

Selecting Mobile Applications: Hotel vs. Online Travel Agency

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Abstract:

With emergence of smart phones, the Internet accessibility and mobility were remarkably increased; therefore, many travelers book a hotel room using a smart phone. Accordingly, hotel companies and online travel agencies (OTAs) have offered mobile applications (apps) for their guests who use a smart phone. The study was designed to investigate what factors influence hotel guests in choosing mobile applications and what kinds of functions and information the guests are interested in depending on the timing of need and gender. The researchers found that very few respondents have used mobile apps from hotel companies. In addition, there were significant relationships between choosing mobile apps and temporal situations and choosing mobile apps and gender differences. Finally, the results showed what functions or information provided by mobile apps that hotel guests are interested in. We also make suggestions about how provide better mobile applications for targeted consumers in the hotel industry.

Keywords: Hotel, Smartphone, Online Travel Agency

1. Introduction:

Hotel firms sell hotel rooms via many distribution channels including Internet websites, phones, and online travel agencies (Tewari, 2009). About 38 percent of global tourism market is represented by online travel agencies (OTAs) in 2014 (PhoCusWright, 2014). When guests book hotel rooms through OTA websites, it can cost the hotels up to 15 times more than booking through hotel websites due to commission costs collected by OTAs (Starkov, 2011). Moreover, the information overload from OTA can lead ineffective

choices for customers (Rianthong, Dumrongsiri, & Kohda, 2016). Hotel firms try to encourage more guests to utilize direct distribution channels in order to avoid paying high commission costs to OTAs (Morosan & Jeong, 2008).

Trips can now be planned using Smartphone's. According to Adobe Systems Inc. (2011), only about 40 percent of consumers search for travel information with Smartphone's and 25 percent of consumers actually purchase travel products or services using Smartphone's. Yet, Google Inc. (2014) indicated that about 67% of leisure travelers and 78% of business travelers use Smartphone's throughout the travel process. Morosan (2014) indicated that customers acquire travel related information and purchase core tourism products using Smartphone's with the internet connections. Since Smartphone use in the United States has rapidly increased in recent years, it is expected that more consumers will now use Smartphone's as travel planning tools. Therefore, managers in the hotel industry must pay attention to the development of their mobile applications (apps) and understand what hotel guests want from mobile apps.

Mobile apps in the hotel industry can be separated into two categories: hotel apps and OTA apps. Hotel guests can book hotel rooms via their Smartphone's using either hotel apps or online travel agency (OTA) apps. Hotel companies offer many unique functions and information online travel agencies cannot provide for guests. For example, customers can use the app to check in or out of the hotel, order room service, or as a room key. Unlike mobile apps from hotel companies, OTA apps provide integrated services. For instance, customers can book a hotel room, flight seat, and rental car all at once using an OTA app (Belopotosky, 2011; Green & Lomanno, 2012).

However, many hotel guests who use a Smartphone to book hotels rooms wait until the last minute (Belopotosky, 2011; Starkov, 2012). Many people use apps from OTAs because they believe that OTAs offer cheap last-minute deals and integrated services. Hotel companies should attempt to increase hotel brand mobile app users in order to decrease commissions paid to OTAs.

The purpose of this study is to identify the characteristics of hotel guests who use mobile apps in the lodging industry. The researchers investigate how temporal situations and gender influence consumers' evaluations of mobile apps from different app providers and introduce consumers' perceptions of mobile apps (hotel companies versus online travel agencies). Construal level theory (CLT) was applied to developed scenarios to examine respondents in different temporal situations.

2. Literature Review:

2.1 Smartphone's and the U.S.E-commerce Market:

By the end of 2011, only about 35 percent people in the United States owned a Smartphone (Elkin, 2011), but about 64 percent of Americans own Smartphone's in 2015 (Smith, 2015). Global Internet developers have focused more on mobile Internet use than personal computer (PC) Internet use because mobile Internet use will soon surpass PC Internet use (Wu, Chen, Zhou, & Guo, 2010; Want, 2009).

Until a few years ago, applications (apps) for mobile services in business and various industries were not considered to play a major role in business success (Carlsson *et al.*, 2005); however, Smartphone's such as iPhones, PDAs, or Android phones have become major communication devices for consumers (Collins, 2010). Furthermore, many people purchase products or services using Smartphone's (Cena *et al.*, 2006). In 2012, about 96 percent of consumers search for product information using their Smartphone's, so there is great possibility of growth in the practice of purchasing products and services using Smartphone's in the future (Google Inc., 2012).

According to Adobe Systems Inc. (2011), consumers spent \$5.3 billion on mobile commerce in 2011, about an 83 percent increase from 2010, but it grows to about \$335 billion in 2015 (Linder, 2016). This trend can

be applied to the travel and the hotel industries (Cenaet *al.*, 2006). According to Petrock (2010), only 9 percent of travelers used Smartphone's to plan their trips in 2009. However, approximately 87 percent of travelers in the United States use a mobile device when they are travelling and about 46 percent of mobile users actually booked their trips using a mobile device in 2014 (Gevelber&Heckmann, 2015).

2.2 Mobile Apps from Hotel Companies and Online Travel Agencies:

Choice Hotels International introduced the first mobile application (app) among major hotel companies for iPhone users in 2009 (Collins, 2010). Competing hotel companies introduced their own mobile applications (apps) for Smartphone users in 2010.

According to Adobe Systems Inc.(2010and2011), mobile users who travel frequently use a map of the location, research travel destinations, check reviews from other consumers, compare prices, check itineraries, and book hotel rooms. When consumers make a travel plan using a Smartphone, they either research information concerning the travel separately or use several different mobile apps to do so. Therefore, hotel companies and online travel agencies keep adding more functions to their mobile apps to meet users' growing needs (Petrock, 2010).

Mobile users who use apps from hotel companies are able to book or cancel a room, order room service, redeem customer reward points, check in and out, and even use the phone as a room key (De Lollis, 2010; Frequent traveler survey, 2011). These functions are only provided by hotel company apps because they are directly connected with hotel systems. Thus, hotel guests cannot use many of them until they arrive at a hotel. These functions could save hotel guests time at the front desk and increase guest convenience and satisfaction during their stays. However, these features may not appear attractive to guests until the guests have checked into the hotel. Although hotel companies offer special functions in a mobile app, hotel guests may not want those functions when booking a room. Guests may want to compare prices with other hotels, read reviews from other customers, or book a hotel room and flight ticket together. Online travel agencies, such as Priceline, Hotels.com, Expedia, or Trip Advisor provide mobile apps for hotel guests that provide these services (Belopotosky, 2011).

While apps from hotel companies and online travel agencies provide hotel information and transaction functions (Patrick,2011; Wang&Wang,2010), apps from online travel agencies provide additional convenient functions for hotel guests. According to Belopotosky (2011), customers can make reservations for hotels, flights, and rental cars all at once with mobile apps from online travel agencies. In addition, OTA apps provide consumer reviews and information about the prices of comparable hotels in the area and may offer cheaper prices than any hotel company (Belopotosky, 2011). Consumers may not see the need for mobile apps from hotel companies because they prefer integrated mobile apps (Belopotosky, 2011). Many Smartphone users wait for last minute deals and find comparing rates among hotels in a certain area very attractive (Strakov, 2012). However, this function is only provided by online travel agency apps. According to Wang and Wang (2010), customers can compare hotel brands by using apps from online travel agencies, while apps from hotel companies only show their own hotel brands. These reasons could drive hotel guests away from the mobile apps of hotel companies.

Since the number of Smartphone users has increased every year, mobile app developers and hotel managements should pay more attention to consumer demands from mobile apps. According to Schmidt, Cantalops, and dos Santos (2008), broad text information about and photos of hotel services, rooms, and the local area on hotel websites are features that attract new guests, retain current guests, and increase market share. Unfortunately, Smartphone's have the limitations of small screen size, slow internet speeds, and relatively poor connectivity (Trip Advisor, 2011), so app developers need to determine how to express condensed information on a small screen. Hotel companies need to create apps that can compete with apps from online travel agencies and adapt to the limitations of Smartphone's.

Hotel firms allow about 37.5 percent of hotel guests to book hotel rooms through OTAs, but the fair share of OTAs is 25 percent (Starkov, 2011). Hotel companies have lost revenue by paying commissions to OTAs. The last-minute deals offered by OTAs can harm the room rates and revenue of hotels (Green & Lomanno, 2012). In addition, guests have been trained to believe that they can attain the cheapest room rates if they wait longer to book, which may lead to brand erosion (Starkov, 2011).

2.3 Factors Influencing Hotel Guests in Choosing Mobile Apps:

2.3.1. Immediate Use vs. Future Use:

Trope and Liberman (2003) introduced Construal Level Theory (CLT), which proposes that people can think differently of the same event depending on temporal distances. Trope and Liberman (2003) introduced a high-level construal and a low level construal. People seek general, decontextualized, and simple information for distant future events. In contrast, when people have an event in the near-future, they want to look for context, concrete, and incidental details.

Liberman and Trope (1998) examined behaviors in consumers evaluating products or services for future use (a year from today) versus immediate use (now). When consumers need a product for immediate use, they consider feasibility the primary concern. In contrast, when consumers need a product for future use; they choose desirability as a primary consideration. For example, when consumers need an apartment immediately, they pay more attention to moving expenses, rather than the size of the apartments in question (Kim *et al.*, 2009). On the other hand, when consumers require an apartment for future living, they will search a large apartment but not care as much about the moving expenses (Kim *et al.*, 2009). When consumers need information about events in the distant future, they look for super ordinate features rather than subordinate features.

The CLT is applied to study the intention of downloading mobile apps in the hotel industry. Therefore, it is hypothesized that when a consumer needs to book a hotel room immediately, they may need to know prices, room types, or room availability information about hotels. In contrast, when hotel guests book a hotel room for the distant-future, they want to know overall information about hotels and amenities (Trope and Liberman, 2003).

According to Starkov (2012), more than 65 percent of mobile bookings are for the same day or the next day. In other words, travelers who plan a trip with mobile apps try to book last-minute deals (Starkov, 2012; Tripadvisor, 2011). Therefore, temporal situations are expected to be an important factor in influencing consumers to choose mobile apps from different providers (hotels versus third party agencies) in the hotel industry. Travelers who want to book a room immediately may focus more on the price of rooms. In contrast, people who require a hotel room for the distant future may focus more on hotel feasibility factors such as hotel amenities, the area near the hotel, quality of services, and so on. Since online travel agencies provide last-minute deals, well optimized mobile websites including rich content are required to motivate hotel guests to download mobile apps from hotel companies instead of from OTAs.

2.3.2 Gender Differences:

Previous research pointed out differences in the patterns of Internet use and purchasing behaviors between men and women (Iqbal, 2010; Ahuja *et al.*, 2003; Jackson *et al.*, 2001; Kim *et al.*, 2011). Traditionally, men's characteristics are considered to be instrumental, self confident, competitive, dynamic, and task competent, and women's characteristics are considered to be kind, nurturing, and relationship oriented (Iqbal, 2010). In addition, women tend to seek information more actively than men; in other words, men tend to focus on fractional information while women tend to compare all possible information before making a purchasing decision (Richard *et al.*, 2010). With the Internet, consumers are able to research reviews from other consumers. Women acquire and share opinions with other customers before making a

purchasing decision, while men just research the information they need (Jackson *et al.*, 2001; Kim *et al.*, 2011). Therefore, women may be more influenced by other customers' opinions than men (Kim *et al.*, 2011).

In the context of making purchase decisions, men are more likely to consider shopping as a job to be completed, and do not browse for similar products or services (Richard *et al.*, 2010). It is common for male shoppers to stop by one store, purchase the targeted products or services, and leave. However, for female shoppers, the shopping process may become more satisfying after exploring a variety of products, comparing the prices of possible stores, and making a decision at the end of this process (Richard *et al.*, 2010). Since customer reviews and price comparisons of products are only provided in applications (apps) from online travel agencies, women may prefer online travel agency apps. Based on previous literature, the following hypotheses were suggested in this study. The hypotheses verified the relationships between choosing apps and temporal situations and choosing apps and gender differences. Hypotheses were generated from temporal situations and gender differences.

2.4 Hypotheses:

H01: Choosing mobile applications between hotels and OTAs are independent with temporal situations of travelers.

Ha 1: Choosing mobile applications between hotels and OTAs are not independent with temporal situations of travelers.

H02: Choosing mobile applications between hotels and OTAs are independent with gender differences of travelers.

Ha 2: Choosing mobile applications between hotels and OTAs are not independent with gender differences of travelers.

3. Methodology:

The target population was Smartphone owners between ages 19 and 30 because the younger generation tends to be more familiar with new technologies and these technologies have been a larger part of their lives (Becker *et al.*, 2012; Walling, 2012). Furthermore, the younger generation spends more time on the Internet, blogs, social network websites, etc. than any other generation groups (Becker *et al.*, 2012; Junco & Cole-Avent, 2008; Walling, 2012). A total of four hundred self-administered questionnaires were distributed on a university campus and 247 valid responses were collected using the paper-pencil survey. The questionnaire was generated based on consumer trends from Adobe Systems Inc. (2010) with short scenarios.

Scenarios were created by researchers using temporal distances (immediate use and distant future use) from construal level theory (CLT). Two scenarios (See appendix A) were developed to manipulate the temporal situations. Both scenarios involved a family trip. The researchers mentioned family in the scenarios because when a task involves family members or close friends, the subject generally feels a larger responsibility to succeed in completing said task in order to protect their reputation among loved people (Fennell, 1978).

The first scenario describes a situation asking the consumer to make a hotel room reservation right now for their family. The second scenario describes a situation in which the consumer needs to book a year from today for a family vacation. Two groups of questions were asked of respondents. Data on Smartphone usage and experience and demographic information were collected in the first section. In the second section, respondents were asked about interests in functions and information in apps from hotel companies or online travel agencies with the scenarios mentioned earlier.

Respondents were divided into two groups. Both groups read a short scenario about booking a room for a family trip. The first group was given a short scenario which included a current problem: they needed to book a room for tomorrow. The second group was given the scenario concerning a future problem: they needed to book a room for a year from now. After reading the scenarios, both groups were asked the same questions about functions and information provided by applications (apps) from hotel companies and online travel agencies.

A total of 22 items were included to examine respondents’ interests in functions and information on mobile apps. Although some features were not supported by all the apps, the respondents were not given this information until they had finished the questionnaires. All questions in this section were measured by a 5-point Likert scale from 1 (Strongly disagree) to 5 (Strongly agree). After the respondents finished answering the questionnaires, they were provided an information sheet to increase their understanding about mobile apps. The information sheet indicated which functions were available in apps from hotel companies, online travel agencies, or both. Finally, respondents selected mobile apps either from hotel companies or online travel agencies.

The data was analyzed with SPSS 20.0. The research hypotheses were examined by chi-square analysis to determine the relationship between choosing apps and temporal situations and choosing apps and gender differences. In addition, exploratory factor analysis (EFA) was conducted to determine which functions or information hotel guests were interested in from mobile apps (Bandalos& Finney, 2010).

4. Results:

4.1 Sample Characteristics:

A total of 400 survey questionnaires were distributed, and 247 valid responses were collected. Of the valid responses, 136 subjects were presented with scenario A (Present consumer needs) and 111 subjects were presented with scenario B (Future consumer needs). Approximately 46.7 percent of respondents were male and 53.3 percent were female. All subjects were university students between the ages of 18 and 26. More demographic information about the respondents is provided in Table 1.

About 60 percent of respondents had used a Smartphone for longer than two years, and approximately 80 percent of respondents had used a Smartphone for at least a year, which insinuates that the respondents know how to use Smartphone’s. Almost all respondents indicated that they use their Smartphone’s for calls, text messages, and the Internet. However, less than the half (43 percent) of respondents had purchased products using a Smartphone. About 42 percent of respondents spend one to three hours per day using a Smartphone. In addition, approximately 45 percent of respondents had less than 15 mobile applications (apps) on their Smartphone’s. The majority of respondents (79.3 percent) had not used mobile apps from either hotel companies or online travel agencies. Among respondents who had experience with mobile apps in the hotel industry, 80 percent of them used mobile apps from online travel agencies.

Table 1. Profile of Respondents

Variables	Frequency	Percentage (%)
Temporal Situations (N=247)		
Scenario A	136	55
Scenario B	111	45
Gender (N=244)		
Male	114	46.7
Female	130	53.3
How long have use used Smartphone? (N=245)		
6 months or less	16	6.5
7 to 12 months	36	14.7
13 to 24 months	48	19.6
25 months or more	145	59.2

Have you used mobile applications provided by hotel companies (Hilton, Marriott, Best Western, etc.) or online travel agencies (Priceline, Expedia, TripAdvisor, etc.)? (N=242)

Yes	50	20.7
No	192	79.3
If yes, which company do you use the most? (N=45)		
Hotel companies	5	11.1
Online travel agencies	40	78.9

4.2 Chi-Square Analysis:

As the results show, we were able to reject the null hypotheses. There were significant relationships between choosing apps and temporal situations and choosing apps and gender differences (see table 2). Respondents who read scenario A with a present problem were more likely to download OTA apps than hotel apps. This corresponded to the previous literature; many mobile users looked for last-minute deals and online travel agencies provide last minute deals(Starkov,2012). However, respondents who read scenario B with a future problem were more likely to choose hotel apps than OTA apps.Hotel companies provide detailed information about hotel rooms and amenities.

About the same number of male respondents (49.6 percent and 50.4 percent) chose hotel companies and online travel agencies. However, almost double the number of females would rather download mobile apps from online travel agencies (65.9 percent) than from hotels (34.1 percent). These results are also explained by previous literature: women prefer to communicate with other people and compare prices on similar products.

Table 2. Results of Chi-Square Analysis

	Hotel apps		OTA apps		χ^2
	N	%	N	%	
Temporal Situations					
Scenario A (Immediate Use)	45	33%	91	67%	9.233**
Scenario B (Future Use)	63	56.7%	48	43.3%	
Gender Differences					
Male	56	49.6%	57	50.4%	5.929*
Female	44	34.1%	85	65.9%	

4.3 Temporal Situations: Scenario A (present use) vs. Scenario B (future use):

To examine hotel guests' interests in functions and information in mobile applications (apps), we adopted items from prior research and extracted 22 functional and informational features of mobile apps from hotel companies and online travel agencies. Exploratory factor analysis (EFA) was conducted to examine two major dimensions functions and information. Three factors were extracted from Scenario A (present use) and from Scenario B (future use)(see table 3). Factor loadings below 0.4 were not displayed. The Varimax method was applied using an Eigenvalue criterion of 1.0. Eleven items were deleted after conducting the EFA in the scenario A, and ten items were deleted by EFA in the scenario B.

To test sample adequacy, the Kaiser-Meyer Olkin (KMO) test was applied; it revealed appropriate scores of .833 for scenario A and .876 for scenario B (Tabachnick&Fidell, 1996). The Bartlett test of sphericity was also applied to examine the suitability for factor analysis and was found to be significant ($p < .001$). In addition, all six factors indicated Chronbach's alpha values were greater than 0.86, which meant all factors were statistically reliable (Tabachnick&Fidell, 1996).In Scenario A, almost 49 percent of variances were

accounted for by functions provided only by online travel agencies. In contrast, the respondents who read Scenario B showed the highest variance (54 percent) with general information provided by both hotel companies and online travel agencies.

Table 3. Factor Analysis 1 (Temporal situations)

It would be an important characteristic to download a mobile application from hotel companies or online travel agencies because it...						
Scenario A (Immediate Use)						
Factor	Items	Loading	Alpha	Mean	SD	Variance
Factor 1 Online Travel Agencies	is able to compare prices of hotels in the area.	.834	.893	4.04	0.85	48.76
	is able to find information about restaurants in the area.	.810				
	is able to read hotel reviews from previous consumers.	.792				
	provides brief hotel information.	.788				
	is able to purchase a flight ticket.	.747				
Factor 2 Hotel Companies	is able to check-out.	.999	.882	3.88	1.11	18.86
	is able to check-in.	.966				
	is able to use a room key.	.620				
Factor 3 Price	is able to have an exclusive offer.	.975	.896	4.13	0.99	10.98
	is able to have a better offer.	.850				
	is able to have a cheaper price.	.727				
Scenario B (Future Use)						
Factor	Items	Loading	Alpha	Mean	SD	Variance
Factor 1 General Information	provides a local map.	.912	.893	4.13	0.90	54.01
	provides information about the local area.	.837				
	provides address and phone number.	.816				
	provides detailed hotel information.	.646				
Factor 2 Hotel Companies	is able to check out.	.917	.861	3.73	1.08	14.19
	is able to check in.	.912				
	is able to use a room key.	.650				
	is able to order room service.	.583				
Factor 3 Online Travel Agencies	is able to make a rental car reservation.	.905	.882	3.90	0.94	9.09
	is able to purchase a flight ticket.	.739				
	is able to find information about restaurants in the area.	.640				
	is able to join a reward program for frequent purchase.	.600				

Note. Extraction method was Principal Axis Factoring. All factors were measured on a five-point Likert scale where 1 = strongly disagree and 5 = strongly agree.

4.4 Gender Differences:

We also tested 22 items to examine gender differences in interest in mobile apps. Three factors were extracted from both male respondents and female respondents (see table 4). Thirteen items were deleted after conducting the EFA for male respondents, and eleven items were deleted after conducting the EFA for female respondents. As with the temporal situations, factor loadings below 0.4 were deleted. Varimax rotation was employed and only factors with an Eigenvalue greater than 1.0 were retained. A Kaiser-Meyer Olkin (KMO) test revealed appropriate scores of .880 for male respondents and .922 for female respondents (Tabachnick&Fidell,1996). The result of the Bartlett test of sphericity was significant (p <.001). All six factors had Chronbach’s alpha values over .76, which meant all six factors had statistical reliability (Tabachnick&Fidell, 1996). Male respondents showed the highest variance (44.98 percent) with special offers. In contrast, basic functions and information showed the highest variance (53.72 percent) for female respondents.

Table 4. Factor Analysis 2(Gender)

It would be an important characteristic to download a mobile application from hotel companies or online travel agencies because it...						
Male Respondents						
Factor	Items	Loading	Alpha	Mean	SD	Variance
Factor 1 Price	is able to have an exclusive offer.	.857	.882	4.07	1.68	44.98
	is able to have cheaper prices.					
	is able to have a special offer.	.763				
		.735				
Factor 2 Hotel Companies	Is able to check out.	.889	.870	3.81	2.54	15.64
	Is able to check in.	.887				
	Is able to use a room key.	.578				
Factor 3 Online Travel Agencies	is able to find restaurants information in the area.	.762	.768	4.09	1.22	8.92
	is able to purchase a flight ticket.	.681				
	is able to make a rental car reservation.	.679				
Female Respondents						
Factor	Items	Loading	Alpha	Mean	SD	Variance
Factor 1 Basic Information and Functions	provides local map.	.948	.922	4.09	1.30	53.72
	is able to make a room reservation.	.840				
	provides information about local area. provides address and phone number of hotels.	.798				
	is able to cancel a room reservation.	.742				
		.741				
Factor 2 Online Travel Agencies	is able to read hotel reviews from previous consumers.	.851	.892	3.88	1.30	15.79
	is able to compare prices of hotels in the area.	.824				
	is able to purchase a flight ticket	.798				
Factor 3 Hotel Companies	is able to check-in.	.995	.878	.379	2.88	8.81
	is able to check-out.	.955				
	is able to use a room key.	.607				

Note. Extraction method was Principal Axis Factoring. All factors were measured on a five-point Likert scale where 1 = strongly disagree and 5 = strongly agree.

5. Conclusion and Implications:

The results of our study showed that a majority of respondents have not used mobile apps from hotel companies or online travel agencies. Even though approximately 60percent of respondents had used a Smartphone for more than two years, only one-fifth of our respondents had used mobile apps either from hotel companies or online travel agencies. Apps from hotel companies were not frequently used by respondents, as only five respondents had used mobile apps from hotel companies.

Starkov (2012) mentioned that the biggest mistake hotel managements make is not developing decent mobile applications (apps). Since mobile Internet is replacing PC Internet, hotel companies need to respond effectively to this growing demand. According to Starkov (2012), many hotel companies tried to appeal to customer loyalty with their mobile apps but it was not enough and did not work well because mobile apps have limitations when compared to PC Internet. If hotel companies cannot provide contemporary and eye-catching mobile websites, consumers will not choose to download their mobile apps.

Therefore, mobile apps should include simple and clear navigation tools. Next, the apps should include the most important elements of hotel products or services. Finally, a mobile websites should connect with its traditional hotel website; this will help customers experience consistency with the company (Kasavana, 2012; Starkov, 2012).

We found a significant relationship between temporal situations and downloading mobile apps. Previous research indicated travelers purchase products or services using mobile apps at the last-minute. Our results showed that about 67percent of respondents would download mobile apps and showed the highest interest in functions only provided by online travel agencies in Scenario A (immediate use). Since mobile apps from hotel companies do not provide connected services with other hospitality companies, travelers may avoid choosing mobile apps from hotel companies at the last minute. Consumers who use Smartphone's to place room reservations usually make a purchasing decision in a short period of time. Thus, more respondents in Scenario A condition chose OTA apps for purchase decision aids such as price comparison and consumer reviews to save time while making a decision. Since many hotel guests wait for last minute deals, hotel should prevent losing hotel guests to OTAs by providing alternatives to last-minute deals.

The best rate guarantee program is good way to promote room sales for hotel companies. Many hotel firms match room prices with other distribution channels if hotel guests find lower rates than listed on their own websites (Morrosan&Jeong,2008). In 2016, major hotel companies such as Hilton Worldwide, Marriott International, Hyatt Hotels Corp, etc., offer direct-booking discounts for guests. If hotel guests book a hotel room using direct hotel websites or applications, the guests get discounts (Sickel,2016). Promotions can increase hotel revenue but hotel companies should inform guests first about benefit about direct-booking.

By contrast, about 57 percent of the respondents who read Scenario B, the future problem, chose mobile apps from hotel companies. Since the respondents had more time to make a decision, they were more interested in the general information provided by both hotel companies and online travel agencies. As Trope and Liberman (2003) indicated, when consumers have an event in the distant-future, they tend to look for more general information that conveys essential information about the hotels in question. When consumers purchase products for distant-future, they especially worried about evaluations of their purchasing decision from family, friends, social groups, or others (Fennel,1978). Hotel practitioners should consider that information needs to be clear and simple to make customers avoiding mistakes.

Finally, there was a significant relationship between choosing mobile apps and gender differences. About two-thirds of female respondents would download mobile apps from online travel agencies. Male respondents were more ambivalent and would choose either a mobile app from hotel companies or online travel agencies at about an equal rate. As other researchers have indicated about the characteristics of female

shoppers, our female respondents were interested in general information and the basic functions of apps.

6. Future Research and Limitations:

Since online travel agencies offer flight tickets and rental cars as well, the results of this study may apply to other industries such as car rentals, airlines, or other hospitality companies. Hospitality companies pay expensive commissions to offer their products or services on online travel agency websites. Therefore, future researchers can investigate attractive functions or information in mobile apps for companies in hospitality industry.

Second, this study only verified the relationship between downloading mobile apps and temporal situations and downloading mobile apps and gender differences. Future research could examine which factors inspire hotel guests to download mobile apps.

Third, some functions that consumer favored in this study, such as customer reviews of hotel stays, may be difficult for hotel companies to adopt because hotel guests could leave negative reviews. Hotel companies would not want to show negative reviews on their websites. In addition, hotel companies would not want to show other hotels' room rates on their websites or mobile apps.

Finally, as for the limitation of this study, this study only examined university students, which may limit the generalizability of this study. Although these students are savvy with new technologies, they may not have actual purchasing power yet. Therefore, future research could test samples that have purchasing power and frequently use mobile commerce. According to Adobe System Inc.(2011), male consumers between thirty and forty years old spend more money using Smartphone's than any other age groups, which means that group has purchasing power.

By 2015, it is expected that there will be more U.S. users accessing the Internet via mobile devices than via PCs (Burger, 2012). It is very likely that more and more consumers will use Smartphone's or other mobile devices for their travel planning and room reservations. As this topic become more prevalent, hotel managers will need to pay more attention to their mobile site and apps regarding providing right information to the different types of consumers, as well as how their mobile apps practices can enhance the consumer/retailer relationship.

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APPENDIX A

Scenario A

You are going on a family trip tomorrow, but you forgot to make a hotel room reservation. Thus, you would like to download a mobile application to make a hotel room reservation from either a hotel company such as Marriott, Hilton, Holiday Inn, etc. or an online travel agency such as Hotels.com, Expedia, Priceline, etc. You already know the characteristics of applications from hotel companies and also online travel agencies. Table 1 shows characteristics of mobile applications.

Scenario B

You are going on a family trip next year. You want to make a hotel room reservation for the trip now. You would like to download a mobile application to make a hotel room reservation from either a hotel company such as Marriott, Hilton, Holiday Inn, etc. or an online travel agency such as Hotels.com, Expedia, Priceline, etc. You already know the characteristics of applications from hotel companies and also online travel agencies. Table 1 shows characteristics of mobile applications.