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The Mobile Revolution Is Here: Are You Ready?

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Abstract

With the rise of smartphones and tablets, travelers now have remarkable connectivity that allows them to make travel arrangements and share information before, during, and after their trips. A 2014 survey by the Pew Research Center found that 58 percent of adults in the United States owned a smartphone.[1] With that rapid expansion of mobile devices, one concern is that the hospitality industry might not be ready for the level of mobile accessibility and functionality that customers expect. In that regard, an analysis by the Boston Consulting Group (BCG) found that although most travel companies recognize that mobile is increasing in importance, they do not yet understand its full reach and impact.[2] Compared to PCs, mobile use patterns, behaviors, and expectations are different, and each phase of the travel cycle requires a distinctive approach for mobile.

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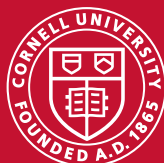
School of Hotel Administration

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EXECUTIVE SUMMARY

Hotel guests are ready to do much more with their smartphones than is currently possible, according to a survey of 754 U.S. travelers. Young travelers in particular would like to use their mobile devices to handle routine functions, such as checking in and out of a hotel. A substantial number of travelers of all ages use their smartphones and tablets to research and sometimes book activities and restaurants during their trip. About two-thirds of the survey respondents had downloaded at least one travel-related mobile app, but half of those apps were later deleted. Moreover, respondents still preferred to use their PC for planning and booking purposes before the trip. Even if they were using their mobile device, they preferred to log into a hotel's website rather than use the mobile app—a finding that argues for a more careful look at the user experience provided by mobile apps. Further analysis indicates that travelers would prefer a general (multiple-firm) travel app rather than one that is limited to just one company. Privacy remains a great concern for most of the respondents, and they particularly dislike the idea of apps that include automatic geolocation. However, many travelers, particularly women and young travelers, are willing to share personal information on a limited basis in exchange for special services or offers.

ABOUT THE AUTHORS

Heather Linton is a Ph.D. student in the Cornell University School of Hotel Administration. She holds a B.S. in communications and business management from Ithaca College, an MBA from Suffolk University, and the Certified Hospitality Marketing Executive (CHME) certification from HSMAI. With industry experience that includes a hotel research firm, two DMOs, and a website development company focused on small and medium hotels in emerging economies, Heather's background gives her a strong practical foundation. This is complemented by five years' teaching experience in the business school at Ithaca College, three semesters as an adjunct instructor at Wells College, and a semester teaching at SRH Hochschule in Heidelberg, Germany. Heather's primary research interests involve technology, decision making, and international travel.

Rob Kwortnik, Ph.D., an associate professor of services marketing, joined Cornell's faculty after earning his Ph.D. in Business Administration from Temple University in 2003. He also earned a BA in Journalism from Temple and an MBA from California State University, Northridge. Kwortnik's research focuses on consumer behavior in service contexts, with special attention to service experience management. He has published in *Journal of Marketing Research, Journal of Service Research, International Journal of Research in Marketing*, and the *Cornell Hospitality Quarterly*, among others. He has been honored eight times as a Teacher of the Year by students at the Cornell School of Hotel Administration. Prior to his career in academics, Kwortnik held several professional positions in marketing and was a travel industry consultant. He is a recognized expert on the leisure cruise industry.

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With the rise of smartphones and tablets, travelers now have remarkable connectivity that allows them to make travel arrangements and share information before, during, and after their trips. A 2014 survey by the Pew Research Center found that 58 percent of adults in the United States owned a smartphone.[1] With that rapid expansion of mobile devices, one concern is that the hospitality industry might not be ready for the level of mobile accessibility and functionality that customers expect. In that regard, an analysis by the Boston Consulting Group (BCG) found that although most travel companies recognize that mobile is increasing in importance, they do not yet understand its full reach and impact.[2] Compared to PCs, mobile use patterns, behaviors, and expectations are different, and each phase of the travel cycle requires a distinctive approach for mobile.

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[1] Pew Research Center, "Mobile Technology Fact Sheet," www.pewinternet.org/fact-sheets/mobile-technology-fact-sheet/, viewed December 22, 2014.

[2] Boston Consulting Group, "Travel Goes Mobile," www.bcgperspectives.com/content/articles/transportation_travel_tourism_digital_economy_travel_goes_mobile/, viewed October 27, 2014.

The study described here is motivated by the concern that the fast-changing nature of the mobile platform may have outpaced our understanding of how consumers want to use mobile devices when they travel. Clearly, they want information, but they may also book activities as they travel, and they certainly share their experiences through their social networks. Our study takes a novel approach by subdividing the travel process into its three components—before, during, and after the trip—to look more closely at consumer behavior and mobile usage at each stage.

Whereas industry research to date has explored the pre-trip use of mobile technology, we've seen relatively few studies about how mobile can be used to enhance the journey during or after a trip. With this in mind, we survey more than 750 smartphone owners to examine how they have used their mobile devices when they travel, as well as how they would like to use their devices in the future, especially for an improved lodging experience. This study also explores consumers' concerns about information privacy and describes what travelers are willing to tell hotels and other travel operators about themselves in exchange for a more personalized experience. Based on those findings, we close with recommendations for how travel marketers can further develop their mobile strategy. We begin by examining existing research.

How Travelers Use Mobile Now— Industry Research to Date

Pre-Trip

Although travelers can, of course, use their mobile devices to call the supplier directly before their journey, this study focuses on electronic channels they might use, either visiting the supplier's website or downloading the supplier's mobile app. Although travel apps offer potential benefits, such as browseable databases of travel suppliers, booking engines, loyalty points monitoring, guest recognition on site through geolocation tracking, options for customizing one's stay, and SMS texting with staff, they usually require the user to share personal information as they download the app. One question that has not been addressed is whether people are willing to do this, especially for multiple suppliers.

Consumers' mobile usage related to hospitality has room to grow. PhoCusWright concluded that more than four in ten online travel shoppers have used a mobile device to research air or hotel itineraries when planning a leisure trip, and one in four booked via a mobile device within the past twelve months. At the moment, younger travelers are more likely to book on their mobile device, while older shoppers

will look using their mobile device but are less likely to book.[3]

Nielsen reported that the most commonly used travel apps offer a map or navigation function.[4] Similar to PhoCusWright, BCG found that Millennial consumers (ages 18-34) are more likely than older travelers to have travel apps on their smartphones (75% vs. 47%) and are more likely to use a mobile device for making travel arrangements.[5]

If travel providers offer a useful app, promote it well, and perhaps incentivize adoption, there's a possibility that consumers will download the app and engage with the provider throughout their travel process. In addition to offering content where and when consumers want it, as travelers interact more with travel companies using apps, they provide more data. The type of information generated can include usage, search, location, spending, status, friends and followers, and many other items that may be useful for companies' attempts to learn more about their customers and to serve them better.

During the Trip

Recent innovations using mobile technology for hospitality include Starwood Hotels' introduction of mobile keys at 10 properties around the world, with plans to roll out the mobile keys to 150 hotels in 2015. The program requires guests to download and check in using the Starwood app.[6] In December 2014, the Hyatt Regency Bellevue in Seattle, Washington, became the first hotel to enable guests to use SMS two-way communication with staff through the Connect app created by Bellevue's technology partner, Monscierge.[7]

Serving travelers during a trip offers a way to increase engagement and potentially generate revenue. According to tour operator Rezdy, most tour and attraction services are booked during a trip, as activities frequently are considered

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[3] PhoCusWright, "Touch and Go: Travel Planning Across Channels," www.phocuswright.com/free_reports/touch-and-go-travel-planning-across-channels, viewed November 3, 2014.

[4] The Nielsen Company, "Apps Dominate Mobile Time Spent Accessing Travel In U.S.," www.nielsen.com/us/en/insights/news/2012/apps-dominate-mobile-time-spent-accessing-travel-in-u-s.html, viewed October 27, 2014.

[5] J. Guggenheim *et al.*, "Travel Goes Mobile," *BCG Perspectives*, June 2014; Boston Consulting Group; www.bcgperspectives.com.

[6] Logan Whiteside, "Starwood hotels let you unlock your hotel room with your phone, November 4, 2014, http://money.cnn.com/2014/11/04/technology/mobile/starwood-hotel-room-unlock-phone/, viewed December 23, 2014.

[7] PR Newswire, "Hyatt's Technology Strategy Will Save Thousands While Benefitting Guests," Thursday, 18 Dec 2014, www.cnbc.com/id/102280193, viewed December 23, 2014.

details that travelers will handle when they arrive at their destination.[8] Along the same lines, PhoCusWright predicted that OTAs will become more involved during trips, as travelers check and change itineraries, read reviews, share experiences, and choose restaurants, hotels, tours, and activities on the go—often via their mobile devices.[9] TripAdvisor currently has the most popular travel app (which offers an instant booking feature), with 150 million downloads as of Q3 2014.[10] Travelers are also continuing to use their mobile devices to share their experience during the trip. A survey of 2,000 cruisers by Royal Caribbean found that during a week-long cruise, on average each person sends 28 Instagram pictures or texts, pins 28 items on Pinterest, posts 21 Facebook updates, broadcasts 21 tweets, sends 14 Snapchats, and uploads 7 Vine clips—a total of 120 individual items of content.[11]

Industry research reveals opportunities—many untapped—for travel suppliers to better use the mobile platform for marketing, communications, brand engagement, and relationship building during a trip. However, taking advantage of these opportunities requires a better understanding of the mobile experience that travelers seek, as well as what travelers are willing to give up in terms of privacy to receive the desired experience.

Post-Trip

Relatively little research has been done in the area of post-trip mobile usage. Travelers are, of course, sharing details of their trip on social media, but the specific role of mobile technology has not been ascertained. The mobile platform offers travel suppliers engagement and relationship-building opportunities after the actual travel experience has finished—and beyond the typical request for post-trip feedback.

Privacy Concerns

Part of the *quid pro quo* for downloading and using mobile apps is that users will share pertinent personal information, including their whereabouts and their activities. However, mobile users still draw lines when it comes to privacy. Research by airline technology specialists SITA indicated that 72 percent of passengers using mobile devices say they are willing to share data in exchange for more personalized

services—but fewer than one out of three will share data in exchange for commercial offers.[12] According to TRUSTe's 2014 Consumer Confidence Index, 85 percent of users are concerned about their privacy when using mobile apps. Due to privacy concerns, 80 percent of people are reluctant to use apps they don't trust, and 74 percent are unlikely to enable location tracking. [13]

On the other hand, consumers seem willing to share their most intimate secrets with online social networks and to be tracked by geolocation, such as by "checking in" on FourSquare or Facebook. These activities set the stage for offer-based engines that integrate social logins with big data to capture more refined information from a user's personal profile to facilitate personalized offers. Consumers who enable this data mining may appreciate the targeted offers they receive, though they're wary of the intelligence that produced the offer—a dilemma labeled the personalization-privacy paradox.[14] This paradox involves a privacy calculus, wherein users assess the tradeoff between the information they are required to give up and what they will receive in exchange.

Mobile data may be delivered in a covert or "push" approach or in an overt or "pull" transfer. In the push arrangement, information is transferred continually in the background, while the pull channel involves transfers of custom content only when the user approves the request. Privacy concerns tend to be higher in the covert channel and users are less likely to adopt personalized-content mechanisms of that type.

Research shows that approximately two-thirds of consumers are concerned about how companies use their personal information, a concern that increases for older consumers.[15] In addition, consumers who perceive themselves to be technology experts and who have been victims of privacy abuse in the past are most concerned about their privacy. Novice technology users exhibit mid-level concern about privacy, and expert users who have not been a victim of privacy abuse have the least concern.[16]

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[8] Martin Cowen, "Rezdy Confirms Offline Dominates Tours and Activities Bookings," Tnooz, October 31, 2014, www.tnooz.com/article/rezdy-confirms-offline-dominates-tours-activities-bookings/, viewed November 2, 2014.

[9] PhoCusWright, "Online Travel Agencies: More Than a Distribution Channel," www.phocuswright.com/free_reports/online-travel-agencies-more-than-a-distribution-channel, November 3, 2014.

[10] TripAdvisor, "Fact Sheet," www.tripadvisor.com/PressCenter-c4-Fact_Sheet.html, viewed December 23, 2014.

[11] Kevin May, "Volume of social media content hits 120 items a week on a trip," Tnooz, October 15, 2014, www.tnooz.com/article/social-media-content-trip-week/, viewed November 3, 2014.

[12] Linda Fox, "On The Ground And Up In The Air, Demand For Mobile Services Rising," Tnooz, September 29, 2014, www.tnooz.com/article/sita-air-passenger-IT-trends-2014/#utm, viewed October 29, 2014.

[13] TRUSTe, "2014 TRUSTe US Consumer Confidence Index," http://www.truste.com/us-consumer-confidence-index-2014/, viewed November 2, 2014.

[14] Heng Xu, Xin Luo, and John M. Carroll, "The Personalization Privacy Paradox: An Exploratory Study of Decision Making Process for Location-Aware Marketing," *Decision Support Systems*, April 2011.

[15] Felim McGrath, "GlobalWebIndex Blog," The Whisper Revelations and the Fight for Online Privacy, http://blog.globalwebindex.net/whisper-and-privacy, accessed November 3, 2014.

[16] Wen Yong Chua, Klarissa T.T. Chang, and Maffee Peng-Hui, "Information Privacy Concerns Among Novice and Expert Users of SoLoMo," Pacific Asia Conference on Information Systems (PACIS), 2014.

EXHIBIT 1

Respondent demographics

Age				
18-25	26-34	35-54	55-65	65+
27%	42%	27%	3%	1%

Education						
Less than High School	High School/ GED	Some College	2-year College Degree	4-year College Degree	Master's Degree	Professional/ Doctoral Degree (PhD, JD, MD)
<1%	9%	27%	11%	40%	9%	3%

Occupation									
Management, professional, and related	Other	Sales and office	Unemployed	Service	Government	Production, transportation, and material moving	Construction, extraction, and maintenance	Retired	Farming, fishing, and forestry
25%	18%	17%	16%	14%	5%	3%	2%	1%	<1%

Income				
<$30,000	$30,000-49,999	$50,000-69,999	$70,000-99,999	>$100,000
23%	31%	18%	16%	11%

The purpose of the information exchange also determines people's privacy wishes. Customers are more willing to share information for a utilitarian purpose, such as receiving assistance with a task, and also for a hedonic purpose, depending on the amount of pleasure they will receive in exchange.[17] In either case, consumers must receive something of value in exchange for sharing their personal information.

To augment the existing research on mobile device usage in travel, we studied the mobile use before, during, and after a trip of a group of travelers, as well as their technology-related privacy concerns. In addition to learning how they used their devices while traveling, we wanted to know how much information mobile users are willing to share about themselves, and their preferences for receiving special offers or customized hotel services. We also wanted to learn more about a traveler's preferred methods for communicating with hotels for specific actions, and how they would like to receive information from hospitality providers.

Methodology: Survey

The study used an online survey conducted in December 2014, with 849 participants from Amazon's Mechanical Turk subject pool. We removed two respondents for not completing the survey, 46 for not having a smartphone, and 47 for failing a survey quality control-check question, leaving a final sample size of 754. Respondents were almost balanced

between men and women, with slightly more men, at 54 percent. Other demographic statistics for the sample are shown in Exhibit 1. Including demographics, the survey had 37 questions covering the following seven subject areas:

1. **Device Information**: We asked about their smartphone brand, how many years they had owned a smartphone, whether they owned a tablet, and, if so, what brand and for how long.

2. **Travel Behavior**: To ensure that the sample contained people with varied travel behavior, we asked about how many overnight trips the users took in 2014, how many nights they stayed in a hotel, how many hotel loyalty programs they belong to, and how many travel apps they have on their mobile device.

3. **Mobile Use Before the Trip**: We asked what mobile devices and methods participants use to research (and book) a recent trip that involved an overnight hotel stay.

4. **Mobile Use During the Trip**: Once on the trip, we asked what information participants seek, what activities or offers they purchased or booked, and again, what devices they used. Plus, we asked how much they trust available information sources, how interested they would be in creating an electronic travel profile, and what methods they would prefer for communicating with a hotel in various situations.

[17] *Ibid..*

EXHIBIT 2

Mobile device operating systems

Smartphone	Tablet
Android 60%	Apple iPad 41%
Apple 35%	Other 16%
Other 3%	Kindle Fire 17%
Blackberry 1%	Samsung Galaxy 15%
	Google Nexus 9%
	Microsoft Surface 2%

Note: Totals may not add to 100% due to rounding.

5. **Mobile Use After the Trip**: The ways that the respondents uses their mobile devices after a recent trip, as well as what functions they wished for.

6. **Privacy**: What guests would tell a hotel and what they would like in exchange, as well as how comfortable they feel with automatic geolocation, as well as whether they would be willing to allow hotels to store their personal information.

7. **Demographics**: Gender, age, education, occupation, and income.

Device Profile

Consistent with the overall U.S. population, the majority of the survey respondents are Android users (see Exhibit 2), and they have owned a smartphone for an average of 4.24 years.[18] More than two-thirds (68%) of the sample have owned a tablet for an average of 2.13 years, and the Apple iPad is the most popular tablet-type device.

Travel Profile

On average, study participants took four overnight trips in 2014 that involved staying in a hotel, and stayed more than ten nights total in the year. More than half of the trips (56%) reported here had occurred within the prior three months. The majority of respondents (57%) are not members of any hotel-chain loyalty program, while 19 percent are members of multiple programs.

Results: Mobile App Adoption

Perhaps the most curious finding is that many consumers have removed travel-related applications that they downloaded to their mobile device. On average, respondents have downloaded one hotel app and one OTA app on their mobile device—but only half of those apps are still installed.

Of the study participants who still have apps installed, 37 percent have multiple apps and 25 percent have just one. But 38 percent of respondents had no travel-related apps on their mobile devices. As we discuss later, the issue here may be that people don't want their phones cluttered with single-purpose apps.

Pre-Trip Mobile Device Usage

Travelers use both their mobile devices and PCs for researching and booking trip components (see Exhibit 3). Although travelers use their mobile devices for travel research and bookings, they prefer to use a PC to research and book their hotel in advance,[19] and they are twice as likely to book activities using a PC. On the other hand, they are more likely to use their smartphones to locate and make reservations for restaurants.

Even though our respondents are increasingly using mobile devices to research and book travel, they still prefer to use websites for this purpose, instead of mobile apps. So, for example, when looking at a specific hotel, 63 percent of users chose to view the hotel's website, and only 32 percent used the hotel's app (see Exhibit 4). A similar gap applies to OTAs, with 51 percent preferring the OTA's website and 38 percent preferring an OTA's app.

Mobile Device Use During a Trip

People clearly are using their mobile devices to augment their experience while they travel (see Exhibit 5, page 12). Almost all (94%) respondents used maps or navigation apps and checked the weather on their mobile device. They also rely on their devices to locate restaurants (81%), find things to do and see (80%), and read restaurant recommendations (67%), as well as find local stores (53%). For these purposes, respondents preferred smartphones over tablets. Still, tablets are also in use, especially for research: 23 percent of respondents researched things to do or see and 19 percent researched restaurants using their tablets. These findings suggest that activity and attraction providers and restaurateurs must be aware that many travelers make decisions about things to do while they are traveling and not only before they leave.

For dining and activity recommendations, respondents were most likely to trust friends' recommendations (5.99 on a 1-7 scale, where 7 = trust completely), followed by review websites or apps (5.41), and the hotel concierge (4.96). Travel blogs (4.87), other hotel staff (4.5), and visitors' bureaus (4.06) were viewed as moderately trustworthy. As other studies have found, travelers tend to trust other travelers (friends and review sites) for information about what to

[18] Lance Whitney, "Android Loses Some US Market Share But Remains Top Dog", CNET; www.cnet.com/news/android-loses-some-us-market-share-but-remains-top-dog/, viewed December 27, 2014.

[19] PhoCusWright, "Touch and Go: Travel Planning Across Channels," www.phocuswright.com/free_reports/touch-and-go-travel-planning-across-channels, viewed November 3, 2014.

EXHIBIT 3

Electronic device use

Legend: Smartphone (blue), Tablet (red), PC (green). Categories: Researching hotels, Booking a hotel, Researching restaurants, Making a restaurant reservation, Researching activities, Booking activities. Y-axis: Percentage of respondents (0–90).
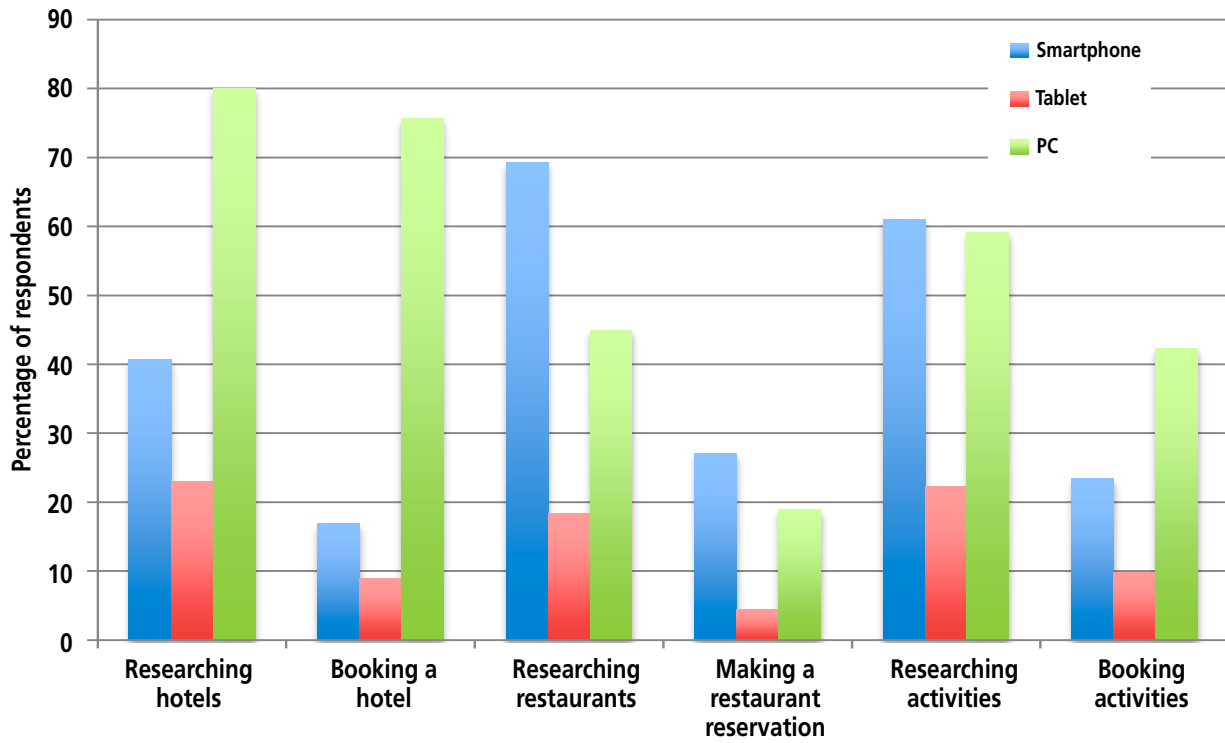
EXHIBIT 4

Preferred hotel research and booking methods

Legend: Any mobile (blue), Smartphone (red), Tablet (green). Categories: Hotel website, Hotel app, OTA website, OTA app. Y-axis: Percentage of respondents (0–70).
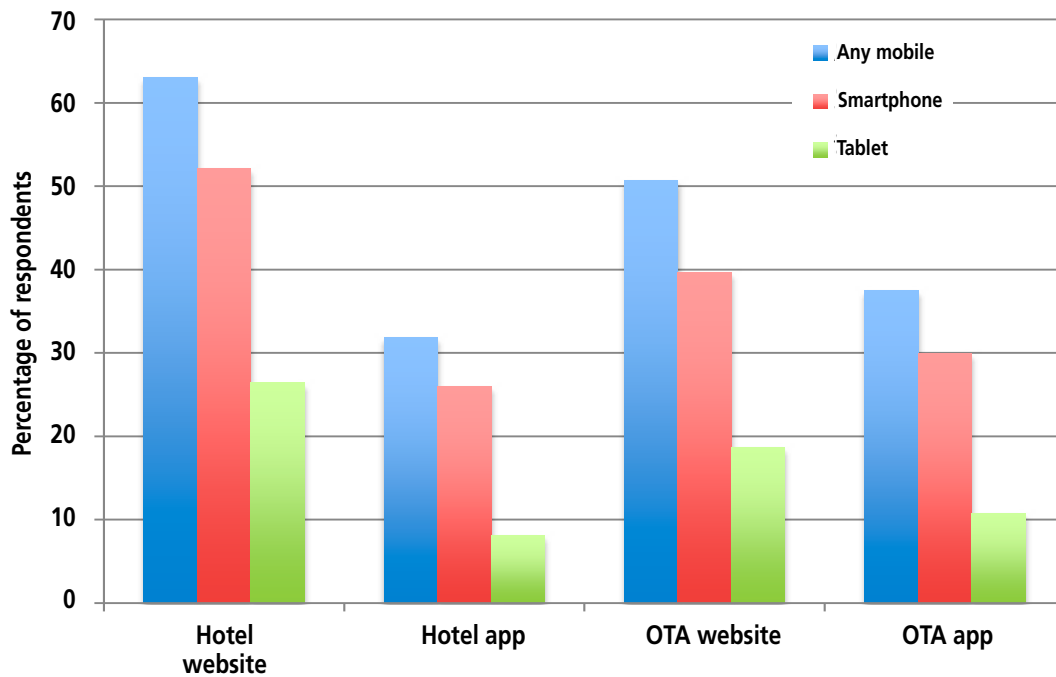
Note: Respondents could choose any combination of websites and apps.

Exhibit 5
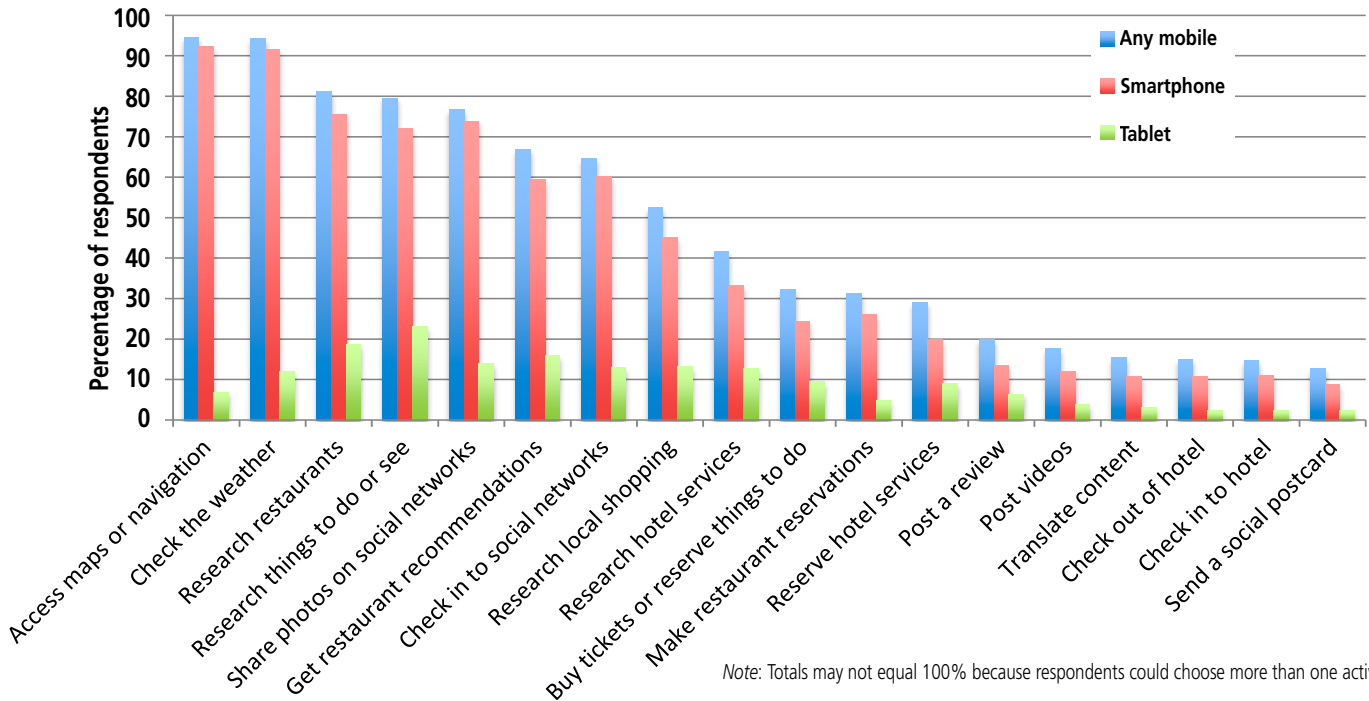
Mobile device use

Note: Totals may not equal 100% because respondents could choose more than one activity.

see and do during a trip, although hotel concierges are also seen as trustworthy.

About one-third of the respondents have used their mobile devices to make a restaurant or activity reservation. Thirty-two percent have used their smartphone or tablet to buy tickets or make activity reservations, and 31 percent have made a restaurant reservation on a mobile device, while 29 percent of respondents have reserved hotel services.

Needless to say, survey participants use their mobile devices for social networking: 77 percent of them shared photos, and 65 percent reported "checking in" on their Facebook or FourSquare pages. On the other hand, relatively few of the respondents posted reviews, uploaded videos, or sent electronic postcards. Nor did many of these travelers use their phone to check in or out of a hotel, most likely because such service is not widely available. Only 15 percent of respondents had checked-in via mobile on their most recent trip.

## Expanding Mobile Device Capabilities

Considering that issue of availability, the survey asked participants how interested they would be in using their mobile devices to do things that may not currently be available via mobile. They were in favor of most of the possible activities, except for connecting with other guests who have similar profiles and interests (see Exhibit 6). In general, they wanted greater automation of procedures and interactions, such

as (in descending order) receiving a notification on their mobile device when their room is ready, requesting hotel amenities, checking in and out of the hotel, and ordering room service. Participants were also interested in looking at more information about the hotel, such as menus of on-site restaurants, a property map, upgrading a room before checking in, requesting reservations for on-site restaurants or hotel-recommended off-site restaurants, having the valet retrieve a car, scheduling a taxi, or translating content. The respondents were essentially neutral regarding reserving a spa appointment or scheduling a tour by mobile device.

Individual Differences in Mobile Device Use

A factor analysis of these interest-level responses revealed two main factors: activities specifically related to the hotel room (i.e., checking in and out, upgrading one's room, receiving a notification when one's room is ready, and requesting room amenities), and ancillary activities (e.g., viewing menus of hotel restaurants, translating content into one's native language, reserving a spa appointment). Our test for differences among respondents on those two factors, specifically in terms of age and gender, found a significant interaction between activity interest and age when respondents are split into two age groups: Millennials (18-34) and non-Millennials (all the others, 35+). Millennials are more interested than older adults in using their mobile phones to perform the utilitarian tasks associated with their hotel stay, whereas

Exhibit 6

Desired potential mobile device applications and uses
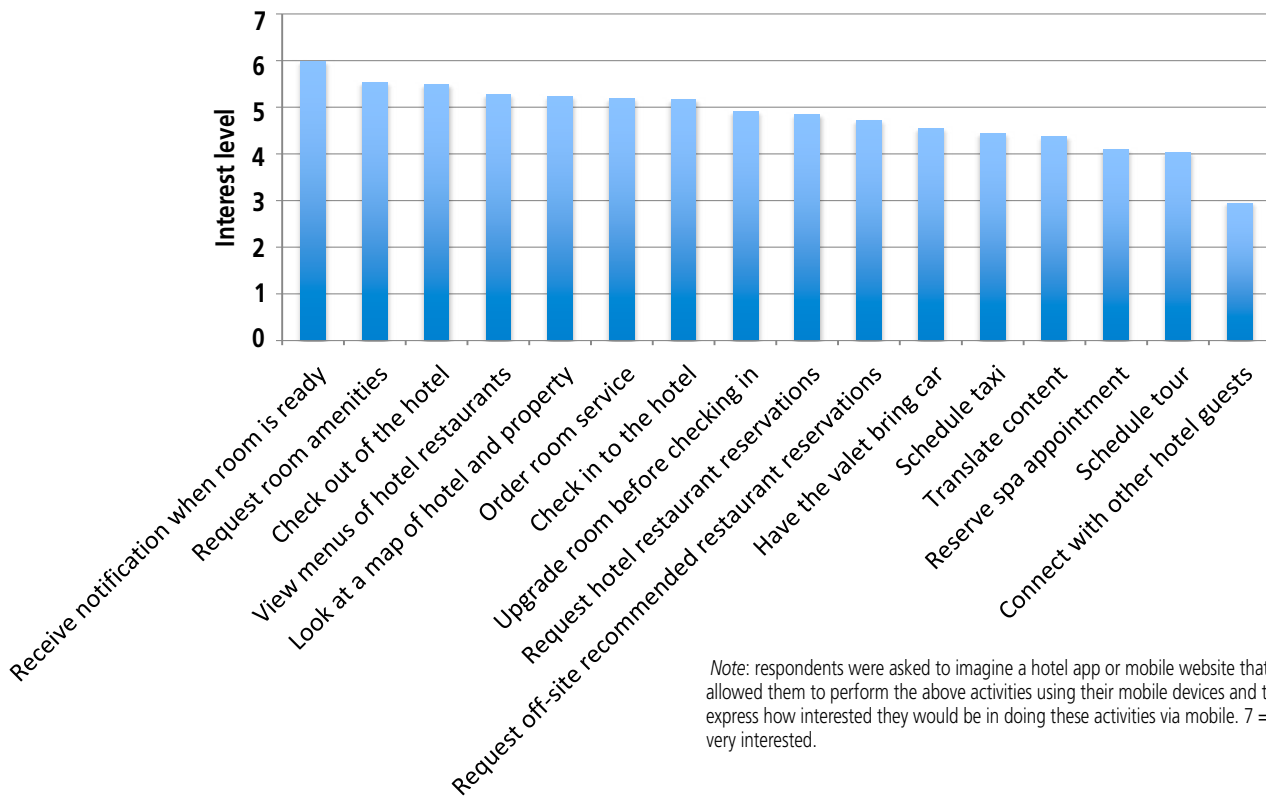
Note: respondents were asked to imagine a hotel app or mobile website that allowed them to perform the above activities using their mobile devices and to express how interested they would be in doing these activities via mobile. 7 = very interested.

older adults are more interested than younger respondents in using their mobile phones to perform ancillary activities during a trip (t = -2.461, p = .014), a finding that we thought was puzzling, since the conventional view is that Millennials use their mobiles for many activities. More research in this area would help to clarify this finding.

In terms of gender, analysis shows that women are significantly more interested than men in using their mobile devices to perform utilitarian activities related to the hotel room (f = 29.241, p = .000), and women also seemed more interested than men in performing the ancillary travel activities via mobile, but that difference was not statistically significant. The one area where men were significantly more interested than women was in connecting with other hotel guests who have similar profiles and interests (men's mean interest level = 3.23; women's mean interest level = 2.61; f = 19.236, p = .000).

Communication Preferences

Although travelers are interested in using their mobile devices for a variety of activities during a trip, they still would like to interact directly with hotel employees for certain things (see Exhibit 7), particularly communicating with a hotel once they are at the property, as 65 percent of travel-

Exhibit 7

Preferred communication channels for actions at hotels

Activity	Go to front desk	Phone front desk	Email	Text	Other
Confirm reservations	18%	19%	36%	25%	2%
Check-in	65%	5%	9%	20%	2%
Request late check-out	20%	40%	10%	28%	2%
Receive dining recommendations	19%	10%	42%	18%	10%
Receive special offers for hotel	8%	3%	73%	10%	6%
Receive special offers for activities	8%	4%	67%	14%	6%
Complain about a problem	45%	32%	15%	8%	1%
Request an amenity	12%	48%	6%	31%	4%
Give feedback on your stay	7%	2%	65%	12%	14%

Note: Respondents were asked to choose their most preferred communication method for each action in this question.

EXHIBIT 8

Social media activities following a trip
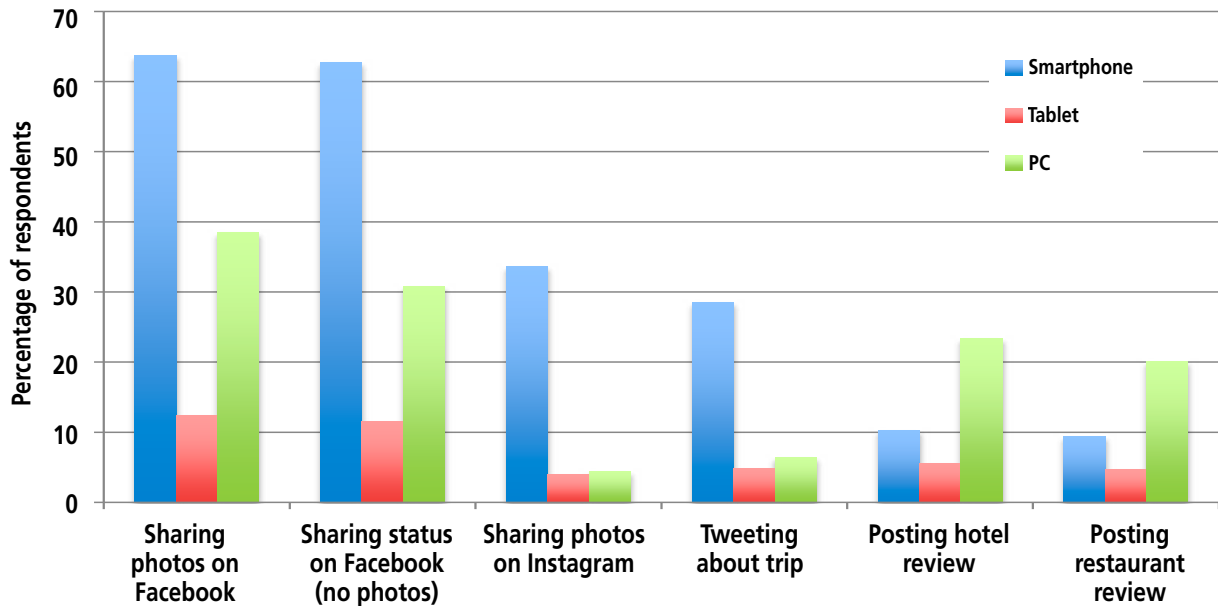
Note: Respondents were asked describe how they used their devices after their trip was complete. Percentages may add to more than 100 if participants used multiple devices for the same activity.

ers want to go to the front desk when checking in, and 77 percent prefer to visit or to phone the front desk to complain about a problem. On the other hand, the respondents stated that they would prefer to use email for receiving special offers for hotels (73%) and for activities (67%), and to give feedback (65%), to receive dining recommendations (42%), or to confirm hotel reservations (36%). While texting is not the most preferred communication medium for any action, it's the second choice in six of the nine situations we profiled, such as for requesting an amenity (31%), requesting a late check-out (28%), or receiving a hotel reservation confirmation (25%).

In summary, the two findings that stand out for mobile use during a trip is that Millennials are more interested in handling utilitarian tasks involving their hotel room via a mobile device, and women are more interested than men in going mobile. In the end, however, when it comes to time-sensitive actions and requests, such as checking in, making a complaint, or requesting a late checkout, travelers still prefer to interact directly with a hotel representative.

Post-Trip

After the trip has been completed, we found that respondents preferred to use their smartphone for sharing photos (64%) and status on social networks (63%), but PCs are more popular for posting hotel (23%) and restaurant (20%)

reviews (see Exhibit 8). To complement these findings, we asked about things that guests were interested in doing post-trip using their mobile devices, but may not have been able to do (see Exhibit 9). We found that travelers are interested in looking for special deals at the same hotel (31% did this and 17% wished they could have). However, few travelers were inclined to share additional personal information with the hotel to receive more targeted offers (10% did this and 10% wished they could have). Signing up for an email newsletter and following the hotel on Twitter were not popular actions.

Sharing Personal Information with Travel Suppliers

The digital divide between Millennials and older travelers showed up again with regard to sharing personal information. The respondents were generally hesitant to share their personal information with a hotel to receive customized service and offers, but Millennials were less reluctant. To explore the personalization-privacy issue, we asked participants to imagine that they could create a travel profile that would allow them to provide personal contact information and travel preferences in exchange for customized recommendations, offers, and amenities from a hotel. They could create this profile by **(1)** downloading a single hotel's app; **(2)** downloading a general lodging app that shares the infor-

EXHIBIT 9

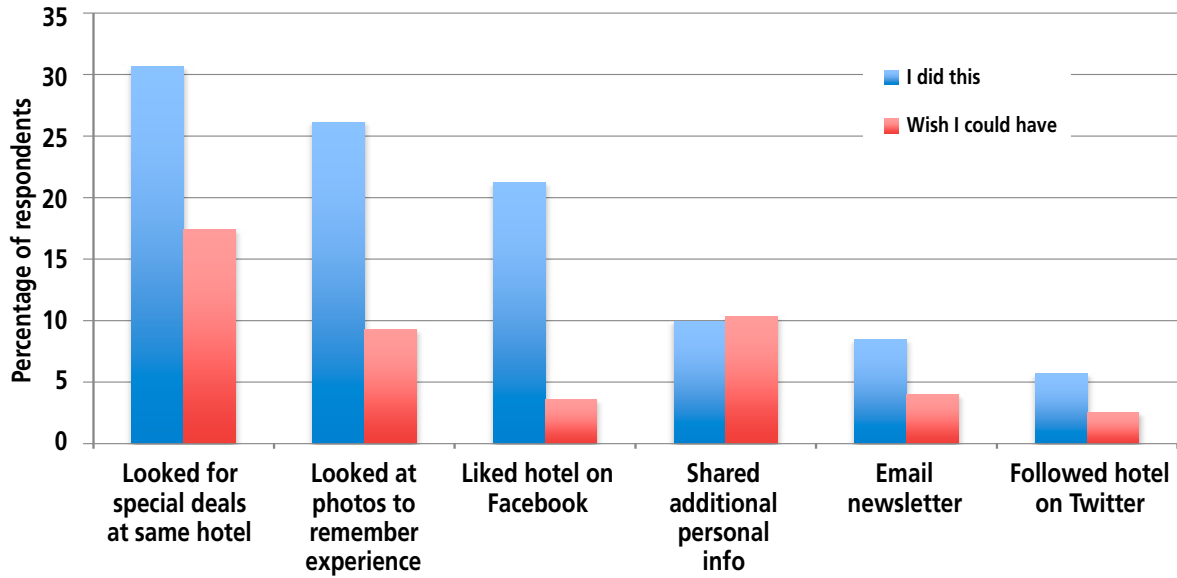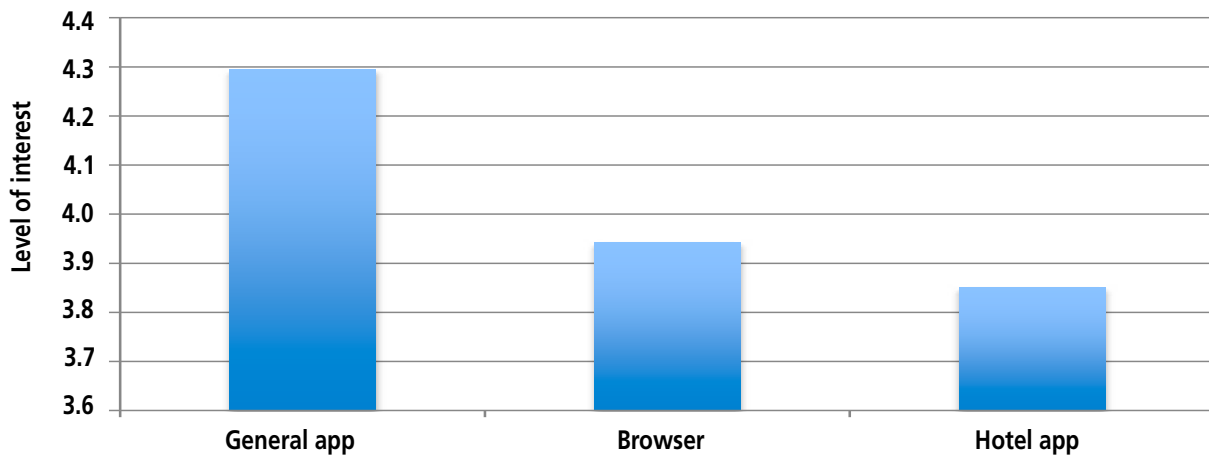**Hotel guests' mobile device uses and potential uses**

EXHIBIT 10

Hotel guests' preferences for hotel search and booking applications (7 = highly interested)


mation with multiple hotels; or **(3)** connecting to a hotel's website, thereby allowing that hotel to see the information only while the guest is connected to the hotel's internet service.

Although the respondents were not overwhelmed by any of these information-sharing options (see Exhibit 10), they were significantly more interesting in the general app that could be used as a central location for their information and preferences, and through which multiple hotels could

view the traveler's profile to provide a more customized stay (t = -5.360, p = .000). The difference in mean interest between connecting to the browser and using the single hotel app is not significant.

The group that was most interested in this hypothetical general app was Millennials (mean interest scores: younger travelers = 4.44; older travelers = 3.97; f = 18.915, p = .000). There were no significant differences in interest between age groups for the two other possible approaches. Men were

EXHIBIT **11**

Travelers' mobile device privacy concerns
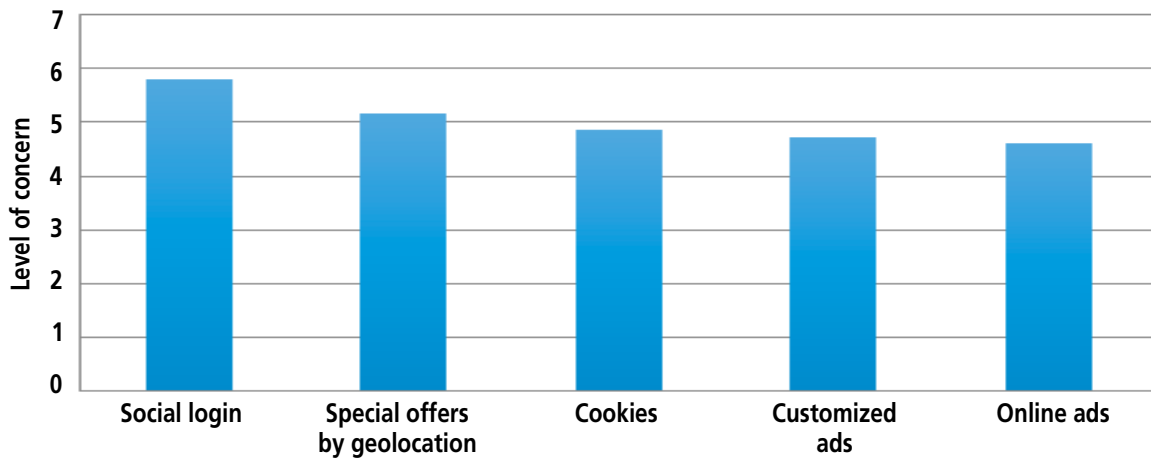
more interested than women in downloading this proposed general app (mean for men = 4.45, mean for women = 4.12; f = 11.434, *p* = .001), and again there were no significant differences between genders with regard to the two other information-sharing options. Even when we changed the proposal so that travelers could earn extra loyalty points for downloading the hypothetical hotel app, the interest remained modest overall (4.55 on a 7-point scale), and no respondent group stood out as more or less interested.

Privacy Concerns

To delve further into the issue of personal information and mobile technology, we asked study participants whether they have been a victim of a breach of privacy or information theft. Only 10 percent of respondents said that they had had a problem with this, most often email accounts being hacked or credit card numbers being stolen. On average they believed these breaches to be fairly damaging (6.3 on a scale of 1-10, where 10 = very damaging).

Privacy concerns are an important consideration when asking people to share information. When asked about privacy on mobile devices, respondents were at least moderately concerned (see Exhibit 11). They are most worried about sharing access to their social login, receiving targeted offers, the use of cookies placed on their devices' hard drives, companies customizing ads based on their personal information, and online advertising in general.

Tests for individual differences in privacy concerns show that women are more concerned when it comes to cookies being placed on device hard drives (men = 4.60, women = 5.15; f = 35.962, *p* = .000), receiving online ads (men = 4.51, women = 4.71, f = 4.952; *p* = .026), sharing access to their social logins (men = 5.68, women = 5.96; f =

12.287, *p* = .000), using geolocation to receive special offers (men = 4.95, women = 5.44; f = 29.349, *p* = .000), and receiving customized ads and promotions in general (men = 4.62, women = 4.86; f = 8.016, *p* = .005). Older travelers (35+) are more concerned about receiving online ads than Millennials (Millennials mean = 4.49, older mean = 4.87; f = 15.549, *p* = .000), receiving customized ads and promotions (Millennials = 4.64; older = 4.92; f = 8.750, *p* = .003), receiving special offers through geolocation (Millennials = 5.07, older = 5.40; f = 11.517, *p* = .001), and giving access to their social login (Millennials = 5.74, older = 5.06; f = 6.094, *p* = .014). The difference between age groups regarding concerns about cookies is not significant.

To augment these findings, we inquired about how travelers respond when an app or mobile website requires them to enter personal information to use the service. Only 16 percent of participants said they are willing to provide all of the information requested; 55 percent will provide some of the information requested; 9 percent will give false information, and 20 percent will renege and simply exit altogether. There were no significant age or gender differences.

Respondents were generally willing to share basic information such as gender and age, along with preferences on hotel rooms, dining, entertainment, and activities in exchange for customized travel recommendations (see Exhibit 12). They are much less willing to share access to their social profile or their employment, and they don't support automatic geolocation (see Exhibit 13). Women were more willing than men to share their basic information (name, age, gender, family status, email address) to receive customized offers (f = 8.725, *p* = .003). There was no difference between genders on willingness to share private information, and no significant differences due to age.

EXHIBIT 12

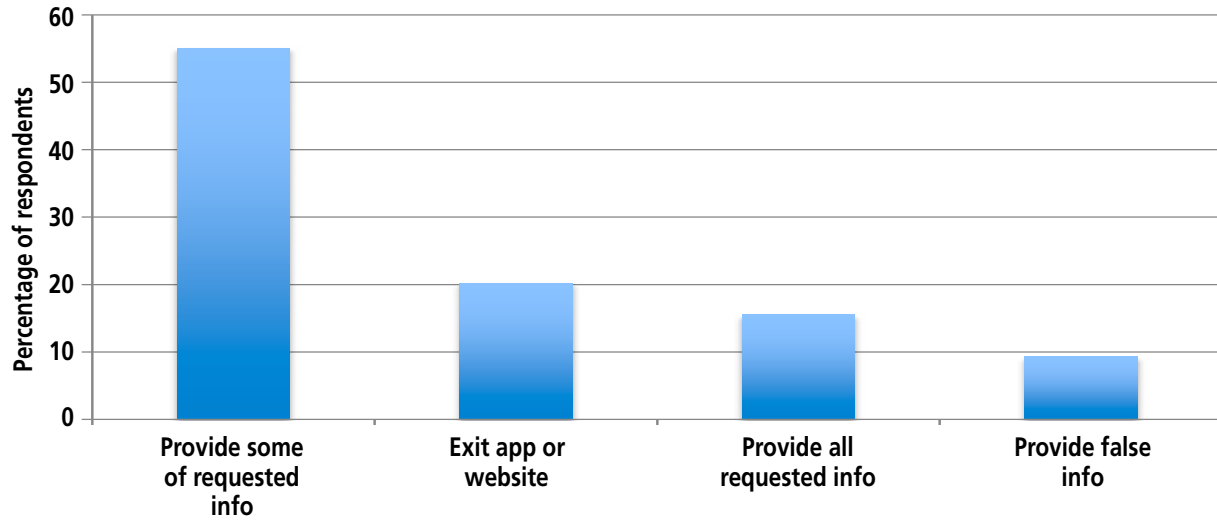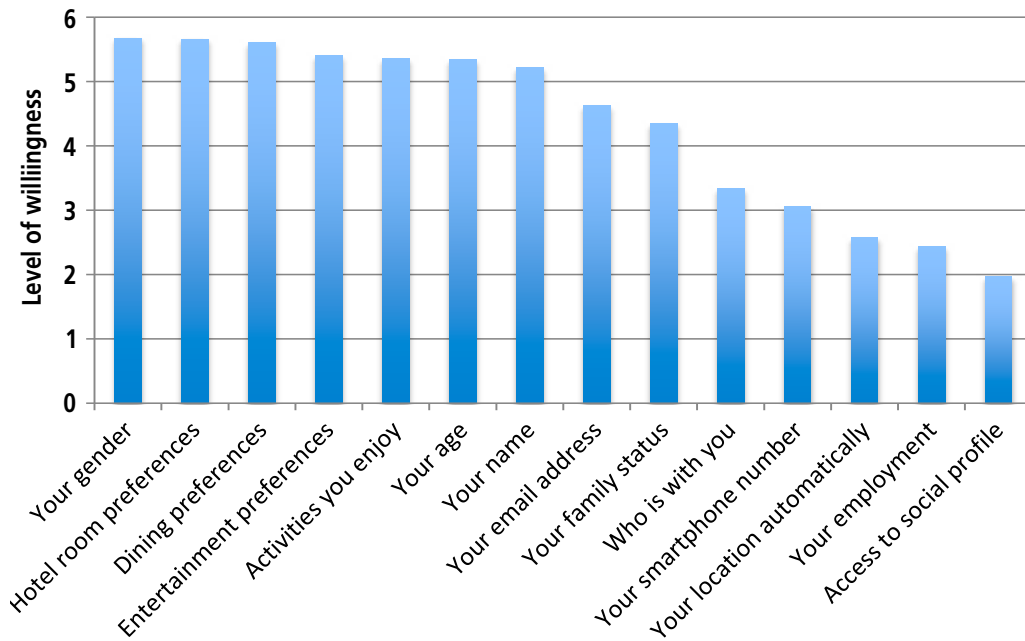**Travelers' response to requests for personal information**

EXHIBIT 13

Travelers' willingness to provide personal information

Note: Responses are on a 7-point scale, where 7 is very willing.

Despite concerns about privacy and the exchange of personal information, 72 percent of respondents are willing to let a hotel keep track of their requests and preferences as part of a confidential guest profile, with no significant differences between age or gender groups.

Discussion and Recommendations

In general, the results of this study show that consumers are using or willing to use mobile devices in all stages of the travel cycle. Although most users are willing to download specific travel apps onto their mobile devices, about half of those are subsequently deleted, and the travelers in this study preferred to use travel websites rather than apps. One clue to why consumers don't keep the downloaded apps was respondents' interest in downloading a hypothetical general app that could be used to create a personal travel profile to serve as a central location for their information and preferences, so that hotels could provide a more customized stay, rather than downloading apps for individual hotels or brands.

These findings seem to indicate that apps currently on the market aren't providing sufficient value. Some kind of friction keeps users from completing transactions using mobile apps (rather than websites), and if they do use the app many apparently see no need to retain it once their trip is complete. So, one goal for mobile app designers may be to give travelers a reason to retain the app for future use. Not only do mobile sites and apps need to be simple, interesting, and secure, but they also need to give customers a reason to stay connected, such as by building a desirable brand community for sharing reviews, photos, or trip ideas, and by providing benefits to the customer for sharing personal information and maintaining a relationship, such as reward points, customized offers for future travel, or upgrades. More research is needed to determine why consumers are not keeping the travel apps that they download, and what type of user interface, design, and benefits bundle would serve them best.

Consistent with industry research, we find that travelers would like to use their mobile devices to gain convenience—notably, for checking in and out of a hotel and reserving guest services.[20] They are also willing to share their preferences (although not their location or social profile) to receive special offers. Because of this high level of interest in convenience tasks, providers should move forward in offering the functionality for travelers to handle these actions on their mobile devices. That does not, however, negate the importance of personal contact. From the moment the guest makes a reservation, the hotel can start building a virtual relationship, including upselling, but the hotel also must also ensure a personal connection, especially when a trip is not going as planned.

App developers should be cautious when it comes to automatically tracking customers' location using their smartphone. Embedded geolocation technology can be valuable for hotels, given the importance of engagement. If the hotel knows where the user is on the property, employees can take steps to improve the guest's experience.[21] Any approach of this type must be implemented with care and with a clear value-based reason for geolocation tracking, such as to improve personalized interactions or to make relevant offers.

Although it is exciting to think of the marketing implications and possibilities for using the data required for customized activities, dining, service offers, and suggestions, hospitality companies must tread carefully. This study again demonstrates that consumers are protective of their personal information and want control over what they choose to share with marketers. To encourage guests to share their information, travel providers need to earn guests' trust and demonstrate that the data will be used to benefit them. Needless to say, guest profiles must be stored securely and only include information that travelers have intentionally shared. The survey shows that travelers are interested in having one mobile app that can keep their information in a central location and be used by multiple hotels to customize their stay, rather than several single-purpose apps. Guests want to maintain control: they are willing to share their preferences with such an app, but they are less interested in automatically providing their location, and they do not want to be required to connect with their social profile.

Future studies should further investigate consumers' app preferences, their motivations for installing travel apps, and why they are deleting the apps that they do download. Another question for future research is why older people are more interested than younger people in handling ancillary activities on their mobile devices. Of particular note, hotel guests want to use their mobile devices in more ways than are currently available to them. This finding demonstrates why mobile is an important trend in the hospitality industry. Providers must be ready to respond to travelers' mobile needs with a timely and appropriate strategy. Whether hospitality providers are ready for the mobile revolution—and what barriers may be standing in the way—is a final area that demands research attention. ■

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[20] SmithMicro Software, "Majority of Consumers Prefer to Purchase and Reserve Hotel Services Using Mobile Devices," www.smithmicro.com, June 23, 2014, viewed November 8, 2014.

[21] M. Garvin, "How You 'Engage' with Guests on their Mobile Devices will Determine Your Hotel's Failure or Success" (October 28, 2014). Retrieved November 2 2014, from Hotel Online: http://www.hotel-online.com/press_releases/release/how-you-engage-with-guests-on-their-mobile-devices-will-determine-your-hotel

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