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Digital Transformation in Hospitality –

A guidance on how to implement and
operate a hotel app to generate
incremental revenue and to maximize
customer value

Pia Mairinger

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André Pinho

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ABSTRACT

Title: Digital transformation in Hospitality – A guidance on how to implement and operate a hotel app to generate incremental revenue and to maximize customer value

Author: Pia Mairinger

The way luxury hospitality services are consumed has changed immensely over the last years due to evolving customer expectations, innovative technology and high competition in the market. Therefore, luxury hoteliers are forced to provide a completely seamless and personalized experience to serve the mobile-driven guests. With a personalized hotel-app a hotel can interact with the guest on a variety of different touchpoints during the customer journey to provide an extraordinary experience at all time.

The thesis focuses on different hotel-apps and features and analyses which of them can generate incremental revenues. With expert interviews and a conducted online survey, a model on how to implement and operate a hotel-app successfully to maximize customer value and to generate additional revenue was created. The results reveal, that various features can lead to incremental revenue and added customer value, especially the option to order room-service via the app. With the usage of push-notifications an additional revenue increase can be generated among certain customers and discounts should be considered according to the hotels' strategy. Finally, the study helps as a guidance for hoteliers to know which features should be implemented and prioritized, how these features should be operated in the app and provides key figures on additional generated revenue.

Keywords: digital transformation, technology in hospitality, hotel-app features, mobile customer experience, incremental revenue

SUMÁRIO

Título: Transformação digital em Hospitalidade - Uma orientação sobre como implementar e operar uma aplicação hoteleira para gerar receita incremental e maximizar o valor do cliente

Autor: Pia Mairinger

A forma como os serviços de hospitalidade de luxo são consumidos mudou imensamente nos últimos anos, devido à evolução das expectativas dos clientes, tecnologia inovadora e alta concorrência no mercado. Portanto, hoteleiros de luxo são forçados a fornecer uma experiência completamente perfeita e personalizada para servir os hóspedes mais tecnológicos. Com uma hotel-app personalizada um hotel pode interagir com o hóspede numa variedade de diferentes pontos de contato durante a viagem do cliente para proporcionar uma experiência extraordinária em todos os momentos.

A presente tese tem como foco diferentes aplicações de hotéis e características, e analisa quais delas podem gerar receitas incrementais. Com base em entrevistas com especialistas e um questionário on-line, foi criado um modelo sobre como implementar e gerir uma aplicação hoteleira com sucesso para maximizar o valor do cliente e gerar receita adicional. Os resultados revelam que várias funcionalidades podem conduzir a receitas incrementais e valor acrescentado para o cliente, especialmente a opção de encomendar room-service através da aplicação. Com o uso de notificações, um aumento adicional de receita pode ser gerado entre certos clientes e os descontos devem ser considerados de acordo com a estratégia dos hotéis. Finalmente, o estudo ajuda como orientação para que os hoteleiros saibam quais recursos devem ser implementados e priorizados, como esses recursos devem ser operados na aplicação e fornece números-chave sobre a receita adicional gerada.

Palavras-chave: transformação digital, tecnologia em hotelaria, recursos hoteleiros, experiência mobile do cliente, receita incremental

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CHAPTER 1: INTRODUCTION

The way hospitality services are purchased and consumed has changed extremely over the last years. Especially technological innovations have an important impact on the traditional hotel service process for both, customers as well as hotel managers and staff. Technology is now determining the way service is delivered, in every type of operation (Oracle Hospitality, 2016b). In particular mobile devices play an important role, as they have become indispensable in our daily lives.

Nevertheless, the hospitality industry is lagging behind other industries in terms of digitalization, hence an acute need for advancement is evident. As digital transformation is not only about installing technology, it must drive real value for the customer and improve outcomes for the business. These transformations typically lead to changes in the customer experience, the digitalization of products and services, the creation of new economic models, and advances in operations (Bain & Company, 2018).

Moreover, guests are not only becoming more diverse demographically, but also in their expectations, therefore, the one-size-fits all approach needs to be replaced by a more unique personalized experience. Consumers have changed in their behaviour, they have new requirements and expect innovative technology before, during and after the hotel stay. To meet the guests' needs of the digital age and to survive in an increasingly competitive market, it is crucial for hotels to provide a unique, personalized and high-quality guest experience leading to total guest satisfaction, added value and increased guest loyalty.

To solve the named problems, the deployment of a hotel-app, also known as digital concierge app can help. It enables hotels to deliver a unique experience through seamless and easy interactions between the guest and the hotel and can help at the most important points of the customer journey. With this technology, the guests are able to complete all transactions through their own mobile device. It is a conversational, informational and digitally-powered tool that ensures constant service to provide higher value to the guests as well as to the hoteliers. This technology can increase the guest's satisfaction by delivering a faster, more personalized and immediate service while it also provides customer data to the hotel manager which is fundamentally needed to create such experiences according to the guests wishes (Richard, 2017). Besides more efficient operations and a competitive position, hotels can increase revenues by implementing a hotel app. As the installation of such a technology is combined with high costs, complexities and technical skills and is only effective when utilised properly, an optimal model of operation is highly important. Therefore, the aim of this study is to give

hotel managers a guidance on how to implement and operate a hotel app successfully. In order to come to this result and to create an appropriate model, the following research questions will be answered within the scope of the study:

RQ1: What are the features available on hotel apps for luxury hotels?

RQ2: Which of those features can generate additional non-room revenue?

RQ3: How should an optimal model of a hotel app be implemented and operated to generate additional non-room revenue and to maximize customer value?

Non-room revenues relate to all ancillary services and activities that generate an additional profit beyond room-rate prices. These additional revenue streams are becoming more important, as the traditional revenue management is moving away from a straight focus on top-line rooms revenue towards a bottom-line orientation focused on the customer leading to an expansion to multiple revenue sources including food and beverage, spas, leisure activities, upgrades, etc. (Noone, Enz, & Glassmire, 2017).

Currently, there are different hotels offering a hotel app either from third-party providers or developed by the hotel itself. Each app varies in its features and functionalities, depending on the technological innovation and development. Thus, there is no prototype for all hotels.

As research on hotel app features generating incremental revenue is not well explored yet and plays an important role on the scalability of digital transformation and the return on investment especially in terms of such high investments, it is critical to investigate a proper way on how to operate and implement a hotel app to create additional revenue streams. By examining the different hotel app features and the appropriate way of managing them to increase revenues, from a customer and from a hotel managers perspective, this study will contribute not only to the literature but also to practice. The main contribution to the literature will be in assessing the apps market in the context of hotels. Despite the increasing importance of being mobile, there has been limited research on features that lead to additional revenue. While other studies examined the technology progress and the technology acceptance in the hospitality, they fail to investigate the customers' viewpoint on operations of such hotel apps. It contributes to get an understanding of the app usage likelihood for guests and demonstrates increases of certain service bookings made through the app. Mainly the study contributes to managerial practice: it presents and analyses the main hotel apps covering the hospitality industry and their different features; it identifies the value-added features and the benefits of each app. The customers perspectives assist managers to develop and operate the app according to their needs and

expectations to ensure a high usage rate in the end. Finally, as the market for mobile applications is very competitive and adoption is very low and short term for travel apps (Nielson, 2015) it is essential to offer a customer oriented-app with a successful implementation and operating strategy.

This study is structured in the following order: after the introduction, the relevant literature and research on luxury hospitality and its current trends and challenges, new technologies in the hotel market and on personalized hotel apps is presented to give the theoretical foundation of this research. The methodology section shows the research design and the data collection and data analysis process. Key findings from both research approaches are presented in the analysis and findings part and are followed by the discussion section. Finally, the conclusion, managerial implications and limitations and future research are elaborated.

As luxury hotels offer a wider range of amenities and services to differentiate themselves and to generate additional revenue, the study has focused only luxury hospitality. Besides that, the luxury sector has the necessary resources for technology investments and accommodates the most demanding customers. The anticipation of the needs and preferences of the guest is especially in luxury travel of highest importance. Instead of bothering the guest repeatedly with the same questions, hotels can guide the guest inconspicuously and outline all options of the hotel in the app.

What is more, the investigated apps belong to hotel chains or third-party providers covering multiple properties, since those may be perceived as more useful than apps only limited to one hotel and are therefore likely to be downloaded and preferred by a larger number of hotel guests.

CHAPTER 2: LITERATURE REVIEW

2.1 Experience as a new form of luxury

Since defining a luxury hotel is challenging and ambiguous, one should first explain what is meant by the word luxury. The word “luxury” derives from *luxus* which means sensuality, splendour and pomp (Yeoman & McMahon-Beattie, 2011). More generally the meaning is highly subjective, perceived different from person to person (Brun & Castelli, 2013) and depends on the context (Vigneron & Johnson, 2004). Where ordinary ends and luxury begins is judged individually by consumers (Miller & Mills, 2012; Tynan, McKechnie, & Chhuon, 2010), thus luxury means different things to different people.

The concept of luxury has changed extremely over the past years. It has shifted from material values to a blurred genre where people seek for personal fulfilment, individualism and authenticity through experience improving their quality of life (Yeoman & McMahon-Beattie, 2011). With predictive technology and the emergence of an on-demand economy, the consumers today expect more than material luxury goods. This results in a growth of the experience economy and a focus on expenditure on travel and tourism products (Yeoman, Brass, & McMahon-Beattie, 2007). Moreover, the luxury spending portfolios of the consumer have moved since the 1990s to a significant increase of spending on leisure activities, eating out, hotels etc. classified as ‘enrichment’ in Appendix 1. It is forecasted to continue to grow immensely, hence enrichment and experience will be determining factors of our future luxury consumption (Yeoman & McMahon-Beattie, 2011). Particularly the leisure industry and out of home expenditure can benefit from this experience economy. (Yeoman, 2010). This means that delivering a flawless experience, expanding innovation and improving quality are key to compete in the growing luxury market. Customization in value chains is important to provide benefits, and being authentic should be valued high to protect the exclusivity (Yeoman & McMahon-Beattie, 2011).

2.2 Luxury hotels and their rising demand

In regard to the hospitality industry, the definition of the concept of luxury is as well relative, based on different physical factors and on the perceptions and personal evaluation that people assign to them (Fedeli, 2010). Generally, luxury hotels account for the top 15% average daily room rate (STR Global, 2015) and offer their guests superior physical environments and qualified service to support their high-price strategies. Next to functional benefits, guests of luxury hotels seek for experiential service attributes that are memorable (Cetin & Walls, 2016). Luxury hotel guests typically travel frequently with high expectations and are well experienced

in hospitality services (Presbury, Fitzgerald, & Chapman, 2005). Besides that, consumers have more and more demanded greater value for money, followed by requests for higher levels of service and facilities (Presbury et al., 2005). These luxury travel accommodations need to create an experience rather than just a product (Chu, 2014). This is why the concept of luxury in hospitality has also seen a shift from traditional luxury products, like five star resorts, to a large variety of unique and exclusive experiences (Bakker, 2005). Nevertheless, Barbara Talbot, former Chief Marketing Officer of the Four Seasons Hotels, proposed that key factors: style, comfort, service and pampering complement a luxury hotel experience. To be considered as a luxury hotel, the four requirements should be met, regardless whether the hotel belongs to a chain or is independently-owned (Becker, 2009).

In terms of demand, the luxury hotel segment has experienced an immense growth in the past decade and has become a major role in the hospitality industry (Tran, 2015). The global luxury hotel market size was valued USD 83.10 billion in 2017 and is expected to reach a valuation of around USD 115.80 billion by 2025 (Grand View Research, 2018). The key drivers for the luxury hotels' strong performance are growing tourism across various regions, rising disposable income, increasing standard of living of people and the rise in preference for leisure travel. The increasing number of distribution channels and the availability of easy hotel booking processes contribute as well to the rising demand of luxury hotels (Grand View Research, 2018). The number of luxury hotels is increasing worldwide, most dominant is North America with a revenue share over 35% in 2017. The top global players in the luxury hotel market are Marriott International, Inc.; Shangri-La International Hotel Management Ltd.; InterContinental Hotels Group; AccorHotels; Taj Hotels Palaces Resorts Safari; and Four Seasons Hotels Limited (Grand View Research, 2018).

2.3 Current trends and challenges in luxury hospitality

With the entry in a new era of luxury hospitality, it is getting more challenging to serve each luxury customer whilst remaining exclusive and relevant. The competition is intensified with increasing numbers of luxury hotel rooms in the global infrastructure, higher mobility of guests and a variety of high-quality online marketing. The luxury hotel industry today is under the impact of an evolutionary change. Rapid technological progress is driving society forward at an incomparable pace and affects the human life as never before. Hoteliers are faced with a critical challenge on how to continuously meet the expectations of a constantly evolving customer (Tutek, Roth, & Simatic, 2018).

2.3.1 The personalized experience

In order to provide a more personalized experience, it is fundamental to better understand the customers and their needs. It is inevitable to collect and analyze customer data to identify the customers beyond basic segmentation, measuring and monitoring their changing expectations, and generating authentic experiences. Therefore, it is crucial to determine the customers as unique individuals rather than statistical groups. With the constant present of the internet and the related transparency of information, the 'knowing your customer' has become even more important (Yeoman, 2011). For a market segmentation in greater detail, it is necessary to rely more on the capability to collect, access, and analyze larger data sets and pass traditional segmentation methods (Richard, 2017). In the age of 'big data', segmentation means to include activity-based data (e.g. website, mobile, purchase history), social network profiles and social influence plus sentiment data into the analyses. This shift from market segmentation to individual's expectations and preferences will affect the process of customer acquisition and the serving of existing guests. Besides this, the data generated during the customers' stay should not be disregarded. Meaning remembering the customers' choices, analyzing the details of the activities they were involved with, what facilities they used and what they consumed during their stay. Using this data, the next visit can be even more customized and refine to the customers' wishes (Talwar, 2011), including marketing and issue tailored offerings (Oracle Hospitality, 2016).

Additionally, a 'total service model' can be used to deliver a personalized experience. The model offers choices for almost every aspect of what the guest sees, experiences and uses during the stay. Thus, the customers have the ability to select their exact requirements from a set of choices to personalize their stay starting from the booking process, type of bed to the payment method, etc. (Talwar, 2011). Eventually, luxury hotels can either reach a potential customer at the best time through the best fitting channel or encourage loyalty for existing customers (Richard, 2017).

2.3.2 Evolving customer expectations within the hospitality sector

Due to the rise of ubiquitous computing and content sharing on various social media channels the customer is more informed than ever, what leads to a higher level of expectations of service and product offerings (Richard, 2017). According to Chris Elam (Hyatt Hotels, Vice President central reservations) until today the customer is forced to interact with the hotel employees on regular points like check-in/-out, room service, wake-up calls, etc. The trend is developing to a scenario where hoteliers have to deal with the customer at several touch points based on the

customer desire (Amadeus, 2016). This assumption can be confirmed by the behavior of millennials, since they seek immediate satisfaction and prefer fast service over friendly service and personal contact. Millennials are social beings who actively engage in social media, share their experiences online, and research and contribute to crowdsourced review sites like TripAdvisor. This forces hoteliers to provide a completely seamless integrated experience, in which every aspect of the hotel stay can be customized and reserved online (Richard, 2017).

2.3.3 Increasing Competition – the battle for the customer

The landscape of luxury hotels is highly competitive and likely to be intensifying, due to both an increasing number of luxury properties as well as improvements in delivering customized service to luxury guests in existing operations (Tutek et al., 2018). The phenomena of Airbnb, shared accommodation and other similar forms play also a strong role in the market. According to a study for every 10% increase in Airbnb listings in one market, hotel revenue decreased by 0.37%. This fact challenges hotels on how to innovate and adapt to bypass such a collaborative technology (Richard, 2017).

In terms of distribution the relationship between hotels and online travel agencies (OTAs) is an ongoing contest, as OTAs continue to prove their strength and evoke an important inflection point in the hotel industry. For the first time, OTA hotel bookings exceed now the total number of hotel bookings on the hotel's website with no sign for a slowdown (Langford & Weissenberg, 2017). With their strategy of continuously investing in technology, OTAs are able to provide digital trip-planning experiences that are difficult to outperform (Dongre, 2017). Apart from that, OTAs enlarge their business with additional services like private accommodation, tours and activities, restaurant reservations and others. Together with extensive investments in new technologies, this range of different purchasing and booking data can provide OTAs with new opportunities to a fully personalized customer experience (Langford & Weissenberg, 2017). To compete against the power of OTAs, hotels have to develop their own applications to provide better on-property and off-property services to guests. With special incentives such as loyalty points, hotels can encourage their guests to use the internal application over OTAs applications and enhance customers for direct bookings. These services require a developed technological infrastructure with specialized analytics and communications capabilities (Kansakar, Munir, & Shabani, 2018). On the other hand, OTAs offer value-added marketing and deliver thereby new customers to hotels. Since OTAs focus normally on price-sensitive travels and bargain hunters, hotels can concentrate on generating more loyalty and higher-spending of their guests through digital and experiential improvements. Thus, OTAs are not only a threat, the relationship

between OTAs and hotels can be also seen from a perspective of collaboration (Langford & Weissenberg, 2017).

2.3.4 New technologies in hospitality

In order to meet these challenging trends, to stay competitive and to satisfy the modern customer in the digital world, the hospitality industry needs to make appropriate investments in technology and understand how to exploit technology in the right way (Momongan & Papandreou, 2018). The challenge here is to determine which type and level of technology to integrate based on specific objectives and the different customers (Tutak et al., 2018). The following paragraph gives an overview of emerging technologies in the hotel industry.

Self-service technology makes it possible to serve customers without direct contact to employees, what is favored especially by business people, since it is a faster, more productive approach. A typical self-service technology are kiosks systems in hotels allowing guests to check-in and check-out on their own. Commonly they are situated close to the front desk, and the customers only need to put in their data, a keycard comes out and they can go straight to the room (Wei, Torres, & Hua, 2017). Although self-service technology does not align with the values of luxury hotels, its implementation is inevitable, as technology development cannot be stopped (Tomašević, 2018).

In addition, mobile devices can be used as credit cards and room-keys while cameras can report who is coming and going with the aid of a face recording software (Tomašević, 2018). Primarily, the software is to increase security, but it also memorizes and stores all kinds of personal information of the customer what can contribute to deliver a personalized service (Tomašević, 2018). Other new services emerged from information technology are databases for example of previous pillow requests, since special pillow menus are widely used in luxury hotels. The data can be collected with personalized hotel-apps, which are discussed in more detail in the next point.

Besides that, Artificial Intelligence will be used to mine data from guests from external sources and internal collected data, to create an even more advanced customer profile. Next to personalized experience at scale, it also offers an anticipation of needs that is remarkable aligned with the customers' own to predict what they want in a fast way (Hospitality Technology, 2018).

Moreover, smart mirrors in hotel rooms can provide the guest information about the weather, the stock market, the guest's emails and it can even be configured to interact with the guests' smartphones (Tomašević, 2018). Also, connected smart-home assistants such as Amazon Alexa and Google Home provide real-time convenience and connectivity to customers. Thereby customers can request concierge assistance and utilize their voices to access services via new touchpoints in a more seamless way (Hospitality Technology, 2018).

Another upcoming technology are robots. They are being introduced in major hotel chains in different roles: bartenders, receptionists, room service delivery, housekeeping and also as concierge. The robots have the ability to move at the same speed as humans and can ride the elevators by itself with Wi-Fi sensors (Seitzman, Bhattacharjee, & Seeley, 2017). They are based on a technology platform for cognitive computers, a combination of different application programming interfaces (Dialog, Speech to Text, Text to Speech and Natural Language Classifier) and a cognitive travel recommendation engine. Furthermore, they are able to welcome guests upon arrival and answer questions about hotel facilities, services and opening hours (Bellini & Convert, 2016). However, the degree of use should be carefully considered, as human interaction plays an extremely important role in the luxury experience and is in certain areas highly appreciated.

The challenge for the hoteliers is to find the right balance between the use of technology and dedicated human interaction (Amadeus, 2016). All these technologies have the aim to provide newer generations of customers with additional elements of experience, that are characterized by a gaming approach as well as by the variety and timeliness of the information provided (Bellini & Convert, 2016).

2.4 A personalized hotel app

Since the customers basically thrive for personalized engagement on the appropriate device, with the right message at the time they need it, luxury hotels need to engage in platforms that enable them to deliver such an integrated, seamless and personalized experience across different channels, devices and various customers (Solis, 2018). Regarding mobile-device-related behavior and preferences among travelers, they consider the smartphone as the single most indispensable item to carry with them when travelling, more important than taking a toothbrush (Egencia, 2016). Leading to the fact, that mobile is becoming one of the most important elements for consumers' interaction with the hotel and an indispensable tool for the modern traveler. It is used for pre-trip research and booking, in-destination engagement, and post-trip

interaction (Skift, 2018). To deliver such a seamless mobile experience to the customers, hotels need to engage in mobile apps, either with a hotel's proprietary app or a third-party app. With such an app, also known as the 'digital concierge', hotels are able to communicate with the guests, provide services on demand and collect data at real time, no matter where the guest is located. The data and analytics processed by the app are powerful tools to personalize the customer experience and meet the most important touchpoints of the journey (Skift, 2018).

Despite the fact that the role of a traditional concierge in a luxury hotels being highly important, especially in a time of emerging experiential luxury, a 'digital concierge' approach indeed allow for a much wider scope of interaction with guests (Bellini & Convert, 2016). It guarantees that every guest is connected to virtual assistance 24/7 for all requests by the app, meaning that many traditional and manual services can be available at the touch of a screen (Friberg, 2018). Only more complex problems that need human assistance and are unable to be answered by the app are redirected to the on-site concierge. In this way, the concierge can invest his time in more personalized, genuine interactions with each guest, what is of incredible value as personalization of the guest experience being a driving hospitality trend (Schyma, 2017).

The personalized hotel app allocates many features that drive engagement and build loyalty. Regardless at which stage of the journey the users of the app are – be it researching and planning the trip, currently staying at the hotel or already writing their review online – the app provides personalized features and content depending on which services users are most likely to need in that particular moment (Wolf, 2017). Features such as mobile check-in and check-out, mobile key, ordering room-service, loyalty programs and more can be integrated in the app and vary among the different providers.

2.4.1 Benefits for the hotelier

Since the investments of developing and implementing a hotel app are huge, it is of high interest and importance which benefits it offers for the hotel itself.

With the digital app, hotels can collect data more efficiently and store them in one place. Hence, services and a more personalized experience can be executed according to the needs of the guest. Furthermore, it can increase operating efficiency and drives up quality and consistency. Since data of every guest is recorded, the hotel employees can foresee requests, generate a considerable share of repetitive visits and increase recommendations from former guests. In addition, the processes are faster and human errors can be eliminated (Kazandzhieva & Ilieva, 2018). What is more, a successful implementation of the app leads to improving guest

communication, higher customer satisfaction at all and enhances customer loyalty (Oracle Hospitality, 2016).

Another major part of justifying the investment are increasing revenue streams. Through transparency of the offers and having them available in one tool at hand additional revenue can be generated. Reducing costs is as well a benefit of the app, because paper and printing costs can be minimized through digitalization of the documents and all guest information can be updated easily whenever necessary (Oracle Hospitality, 2016).

The usage of this technology further increases competitiveness within the industry, and hotels seeking to differentiate themselves among their guests as leaders in comfort and convenience should be concerned about the interests of modern guests (Intelity, 2016b).

Finally, a hotel app is the ideal platform to create relevant, timely and personalized experiences – ranging from offering customized benefits to guests to providing valuable information to employees when they need it. Delivering such experiences consistently and at scale is increasingly becoming a key to success (Oracle Hospitality, 2017).

CHAPTER 3: METHODOLOGY

3.1 Research Design

For the purpose of the study, primary and secondary data were used.

First, secondary data was collected to develop the theoretical foundation of the study based on information found in existing literature, such as academic articles, journals and specialist books. These secondary data were primarily used to get an overview of the industry and to validate them with primary data subsequently. Furthermore, a content analysis of hotel apps' features and functions was conducted after they were identified and downloaded. The hotel apps had to meet the criteria of serving several luxury hotels from different locations, thus hotel apps focusing on one property only were excluded. The identified features and functions from the content analysis were then used for the primary data collection.

For the primary data collection, two independent methods were conducted. First, in-depth interviews were executed with experts from the industry. These insights, combined with those of the content analysis, helped to develop an online customer survey. Both methods were generated to collect primary data to answer the research questions mentioned in the problem statement.

3.2 In-depth interviews

A total of six expert interviews were conducted on the basis of a pre-defined interview guideline. Three of the interviews were conducted with experts from the hotel chains Marriott and Hilton, the others were taken with employees from the third-party apps Conichi, SuitePad and Intelity. All experts have positions either in the department of marketing, sales or guest experience and mobile operations.

For the interview guideline (Gläser & Laudel, 2010), a questionnaire was formulated with regard to predefined topics, but neither the wording nor the sequence was subject to a rigid and binding sequence, and the possible answers were widely open. The interviewees could answer the questions openly, report freely, comment, explain and thus direct the conversation to aspects that are important to them.

Next to deeper insights regarding the specific features of each app and future app-developments, the experts provided some key figures relating to additional revenue sources generated by the app, which could later be used as indication for the development of the model.

3.3 Online survey

To gather insights on the consumer-side an online survey was generated. Thereby, the customers' attitude towards hotel apps at luxury hotels was assessed and it was tested how likely customers would use such an app in particular for revenue-generating activities.

Starting with an introduction to the survey, the first blog assessed the type and purpose of luxury hotel stays of the participants and if they had ever used a hotel app before and for which services. Further, a five-point Likert scale was used for rating the level of likelihood to use a hotel app for 14 identified services. In addition, their motivation to use the app with a discount was identified, followed by their attitude towards push-notifications. Also, they were asked to specify their preferred way of booking services to find out if human-interaction is valued among the participants. The next blog investigated the likelihood of using the app to book revenue-generating activities. Thereby, different scenarios were presented to the participants: without app, with app and with app and push-notifications. The likelihood rating was again assessed with a five-point Likert scale. The survey concluded with a section on respondent demographics.

The survey was generated through the online platform 'Qualtrics' and distributed among the authors' social circle (friends, family and social media), luxurious travel groups on social media and among guests of a luxury hotel. The survey was pre-tested by five individuals to ensure all questions were clear and easy to answer and to make sure no further adjustments were needed. Through this easy to track procedure, responses from a large number of individuals could be obtained at short time. All answers were collected anonymously since the personal identity of the individuals was not crucial for the analysis. In the next step, the data reports were imported into SPSS to perform a statistical analysis by using descriptive statistics, means, standard deviation and correlation.

CHAPTER 4: ANALYSIS AND FINDINGS

The first part of the analysis concentrates on the various features implemented in digital hotel-apps. Using information from primary and secondary research, different apps from hotels and third-party providers are analysed, by the most common features and special features. In addition, it shows which of these features can generate additional revenue and highlights the benefits of each app. The second part of the analysis is customer-oriented based on insights of a conducted online survey.

4.1 Analysis of expert interviews

In the following analysis five different mobile apps are examined: two of them are apps of international hotel chains, the other three are developed by third-party providers to be used at different hotels. All apps are free of charge and can be downloaded by everyone. Further, the features increasing non-room revenue are explained.

4.1.2 Hotel's branded apps

4.1.2.1 Marriott Rewards App

The Marriott Rewards App, also named as 'The Perfect Travel Companion' encompasses 6,700 hotels and 29 brands across different categories. Since it merged with Starwood Preferred Guest and Ritz-Carlton Rewards in August 2018, it is one of the largest hotel rewards programs in the world (Marriott, Interview). Marriott's mobile app is a dynamic and personalized tool designed to meet the needs of the guests before, during and after their stay. Within the loyalty program the guests can reach five elite levels and the earned points can be redeemed for different services. Regarding the target group, the app should be appealing for business guests as well as for leisure guests. Special about the app is the huge portfolio of hotels where the app can be used, and the loyalty program including different kind of rewards. On top of that Marriott focuses currently on the deployment of mobile key, which will be standard from January 2021 in all 6,500 hotels. The feature 'mobile places' is another differentiating feature that sends push-notifications to the guests according to their location and is currently only available in the U.S. and in Canada (Marriott, Interview).

4.1.2.2 Hilton Honors App

The Hilton Honors App is the award-winning guest loyalty program with almost 80 million members. The app has functionality for almost 5,500 hotels of Hilton's 14 brands all around the world (Hilton, 2018). First, every brand had their own app, only during the last years all apps were consolidated to one app. It is with a rating of 4.8 the highest-rated hospitality app in the Apple App Store (Hilton, Interview). Hilton Honors members can book directly via the app and have access to instant benefits like an exclusive member discount that is not available anywhere else. By collecting points, each member can achieve different loyalty levels and redeem the points afterwards. The aim of Hilton is to get 100% of the guest to use the app (right now 20-30% are interested in using the app). The app is also a tool to attract younger people and to build a lifetime relationship with them. Another new feature of the app is 'Explore', a local travel feature giving the guest the opportunity to explore the neighbourhood surroundings of their hotel with location-based suggestions for dining, entertainment and more from locals (Hilton, Interview). Besides that, the Hilton Honors app is currently the only app offering the ability to select the room on a digital floor plan. In this way, the guests can choose their preferred floor and location of the room upon availability. What is more, a new coming feature 'Connected-Room' is tested at the moment in four hotels in the U.S. (Hilton, Interview).

4.1.3 Third-party Apps

4.1.3.1 Conichi

The Berlin-based start-up Conichi is an app to connect guests and hotels during their stay to offer a personalized and efficient guest experience. By setting up Conichi's software, the hotel becomes a so-called 'smarthotel', which offers an innovative hotel experience to its guests, focused on a fully digital arrival and departure process and guarantees a secure handling of personal and sensible payment data. Conichi can be seen as the bridge between hotels and corporates. The start-up collaborates with more than 500 hotels and over 20 leading corporates, resulting in a total of 25 million travellers who use Conichi. It is mostly represented in the DACH (Germany, Austria, Switzerland) region, but also in Italy, Ireland and the U.S.

Due to high competition of travel apps the company has shifted from the leisure market to focus on business travels. Since Conichi experienced that the adoption of mobile apps among business travellers is low, the company is now expanding its web service and sends emails with booking information, the ability to check-in and to share payment information in advance, to the traveller. This allows the traveller to use the service as well without downloading the app. The

start-up also got support from investor HRS¹, which integrated the Conichi functionality into the HRS app for its ‘smarthotels’ (Conichi, Interview). Conichi has cooperation with companies like Volkswagen and Daimler, and in terms of luxury hotels, its client base consists of hotels such as ‘Roomers’, ‘Regent Hotels & Resorts’ and ‘Radisson Blu’.

4.1.3.2 SuitePad

SuitePad is a digital guest directory and serves as a communication and sales channel for hotel rooms. It combines the classic guest registry, travel guide, in-room entertainment, room service menu and hotel shop in one tablet, placed in the guest room. SuitePad is currently used by more than 500 hotels in 25 different countries and every month more than 400.000 guests are reached (SuitePad, 2018).

The company concentrated on the tablet-solution, since it generates a positive surprise-effect to the guests and meets the DEHOGA (German hotel and restaurant association) criteria of having a certain number of physical items in the hotel room. Getting the customer to download a mobile app can be challenging and shows low engagement rates compared to the tablet solution. Therefore, SuitePad offers now as well SuitePad BYOD to follow the mobile trend. Via a personalised link the guests have access to all the functions of a hotel app, without any downloads or registration. As such, the guests have all the amenities of a hotel app and the hotel does not have to invest lots of money in the development and design of an app (SuitePad, 2018). Moreover, with SuitePad, push-notifications can be sent to the in-room tablets of the guests for marketing purposes, resulting in additional revenue streams depending on the amount of notifications sent per day and guest. Among the clients of the company are ‘Ruby Hotels & Resorts’, ‘The Four Seasons Limassol’ in Cyprus and ‘Jumeirah Port Soller Hotel & Spa’ (SuitePad, 2018).

4.1.3.3 Intelity

Intelity, headquartered in Orlando, Florida, was the first hospitality company introducing a guest-service mobile app (ICEapp). Next to a conventional information tool, it serves as a complete interactive device including all important operating areas on and off the property. Each hotel can fully customize the mobile app and can pull all of the existing hotel systems

¹ The HRS Group is a global eCommerce company and one of the market leaders in the global business travel market. In Europe, HRS is one of the top three hotel portals. As an outsourcing provider for corporate groups, it simplifies processes relating to hotel stays and offers forward-looking solutions for travel managers and travellers themselves.

together. Compared to the other analysed apps, the Intelity app includes the biggest number of features, particularly noteworthy are the option to order food and beverages to the room or anywhere else on property (e.g. poolside), and the booking of activities on property like spa-appointments or any sport activities, which have proven to be profitable. In addition, it is possible to integrate third-party services into the app and likewise, the Intelity service offerings can be integrated into existing apps.

The Intelity platform has deployment across six continents at hundreds of hotels worldwide, including major brands like 'The Peninsula Hotels', 'Park Hyatt' and the 'Waldorf Astoria Hotels & Resorts' as well as many independent hotels. Furthermore, Intelity was recently named for several awards as the 'World's Leading Hotel App' (Intelity App).

4.1.4 Main features

Marriott and Hilton are among the largest hotel chains in the world and cover a large proportion of the luxury hotel industry, whilst the client base of the presented third-party-apps also includes luxury hotels such as 'The Peninsula', 'Waldorf Astoria', 'Shangri-La', 'The Grand Westin', 'FourSeasons', 'Jumeirah' and many more. Consequently, the above presented hotel-apps are a representative sample for the whole market. The following functions can be found in the most analysed apps and are therefore called main features:

Mobile-Check-in/Checkout

Next to the ability of booking your journey via the app, in a next step it can be used for mobile check-in and check-out at the hotel. Once the room is ready, the customer gets a notification. This option offers added value to the customer, since it increases the customers' control and allows access to information of the reservation from the smartphone, resulting in transparency, confidence and immediateness. Also, requests for late check-out can be done with the app rather than at front desk and customers can receive the invoice digitally on their phone (Wolf, 2017).

Mobile Key

Users of the app can use their smartphones to open the door to their room after completed the mobile check-in. This allows the guest to skip the queue at the front desk and head directly to the room to ensure a seamless journey (Talwar, 2011).

In-app chat

With automation, hotels can use in-app messaging to get in touch with their guests before, during and after their stay and allow an easy and immediate response for frequently-asked questions. Thereby staff can be relieved from answering the same questions repeatedly and valuable time can be saved for more meaningful tasks. For special requests that demand personal assistance, the guests get directed to chat directly with hotel staff (Alice Hotel Technology, 2018). The upcoming 'chatbot' technology (AI) will automate this furthermore and reduce human intervention (Hotel Technology).

Special requests

Most frequently requested services or amenities like extra pillows, new towels or another shampoo can be selected via the app before or during the stay.

Loyalty Program with a personal account

To drive loyalty and generate traffic in the app, a personal account is crucial. With the earning of loyalty points, special rewards and discounts, guests are eager to book another stay (Tecsyntax Solutions, 2018).

4.1.5 Special features

Some of the analysed apps have special features that differentiate them from the others. Depending on their strategy, their focus and their state of development, the following functions can be found:

Research and book

To facilitate the planning process, users can accurately narrow the search for destinations by address or by point of interest to find the nearest and most convenient hotel and save their favourite hotels for faster future booking.

Room upgrade

Upon arrival or the day before arrival, the guest gets offered (or can request) an upgraded room for a nominal fee via the app. This function is an easy to use upselling tool and improves the customer experience.

Room selection process

The day before arrival, the guest can choose the preferred room via digital floor plan maps adapted the property similar to selecting the seat on a flight (Hilton, 2018).

In-room dining/room-service

On top of that, guests can order food from the restaurant or the room-service to be delivered wherever they are in the hotel, be it by the pool or in the room (Wolf, 2017).

Booking activities on property

It is also possible to schedule spa-appointments, reservations at a restaurant or other additional services the hotel is offering (Intelity, Interview).

Real-time messaging

This feature allows for recognition and personalized offers at the right time and place throughout the customer stays. Based on customer data and installed beacons at hotels, personalized and informative content can be added to the feature. Examples are greeting guests with a personal welcome by the time they arrive at the hotel or sending guests who normally workout during their stay information about the location, hours and services of the hotel gym (Wolf, 2017). This feature can also be utilized for real-time alerts, such as guest notifications of spa and restaurant availability and last-minute rates (Friedman & Sen, 2017).

Connected-Room

Implementing room-automation enables the guests for full control over activities like turn off and on the lights, regulate the temperature and personalize their room entertainment with their mobile device. Specific preferences can be saved in the app for future stays, in order to make sure the room is set according to the guests' preferences before they arrive the next time (Ting, 2017).

Integration of third-party services

Ordering an Uber driver with the app, getting information about events and special offers nearby or recommendations from locals about hotspots in the city, offer the guests a wider range of services during their stay and thus (Tecsyt Solutions, 2018), satisfy the increasingly desire for more authentic destination information from local experts (Wolf, 2017).

In-app payments


















Following the one-size-fits-all approach and having only one instrument to manage all booking details delivers high convenience to the customer and creates loyalty (Tecsyt Solutions, 2018). Integrating mobile payment simplifies user's activities, but reliable security measures are needed.

Reading/ leaving a review

Sending an in-stay survey to guests via the app before check-out is an optimal way to get easy and direct feedback to identify problems, which can be addressed immediately and hence improve review ratings (SuitePad, 2018).

The analysis above of the different features in a hotel app and Table 1 address the first research question, '*What are the features available on hotel apps for luxury hotels?*' Combining all those features in one app includes important touchpoints of the customer journey to increase efficiency, boost guest satisfaction and to create loyalty through a stronger customer relationship what in the end can lead to higher revenues (Tatar, 2017).

Table 1 – Overview of the different apps and their features

Main Features		Marriott Rewards	Hilton Honors	Conichi	SuitePad	Intevity
	Mobile check-in/check-out	✓	✓	✓		✓
	Mobile key	✓*	✓*	✓*		✓*
	In-app chat	✓	✓	✓	✓	✓
	Special requests (like pillows, towels, shower gel)	✓	✓	✓	✓	✓
	Loyalty program w/ personal account	✓	✓		✓****	✓****
Special Features						
	Research and book	✓	✓			✓
	Room upgrade	✓	✓			✓
	Room selection from a digital floor plan		✓*			
	Ordering room-service				✓	✓
	Reservation at the hotel-restaurant				✓	✓
	Booking activities on property (sports, spa-treatments, etc.)				✓	✓
	Integration of 3 rd -party services		✓		✓	✓
	Real-time messaging	✓***				✓
	Push-notification	✓***	[✓]		✓	✓
	Connected-room		✓**		✓	✓
	In-app payment			✓		
	Reading/leaving a review/feedback				✓	✓

- * Only in a few hotels available
- ** In testing phase, not available yet
- *** Only available in the US and Canada, in Europe in testing phase (pilot program)
- **** Does not offer a native loyalty program, only existing ones from hotels can be embedded in the app.

The table above represents the analysed apps with their availability of different features. Many features are not available for all hotels of the chains, and others are still in the testing phase to be implemented in the app in the future.

4.1.6 Features increasing non-room revenue

Next to benefits like higher guest satisfaction and optimization of processes, a hotel-app can be used to increase non-room revenue. In particular in the area of food and beverage, but also with additional services like booking of spa-appointments, the ability to request late-check-outs or with the option for room-upgrades, additional revenue be generated. Using push-notifications can even intensify the growth of incremental revenue and can attract the guest with suitable offers at the right time. To answer the second research question, the features mentioned before are examined in more detail:

Ordering room-service

This feature is one of the main additional revenue drivers in the food and beverage area. Intelity reports on average a growth in room-service revenue between 15% and 35% as adoption varies depending on the type of property (Intelity, Interview).

This can be attributed to an increase in the number of orders explained by convenience and capitalizing on guests that would normally not order room-service at all. Also, it leads to increases in check averages due the more appealing menu-presentation, since pictures of food are much more attractive than names of dishes or descriptions (Intelity, Interview). Also, suggesting additional menu items based on the order history of returning customers (e.g. drink the guest had before) can lead to higher revenues. If reviews of previously ordered items are available, those the customer has rated highest can be suggested for reordering.

Besides creating an easier and less stressful process for the guests, it also reduces the risk of human error when taking room-service orders (Intelity, Interview).

Reserving a table at the hotel restaurant

Another feature leading to more revenue in the area of food and beverage is the possibility to view the menu of the hotel restaurant in the app and to make a reservation via the app, due to the fact of convenience and more transparency for the guest. Meaning the guest can check if the restaurant suits his/her food preferences before making the reservation and the risk of waiting for minutes on the telephone line or even reaching no one can be omitted (SuitePad, Interview).

Late-check out and room-upgrades

The option to request late-check-out is an additional revenue source, which can be implemented in form of a tiered-pricing, where the guest gets charged an additional fee according to the hour

of check-out (SuitePad, Interview). Apart from this, room-upgrades can be used as an additional revenue source. For a certain amount of money, the guest gets offered a superior room-category just before the arrival (Hilton, Interview).

Integration of third-party services

By integrating services such as Uber or car rental, food delivery services (Uber Eats), activities in the area or local shopping guides, the guest is offered additional services leading to rising revenues. For a fee discussed individually, these partners can advertise their offering on the hotel-app and give guests information about local services (Hilton, Interview; SuitePad, Interview). It is essential to select partners who fit to the existing brand image or bring relevant benefits to the guests of the hotel (Intelity, 2016a).

Next to the described features above, the effect of push-notifications and discounts can even more increase additional revenue (SuitePad, Interview).

Push-notifications

Push-notifications allow hoteliers a wider reach to market their services to their guests and can be used for a variety of purposes: especially upselling and cross-selling can be very effective and are well accepted by the guest (SuitePad, Interview). Depending on the effort the respective hotel invests in managing the tool, the messages can be either personalized or generic. The messages commonly advertise a special dish of the day, announce the happy hour or contain personalized offerings. It is also a way to promote free capacities for spa-treatments or restaurant-reservations to tempt guests and to make full use of all available facilities. An alternative approach, that has proven to be successful is to promote value added items, such as breakfast offers for those who have not booked it in advance (SuitePad, Interview).

Offering discounts for bookings via the app

Offering discounts on the services when booking via the app create more incentives to buy. Additionally, discounts can also be combined with push-notifications to maximize the effect even more (SuitePad, Interview).

Finally, despite the already mentioned growth in room-service revenue between 15% and 35% (Intelity, Interview), other apps report a total annual in-room dining revenue increase by 16.4% and average restaurant reservations are up 8% (SuitePad, Interview). Regarding spa sales

revenue, a wellness hotel increased revenue up to 50% (SuitePad, Interview) with the implementation in the hotel app and the sending of push-messages. Eventually, a total property revenue increase up to 5% can be seen in hotels deploying the Intelity-App as guests become more aware of all property offerings (Intelity, Interview).

4.2 Survey analysis

4.2.1 Sample description

During the data collection phase, 195 surveys have been accessed. Responses that have been completed only partially were eliminated from the dataset. Furthermore, data obtained from participants indicating not staying sometimes at luxury hotels were also cleared as they are not part of the aimed statistical sample. Leaving a total sample of 120 valid answers for further analysis. Since all questions of the online survey were backed up by a 'forced response', there were no missing data.

Table 2 – Descriptive statistics of the sample (N=120).

Variable	Frequency	%
Age		
18-24	20	16.67%
25-34	66	55%
35-50	22	18.33%
>50	12	10%
Gender		
Male	51	42.50%
Female	69	57.50%
Occupation		
Student	28	23.33%
Employed	87	72.50%
Unemployed	0	0%
Retired	1	0.83%
Other	4	3.33%
Nationality		
Germany	107	89.17%
Portugal	3	2.50%
U.S.	2	1.67%
Bangladesh	1	0.83%
Colombia	1	0.83%
Croatia	1	0.83%
India	1	0.83%
Ireland	1	0.83%
Switzerland	1	0.83%
Turkey	1	0.83%
UK	1	0.83%
Main purpose of luxury hotel stays		
Leisure	87	72.50%
Business	9	7.50%
Both	24	20%
Luxury hotel characteristics		
Chain Hotel	61	49.59%
Independent Hotel	59	47.97%
Other	3	2.44%
Usage of hotel app before		
Yes	53	44.17%
No	67	55.83%

4.2.2 Findings

Analyzing the main purpose for most of the luxury hotel stays among the sample, 72,5% indicated leisure, 7,5% stated business and 20% selected both as being their main purpose for luxury hotel stays (table 2).

Regarding the usage of a hotel app, 44% already used a hotel-app on their own mobile device or on the in-room tablet of the hotel during their luxury hotel stay, whereas the majority with 56% has not used it before.

4.2.2.1 Most used features in the app

The people who used a hotel-app before, indicated as the top three most used features within the app the ‘booking of the hotel-stay’ (only those who used the app on their own mobile device) with 83%, followed by the feature to get information about the hotel with 75% and to check-in/check-out with 41% (also only on their own mobile device). All the other features were used less frequent, but at least by 2% (3 people) of the 44% who already used a hotel-app before (Appendix 2).

4.2.2.2 Features most likely to be used by the sample in the future

To measure the services the respondents would most likely use within a hotel-app, a 5-point Likert-scale was used. In order to test the reliability and internal consistency of each factor a reliability analysis (Cronbach’s Alpha) was conducted. Coefficients over 0.7 are considered acceptable, coefficients greater than 0.8 considered as good (Malhotra, Nunan, & Birks, 2017). Thus, with $\alpha = 0.884$, the overall reliability of the 14 items is good.

Looking at the means of the different features, the ‘check-in/check-out’ feature, ‘reserve a table at the hotel restaurant’ and ‘leave/read reviews about the hotel’ result in the highest means (Appendix 3). Having a closer look at the results of each feature, the following table can be obtained.

Table 3 – Likelihood rating for usage of hotel app features in detail

Scale	Extremely unlikely	Somewhat unlikely	Neutral	Somewhat likely	Extremely likely
Feature	Frequency (%)				
Check-in/Check-out process	10 (8.3)	15 (12.5)	13 (10.8)	33 (27.5)	49 (40.8)
Ordering room-service	11 (9.2)	19 (15.8)	20 (16.7)	39 (32.5)	31 (25.8)
Schedule spa-appointments	9 (7.5)	12 (10.0)	19 (15.8)	42 (35.0)	38 (31.7)
Book other services/ activities on property	8 (6.7)	14 (11.7)	17 (14.2)	49 (40.8)	32 (26.7)
Book external facilities and activities	16 (13.3)	16 (13.3)	9 (7.5)	47 (39.2)	32 (26.7)
Reserve a table at the hotel restaurant	7 (5.8)	11 (9.2)	9 (7.5)	48 (40.0)	45 (37.5)
Mobile-key to access the room	14 (11.7)	13 (10.8)	15 (12.5)	27 (22.5)	51 (42.5)
Payment made through the app	9 (7.5)	17 (14.2)	18 (15.0)	29 (24.2)	47 (39.2)
Control the room	12 (10.0)	26 (21.7)	21 (17.5)	32 (26.7)	29 (24.2)
Access loyalty programs	10 (8.3)	15 (12.5)	28 (23.3)	33 (27.5)	34 (28.3)
Connect to in-room entertainment	9 (7.5)	20 (16.7)	17 (14.2)	39 (32.5)	35 (29.2)
Communicate with hotel staff	11 (9.2)	21 (17.5)	30 (25.0)	40 (33.3)	18 (15.0)
Access social media	16 (13.3)	23 (19.2)	24 (20.0)	33 (27.5)	24 (20.0)
Leave/read reviews about the hotel	9 (7.5)	10 (8.3)	19 (15.8)	38 (31.7)	44 (36.7)

Note: 5-point Likert-scale: 1 = extremely unlikely, 5 = extremely likely; $\alpha = 0.884$

The results show, the features extremely likely to be used indicated by the majority of the participants are: ‘Check-in/check-out’, ‘Mobile-key to access the room’, ‘Payment made through the app’, ‘Access loyalty programs’ and ‘Leave/read reviews about the hotel’. The features related to increase additional revenue have highest frequencies only for the scale point ‘somewhat likely’.

4.2.2.3 Assessing the amount of discount for each feature

To motivate guests to use the hotel-app for bookings of services, the hotel could offer a discount on these services (Interview, SuitePad). SuitePad usually recommends its clients to give a discount of 10%. To verify the information and to establish an appropriate discount amount, the following hypothesis was established:

H2: People are more likely to book the service via the app with a discount of at least 10%.

In the following, the discount amounts that would convince the participants to use the app for each specific service are determined. Only the features leading to incremental revenue were listed and each participant could select a percentage between 0 and 100 as the discount amount.

Table 4 – Discount amounts to use the app

Features	Discount Amounts						Mean
	No discount 0%	Low 1-10%	Medium 11-20%	High 21-50%	Very High 51-99%	For free 100%	
Ordering-room service	22	37	35	17	7	2	19,2%
Schedule spa-appointments	13	29	46	23	7	2	21,1%
Book other services/activities on property	25	22	41	23	5	4	21,6%
Book external facilities/activities	30	23	37	19	7	4	19,9%
Reserve a table at the hotel restaurant	37	30	29	13	6	5	17,8%
Use the in-room entertainment	48	19	17	22	6	8	20,5%

Table 4 shows the indicated discount amounts divided into six different groups for each feature. Leading to the following result, that for spa-appointments a discount would be most appropriate, since the amount to book the service even without discount is the lowest and the

convincing discount amount (mean) is in the upper range compared to the other average discount amounts. A discount would also be conceivable for the feature to book other services and activities on property, since the average convincing discount amount is also comparatively higher. All in all, the average discount amount for the different services ranges between 17% and 22% and ensures that the majority would use the app for the corresponding services. The feature to reserve a table at the hotel restaurant and to use the in-room entertainment resulting in the highest number of people, who would use the service even without discount. Regarding the *H2* it is accepted for all features, since the majority indicated a discount amount of at least 10% for all services. To mention is here, that *H2* is a logic acceptance, not a statistic one.

4.2.2.4 Usage of app versus traditional approach

The preferred way of booking services (such as spa-treatments, room-service, restaurant reservations, sports activities, late-check-out, etc.) among the participants was with 55% the app, 34% indicated preferring going to the front-desk and only 11% selected to prefer the in-room phone. To find out if people who prefer booking via the app indicated as well high discount amounts, the following table was created.

Table 5 – Preferred way of booking vs. discount amounts

Feature	Without discount (frequencies)		Mean Discount Amount (%)	
	<i>App</i>	<i>No App</i>	<i>App</i>	<i>No App</i>
Ordering-room service	13	9	19.22%	22.08%
Schedule spa-appointments	10	3	19.65%	27.02%
Book other services/activities on property	17	8	21.13%	25.17%
Book external facilities/activities	18	12	18.15%	23.79%
Reserve a table at the hotel restaurant	23	14	16.39%	22.77%
Use the in-room entertainment	26	22	19.52%	27.92%

Table 5 reveals the following result:

Number of people (no discount + App) > Number of people (no discount + no App)

Also, the average discount amounts are lower for those who prefer booking via the app. Therefore, people do not prefer to book via the app only because high amounts of discounts motivate them.

To examine if the way of booking can be associated to a certain age group the following hypothesis were established:

H3: The preferred way of booking varies across age.

H3a: Young adults (age 18-24; 25-34) prefer using a mobile app to book the services.

H3b: Adults (age 35-50; > 50) prefer the more traditional ways of booking (either using the in-room phone or going the front desk concierge service).

Table 6 – Frequencies: Preferred way of booking vs. age-group

Age-group	Using mobile app	Going to the front-desk	Using in-room phone	Total
18-24	14	5	1	20
25-34	34	26	6	66
35-50	14	5	3	22
> 50	4	5	3	12

p-value = 0,274

With regard to Table 6, it can be observed, that out of 86 young adults (18-24; 25-34) 56% (N = 48) prefer the app to book services and out of 34 adults (35-50; > 50) 53% (N = 18) indicated the app as their preferred way of booking. Computing the chi-square test, the p-value results in $p= 0,274$, which is greater than the significance level ($\alpha= 0.05$). Hence, the hypotheses (*H3a*, *H3b*) are rejected, meaning there is not enough evidence for having an association between the age group and the preferred way of booking.

4.2.2.5 Usage of push-notification

To assess the likelihood of allowing push-notifications among the respondents, descriptive statistics were used (table 7). Analyzing the mean, it can be concluded that the tendency of the participants is somewhat unlikely to allow push-notifications.

Regarding the amount of push-notifications the participants would allow per day, the average amount resulted in 1,13 push-notifications per day sent by the hotel. 45% of the sample indicated to allow zero push-notifications per day. Hence, the sending of push-notification should be done cautiously.

Table 7 – Rating for allowance of push-notifications

Scale	Frequency	%	Mean (Stdev)
Extremely unlikely	39	32.50%	} 2.37 (1.30)
Somewhat unlikely	39	32.50%	
Neither likely nor unlikely	8	6.67%	
Somewhat likely	27	22.50%	
Extremely likely	7	5.83%	

Note: 5-point Likert-scale: 1 = extremely unlikely, 5 = extremely likely

In terms of the areas, the participants would be most interested to receive push-notifications for room-upgrades (N= 63), special offers from spa (N= 56) and special offers from the hotel restaurant/bar/room-service (N= 43) (Appendix 4).

To see if there is a correlation between the number of push-notifications and the amount of discount, the following hypothesis was tested:

H4: 'Discount-driven' people allow more push-notifications than people who indicated no/low discount amounts.

To test *H4*, the crosstabs function was used. With a p-value above 0,05 for every feature, there is not enough evidence for a correlation between the number of push-notification and the amount of discount, thus *H4* is rejected. What can be monitored is that the number of people who allow zero push-notifications is the highest at booking without discount for each feature (Appendix).

4.2.2.6 The impact of a mobile app on selected revenue-generating services

Three different scenarios were presented to the participants with the same starting position. One third of the participants was presented only the basic scenario without app (scenario 1), the other third was presented the scenario with app (scenario 2), and the last group was demonstrated the scenario with app and push-notification (scenario 3) (Appendix 6). The aim of this split between the three scenarios was to determine the effect of the app on non-room revenue, meaning if people would be more likely to choose room-service or go to the hotel-restaurant with the usage of the app and if push-notification can be seen as an extra boost. Consequently, the following hypothesis were developed:

H5: The option to use a mobile app has an influence on the likelihood to choose a specific service.

H5a: The option to use a mobile app has a positive influence on the likelihood to order room-service.

H5b: The option to use a mobile app has a positive influence on the likelihood to go to the hotel-restaurant.

H5c: The option to use a mobile app has a negative influence on the likelihood to go to a restaurant outside the hotel.

H6: Push-notifications sent via the app with messages about hotel dining-options have an influence on the likelihood to choose a specific service.

H6a: Push-notifications sent via the app with messages about hotel dining-options increase the likelihood for ordering room-service even more than only having the app.

H6b: Push-notifications sent via the app with messages about hotel dining-options increase the likelihood for going to the hotel-restaurant even more than only having the app.

H6c: Push-notifications sent via the app with messages about hotel dining-options decrease the likelihood for going to a restaurant outside the hotel even more than only having the app.

To test *H5*, the mean and the standard deviation, shown in table 8 were determined. A one-way ANOVA was conducted to test the statistical significance of the differences between the scenarios (p-value).

Table 8 – Rating for likelihood usage No App vs. With App

Option	No App <i>Mean (Stdev)</i>	With App <i>Mean (Stdev)</i>	P-value
Ordering room-service	2,80 (1,44)	3,53 (1,01)	0,034
Going to hotel-restaurant	4,07 (0,66)	3,59 (1,14)	0,016
Going to the restaurant outside the hotel	3,80 (1,24)	3,56 (1,02)	0,285
	$\alpha = 0.994$	$\alpha = 0.479$	

The table shows an increase in the likelihood of ordering room-service of 26,1% with the app and a p-value of 0,034, which shows that the difference is statistically significant. The likelihood of going to the hotel-restaurant with the possibility to view the menu via the app and making a reservation decreased by 13,4% with the app and resulted in a p-value of 0,016. In terms of going to a restaurant outside the hotel, the likelihood decreased by 6,7% with the app.

The p-value (0,285) shows that the difference is not statistically significant. Finally, the hypothesis *H5a* is accepted and *H5b* is rejected. *H5c* could be accepted, but with no statistically significance.

To prove *H6*, only people who indicated previously to allow more than one push-notification per day were examined (N= 32).

Table 9 – Rating for likelihood usage With App vs. With App + Push-Notifications

Option	With App <i>Mean (Stdev)</i>	With App + Push-N. <i>Mean (Stdev)</i>	P-value
Ordering room-service	3,7 (0,82)	4,17 (1,17)	0,032
Going to hotel-restaurant	3,73 (1,27)	3,83 (1,17)	0,021
Going to the restaurant outside the hotel	3,18 (1,17)	3,83 (0,75)	0,000

N= 32 (accepting more than 1 push-notifications per day)

$\alpha = 0.764$

Among the selected sample, the likelihood of ordering room-service increased by 12,7% and the likelihood of going to the hotel-restaurant by 2,7%. Concerning the likelihood of going to a restaurant outside the hotel, an increase of 20,4% can be determined. All p-values are below 0,05, hence the differences are statistically significant. The effect of push-notifications is positively influencing the likelihood of ordering room-service and going to the hotel-restaurant, thus the sub-hypothesis *H6a* and *H6b* are accepted. Since push-notifications do not decrease the likelihood of going to a restaurant outside the hotel *H6c* is rejected.

CHAPTER 5: DISCUSSION

Supplied features versus customers' demand

This study shows that the features of a hotel app, which the participants have already used are limited to 'booking of the hotel-stay', 'get information about the hotel' and 'check-in/check-out'. Thus, it can be determined that hotel apps do not focus yet on features generating incremental revenue. This statement can be supported by the information of experts, that especially the Marriott Rewards app as well as the Hilton Honors app have their focus for now more on delivering a seamless guest experience rather than on generating additional revenue (Marriott Interview, Hilton Interview). The perceived high values of 'mobile key', 'check-in/check-out' and 'mobile payment', may reflect the basic needs of hotel guests and the higher demand for convenience by customers. Looking at features the participants would *somewhat likely* use in a hotel-app, these can generate additional revenue. Comparing the results with the existing functions of each analysed app as shown in table 1, one can see that some apps lack of the presence of certain revenue-increasing features, although a demand can be observed by the customers. This may present opportunities for hotel apps to develop more value-added features for the customers to promote a more satisfying hotel stay and to generate more revenue.

Discount amounts and the luxury sector

Comparing the received average discount amounts ranging between 17%-22% with the suggested discount amount of 10% by SuitePad (SuitePad, Interview), the customers indicated noticeable higher amounts motivating them to use the app. Nevertheless, it should be noted that generally luxury is not identified by discounts and price reduction (Kapferer, 2010), therefore a cautious handling of discounts is advisable.

Push-notifications for marketing purposes

As the results of the study show, push-notifications are not very appreciated among the customers and reflecting the experts' opinion from Hilton, the sending of push-notifications should be handled with caution for marketing purposes. Sending room ready alerts to guests can be very useful, promoting services or offerings could seem intrusive and annoying (Hilton, Interview). The customer should feel honoured and valued at any time, hence push-notifications are most effective when they are personalized, delivered to the customer in a careful and thoughtful way (Hilton, Interview). However, the app Suitepad is working with push-notifications a lot, but those are sent to the in-room tablet and not directly to the guests' smartphone.

Incremental revenue due to increased room-service orders

As the amount of increase in revenue varies across properties, an average increase in room-service revenue between 15% and 35% can be monitored due to the possibility of ordering room-service via a hotel app (Intelity, Interview). In the conducted survey, the observed likelihood to order room-service using the app increased by 26,1% and by another 12,7% including push-notifications. To predict actual purchases, Likert-scales can be used as an indicator by converting a respondent's stated purchase intention into actual purchase probabilities (Chintagunta & Lee, 2012). Using the BASES model as a basis to conduct the intent scale translations (Risen & Risen, 2008), the purchase probability without app results in 9% and with app in 18%. Hence, it can be assumed that room-service revenues increase with the app approximately by 9% (Appendix 5). Concerning the effect of push-notifications, people accepting more than one push-notification a day result in a purchase probability of 21% with app and 32% including push-notifications. Therefore, an increase of 11% in room-service revenue can be expected. When comparing the results with the information from the experts a deviation of the values can be found. This could be explained by the fact of presenting a set scenario in the context of a survey versus a real case and by only testing one scenario (only dinner) and not specifying the actual menu items. Besides that, the total amount of the order is not considered during the experiment. Also, the translation according to the BASES model specifies only predictions and can differ from real data (Chandon, Morwitz, & Reinartz, 2005), hence it can be expected that the detected figures correspond to the minimal increase (9-11%).

CHAPTER 6: CONCLUSION

6.1 Main Findings and Conclusion

The fact that smartphones play an ever-increasing role in the context of travelling whether before, during or after the stay, drive hotels to understand and develop mobile strategies to satisfy their customers' needs. Furthermore, the growing competition in the area of accommodation contributes to the fact that the hotel industry has to differentiate itself. This study focused on the analysis of the features from different hotel-apps, and on how these features can generate incremental revenue respecting customer wishes and needs. The following model answers the third research question on how the optimal model of a hotel app should be implemented and operated to generate additional non-room revenue and to maximize customer value:

The hotel apps should move beyond providing the main features of an app like check-in/check-out, mobile key, in-app-chat, loyalty programs and special requests to differentiate themselves and to generate additional revenue. The customers expect relevant, timely and location based local knowledge and services to enrich their hotel experience. Therefore, features such as ordering room-service, scheduling spa-appointments, booking activities and services on and off property, making reservations at the hotel restaurant, late-check-out options and room-upgrades should be available in the app to generate additional revenue. Other features to offer a seamless journey and to meet the customers' expectations are mobile payment, reviewing and rating options, controlling the room and connecting to in-room entertainment.

Besides implementing the relevant features in the app, even more important is the correct operation of these features in order to be used by the guests. Starting with push-notifications, which should not overwhelm the guest with information, but promote targeted and personalized offers that are relevant to the guest and contribute to a comfortable stay (Hilton, Interview). These include room-ready alerts, room-upgrades and late-check-out options but can also be special offers from the spa or from the hotel restaurant, bar or room-service. The number of push-notifications per day should not exceed more than one message and should only be sent after the guests' permission.

Providing discounts for services when booking via the app depends on the hotel, its guests and its strategy. Hotels which use discounts a lot, should first implement the features that people would only use with high discounts, such as the scheduling of spa-appointments and the booking of services and activities on and off property, with a discount ranging between 11-20%. Whilst hotels usually offering low to zero discounts should prioritize the features to order

room-service, to reserve a table in the hotel restaurant and the feature to use the in-room entertainment offer. Thus, a high usage rate of the app can be guaranteed.

Concerning the feature to order room-service with the app, next to the convenience approach it is also important to have an appealing and informative visualization. Presenting the menu with a clear structure and appealing pictures can influence the ordering process. Asking the guest about special diets and food intolerances as well as informing the guest about the time of delivery and which cook is preparing the meal creates an even more personalized and transparent operation. Further, the order history of returning customers should be integrated in the menu suggestions.

Push-notifications can also be used to announce a special menu or to point out the offered possibilities to the guest but should only be sent to guests allowing push-notifications to have an effect on revenue maximization.

Furthermore, the implementation of the technology into an operating hotel has to be considered. The greatest challenges of the digital transformation are the changes to key enablers. A lot depends on the organisational and cultural change to transform a business successfully. The aim is to shift the company's culture to become more innovative and adaptable (Bain & Company, 2018). The employees of the hotel need to get taught to use the technology and to use the acquired data efficiently in their work. Besides that, the ways of working need to be adapted, new capabilities should be acquired, and skills need to be enhanced.

In terms of the feature to order room-service the conditions and capabilities for increasing order volumes should be set at all times. In order to offer personalized services, a customer profile of every guests needs to be available and updated permanently. In addition, the property needs to adapt for technological change, for example special door locks for mobile key and the installation of sensors to execute location-based services. Another factor to consider is information security. With the usage of huge amounts of data and constant connectivity of everything, challenges of security, compliance and data protection get greater. Therefore, proper security processes need to be embedded from the start to ensure a successful transformation. Moreover, an established partner ecosystem is also one of the enablers of digital transformation. Besides partnering with third-party-services like Uber or Netflix, a hotel needs to have an IT support for any issues with the technology. Lastly, the app should be marketed to make the guests aware of the technology and to enhance the usage.

6.2 Managerial Implications

This research will benefit industry practitioners, such as hotel managers, hotel app developers and other positions related to the mobile journey of a hotel guest, by providing them with insights into the features of a mobile hotel app. In general, the study gives hotels an understanding about hotel app features generating incremental revenue and presents how these features should be implemented and operated according to the preferences of the customers. In this way, a guidance for a successful execution is presented and can help hotel managers either to introduce a hotel-app into their business or to make improvements for a more successful strategy. As the study also comes up with features that the customers are most likely to use, it can be ensured that the numbers of users are maximized and that the customers are satisfied with the features. Finally, room service revenue growth figures show that a hotel app can be more than just a tool to enhance the customer experience and serve customers with information.

As the development of a hotel-app depends on available budget to invest in technology and on the infrastructure to support technology, not all features can be implemented ad hoc and hotels need to prioritize most important and most appropriate ones first. Furthermore, it has to be decided whether to develop a hotels' own branded app or to partner with a third-party provider. The latter is usually cost-saving and does not require the necessary capabilities to develop an app, but the hotel is dependent on the third-party provider and their offer. Developing an own branded hotel app is only worth it, if it is a hotel chain and operates several hotels. Otherwise, economies of scale cannot be captured and the problem of convincing the guests to download the app increases.

6.3 Limitations and Future Research

This research was based on a convenience sample, since it is an applied and pragmatic study. Due to the self-selection process used, a limitation is the under-representation or over-representation of particular groups within the sample. Thus, the number of business travellers represents a relatively small number of people and people with a German nationality are dominant in the sample. Another limitation is the concentration of features relating only to food and beverage during the experiment in the customer survey. Future research could also investigate other revenue generating features such as booking of spa-treatments and other activities or room-upgrade and late-check-out options in the app. Thereby more figures for incremental revenue could be obtained and a total increase of revenue for a property could be calculated. As the situations of the experiment are controlled, the indicated answers from the

participants can differ from real life situations. To obtain exact figures A/B testing in a hotel should be conducted and actual data should be used for further investigations. Besides that, the customers willingness to pay for the services could be determined as well as the acceptance level to which technology can replace human interaction. In this way, the right balance between technology and human interaction could be determined. Also, the customers who used an hotel app before were not asked which hotel app they used. In further studies this could be examined to find out which hotel app is most present in the market.

Future research would be to update the features investigated, as apps are updated regularly, and go deeper into each specific feature as well as extend the sample to a wider population. Additionally, customers could be asked if the features work well and if the service provided with the app is better than the traditional approach. Thus, opportunities for improvement could be identified and possible failures can be fixed. Apart from that, it could also be tested if a hotel-app would motivate non-luxury travellers to stay at a luxury hotel and which features they would like to have in an app.

Finally, this study identified different features of a hotel-app and which of them generate incremental revenue and how this can be achieved. The amount of costs that a hotel could save by implementing an app are not investigated. Most important for hoteliers to know is the share of guests who actually use the app regularly, in order to see if further investments and developments are worthwhile.

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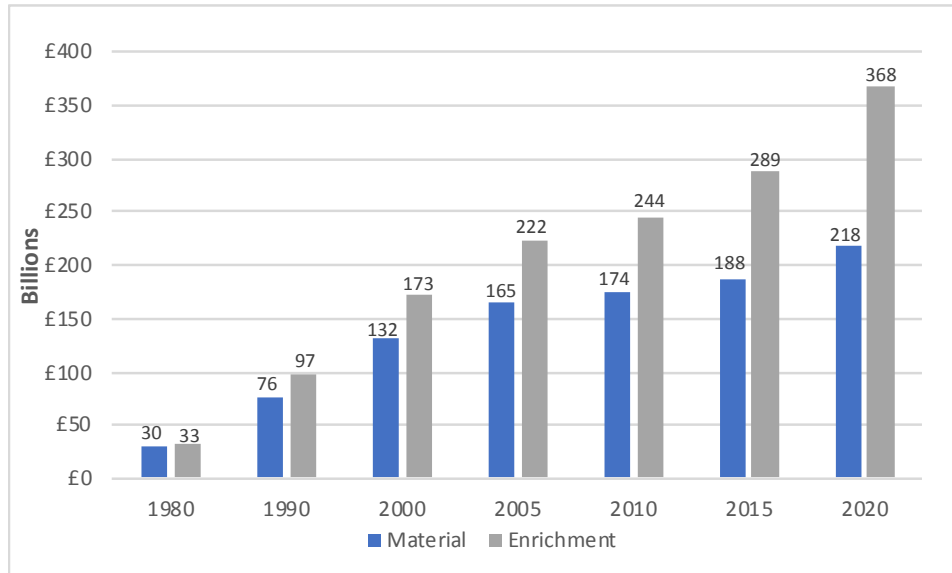
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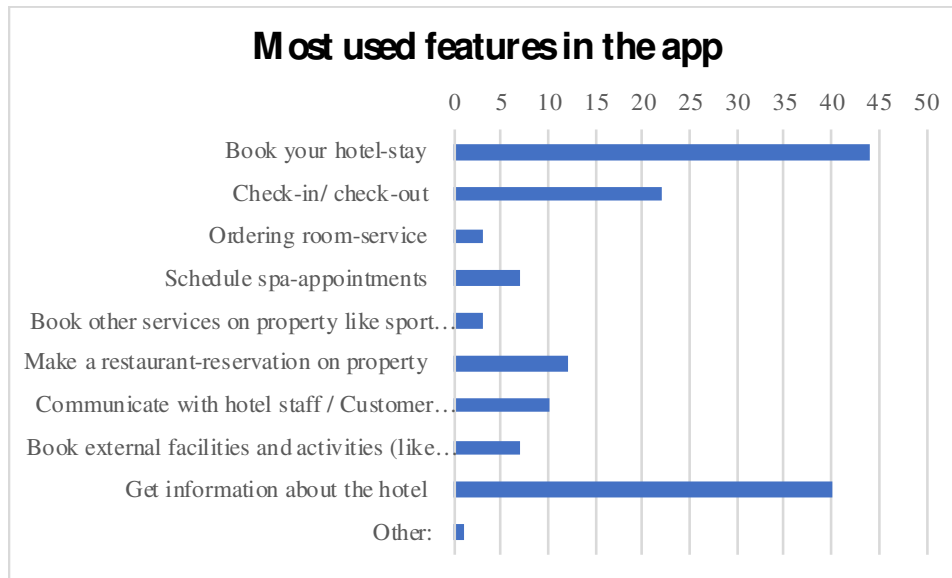
APPENDICES

Appendix 1 – Growth in spending on enrichment



Source: Office of National Statistics/Experian (in Yeoman & McMahon-Beattie, 2011).

Appendix 2 – Most used features in the app

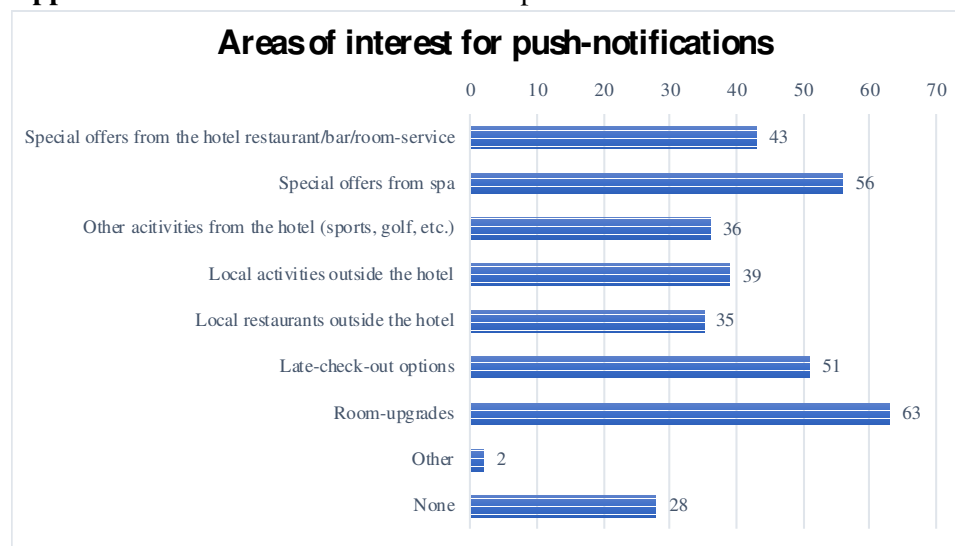


Appendix 3 – Likelihood ratings for usage of hotel app features

Feature	Likelihood usage	
	Mean	Stdev
Check-in/Check-out process	3.80	1.32
Ordering room-service	3.50	1.28
Schedule spa-appointments	3.73	1.22
Book other services and activities on property	3.69	1.18
Book external facilities and activities	3.53	1.37
Reserve a table at the hotel restaurant	3.94	1.16
Mobile-key to access the room	3.73	1.41
Payment of bills made through the app	3.73	1.31
Control the room	3.33	1.32
Access loyalty programs	3.55	1.26
Connect to in-room entertainment	3.59	1.27
Communicate with hotel staff	3.28	1.18
Access social media	3.22	1.33
Leave/read reviews about the hotel	3.82	1.23

Note: 5-point Likert-scale: 1 = extremely unlikely, 5 = extremely likely; $\alpha = 0.884$

Appendix 4 – Areas of interest to receive push-notifications

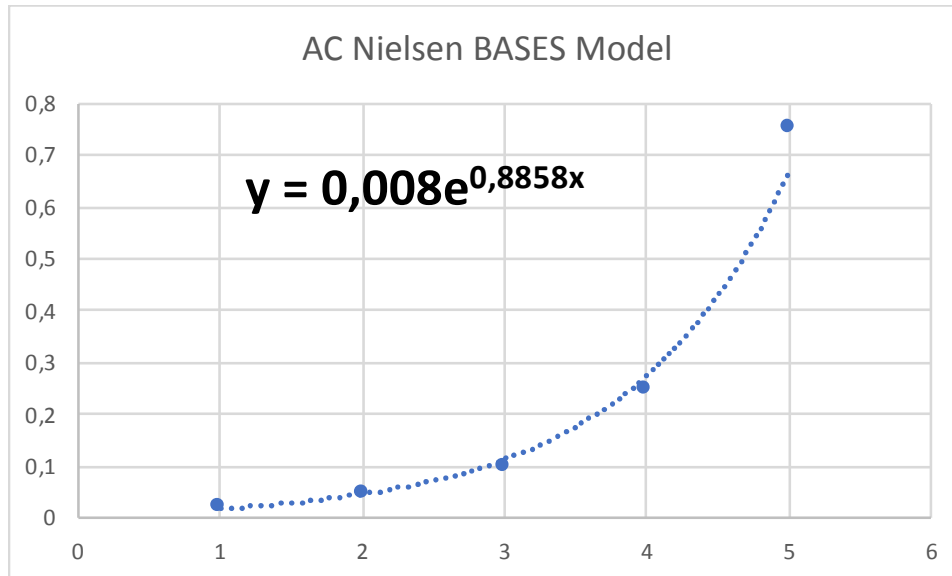


Appendix 5 – BASES Model

Scale	AC Nielsen
5	0,75
4	0,25
3	0,1
2	0,05
1	0,02

Note: 5-point Likert-scale:

1 = extremely unlikely, 5 = extremely likely



Source: (Risen & Risen, 2008)

y-value	x-value (%)
2,8	9%
3,32	15%
3,53	18%
3,7	21%
4,17	32%

Appendix 6 – Questionnaire

Q1 – Are you sometimes staying in **Luxury Hotels**?

- Yes
- No

Q2 – What is the **main purpose** for most of your **luxury hotel** stays?

- Leisure
- Business
- Both
- Other:

Q3 – Which of the following characteristics best describe those **luxury hotels**?

- Chain Hotel** (like Marriott, Hilton, InterContinental, Accor, Mandarin Oriental, etc.)
- Independent Hotel** (not belonging to a chain)
- Other:

Q4 – Have you ever used a **hotel-app** on your own mobile device or the in-room tablet of the hotel during your stay? (e.g. for booking, check-in, information about the hotel, etc.)

- Yes
- No

Q5 – For which of the following services have you used a **hotel-app** before? Click all that apply.

- Book your hotel-stay
- Check-in/check-out
- Ordering room-service
- Schedule spa-appointments
- Book other services on property like sport activities (golf, tennis, personal trainer, etc.)
- Make a restaurant reservation on property
- Communicate with hotel staff/ customer service
- Book external facilities and activities (like Uber, restaurants, hair dresser, etc.)
- Get information about the hotel
- Other:

Q6 – How likely would you use a **hotel-app** for the following services in the future?

	Extremely unlikely	Somewhat unlikely	Neutral	Somewhat likely	Extremely likely
Check-in/check-out process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ordering room-service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Schedule spa-appointments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Book other services and activities on property (like golf, tennis, personal trainer, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Book external facilities and activities (like Uber, Restaurants, Hair dresser, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reserve a table at the hotel restaurant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile-key to access the room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment of the bills made through the app	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Control the room (lighting, temperature, curtains, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access loyalty programs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Connect to in-room entertainment (tv, movies, music)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communicate with hotel staff/ Customer service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access social media	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leave/read reviews about the hotel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 – Now imagine you get a **discount** on the services when booking **via the app**. Please move the sliding bar to indicate the **discount amount in %** that would convince you to use the app for each of the following services (You can also indicate 0, if you would use the app anyways, without getting a discount).

	0	10	20	30	40	50	60	70	80	90	100
Ordering room-service											
Schedule spa-appointments											
Book other services on property											
Book external facilities and activities											
Reserve a table at the hotel-restaurant											
Use the in-room entertainment											

Q8 – Imagine you are staying at a luxury hotel and you would like to **book services** like spa-treatments, room-service, restaurant-reservation, sport-activities, late-check-out, etc. Which of the following ways of booking would you prefer?

- Using a mobile app to get information about the offer and book the service via the app
- Going to the front-desk/concierge service and book the service directly with the staff
- Using the in-room phone to communicate directly with the staff and book the service
- Other:

Q9 – How likely would you allow **push notification** on your mobile device so that the hotel can inform you about activities, personalized recommendations, special offers, etc.?

- | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Extremely unlikely | Somewhat unlikely | Neutral | Somewhat likely | Extremely likely |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Q10 – How often would you allow **push-notifications sent by the hotel** about activities, personalized suggestions, special offers, etc. **per day**? (If you would not allow push-notifications at all, please indicate 0.)

	0	1	2	3	4	5	6	7	8	9	10
Number of push-notifications per day											

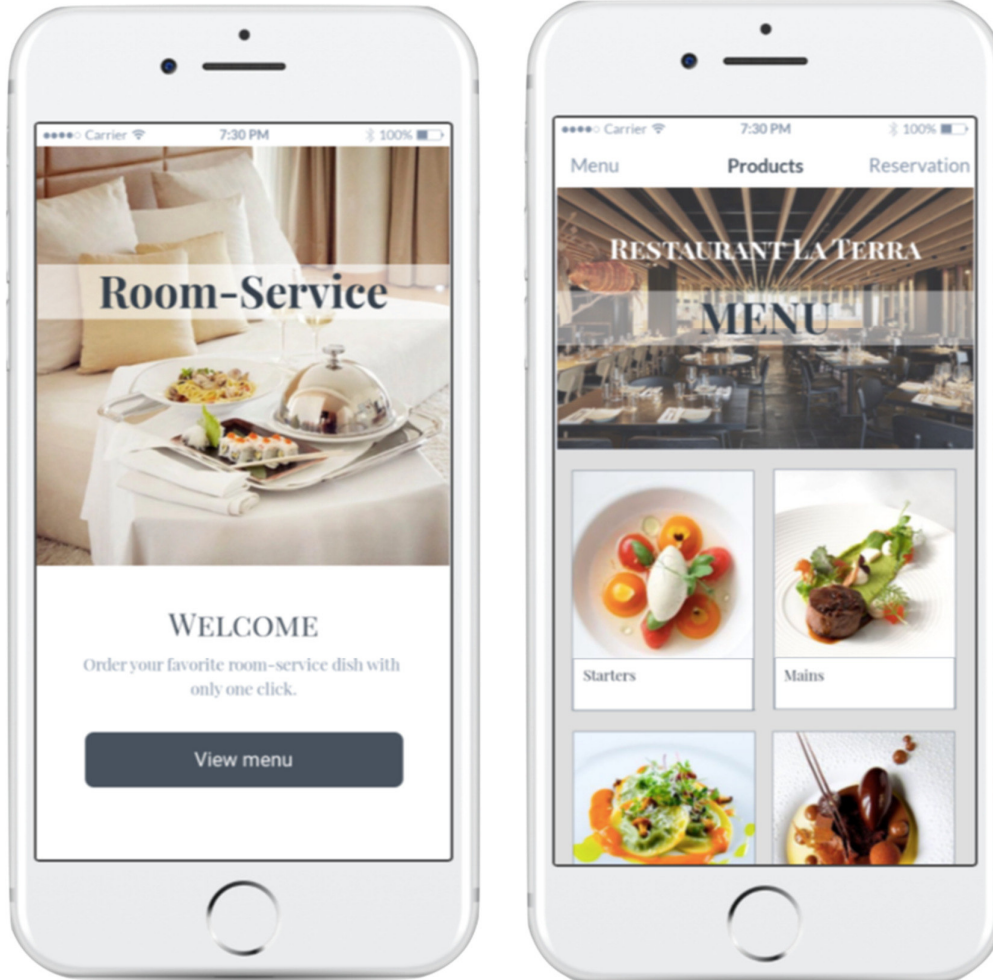
Q11 – For which of the following areas would you be interested to receive **push-notifications sent by the hotel** to your mobile device. Click all that apply.

- Special offers from the hotel restaurant / bar / room-service
- Special offers from spa
- Other activities from the hotel (sports, golf, etc.)
- Local activities outside the hotel
- Local restaurants outside the hotel
- Late-check-out options
- Room-upgrades
- Other:
- None

Q12 – Imagine it's 7:30pm, you just checked in your hotel room and you don't have dinner plans yet. How likely would you choose the following options?

	Extremely unlikely	Somewhat unlikely	Neutral	Somewhat likely	Extremely likely
Ordering room-service (via in-room phone)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Going to the hotel-restaurant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Going to a restaurant outside the hotel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q13 – Now imagine you have downloaded the **hotel-app** and you have the option to **order room-service via the app** (left picture), you can **view the menu of the hotel-restaurant** and **make a reservation at the hotel-restaurant** (right picture) **via the app**.



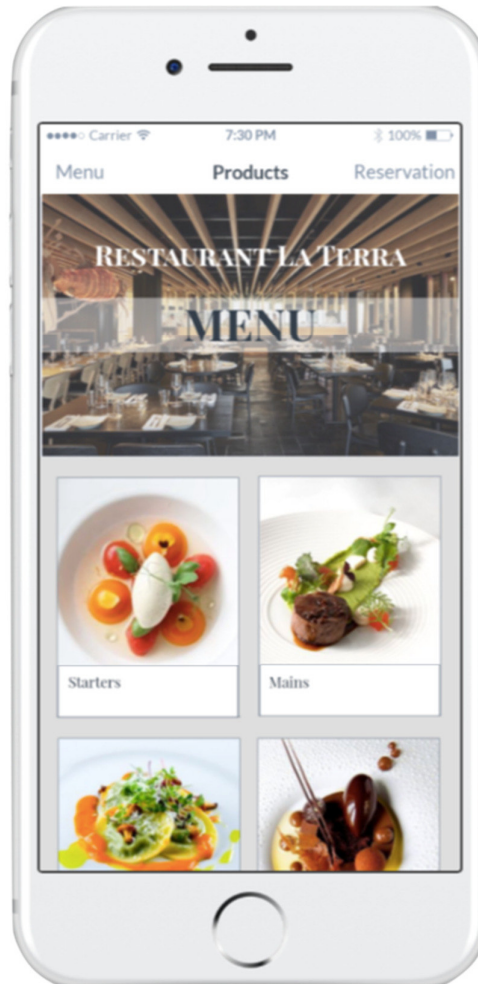
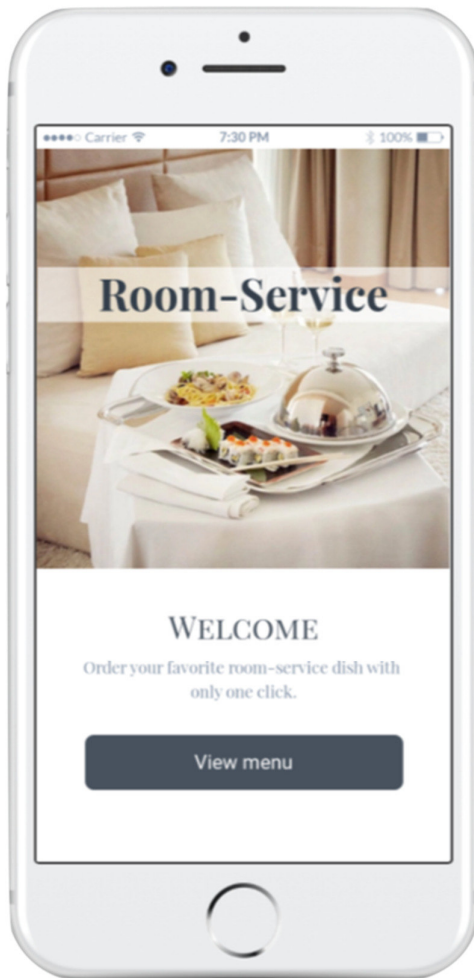
How likely would you choose the following options?

	Extremely unlikely	Somewhat unlikely	Neutral	Somewhat likely	Extremely likely
Ordering room-service via the app	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ordering room-service via the in-room phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Going to the hotel-restaurant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Going to a restaurant
outside the hotel

○ ○ ○ ○ ○

Q14 – Imagine it's 7:30pm, you just checked in your hotel room and you don't have dinner plans yet. You already downloaded **the hotel-app** and you have the possibility to book different services via the app. You have the option **to order room-service** (left picture), you can **view the menu of the hotel-restaurant** and **make a reservation at the hotel-restaurant** (right picture) **via the app**.



How likely would you choose the following options?

	Extremely unlikely	Somewhat unlikely	Neutral	Somewhat likely	Extremely likely
Ordering room-service via the app	○	○	○	○	○

Ordering room-service via
the in-room phone

-
-
-
-
-

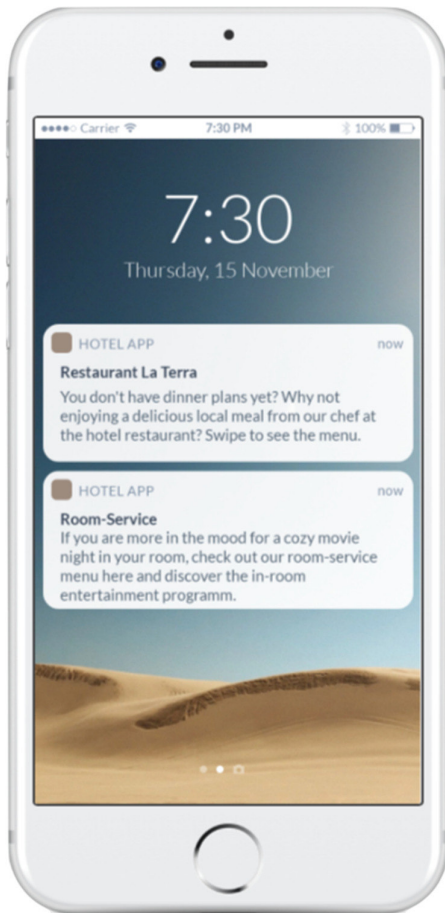
Going to the hotel-
restaurant

-
-
-
-
-

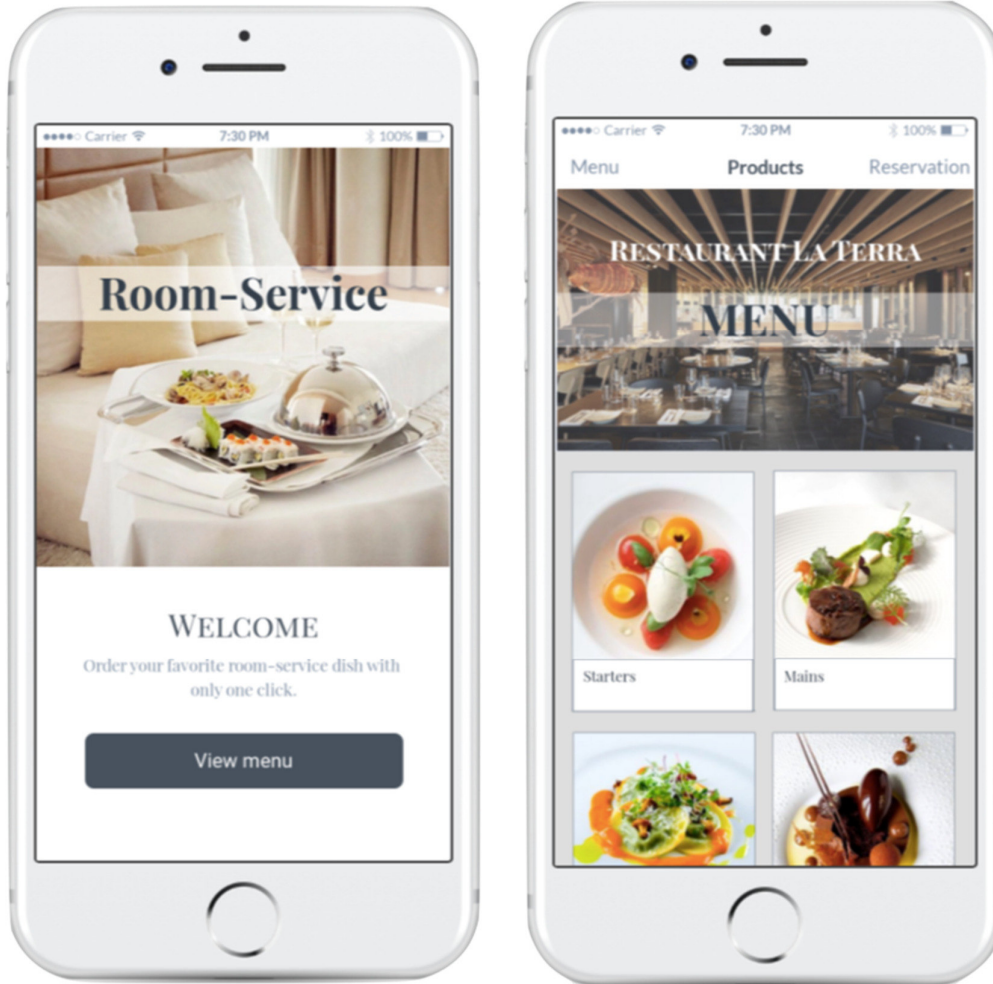
Going to a restaurant
outside the hotel

-
-
-
-
-

Q15 – Imagine it's 7:30pm, you just checked in your hotel room and you don't have dinner plans yet. You have downloaded **the hotel-app** and you have now the possibility to book different services via the app. **Suddenly the following messages sent by the hotel pop up on your mobile device:**



When you open the push-notifications, the following two screens of the **hotel-app** appear. You have the option **to order room-service** (left picture), you can **view the menu of the hotel-restaurant** and **make a reservation at the hotel-restaurant** (right picture) **via the app**.



How likely would you choose the following options?

	Extremely unlikely	Somewhat unlikely	Neutral	Somewhat likely	Extremely likely
Ordering room-service via the app	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ordering room-service via the in-room phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Going to the hotel-restaurant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Going to a restaurant
outside the hotel

-
-
-
-
-

Q16 – What is your gender:

- Male
- Female

Q17 – What is your age?

- 18-24
- 25-34
- 35-50
- > 50

Q18 – What country are you from?

(Trop down menu with all countries)

Q19 – What is your current occupation?

- Student
- Employed
- Unemployed
- Retired
- Other

Appendix 7 – Expert Interview Marriott

Date: 16.11.2018 *Duration:* 45min

Expert: Nicole Sturm (Frankfurt)

Company: Marriott

Position: Director Guest Experience & Mobile Operations, Europe

The Marriott Rewards App is the Marriott's own app which encompasses 6,700 hotels and 29 brands. Once you download the app you can **create an account**, manage your reservations and you have access to exclusive benefits all around the world. Meaning every app-user is a **loyalty member of the loyalty program**. The app includes the following features: **Search and book your stay with the lowest rates**; **Mobile check-in and check-out** (where applicable by country); **Mobile request** for e.g. extra pillow, towel, shampoo, etc.; **Mobile Chat** before, during and after the stay; **Mobile Dining** (applicable in one hotel in Europe (Berlin) and two hotels are on pilot roll out since it is a new feature being tested); **Mobile Key** (where applicable), it is in deployment and not yet live in all hotels; **Mobile Places** (not yet implemented outside of the US and Canada).

With the ability of mobile check-in, the guests are 4.9% more satisfied regarding their arrival and check-in process and the feature is very well accepted. At the moment, the focus is on the mobile key. It will be standard from January 2021 onwards, that the mobile key is activated in all 6.500 hotels, which is a big deployment. **Mobile Places** is a feature that sends push-notifications to the guests according to their location. They started with it in 2016 only in the US and in Canada. In Europe, it is on the road map but not for 2019, they test it already in a pilot program, but they will only focus on it after the installation of the mobile key. The possibility to book spa-treatments and other activities via the app is not yet in the planning stage.

Further, a **reservation tool to reserve a table** directly in the hotel-restaurant is not yet installed. The guest can just make a reservation via the in-app chat. The expert mentions that especially in the areas of F&B and digitalization there is a lot in the planning, but she cannot give any further information about it yet. Marriott has a hotel-lab where selected hotels from different continents go on test phase to try different ideas, like facial-recognition, in-app shuttle service, etc. The aim is to make the app more attractive and like an experience in order to improve and personalize the guest's stay. **Concerning mobile payment is also an important topic, but not yet installed.** Marriott is still in the early stage of the development of the app, there is a lot in planning and many pilots are on the go, but it has to be perfect, once it goes live in the app. If the guests face one negative experience with the app, they will not use it again. Especially in Europe such developments take time and are more complicated than in the US, since Europe has so many different languages, country specifics and regulations. Thus, more proper research needs to be done. As well regarding current trends, the US and Japan are always one step ahead, it takes longer until the people in Europe are adapted to innovations. As the trend is towards mobile, Marriott hotel employees are trained to promote the mobile guest app and to filter out the right guest to use it. Basically, the mobile app should be attractive for all guests, whether business guests or leisure guests. The business guest is addressed a little bit more, because the leisure guest often seeks personal contact. The strict separation becomes somewhat blurred, as the business guest also becomes a leisure guest at the weekends, takes his family to the hotel and redeems his loyalty points. Information about incremental revenue does the expert not have at hand, as this is not yet a priority of the app. In 2018, the focus was on the merger with Starwood and Ritz Carlton in August. There is now one app for all guests and facilities, and everyone enjoys the same service.

Appendix 8 – Expert Interview Hilton I

Date: 25.11.2018 *Duration:* 30min

Expert: Geraldine Calpine

Company: Hilton worldwide

Position: Chief Marketing Officer

The interview was conducted to get additional information about the *Hilton Honors App*, since one interview with an expert from the Hilton company was already held. The interviewee is the Chief Marketing Officer for Hilton worldwide. As the other interviewee already mentioned, the *Hilton Honors App* is more focusing on delivering a great guest experience than on generating incremental revenue, since the experience is at the heart of the customers decision to stay at Hilton or not. The first feature of the app was to fix the pain-point of long queuing before the check-in. Thus, they automated the process, but not entirely since all guests still have the possibility to check-in at the front desk without the app. The next evolution was the **digital key** to use the phone as a key. Another reason, why Hilton's **priority is on the guest experience** first is that the audience for additional revenue for example in form of room-service is smaller than for other features like check-in. Additionally, the installation for **mobile check-in** and **mobile key** is less complex, since the hotel already has one single property management system program with which the app needs to cooperate. The installation of the feature to order room-service is combined with more complexities in the operations, since the delivery of the food need to be immediately. It would be easy to implement in the app and in the front-end, but difficult for the operational part. The expert says it is an important tool for the app, but customers thrive for other features before, such as the **personalized room**, what will be the next big thing to come. Many external and internal players are involved to enable the feature to work, like IT-companies, Netflix, etc.

In terms of features that provide incremental revenue, the expert believes that offers such as **access to the executive lounge** and **room upgrades** available via the app for an additional fee just the day before arrival would boost revenues even more than room-service.

Most important is to make the experience delightful and to make it easy for customers to spend money. The expert mentions Amazon as an example for the ease of purchase, whereby the convenience factor plays a huge role.

Regarding **push-notifications**, the app already sends them out to check-in and when the room is ready. For marketing usage like promotion, it is not used yet. The expert mentions that the handling of push-notifications should be done very careful and conscious. It can seem very intrusive and annoying and could end up in being ignored by the guests. The guests should feel that you are doing something carefully and thoughtfully, only then he/she will feel valued. If not, the customer will be mad and will judge the hotel company for it. On top of that, sending personalized push-notifications is easier for unique or boutique hotels since they have fewer customers. The likelihood of getting it totally wrong is higher at big players, it would be difficult to manage at scale as the customer base is too big to have the ability to send out personalized push-notifications. All in all, push-notifications for marketing purposes should be taken with caution.

Appendix 9 – Expert Interview Hilton II

Date: 11.11.2018 *Duration:* 3/4h

Expert: David Derbyshire (Great Britain)

Company: Hilton

Position: Director, Property Technology Service Delivery Global

The *Hilton Honors App* is Hilton's own Guest App and has functionality for almost 5,500 hotels of Hilton's 14 brands all around the world. It is the top-rated app for hotels in the app store. First every Hilton brand had their own app and all were a little bit different- During the last years they consolidated all in one app. Almost 80 million members now have access to view all hotels in the portfolio, make reservations and cancel and have the ability to contact the hotel to request special amenities in the room prior their stay (no real-time messaging). The day before the arrival, the guest **can check-in and choose a room via the mobile app**. The feature of choosing a room is very special, because it is not available in any of the other big hotel chain apps. In almost 4,000 hotels the **digital key** is installed, which allows to access the room using a mobile device. It depends on local regulations, if the guest can go directly to the room or needs to pass the front-desk before. During or before the stay, the guest can **order amenities like extra pillows, towels, etc. for the room with the app**. It is also possible to **order some basic food and drinks** like crisps, fruits, a coke or a bottle of wine, etc. but **in-room dining or ordering room-service is not possible yet**. Also, the driving service Uber is embedded in the app and they collaborate in some kind of revenue-sharing deal.

Just during the last few weeks, the **new feature of mobile check-out** was implemented.

Another new feature is '**Explore**', a new local travel feature giving the guest the opportunity to explore the neighborhood surrounding of their hotel with suggestions from locals. It provides location-based suggestions for dining, entertainment and more featured by Foursquare. Furthermore, a new coming feature, which is tested at the moment in four hotels, is the '**Connected-room**'. It allows to control lights, air conditioning, usage of TV system to potentially display the guests' own content like Netflix.

In terms of features that boost non-room revenue, right now only the ordering of simple food and drinks can generate incremental revenue. The reason why not more features are implemented yet is that the development involves a lot of time and the priority was more on mobile check-in and the digital key. More features are planned but for now the *Hilton Honors App* focuses more on the **guest loyalty program** and on a good guest experience than on boosting revenue. Once *Hilton Honors* members have a certain status, they can redeem their points for free nights, free breakfast or any premium merchandise. The expert believes based on some other types of apps that the hotel can particularly increase revenue in F&B. By using **push-messages and special offers**, revenues can be maximized by 20-30% if it managed in the right way (not available in the Hilton Honors App yet).

In the future, the different features of the app will be activated depending on the hotel you are staying in. Since a luxury brand has the facilities and money to invest in technology more features in the app will be activated for those hotels. In brands like Hilton Garden Inn, the guest offers are generally simpler resulting in less technology and less features in the app. In some of the Hilton hotels in-room tablets were tried out to use them as a control-panel, to call the concierge and room service, but it involves high installation costs and having a mobile app is more future-oriented. Although it will be a long way to get 100% of the guest to use the app (right now 20-30% are interested), but it is a way to attract younger people and to build a lifetime relationship with them.

Appendix 10 – Expert Interview SuitePad

Date: 06.11.2018 *Duration:* 1h

Expert: Daniel Rotner

Company: SuitePad

Position: Senior Sales Manager

SuitePad is a digital guest directory and serves as a communication and sales channel for hotel rooms. It combines the classic guest registry, travel guide, in-room entertainment, room service menu and hotel shop in one tablet. Until now the app cannot be used on the mobile device of the guest, but only on the tablet of the hotel.

First it serves as a digital guest portfolio including all information about the hotel, spa, room-service, etc. Having only the tablet in the room cannot boost revenue, the real trigger are push-notifications. These can be automated messages such as: cocktail of the week, table reservation or monthly offers coupled with an appealing image. The messages can be extended to any areas according to individuals' preferences. Also, manually generated messages depending on availability of the services can be send. (For example, if there is one last available spot at the spa that day). It is also a beneficial tool to sell breakfast to guests who booked the room without breakfast. These messages are sent traditionally in the evening, before the guest goes to bed or in the early morning, so the guest sees it after waking up. Other push-notifications that boost revenue are options for late-check-out in different price segments, depending on the check-out time (e.g. 2h ~ 20€). Products the guests consumed during their stay can also be promoted through push-notifications (e.g. 'You liked the wine from yesterday's dinner? Here you have the option to shop it').

Another service to boost revenue is the romantic turn-down service. The guests can book the service via the tablet and for 30-35€ the room will appear in a romantic décor. Cooperation with third-party-services in form of advertising partnerships is as well a feature to maximize revenue with SuitePad. The guest receives information about nearby restaurants, car rentals, nearby boutiques, hair dressers, surf-school, etc. The costs are discussed individually between the hotel and the service provider.

Next to an increase in revenue, it serves also to save costs. For example, printing costs for any hotel brochures and information flyers. The biggest refinancing feature is the green feature: With push-messages the guests are asked if they want to skip room-service to go green. Thereby costs can be saved, dependent on the hotel and on the duration of the guests stay. With an occupancy rate of 70-80% and an average stay of 2 nights, one can count on one saving in cleaning per month per room.

The features which are mainly used by the guests are additional bookings of breakfast and reservations at the restaurant. Whereas bookings of spa-treatments are less popular, because hotels are pushing too less in this area.

SuitePad cannot be used from the mobile device of the guest yet, only on the hotels' tablet or on the mobile web-page. The company concentrated on the tablet, since it generates a wow-effect in the room and one cannot assume that everyone has a smartphone. According to the standards of DEHOGA (German hotel and restaurant association) a hotel room needs to encompass a minimum number of physical objects and a phone. With SuitePad the phone can be replaced, with a mobile app for the customers device a phone cannot be replaced. There is definitely the approach for having the app on the guests' smartphone, but it won't replace the tablet totally for now. On top of that, one would face the challenge of getting the guest to download the app, having the tablet in the room the app is already

installed. The prices of the services offered via SuitePad can be determined by the hotel itself, but SuitePad recommends offering e.g. breakfast with a 10% discount.

Average values of how much revenue each feature brings is difficult to measure, because it includes many factors. On average total annual in-room dining revenues increase by 16.4% and restaurant reservation increase by 8%. What else can be measured is the effect of push-notifications: It depends on the number of messages the hotel sends to the guests. In terms of the increase of reservations for the hotel restaurant, it results in 0,125 additional reservations per month and room. Regarding spa-bookings, it depends on the type of the hotel if it's a city-hotel or a leisure and wellness-hotel, but on average one can see an increase in revenue of 3,50€ per month and room (in case of one push message per room daily). At a wellness hotel, spa sales revenues increased by up to 50% through customized push-messages and a sales promoting layout.

The average usage rate is at 80% probability per overnight stay. Influencing factors are the type of the guest: a business traveller has a 50% usage rate with approximately one session daily and each session lasts about 3 minutes. Whereas a leisure traveller has a 200% usage rate, has on average 2 sessions daily with 6-7 minutes; resulting in an average session duration of 5m 24sec, no matter what age the guest has.

Appendix 11 – Expert Interview Intelity

Date: 19.11.2018 *Duration:* 1h

Expert: Greg Vigil

Company: Intelity

Position: Sales Director

Each property has different requirements, but the ICE App is typically deployed with the below features.

- a. Mobile Key – Use of a smartphone instead of a traditional key or key card.
- b. Digital Compendium – Property information that can be updated quickly
- c. Mobile Check-In/Check-Out
- d. Mobile Ordering for In-Room Dining
- e. Mobile shopping for amenities and boutique retail items.
- f. Messaging and interactive guest requests – This allows guests to communicate with hotel staff without picking up the phone.
- g. Digital concierge – This allows guests to manage itineraries electronically.
- h. Loyalty Program: Including them from existing programs.

Push notifications and direct messages can be employed by properties for promotional purposes at any time, but these are typically targeted towards groups or specific types of guests as opposed to generic blasts.

Food orders and retail shopping are the features that boost revenue the most. Some properties have reported non-room revenue increases of up to 35%.

Spa, golf, and restaurant reservations can be made through the app, but it is difficult to quantify the bookings that would have been made anyway regardless of the app.

All features work well. Some interfaces offer a more robust experience than others.

Several customers have requested that we integrate a payment into the app. Currently all purchases are posted to the guest folio through the PMS (Property management system) interface. We are also strengthening integrations with all 3rd party systems. Lastly, we are enhancing our voice functionality with the Amazon Echo.

Each property has the ability to set their own pricing and manage their own promotions. While I have not seen discounted pricing for electronic orders, this strategy could be implemented and adjusted as needed. A more common strategy is to waive the service fee or to provide a free dessert to encourage usage.

Intelity does not have a proprietary booking engine. We have the ability to integrate existing property booking engines into our app. Direct bookings eliminate commissions paid to 3rd party OTAs and can increase revenues by as much 25%. A property can create a rate code that is only available through the app to incentivize booking on the app.

Each property reports different revenue increases as adoption varies depending on the type of property. We typically see an increase in room service revenue between 15% and 35%. This can be attributed to an increase in the number of orders and higher check averages. We have seen total property revenues increase up to 5% as guests become more aware of all property offerings. There are also many intangible benefits that are difficult to quantify such as higher guest satisfaction; which leads to higher levels of guest loyalty and referrals.

Increases in the number of orders can be attributed to convenience and capitalizing on guests that would not normally order room service over the phone. Increases in check averages are due to the “human factor”. Pictures of food are much more appealing than names of dishes or descriptions. More so, people more likely to splurge on additional items if they do not feel that they are being judged by another person; even if that other person is simply taking their order on a phone.

Appendix 12 – Expert Interview Conichi

Date: 08.11.2018 *Duration:* 1/2h

Expert: Andrea Graf

Company: Conichi

Position: Global Sales

Conichi is a third-party travel app, which can be used at so-called “Smarthotels”. It allows guests to check in and out of their hotel online, pay the bill in-app via virtual credit card and use their smartphones as a room key. Since the company is specialized for business travel, it mostly cooperates with hotels focusing on business travel. Due to the high competition of travel apps the company decided for the niche of business travels. The fundamental function of the app is being the bridge between the hotel and the company of the traveler.

Using *conichi* and the mobile payment feature brings the advantage of the digital cost coverage to the company, resulting in reducing the cost for correcting invoices, which is a huge cost factor in big companies. On top of that, the guest can see information about the hotel and specify preferences before his stay in the app. In terms of the mobile key, it is not one of the main features of *conichi*, because it is a huge cost factor for hotels, including technical requirements like special door locks, maintenance costs and a monthly fee. Thus, it depends on the hotel if this feature is available. Additional services such as dinner, breakfast and room-upgrade can be booked after the check-in. Compared to other apps this feature is very basic and they focus is more on the check-in/out and on the payment-process. More features might be implemented in the future, but are not planned yet, because according to the expert the hotel industry does not develop as quickly as other industries and *conichi* is still a start-up, so the company needs to stay realistic. For example, Artificial intelligence and chatbots are combined with a lot of costs and it is a matter of what benefits it brings to the target group to deliver the best service.

Another point to mention is that *conichi* is about to concentrate more on web than on the further development of the app, since especially in Germany automation and service without human-interaction is not desired yet. They still value the human interaction a lot. Not only the traveler but also the market

is not yet ready for complete automation. Also, people are reluctant to download for every single service a new app, so check-in via web is for most travelers more convenient. They receive 1-2 days prior their journey an Email to check-in. They need to indicate the details of their passport and credit cards to ensure a seamless travel experience.

Conichi is currently mostly represented in DACH (Germany, Austria, Switzerland), but also in Italy, Ireland and the US. In addition, the start-up carries out further market research to see in which other European markets the solution could have potential and benefits. Although the US is pioneer regarding such travel apps, *conichi* has the advantage of having the connection to huge companies which have special agreements with hotels. Concerning figures, the app has more than 40,000 downloads in the DACH-region and the customer is able to connect his profile to the HSR-APP, which can be seen as an additional feature. More figures about the usage and profitability of the app are not available at this time, since it is dependent on several factors: size of the hotel, communication and marketing, expertise of the staff, etc.

What should be added at the end is that *conichi* initially had the objective of using the beacon-technology to address the guest by name. But the company soon distanced itself from it and focused on the niche of business travels in terms of a fully digital arrival and departure process, for a modern, secure and seamless stay.