Customer’s adoption intention of Hotel X’s Mobile Reservation Application

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Diffusion process is how an innovation is adopted and communicated within a social society. Hotel Mobile Reservation Application is a necessary step for a brand to establish connection with customers, develop brand attachment and brand identity. Hotel X newly introduced its own branded mobile application targeted exclusively to their Loyalty Program’s members. As an innovation, researchers chose Hotel X as the targeted subject for this research.

The aim of the research is to study Hotel X’s customers attitude toward adopting mobile app and identify attributes that influent this attitude. Since the loyalty program targets directly to Finnish business travelers, the research is conducted to Finnish customers solely. In order to measure customers’ attitude, the research uses quantitative research and Likert-scale questions regarding 6 characteristics of an innovation and attitude. In addition, there are multiple choice questions to distinguish demographics and specify mobile app usage behavior.

Among 6 characteristics, Compatibility, Perceived Usefulness, Risk, Perceived Ease of Use and Observability are found to have significant relationship with customers’ attitude toward using mobile app. Meanwhile Image is the only attribute with no significant relationship.

The research also analyze customer’s decision based on 3 categories: adopter, postponer and rejecter. Demographics also able to justify the difference in decision regarding mobile app’s usage. A few suggestions are also made on communication channels of the mobile apps, pull and push effect and improving the perceived value of the mobile apps.

Keywords
Innovation Diffusion Theory | Technology Acceptance Model | Rate of Adoption | Hotel Mobile Reservation Application
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1 Introduction

In the raising era of Internet of Thing, it is inevitable for accommodation companies to adopt technology solutions. This is an opportunity for hotels to find and maximize advantage of technology, solve recurring problems, create better experience, provide cost/information advantage and distinct itself from the rest of marketplace (Nyheim, Connolly, Holmer & Durham 2012, 24.) Conversely, technology in hospitality is a highly controversial subject since hospitality has always been about personalization and human interaction. Fortunately, with the development of internets, customer behavior in looking for hotel information, making reservation and contacting hotels are changing. It is now vital to hotels’ experience success to provide high touch using high technology (Nyheim & al. 2012, 27.) In addition, thanks to the widespread of Automated Teller Machines (ATMs) in banking industry, Self-service checkout in retailing industry and Self Check-in kiosks in airline industry, customers are more frequent with technology in service industry and have more willing toward trying self-service technology (Kasavana 2013, 111.) This shifting era creates opportunity and also a push for hotels to consider implementing technology-based services into the service streamline.

One of the significant technology breakthroughs is the evolution of mobile phone and later on is smartphone. Smartphone emergence has revolutionized varieties of industry and hospitality industry is not an exception. Smartphone offers substantial advantage for hotels to reach its customers regardless of location, in real time and at all time (Scott 2014, 11.) Research found 25% customers search for accommodation information using smartphone and 17% of them book accommodation using this device (Statista 2019). Therefore, optimizing this M-commerce platform and acknowledging the opportunity of branded mobile application are necessary to cater this increasingly important touch point.

Diffusion research explains innovations’ rate of adoption based on its characteristics and related elements. According to Eric Seufert (2014, 216.), little is known about customers behavior prior to service usage on the mobile platform compare to when they are on the web. Even less is the research about customers attitude toward using service intangible products such as hotel mobile reservation application (HMRA) (Laukkonen 2016, 2432.) Furthermore, diffusion of an innovation has culture characteristic. Each culture adopts an innovation at a different rate and for different reasons. Thus, having research on Finnish customer’s adoption intention toward HMRA is significantly important for the success of Mobile Reservation Application’s diffusion.
The research takes up after 2 most recognized diffusion theories namely Innovation Diffusion Theory by Everett Rogers and Technology Acceptance Model by Fred Davis as research framework. These models are typical for innovation characteristic theory, which explain that customer’s decision to adopt an innovation is based on evaluation of benefits they gain from the innovation (Yetton, Sharma & Southon 1999, 54.) Within technology field in general and self-service technology in particular, the integration of these models bring insights regarding customer decision to adopt, reject or postpone using a particular innovation.

The research chose Hotel X’s newly launched mobile application as the case to conduct research on. The hotel interests in the explanation of its mobile application’s rate of adoption. With that aim, diffusion research is highly suitable due to its high construct on study of customer’s adoption intention based on perception of innovation’s characteristics (in order to keep the consistency with studies within diffusion research field, from now on also refer to as innovation attributes).

1.1 Research problems

Using the integration of 2 diffusion theories mentioned above, this research’s purpose is to find answer for the research problem: What attributes influence customers’ attitude toward using Hotel X’s mobile reservation application?

Beside the main research question, there are 3 sub-questions that the research aims to answer to support for the research problem include:

1. How customers evaluate Compatibility, Perceived Usefulness, Image, Perceived Risk, Perceived Ease of Use and Observability of the mobile application?
2. How customers evaluate their attitude toward using the mobile app?
3. Are demographics influence the adoption decision?

According to Moore & Benbasat (1991, 194), primary attributes are intrinsic to each innovation and customers’ perception on these primary attributes predicts their behavior. Therefore, the focus of the research is placed on customer’s perception of using the mobile app and not perception of the innovation itself. Upon answering the research questions, it is proposed to bring insights of hotel mobile application’s customer profiles, their expectation when using the app as well as perspective toward innovation’s attributes. For the diffusion research’s contribution, the thesis is targeted to give knowledge of Finnish market perspective toward adopting hotel mobile reservation application.
1.2 Research objective & outline

The research aims to review the literature concerning 2 diffusion theories, mobile app’s adoption and mobile reservation application. Chapter 2 defines mobile commerce, mobile application and advancement of mobile self-service technology in Finland. Chapter 3 examines decision-making process and consumer behavior in making product selection. Chapter 4 reviews literature regarding Innovation Diffusion Theory, Technology Acceptance Model and the basis of how innovation’s attributes relate to attitude and behavior intention. Chapter 5 examines in details attributes from 2 theoretical frameworks that lay the basis of this research which are Innovation Diffusion Theory by Everett Rogers and Technology Acceptance Model by Davis. Through this chapter, 6 most significant attributes to self-service mobile application and their measurements are selected to be included in theoretical framework. Chapter 6 gives explanation of how the research will be conducted, survey construct and measurement method to be used to analyze the responses. Chapter 7 review the result of the survey. Chapter 8 summarize the discussion, its implications and discuss limitations of the research.
2 Mobile Reservation Application

2.1 Mobile commerce & branded mobile application

E-commerce is defined as “the buying and selling of products or services over electronic systems” (Schniederjans, Cao & Triche 2014, 276.) Mobile phone is one of those electronic systems. Therefore, mobile commerce (or m-commerce) is categorized as the subset of e-commerce (Schniederjans & al. 2014, 276.) However, it is also need to be acknowledged that since then, electronic systems have been introduced to more than just mobile but also including tablets and laptop. It is misleading to study smartphone-based service and laptop-based service’s rate of adoption together under m-commerce. The reason is because while these 2 platforms have similar characteristics of m-commerce which are: mobility and broad reach (Schniederjans & al. 2014, 276.), laptop platform have had longer history than the smartphone platform, making laptop platform has different longer time to be adopted than smartphone. According to the Innovation Diffusion Theory (introduce in next chapter) of Rogers, time is one of the factors that affect innovation’s rate of adoption. In addition, throughout its development period, laptop has gained significant popularity over desktop, replacing customers’ definition of computer device to laptop instead of the traditional desktop. Therefore, in this research, the main focus will be put solely on smartphone platform of m-commerce.

Native apps are applications that are made to be used solely on mobile device’s operating system. Native apps are different from mobile-optimized websites, which can be used using any device that can get accessed to the web (Laudon & Traver 2019, 154.) Compare to desktop or mobile websites, mobile apps have unique features, including the extremely high portability and personal relationship to owner, as well as built-in GPS allow marketers to locate users in real time (Laudon & Traver 2019, 506.) In this research, the terms “mobile apps” and “mobile commerce” refer to the native apps running on smartphone platform.

Due to the ability to reach customers in a much more personalized level, marketers are paying more attention into introducing branded mobile apps (Morosan & DeFranco 2015b, 1969.) Bellman defined these apps as “downloadable software which prominently displays a brand identity, often via name of the app and appearance of brand logo throughout user’s experience” (Bellman, Potter, Treleaven-Hassard, Robinson, Varan 2011, 191.) This opportunity is becoming more significant than ever as customers are getting more frequent with self-service technology (Newman, Wachter & White 2018, 211.)
Branded app creates a more direct connection between brand and its customers, as in Rohm’s words: “brand in the hand”. Tasks such as searching, sharing information, payment, navigating etc. can now be all executed using a branded app. However, other than to provide customers with more services, marketers are looking at mobile apps as a new way to interact and draw customers’ attention to their advertisement campaigns (Wang, Kim, Malt-house 2016, 3.) Customers make choices only after knowing about the products or services. Therefore, thanks to this characteristic of mobile phone, marketers can now notify their customers regarding their new launch almost instantaneously, enhance customers’ exposure to the brand and its services. In addition, since mobile phone is more personal than desktop, it provides marketers with more options to generate context-dependent marketing message, as well as more ways for customers to interact with the brand using their own mobile phone (Wang & al. 2016, 4.)

2.1.1 Opportunities

Within mobile platform, native apps have bigger advantage than mobile optimized websites. Mobile app is simpler, more concise in features compare to the whole full-scale website, even if it is already optimized for mobile usage. This is the advantage of mobile app but also hinders a challenge for app developers: the more functions are introduced to the screen, the more difficult the app will be to use (Nielsen & Budiu 2013, 34.)

As indicated in its name, a branded mobile apps are found to be helpful in increasing the brand attachment and brand identification. By getting customers to be emotionally attached to the brand, they express a willingness to invest in the brand and let go off their immediate interest. This strong bond connection is desirable for marketers since it promotes customer’s habitual decision and brand loyalty (Kuo-Fang, Chen & Kuang-Wei 2014, 1134.) Moreover, brand attachment also facilitates customers’ willingness to interact with the brand, provide brand with additional touchpoint for communication (Kuo-Fang & al. 2014, 1134.) Stocchi, Michaelidou & Micevski (2019, 29.) called this a new manner of marketing that outweigh, what a web can ever offer. However, Bellman argues that even though the brand attachment does prove to exist, branded app is not found to be effective in increasing customer’s intention to purchase. Under the term of marketing mobile apps have a successful pull effect on customers, offering up to date information but not in the form of push messages (Bellman & al. 2011, 198.)
2.1.2 Challenges

Great benefits also come with great challenges. Branded apps which fail to live up to customers’ satisfaction or needs have to deal with uninstalling and even damage to the brand image directly (Wang & al. 2016, 18.) In addition, security and privacy concerns can also impose setbacks on the previously mentioned benefits from branded mobile app. Customers can easily get overwhelmed with marketing messages that they may choose to opt out from receiving notification or sending data. This behavior causes harm to marketers’ ability to understand their customers and to an important communication channel. Therefore, it is important then to create value for the data customers send to brands so that both can benefit from the data collected (Wang & al. 2016, 22.)

In addition, contrary to its advantages, mobile apps are not gaining popularity equally among all sections. Attempts to understand customers’ acceptance toward mobile commerce have not been consistent (Hubert, Blut, Brock, Backhaus & Eberhardt 2017, 176.)

2.2 Mobile application acceptance in Finland

The rate of adoption is not consistent across cultures and countries (Mooij 2011, 355.) It is essential to examine the perspective of specific country. Because of those significant characteristics of mobile app, more and more hotel chains have their own version of application for travel-planning purpose (Wang, Xiang, Law & Ki 2016, 292.) Not only hotels but also OTAs and other distribution channels are releasing their own version of mobile application such as Travelocity, Booking.com, Expedia, Hotwire… This makes having presence on this fast-growing platform is a necessity.

Hotel reservation is one of 4 major sectors of travel market (Laudon & Traver 2019, 786.) Mobile apps are used for trip planning have opened a new chapter for travel industry with online travel agencies and major hotel chains, mobile platform is emerging as a popular mean for customers to plan their trip (Laudon & Traver 2019. 788.) Unfortunately, the rate of adoption is not consistent across all cultures and countries (Mooij 2011, 355.) It is essential to examine the perspective of specific country.

Research of millennials (age 18-37) in Finland found 30% people within this age group are using mobile phone to research for hotels, and 17% will eventually book hotel using mobile (Statista 2019) This is result is much lower than the percentage of bookers using computer with relatively percentages are 63% and 75%. Regardless, smartphone is still the second most popular method to search and book accommodation among millennials. As Scott pointed out, hotel can communicate with its customers through computer when they are sit
down at the desk, but through smartphone, the communication is now anytime, anywhere (Scott 2014, 11.)

With the growth of mobile commerce, comes the development of research on customer’s adoption attitude toward this platform, in order to exploit the full potential of this marketplace: to communicate with customers where they are locating and deliver marketing messages at right place, right time (Siau, Lim & Shen 2001, 5.) several researches point out that customers’ do not have equal receptive attitude toward all types of SSTs. With the strong competition, it is crucial for managers to identify which factors can be utilized to encourage customers’ mobile apps usage (Stocchi & al. 2019, 29.)
3 Consumer behavior

Consumer behavior is: “The study of the processes involved when individuals or groups select, purchase, use or dispose of products, services, ideas or experiences to satisfy needs, including before, during and after purchase. To understand this process is growingly the essential part of product’s marketing (Solomon & al. 2016, 6.)

With digital technologies, customers have a compelling tool to compare different alternatives of a service at their own comfort, anytime, anywhere (Schiffman, Kaunuk & Hansen 2012, 11.) With the increasing buying power and information, marketers need to work to match their service (or product) to customers’ need effectively and actively (Schiffman & al 2012, 11.)

3.1 Customer’s decision-making process

Early customer behavior believes that customers make decision by comparing and assessing the products’ offers, to choose the one with the most benefits. However, it is suggested that customers’ decision is based on 3 categories: Cognitive, Habitual and Affective (Solomon & al. 2016, 326.) Cognitive is influenced by deliberate, rational perspective, while habitual influence by unconscious, habit-based behavior. Lastly, affective decision-making is made using emotional, instantaneous reasoning. The mixture ratio of these 3 elements varies depend on the situation and importance of the decision (Solomon & al. 2016, 326-327.) Therefore, It is of great interest for marketers to know customers’ process in information evaluation, attitude formation about options and criteria to choose one option over the others (Solomon & al. 2016, 330.)

Cognitive decision-making process is the base of many decision studies, includes 5 steps, forming a loop of constant evaluation Solomon & al. 2016, 331.)

Need recognition

Need recognition happens when there is a difference between customer’s current state and their ideal (or desired) state. In the case that actual situation is moving downward, customer has a need recognition to increase this state to the ideal state. Meanwhile, if the actual state remains the same, but the ideal state is increasing, customer will have opportunity recognition. Marketing efforts can be implemented in order to create this demand. There are 2 kinds of demand that marketing effort can create. Primary demand is the overall demand of using a service regardless of the brand, and secondary demand is the demand of using of a specific brand to solve the problem (Solomon & al. 2016, 332.)
Information search
Can also refers to as pre-purchase search. Information search is the process that customers collect adequate needed data to make the most reasonable decision. There are 2 types of information that customers search for is internal and external search. Internal search comes from customer’s own memory while external search is looking for clue from outsider sources such as advertisements, friends, observation… The amount of researches are not similar among customers and cannot be infer from their demographics or expertise in concerned field (Solomon & al. 2016, 332-334.)

For decisions that need considerable amount of research, perceived risk may come along. This is a belief that customers have concerning possibilities they will receive negative results from decision to use (or not use) a service (Solomon & al 2016, 337.) There are 5 kinds of risk that customers can encounter, namely: Monetary risk (money & property), functional risk (function performance), physical risk (physical health & vitality), social risk (self-esteem, self-confidence) and psychological risk (affiliations & status). Risk present if the product is costly, complex or appear to be a new concept for customers (Solomon & al. 2016, 337.)

Evaluation of alternatives
Customers put much effort into making choice between available alternatives (Solomon & al 2016, 338.) Evoked set is the set of alternatives that customers know about. From there, it forms a set of options that they actually consider using, called consideration set. Marketers strive to get their service remain within evoked set as customers will unlikely to not put the service they already considered and rejected back to evoked set. This emphasizes the importance for service to perform at its best right when it is first introduced (Solomon & al. 2016, 342.)

During the evaluation of alternatives, customers frequently use determinant attributes to separate a choice among the others. Marketer can influence the outstanding of their service (or product) by educating customers of determinant attributes’ criteria inherited in the service (Solomon & al. 2016, 346.)

Product choice
After collecting alternatives and assess different attributes, customers need to come to product selection decision. The decision can be simple, fast or intricated with a lot of cognitive reasonings (Solomon & al. 2016, 349.) Some information that can affect customers'
decision are from prior experience, information at the time of decision and brand’s assumption opinion results from advertising effort (Solomon & al. 2016, 350.)

Post-purchase evaluation
Customers’ evaluation of the service after usage is the last element of decision-making process but not the end of the process. From here, customers form a loop of evaluation by determining whether the service meet or fail to meet their expectation. The positive or negative experience after each usage plays critical part in influencing customers’ future decision. It is widely known that selling a dissatisfied service or product is way more difficult than selling the service/product for the first time. This critical role of customer’s satisfaction is a challenge for marketer to constantly figure out: What exactly are customers’ expectation? (Solomon & al. 2016, 352.)

3.2 Habitual & affective decision-making

As mentioned earlier, customer’s decision-making is influenced by more than just cognitive reasoning. Above mentioned process is drawn within customer’s cognitive thinking, while habitual decision-making also plays an important role in each choice that customers make. Habitual thinking is when customers make choices without being conscious of choosing, based heavily on routine. On the other spectrum is affective decision-making. This is the emotion that drive customer’s toward making choice in response to emotion triggers (Solomon & al. 2016, 364.) Combining cognitive, habitual & affective decision-making, Schiffman (2015, 47.) depicts a decision-making process consists of 3 stages: input, process and output.

In input stage, customers receive information of the service and the marketing information, combine with the influence from surrounding society. Communication channels are incorporated in order to transmit marketing information and society influence to the customers. The core of the map is the process stage, involve almost all the concept decision-making as mentioned earlier: need recognition, pre-purchase search and evaluation of alternative. These reasoning are influenced by affective factors such as motivation, perception, personality and attitude, to affect customer’s experience of the learning process. At the last stage, output, customers make purchase decision and give evaluation of the purchase. Evaluation becomes part of customer’s experience and influence future purchase (Schiffman 2015, 47-48.) (Figure 1)
Figure 1: Customer Decision-Making Model (Schiffman & al. 2015, 48.)
3.3 Customer's attitude

As demonstrated in Figure 1, during process stage, psychological influences play essential impact in customer’s cognitive decision-making. Attitude is found to be resulted from communication channels and marketing effort during previous (input) stage. Customers depend on their formed attitude to make decision whether to purchase or not purchase (Schiffman & al. 2015, 172.) Therefore, understanding and influencing customer's attitude toward targeting service is fundamental to promote customers' acceptance and maintaining purchase loyalty.

Attitude is not formed in the same way and therefore customer's commitment to their attitude is also not consistent. There are 3 levels of commitment that customers possess: compliance, identification and internalization. Compliance commitment is formed when the product is rewarding or help customers to avoid punishment. Meanwhile, identification is to represent attitude forms from society’s expectation. Last but not least, the highest level of attitude, internalization, formed when that attitude match with customer’s value set. Since this attitude is so important to customers' belief, it is the most difficult to change (Solomon 2013, 277.) Since attitude is complex and composed of various attributes, different models are introduced to identify set of attributes that are used by customers to form an attitude toward an object and the importance order of those attributes (Solomon 2013, 282.)

Multi-attribute models are one of them. These models are formed based on 3 elements: attribute, belief and importance. For marketers of products, the result of these models provides insights to improve customers’ image toward a brand. According to Solomon (2013, 284) this can be done by educate customers about the product's most remarkable attribute and strengthen this attribute linkage with customers' problem. In addition, the most standout attribute found from the models can be emphasized to become a differentiate factor that separates the brand's product from its competitors or even decrease competing products' rating.

Consider the importance of identifying influential attributes in customer's attitude toward a product, the following chapter is going to discuss the role of attitude in new product adoption as well as 2 of the most recognizable theories in innovation's adoption based on attitude and attributes.
4 Innovation diffusion theories

Innovation, like its name, bare within itself new and inventive ideas. Contrary to the common belief, it is rarely the case that an innovation can be adopted without any effort (Rogers 1995, 8.) Diffusion researches dedicate to measure customer’s attitude, predict the reaction of customers to the innovation, evaluate customers’ perception in order to give out informative correctional actions.

4.1 Innovation diffusion history

The definition of innovation roots back to 1923 with the infamous book of Joseph A. Schumpeter, in which he defines innovation as the situation when a new form of functions is added to current factors (Schumpeter 1923, 87.) Since then, the innovations’ emergence coming from varieties of industry and society request for the extensive research on innovation implementation process, maturity of adopters in each phase and elements contributes to implementation’s success.

The reason behind consumer’s decision to adopt or reject an innovation as well as how perceived attributes contribute to the implementation success, are among the most challenging issues (Swanson 2012, 76.) In order to find the answer to these issues, researchers use cognitive approach to create relationship between consumers’ attitude and beliefs to their intention of behavior. Behavior and attitude theories are used by many researchers as foundation (Goodhue & Thompson 1995, 214.) According to behavior psychology, attitudes are what consumer feel about a specific concept, of which action is an important class (East, Singh, Wright, Vanhuele & Wright 2017, 135.) This attitude is formed by linking an object to certain characteristics. Similarly, attitude toward an action is often concerned with the evaluation of outcomes, whether it is positive or negative, incurred from doing the action (East & al. 2017, 136; Ajzen 1991, 191.) Another factor that impose influence on customer’s intention is subjective norm, driven by consumer’s evaluation on their important individual’s likelihood to approve their action. According to Theory of Reasoned Action (TRA), these elements together are the forces to form customer’s behavior intention and ultimately, actual behavior (Davis, Bagozzi & Warshaw 1989, 984.) In 1991, Ajzen added another element to this theory, namely perceived control. Driven by control belief, perceived control evaluates consumer’s presence or lack thereof from necessary resources and opportunities to perform the desired action (Ajzen 1991, 196.) With the third element, Ajzen expanded TRA to Theory of Planned Behavior (TPB) (Figure 2)
Research conducted by Davis and Bagozzi also provided support for these determinants role in predicting consumer's adoption intention, especially in information technology field (Davis & al. 1989, 997.) The using of this theory can potentially provide management level diagnosis for innovation’s adoptability, as well as correspondent actions to improve rate of adoption (Davis & al. 1989, 999.)

Recent use of innovation diffusion theories are developed base on behavior and attitude theory (East & al. 2017, 154.) One of the most important concepts that behavior theory offered is perceived attitude. Perceived attitude is referred frequently in innovation diffusion theories as the customer’s attitude toward the action of doing preferable behavior (Tornatzky & Klein 1982, 29.) Compared to the attitude toward brand or concept, the attitude toward action is considered to be more efficient in predicting the behavior intention (Moore & Benbasat 1991, 194.) Hence, when investigating the innovation’s characteristics, rate of adoption should be evaluated based on customer’s perceived attitude toward using the product rather than on the product itself. However, since the perceived attitude toward each innovation is varies, it is premature to generalize characteristics across large scale sample of scenario (Tornatzky & Klein 1982, 29.) Hence, even though innovation’s characteristic and perception on actions are significant to behavior intention, others attributes need to be included depends on industry uniqueness.

4.2 Innovation characteristic theory

There are more than just the customers themselves involved in the consumption process. In individual customers scenario, the purchase decision get influenced by the users to the product, recommenders, friends, relatives… They are called influencers, who direct or indirectly provide opinion toward or against the purchasing decision (Solomon & al. 2016, 7.)
In the organizational scenario, the purchase maybe influenced by groups of people, especially if the purchase results in the behavior alternation of multiple people. Therefore, with the expectancy-value approach and TPB, it is essential for change agent (marketer) to measure user attitude for prediction of success (Leonard-Barton & Deschamps 1988, 1252.) Throughout the development of innovation researches, there are 2 theories acclaimed to justify the success (or lack thereof) of an innovation: The Innovation Characteristic Theory (ICT) and the Implementation Process Theory (IPT).

In ICT oriented researches, consumer’s decision to adopt an innovation is due to their evaluation on innovation’s characteristic (Yetton, Sharma & Southon 1999, 54.) One of the most well-known frameworks using this assumption is the innovation diffusion theory (IDT) by Everett Rogers. Rogers identifies success of an innovation with 5 attributes, namely: Relative Advantage, Complexity, Compatibility, Observability, Trialability (Rogers 1995, 15.) Technology Acceptance Model (TAM) is another popular research based on ICT, with the introduction of Perceived Usefulness and Perceived Ease-of-Use. The same concept is also confirmed in a research conducted by Goodhue & Thompson (1995, 228) who confirmed technology positive impacts need to be created by utilization of technology and technology-fit with task (TTF). Researches using ICT link the decision of adoption or implementation to innovation’s characteristic, measure whether target customers have positive attitude toward its attributes (Tornatzky & Klein 1982, 28.)

In IPT researches however, study innovation adopted by groups performing interdependent tasks, incorporate managerial action to impose influence on adoption (Yetton & al. 1999, 53.) When the potential adopter is part of a group, the attitude and evaluation on innovation is not only depend on personal opinion but also on manager’s actions, preferences (Leonard-Barton & Deschamps 1988, 1253.) Organization’s culture, innovation’s value-fit also play important role in setting success for implementation (Klein & Sora 1996, 1076.)

Different adoption context and audience include distinct elements of success and rate of adoption (Rogers 1995, 233.) Therefore, the context needs to be classified in order to be used with the correct diffusion model. Depend on the locus of adoption, the context of study can be divided to individual or organizational. For each locus, the innovation is divided depends on level of knowledge required to operate and interdependency relationship between users and innovation (Fichman 1992, 8.) This meta-analysis research from Fichman support applying diffusion theories to individual adopters with low burden of knowledge and interdependency to the innovation (Fichman 1992, 16.) In individual adoption context, perceived attributes are confirmed to be the more important factor than implementation process (Yetton & al. 1999, 65.) With organizational research, the innovation’s attributes to adoption

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success need to be altered and addition of managerial influence element is crucial (Yetton & al. 1999, 55; Leonard-Barton & Deschamps 1988, 1254.)

The main purpose of this thesis is to study the diffusion of Online Check-in for individual users. It is acknowledged that users can also be part of partnered companies however, the influence or group benefits that impose change in users’ attitude is not high. The target users are also identified as the one that do not require high level of knowledge to operate the system. This target audience fits well with the category that Fichman proposed to use innovation characteristic theory. The innovation’s rate of adoption will be measured based on customer’s perceived attitude on innovation’s attributes.

4.3 Innovation Diffusion Theory (IDT)

Innovation Diffusion Theory is recognized as one of the most significant theories for ICT. Published the first time in 1962 and continued to be edited and republished until 2005, IDT is one of the most frequently edited theory in diffusion research. Today, IDT is applied to gain understanding of customer’s adoption behavior in different industry such as retail, agriculture, banking…but most importantly in self-service technology.

Innovation Diffusion Theory (IDT) defines innovation as any idea that perceived to be new by the customer. This definition disregards the product’s historical development or customer’s knowledge. As long as customers have not developed approve/reject decision about a product, it can be considered an innovation (Rogers 1995, 6.)

Diffusion researches usually target 2 important parts, diffusion process and adoption process, in which adoption process is part of innovation’s diffusion journey extends over a period of time (Schiffman & al. 2012, 403.) Rogers refers to these processes in his model as innovation-decision process. Customers go through series of action during each stage to reach adopt or reject decision, under the influence of 4 important elements: innovation attributes, communication channel, time and social system (Figure 3). 5 stages in IDT models include:

- Knowledge stage: Customer acknowledges innovation’s existence and functional knowledge
- Persuasion stage: Customer forms attitude toward innovation
- Decision stage: Customer form choice to adopt or reject the innovation
- Implementation stage: Innovation is utilized in routine
- Confirmation stage: Customer searches for decision’s reinforcement. At this stage, reverse decision might be possible.
According to IDT, customer’s adoption decision is made after being persuaded by innovation’s attributes and base on attitude formed in previous stage.

Figure 3: Innovation-decision process (Rogers 1995, 165.)

IDT points out 5 main characteristic that influence customer’s attitude namely: Relative Advantage, Compatibility, Complexity, Trialability, Observability. Innovation’s perceived characteristics are identified to play the most important impact on customers’ adoption decision, account for the variation in rate of adoption between different innovations (Rogers 1995, 15.)

4.4 Technology Acceptance Model (TAM)

Another important theory in diffusion research is the Technology Acceptance Model (TAM), developed from the Theory of Reasoned Action by Davis for computer acceptance and ranges of technology (Davis & al. 1989, 984.) Similar to TRA, attitude is the only correspond measure of the actual behaviour (Ajzen 1991, 19.) However, in TAM, attitude toward the usage is influenced by 2 perceptions: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), in which, PU can be affected by PEOU. By measuring the perception of PU and PEOU, TAM aims to identify customer’s negative or positive attitude toward the value of the innovation, which ultimately explain customers adopt or reject behavior (Figure 4)
Figure 4: Technology Acceptance Model (Davis 1985, 24.)

It would also be more precise if customers are asked adoption intention regarding a specific model or brand rather than regarding a category. Intention measurement to summarize evaluation need to also in comparative mode (Morwitz & al. 2007, 363.) In order to close this gap, researchers proposed the modification in response scale instead of changing the determinants of behavior intention. In another words, innovation characteristics still play an important role in predicting innovation’s rate of adoption given using a reliable scale (Liao & Lu 2008, 1414; Arts, Frambach, Ruud & Bijmolt 2011, 140.)
5 Attributes to rate of adoption

Both IDT and TAM define adoption as a decision results from customer’s positive attitude toward the innovation; and innovation’s characteristics play significant role in influencing this decision. Due to the similarity between 2 models, IDT is frequently combined with TAM when researching adoption of self-service technology field and hotel mobile reservation system particularly (Karahanna, Agarwal & Angst 2006, 782; Curran & Meuter 2005, 105, Wu & Wang 2005, 721.) This research will also use the integration of these 2 models in order to examine adoption rate of the innovation in question.

However, it is difficult to apply any model as it is due to the complexity inherited within each innovation (Fichman 1992, 1.) Hospitality industry, in particular takes service as the core product. Expected values from hotel are not only just the product but also experience and atmosphere (Stringam & Partlow 2015, 66.) Experience is one of the elements that are neglected in both the model of IDT and TAM. Therefore, exist the need to combine other attributes proven to be significant to the hospitality industry to serve as the measurements for innovation’s attributes proposed by Rogers and Davis.

This section will discuss about each attribute in the 2 models, independency from other attributes and relatability with hospitality industry. In addition to that is inspecting proposed measurements that going to be used as variables in research survey.

5.1 Compatibility

One of the attributes introduced by Rogers in his diffusion theory is compatibility, which was defined as “the degree to which innovation is consistent with the existing values, past experience and needs of potential adopters” (Rogers 1995, 223.) The existing values are understood as the values embedded in the social-culture, while past experience is what customer previously introduced to or was familiar with. In fact, the better fit the innovation can be with customer’s need and practice, the more desirable it becomes (Van Slyke, Johnson, Hightower & Elgarah 2008, 60.)

Although the importance of compatibility has been emphasized as one of the most influential factors of innovation adoption (Ostlund 1974, 26; Kim & Qu 2014, 238; Tornatzky & Klein 1982, 40.) and confirmed by a reliability test (Moore & Benbasat 1991, 197.), it is challenging to incorporate this characteristic into adoption model (Karahanna & al. 2006, 783.) Moore & Benbasat’s research (1991, 208) acclaimed that the definition of compatibility correlated with relative advantage, or at least being indistinguishable under customer’s point of view. Van Slyke, however, criticized this statement. According to him, the scale used in
Moore & Benbasat’s research caused this confusion, by letting compatibility focus solely on preferred working style, when Rogers’ definition is also focusing on the past experience and sociocultural belief. Moore & Benbasat scale made compatibility a subdimension for relative advantage, which made relative advantage lose portion of its concept (Van Slyke & al. 2008, 52.) By conclusion Van Slyke affirm that compatibility still not possess the equivalent to relative advantage, and hence, made it inadequate to eliminate either one of them (Van Slyke & al. 2008, 57.)

Discussing this matter, Karahanna proposed a revision of compatibility scale. In this version, compatibility is viewed under 4 dimensions, concerning innovation’s compatibility to customers’ existing practices, preferred style, prior experience and personal values (Karahanna & al. 2006, 787.) With this scale, Karahanna proposed to leave the “Compatibility with needs” entirely for measurement of Relation Advantage in order to avoid concept overlapping (Karahanna & al. 2006, 783.) Similarly, Wei Wang’s research use term “tech congruence” to describe “the degree to which a new mobile app is perceived by users as being consistent or compatible with their values” (Wang 2019, 123.) Both researchers confirm compatibility’s influence toward customer perceived usefulness in all dimensions except for compatibility with prior experience (Karahanna 2006, 798; Wang 2019, 131.) On the other hand, too high compatibility level also does harm to the adoption. The more compatible to the existing practice, the less useful the innovation is perceived (Karahanna & al. 2006, 794.) Rogers also agree on this matter, stating that innovation motivation will not exist if it’s totally in line with the existing one (Rogers 1995, 224-225.)

In conclusion, compatibility emphasizes on the alignment of mobile apps with customer’s usage level with mobile phones, preferred booking style and fulfillment of personal belief.

5.2 Relative advantage

Relative advantage is proposed in IDT remains as one of the most cited attributes in innovation diffusion. According to Rogers, relative advantage is the degree in which innovation exceeds its replacement. The measurement for relative advantage can be based on economic, social benefit or other ways depends on the character of the potential adopter (Rogers 1995, 213.) However, Tornatzky & Klein (1982, 34.) found this definition too broad to be applied. The “other ways of benefit” cannot make relative advantage distinguish from other characteristics, especially from compatibility. While relative advantage is found to be one of the most significant attributes to influent adoption intention, the measurements need to be specified so that not to overlap with compatibility measurements (Tornatzky & Klein 1982, 40.) According to Rogers, this is discovered by measuring customer’s perception of how the innovation is better than the one it substitute (Rogers 1995, 213.)
In Rogers’ model, relative advantage’s subdimensions include the increase in profitability, reduction in initial cost, decrease of discomfort, time, efforts and lastly, the immediacy of rewards (Rogers 1995, 217.) In TAM, Davis proposed “perceived usefulness”, in which he defined as “the degree to which an individual believes that using a particular system would enhance his or her performance” (Davis 1985, 26.) Moore & Benbasat’s research points out the similarity between these definitions and since relative advantage’s definition is ambiguous and broad, perceived usefulness is considered to be the better expressed term of the same notion (Moore & Benbasat 1991, 198.) Relative advantage is then often used as an exchangeable term for perceived usefulness to express innovation’s ability to improve task’s performance (Conrad 2009, 53) In order to reduce the confusion the scale, the research will also use perceived usefulness to indicate this notion instead of relative advantage.

5.3 Perceived usefulness

The measurements of perceived usefulness from TAM originally include 9 items, however many of which can be understood to be referring to the same thing in mobile reservation situation (task’s productivity, effectiveness, accomplished work load). Therefore, in the scale developed by Moore & Benbasat, the list was reduced to 5 items including: Task’s quality, controllability, speed, effectiveness and effort (Moore & Benbasat 1991, 216.) The application of this measurements was used to develop evaluation survey in healthcare mobile application (Immonen & Koivuniemi 2018, 22.) Since there is no designated scale model specifically made for hotel mobile reservation application, IBM’s consulting report provided to Hilton’s self-service can be adapted for this research. In this report, there are several optimization points that are similar to Moore & Benbasat’s scale include: focusing on functionality & information quality, optimization of service speed and increasing usability of service flow (Griffy-Brown, Chun & Machen 2008, 44.) It can be seen that functions and information quality are crucial for customers nowadays as they expect service to do the exact needed job in least amount of time and keeping customers searching, overwhelmed with irrelevant information are not the way to keep them engaged (Bailie & Urbina 2013, 17.) A successful mobile application needs to find a balance between compelling, useful information and overwhelming information load so as not to lose customers’ interest and attention (Hopkins & Turner 2012, 50.) For this reason, information quality needs to be included as one of the measurement values for perceived usefulness.

Convenience

Besides risk, convenience is also recognized as significant influence toward perceived usefulness in self-service technology and travel related mobile apps. Due to the nature of SST, the service is initiated and operate according to customer’s timetable. Hence, attributes
such as: ability to initiate service at customer’s convenient time and ease to access are found to be significant to customer’s perceived convenience, making it the direct influence on adoption intention (Colliers 2006, 187.) Furthermore, convenience is a mean for customers to evaluate the benefit value of the innovation. One of the reasons customer choose to use mobile phone is to conveniently do task anytime, anywhere. In another words, benefits are derived directly from a convenient and effective transaction within mobile app (Lin & Lu 2014, 111.) Therefore, the convenience of the mobile app directly relates to customer’s perception of usefulness. A research by Cornell School of Hotel Administration also found convenience the main motivation not only for consumer’s use of mobile applications but also their decision to disclose privacy data, the essential component for hotels to provide customers personalized experience (Linton & Kwortnik 2015, 8.) Most importantly, high compatibility with convenience emphasizes probability of continued usage (Ozturk, Bilgihan, Nusair & Okumus 2016a, 1356; Linton & Kwortnik 2015, 18)

5.4 Risk

In order to initiate the adoption process, the most challenging but also the most vital obstacle for innovation is to get tried for the first time (Meuter & al. 2005, 61.) Since adoption of mobile app innovation requires major changes in task’s execution from customers, uncertainty will impose negativity to customer’s attitude of trial (Kaushik & al. 2015, 281.) Resistance researchers have brought up perceived risk to justify customer’s decision of postponement, rejection or opponent. In the mobile reservation system situation, the concern that is strongly considered risk for customers is privacy. Despite of all the potential benefits from using mobile application, customers have to decide to give off personal information upon downloading (Linton & Kwortnik 2015, 7.) This awareness of personal data collection is proven to develop negative attitude toward the application’s adoption among Finnish customers (Immonen & Koivuniemi 2018, 23.) On the other hand, customers choose to use self-check-in technology expect high level of personalization which is essentially empowered by personal information (Morosan & DeFranco 2015, 120.) Researchers have found customers to be less insecure about privacy concern if the perceived personalization value increase (Lee & Cranage 2011, 992.) The perceived privacy risk increase the dissatisfaction in customers’ experience, which consequently affect their attitude (Kaushik & al. 2015, 285.) Furthermore, the willingness to disclose information is significantly influenced by how customers evaluate value of the disclosure and the trust toward the application (Morosan & DeFranco 2015, 128.) Hence, in order to fully examine the perceived usefulness, perceived personalization and privacy concern are essential to be measured.
Another aspect of risk when it comes to mobile app is the performance risk. Customers when dealing with uncertain situation and uncertain results caused by adoption will impose perceived risk. The newer the technology’s used to complete task, the higher level of risk will be perceived (Ozturk, Nusair, Okumus & Singh 2017, 755.) However, according to a research regarding Finnish customers’ mobile banking usage, both privacy risk and performance risk is not imposing negative affect on adoption.

5.5 Image

One of the aspects that distinguish as relative advantage from perceived usefulness is self-image, discussed in IDT as the degree that innovation is perceived to give prestigious status to adopter (Rogers 1995, 215; Moore & Benbasat 1991, 195.) Plouffe’s research confirms the importance of ideal image for customer’s adoption decision, similar to the proposed “subjective norm” in TRA (Ajzen 1991, 195; Plouffe & al. 2001, 217; Kaushik, Agrawal & Rahman 2015, 285.) According to Schiffman, there are 4 different types of self-image: actual self-image, ideal self-image, social self-image and ideal social self-image (Schiffman & al. 2012, 148.) Depends on type of product, customer selects one perception of self-image to guide their attitude. Kleijnen defines this selection as “image congruence”, which is the compatibility between customer’s perception of self-image and of the innovation (Kleijnen, de Ruyter & Andreassen 2005, 345.) In order to develop this congruence, brand or innovation’s stereotype and the brand-user relationship need to be in alignment (Karjaluoto, Shaikh, Saarijärvi & Saraniemi 2019, 253.)

Regarding to self-image, self-efficacy is frequently discussed in technology adoption as an important factor determine if customer willing to adopt a self-service technology innovation (Ozturk & al. 2016a, 1351; Bandura 1982, 140.) Self-efficacy is customers’ perception of ability to operate the desired task (Huffman, Whetten & Huffman 2013, 1780.) With the nature of self-service technology, part of responsibility to create and deliver desired result belongs to customers (Meuter, Bitner, Ostrom & Brown 2005, 61.) Hence, their self-efficacy in technology handling significantly influence the determination to engage with innovation (Meuter & al. 2005, 78.) Research of mobile banking innovation adoption in Finnish market found self-efficacy to be one of the most significant adoption barrier, stopping customers from trying new technology (Laukkanen 2016, 2437.)

Design of innovation also plays a crucial part in creating brand-user relationship (Lee 2018, 182.) It is undeniable that hotel mobile reservation application is not only an added service but a part of the process to create experience for customers. Hence, the focus should not only be placed on the mechanics part of the innovation but also on how it feels, its ability to spark enjoyment during usage (Pine & Gilmore 2011, 78; Ozturk, Nusair, Okumus & Hua
2016b, 112.) Graphic design & pictures specifically are found to be the most essential elements for the customers’ experience (Phelan, Christodoulidou, Countryman & Kistner 2011, 143.) These symbolism design characters directly influence customers’ adoption behavior by linking products usage to self-image, personality and values (Candi, Jae, Makarem & Mohan 2017, 35; Lee 2016, 188.) Despite being recognized as the most influential model for adoption intention, TAM has also been criticized to focus mainly to external factor with little concern to internal factor that can influence customer’s perceived usefulness (Jahanmir & Cavadas 2018, 338.) One of this internal factor is customer’s perception of their technology congruence. This attribute has proved to have positive influence toward adoption intention (Wang 2018, 130.)

5.6 Complexity, Perceived Ease of Use (PEOU)

Complexity is used in IDT to depict the degree of difficulty customers encounter in navigating and using the innovation (Rogers 1995, 231.) Together with relative advantage and compatibility, complexity made three of the only innovation characteristic that closely relate to adoption intention (Tornatzky & Klein 1982, 40.) Similarly, TAM introduce “perceived ease of use”, define as “the degree to which an individual believes that using a particular system would be free of physical and mental effort” (Davis 1985, 26.) The correlation between these terms are discernible as both represent customer’s ability to operate easily within the innovation setting. Complexity is the only attribute that creates negative influence toward customers’ intention, thus PEOU is frequently used in measurement or survey process to avoid confusion for respondents (Moore & Benbasat 1991, 197.) PEOU is the causal element for customers to perceive usefulness of an innovation (Davis 1985, 24.) Studies of customers’ intention to adopt hotel self-service technology also confirm this relationship as well as the influence of PEOU on behavior intention (Kaushik & al. 2015, 284; Kim & Qu 2014, 238; Lee 2016, 182.) However, research of Finnish customers in mobile banking situation proves that complexity is not accounted for the non-adoption behavior (Laukkanen 2016, 2437.) This can be explained as customers content to overlook complexity if the innovation is beneficial, however vice versa is not likely to happen as ease of use is useless without the task’s functionality (Davis & al. 1989, 1000.) Due to the contribution of PEOU to customers’ perception usefulness, it is fundamental to assess customer’s perception of innovation’s usability.
5.7 Observability & Trialability

In attempt to explain customer’s preference, opinion of an object cannot be formed unless customer acknowledge of it (Zajonc & Hazel 1982, 125.) Hence, observability plays an important role in customers’ ability to form positive attitude towards the innovation. IDT defines observability as “the degree to which the results of an innovation are visible to others”. According to Rogers, not all results can be seen and communicate to customers. For example in the case of software based technology, it is easier to be adopted than hardware based technology since the result is easy to see and demonstrate (Rogers 1995, 232.) Hence, Moore & Benbasat use 2 other elements instead of observability: result demonstrability and visibility (Moore & Benbasat 1991, 203.) Result demonstrability This division Within theoretical researches of innovation diffusion, observability is not frequently included. Researchers find compatibility, relative advantage and PEOU as the most significant and consistently able to justify the adoption intention (Tornatzky & Klein 1982, 40)

Trialability is the degree that customer can be partially experienced in limited scale (Rogers 1995, 232.) However, IDT also acknowledge that not all innovation can be tried or divisible for trial. In the case of mobile application in question, the prerequisite factor for usage is customer’s existing participation in loyalty program. Since the loyalty program provides no trial period, the innovation is unable to be offered for trial. As the result, attribute trialability is inapplicable due to lack of application meaning.

5.8 Theoretical framework

Attitude is defined by Schiffman as “a learned predisposition to behave in a consistently favourable or unfavourable way to a given object” (Schiffman, Kanuk & Hansen 2012, 233.) The Attitude Towards Behavior Model acclaims that attitude formed toward a specified behavior is more closely in response to actual behavior than attitude toward an object (Schiffman & al. 2012, 238.) This connection between attitude and behavior is found to be relatively consistent, though not permanent and subject to change (Schiffman & al. 2012, 233.) Therefore, understand customers’ attitude on the innovation and identify unfulfilled areas enable business to take informative corrective actions to promote desired behavior intention (Davis & al. 1989, 999.)

Attitude is formed mainly from personal experience, social system influence, marketing efforts and mass media (Schiffman & al. 2012, 244.) Within the scope of this research, it is not possible to include marketing effort and mass media practices in the research. Therefore, the research pay strong focus on attitude formed by personal experience and influence of social system.
Above discussed foundation of diffusion research and innovation’s attributes prove the applicability of IDT and TAM to self-service technology in general and hotel mobile apps in particular. The link between innovation’s attributes and customer’s attitude will be utilized to interpret adoption behavior. Research model is included below to summarize the hypotheses relationship and depicts the theoretical framework that is going to be tested within this paper (Figure 4) The tested theoretical framework is adapted from the model TAM with the combination of attributes from both TAM and IDT.

![Theoretical framework diagram]

Figure 4: Theoretical framework
6 Research method & data collection process

Previous chapter have investigated on the relationship between innovation characteristics and attitude toward usage in different service settings: library, medical, banking… However, there are little to no research specifically made to research customers’ perception of hotel mobile reservation application and even less are dedicated to understand Finnish customers. This research bridges the gap between technology diffusion theories and Finland’s hotel industry, explaining customers’ expectation and market uniqueness.

This research aims to answer a question: What attributes influence customers’ attitude toward using Hotel X’s mobile application?

Research questions sub-questions includes:

1. How customers evaluate Compatibility, Perceived Usefulness, Image, Perceived Risk, Perceived Ease of Use and Observability of the mobile application?
2. How customers evaluate their attitude toward using the mobile app?
3. Are demographics influence the adoption decision?

6.1 Research methodology

The objective of the research is to evaluate customer’s attitude toward using mobile reservation application (MRA) and explore influential factors of this attitude. In order to achieve targeted objectives, variables and their correlation relationship need to be examined. Therefore, quantitative is the chosen research method (Creswell & Creswell 2018, 137) Quantitative research offers the statistical number result necessary for drawing inference and testing hypotheses process (Creswell & Creswell 2018, 136.) This is also the suggested method to conduct innovation diffusion research by Tornatzky & Klein (1982, 39.) Among designs of quantitative method, survey design is selected due to the nature of survey, which enables explanation of variables’ relationship (Creswell & Creswell 2018, 148.) Secondly, since the variables of the research include customer’s perception, it is by define difficult to hold this variable constant to test the outcome impact (Creswell & Creswell 2018, 148.)

The research is the test of a research model with strong supporting literature and established measurement scales. This is an advantage for the survey to be adapted for purpose of the research (Benzo, Fourali & Mohsen 2018, 313.)
6.2 Measurement scale

First developed in 1932, Likert is a familiar bipolar scale with 5 stop points in between. Scale range can be adapted base on research’s need, for example from Strongly Disagree to Strongly Agree. Likert scale offers data that is uniform and continuous, allows flexibility for number handling during interpretation phase. This scale is frequently used in examining direction relationship among variables (Benzo & al. 2018, 344.) In diffusion research, Likert scale is used by many reliable researches such as Morosan & Defranco (2016), Davis (1989), Agarwal & Prasad (1998) In this research, Likert scale will be used for customers to rate on each statement, with 1 being associated with “Strongly Disagree” to 7 being “Strongly Agree” will be used for all innovation's attributes variables and customer’s attitude.

In order to quantify and measure variables, it is identified that there are 4 possible measurement scales: nominal, ordinal, interval and ratio measurement (Balnaves & Caputi 2001, 46.) Selected Likert 7-point scale belongs to ordinal measurement scale. Due to the specific characteristics of ordinal scale, it is suggested to use Spearman’s correlation coefficient analysis to confirm whether there is independence between variable (Murray 2013, 260.) However, Murray argues that using Spearman or Pearson scales on Likert scale will derive similar analyzing (Murray 2013, 262.) With Spearman’s test, the significant level is at .05.

6.3 Research question design

Questions is separated into 3 main sections. Section 1 is to measure the demographics of the customers. There are questions regarding: Gender, Age, Highest Education, Business trips, Vacation trips and Familiarity with mobile app. These questions help segment respondents to be analysed on latter questions. Section 2 includes all the characteristics of the mobile app as well as its measurement scale. Section 3 measures customers' intention toward the mobile app and questions to specify their choice.

In questions regard mobile app’s attributions (construct), each construct includes several measures that depict the same thing. Each measures is presented by a statement that there is no right or wrong answer, fully rated based on the level of agreement from the customers. Each construct will be summarized to measure the construct. This questionnaire design is summated scale. This scale is frequently used in measure of attitudes and opinions (Spector 1992, 1.) Therefore, this scale is suitable with this research’s purpose.

Even though the measures are adapted from already developed and tested scales from Karahanna (2006) and Ozturk & al. (2016a), exist a need to combine the measures in order
to represent the construct in general. Therefore, it is important that the measurements correctly reflect the same targeted construct (Vaske, Beaman & Sponarski 2017, 163.) Cronbach’s alpha measures the degree that measurements relate to each other and with the main construct. Since the questions are conducted in summated scale, the Cronbach’s measures is a very well-known tool to inspect reliability of summated scales (Vaske & al. 2017, 163.)

In order to have a validated measurement scale for a construct, researcher need to go under a process, from define construct, design scale, go through pilot test. Afterward item analysis is made to redefine the construct (Spector 1992, 8.) However, with the scope of this research, an established measurement scale from previous researches are used to ensure the reliability of the scale.

Survey is distributed and collected using Webropol 3.0. This is a full function tool for collecting data and was supplied free of charge from HAAGA-HELIA University of Applied Sciences. After all the necessary data is collected, it is imported to be analyzed in IBM SPSS and Excel PivotTable.

6.4 Data collection

With the time allowance for the research, survey will be conducted in Hotel X with the acceptance of manager to collect survey. The survey is handed out at the hotel’s lobby because this is where there are observable amount of Loyalty Program’s members. Survey is handed out randomly to customers that are observed to have engaged in Online Check-in, customers with Loyalty Program card and also to customers that chose to use traditional method. This is to ensure the customer’s perspective and attitude toward usage is current and not affected by their rationalization (Tornatzky & Klein 1982, 29.)

Table 1: Summary of measurement for innovation’s attributes

<table>
<thead>
<tr>
<th>Innovation’s attributes</th>
<th>Definition</th>
<th>Measurement</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compatibility</td>
<td>Innovation create positive attitude from alignment with values, experience and practices.</td>
<td>- Existing practice&lt;br&gt;- Prefer booking style&lt;br&gt;- Prior experience&lt;br&gt;- Belief&lt;br&gt;- Need</td>
<td>Karahanna &amp; al. (2006)&lt;br&gt;Ozturk &amp; al. (2016a)</td>
</tr>
</tbody>
</table>
| Image | Innovation that is perceived to be able to improve self-image and has more | - Self-image  
- Self-efficiency  
- Design | Meuter & al. (2005)  
Karjaluoto & al. (2019)  
Roger & Rohini (2018)  
Moore & Benbasat (1991) |
|---|---|---|---|
| Perceived Usefulness | Perception of innovation’s to ability to improve customer’s performance influence customer’s motivation to adopt. In addition, risk of privacy leakage impose negative attitude toward usage of new technology | - Task’s quality  
- Controllability  
- Speed  
- Effectiveness  
- Effort  
- Privacy risk | Moore & Benbasat (1991)  
Meuter & al. (2005) |
| Perceived Ease of Use | Innovation’s complexity in using and acquiring is the barrier for customer to recognize innovation’s advantages | - Ease to use  
- Easy to learn  
- Mental effort  
- Comfort | Moore & Benbasat (1991) |
| Observability | Innovation result demonstration and visibility of advantages lower uncertainty of using innovation and motivate for reward afterward | - Result demonstrability  
- Visibility | Moore & Benbasat (1991) |

Adoption intention will be analyzed using the customer’s assessment of perceived attributes. 5 innovation’s attributes will be measured using scales developed and tested reliability from previous researches with adaptation to hospitality industry. Summary of justification and scales sources will be included in Table 1.
### Table 2: Measurements of innovation’s attributes (construct)

<table>
<thead>
<tr>
<th>Compatibility</th>
<th>Perceived Image</th>
<th>Perceived Usefulness</th>
<th>Perceived Risk</th>
<th>Perceived Ease of Use</th>
<th>Observability</th>
<th>Attitude toward using MRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Using MRA a new experience for me</td>
<td>1. Using MRA is a social status symbol</td>
<td>1. Using MRA makes booking hotels more convenient</td>
<td>1. Using MRA may put risk on my privacy details</td>
<td>1. If I use MRA, the steps in the booking process are clear to me</td>
<td>1. I have no difficulty explain why using MRA may be beneficial</td>
<td>1. Using MRA is a good idea</td>
</tr>
<tr>
<td>2. Using MRA fits my level of mobile usage</td>
<td>2. Using MRA improves my social image</td>
<td>2. Using MRA give me more control over my reservations</td>
<td>2. I fear I would make mistakes on my reservation by accident if I use MRA</td>
<td>2. I believe using MRA is easy for me</td>
<td>2. The benefit of using MRA is clear to see</td>
<td>2. My attitude toward using MRA is favorable</td>
</tr>
<tr>
<td>3. Using MRA fits in my way to book hotel room</td>
<td>3. I feel special using MRA</td>
<td>3. Using MRA gives me more personalized options</td>
<td>3. I fear using MRA will not do the job as I expected</td>
<td>3. Learning to use MRA is easy for me</td>
<td>3. It is easy to see other people benefit from using MRA</td>
<td>3. Using MRA is recommendable</td>
</tr>
<tr>
<td>4. I find self-service options more pleasant than personal communication with staff</td>
<td></td>
<td>4. Using MRA offer me more information of Hotel X loyalty program’s benefits</td>
<td></td>
<td>4. I believe it is easy to find information I need using MRA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Using hotel application would not fit my personal belief of technology’s role in customer service</td>
<td></td>
<td>5. Using MRA give me all the information I need (hotel address, facilities, reviews, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Using MRA helps me shorten queuing time</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Before rolling out the official survey, a pilot test was made on 5 respondents. The selected pilot respondents are all Finnish citizens, age range from 18 to 65 years old. In addition, a private meeting with Hotel X’s Loyalty Program Manager who are responsible for analyzing and developing the mobile app were arranged to gain more insight about customer behavior in Hotel X. After consulting both parties, several adjustments were made to yield more optimal result.

Finnish translation: Included side by side to the original English scale previously tested for reliability. The Finnish translation acts as the motivator for Finnish speakers to take part in the survey as well as to specify the meaning of the questions in respondents’ native language. In addition, since the survey also includes variety of educational background and age range, the inclusion of Finnish translation is necessary to ensure the survey can fully cater different language skill of respondents.

Length of survey: The survey is re-designed to be completed within 5-7 minutes. Questions that are considered to be repetitive are grouped. Several addition of questions are made that express the discovery desire from Hotel X’s representative.

Wording: The wording expression of measurements are altered and simplified. Firstly to reduce the mental stress of participants, secondly is to ensure the meaning of the questions are precisely delivered. Questions that are observed to have high rate of answering "Neutral" in pilot is investigated and reshaped to provoke more emotion and clearer attitude from respondents.
7 Results

7.1 Respondents

The survey was distributed in 2 sources: online weblink and face-to-face handouts in Hotel X. There are totally 103 surveys that are responded, of which 24 responses are incomplete and not included in final study. The final sample to be studied for the research is 79. The current mobile app solely targets to Hotel X Loyalty Program’s members. The fact that solely these members can make decision to adopt the mobile app makes they are the targeted audience for the research. However, as mentioned in the potential of branded mobile app as the new marketing platform, the mobile app has the potential to be a pulling factor for customers to join the loyalty program. Hotel X is also exhibiting its intention to reach out for non-members by sending the mobile app’s recommendation to all of eligible reservations as well as in its newsletter. Therefore, researcher find the need to also include Hotel X’s non-member customers in order to study their attitude toward adopting the mobile app.

![Age Range Chart](image)

Figure 5: Respondents age range (n=79)

Respondents of the survey distributed almost equally through all the age range. However, as observed from the surveys, large portion of Hotel X’s customer segmentation is 26 years old and over (Figure 5). This is also observed while researcher collect answers at the hotel’s reception. In addition, majority of respondents are member of loyalty program, which is specifically target to business travelers at the moment. The age range reflects the credibility of the survey in representing the large part of hotel guest’s demography.
In order to categorize respondent’s attitude and identify barriers, customers are categorized in 3 groups:

- **Adopter**: Customers who have used, currently using and plan to continue the usage of the mobile app (Questions 14 – 16)
- **Postponer**: Customers who has not used the mobile app and have intention to use it in the next 12 months (Answer “YES” in Question 18)
- **Rejectors**: Customers who have used the app but refuse to continue (Answer “NO' in Question 16), customers who have not used the app and have no intention to do so in the future (Answer “NO” in Question 18)

![Adoption Groups](image)

**Figure 6: Adoption Groups distribution**

![Adoption Groups by Age & Gender](image)

**Figure 7: Adoption groups by age (n=79)**
As presented in Figure 6, the majority of respondents (81%, n=79) are adopters and postponers of the mobile app. Postponers take slightly higher percentage with 43% (n=34) compare to 38% of adopters (n=30) When looking at the age range, majority of adopters come from the age of 36-65. Meanwhile, customers with age ranges from 18-35 are dominantly postponers and rejectors (Figure 7) This phenomenon can be explained by the fact that the mobile app is targeted toward business travelers. As demonstrated in Figure 8, customers from age range of 36-65 have the highest business travel frequency. Therefore, they are more frequent with this application and have higher possibility to adopt this innovation.

![Business trips frequency by age](image)

**Figure 8: Business trips frequency sorted by age (n=79)**

<table>
<thead>
<tr>
<th>FAMILIARITY WITH HOTEL MOBILE APPLICATION</th>
<th>N</th>
<th>MINIMUM</th>
<th>MAXIMUM</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>VALID N (LISTWISE)</td>
<td>79</td>
<td>1.00</td>
<td>7.00</td>
<td>3.53</td>
<td>2.22</td>
</tr>
</tbody>
</table>

In Question 6, SPSS is used to run for mean and standard deviation value. According to Table 3, customers’ average familiarity with hotel mobile app is 3.53 with the deviation from average value is 2.22. This question is included in order to measure customers’ exposure to mobile technology, specifically hotel mobile app. From the result, it can be noticed that most respondents rank themselves from 2 to 6 on the scale of familiarity with hotel mobile app, with 1 being “Not at all” and 7 being “Extremely well”. The high standard deviation detects that respondents’ familiarity with mobile app varies greatly, due to the difference in age and education background as depicted earlier in Figure 5.
7.2 Compatibility

Cronbach’s alpha result range from minimum 0.00 to maximum 1.00. Cut-off line is set at 0.7 for Cronbach’s alpha. According to Table 4, the result of Cronbach’s alpha for 5 items in Compatibility construct is 0.62, lower than the suggested result. Drilling down to each of the measurement, it is noticed that item 1 and item 5 (reversed) have significant big impact to the Cronbach’s alpha if being removed. Without these 2 measurements, Cronbach’s alpha result of Compatibility construct is raised up to .67. With the satisfactory Cronbach’s alpha score, compatibility measures will be run with a test of correlation with attitude. The chosen correlation test in this research is Spearman Correlation.

Table 4: Cronbach’s Alpha

<table>
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<tr>
<th>Construct</th>
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<th>Cronbach’s Alpha final*</th>
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<tr>
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<td>.672</td>
</tr>
<tr>
<td>Image</td>
<td>3</td>
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<td>.842</td>
</tr>
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<tr>
<td>Observability</td>
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</tr>
<tr>
<td>Attitude toward usage</td>
<td>3</td>
<td>.920</td>
<td>.920</td>
</tr>
</tbody>
</table>

*Cronbach’s Alpha after removing low correlate items

Figure 9: Compatibility score by adopting groups
Comparing how each adopting group grade their belief on Compatibility factors, it can be seen that how they perceive the mobile app’s alignment with their lifestyle and belief effect noticeably on their decision toward the app. In Postpone and Reject group, customers rate COMPAT1 factor (hotel mobile app is a new experience) significantly higher than so do from Adopt group’s customers. According to the question table 2, it results from their inexperience to hotel mobile application and hence, booking hotel using mobile app is a new experience for them.

All groups agree on questions 2 (COMPAT2) that their current level of using mobile is suitable for booking on mobile phone. In question 3 & 4 (COMPAT3 & 4) observed a slight difference in perception of reject group concerning the booking method and communication need. By rating these questions lower than adopt and postpone group, rejectors indicate they are not in favor of booking hotels using their phone and find interacting with staff more pleasant than self-service.

At the last question (COMPAT5), respondents are asked if using mobile app oppose to their personal belief concerning technology in customer service. While all groups express their positivity with involving technology in customer service, postponers show exceptional interest in having more of technology in servicing.

7.3 Image

Cronbach’s alpha result of image is .842, which met the satisfactory of internal reliability. For this reason, all 3 factors of image will be included in regression and coefficient test.

Figure 11: Perceived image score by adoption groups
Figure 11 summarizes how different adoption groups rate the image congruence between mobile app and themselves. The graph point out that overall, Hotel X’s customers are not putting emphasis on social image. All the factors of perceived image are rated almost equally and exists small difference of opinion between adoption groups. At question 3 (IMG3), adopters are expected to answer more favorably toward how they are treated in a more personalized and privilege way. However, this question also received great amount of disagreement.

7.4 Perceived Usefulness

The result of Cronbach’s alpha for the Perceived Usefulness is .845 so it’s internally reliable. Even though Cronbach’s alpha is notorious for being lower the more factors included, the result is still at satisfactory point.

![Perceived Usefulness](image)

**Figure 12: Perceived Usefulness score by adoption groups**

As depicted in Figure 12, Reject group respond have lower average score in all 6 factors. In question 2 (PU2), while both Adopt and Postpone both perceive positively to this factor, Reject group see significantly lower impression on mobile app’s ability to offer control over reservations. Similarly in question 3 (PU3), the Reject group has lower agreement over personalization potential of mobile app. Also at this question observed a significant drop in perception of Postpone group.
At question 4 (PU4), there is a significant raise in Adopt group while Postpone group continue the declining trend. This is a question regarding Hotel X’s loyalty program benefit. Adopters are using the mobile app, which explains their better understanding of the app as well as of the offers that Hotel X are offering. On the other hand, since postponers and rejecters majorly have not tried out the mobile app, their opinion is not yet decided (on average 4.43, “Neutral”).

Question 5 (PU5) regards information quality provided within the mobile app. This question has both Postpone and Reject groups positive opinion while Adopt group has slightly increase. Since these groups have not directly used the app before, this is rather their expectation of information that will be available within the application. Importantly, question 6 measures customers’ perception of queuing time. All 3 categories express not positive perception toward ability to reduce queuing time by using mobile app.

7.5 Perceived Risk

![Figure 13: Perceived Risk score by adoption groups](image)

Overall score for perceived risk is low throughout all 3 groups and 3 factors. However this is a positive sign for mobile app developer since this show that Finnish customers are not having concern about privacy details and performance of mobile app. In question number 2 (RISK2), there is significantly strong oppose opinion among all groups. In general, customers have low fear toward the performance risk of the application.
7.6 Perceived Ease of Use

In general, all of factors in Perceived Ease of Use are perceived positively by respondents. Question 1 observed a separation from Adopt group. This question concern customers' understanding of booking process when using mobile app and their role in that process. For customers that have not used the app, they cannot imagine how the booking can be done. Especially in the case of a newly introduced service like Hotel X’s mobile app, not much knowledge about the operation of the service is known and educated.

In the next 2 questions (PEOU2 & 3), there are positive perception among all groups. Even though reject group has lower score than the others group, all groups are confident in their ability to use and learn to use a mobile app. The last question (PEOU4) measures customers’ perception of information navigation quality within the mobile app. As displayed in Figure 14, Reject group has the lowest score in this measure, exhibit their low perception in ease of looking for information.

7.7 Observability

This construct measures how well the value of mobile app usage demonstrated for potential users.
As presented in Figure 15, reject group is significantly lower perception toward the observability of the mobile app. The average score over 3 factors is 4 point, which is “Neutral” in Likert-scale. There is also not much fluctuation over 3 factors in reject group. This can be interpreted that respondents in this group is indifferent or not have opinion about any factor represented in this measurement. Contrary to reject group, adopt and postpone group are almost identical in the perception of mobile app’s observability. Question 3 depicts whether the innovation’s benefits are visible to the user as well as to the surrounding. Even in the case of adopters, the visibility is still low and similar to other group,

**7.8 Correlation**

As mentioned earlier, one of the objectives for this research is to confirm if there is relationship between innovation’s attributes and customers attitude and strength of the relationship. In order to examine the correlation between variables, Spearman’s rank correlation analysis is chosen. Using SPSS, matrix analysis of compatibility, perceived risk, perceived usefulness, image, perceived ease of use, observability and attitude is generated.

As indicated in table 5, almost all attributes have significant relationship with attitude. Within compatibility and attitude exists significant relationship with p-value < 0.01. Coefficient value between 2 variables is $r = 0.502$. Similarly, perceived usefulness ($r = 0.613$), perceived ease of use ($r = 0.658$), observability ($r = 0.623$). Exceptionally, risk has coefficient value of $r = -0.383$. The negative coefficient indicates that customers’ attitude reduce when perceived risk increase. There is only 1 correlation that found not significant which is perceived image with value $p = 0.111 > 0.05$. 

![Figure 15: Observability score by adoption groups](image-url)
Table 5: Spearman’s analysis matrix

<table>
<thead>
<tr>
<th></th>
<th>ATT</th>
<th>COM-</th>
<th>IMAGE</th>
<th>PU</th>
<th>RISK</th>
<th>PEOU</th>
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** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
8 Discussion & conclusion

After analysing the result of the survey, this chapter will be dedicated to reflect the result to literature within diffusion research of mobile app, answer research questions and summarize main findings.

8.1 Summary findings

![Adoption groups by familiarity](image)

Figure 16: Adoption groups by familiarity

Most of adopters have sufficient knowledge of hotel mobile app, from 5 to 7 on the familiarity scale. Customers who are not familiar with this platform are mostly postponers and rejectors (Figure 16). It can be explained that adopters have used the mobile app frequently, therefore they are more frequent with this booking way. Similarly when customers do not know about the application, they tend to postpone the decision until better acknowledged or reject it due to wrong impression.

This conclusion is seen better in Question 22 about source of acknowledgement about the mobile app. Majority of postponers (Attachment 1) stated that this is the first time they know about this mobile app, other sources are knowing from co-worker, social media and from friends. Similarly, adopters also know about the app almost solely from a single channel, Hotel X’s website (Attachment 2) Lastly we inspect the reasons behind rejection decision. Even though not many respondents specify their decision, few reasons for rejection include low staying frequency, mobile app overload, personal communication preference and personal interest.
This result indicated that there are still a great portion of customers have not known about the mobile app. As featured in Roger’s innovation-decision (Figure 3), customers need to have awareness of the innovation before being persuaded by innovation’s attributes. This finding implies the necessity raise of awareness as well as need motivation for Hotel X’s mobile app.

**Age range**
Current adopters of Hotel X’s mobile app is business travellers with more than 2 business trips a year and from the age range 36-65 (Attachment 4). Age group 26-35 is also a rising segment with frequent business trip and great attitude toward involving technology in booking process.

**Compatibility**
Through analysing compatibility perception among all groups, it can be seen that mobile app is still new to customers. Customers finds this booking method align with their mobile usage and booking method. Postponers also show positive eager in adopting technology into their booking process since it highly in line with their preference of self-service communication level and belief in technology's role.

Especially, Spearman’s correlation coefficient result show significant relationship with attitude toward hotel mobile app usage (p = .000 < .001) and this relationship is moderately strong (r = .502)

**Image**
According to the established result in previous chapter, Finnish customers are not putting stress in elevating their self-image as well as social image. However, there is a factor that is very important for loyalty program which is special feeling when using mobile application. Surprisingly, adopters of the program does not rate this factor highly compare to other groups.

Image is also the only non-significant construct that comes up during Spearman’s correlation matrix. There is no significant relationship between image and customers’ attitude toward mobile app usage (p = .111 > .05, r= .181). This finding is contrary to researches regarding customers’ image congruence. However as mentioned by Moore & Benbasat (1991, 210.) image is a rather weak predictors for adoption attitude.

**Perceived Usefulness**
In general, all factors within Perceived Usefulness received more than 4 ("Neutral" point) point over all 3 groups. Within Perceived Usefulness, 3 factors: booking convenience, reservation control and personalized ability do not receive significant positive perception from all groups. Conversely, customers’ perception toward loyalty program’s information and benefits offered from mobile app are very positive. It indicates that customers have expectation or interest toward these functions of the app and consider these functions suitable to be implemented on mobile application. Last question concern customers perception of using the app to reduce queuing time. This question also not receive too well score (5 = “Somewhat agree”.)

Perceived Usefulness is the most important element of customer’s adoption and also the major barrier. If the mobile app fail to clearly communicate and deliver the vital values, the innovation has a great chance to be unsuccessful (Laukkanen 2016, 2437.)

As result of Spearman’s correlation, there is significant relationship between Perceived Usefulness and Attitude toward usage of mobile app (p = .000 > .05, r = .613) Since the relationship is positive, if the score for Perceived Usefulness rises, so does the score of Attitude toward mobile app usage.

**Perceived Risk**

All adoption groups shows negative perception toward privacy and function risk that may exist when using mobile. It indicates that tested respondents do not consider risk a barrier in adopting a new innovation. This finding is not similar to a study about mobile banking, where Laukkanen (2016, 2437.) found risk demonstrate barrier on image of mobile banking. However, Wang & Wang (2010, 605) provides support on this result, point out that customers have gotten more frequent and well aware of the existence of possible risk as well as the development of technology to reduce this problem. This understanding helps customers to have more confidence in adopting new technology. Another reason can be given out is the characteristics of hotel booking being less sensitive and discrete than mobile banking. Nonetheless, if customers perceive the risk to be increasing, it still able to cause harm to the adoption process.

Spearman’s correlation suggest a significant relationship between 2 variables attitude and risk (p = .000 < .05, r = -.383) However, since r-value is negative, the relationship is reverse, a raise in perception of risk will observe a decline in attitude toward using mobile app.
Perceived Ease of Use

Customers show low perception of the role clarity in the booking process. In addition, Reject groups have perception that information may be hard to find within the mobile app. As this is a new booking method, customers need more information regarding booking process and its advantage.

Spearman’s correlation test find a significant connection between Perceived Ease of Use to Attitude ($p = .000 < .05, r = .658$). However according to a study by Lukkanen (2016, 2437.), perceived ease of use though important, will not be a barrier for customers to adopt an innovation. According to Lukkanen, customers value the usefulness of the innovation more and willing to adapt to the innovation if perceived value is visible. Similarly Ozturk & al. (2016a, 112.) find a causal relationship between Ease of Use and Perceived Usefulness, amplify that complexity of an innovation will increase how customer perceive usefulness of an innovation.

Observability

Observability measures innovation’s ability to demonstrate its benefits to customers. Reject group’s score expresses a difficulty in seeing the benefits of the mobile app as well as exposure to the new innovation in their social society. As Morosan (2012, 73.) concluded, lack of observability is the barrier for other problems that innovation may encounter. An increase in exposure and familiarity contributes to the advancement of positive attitude and belief of the mobile app.

Spearman’s correlation result show significant relationship between observability and customers’ attitude ($p = .000 < .05, r = .623$) The result is correspondent to Moore & Benbasat (1991, 210.) that observability and Perceived Usefulness are the best predictors of attitude toward usage.

8.2 Conclusion & implications

Based on the acquired data and analysis, there are several implications can be made regarding Hotel X’s customers attitude toward usage of the new mobile application.

Current customers base of the mobile app is business travellers from the age of 36-65. This demographic is due to fact that mobile app allows business travellers to review the reservation, claiming benefits using mobile phone. Potential customers segment can be 26-35 since this segment also frequently has business trips. In addition, they are also more familiar
with mobile application and have very positive attitude toward adopting technology into their booking process (Attachment 5).

Compatibility, Risk, Ease of Use, Observability and Perceived Usefulness are found to have significant relationship with customers’ attitude toward Hotel X’s mobile app usage. This result confirms the tested models and strengthen the researches that have been made regarding the relationship between mobile app’s attributions and attitude of the customers. Besides, the result indicates that customers are still new to this platform as more information is needed to remove the barrier customers are having in understanding the benefits of using this application. Importantly, reported respondents are not having desirable social image from the service. According to Solomon & al (2016, 332), improving current state and move to ideal state are 2 ways that customers raise their need recognition. While reducing the quality of booking an checking-in time is unethical, Hotel X can create this need by creating a desirable privilege image for the service.

Customers have positive attitude toward adopting the mobile app into booking process. And do not put pressure on social image. However, as an exclusive benefit for Loyalty Program, mobile app experience was not able to create special feeling and reduce queuing time for members. In addition, being treated specially is also a way to boost the observability of the mobile app and result demonstrability. In addition, it develops the emotional attachment customers have with the brand, as well as promote the observability, making the benefits more desirable for non-users

Regarding the usefulness of using the mobile app, adopters have positive score regarding all the mentioned functions. Customers pay great expectation in knowing loyalty program’s benefits and ability to conveniently search for information. These are all existing features of the mobile app, however, it’s observed a rather low score on the postpone and reject. According to Laukkanen (2016, 2437), there are 2 ways to increase the rate of adoption through perceived usefulness: pull and push. Pull is method to create awareness and motivation through marketing efforts, meanwhile push method is creating traffic by making other options less desirable. Either way, customers need to be educated on the determinant attributes, attributes that make mobile app more advantageous than other options (Solomon & al 2016, 346.)

The communication methods play important role in raising this awareness of the mobile app. Currently the main communication channel is through main website. While this platform is effective in spreading knowledge of the innovation, it is not effect in vividly demonstrate
and educate customers of the benefits, characteristics and accessibility of the mobile application. Other platform and material such as videos, image, info board is a great way to visually demonstrate these advantages.

8.3 Limitation

One of the limitation of the research is the sample size. Thesis is conducted on rather small sample. A larger sample would be more optimal to generalize the result. In addition, the questions are rated on a Likert-scale. A qualitative research can be made in the future to have deeper understanding of customers’ explanation and feedback.

Research only focus on the persuasion stage and mobile app's characteristics. There are many more factors that affect the diffusion of an innovation such as communication channel, marketing effort…and factors that affect the loyalty of customers post-purchase. Therefore, there need to be more researched in the future involving the stage before adoption decision and how the mobile app can be discovered.

Finally, the survey is conducted mostly on face-to-face basis at the Hotel X premise. Even though researcher is not observing as the respondents answer, there is a bias from customers when answering extreme, sensitive questions.
References


Collier, J. 2006. Examining customers’ intentions to use self-service technology through utilitarian and hedonic value judgments. ProQuest Dissertations Publishing. The University of Memphis.


Attachments

Attachment 1. Source of acknowledge – adopter

Attachment 2. Source of acknowledge – adopter

Attachment 3. Reasons for rejection
Attachment 4. Adopters by age and business trips groups

Attachment 5. Adopters by familiarity and age