers, support them in their use of information and communication (Wang and Xiang, 2012) and lead to the emergence of a new generation of modern tourists (Gretzel, 2010; Gretzel & Jamal, 2009). Smartphones guide people to new destinations and attractions, provide them with new experiences, contribute to the communication with other people and negotiate instantly tourist needs (Dickinson et al., 2012).

1.2 Smartphone Applications

What is important about smartphones is that users have the ability to enhance their devices by downloading and installing mobile applications. An application (app) is a computer program that performs a particular task (Chen, Knecht & Murphy, 2014). The diffusion of smartphone ownership contributes to the development and popularity of smartphone applications, as recent studies show that the time spent on apps is increasing (Chen et al., 2014).

As Tan, Lee, Lin and Ooi (2017) point out, there are many available smartphone apps regarding social networking, e-mail, weather, news and others. However, the last years there are applications that can be used as a purchasing channel as well. Therefore, with the use of shopping applications the shopping experience becomes more convenient, flexible and personalized (Persaud & Azhar, 2012).

Telecom carriers offer smartphone users data plans, which perform a decrease in prices the last years. This encourages consumers to browse the internet unlimited and use social media networking sites, for instance Facebook, Twitter, Flickr and YouTube. As mobile users engage more with smartphones and the amount of time they spend online is increasing, marketers have a great opportunity to extend their social media marketing strategy.

The use of smartphone applications is quite ubiquitous, as more and more smartphone owners enjoy the use of these applications for travel purposes (Wang & Xiang, 2012). Particularly, there is a wide range of tourism and hospitality applications (Wang et al. 2010), which among others involve music, communication, social media, and booking features (Adukaite et al., 2013).

Kennedy-Eden and Gretzel (2012) have identified seven categories for travel apps, which are navigation, social, mobile marketing, transactional, security/emergency, entertainment and information. Wang and Xiang (2012) categorized travel apps into eleven categories, which are; single city destination guide, online travel agency, language assistant, flight manager, theme park and resort guide, facilitators, multiple city destination guide, food finder, entertainment, live camera, and currency converter.

A more recent study by Adukaite et al. (2013) focuses on hotel apps and categorized them into six categories; information regarding the hotel, information about the destination, social media communication tools, app settings and extras. The most frequent available features appear to be information about the hotel location, contact details, room amenities, photo gallery, feedback via guests, loyalty account access, restaurant and spa reservations and booking system (Adukaite et al., 2013; Wang et al., 2015).

With the increase in smartphone application use, many brands in the hotel industry took advantage of that and adopted this technology so as to stay in touch with the guests and boost customer service. The launching of smartphone apps, via which

check in/out service, reservations and location service are possible, helps the hospitality sector to create a strong brand awareness and connection. Choice Hotels International provided guests the possibility to make a reservation and have access to the guest loyalty program, through their smartphone application for iPhone users in 2009 (Kwon, Bae & Blum; 2013). Today many hotels and hotel chains have launched their own apps with many other services. The use of hotel apps by travelers will probably have a positive impact on brand awareness, customer engagement and brand commitment, and all these will consecutively have a positive effect on brand loyalty (Kim and Adler, 2011).
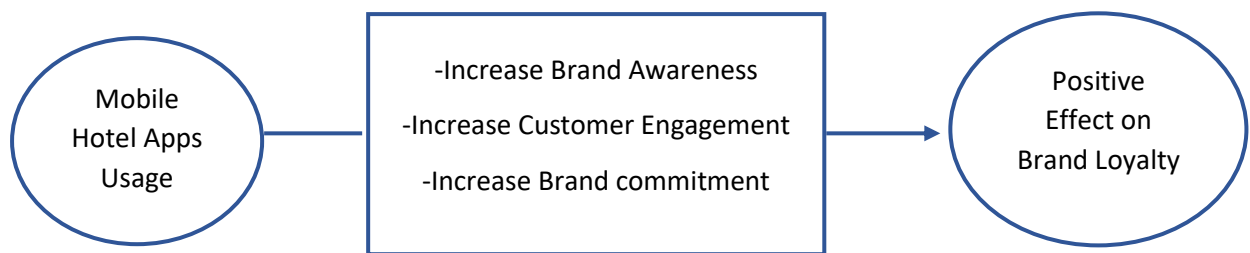
Figure 1, Source: Student's Use of Hotel Mobile Application: Their Effect on Brand Loyalty (Kim and Adler, 2011).

Because of the intangibility of most of the hotel services and the ubiquity of the applications, they provide travelers the capability to find the necessary information online, before, during and after their trip (Brown & Chalmers, 2003). According to Wang et al. (2010) the uncertainty of travelers leads them to use their smartphones as travel assistants during all the phases of the trip. In particular, before and during the trip, they search information regarding accommodation, transportation, attractions and activities. Additionally, smartphones help them communicate with other people via emails, calls, messages and social media applications.

Smartphone apps not only offer unlimited possibilities to hotel guests, but also maximize staff's performance, as they offer them the opportunity to deliver individualized and excellent service in real time. Guests can share information or inquiries and get an instant, personalized service, let alone in an era, when guests seek individualized experiences, tailored to their needs and preferences (Oracle.com, 2017).

Hotel staff can take advantage of mobile apps by having access to guests' preferences, consumption model and stay history. This information helps employees to pay attention to every single guest and provide them a unique experience from their check-in till their departure. For instance, a group of guests that will attend an event can be checked-in separately in a special area so as to avoid standing at a long queue in front of the reception desk. Moreover, VIP members can check-in when they are chauffeured to the hotel, in order to enter directly their rooms when they will arrive (Oracle.com, 2017).

What is more, with the use of hotel mobile apps housekeeping staff stays informed about the rooms that need to be cleaned. The app provides always updated information based on the hotel management system. Through the mobile app the Front Office is informed as well about the adjustments in room status. Furthermore, guests can inform about a maintenance request and the maintenance staff can resolve the issue at real time and update the maintenance status. Thus, hotel staff delivers guests exceptional, individualized services, according to their needs and preferences. Mobile apps turn basic procedure into personalized services and this raises the standards of guest service to a higher level (Oracle.com, 2017).

1.3 Smartphone Applications as a Marketing Tool

Prior to the advent of smartphones, the means of marketing communication were very limited, relying mainly on texts, SMS or MMS messages. Hence, brands could promote goods and services by sending consumers personalized SMS messages through their mobile devices (Sultan, Rohm, & Gao, 2009). However, these technologies can only offer marketers an instant brand promotion, as there is no continual promotion awareness, neither customer loyalty. Only with the advent of smartphone applications were these capabilities enabled (Chiem et al., 2010).

Developments in the mobile technology have created innovative ways and a great variety of possibilities for marketers so as to communicate with customers via downloadable smartphone applications anytime, anywhere (Chiem et al., 2010). While consumers see smartphones as a way to enhance their private and social life, companies use the mobile handsets as a marketing channel so as to reach and serve customers and generate brand commitment as well. These two different aspects show that marketers should not be invasive. Mobile marketing is a simple and economical way to approach customers, however this does not mean that consumers want to receive offers and promotional messages on their mobile phones (Persaud & Azhar, 2012).

According to Sinisalo, Salo, Leppäniemi and Karjaluoto (2005), the mobile marketing can be used for three main purposes:

- *Customer acquisition:* Marketers can attract and gain new customers with the help of direct response strategies, such as promotions and competitions.
- *Customer relationship management:* Companies try to build and boost the relationships with existing customers by enhancing brand awareness and creating ongoing dialogue. The customer loyalty, customer retention schemes and sales support programs are some of the most important strategies in mCRM.
- *Driving sales:* Mobile marketing can also stimulate micropayments via the handset. Regarding more expensive products and services, companies focus on generating sales leads, for instance vouchers that stimulate consumers to

visit a physical shop or the company's website. Hence, this can lead to customer loyalty and continuous CRM activity.

The reason why mobile devices triggered this revolution in marketing and offered marketers new opportunities for business, relies on their underlying characteristics (Smutkupt et al., 2010; Kim et al., 2008). These key features are the following:

Ubiquity, which is the ability of mobile owners to receive any information and perform transactions wherever they are and whenever they wish due to Internet enabled mobile devices. On the other hand, companies are also able to reach customers anytime and anywhere.

Personalization, as the mobile phone is a personal device, which is hardly used by someone else except the owner and contains personal information, contacts and messages. Mobile phones can be used as a means of self-expression; the users can personalize their mobile phones with add-on features, like ringtones or display, according to their preferences. Moreover, m-commerce applications can personalize and customize information that are addressed to a specific user.

Two-way communication is another important feature of mobile phones, as these devices allow a greater two-way communication than any other tool due to their "always-on" connectivity.

Flexibility as due to the portable nature of smartphones, users have the ability to get involved with other activities, for instance travelling or meeting other people at the same time that they conduct a transaction.

Localisation is the technique of pinpointing the geographical position of the mobile user via some location-based technologies, for instance GPS. Localisation helps marketers to target location-specific products and services to protential customers.

Industry background, which is the ability that smartphones offer to marketers to reach customers through a variety of channels. These channels range from a simple SMS to mobile internet.

The booming of technology in the hospitality industry is a new expanding field and resulted in the widespread use of smartphone applications as a new marketing tool (Anuar, Musa, & Khalid, 2014). The portable nature of smartphones and the accessibility of the internet helps travelers make reservations for hotels, flights, rental cars and many others by using the mobile internet (Wang & Wang. 2010). Hence, many hospitality companies like airlines, restaurants and hotels started taking advantage of mobile marketing by offering their own smartphone applications to reach out potential customers and have direct access to them. As mobile marketing is growing fast, hospitality companies should launch applications with detailed and adequate information about their products and services, so as to reduce marketing costs and approach new customers (Kwon et. al., 2013).

2. Overview of the smartphone applications in the hotel sector

Technology has changed emphatically the landscape of tourism and especially mobile applications have brought a subversive revolution in this field. This shift in mobile technology, and especially the proliferation of smartphones and smartphone apps, had an impact on customer behavior, needs, experiences, decision making and sharing (Dickinson et al., 2012; Wang et al., 2014), as customers are no longer passive information receivers. Consumers now decide to retrieve information when and where they want. Additionally, they have a wealth of options, so as to search, compare and choose the ideal solution that meets their needs and this sets the consumer 'in control' (Coussement & Teague, 2013). The new traveler is more informed and knowledgeable, more autonomous and more individualistic (Buhalis, Costa & Ford, 2006).

2.1 Customer Relationship Management in the Hotel Industry

The quality of products and services alone is not enough anymore so as to enhance customer loyalty. Hence, many organisations applied Customer Relationship Management (CRM) to strengthen the relationship with customers, increase customer loyalty and provide value for them. Customer Relationship Management allows companies to exploit internal resources, for instance technology, people and process in order to have competitive advantage and improve their performance (Sinisalo et al., 2005). Except from customer satisfaction and loyalty, companies are trying to reach out new customers, so they moved from CRM to eCRM, which uses internet technologies to enhance CRM (Pechruttanamunee & Assenov, 2008).

Many industries adopted eCRM and especially the hospitality industry. For instance, hotels investigated guests' profiles and preferences via eCRM software and then sent them customized special offers. Hotels try to stay competitive and increase brand awareness, so more and more hotels use social media as a marketing tool. Today social media have gained popularity among travelers, because comments and reviews written by other travelers contribute to customers' decision making. Travelers take into consideration every review, gather information and compare the options about where to stay, to eat or which attractions to visit.

As customers require more and more personal attention, mobile customer relationship management (mCRM) is an innovative and powerful means, which helps reinforce the relationship between companies and customers. CRM in combination with mobile marketing allow companies build and maintain stronger relationships with customers through their mobile phone. Companies can respond directly to demanding consumers and have access to them virtually anytime, anywhere (Chan, 2012). This direct contact with customers, which occurs individually in a personal level, leads to personalization and companies can easier handle the relationships with them, as mobile phones normally belong to one particular user.

Many hoteliers use mCRM strategies, because they allow personalization, direct contact with guests and they boost guests' satisfaction. Starwood's W Hotels was an early adopter of mCRM strategy. They launched a SMS text messaging application, where guests could subscribe and receive reminder text messages on their cellphones during their stay there. Therefore, the direct dialogue between the hotel and the guest is enhanced. The main goal of this application was not to be utilized as a promotional tool, rather to boost the customer service and the guests' experience (Chan, 2012). Now many hotels have launched their own apps with enhanced features and possibilities, although mCRM is a relatively new communication channel.

The days that a traveler had to depend on the travel agent to arrange his trip have lapsed, as now hotel apps offer travelers tailored service and customer experience, which are two examples of added value. Hoteliers compile customers' preferences, patterns of social communication, interests and their locations, so as to offer each guest tailored apps that meet their needs (Kim & Adler, 2011) and cater to their complicated preferences. By using the hotel apps guests can personalize their travel experience. Through the mobile platform, management can deal with customers' desires and wishes in real time, so guests are no longer clung to hoteliers (Coussement & Teague, 2013).

2.2 The three stages of tourism consumption

Unlike other sectors, in tourism industry the travel experience includes also pre- and post-consumption phases beyond the actual trip. These stages may last a couple of weeks or even several months, in which internet technologies play a crucial role (Buhalis & Costa 2006). The intangibility of most of the hotel services and the portable nature and ubiquity of smartphones have helped hotel guests to have access to online information in all three phases of travel; before, during and after the trip (Brown & Chalmers, 2003). Hoteliers should target travelers not only during their trips, but also before and after the trip, so as to enhance customer satisfaction and loyalty.

As shown in Figure 2, during the pre-consumption phase travelers aim to plan and organize the upcoming trip, develop their expectations, evaluate the alternatives, make decisions and arrange or carry out transactions. During the actual vacation stage, it is important that with the help of the internet technologies, tourists will receive promptly accurate and relevant information wherever they are and whenever they want. In the final stage the traveler recalls, either in a positive or in a negative way his trip experiences. Most of them feel the need to share, document and live again these experiences with the help of internet technologies. In this way, travelers build a relationship with the places that they have been, the attractions they have visited and the products or services they have used.
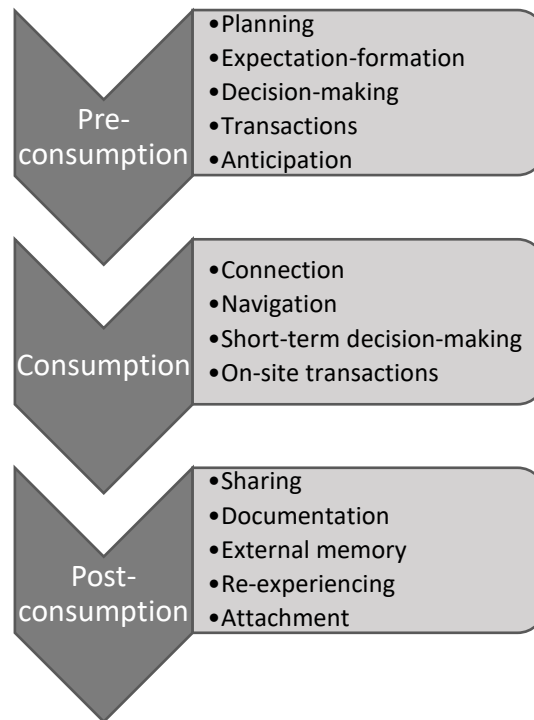
Figure 2, Source: Communication and information needs in the three stages of tourism consumption (Buhalis & Costa 2006, 10)

2.3 The five stages of travel

Google released recently a study elaborating a new model, which includes 5 stages of travel. These stages concern the process through which travelers make the trip a reality, when they determine the when, where, how and what of the journey (SiteMinder, n.d.). Whether the travel is still a dream, or the traveler is planning and booking the upcoming vacations, or even is experiencing it, travelers are online constantly using their smartphones in every stage of their journey, waiting to be motivated (Digital Tourism Scotland, 2017).
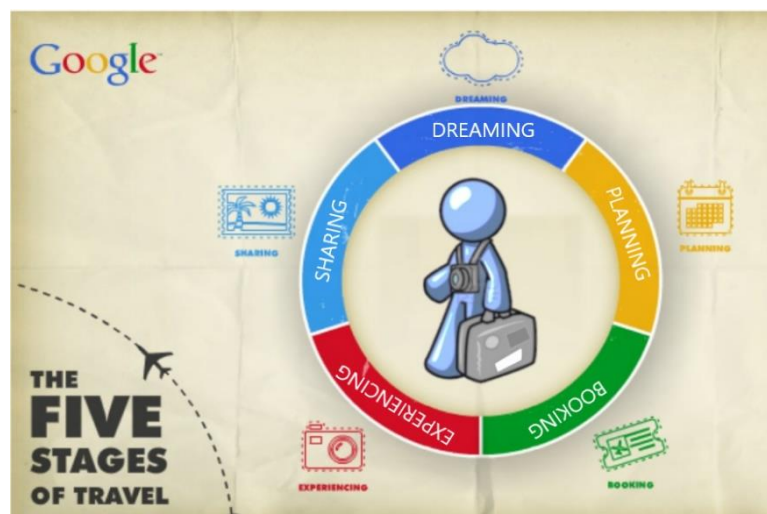
Figure 3, Source: The Five Stages of Travel (Google, 2011)

Stage 1: Dreaming

Every trip starts with a dream. Many people are thinking about their next vacation every day and this is the first step of the travel cycle. A YouTube video about an exotic destination; a photo of a colleague from their latest vacations posted on social media; or a breathtaking destination advertised on a blog, are only some of the many sources of inspiration a traveler needs to start the dream (Hotel Link Solutions; SiteMinder).

Stage 2: Planning

Many people are ready to take action and move from the dreaming to the planning stage. In the past, travelers used to plan their vacations using printed material, like travel books. Today this is not the case, as online travel guides have replaced the outdated printed guidebooks. Moreover, at this stage travelers are very interested at online reviews written from other guests at many websites, for instance TripAdvisor or Yelp (Gretzel, Yoo and Purifoy, 2007; Digital Tourism Scotland, 2017).

Stage 3: Booking

The planning stage lay a foundation for the next step of the travel cycle, which is the booking stage. The traveler is ready to book his holidays and turn his dream into reality. Today the majority of customers prefer the online booking procedure. A TripAdvisor (2016) study reports that 73% of travelers make an online research when they are planning their holiday destination and 86% search online when it comes to the accommodation. The booking websites should be as simple as possible and easy for the guest to navigate and book his trip. According to studies 79% of smartphone users in 2017 completed a booking after searching online on their mobile phones, in comparison to 2016, when the percentage was 70% (Loo, 2017).

Stage 4: Experiencing

This stage is, in fact, the traveler's actual trip. Mobility, one of the unique characteristics that smartphones offer and the continuous connectivity enable travelers to use their devices anywhere and anytime during the trip (Digital Tourism Scotland, 2017). In the past, in contrast, the access in any kind of information sources was limited through printed maps and travel guides. The online connection that travelers have during the journey makes them feel more flexible and have an informative experience, which can share with their friends, family or other travelers through social media. For this reason, at the experiencing stage the customer service is very crucial (Hotel Link Solutions, n.d.). Companies should meet or exceed travelers' expectations, so as to have satisfied customers that will leave with memorable experiences and probably return back (SiteMinder, n.d.).

Stage 5: Sharing

Whether it is a picture, video, review or a blog, by sharing their experiences in social media, travelers may encourage and inspire their family, friends or other potential travelers visit the same places or destination. Travelers usually share their moments

and knowledge via social networking or other online platforms, for example Facebook, Twitter, YouTube or TripAdvisor, which will may inspire other people and will start dreaming.

2.4 Features of Hotel Smartphone Applications

There are many websites and applications, for example Hotels.com, Trivago, Expedia, that make the hotel booking process a simple procedure. Because of the reduced prices and the deals that intermediaries offer, they are high on the preferences of travelers when they are to book their accommodation. On the other hand, booking a hotel via a branded hotel app is not so popular among travelers (AppsBuilder Blog). Hotel apps bring guests closer to hotels and link the user to the brand, which increases hotel brand awareness, guest loyalty and revenues for the organization (Kim and Adler 2011). By optimizing hotel apps and the technology of mobile phones guests turn their trip into a unique experience.

2.4.1 Guest approach

More and more big hotel chains, luxury resorts and 5-star hotels launch smartphone applications to their guests. However, the number of hotel chains that offer mobile apps is bigger than that of individual hotels. This happens because hotel chains have higher budgets and resources so as to conform with technology, and because travelers, who choose to stay at hotel chains, can use their mobile apps in many destinations (Adukaite et al., 2013).

Most of the hotel apps present some common features and functions. For instance, booking system, transportation, weather forecast, restaurant and spa menu, contact information like phone number, address and e-mail are some of them. Nevertheless, there are many hotel apps with outstanding features that provide users with excellent mobile experience.

Travelers can not only reserve a room with the use of hotel apps, but they can also manage their whole trip only with the use of their mobile device. Through mobile apps guests can avoid long queues at the reception desk, as they can enter or leave their room using only their mobile device for check-in/out at any place (Hospitality Technology, 2017; Thinkmobiles, 2016). Marriott Hotels give elite members of the app the privilege to take priority when they wish to request a late check-out. And for those who travel a lot, Accor Hotel app sends travelers a booking reminder 48 hours before their trip (Thinkmobiles, 2016).
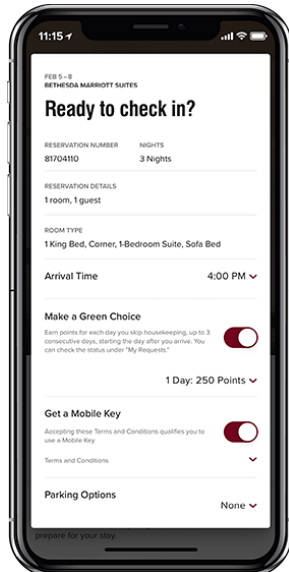
Figure 6, Mobile Check-in
(Source: Marriott Mobile App.)
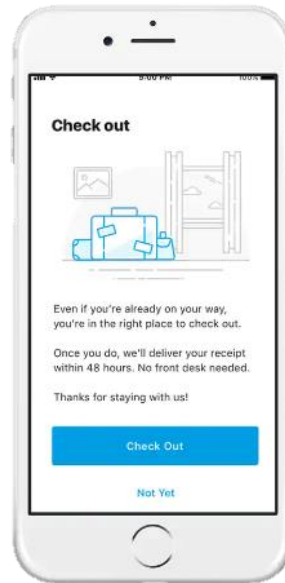
Figure 5, Mobile Check-out (Source
Hiltonhonors3.hilton.com)

If a room is not ready for guests to check- in, La Quinta Hotels App sends them a notification text message when their room will be available (Thinkmobiles, 2016). Another important feature of smartphone apps is that instead of picking up another set of the usual plastic cards and being afraid of losing them, more and more apps enable guests to use their mobile phones as a room key. The SPG Keyless feature in Starwood Hotels & Resorts App can remind guests their room number as well (Fossel, 2013; Thinkmobiles, 2016). A hotel smartphone app can also include a room control feature, which means that guests can in fact control all smart devices inside the room, like TV, air-condition and other devices. Even though this is a top-notch feature and requires a big investment, it is something that will impress the customers and make the difference at the hotel.
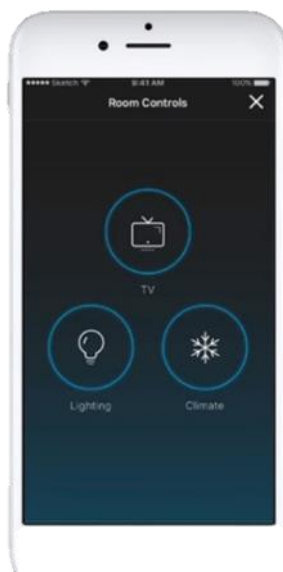
Figure 4, Room Controller (Source
Hiltonhonors3.hilton.com)

Users can order room service or order by the pool and the beach only in a few taps. Furthermore, they can book a hotel spa treatment or make a restaurant reservation (AppsBuilder Blog). If guests would like to have a look at their balance, many hotel apps provide the feature of current charges, where the users can observe online their current expenses during their stay (Thinkmobiles, 2016).
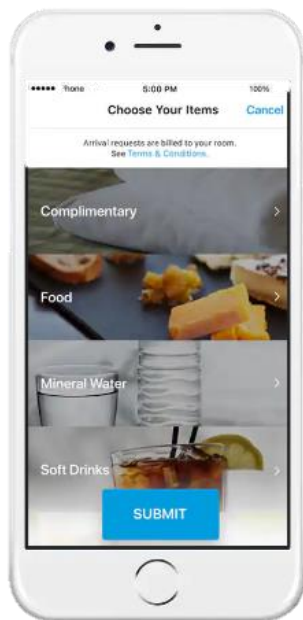
Figure 8, Orders (Source Hiltonhonors3.hilton.com)
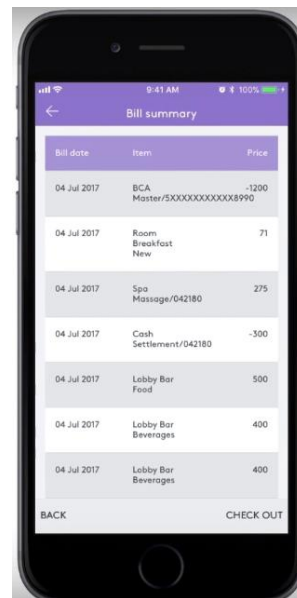
Figure 7, Current Charges (Source: Mediaconcepts.com)

One of the most important things before choosing a hotel is to see how the hotel looks like and this is possible via most of the hotel apps. Users can see photos and detailed information of the rooms and the amenities of the hotel in 3D view (Thinkmobiles, 2016). Information and guides with maps about the local region are also available in many hotel applications (AppsBuilder Blog). Best Western Hotels & Resorts app show

Figure 9, Concierge Service (Source: Exclusivi.com)

travelers places to eat, transportation, nearby attractions and famous landmarks (Thinkmobiles, 2016). IHG's Concierge Insider Guides app provide users with videos hosted by local concierges suggesting the local attractions (Fossel, 2013).

Many hotel apps offer concierge service and can answer any question the traveler might have or provide customized service to the guest. For instance, via Hyatt App, the St. Regis in New York app and SPG (Starwood Hotels & Resorts) app guests can communicate directly with a hotel employee using their Facebook, Messenger, Twitter or FaceTime account (Fossel, 2013). Users can request special additional items and amenities in room from a proposed list according to their personal needs, like special bath amenities or pillow preferences. Additionally, guests at Starwood Hotels & Resorts can use the voice search not only to book a room, but also to get driving directions to reach the hotel. IHG Group launched the IHG Translator App, where travelers can find the most popular phrases translated in 12 languages, including slang (Thinkmobiles, 2016).
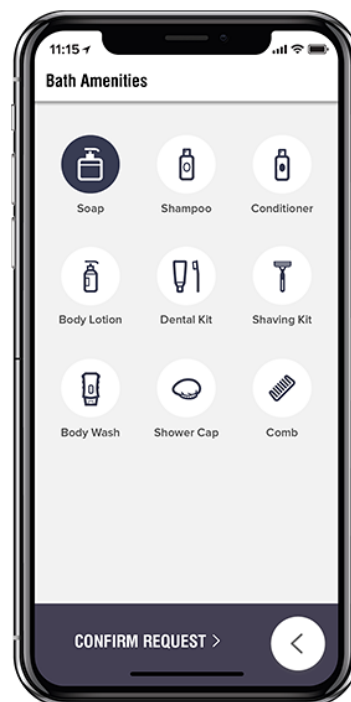
Figure 10, Special Amenities (Source: Marriott Mobile App)

More and more hotels have integrated reward programs in their apps, so as to praise their loyal customers and attract more. With the help of these programs users can have member benefits, discount rates and rewards (AppsBuilder Blog). Guests can log-in with their account and redeem points for free or discounted nights, or gain free dining and spa coupons. Choice Hotels launched the "Choice Privileges" program through the app, with which guests can collect points and except from a free night, they can earn fuel rewards, digital gift cards and many other benefits (Thinkmobiles, 2016). Moreover, they can combine points and cash for a prospective room reservation. The loyalty program is also a motivation for guests, so as not to delete

the mobile app from their mobile phones after they leave the hotel. Last but not least, guests can find many deals and offers through the hotel app regarding the amenities of the hotel, like spa treatments or restaurant discounts (AppsBuilder Blog). This
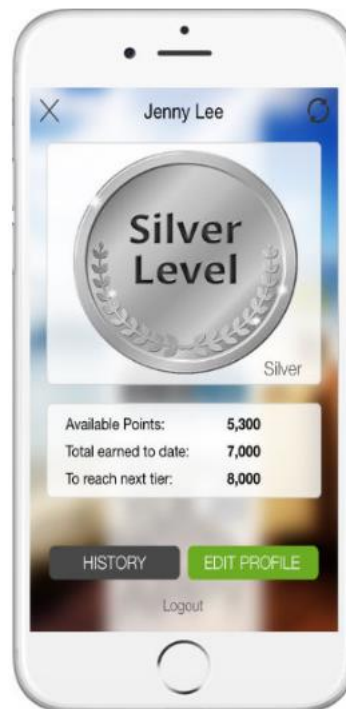
Figure 11, Loyalty program (Source: Digital Interactive Marketing)

motivates guests return to the hotel, while additionally raises hotel's occupancy.

The "social media" feature is very important for the hotel brand awareness, so some hotels let their guess leave their comments after their stay and read real reviews and feedback written by previous guests (Thinkmobiles, 2016). There are also apps that urge guests to inform their friends and family about their current stay by sharing their experiences and travel plans via social media.

Many hotel apps appear to provide users with many other innovative functions. For example, NH Hotel Group allows guests to use the mobile app and do operations even if they are offline, for instance they can check their points, manage their booking or communicate with the hotel helpline (Thinkmobiles, 2016). Many apps, like Shangri-La Hotels & Resorts App and The Ritz-Carlton Hotel App, have built-in QR code scanner, which allow users to get special discounts from the hotel and to read stories about the hotel (Weissman, 2013; Fossel, 2013; Thinkmobiles, 2016). Quite interesting is also that W Hotels App offers a music streaming option with mixes by global emerging DJs (Weissman, 2013; Fossel, 2013; Net,2011).
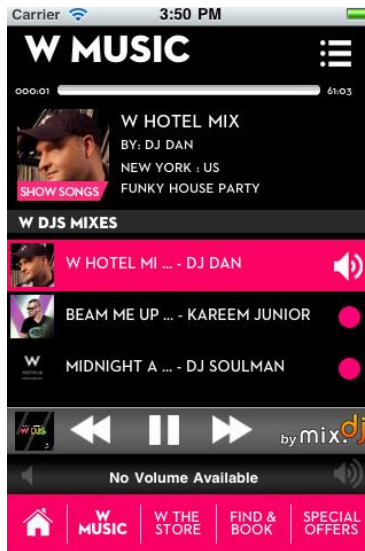
Figure 12, Music Streaming (Source: Net, 2011)

2.4.2 Back-office approach

Hotel mobile apps are not only beneficial for guests, but for the staff as well. Smartphone apps simplify some procedures during guests' stay and establish a self-service model that many customers prefer. Unfortunately, this will lead to an elimination of face-to-face communication with the staff, a big part of which will be replaced by devices. Nevertheless, self-service is an increasingly preferred model by guests (Kosir, 2015).

Mobile apps can boost guests' satisfaction as the back-office processes will be accelerated and the guest services will be delivered faster. When a guest will have any inquiry, this will be sent directly to the person in charge and the employee can immediately deal with the issue. This process will enhance the operating efficiency and improves the collaboration not only within each department, but also among the
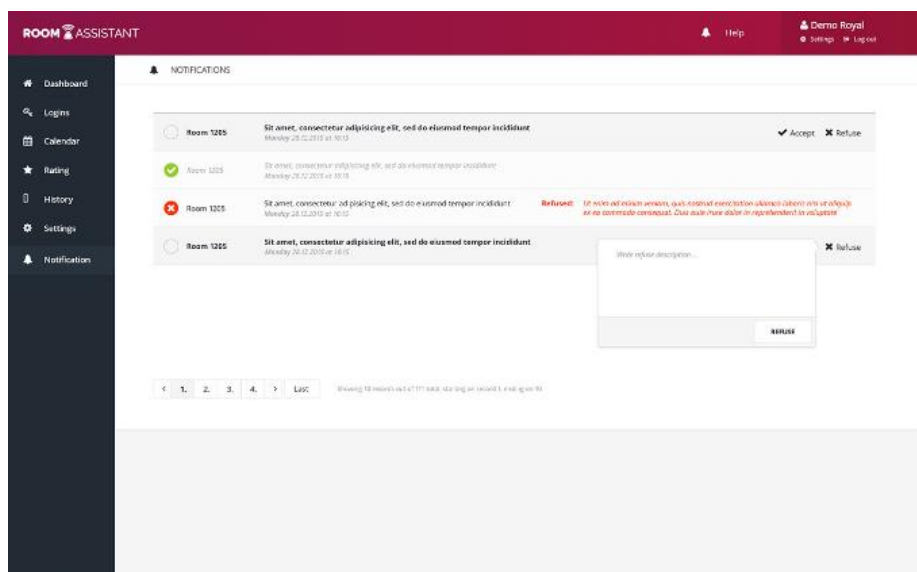
Figure 13, Guests' Requests (Source: Roomassistant.com)

departments (Roomassistant.com, n.d.). Staff can also have insight to every guest's booking history. Therefore, can capture his personal needs, consumption preferences and interactions, so as to provide him individualized services (Oracle.com, 2017; Mediaconcepts.com, n.d.). In this way the hotel can send tailored promotions and offers to guests and personalize their communication.

Mobile apps are a really useful tool for all hotel departments, as it helps employees to focus on less administrative tasks. Regarding the Housekeeping, the room status updates in real time and the staff can see anytime the latest updates (Flexkeeping, n.d.). Additionally, the front office staff can receive and handle all guest service inquiries or requests and keep guests pleased and happy. Concerning the maintenance requests that may arise, the maintenance staff can be informed at the same time through the application. Some mobile apps enable guests to upload even a picture with the maintenance issue. When the staff repairs the damage, the maintenance status is being updated (Flexkeeping, n.d.).
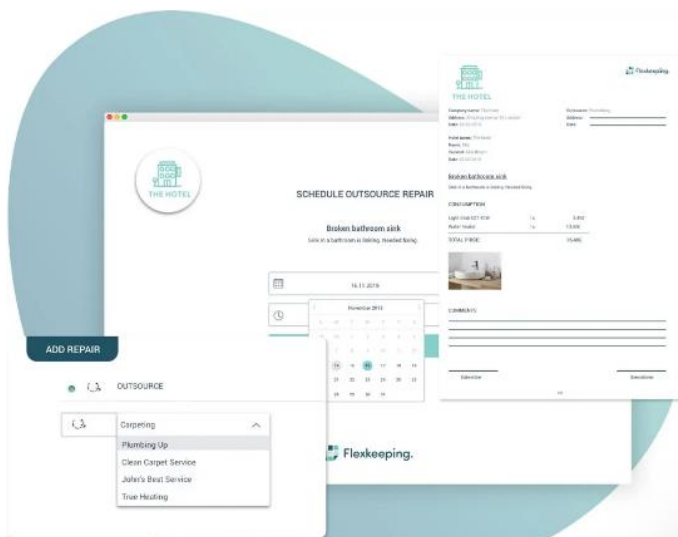
Figure 15, Maintenance (Source: Flexkeeping)
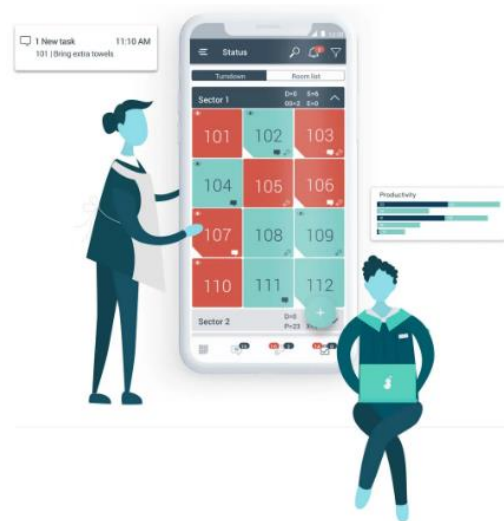
Figure 14, Housekeeping (Source: Flexkeeping)

Smartphone apps help staff to optimize their work and resolve issues faster or even avoid them from happening, since mobile apps allow staff to handle guests' feedback in real time (Mediaconcepts.com, n.d.). Therefore, the guest satisfaction and loyalty will be boosted and the hotel will increase its revenues (Flexkeeping, n.d.).

3. Study on Hotel Smartphone Applications

The aim of this study is to identify the features and functionalities of hotel mobile apps. Additionally, the survey is focused on the effectiveness of mobile apps in the hotel industry and the perspectives in the near future.

The research comprised two main phases:

- A questionnaire of 15 companies that design smartphone applications for hotels.
- A content and functionalities analysis of 50 hotel chain mobile apps and companies that design hotel smartphone apps.

4. Questionnaire

4.1. Methodology

The questionnaire was administered online and was sent via various social media websites and email to companies worldwide that design and launch smartphone apps to hotels. The data was collected in February, 2019. By the end of the survey, out of 31 questionnaires, 15 were completed and returned by companies that develop hotel mobile apps. The companies that participated were asked to complete a web-based questionnaire, which consisted of 4 main sections. The first part included demographic questions of the participant. The second part was about the functionality of the hotel mobile apps, the third included items related to the effectiveness and the benefits that hoteliers will have by using the smartphone apps. Lastly, the fourth section referred to the perspectives of mobile apps in the near future.

4.2. Results

4.2.1. Profile of respondents

The companies that contributed to the survey are mainly based in Greece, followed by 3 companies located in India, one in Slovakia and one in United Kingdom. Approximately half of the companies surveyed collaborate and design mobile apps for more than 31 hotels each. Almost one third of these hotels (32%) are located in Greece followed by India with 11%, Germany and United Kingdom with 7% respectively. According to the respondents, the hotel types that mainly offer mobile apps to guests are business hotels and resorts. Additionally, the survey showed that the most widespread app store for hotel mobile apps is Google Play (55%), while in the second place is Apple App Store (41%).

Table 1, Profile of respondents (Source: The author)

(n = 15)	Demographic factors	Frequency	Percent (%)
Location	Greece	10	66.7%
	India	3	20%
	Slovakia	1	6.7%
	United Kingdom (UK)	1	6.7%
Collaborating Hotels	<10	4	26.7%
	11-20	2	13.3%

	21-30	2	13.3%
	>31	7	46.7%
Location of Hotels	Greece	9	32%
	India	3	11%
	Germany	2	7%
	United Kingdom (UK)	2	7%
	Egypt	1	4%
	Montenegro	1	4%
	Turkey	1	4%
	Italy	1	4%
	Thailand	1	4%
	Slovakia	1	4%
	Spain	1	4%
	Argentina	1	4%
	Denmark	1	4%
	Florida	1	4%
	Indonesia	1	4%
	France	1	4%
Hotel types that mostly use smartphone apps	Business Hotels	9	27.3%
	Resort Hotels	9	27.3%
	Suite Hotels	4	12.1%
	Airport Hotels	3	9.1%
	Bed & Breakfast Hotels	3	9.1%
	Apartment/Residential Hotels	2	6.1%
	Extended Stay Hotels	0	0%
	Timeshare and Condominium Hotels	0	0%

	Casino Hotels	1	3%
	Conference Centers	0	0%
	Convention Centers	1	3%
	Villas	1	3%
	Google Play	15	55%
	Apple App Store	11	41%
Availability in App Stores	Windows Store	1	4%
	Amazon Appstore	0	0%
	BlackBerry World	0	0%

4.2.2. Functionality

This section of the questionnaire required participants to indicate which features are mostly included in the smartphone apps that companies offer to hotels. The most frequent feature is the "booking online" option (80%), followed by hotel's contact information, for instance phone number, e-mail, address and other contact details (73.3%). Moreover, approximately 67% of the companies integrate a hotel map in the mobile apps, while 60% of them contain information about the region, like attractions, shopping, local events or travel tips. Interestingly, while 67% of the companies include a mobile check-in feature in mobile apps, the mobile check-out is present only in 40% of the cases. Just over half of the surveyed companies stated that mobile apps provide indication of hotel location, information and photos of the hotel amenities, a map of the region and social media category. 47% of the companies integrate in mobile apps a live chat option, room service, description of the rooms, payment trough the mobile device, QR scanner and a language selection.

Concerning the least present features, only a few companies prefer the "mobile phone as a key card" option (26.7%), or the feature of the current charges (20%) and the loyalty system (26.7%). Only two of the fifteen companies enable the room control option, so as the guests to have the opportunity to control every smart device in room only with their smartphone via the application. The virtual tours in the hotel and the orders by the pool through the app (6.7%) show a rather weak presence.

Table 2, Functionality (Source: The author)

Features that are included in hotel apps	Frequency	Percent (%)
Booking online	12	80%

Hotel information (phone number, e-mail, address, etc.)	11	73.3%
Live chat	7	46.7%
Indication of hotel location	8	53.3%
Hotel Map	10	66.7%
Area information (attractions, shopping, local events, travel tips, etc.)	9	60%
Hotel amenities (information and photos)	8	53.3%
Hotel virtual tours	1	6.7%
Real-time content updates (deals and offers, events, etc.)	6	40%
Reception services (wake-up calls, housekeeping/maintenance services, order a taxi, etc.)	5	33.3%
Room Service	7	46.7%
Restaurant/Spa Reservation	6	40%
Rooms description (information and photos)	7	46.7%
Room control (control room lights, temperature, curtains and entertainment system through smartphone)	2	13.3%
Mobile Check-in	10	66.7%
Mobile Check-out	6	40%
Mobile device as a room key	4	26.7%
Current Charges	3	20%
Payment	7	46.7%
QR scanner	7	46.7%
Weather Forecast	6	40%
Map of the region	8	53.3%
Loyalty System	4	26.7%
Review & Feedback section	6	40%
Social Media network	8	53.3%

Language Selection	7	46.7%
Order by the pool	1	6.7%

4.2.3. Effectiveness

When the participants were asked which are the most important benefits that hotels can acquire from the use of smartphones, the majority (53.3%) commented that the main benefit is that via mobile apps can boost the interaction with guests. Additionally, approximately half of the respondents (46.7%) agreed that the second most significant advantage is that mobile apps help hoteliers boost their sales. One third of the participants said that via hotel apps hotels can increase their bookings and promote special offers and promotions to guests. The results also showed that only 27% of the companies agree that brand loyalty can be boosted through a mobile app. Only a small number of companies indicated that mobile apps are capable to increase staff productivity, establish a competitive advantage among other hotels and increase the hotel revenues.

Table 3, Benefits for hotels (Source: The author)

Benefits for hotels	Frequency	Percent (%)
Boosting sales	7	46.7%
Boosting staff productivity	2	13.3%
Checking hotel performance through in-built feedback system	4	26.7%
Establishing competitive advantage	2	13.3%
Increasing bookings	5	33.3%
Increasing brand awareness	3	20%
Increasing brand loyalty	4	26.7%
Increasing interaction with guests	8	53.3%
Improving operations	3	20%
Increasing revenues	2	13.3%
Promoting special offers and promotions	5	33.3%

At the next question respondents were asked to indicate how likely it is for a hotel to successfully meet different goals using smartphone apps. According to Table 4, the majority of respondents believe that it is very likely the mobile apps to increase the brand awareness of a hotel. Moreover, almost half of the surveyed companies agree

that it is extremely likely for a hotel that uses mobile apps to increase the interaction with the guests. Companies also think that hotel apps will help hotels to add value to guest experience, promote special offers and promotions to guests and provide service quality. Additionally, the overall response to goals like boosting sales, increasing guests' satisfaction, increasing hotel's revenues, bookings and brand loyalty and providing information about the region as well, was quite positive. On the other hand, companies think that the use of hotel mobile apps is not very likely to boost staff productivity.

Table 4, Accomplishment of goals via mobile apps (Source: The author)[1]

Accomplishment of goals		Frequency	Percent (%)	Level of accomplishment
Adding value to the guest experience	Not at all likely	1	6.7%	LIKELY
	Slightly likely	1	6.7%	
	Moderately likely	2	13.3%	
	Very likely	5	33.3%	
	Extremely likely	6	40%	
Boosting Sales	Not at all likely	1	6.7%	LIKELY
	Slightly likely	3	20%	
	Moderately likely	2	13.3%	
	Very likely	4	26.7%	
	Extremely likely	5	33.3%	
Boosting staff productivity	Not at all likely	2	13.3%	UNLIKELY
	Slightly likely	5	33.3%	
	Moderately likely	2	13.3%	
	Very likely	5	33.3%	
	Extremely likely	1	6.7%	
	Not at all likely	0	0%	LIKELY

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[1] Likert Scale of 1 to 5 (where 1-not at all likely, 2-slightly likely, 3-moderately likely, 4-very likely, 5-extremely likely) was used to mark the accomplishment of each goal.

Increasing guests' satisfaction	Slightly likely	1	6.7%	
	Moderately likely	4	26.7%	
	Very likely	5	33.3%	
	Extremely likely	5	33.3%	
Increasing hotel's revenues	Not at all likely	0	0%	
	Slightly likely	2	13.3%	
	Moderately likely	5	33.3%	LIKELY
	Very likely	5	33.3%	
	Extremely likely	3	20%	
Increasing bookings	Not at all likely	1	6.7%	
	Slightly likely	3	20%	
	Moderately likely	4	26.7%	LIKELY
	Very likely	5	33.3%	
	Extremely likely	2	13.3%	
Increasing interaction with guests	Not at all likely	0	0%	
	Slightly likely	2	13.3%	
	Moderately likely	3	20%	LIKELY
	Very likely	3	20%	
	Extremely likely	7	46.7%	
Increasing brand awareness	Not at all likely	1	6.7%	
	Slightly likely	2	13.3%	
	Moderately likely	1	6.7%	LIKELY
	Very likely	8	53.3%	
	Extremely likely	3	20%	
Increasing brand loyalty	Not at all likely	1	6.7%	LIKELY
	Slightly likely	2	13.3%	

	Moderately likely	2	13.3%	
	Very likely	5	33.3%	
	Extremely likely	5	33.3%	
Providing information about the destination	Not at all likely	1	6.7%	LIKELY
	Slightly likely	1	6.7%	
	Moderately likely	4	26.7%	
	Very likely	5	33.3%	
	Extremely likely	4	26.7%	
Promoting special offers and promotions	Not at all likely	1	6.7%	LIKELY
	Slightly likely	0	0%	
	Moderately likely	2	13.3%	
	Very likely	6	40%	
	Extremely likely	6	40%	
Service quality	Not at all likely	2	13.3%	LIKELY
	Slightly likely	1	6.7%	
	Moderately likely	1	6.7%	
	Very likely	5	33.3%	
	Extremely likely	6	40%	

4.2.4. Perspectives

In this section of the questionnaire respondents were asked to indicate if the hotel apps have peaked and if the interest of guests regarding the mobile apps will start decreasing from now on. The majority of respondents in this question (40%) neither agree nor disagree, so the level of agreement was medium. However, 33% of the companies disagreed with this statement, whereas 27% agreed. Therefore, although most of them were neutral, there is an inclination to disagree with the question.

Table 5, Perspectives of mobile apps (Source: The author)[2]

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[2] Likert Scale of 1 to 5 (where 1-strongly agree, 2-agree, 3-neither agree nor disagree, 4-disagree, 5-strongly disagree) was used to mark the agreement of each goal.

Peak of hotel mobile apps and decrease of guests' interest	Frequency	Percent (%)	Level of agreement
Strongly agree	3	20%	
Agree	1	6.7%	
Neither agree nor disagree	6	40%	MEDIUM
Disagree	3	20%	
Strongly disagree	2	13.3%	

Concerning the last question, respondents were asked to mention how they see hotel apps evolving over the next few years. 10 out of 15 respondents were positive towards the future of hotel apps. Some indicative responses are the following:

- "The mobile apps will offer location-based services and payments across partner networks."

- "Hotels will develop mobile-friendly websites and apps, live and up-to-date information sharing and better trend predictions based on customer behavior. They will maintain long-term relationships and hotels will be able to connect with their customers. Hotels will leverage the loyalty program feature and through the apps self-service will be encouraged."

- "Smartphone apps will focus more on in-stay services (reservations, room service), rather than promoting local sights/shops. Apps should provide hoteliers with insights related to guest's preferences (personalized experience). Mobile check in the No 1 requested feature from hoteliers."

- "I see more advance apps, like 3d tours."

- "Hotel apps will multiply and most hotels will have their own app."

On the other hand, 5 out of 15 respondents were rather reluctant with the future of mobile apps. One surveyed mentioned: "Unfortunately, hotel owners in Greece are still reluctant to invest in a mobile app. Thus, I am not very optimistic, unless customers start demanding the availability of a mobile app, in a similar way that they demand fast & reliable internet access (WiFi, etc).". Some of them said that they are not sure if mobile apps will exist in the future, while one said that they will disappear.

4.3. Summary

The average respondent, according to the questionnaire results, is a Greek company, which cooperates with more than 31 hotels, most of which are located in Greece. Interesting aspect was to see that although the 31 questionnaires were distributed equally to countries all over the world, most of the respondents were Greek companies. For this reason, a content analysis was conducted so as to investigate and

compare the findings with companies and hotels all over the world. The survey showed also that mainly resorts and business hotels offer mobile apps to guests, who can download the apps primarily in Google AppStore.

Concerning the features and functions that companies provide for mobile apps, the most popular feature is the booking online option, as well as general information and maps of the hotel and the region. The mobile check in and the social media section are also included by most of the companies. Therefore, it is clear that companies offer to hotels features mainly about the information services of the hotel and offer less the more complex services, such as loyalty programs, current charges, room control and virtual tours. That is because guests may not be yet quite familiar with the use of hotel mobile phones, so they prefer more basic features.

The development of a hotel app offers many advantages not only to guests, but also to hoteliers. Companies believe that the most important of them is the increased interaction with guests, as the app help the hotel to connect directly with the guests. Through the app guests are able to contact directly the hotel staff, who will take care of their requests. Furthermore, according to the survey results, mobile apps help hotels boost their sales. Mobile apps are a great marketing tool to inform and encourage guests to discover new offers and discounts. Moreover, mobile apps give hotels the opportunity to suggest upsells and add-ons to guests, for instance spa treatments, room service, restaurant meals and other services. Additionally, the majority of companies thinks that it is very likely the mobile apps to increase the hotel's brand awareness. Having downloaded the app on the phone, the users will likely see it whenever they use it and the hotel brand sticks in their subconscious. By offering rewards and promotions through the app, the user is encouraged to use it more often and thus it boosts the brand visibility and the hotel's image.

Concerning the future of hotel mobile apps, there is a disagreement on whether the hotel apps have peaked or not. The majority of companies are neither positive nor negative to this issue, however a big part of the respondents is inclined to believe that hotel apps have not peaked yet. The survey results showed that the future hotel apps will be advanced and enhanced with more features and functions, like virtual tours, online payments and loyalty programs, which will boost self-service. Few of the companies yet were rather pessimistic, by saying that hotel mobile apps will disappear, as people are reluctant regarding the hotel apps.

5. Content Analysis

5.1. Methodology

The content analysis was conducted so as to complete the survey. The target population for the content analysis is a) companies from different places all over the world that launch hotel smartphone apps and b) hotel proprietary apps and hotel chain apps worldwide.

Concerning the companies that develop smartphone apps for hotels, the researcher used the search engines on internet and selected randomly 16 of them. With the help of content analysis, the content presented in their websites was collected and their features and marketing goals were analyzed and compared. The companies that took part in content analysis were Exclusivi, Appytect, BiCon Apps, AppHotels.com, RoomAssistant, ALICE, MyAPP.Concierge, Hotex, Media Concepts, Stay, m-Hospitality, Monscierge, InHotelApp, Intelity, Criton and GuestU.

Moreover, the researcher conducted a survey in Google Play and in Apple's iTunes AppStore and selected 34 hotel mobile apps, some of which were hotels that develop their own apps. The 34 apps were downloaded and installed from Google Play and Apple's iTunes Appstore. Subsequently their features and functions were identified, tested and compared by the researcher. The hotel apps are the following: Accor Hotels, Hyatt Hotels, Premier Inn Hotels, Choice Hotels, Best Western to go, Wyndham Rewards, NH Hotels, Shangri-La Hotels, Ritz Carlton, Four Seasons Hotels, W Hotels, Rotana Hotels, Grand Palladium, Mandarin Oriental, Meritus Hotels&Resorts, Sani Resorts, MGM Resorts, Costa Navarino, Mirragio , Acqua Vatos, Buddha, Dusit Hotels&Resorts, Meliá Hotels, Scandic Hotels, Hello Rewards (Red Lion Hotels), Kempinski, Mitsis Alila Resort & Spa, Amada Colossos, Arlo Hotels, Bonham Hotel and Boringdon Hall.

5.2. Results

5.2.1. Features analysis

A total of 27 features were present at the websites of companies that develop hotel apps and at the hotel mobile apps that were downloaded and analyzed. **Table 6** &

Table 8, Features of hotel mobile apps (Source: The author)Table 9 and **Table 10,** Features of hotel mobile apps (Source: The author)

Table 11, (Continued) Features of hotel mobile apps (Source: The author)Table 12 & **Table 13,** (Continued) Features of hotel mobile apps (Source: The author)

Table 14 present the features that companies and hotels provide, respectively.

The results obtained by the analysis of companies show that the majority of them (87.5%) offer real time content and updates, like offers, deals or events, followed by the information and pictures of hotel amenities (81.3%). 75% of the companies provide hotels with the book online feature, information about the region and room description, together with the option of online restaurant and spa reservations (68.8%). Additionally, the hotel information, a map of the region, reception services,
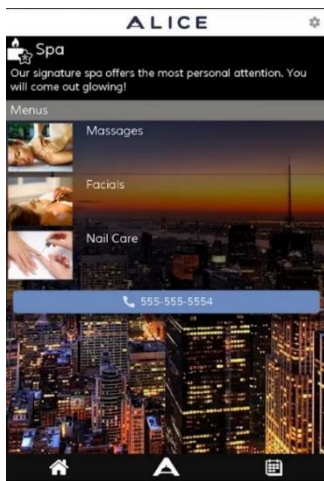
Figure 19, Spa reservation (Source: Aliceplatform.com.)
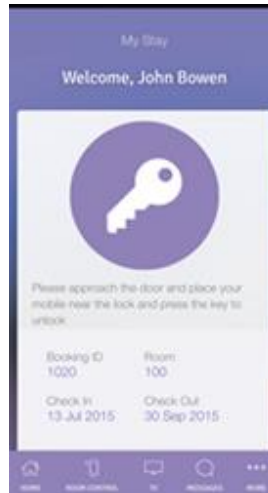
Figure 17, Room Key (Source: Mediaconcepts.com.)

Figure 20, Main Menu (Source: Roomassistant.com.)
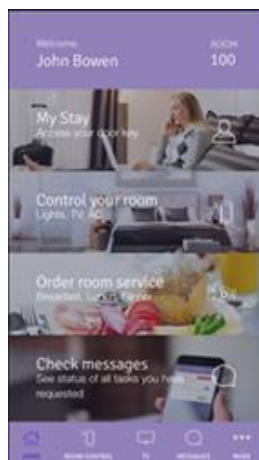
Figure 16, Main Menu (Source: Mediaconcepts.com.)

Figure 18, Main Menu (Source: Aliceplatform.com.)

such as wake up calls or order a taxi and the room service option were present in 10 out of 16 companies' websites. Almost half of the companies (56.3%) offered to hotels the indication of hotel location and the feedback and reviews section. Exactly half of the companies provide the feature of a hotel map and mobile check-in and check-out, while the use of mobile as a room key, the live chat option and the QR scanner are present in 7 out of 16 companies. The least frequent indicators in these websites were the view of current charges and free Wi-Fi option (25%), the loyalty system (18.8%) and the hotel virtual tours (6.3%).

Concerning the hotel mobile apps, the majority of them provide information and pictures about the hotel amenities (94.1%). 31 out of 34 mobile apps offer users the

potential to book a room online through their mobile phone and find information about attractions, events, travel tips and shopping centers of the local area. Furthermore, users can find the hotel contact details, the hotel location and room descriptions in 85.3% of the downloaded hotel apps, followed by real-time content updates and a map of the region section with 82.4% and 76.5%, respectively. Almost two thirds (67.6%) of the downloaded apps provide users a loyalty system, while in 64.7% of the cases users can check-in with their mobile phone instead of waiting at

Figure 25, Spa Reservation
(Source: Mitsis.)
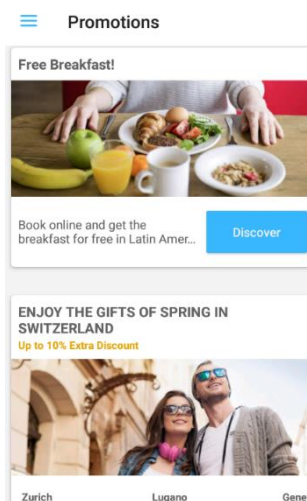
Figure 24, Promotions & Offers
(Source: Accorhotels.com.)
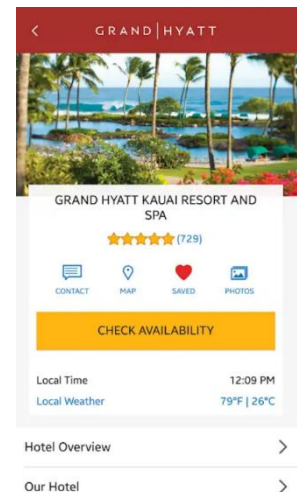
Figure 23, Booking
(Source: Hyatt.com.)

Figure 22, Hotel Gallery
(Source: Hyatt.com.)

Figure 21, Hotel Map
(Source: Mitsis.)

the reception. On the other hand, only 47.1% of the apps offer a mobile check-out to guests. 41.2% of the hotels offer reception services and room service option, while the social media feature is available in 38.2% of them. The least present features were live chat, current charges and language selection (26.5%), followed by hotel map, mobile as a room key and online payment via mobile app (23.5%). In addition, only a few apps offered hotel virtual tours through the app (11.8%), room control function and free Wi-Fi (5.9%).

The results of the content and features analysis show that both companies and hotels aim at offering mainly information services, namely information about the rooms, the hotel amenities and the local area. Moreover, the online booking feature, the real time offers and deals, and the map of the region are some of the most frequent indicators in both companies and hotel apps. However, interestingly, while the loyalty account access is rarely offered by the companies, it seems that this feature is of high preference for the hotels, as approximately two thirds of them offer this feature to guests. Furthermore, almost half of the companies that develop mobile apps offer the function to use the mobile app instead of a plastic key, the live chat feature and the QR-scanner, whereas the presence of these three features in hotel apps is rather weak. According to the results, there is a disparity in mobile check-in and check-out features. While companies offer equally both mobile check-in and check-out, the majority of hotels includes the mobile check-in in their apps, as the mobile check-out is less preferable.

5.2.2. Hotel benefits

Table 15 shows that not only guests, but also hotels can benefit from a mobile application. The majority of companies (93.8%) claim that the utilization of mobile apps will help hotels to enhance their sales and revenues. Through mobile apps the hotel can promote services or products (37.5%), like room service, spa treatments, and inform guests about the current deals and offers. Thus, in-house guests are encouraged to spend more and maximize the hotel revenue.

11 out of 16 companies argue that hotels will acquire loyal customers and build strong and valuable relationships with them, while 7 out of 16 mention at their website that smartphone apps assist hotels to increase interaction with guests. Hotels can use mobile apps so as to keep in touch with current and previous guests, send them a birthday wish, an event invitation or the current rates so as to book online via the app. Even before their arrival, hoteliers can contact the guests and give them access to the app so they can purchase products or services even before their arrival. Moreover, 62.5% of the companies believe that the customer satisfaction will be boosted with the use of mobile apps, as guests can leave their feedback at the reviews and feedback section before their check-out. Therefore, hotel staff can face any issue quickly and proactively and satisfy even the most demanding customers.

Approximately half of the companies (43.8%) claim that the hotel operations will be improved, as the mobile app will let staff concentrate on less administrative tasks. Moreover, the department managers will be able to manage and coordinate their staff easier and monitor the performance of the operations, as they will have a better control over the allocation of duties. Every department can also manage guest requests and needs in real time. Additionally, 37.5% of the companies believe that mobile apps help to the reduction of costs. Mobile apps are environmentally friendly as well, as they can replace papers and brochures, which pollute the environment and increase the company's expenses. Hotels can incorporate all the information about the hotel or the local area in a single application.

However, concerning the staff productivity, only 18.8% of the companies believe that it will be increased with the use of the hotel apps. Some mobile apps target only to front office tasks, but there are also apps that offer a link among the departments, allowing staff to communicate and anticipate promptly the customer needs and requests. Without a mobile app, the hotel needs more employees, who will have to deal manually with their labor and this results in the reduction of their effectiveness. Furthermore, only 25% of the companies think that bookings will be boosted with the use of mobile apps. This is because hotel mobile apps just entered the market, they are not so popular among travelers and hotel guests are unacquainted with them. Although many of them are aware of their existence, only a few embraces the opportunity to use the app or even make a hotel booking. What is interesting is that only 25 % of the companies, states on their website that mobile apps can establish a competitive advantage, while 18.8% believe that they can increase brand awareness.

Table 6, Features of companies that develop hotel mobile apps (Source: The author)

	Booking online	Hotel information	Live chat	Indication of hotel location	Hotel Map	Map of the region	Area information (attractions, shopping, local events, travel tips, etc.)	Hotel amenities (information and photos)	Hotel virtual tours	Real-time content updates (deals & offers, events, etc.)	Reception services (wake-up calls, housekeeping/ maintenance services, order a taxi, etc.)	Room Service	Restaurant/ Spa Reservation	Rooms description (information and photos)
Exclusivi		x	x		x	x	x	x		x	x	x	x	x
Appytect	x	x	x	x	x		x	x		x			x	x
BiCon Apps	x	x	x		x	x		x		x			x	x
AppHotels.com	x	x		x	x	x		x	x	x	x	x	x	x
RoomAssistant		x	x		x	x	x			x	x	x	x	
ALICE	x	x	x					x		x	x	x	x	
MyAPP.Concierge	x				x	x	x	x		x	x	x	x	x
Hotex	x	x		x	x	x	x	x		x		x	x	x
Media Concepts			x	x		x		x		x	x	x		x
Stay	x	x	x	x			x	x		x	x	x		x
m-Hospitality	x			x	x	x		x		x			x	
Monscierge	x	x		x		x	x	x		x	x	x	x	x
InHotelApp	x	x		x		x	x	x		x				x
Intelity	x	x					x	x			x	x		x
Criton	x			x			x	x						x
GuestU							x			x	x		x	
Total	12	10	7	9	8	10	12	13	1	14	10	10	11	12
Percentage	75%	62.5%	43.8%	56.3%	50%	62.5%	75%	81.3%	6.3%	87.5%	62.5%	62.5%	68.8%	75%

Table 7, (Continued) Features of companies that develop hotel mobile apps (Source: The author)

	Room control (control room lights, temperature, curtains & entertainment system)	Mobile Check-in	Mobile Check-out	Mobile device as a room key	Current Charges	Payment	QR scanner	Weather Forecast	Loyalty System	Review & Feedback section	Social Media network	Language Selection	Free WiFi
Exclusivi	x	x	x	x	x	x	x	x	x	x		x	x
Appytect		x	x			x	x	x		x	x		
BiCon Apps							x		x		x		
AppHotels.com		x	x				x	x	x				
RoomAssistant										x	x	x	
ALICE	x									x			
MyAPP.Concierge		x	x	x	x	x	x	x		x			
Hotex	x			x				x	x			x	
Media Concepts	x	x	x	x	x	x				x		x	
Stay				x			x						x
m-Hospitality		x	x				x			x			
Monscierge		x	x	x	x	x				x		x	
InHotelApp											x		
Intelity		x	x	x				x					
Criton										x	x		x
GuestU	x												x
Total	5	8	8	7	4	6	7	6	3	9	5	5	4
Percentage	31.3%	50%	50%	43.8%	25%	37.5%	43.8%	37.5%	18.8%	56.3%	31.3%	31.3%	25%

Table 10, Features of hotel mobile apps (Source: The author)

	Booking online	Hotel information (phone number, e-mail, address, etc.)	Live chat	Indication of hotel location	Hotel Map	Map of the region	Area information (attractions, shopping, local events, travel tips, etc.)	Hotel amenities (information and photos)	Hotel virtual tours	Real-time content updates (deals and offers, events, etc.)	Reception services (wake-up calls, housekeeping/ maintenance services, order a taxi, etc.)	Room Service	Restaurant/ Spa Reservation	Rooms description (information and photos)
Hilton Honors	x	x	x	x	x	x	x	x		x	x	x	x	x
Marriott International	x	x	x	x		x	x	x		x	x	x		x
IHG	x	x	x	x		x	x	x		x				x
Accor Hotels	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Hyatt Hotels	x	x	x	x			x	x	x	x	x			x
Premier Inn Hotels	x	x		x		x		x				x		x
Choice Hotels	x	x	x	x		x	x	x	x					x
Best Western to go	x	x	x	x		x	x	x		x		x	x	x
Wyndham Rewards	x	x		x			x	x		x		x		x
NH Hotels	x	x		x				x		x	x		x	x
Shangri-La Hotels	x	x		x		x	x	x		x				x
Ritz Carlton	x	x		x	x	x	x	x		x	x	x	x	x
Four Seasons Hotels	x	x	x	x	x			x		x	x	x	x	x
W Hotels	x	x		x		x	x	x	x	x	x	x		x
Rotana Hotels	x			x		x	x	x		x			x	x
Grand Palladium				x		x	x	x		x			x	
Mandarin Oriental	x	x		x		x	x	x		x				x
Meritus Hotels&Resorts	x	x		x		x	x	x		x		x	x	x
Sani Resorts	x			x	x	x	x			x			x	
MGM Resorts	x	x					x	x		x			x	x
Costa Navarino	x	x		x	x	x	x	x					x	x
Mirragio	x	x			x	x	x	x					x	
Acqua Vatos	x					x	x	x		x	x	x	x	x
Buddha	x	x		x			x	x			x	x	x	x
Dusit Hotels&Resorts	x	x		x		x	x	x		x				x
Meliá Hotels	x	x		x		x	x	x		x	x	x	x	x
Scandic Hotels	x			x		x		x		x				x
Hello Rewards (Red Lion Hotels)	x	x		x			x	x						x
Kempinski	x	x		x		x	x	x		x			x	x
Mitsis Alila Resort & Spa	x	x		x	x	x	x	x		x			x	x
Amada Colossos	x	x		x			x			x	x			
Arlo Hotels	x	x		x		x	x	x		x	x			x
Bonham Hotel		x	x			x	x	x		x	x			
Boringdon Hall		x				x	x	x		x		x	x	
TOTAL	31	29	9	29	8	26	31	32	4	28	14	14	19	29
Percentage	91.2%	85.3%	26.5%	85.3%	23.5%	76.5%	91.2%	94.1%	11.8%	82.4%	41.2%	41.2%	55.9%	85.3%

Table 13, (Continued) Features of hotel mobile apps (Source: The author)

	Room control (control room lights, temperature, curtains and entertainment system through smartphone)	Mobile Check-in	Mobile Check-out	Mobile device as a room key	Current Charges	Payment	QR scanner	Weather Forecast	Loyalty System	Review & Feedback section	Social Media network	Language Selection	Free WiFi
Hilton Honors	x	x	x	x	x	x		x	x	x			x
Marriott International	x	x	x	x	x	x			x		x		
IHG		x	x		x	x			x	x	x	x	
Accor Hotels		x	x				x	x	x	x	x		
Hyatt Hotels					x				x	x	x		
Premier Inn Hotels		x								x			
Choice Hotels		x	x		x		x		x	x	x		
Best Western to go									x		x		
Wyndham Rewards									x			x	
NH Hotels		x	x			x			x				
Shangri-La Hotels		x	x			x	x		x			x	
Ritz Carlton		x	x		x		x	x				x	
Four Seasons Hotels		x	x					x	x	x			
W Hotels		x					x	x		x	x	x	
Rotana Hotels		x	x		x	x	x		x				
Grand Palladium													
Mandarin Oriental		x					x						
Meritus Hotels&Resorts		x	x	x	x		x						
Sani Resorts		x	x				x						
MGM Resorts		x		x					x	x			
Costa Navarino								x			x	x	
Mirragio									x			x	
Acqua Vatos		x	x						x				
Buddha											x		
Dusit Hotels&Resorts									x				
Meliá Hotels		x		x		x	x	x	x				
Scandic Hotels		x	x	x	x	x			x				
Hello Rewards (Red Lion Hotels)		x	x	x				x	x			x	
Kempinski									x		x		x
Mitsis Alila Resort & Spa								x	x		x	x	
Amada Colossos										x			
Arlo Hotels		x	x	x									
Bonham Hotel		x							x	x	x	x	
Boringdon Hall								x	x		x		
TOTAL	2	22	16	8	9	8	10	11	23	11	13	9	2
Percentage	5.9%	64.7%	47.1%	23.5%	26.5%	23.5%	29.4%	32.4%	67.6%	32.4%	38.2%	26.5%	5.9%

Table 15, Marketing goals of companies that develop hotel mobile apps (Source: The author)

	Boosting sales	Increasing guests' satisfaction	Boosting staff productivity	Reduce costs	Establishing competitive advantage	Increasing bookings	Increasing brand awareness	Increasing brand loyalty	Increasing interaction with guests	Improving operations	Increasing revenues	Promoting special offers and promotions
Exclusivi	x	x		x				x		x	x	
Appytect	x					x		x		x	x	x
BiCon Apps	x			x	x		x	x			x	
AppHotels.com	x	x			x	x	x	x	x		x	
RoomAssistant	x		x					x	x	x	x	
ALICE	x	x	x							x	x	
MyAPP.Concierge	x	x		x				x			x	
Hotex	x			x					x		x	x
Media Concepts	x	x	x	x				x			x	x
Stay	x							x	x		x	x
m-Hospitality	x	x						x			x	
Monscierge	x	x								x	x	x
InHotelApp	x	x			x	x	x	x	x	x	x	x
Intelity		x							x	x		
Criton	x			x		x		x			x	
GuestU	x	x			x				x		x	
Total	15	10	3	6	4	4	3	11	7	7	15	6
Percentage	93.8%	62.5%	18.8%	37.5%	25,00%	25,00%	18.8%	68.8%	43.8%	43.8%	93.8%	37.5%

6. Conclusion and Future Research

The purpose of this study is to discuss the features and functions that smartphone apps offer to hotel guests, as well as the effectiveness of these features towards the consumers. Comparing the results of companies that develop mobile apps, with the one of the hotels, which offer guests a mobile app, it becomes clear that in both cases the most popular features are these that provide information services to guests, like hotel and area information, booking online, real time content and others. Only few are the companies that provide personalized and value-added services, for instance loyalty programs, online check-in and check-out. However, quite a few hotels include these features to their mobile apps, acquiring a competitive advantage towards other hotels that provide more common tools.

The increasing competition in the hotel industry and the more and more demanding guests prompt companies and hotels to invest more in hotel apps and enrich them with sophisticated features in order to endure the intensive competition. Therefore, companies that develop mobile apps for hotels should implement more features that go beyond customers' expectations. Such features can be loyalty programs, the use of the mobile phone as a key card and as a remote control for smart devices in room. Hotel smartphone apps should also include a language selection, so as the mobile app to be useful for guests from all over the world. A live chat, a hotel virtual tour, mobile check-in and check-out would also be significant tools for a better hotel guest service.

Hotel smartphone apps can be of great benefit both for the guests and for the hotel as well. Through the survey it came clear that hotel apps cannot only raise the hotel's sales and revenues, but also increase the interaction with the guests and the brand loyalty. However, according to the findings, companies and hotels think than the brand awareness and the staff productivity are not affected directly by the use of smartphone apps.

An interesting aspect was to see that both hotels and companies consider that the hotel apps hardly establish a competitive advantage for the hotel. This is maybe due to the fact that most hotels' mobile apps have approximately the same content as in their website. Therefore, guests are not invoked to download and use the app, as they can find everything at the hotel's website. Therefore, hotels do not acquire a competitive advantage in the field of mobile marketing. Additionally, as hotel apps are in a primary stage yet, guests are rather reluctant or do not even know how to use them, instead, they prefer to use a desktop website.

Furthermore, there are some points in this study that have limitations. To begin with, most of the companies, which develop apps, that participated in the questionnaire were located in Greece, although the selection of participants was random. For this reason, the results of the questionnaire should not be generalized in other countries.

However, most of the companies that were included in the content analysis have their bases worldwide. Additionally, the sample of the content analysis included smartphone apps of mainly big hotel chains. An extended survey could investigate a larger sample of hotels, which will not only include hotel chains. In a future research it would be also interesting to investigate the expectations that guests have from a hotel app and the features and functions that are most significant for them. Last but not least, in a future study, the researchers could compare the hotel mobile apps with the OTA's apps.

To sum up, although hotels and companies offer guests the basic information that may need during their stay, they should exploit all the opportunities that this distribution channel offers, so as to maximize and gain the advantages that mobile apps can offer.

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