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Hotel guest preferences of in-room technology amenities

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Abstract

Purpose – Advances in technology and in subsequent guest-related amenities have the potential to improve the guest experience and also increase both guestroom revenues and ancillary room revenues. Innovative technologies will be one of the prime differentiators of hotel companies in the twenty-first century. However, it is important for hoteliers to answer questions such as which technology amenities do their guests desire when choosing overnight accommodations? Further, what are the importance levels assigned by guests of these various technology amenities? This study aims to answer the question of how leisure travelers may differ or be similar to business travelers with regard to in-room technology amenities.

Design/methodology/approach – The target population of this study consisted of 2,500 US residents whose email addresses were randomly drawn from a national database company. A series of *t*-tests and ANOVA were conducted to answer the research questions.

Findings – High-speed internet access and guest device connectivity were perceived more important by business travelers than by leisure travelers.

Research limitations/implications – Recognizing guests' technology needs and answering those needs are important for hotel operators to remain competitive. While some segments perceive more value in certain technologies, for others it might be an indifferent amenity.

Practical implications – The amount of time guests spend in their rooms directly correlates to increased revenues from in-room dining, in-room amenities offered and, in general, all pay-for-use products and services such as the internet and movies. Therefore, with the right assortment and offering of technology amenities, hotels will increase their revenues from these ancillary revenues. Moreover, a hotel property with the right mixture of desired in-room amenities and services can charge higher rates for their guestroom sales.

Originality/value – The results of this study provide insights into the changing attitudes toward in-room entertainment technology that many hotel developers should take note of.

Keywords Guest experience, Business travelers, In-room technologies, Leisure travelers

Paper type Technical paper

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1. Introduction

This study aims to provide a snapshot of both leisure and business travelers' perceived importance and satisfaction levels of hotel amenities, with primary emphasis on in-room technologies. The availability of in-room technology amenities is on the rise and evolving at a rapid pace (Bilgihan *et al.*, 2010). Hotels are offering improved technology amenities in guestrooms in an effort to differentiate themselves in the competitive marketplace (Beldona and Cobanoglu, 2007). Cutting-edge in-room technologies help hotels to improve the tangible guest experience; for example, with technology, guests can change the room's physical attributions like color, sound and smell (Melián-González and Bulchand-Gidumal, 2016). Such technology attributes could significantly influence a hotel guest's overall satisfaction and are direct determinants of future behaviors, such as revisit intention (Cobanoglu *et al.*, 2011). Hotels also rely on in-room technologies to provide high-quality personalized services (Van Hoof *et al.*, 1995). A recent study shows that in-room technologies are the third most useful amenities when guests evaluate a hotel, just behind the bathroom facilities and bedding (Heo and Hyun, 2015). In the same study, Wi-Fi was regarded as the most useful hotel amenity by the respondents. Many hotel guests value hotels that offer up-to-date technology amenities and such technology has direct influences on hotel guests' overall satisfaction, purchase behavior and intentions to repurchase (Chen, 2015). Furthermore, such technology amenities present an opportunity for hoteliers as additional revenue sources. Hotels may use technology amenities as a revenue management strategy by either charging higher rates for their accommodations (typically the number one source of income for hotels) and/or charging additional amounts for technology amenities that guests may wish to use during their stay (ancillary revenues) (Kimes and Anderson, 2009). Moreover, updating in-room technologies and keeping pace with the latest trend technologies is essential for shaping and improving hotel image and perceived quality (Šeric *et al.*, 2016). Innovative in-room technologies are now the biggest contributor to enhancing the guest experience (Jayawardena *et al.*, 2013). However, in-room technologies are usually expensive investments (Zhu and Morosan, 2014); hence, hoteliers should be careful when deciding which in-room technologies to invest in.

This presents a challenge for hotel owners and operators to identify the proper in-room technology amenities their guests' desire, as not all guests demand the same technologies in the guestroom (Cobanoglu *et al.*, 2011). To be successful in business, it is vital to understand how customers perceive the product or service attributes, their perceived importance level to the customers and their performance rating when utilized (Chu and Choi, 2000). The financial value of being competitive and offering a competitive advantage has been recognized for many years. In the competitive lodging industry environment, hoteliers must understand the strengths and weaknesses of the product or service that they provide and accurately define their importance and performance (Chu and Choi, 2000).

Research indicates that technology amenities can significantly impact a hotel guest's overall satisfaction (Cobanoglu *et al.*, 2011; Singh and Kasavana, 2005). The variety and the type of technology amenities are considered to be vital factors in a guest's hotel selection and return visit intention (Cobanoglu *et al.*, 2011). Moreover, business and leisure travelers value the importance of the amenities differently and make their hotel selection accordingly (Chu and Choi, 2000; Millar *et al.*, 2012). It is widely assumed that business travelers have unique characteristics and technology needs compared to

leisure travelers as a business traveler might aim to be productive while traveling and, therefore, is often dependent on the proximity and availability of technologies (Dunn and Tucker, 2013). This presents the question of how the leisure travelers may differ or be similar to business travelers with regard to in-room technology amenities. Therefore, this study attempts to answer the following research question:

RQ1. Is there a difference between leisure and business travelers' identification of in-room entertainment technology amenities in the selection of hotels?

In addition, Innovation Diffusion Theory (IDT) suggests that diffusion is a process that an innovation is communicated through certain channels over time among the members of a social system (Rogers, 1995, p. 5). It is therefore reasonable to expect that guests' overall importance rating of in-room technology amenities differs significantly among travelers that have different experience levels with technologies. The current study also attempts to identify whether the overall importance rating of in-room technology amenities differs significantly among travelers with low, medium and high levels of technology usage.

2. Literature review

Lodging companies use technology as a value-added service to their guests. Hotels can create differentiation, enhance guest satisfaction and build long-term relationships with customers by successfully adopting technologies that their target customers demand (Cobanoglu *et al.*, 2011). Contemporary travelers demand technology applications and amenities before, during and after their stay in a hotel. Hotel guests want, and expect, hotels to offer the technologies they enjoy at home (Jung *et al.*, 2014). Smartphone check-ins (before trip), high-speed internet access (during trip) and social media platforms to post comments and pictures and recall memories (post trip) can significantly enhance the experience of travelers.

It is also important to consider that today's luxury is tomorrow's expectation and standard. For instance, a camera was a value-added feature for a cellular telephone several years ago; however, today a majority of smartphones have one or two cameras. The improvements in multimedia entertainment recently have resulted in an increased acceptance by consumers and could now heighten the importance of in-room offerings in hotels.

Some current in-room technology amenities may include personalized welcoming messages on high definition (HD) televisions, video on demand, high speed Wi-Fi, interactive TV systems, video games, in-room fitness items and tablets. Hotels' installation of in-room technology amenities range widely. Most hotels offer in-room movies (88 per cent) and internet connections (97 per cent wired and 81 per cent wireless) while only a few offer VOIP phone (14 per cent) (Leung and Law, 2013). Tablets are now the second most requested amenity after coffee makers in guestrooms (Jayawardena *et al.*, 2013). In-room technologies allow for guest-customized experiences, while also providing a source of revenue (e.g. video on demand). As hotel in-room entertainment technology products have evolved, there are many options available today in the market place. Though it is difficult to predict which in-room technology amenities will be demanded by guests in the future, the current trends suggest that these services will focus on improving guest satisfaction and will, in turn, motivate guests to become loyal to the hotel brand.

In an effort to increase market share, hotel companies are beginning to invest more heavily on both in-room entertainment and technology amenities. However, deployment of these investments has not always resulted in consistent acceptance and use levels by guests. Further, little is known about the importance levels guests attribute to technology amenities when selecting a hotel.

This study seeks to identify if differences in the adoption of in-room technology amenities of hotel customer segments are present. These findings will provide insights into customer adoption, which can then be used effectively by hoteliers and in-room technology manufacturers when evaluating potential products. In-room technologies have become a focus of recent industry initiatives to replicate home-based technologies in hotel rooms and keep pace with the technologies used by US consumers (Beldona and Cobanoglu, 2007). According to Brewer *et al.* (2008), hoteliers will increase revenues and enhance the guest experience with these technology applications.

Table I displays the in-room technologies that are currently being offered by hotels. Several of the identified technologies have been in the guestrooms for decades [e.g. free-to-guest (FTG) television (TV)], while others are in the early stages in their lifecycles (e.g. in-room fitness amenities).

Nintendo and Westin Hotels announced a partnership that allows guests to experience the NintendoWii gaming console in the hotel environment. The modified version of the gaming consoles in hotels rooms are pre-loaded with popular games (Santo, 2008). Hotels have also started to implement in-room fitness amenities for their guests. Westin Hotels offer the option of booking a hotel room that includes a treadmill, stationary bike, dumbbells, fitness DVDs, resistance bands and stability balls (Dale, 2011). Similarly, Hyatt Hotels implemented the YogaAway program on in-room TVs that enables guests to view yoga training videos. Omni Hotels and Resorts also implemented in-room fitness amenities by providing a floor mat, two dumbbells, an elastic exercise band and an informative booklet of exercises. SLS Hotels offer "Lifestyle Suites", which can be reserved at the time of booking. These special suites offer personal training equipment, which allows the option of more than 200 different exercises.

The level of importance assigned to in-room technology may differ between business and leisure travelers, especially, when one considers the traveler's existing level of familiarity with various technologies. Further, business and leisure travelers may rate the performance of in-room technology differently from one another. As such, the following hypotheses are proposed:

H1. The overall importance rating of in-room entertainment technology amenities differs significantly between leisure and business travelers.

H2. The overall perceived performance rating of in-room entertainment technology amenities differs significantly between leisure and business travelers.

H3. The overall importance rating of in-room entertainment technology amenities differs significantly among travelers with low, medium and high levels of technology usage.

3. Methodology

A self-administered questionnaire was created using the online questionnaire system, Qualtrics (www.qualtrics.com). The questionnaire items intended to measure perceived satisfaction and perceived importance scores of in-room technologies using five-point

In-room technology	Description
Bring your own content (BYOC)	Hotel guest can use their subscriptions for various services (e.g. Netflix) using a device in the guestroom (e.g. smart TV)
Free-to-guest (FTG) TV	FTG typically gives the guest a fixed line-up of television programming at no cost to the guest. FTG includes programming delivered by various sources including off-air (local market stations), satellite (DirecTV, Dish Network, etc.), and cable (local market cable provider, e.g., Comcast, Cox, etc.). Each of these sources represents a different technical challenge because of different modulation, encoding, security and conditional access mechanisms
Video on demand (VOD)	VOD provides the guest with a broad selection of pay-per-view content delivered on demand. VOD content provides access to video content from various sources including major Hollywood studios like Paramount, Universal, MGM, Sony, Pixar, etc., second-tier and independent content producers, as well as content creators like HBO and Showtime
High definition (HD) TV	HDTV is a digital television broadcasting system with higher resolution than traditional television systems (standard-definition TV or SDTV). HDTV is digitally broadcast; the earliest implementations used analog broadcasting, but today digital television (DTV) signals are used, requiring less bandwidth due to digital video compression
Promotional video	Promotional video, typically delivered free of charge to the viewer, includes such programming as video welcome, hotel promotions and promotion of local venues like restaurants, theaters and other attractions
Music system	Music may include local and national radio stations, internet-based radio, satellite-based radio (Sirius), as well as large libraries of stored music and music videos presented to the viewer either as an amenity or for a fee. The video services provider may deliver in-room music, or it may originate from sources as simple as a clock radio in the guest room
Video gaming console	Gaming consoles (e.g., Nintendo Wii, Sony PlayStation, Microsoft Xbox) are interactive entertainment computers or customized computer systems that produce a video display signal that can be used with a display device (a television, monitor, etc.) to display a video game
Internet devices	Enables guests to connect to the internet. Accessing the internet on TV was the earliest application
Guest device connectivity	Enables guests to connect their personal devices (e.g., laptop, portable music player, DVD, etc.) to hotel TVs
In-room fitness	In-room fitness consists of a collection of fitness amenities for guests to use privately and conveniently in their own guest rooms. These amenities may or may not include technological enhancements

Table I.
In-room technologies and descriptions

Source: Center for Marketing Effectiveness, Inc. (2005)

Likert-type scales (1 = Not important at all, 5 = Very important for importance; 1 = Not satisfied at all, 5 = Very satisfied for satisfaction). The online questionnaire system displayed videos and pictures of each in-room technology amenities with a verbal explanation. The questionnaire was pilot tested in an effort to test its efficacy and clarity. Minor modifications to the questionnaire were made based on the recommendations of the respondents. The target population consisted of US travelers. The sample used in this study consisted of 2,500 US residents who had email addresses

drawn randomly from a national database company. The online survey was accessed by 1,812 respondents, and data analysis was conducted from 408 completed surveys. The first question of the survey was designed to be a screening question and asked if respondents have stayed in a hotel in the past 12 months. If the respondent selected "No" as their response, the survey was terminated. There were 749 surveys where the respondents had not stayed in a hotel over the past 12 months. Additionally, there were 655 surveys where the survey was initiated but not completed, for a variety of reasons. The net response rate was 16.3 per cent.

4. Results

The demographic characteristics of the research sample are described in Table II. Most of the participants (66.4 per cent) were female. Around 30 per cent of the respondents were between 35 and 44 age range and more than 20 per cent of respondents were between the ages of 45 and 54. Approximately one third (32.7 per cent) of the respondents had obtained at least a bachelor's degree. The most frequent occupation category chosen by respondents was "management, professional, and related occupations". Table II displays the complete demographic breakdown of respondents.

Table III displays the purpose of travel and categorizes each respondent as either a business or leisure traveler. The majority of respondents (69.4 per cent) were leisure travelers, whereas 30.6 per cent of the respondents traveled primarily for business (Table III).

Table IV displays the hotel preferences of travelers. The majority of respondents (43.4 per cent) indicated their lodging preference to be midscale, whereas only 4.9 per cent of the respondents indicated a preference for luxury accommodations (Table IV).

Respondents were also asked how frequently they travel, in an effort to categorize their relative experience. Respondents who traveled 1 to 10 days per year were categorized as "Lite Travelers". Those who traveled 11 to 30 days per year were categorized as "Medium Travelers". And, those who traveled more than 30 days in a year were classified as "Heavy Travelers". Table V presents the findings indicating 72.8 per cent of survey respondents as "Lite Travelers".

Respondents were assigned to a hotel group segment (economy, midscale, upscale and luxury) based on their average spending per room per night. The respondents that stated they paid under $100 were assigned the economy-budget group; those that responded they paid between $101 and 150 were assigned to midscale group; those that responded they paid between $151 and 250 were assigned to upscale group; and those that responded they paid more than $250 were assigned to the luxury group. The largest group for both leisure and business travelers was the economy segment (69.3 per cent for leisure travelers and 74.3 per cent business travelers) (Table VI).

4.1 Technology characteristics of respondents

Respondents were asked to state the degree to which they adopt to new technologies. Table VII presents that 22.8 per cent of respondents reported that they were early adopters of technology compared to only 6.2 per cent reported that they were laggards. In the current study, 71.0 per cent of respondents were in the middle between early adopters and laggards.

The survey included nine technologies and asked respondents if they had used any of these technologies before. For each "yes" answer, one point was awarded allowing for a

Guestroom amenities	*N*	(%)
Gender		
Male	124	30.4
Female	271	66.4
Total	395	96.8
Missing	13	3.2
Total	408	100
Age		
Under 16	1	0.2
16 to 17	2	0.5
18 to 24	41	10.0
25 to 34	90	22.1
35 to 44	118	28.9
45 to 54	95	23.3
55 to 64	39	9.6
65 years and older	9	2.2
Missing	13	3.2
Total	408	100
Education level		
Less than High School	7	1.7
High School / GED	69	16.9
Some College	125	30.6
2-year College Degree	60	14.7
Bachelor's Degree	97	23.8
Master's Degree	29	7.1
Doctoral Degree	3	0.7
Professional Degree (JD, MD)	5	1.2
Total	395	96.8
Missing	13	3.2
Total	408	100
Marital status		
Single, never married	87	21.3
Married without children	37	9.1
Married with children	163	40
Divorced	50	12.3
Separated	6	1.5
Widowed	9	2.2
Living without partner	43	10.5
Total	395	96.8
Missing	13	3.2
Total	408	100
Other	84	20.6
Total	395	96.8
Missing	13	3.2
Total	408	100

Table II. Demographic information sample ($N = 408$)

(*continued*)

	N	(%)
Occupation		
Management, professional, and related occupations	102	25
Service occupations	34	8.3
Sales and office occupations	43	10.5
Farming, fishing, and forestry	1	0.2
Construction, extraction, and maintenance occupations	8	2
Production, transportation, and material moving occupations	10	2.5
Government occupations	19	4.7
Retired	22	5.4
Unemployed	72	17.6
Other	84	20.6
Total	395	96.8
Missing	13	3.2
Total	408	100

Note: $N = 408$

Table II.

Traveler type	*n*	(%)
Leisure	283	69.4
Business	125	30.6
Total	408	100.0

Note: $N = 408$

Table III.
Distribution of primary travel purpose

Hotel type	*N*	(%)
Luxury (i.e. Four Seasons, Ritz-Carlton)	20	4.9
Upscale (i.e. Hyatt, Marriott)	105	25.7
Midscale (i.e. Courtyard, Holiday Inn Express, Comfort Inn	177	43.4
Economy (i.e. Ramada, Super 8, Motel 6, EconoLodge)	91	22.3
Other	15	3.7
Total	408	100.0

Note: $N = 408$

Table IV.
Hotel preferences of the respondents

Type of traveler	*N*	(%)
Lite traveler	297	72.8
Medium traveler	59	14.5
Heavy traveler	34	8.3
Missing	18	4.4

Note: $N = 408$

Table V.
Traveling frequency of the respondents

maximum of 9 points. These technologies included airport check-in kiosk, internet check-in for hotel, internet check-in for airline, self–check-out at a grocery store, self–check-out at a hotel, GPS at a car rental, social networking sites, such as Facebook, internet access on a portable device and broadband internet service. If respondents had less than three points, they were assigned to the "low use of technology" group. If respondents had more than three points, but less than six points, they were assigned to the "medium use of technology" category. If respondents had more than six points, they were assigned to the "high use of technology" group (Table VIII).

Table VIII presents that almost half of the respondents were in the "medium use of technology" group, whereas 20.4 per cent of the respondents were in the "high use of technology" group and 32.1 per cent were in the "low use of technology" group.

Table IX presents that a strong majority of the respondents reported carrying a laptop while traveling. Audio players, such as MP3s were the second most popular

Table VI. Hotel type preferences for different travel types

	Business		Leisure	
Hotel type	*N*	(%)	*N*	(%)
Economy-budget	303	74.3	283	69.3
Mid-scale	75	18.4	82	20.1
Upscale	25	6.1	33	8.1
Luxury	5	1.2	10	2.5
Total	408	100.0	408	100.0

Note: $N = 408$

Table VII. Technology characteristics of respondents

Level of agreement	*n*	(%)
1 I am usually one of the first one who tries new technologies	93	22.8
2	107	26.2
3	151	37.0
4	32	7.8
5 I am usually one of the last people who tries new technologies	25	6.2
Total	408	100.0

Note: $N = 408$

Table VIII. Technology usage index of the respondents

Technology usage	*n*	(%)
Low use of technology	131	32.1
Medium use of technology	194	47.5
High use of technology	83	20.4
Total	408	100.0

Note: $N = 408$

technology gadget taken with respondents when traveling. Roughly, a quarter of respondents reported carrying smart phones while traveling.

Respondents were asked to state the amount of time spent in their guestroom (excluding time spent sleeping). In this study 67.3 per cent reported spending more than 3 hours in their guestrooms while awake (Table X).

4.2 Importance of in-room entertainment technology amenities to the selection of a hotel

Our first research question stated that:

RQ1. What are the in-room entertainment technology amenities that are important in travelers' selection of hotels?

Survey participants were asked to rate the importance of in-room entertainment technology amenities to the selection of a hotel. To determine the importance, a five-point Likert-type scale response format (1 = Not important at all and 5 = Very Important) was utilized. Table XI presents the means and standard deviations for the attributes as reported by respondents as the level of importance for leisure and travelers. For each amenity, an independent *t*-test was performed to test if there was a statistical difference between leisure and business travelers.

In the current study, results indicate only two in-room entertainment technology amenities that were found to be significantly different between leisure and business travelers. High-speed internet access in the guestroom and guest device connectivity was perceived as more important by business travelers than by leisure travelers. Generally speaking, FTG TV and high-speed internet access were ranked as the two most important in-room entertainment technology amenities when selecting a hotel – this was reported for both leisure and business traveler types. Moreover, respondents

Gadgets carried while traveling	*F*	(%)[a]
Laptop	293	71.8
Audio player	149	36.5
Smart phone	104	25.5
Portable video player	73	17.9
Portable gaming device	43	10.5
Portable printer	11	2.7

Note: [a] The total of the percentages may exceed 100% because multiple options were allowed

Table IX. Gadgets carried while traveling

Time spent in the room while awake (hours)	*n*	(%)
1-3	158	38.7
3-5	177	43.4
5-7	42	10.3
7-9	19	4.7
9 +	12	2.9

Note: $N = 408$

Table X. Amount of time spent in the guestroom

reported that promotional video was the least important in-room entertainment technology amenity in the guestroom by both traveler groups. Based on the current results, in-room entertainment technology amenities were rated similarly by both leisure and business travelers.

RQ2 stated:

RQ2. Is there a difference between leisure and business travelers' identification of in-room entertainment technology amenities in the selection of hotels?

For this research question, the following hypotheses were proffered:

H1: The overall importance rating of in-room entertainment technology amenities differs significantly between leisure and business travelers.

H2: The overall perceived performance rating of in-room entertainment technology amenities differs significantly between leisure and business travelers.

In an effort to test *H1*, an independent *t*-test was conducted on the grand means of in-room entertainment technology amenities' importance score between leisure and business travelers. An analysis of the grand mean of importance for in-room entertainment technology amenities showed that the grand mean of business travelers was not statistically different from leisure travelers. The grand mean of importance for in-room entertainment technology amenities for leisure and business travelers were 2.72 and 2.54, respectively (5 = Very important and 1 = Not important at all).

As the *t*-statistic was not significant, *H1* is rejected, concluding that the there was no significant difference in the importance of in-room entertainment amenities between leisure and business travelers. One explanation for this finding may be that entertainment technologies are being used by a larger segment of the population in their

Guestroom amenities	Leisure M[1]	Leisure SD[1]	Business M[2]	Business SD[2]	Dif.[3]	t[4]	Sig.[5]
FTG TV	4.1	1.339	4.14	1.272	0.04	0.262	0.79
High-speed internet access (HSIA)	3.88	1.518	4.4	1.055	0.52	3.477	0.001*
Guest device connectivity	3.25	1.623	3.77	1.487	0.52	3.042	0.003**
Universal battery charger	2.76	1.622	2.98	1.581	0.22	1.318	0.188
Music	2.76	1.485	2.89	1.546	0.13	0.816	0.415
In-room desktop computer	2.6	1.558	2.86	1.593	0.26	1.584	0.114
HDTV	2.45	1.424	2.58	1.514	0.13	0.844	0.399
VOD	2.42	1.433	2.42	1.41	0.00	0.00	1.00
In-room fitness	2.25	1.45	2.49	1.474	0.24	1.515	0.131
Internet on TV	2.22	1.457	2.22	1.495	0.00	0.02	0.984
Game console	1.72	1.205	1.803	1.208	0.010	0.577	0.591
Promotional video	1.61	1.041	1.84	1.247	0.23	1.952	0.07
GRAND MEAN	2.54	0.919	2.72	0.828	0.18	1.88	0.61

Table XI.
In-room entertainment technology amenities important to the selection of a hotel

Notes: M[1]: mean for leisure travelers (1 = Not important at all and 5 = Very important); M[2]: mean for business travelers (1 = Not important at all and 5 = Very important); SD[1]: standard deviation for leisure travelers, SD[2]: standard deviation for business travelers; [3]Diff. (leisure – business travelers); [4]*t*-statistics (two-way independent) and [5]significance $*\alpha \leq 0.001$; $**\alpha \leq 0.05$

daily lives potentially leading to higher expectations of the existence of technology amenities in hotels by both business and leisure travelers.

4.3 Satisfaction level of in-room entertainment technology amenities

Survey participants were asked to rate the satisfaction level of in-room entertainment technology amenities of the last hotel they had stayed in over the preceding 12 months. For the satisfaction measurement, a five-point Likert-type scale response format (1 = Not satisfied at all and 5 = Very satisfied) was used. Additionally, for this question, respondents had a "not available" option for the satisfaction if they did not have experience with the technology in the last hotel where they stayed. Responses that selected "not available" were eliminated from the data analysis. A *t*-test statistic was calculated to determine if there were significant differences among the satisfaction of in-room entertainment technology amenities as reported by leisure and business travelers. The results are presented in Table XII.

In the analysis of respondents' satisfaction with in-room entertainment technology amenities, only one in-room entertainment technology amenity was found to be significantly different between leisure and business travelers. FTG TV was perceived as more satisfactory by leisure travelers as compared to business travelers. FTG TV and high-speed internet access are the two in-room entertainment technology amenities that received the highest satisfaction with both traveler groups. Additionally, respondents indicated that they were not satisfied with the in-room desktop computer.

To test *H2*, an independent *t*-test was performed on the grand means of in-room entertainment technology amenities' satisfaction rating between leisure and business travelers. An analysis of the grand mean of satisfaction for in-room entertainment technology amenities showed that the grand mean of business travelers was not statistically different from leisure travelers. The grand mean of satisfaction for in-room

Guestroom amenities	Leisure M[1]	Leisure SD[1]	Business M[2]	Business SD[2]	Dif.[3]	t[4]	Sig.[5]
FTG TV	4.23	0.986	3.97	1.196	0.26	2.136	0.012*
HSIA	3.82	1.343	3.72	1.266	0.10	0.635	0.61
Guest device connectivity	3.62	1.343	3.58	1.268	0.04	0.236	0.283
VOD	3.68	2.53	4.771	1.212	1.09	1.242	0.992
HDTV	3.56	1.366	3.49	1.356	0.07	0.388	0.907
Music	3.46	1.319	3.42	1.297	0.04	−0.27	0.763
In-room fitness	3.38	2.81	4.579	1.341	1.20	0.933	0.253
Internet on TV	3.3	2.81	4.653	1.354	1.35	0.523	0.545
Promotional video	3.25	2.73	4.608	1.284	1.36	0.108	0.273
Universal battery charger	3.24	1.566	3.09	1.551	0.15	0.675	0.781
Game console	3.20	3.04	4.57	1.39	1.37	0.99	0.47
In-room desktop computer	3.01	1.541	2.96	1.512	0.05	0.217	0.547
GRAND MEAN	3.59	1.043	3.52	1.021	0.07	0.641	0.522

Notes: M[1]: mean for leisure travelers (1 = Not satisfied at all and 5 = Very satisfied); M[2]: mean for business travelers (1 = Not satisfied at all and 5 = Very satisfied); SD[1]: standard deviation for leisure travelers; SD[2]: standard deviation for business travelers, [3]difference (Leisure–Business Travelers); [4]*t*-statistics (two-way independent) and [5]significance $*\alpha \leq 0.001$

Table XII. Satisfaction of in-room entertainment technology amenities ($N = 408$)

entertainment technology amenities for business travelers was 3.52 compared to 3.39 for leisure travelers (5 = Very satisfied and 1 = Not satisfied at all).

In-room entertainment technology amenities were perceived at similar levels by both leisure and business travelers:

H3. The overall importance rating of in-room entertainment technology amenities differs significantly among travelers with low, medium and high levels of technology usage.

To test *H3*, an analysis of variance (ANOVA) test was conducted to determine if there was a significant difference in the means for the importance of in-room entertainment technology amenities among low, medium and high levels of technology usage. The assumptions for ANOVA were met with the conditions of:

- independence – this assumption was met as the sample was selected by using a simple random sampling method;
- normality – Boxplots for the variables were visually verified; and
- the homogeneity of variance test was conducted for each variable.

Table XIII presents that, with the exception of FTG TV, the means of all of the in-room entertainment technology amenities were significantly different across low, medium and high levels of technology usage.

As there were three levels with technology usage index, a post-hoc analysis (Tukey) was conducted. A Tukey post-hoc analysis determined that video on demand, High Definition TV, promotional TV and internet on TV in-room entertainment amenities were perceived as significantly more important by respondents who reported to be high users of technology when compared to those that reported to be medium and low users

Guestroom amenities	Low use of technology M^1	SD^1	Medium use of technology M^2	SD^2	High use of technology M^3	SD^3	*F*	Sig.
FTG TV	3.98	1.34	4.08	1.36	4.37	1.17	2.31	0.101
VOD	2.03	1.28	2.47	1.42	2.93	1.49	10.81	0.000*
HDTV	2.37	1.46	2.41	1.41	2.88	1.48	3.77	0.024**
Promotional video	1.7	1.15	1.54	1	1.98	1.24	4.68	0.010*
Music	2.5	1.47	2.85	1.47	3.14	1.55	4.9	0.008*
Game console #1	1.66	1.14	1.76	1.22	2.25	1.4	6.5	0.002*
Game console #3	1.6	1.11	1.6	1.05	2.05	1.36	5.1	0.007*
Game console #2	1.65	1.17	1.64	1.15	2.08	1.36	4.38	0.013**
Internet on TV	2.02	1.39	2.15	1.41	2.67	1.62	5.48	0.004**
Guest device connectivity	2.92	1.6	3.46	1.57	4.07	1.41	14.34	0.000*
In-room fitness	2.15	1.43	2.3	1.46	2.65	1.46	3.04	0.049**
In-room desktop computer	2.46	1.49	2.64	1.58	3.12	1.6	4.72	0.009**
HSIA	3.46	1.6	4.2	1.28	4.58	1.04	20.16	0.000*
Universal battery charger	2.57	1.57	2.73	1.6	3.45	1.56	8.39	0.000*
GRAND MEAN	2.36	1.37	2.56	1.36	3.02	1.41	14.67	0.000*

Notes: * $\alpha \leq 0.001$; ** $\alpha \leq 0.05$

Table XIII.
Analysis of variance of in-room technology amenity importance by respondent level of technology usage

of technology. In other words, as the level of technology usage increases, the importance of these in-room entertainment amenities increased.

The ANOVA test was also conducted on the grand mean of importance of in-room entertainment technology amenities across respondent groups of low, medium and high usage of technology. The *F*-statistic indicated that there was a significant difference among respondents based on their technology usage. The importance of in-room technology amenities for respondents of high technology usage was significantly more important than both medium and low technology usage respondents. The evidence presented above is that the *t*-statistic is significant; thus, *H3* is not rejected, concluding that the grand mean of importance of in-room entertainment technology amenities was statistically different among respondents who have different levels of technology usage experience.

5. Conclusion and implications

Technology is changing the tourist experience (Neuhofer *et al.*, 2014). Advances and improvements in technology amenities have the potential to improve the guest experience when staying in a hotel. Additionally, these same amenities have the ability to increase a hotel's revenues. Innovative technologies will be one of the prime differentiators of hotel companies moving forward through the twenty-first century. However, it is important for hoteliers to answer questions such as what technology amenities do their guests seek when they arrive in their rooms? What are the levels of importance assigned by guests to these various technology amenities? Recognizing guests' needs and answering those needs are important for hotel operators to remain competitive. Is the traditional view that claims leisure quests expect to be entertained in the guestroom and business travelers expect to use technology to improve or enhance their work still valid? The results of the study indicate that while business and leisure travelers may have different motivations or purposes for travel, their attitudes towards the importance of in-room technology amenities are quite similar. It has been suggested in the past that business travelers have a higher level of sophistication in the use of technology and, therefore, might place a higher importance on these amenities provided by a hotel. These study results indicate that leisure hotel guests' expectations for in-room technology are equally important to those of the business traveler and suggest that they are equally sophisticated.

One possible explanation for this observation could be the advancements made in delivering the most up-to-date consumer electronics to the general public at lower prices. As members of the general population are able to afford the latest in technology advances, their familiarity increases with these various forms of technology and devices. This has the effect of "leveling the playing field" for usage compared to previous years when corporations and business people were generally the "early adopters"/"power users" of new technology. In addition, this exposure to advances in consumer electronics happens with both leisure and business travelers outfitting their homes simultaneously as the technology become available. This observation is further supported by the results that show no significant difference in satisfaction levels between business and leisure travelers.

Another possible explanation with regard to the equality of business and leisure travelers in importance and satisfaction is the development of portable electronic entertainment devices. In the past, travelers were unable to take their home technology

with them and were totally dependent on the amenities provided by the hotel. With the proliferation of laptops, portable DVD players and entertainment tablets, hotel guests are able to negate any lack of hotel in-room entertainment technology with their own. By traveling with their own portable devices, hotel guests are in control of their in-room entertainment, reducing the opportunity for the hotel to provide unsatisfying options.

When the respondents were categorized as high, medium and low users instead of business/leisure travelers, a significant difference was observed. High users do in fact place a greater importance on in-room entertainment technology compared to medium and low users. These results further indicate a shift upwards in the technological sophistication of leisure travelers as many of them have become high users and are placing as much importance on in-room entertainment technology as their high user, business counterparts.

The results of this study provide an insight into the changing attitudes towards in-room entertainment technology that many hotel developers should take note of. One recommendation would be to avoid designing hotel rooms specifically for business or leisure travelers. The results of study indicate that leisure travelers place the same importance on in-room technology as business travelers, and any attempt to reduce services levels to either would negatively affect guest satisfaction. A beach resort of a chain hotel should have the same in-room technology as a downtown property of the same chain.

Finally, this study's results indicate that hotel managers and developers must also become early adopters of entertainment technology. In addition to providing the primary devices, hotels should also make a strong effort to supply their guests with support services/technology. An example of this could include providing high-speed internet access in an effort to support a guest's laptop computer. Another example of technology support would be equipping the hotel room alarm clock with state of the art speakers and an input device that allows the guest to connect their personal digital music player. As both leisure and business travelers now have access to the latest technology, a hotel that falls behind these increased expectations runs the risk of being viewed as antiquated which, in turn, leads to guest dissatisfaction.

In respect to in-room technology amenities, there should be no limitation aligned with the ever-changing needs of guests. Our survey did not include technology amenities such as room controls devices (lights, temperature, etc.), universal power outlets and tablet devices. Future studies may consider including additional technology amenities not yet in frequent use, or possibly not yet developed. Leaning on theories of technology acceptance, we suggest hotels to install technologies that are user-friendly, intuitive and easy to use. We also advise hotels to look at new in-room technologies that enhance guests' experience.

Industry research has shown that the amount of time guests spend in their rooms directly correlates to increased revenues from in-room dining, in-room amenities offered and, in general, all pay-for-use products and services, such as the internet, movies, etc. (Chin, 2012). Hence, with the right assortment and offering of technology amenities, hotels will increase their revenues from these ancillary revenues. Moreover, a hotel property with the right mixture of desired in-room amenities and services can charge higher rates for their guestroom sales. As an anecdotal incident for illustration purposes, in-room revenues at Stanford Hotel's Hilton Washington Dulles property witnessed an increase of 80 per cent after installing an in-room service which permits guests to easily

connect all of their electronic gadgets and gear to a 42-inch HDTV flat screen (Chin, 2012).

Several limitations of this study must be recognized. To start, the survey was distributed only in the USA. Different countries may have different technology acceptance levels or practices among their hotel guests. Next, the survey was distributed online; thus, the researchers did not capture the responses from hotel guests that do not use email. Further, an additional limitation is the low net response rate. Lastly, the authors used a somewhat arbitrary breakdown of the categories of guestroom prices paid to align with the hotel service level classifications of economy, midscale, upscale and luxury. Other researchers may wish to incorporate different price-to-category description levels.

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Further reading

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