

# A Systematic Literature Review on Technology-Enabled Experience in Hotels

Journal of Tourism, Hospitality  
& Culinary Arts (JTHCA)  
2023, Vol. 15 (1) pp 125-146  
© The Author(s) 2023  
Reprints and permission:  
UiTM Press  
Submit date: 15<sup>th</sup> April 2023  
Accept date: 23<sup>rd</sup> April 2023  
Publish date: 30<sup>th</sup> June 2023

**Ritu Narang**

**Ankita Jaiswal\***

University of Lucknow

*Jaiswal.ankita47@gmail.com*

## Proposed citation:

Narang, R. & Jaiswal, A. (2023). A Systematic Literature Review on Technology-Enabled Experience in Hotels. *Journal of Tourism, Hospitality & Culinary Arts*, 15(1), 125-146

## Abstract

This paper provides an updated review of Technology-Enabled Experience in Hotels. For this purpose, it builds on a systematic literature analysis that provides a structured and systematic way to analyze previous contributions. Earlier systematic reviews have either studied the hospitality technology or the conceptualizations, measurement, antecedents, outcomes and application of experiential value. There is hardly any systematic review study available which connects the two topics. This current study follows the guidelines proposed by vomBrocke et al., (2009) in the field of Information Systems (IS) and are now used in this current study. The findings show that research successfully addressed a variety of research gaps. Essential themes in technology-enabled experience in Hotels were research designs, underpinning theories & models, interactive technologies and hotel contexts. However, other research gaps emerged and provide promising directions for future research are also discussed. This systematic literature review provides an up-to-date review of Technology-Enabled Experience in Hotels and an agenda for future research that addresses the nexus of the hotels and elevation of the customer experience through interactive technologies.

## Keywords:

Customer experience, technology-enabled experience, hotel industry, Review Systematic literature analysis

## 1 Introduction

In recent years, the hotel industry has experienced numerous transformations facilitated by developments in information technology. Yet, while the industry is not at the forefront of innovation, it seems to be striving hard to be as innovative as possible. Technological innovation is one such area where the hotel industry is striving to enhance customer experience (Reid and Sandler, 1992). Various hotel groups have embraced technological innovations to take competitive as they enhance productivity, financial performance, and guest service (Kasavana and Cahill, 2003). For instance; even the mid-priced hotels are focusing on appearance and décor instead of just concentrating on providing functional benefits. Further, it is interesting to note that guest –centric technologies not only enhance customer experience but also improve the functionality of the staff. Erdem *et al* (2009) also argued about various in- room technologies that could enhance customer experience. Jauhari and Sanjeev (2010) were also of the same view that customer experience could be enhanced through seamless technology. Additionally, Pine and Gilmore (1998) stated that customer experience has become the next battleground for organizations. Furthermore, they observed that after commodities, goods and services, experiences acts as the most important economic offering for the organizations. Therefore, it is evident that technologies can potentially bring benefits to hotels by enhancing the quality of guests’ experiences and also helps in easier completion of guest-related tasks (Morosan, 2012a). Magnini *et al.*, (2003) has also suggested that hotels could enhance the value proposition of the hotel experience by firstly anticipating as well as implementing those changes happening in new technologies. Following Parasuraman’s (2001) pyramid model of marketing services, hoteliers need to consider that technology mediates nearly any communication between the three dimensions involved in the physical environment: the company, its employees, and the customers. This further indicates that human-computer interaction is intensively discussed in the literature of hospitality industry, consumer services, business, and information systems. Earlier systematic reviews have either studied the hospitality technology (Khatri, I., 2019) or the conceptualizations, measurement, antecedents, outcomes and application of experiential value (Khare, 2017) with respect to some hotel/restaurant formats, cultures, and channels. There is hardly any systematic review study available which connects the two topics. In this regard, the current study, systematically collected, analyzed, synthesized the last ten years (2010-20) literature of customer experience enhancement through interactive technology. It attempts to find the answers of the following research questions to provide useful insights:

- What are the research designs and theories applied by research studies?
- Which interactive technologies have been identified in the different hotel contexts to enhance customer experience?
- What is the various future research direction identified in the literature?

Overall, this study contributes to literature at two levels. First, the current systematic review identifies a set of interactive technologies used in different studies to

enhance customer experience in various hotel contexts. Second, it identifies various future research avenues for upcoming academic researchers.

## **2 Literature Review**

### **2.1 Smart Technology and hotels**

The words “intelligent’ and “smart” have similar connotations, yet there is a lack of comprehension of their meanings and distinctions. Smart technology, which implies the word intelligent, is a term used to describe a new device that refers to the system, state, or motion of technology that adapts to particular functions or is adapted to specific situations (Worden et al. 2003). Intelligent systems are characterised as systems that have the ability to sense their surroundings and learn how to behave in order to achieve specific goals. Intelligent systems have been described in the domain of tourism as autonomous systems that predict user needs and contain detailed and unique information that is adaptable to customer feedback (Gretzel, 2011). Despite many attempts, the idea of smart technology still seems to be vaguely defined beyond the scientific areas, with meanings that are largely ambiguous (Lee, 2012a). With the increasing pervasiveness of technology throughout industries, the application of smart technologies has become a main focus of attention. Smart technologies have created new business opportunities in a number of sectors (Lee, 2012a), including health home systems (Patsadu et al., 2012), retail store usage (Lee, 2012b), urban governance (Himmelreich, 2013), the context of educational designs (McCardle, 2002), and energy monitoring in hotels, due to the convergence of the offline and online worlds (Rogerson and Sims, 2012). In these contexts, smart technologies have been portrayed as instrumental tools with specific functionalities that add value in several ways. For instance, in retail contexts, QR codes can help consumers (Lee, 2012b), while implementation of sensors, tags, Radio frequency Identification (RFID) semantics, and cloud computing is employed in the creation of a smart city, (Komninos 2013). Beyond the health, energy, retail, and public sectors, smart technologies are gaining traction in tourism, as a dynamic industry with a constant demand for innovation (Zach et al., 2010).

The hotel business has recognised the value of technology and is working hard to be far more innovative than before. The majority of hotels are now using technical improvements such as alarm clocks, electronic door locks, PCs, voice mail, and computer modem connections (Reid and Sandler, 1992). With the development of mobile technology, clients prefer to make their reservations via their smartphones. According to research conducted by Travel port (2019), the average US traveler uses seven to eight mobile phone apps. When it comes to hotel applications, 36 percent of customers prefer to use them to check in, while 39 percent prefer to use digital room- keys. In addition to such mobile technology, guests are now expecting various technologically upgraded tools to be available in their guestrooms (Beldona and Cobanoglu, 2007). They expect and want to use technologies such as High-speed internet access (HSIA), and High-definition TV (HDTV) and other emerging technologies, which they use at their homes

(Horner, 2013). With the increase in tech-savvy customers, researchers and operators seem to agree to the same fact that it is very important to satisfy the growing needs of such customers by providing them with proper technology enabled devices such as HSIA and docking stations (Squires, 2008). Managing demands of technophile customers is the most challenging task for hoteliers. Along with this, Horner (2013) also argued about the short life cycle of various hotel technologies, which poses another challenge for hoteliers. Therefore, it is being suggested to invest in the hotel technologies in such a way that these challenges could be transformed into opportunities and gain a competitive advantage.

## **2.2 Technological innovation and customer experience Customer experience**

Pine and Gilmore (1998) proposed the term "experience economy" to describe how businesses operate by emphasizing the consumer experience. Pine and Gilmore (1998, p. 97) described entertainment, education, aesthetics, and escapism as four realms of experiences. The entertainment experience comprises a person's passive participation, with the offerings capturing their attention. Customers are fully immersed in the environment during the aesthetic experience, which entails passive participation. The educational experience requires active engagement in which the client is completely immersed in the events, whereas escapist experiences imply complete immersion in a setting.

In a similar vein, user experience may be described as how people interact with an interactive product and how well it fulfils their needs throughout the entire experience (Alben, 1996). User experience evaluation is critical for managing technology, providing design input, and enhancing how people interact with technology (McNamara and Kirakowski, 2006). Customers' brand experiences, sensations, sentiments, cognitions, and behavioural responses could all be affected (Brakus et al., 2009).

This could potentially impact customers' brand experiences, their sensations, feelings, cognitions and behavioral responses (Brakus et al., 2009). In turn, this influences a number of customer experience consequences including emotional, behavioral and brand-related outcomes (Hwang and Seo, 2016). Additionally, in the experience economy, service providers have become aware of the significance of creating unique consumer experiences beyond merely consuming products and services (Gilmore & Pine, 2002; Pine & Gilmore, 1998). Given online experiential marketing approaches and the inherently experiential nature of the hospitality industry, the emerging technologies offer sensory stimulations to communicate with consumers in supporting travel information search and decision- making processes (Gretzel & Fesenmaier, 2003).

### 3 Methodology

This current study follows the guidelines proposed by vomBrocke et al., (2009) in the field of Information Systems (IS). While analyzing the previous works in the field of information systems, VomBrocke et al. (2009) found that most of reviewed articles miss out on certain areas in the process of documentation. Therefore, VomBrocke et al., (2009) have developed guidelines on systematic literature reviews in the field of Information Systems and are now used in this current study. They have defined five phases to the literature review: (1) scoping the review, (2) conceptualizing the subject, (3) searching appropriate literature, (4) analyzing and synthesizing identified literature, and (5) stating the review's contributions to a research agenda.

Defining the scope of the literature review is the first phase of this review as suggested by vomBrocke et al., (2009). To make this phase more clear and vivid, six characteristics of Cooper's (1988) taxonomy has been used, which highlights some of the central aspects of the review. Cooper (1988) proposed to classify the review to the subsequent six major characteristics which are shown in Table 1: goal, focus, organization, perspective, audience, and coverage. (1) The goal of this study is to integrate review research studies on customer's experience arising from the use of interactive hotel technologies. (2) Therefore, the focus is on the research methodology (qualitative, quantitative, or mixed) and the different physical hotel categories (e.g., upscale, mid-scale or economy) in which the studies have been applied. (3) The organization of the review follows a conceptual process in which the studies are initially organized according to the consumption experience (such as pre-trip, during-trip and post-trip experience). Afterward, reviewed articles by the research methods used (e.g., online surveys or field experiments, surveys). (4) A critical perspective is chosen to summarize and synthesize relevant research studies, (5) the relevant audience for this paper primarily consists of researchers, practitioners and others interested in the field of Information Systems (IS) (6) Finally, an exhaustive literature review on research studies has been covered examining the use of interactive technologies in the hotels in terms of customer experience and its consequences, such as revisit intention and word of mouth.

In the second phase, VomBrocke et al. (2009) states that researchers must provide key definitions relevant to the topic. Therefore, the concepts of customer experience and interactive technologies in hospitality context are discussed in the literature review section. Keeping in mind the research questions, the third phase reveals the precise process of the peer-reviewed literature search and provides the keywords utilized in digital libraries. Moreover, this phase outlines the including and excluding criteria. The search query covered interactive technologies (using the keywords "technology" or "technologies" or "smart" or "interactive" or "digital") in the context of customer experience (using the keywords "experience" and ("hospitality" or "hotel" or "customer" or "customers" or "consumer" or "consumers"). English publications in the field of information and communication technology and business were included, the latter comprising the subcategory of marketing (Willems et al., 2017). Rapid change in

technologies and studies (for example, Willems et al., 2017), the ideal timeframe for reviewing breakthrough in-store technology is 8.5 years; hence this present review contains scientific publications from 2010 until 2020. The electronic search was conducted in the databases ProQuest, EBSCO, and JSTOR. In order to identify hospitality-based publications, duplicate research articles were excluded and analyzed the abstracts of remaining publications. Journal articles were only taken under review as they are considered to be the latest records of knowledge. Therefore, books, conference papers, and papers published in languages other than English were not included. After identifying the relevant literature, phase four focused on analyzing the studies in relevance to the technologies, the research methods and thus the hotel context. The fifth phase of vomBrocke et al.'s (2009) guidelines comprise the research agenda and presents several approaches and questions for future research. This research study includes all the five phases of the systematic literature review proposed by vomBrocke et al. (2009) and reviews the current state of empirical research on interactive technologies in the context of the hotels.

Finally, Microsoft excel and Endnotes applications were used to synthesize and data extraction. Various essential columns were included to record the data for qualitative synthesis. Columns were: author ID, Year of publication, Place of study, research design, data collection methods, interactive technology, hotel context and future research directions.

#### **4 Findings**

The search strategy yielded a total of 1,512 full text-records. Out of which, 133 studies were removed due to duplication of records and 1,379 were screened after reading the titles and abstracts. After further screening 137 full text articles were selected for assessment. After further review of the articles on the basis of research objectives, 122 studies were further excluded. Finally, 15 studies were selected for qualitative assessment and synthesis. Studies were excluded either because they covered customer experience without interactive technology or interactive technology without customer experience.

Table 1: Scope of Review (highlighted in Grey colour) using the Taxonomy proposed by Cooper(1988)

Characteristics		Categories			
(1)	Goal	Integration	Criticism		central issues
(2)	Focus	research outcomes	research methods	Theories	Applications
(3)	Organization	Historical	Conceptual		Methodological
(4)	Perspective	Neutral representation		Critical perspective	Espousal of position
(5)	Audience	Specialized scholars	General scholars	Practitioners	General public
(6)	Coverage	Exhaustive	Exhaustive and selective	Representative	Central/pivotal

Figure 1 show the essential steps involved in systematic literature review. This flow of activities helped in scientific process of records selection. The qualitative synthesis has been grouped under several themes and findings. Firstly; the studies are grouped on major findings (year and country wise publications, and elements of research design). Secondly, the identified interactive technologies in fifteen research studies have been categorized in terms of different customer experience phases. Thirdly, different hotel contexts have also been identified in which these interactive technologies are used. Lastly, future research directions provided by these studies have been analyzed.



Figure1: Steps of identification, screening, eligibility, and inclusion

#### 4.1 Major findings

##### 4.1.1 Characteristics of studies

This article has included fifteen research studies on interactive technologies and their influence on the customer experience in the hotel setting. Studies for years ranging from 2010 to 2019 were included in the final set. The yearly progression of publication can be viewed in Figure 2. Out of the total studies, maximum number of studies i.e., four



were published in the year 2019 and minimum number of studies i.e., one was published the year 2013, 2014, and 2018 respectively. No research study was carried out in the year 2010, 2011, and 2012. This clearly indicates the intention of researchers grew after the year 2012 in this context. Added to this, there is much interesting finding about the country of publication. Although studies were conducted in Asia, Europe, North America, and Africa but largely they are concentrated (50%) in the United States of America, China and India (see Figure 3).

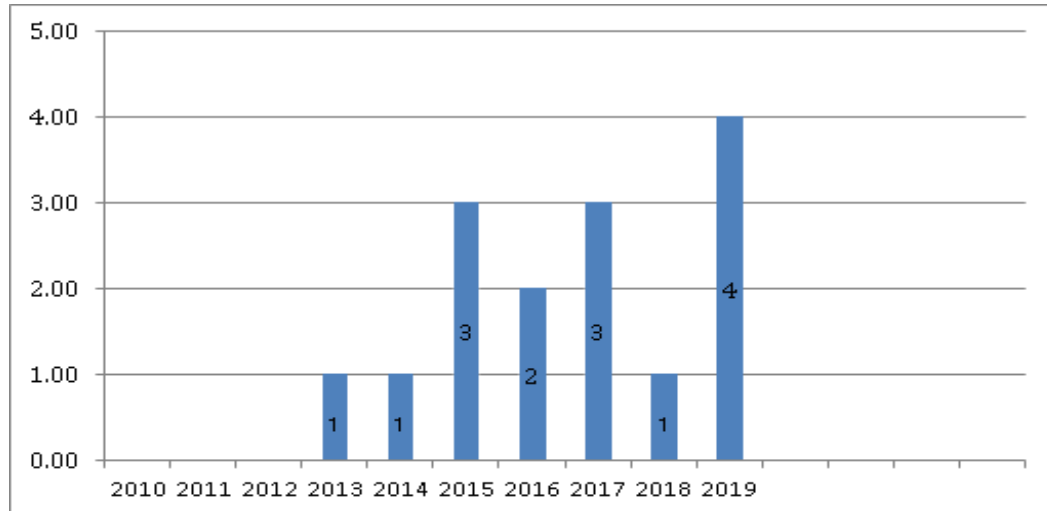


Figure 2: Yearly progression of the identified research studies published in the area of customer experience through technology

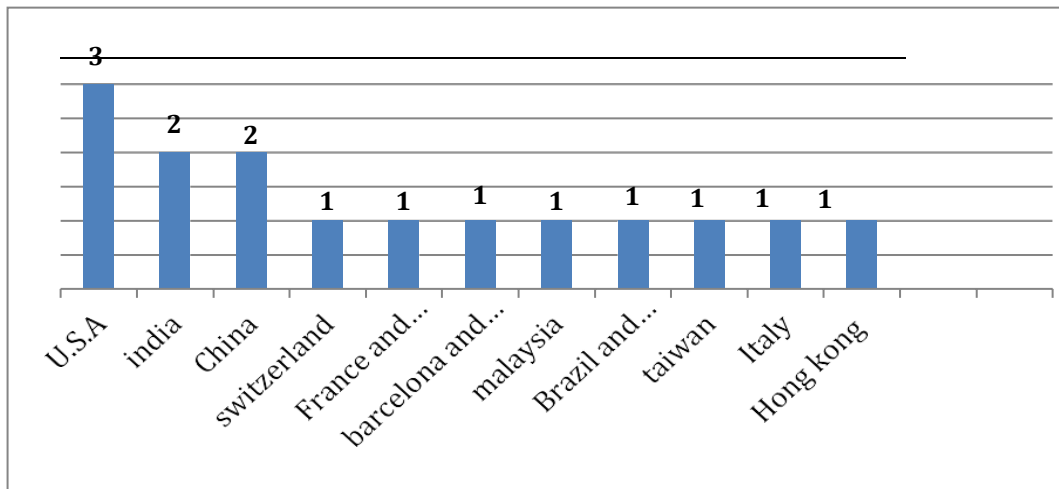


Figure 3: Research studies published in different countries in the area of customer experience through technology

Different studies were published in different countries in the specific context of customer experience through technology. The United States of America published the greatest number of publications. With an identical number of publications, India and China ties for second position in this context (see Figure 3).

As displayed in Figure 4, six publications used quantitative research method, one study used a mixed methods approach and eight studies either conducted focus group interview, text analytics/content Analysis, perceptual mapping or case study method for conducting qualitative method of research. It can be clearly said that more than 50% of research articles i.e., eight out of fifteen research studies opted for qualitative research method. Out of these fifteen research studies, 34% i.e., five research studies used online surveys, or consumer generated online reviews as research design. While others used offline, 53% i.e., eight research studies and both i.e., one media for data collection. Content Analysis was applied by majority (40%) i.e., six out of fifteen identified research studies. Some studies (13%) also applied a simple regression for data analysis. Out of fifteen identified research studies (33%) i.e., five research studies used Smart –PLS to apply Partial Least Square-Structural Equation Modeling (PLS-SEM) and AMOS for Covariance-Based-Structural Equation Modeling (CB-SEM) for analyzing the data (Figure 5).

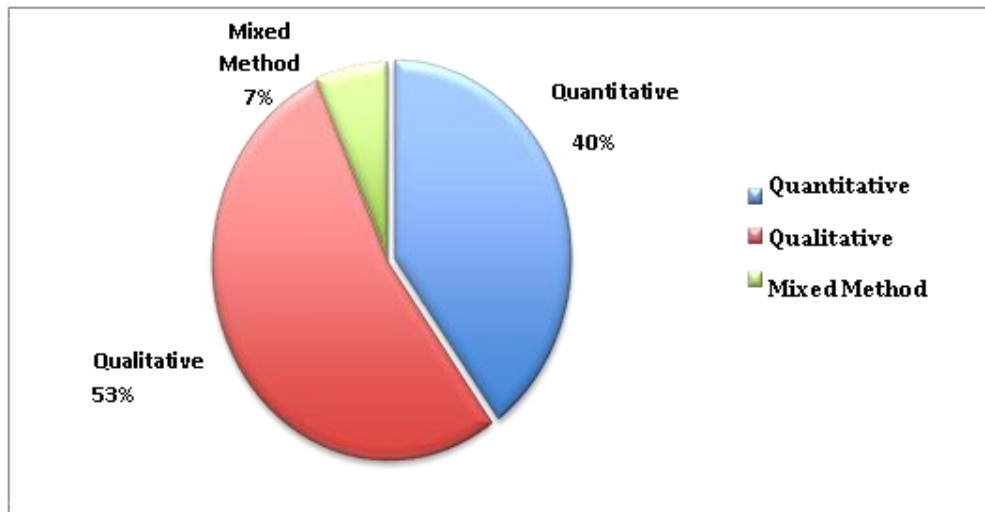


Figure 4: Different approaches used for Data Analysis of the identified studies

Following the results, Content Analysis, however, can be said to be the most efficient data analysis technique in handling complex data in qualitative research. It is applied in more than 70% i.e., six out of eight identified quantitative research studies. Likewise, CB-SEM and PLS- could be said the most effective data analysis technique for handling quantitative research as it is applied in more than 80% i.e., five out of six identified quantitative research studies.

#### 4.2 Interactive Technologies and their Impact on Customer Experience

The accumulation of information and online content shapes the tourism experience in three different stages: pre-trip, during-trip, and post-trip (Hjalager and Jensen, 2012). These three stages studied by Hjalager and Jensen (2012) provided the basis for analyzing the interactive technologies in this review. Furthermore, the interactive

technologies, thus found from the above mentioned fifteen research studies are grouped on the basis of three stages (see Figure 6).

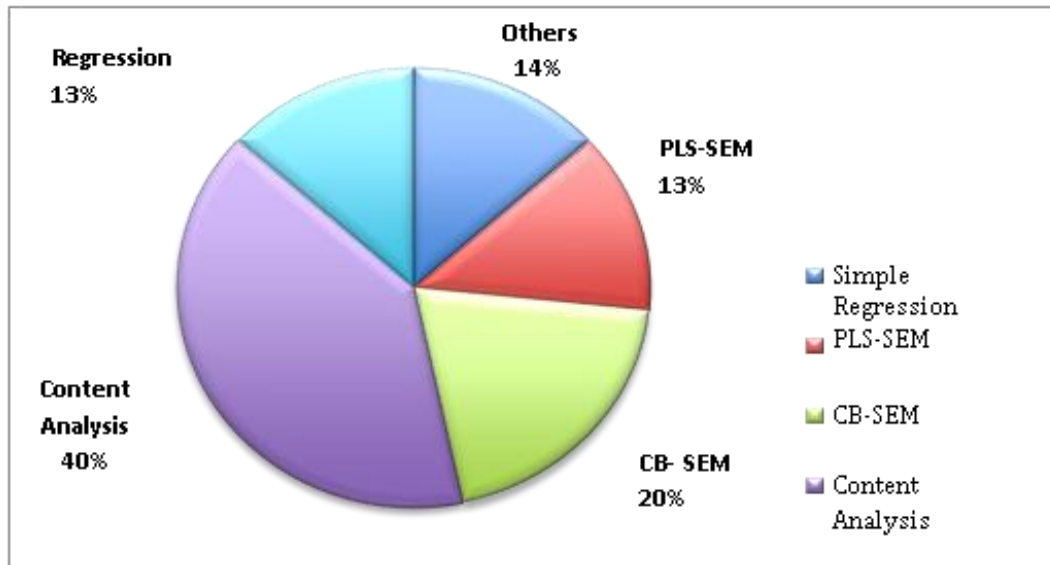


Figure 5: Different Research Methodologies used for Data Analysis of the identified studies

#### 4.2.1 Pre –consumption experience

During the planning process, tourists use information search to obtain ideas, seek for alternatives, and help avoid places that does not interest them (Xiang and Gretzel, 2010). Through reading online reviews, travellers gain a clearer picture of what to expect, increase their confidence in decision making and reduce the risk of satisfaction disconfirmation (Xiang and Gretzel, 2010; Jun et al., 2012). Majority of the studies focused on the evaluation of online travel reviews and presence on social media platforms. These platforms are beneficial for both the companies as well as for enhancing guest experience (Neuhofer, 2012). For instance, Happy Guest Relationship Management System (HGRM) system installed at Hotel Lugano Dante elevates the guests experience at pre-arrival stage by sending an invitation on their smart phones through personalized guest website (MyPage) thus letting hem manage details of their stay and select personal preferences such as customizing room temperatures and bed, extra soft towels, organic bathroom sets, air cleaner, drinks and snacks in the mini-bar, special equipment for children, or the selection of the favourite newspaper etc (Neuhofer, 2015). Additionally, the use of internet technology, such as smartphone apps, offers an opportunity for travellers to search for travel information, make connections with others, and make travel decisions more conveniently and cost-effectively (Arsal, Woosnam, Baldwin, & Backman, 2010).

#### **4.2.2. During stay experience**

Due to the unprecedented use of advanced technological devices, guests also expect high-tech solutions in the hotel guestrooms (Beldona and Cobanoglu, 2007). Furthermore, today's generation yearns for emerging immersive technology that includes elements of both "fun" and "gaming." (Bellini et al., 2016). Robots, for example, are becoming increasingly important in hotels, where they can fill a variety of positions such as bartenders, receptionists, room service delivery, and concierge. Hilton debuted 'Connie,' a humanoid robot that welcomes visitors upon arrival and answers questions about hotel facilities, utilities, and hours of operation (Bellini et al., 2016). Employees and guests co-create experiences at multiple service encounters in real-time, according to Neuhofer et al., (2015). The key to success in the hospitality and tourism industry is the real-time synchronisation and agile service delivery. In-room technology such as free high-speed Internet access (HSIA), flat panel and high- definition television (HDTV), docking stations, and pay-per-view in-room movies may also be used to improve the guest experience. Docking stations is the only one of these technologies that was said to have improved the guest experience (Kim et al., 2014). With the rise of modern 'digitally transformed hotels,' the Renaissance Midtown Hotel has added a large virtual screen to improve the guest experience (Bellini et al., 2016). Furthermore, according to Zander (2013), data of the guest can be used to construct more customised and immersive experiences. RFID- enabled credit cards, for example, check guests' information at the entry point to provide a more customised experience, as hotel staff can address them by name, follow up with them in any case, and record their valuable information in their databases. In a similar vein, smart phone apps could also give guests with a more personalized and customized experiences which will potentially impact guest satisfaction and their revisit intention (Carlino, 2015).

#### **4.2.3. Post-consumption experience**

At the post-trip stage travellers socialize, communicate, share experiences, help others, and reconstruct their memories of the trip by using social media (Jun et al., 2012; Wu and Pearce, 2016). Neuhofer (2012) has also suggested that social media should be used as a tool to enhance customer experience and should try to investigate customers' deep wishes and needs while offering better services and competitive advantage to them. Furthermore, guests share their experiences on various OTAs, hotel websites/ Apps and try to recollect the memories by posting images, videos and blogs on such platforms. For instance, Hotel Lugano Dante with its unique HGRM platform sends a personalised thank-you note, a photo of the employee who performed the check-out, a contact email address for concerns, and an invitation to leave a Trip Advisor review through their MyPage website. It is done to make a personal dialogue with the customer through their shared experiences at the hotel.

### 4.3 Hotel Context

The results of the literature review indicate that nine out of fifteen identified research studies conducted their research in four or five star and luxury or upscale hotel environments (Table 2). In the case of luxury or upscale hotels, researchers have used qualitative research design to explore customer experiences through technology. Experimental study has also been conducted to evaluate the relevance of robots in budget, midscale, or luxury hotel for assessing user experiences (e.g. embodiment, sentiment, human-oriented cognition, feeling of comfort, and co- experience), as inferred from research in human-robot interactions (HRI). Therefore, the synthesis reveals the usage of interactive technologies is still limited to four or five star and luxury or upscale hotel environments and also limited to qualitative research design.

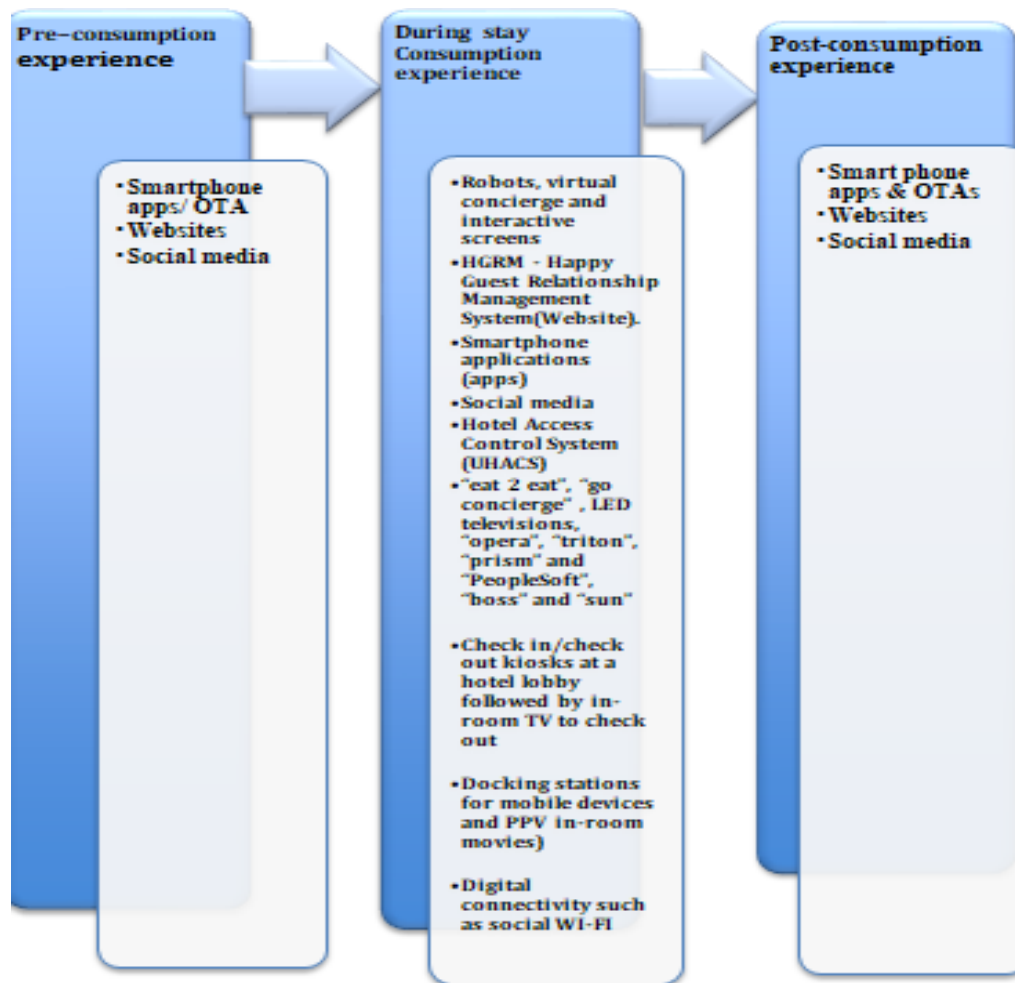


Figure 6: Classification of interactive technologies based on three phases as suggested by Hjalager and Jensen, 2012

#### 4.4 Theories and Models

This review provides useful insights into the underpinning theories used in the fields of customer experience and interactive technology. The technology acceptance model (TAM), and the Unified Theory of Acceptance and Use of Technology (UTAUT) were considered by majority (i.e., seven studies (see Figure 7)). These two theories/models are connected in some way. TAM has proven to be useful in researching consumer behaviour related to technology adoption and social media. On the other hand, UTAUT (Venkatesh, Morris, Davis, & Davis, 2003) was created by combining eight technology acceptance models. One of the studies examined hotel guests' acceptance of a unified hotel access control system (UHACS) for seamless hotel check-in and room access using an engineering approach to service systems development and a Technology Acceptance Model (TAM) as a conceptual lens (Lim et al.,2018).

Another study conducted by Huang (2019) created an integrative model that combines the Technology Acceptance Model (TAM) with the experience construct to examine the factors that impact hotel guests' behavioral intention to use mobile apps. Wani et al. (2017) extended the DeLone and McLean's model of Information System (IS) Success by adding the construct of User Experience to test an evaluation model for retail travel websites that combines the traditional utility-based measures with hedonic measures. Wei et al. (2017) draws upon the theory of consumption values and the experiential value scale to develop a conceptual model concerning hospitality customer's use of self-service technologies (SSTs) and their impact on consumers' service experience. Similarly, Verissimo et al. (2015) has realized the importance of social media platforms by integrating the theory of social media management. They further mentioned that two specific components i.e., relational and lifestyle are important to enhance customer experience in the hotel services.

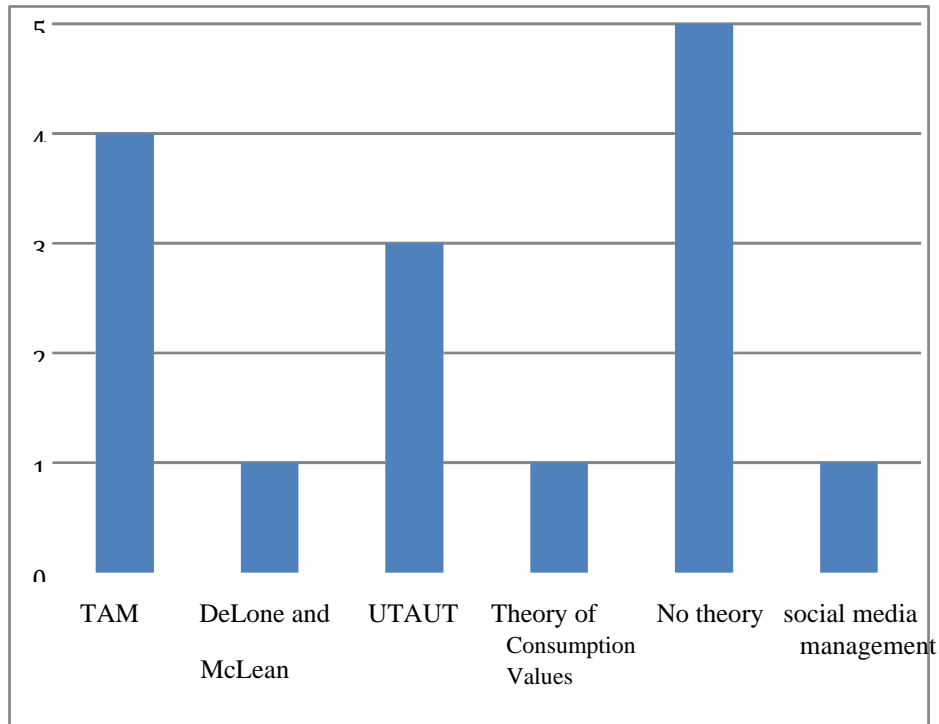


Figure 7: Underpinning theories/models used in the identified research studies

Table2: Synthesis of Systematic literature review

#	Authors	Year	Interactive technology	Group	Methodology	Research design	Context
1.	Bellini, convert	2016	Robots, virtual concierge and interactive screens	2	In-depth interviews (through questionnaire) with professional concierges	Mixed Method	Four- and five-stars hotels
2.	B. Neuhofer et al	2015	HGRM-Happy Guest Relationship Management System.	1&2&3	Three-fold methodology consisted of documentary material, informal interviews and consumer online reviews	Qualitative case study approach	4-star hotel

3.	Rosell et al,	2019	Facebook	1&2&3	Facebook posts were content-analyzed using coda (compositional data analysis)	Qualitative	Three-star hotels, four-star hotels and five-star hotels.
4.	Lim et al	2018	Hotel Access Control System (UHACS)	2	Questionnaire	Quantitative	An international technology exhibition
5.	Wani et al.	2017	Websites	1	Online and paper survey	Quantitative	255 customers of travel websites targeted at the Indian market.
6	Krawczyk, M. & Xiang, Z.	2015	Online travel apps	1& 3	Text-analytics employing online reviews.	Qualitative technique (perceptual mapping of hotel brands using correspondence analysis.)	Midscale and upscale
7.	Park and Allen	2013	Online travel apps	1& 3	Four case Studies of luxury and upscale hotels	Qualitative technique (exploratory)	Upscale and luxury hotels
8.	Sharma, D.	2016	“eat eat”, “go concierge” , led televisions, “opera”, “triton”, “prism” and “PeopleSoft ” , “boss” and “sun”	2	Interview method	Qualitative research	Lower category hotels (LCH) and higher category hotels (HCH).
9.	Wei et al.	2017	Check in/check out kiosks at a hotel lobby followed by in-room TV to check out	2	Questionnaires	Quantitative	Hotels and Restaurants



10.	Soyeonjung, jungsun (sunny) kim, john farrish,	2014	Docking stations for mobile devices and PPV in-room movies)	2	Online surveys	Quantitative	Usable samples from managers, vice-presidents, presidents, owners and executives from hotel companies.
11.	Verissimo et al.	2015	Social media	1&2&3	Online interviews	Qualitative	Luxury hotels
12	Huang	2019	Mobile apps	1	Questionnaire	Quantitative survey Approach	Hotel app users
13	Chan and tung see	2019	Service robot	2	Questionnaire	Quantitative (experimental study)	(Budget, midscale, or luxury hotel)
14.	Tung et al,	2017	Robotics	2	Consumer-generated reviews	Qualitative technique	Yotel in new york, aloft cupertino, hennna hotel in japan and residence inn marriott lax in los angeles.
15.	Buhalis, D. and Tanti, A	2019	Digital connectivity (social wi-fi, social media etc.)	1&2&3	In-depth interviews	Exploratory qualitative research	Tech-savvy travellers

## 5 Gaps and Research Agenda

Besides, the extant literature has studied and confirmed links among customer experience and interactive technologies. A large number of future research avenues were discovered as a result of the study. The literature suggests further studies to be done to discuss the following issues. Few studies suggested despite many attempts to provide professionals with foresight into the "hotel of the future," there is no unambiguous indication of how it may develop, or one might argue that there could be a range of different possible outcomes that will coexist and be viable to the extent that they are consistent with corporate strategies and really contribute to the delivered value an organisation (Bellini, convert, 2016; B. Neuhofer et al., 2015). Research in this realm

should be intensified, particularly when new smart technologies evolve in the fields of location-based services, virtual reality, context-based services, and gamification, opening a wide agenda for future research in hospitality, tourism, and beyond (B. Neuhofer et al., 2015).

One of the future avenues is to examine other explicative hotel factors, such as hotel capacity, hotel chain membership, or the use of other social media, may be used in future research to see if other hotel features affect e- content strategies. Furthermore, research should be done to look at the social media content strategies of various hotel classes in various destinations, as well as the role of Destination Management Organisations (DMOs) in the hospitality industry's contact strategies (Rosell et al., 2019). Wani et al. (2017) suggested future research should concentrate on a systematic assessment of other IS used for the same reason, such as smartphone applications for online travel. Another essential call for future research is to explore security related advanced encryption methods for those involved in the development of hospitality and service programmes (Lim et al., 2018). Future user experience study could also explore both an experimental and a post hoc evaluation to see whether respondents' evaluations of experience vary substantially when given an experimental setup versus a post hoc survey evaluation (Wani et al., 2017). Latent semantic analysis can also be used in other predictive methods, such as discriminant or regression analyses, to investigate the underlying patterns that flow through the content of the reviews (Krawczyk1,

M. & Xiang, and Z. 2015). Allen and Park (2013) urged hospitality firms to engage in more co-creation activities with customers to create memorable experience. However, successful "co-creation" continues to be erratic and elusive to accomplish even in the hotel industry, which is heavily dependent on customer support and experience. Sharma, D.2016; Verissimo et al., 2015; Tung et al., 2017) emphasized on conducting a quantitative study to determine the technological amenities different categories of consumers favour and in what order they prefer them. According to previous studies, the underlying dimensions of consumers' technology experiences may shift over time. Longitudinal experiments can also be carried out to see if the studied relationships evolve over time (Wei et al.,2017; Tunget al.,2017). Further study could combine with other hedonic experiential variables including customer emotion (Jeong et al., 2009) and perceived values (Ozturk, Nusair, et al., 2016) to provide deeper insights into the processes that drive hotel consumer response to mobile technology. Prospective studies might include interviews with hotel executives to determine their impressions of the possible economic (dis)advantages of robot deployment in the hospitality industry (Tung et al., 2017). Buhalis, D. and Tanti, A. (2019) strongly suggested both academics and advertisers must ensure the adequate infrastructure is in place when technologically enabled experiences, co-creation, and smart destinations begin to emerge and expand (e.g., Buhalis and Neuhofer et al., 2014, 2015; Buhalis and Foerste, 2015). Destinations and organisations must ensure that their telecommunications infrastructure is capable of meeting the market's ever-increasing needs.

Finally, future research directions are recommended by the authors of the current research paper. First, the more such technologies could be introduced at pre-stay and

post-stay consumption as majority of the identified studies focused on technologies related to stay consumption phase. Moreover, the above- mentioned factors can also be studied as moderator of the relationship between Interactive technology and customer experience. Causal or experimental and longitudinal research design is another potential future direction. Mixed studies are another future avenue to explore user experience in the given domain. These gaps should be addressed in future works by combining both, technology based and traditional research methods, to gain a holistic view of the effects of technology interaction on guests' experience in the hotel context.

## **6 Conclusion**

This systematic review aimed at addressing three fundamental issues. One was to identify general research design, underpinning theories and methodology in the hotel context. The second was to explore the interactive technologies, used at various stages of consumption experience in the hotel context. The last was to describe the future research areas identified by earlier studies in the said domain. The above-stated objectives were successfully realized by systematically reviewing and synthesizing fifteen research articles. The data analysis revealed many interesting findings. The majority of the studies chose qualitative research design. A dominating number of researchers selected content analysis for the sake of data analysis. The maximum number of research papers was published in the year 2019. United States of America, China, and India remained the top three leading countries concerning the number of publications in the given domain. The majority of the researchers applied TAM as an underpinning theory. The results of the literature review indicate that seven out of fifteen identified research studies conducted their research in four or five star and luxury or upscale hotel environments (table 2). In the case of luxury or upscale hotels, researchers used interviews, surveys, content analysis or case study method. Experimental study has also been conducted to evaluate the relevance of robots in budget, midscale, or luxury hotel.

The synthesis categorized the interactive technologies on three stages as suggested by Hjalager and Jensen (2012). Various technologies investigated during the three phases were labelled as pre-consumption, during-stay consumption experience and post-consumption experience. Hotel context to which these interactive technologies are applied has also been discussed such as five-star, four stars etc. The analysis also found many potential research avenues for future researcher. The systematic literature review reveals firstly, that researchers should focus on exploring the hotel related explicative factors such as hotel capacity, hotel chain membership, or the use of other social media usage. Secondly, more interactive technologies at pre and post –consumption phase could be introduced, as majority of the identified studies focused on stay-phase consumption. Thirdly, Causal or experimental and longitudinal research design could be used to study the relationship of interactive technologies on user experience in the hotel context.

In summary, the findings of this review provide an insight into the field of interactive technologies and customer experience applied in the identified studies relevant to the hotel context. It also provides a comprehensive framework including interactive technologies, research methodologies & underpinning theories applied in these identified studies to elevate customer experience in the hotel context. Moreover, current research study also identified various future research avenues for upcoming academic researchers to explore more in-depth relationship between interactive technologies and user experience in the hotel context.

## 7 References

- Beldona, S. and Cobanoglu, C. (2007), "Importance-performance analysis of guest technologies in the lodging Industry", *Cornell Quarterly*, Vol. 48 No. 3, pp. 299-312.
- Bellini, N., & Convert, L. (2017). The concierge. Tradition, obsolescence and innovation in tourism. *Symphonya. Emerging Issues in Management*, (2), 17-25.
- DeLone, W. H., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. *Information Systems Research*, 3(1), 60–95
- Ding, Y. and Keh, H. T. (2016), "A re-examination of service standardization versus customization from the consumer's perspective", *Journal of Services Marketing*, Vol. 30 No 1, pp. 16-28.
- Erdem, M., Schrier, T. and Brewer, P. (2009), "Guest empowerment technologies", *Journal of Hospitality Finance and Technology Professionals*, Vol. 24 No. 3, pp. 17-19.
- Ferrer-Rosell, B., Martin-Fuentes, E., & Marine-Roig, E. (2020). Diverse and emotional: Facebook content strategies by Spanish hotels. *Information Technology & Tourism*, 22(1), 53-74.
- Khare, G.V., (2017), "Experiential value: a review and future research directions", *Marketing Intelligence & Planning*, Vol. 35,3.
- Gretzel, U. (2011). Intelligent systems in tourism: A social science perspective. *Annals of Tourism Research*, 38(3), 757–779.
- Himmelreich, J. (2013). Good urban governance and smart technologies: A German city as a best practice case of e-government. In K. B. Akhilesh (Ed.), *Emerging dimensions of technology management*, (pp. 55–61): Springer India.
- Horner, T. (2013), "Top hotel technology trends in 2012", *Hotel Executive*, available at: [http://hotelexecutive.com/business\\_review/2888/top-hotel-technology-trends-in-2012](http://hotelexecutive.com/business_review/2888/top-hotel-technology-trends-in-2012) (accessed 9 January 2013).
- Jun S, Hartwell H, Buhalis D (2012) Impacts of the Internet on travel satisfaction and overall life satisfaction. In: Uysal M, Perdue R, Sirgy MJ (eds) *Handbook of tourism and quality-of-life research* (Online). Springer Netherlands, Houten, pp 321–337.
- Karimi, J., Somers, T.M. and Gupta, Y.P. (2001), "Impact of information technology management practices on customer service", *Journal of Management Information Systems*, Vol. 17 No. 4, pp. 125-158.
- Kasavana, M.L. and Cahill, J.J. (2003), *Managing Technology in the Hospitality Industry*, 4th ed., Educational Institute of the American Hotel and Lodging Association, Lansing, MI.
- Komninos, N., Pallot, M., & Schaffers, H. (2013). Special issue on smart cities and the future Internet in Europe. *Journal of the Knowledge Economy*, 4(2), 119–134.

- Krawczyk, M., & Xiang, Z. (2016). Perceptual mapping of hotel brands using online reviews: a text analytics approach. *Information Technology & Tourism*, 16(1), 23-43.
- Lee, H.-J., Yang, K.(2013). Interpersonal service quality, self-service technology (SST) service quality, and retail patronage. *Journal of Retailing and Consumer Services*.
- Lim, W. M., Teh, P. L., Ahmed, P. K., Cheong, S. N., Ling, H. C., & Yap, W. J. (2018). Going keyless for a seamless experience: Insights from a unified hotel access control system. *International Journal of Hospitality Management*, 75, 105-115.
- McCardle, J. R. (2002). The challenge of integrating ai& smart technology in design education. *International Journal of Technology and Design Education*, 12(1), 59–76.
- Neuhofer, B., Buhalis, D., &Ladkin, A. (2015). Smart technologies for personalized experiences: a case study in the hospitality domain. *Electronic Markets*, 25(3), 243-254.
- Parasuraman, A., Grewal, D. (2000). The impact of technology on the quality-valueloyalty chain: A research agenda. *J. of the Acad. Mark. Sci.* 28(1), pp. 168–174.
- Park, S. Y., & Allen, J. P. (2013). Responding to online reviews: Problem solving and engagement in hotels. *Cornell Hospitality Quarterly*, 54(1), 64-73.
- Patsadu, O., Nukoolkit, C. &Watanapa, B. (2012). Survey of smart technologies for fall motion detection: Techniques, algorithms and tools. *Advances in Information Technology*, 137–147.
- Pine, J. B., & Gilmore, J. H. (1999) "The experience economy: Work is a theatre and every business a stage" Cambridge: Harvard Business School.
- Reid, R.D. and Sandler, M. (1992), "The use of technology to improve service quality", *Cornell Hotel and Restaurant Administration Quarterly*, Vol. 33 No. 3, pp. 68-73.
- Sanjeev, G.M. and Jauhari, V. (2012), "The emerging strategic and financial issues in the Indian hospitality industry: an overview", *Worldwide Hospitality and Tourism Themes*, Vol. 4 No. 5, pp. 403-409.
- Sharma, D. (2016). Enhancing customer experience using technological innovations: A study of the Indian hotel industry. *Worldwide Hospitality and Tourism Themes*.
- SoYeon Jung, Jungsun (Sunny) Kim, John Farrish, (2014) "In-room technology trends and their implications for enhancing guest experiences and revenue", *Journal of Hospitality and Tourism Technology*, Vol. 5 Issue: 3, pp.210- 228.
- Squires, M. (2008), "Technology changes lodging workforce", *Lodging Hospitality*, Vol. 64 No. 16, pp. 89-94.
- Tanti, A., &Buhalis, D. (2017). The influences and consequences of being digitally connected and/or disconnected to travellers. *Information Technology and Tourism*, 17(1), 121-141.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 425–478.
- Vincent Wing Sun Tung, Norman Au, (2018) "Exploring customer experiences with robotics in hospitality", *International Journal of Contemporary Hospitality Management*.
- Vom Brocke, J., Simons, A., Niehaves, B., Riemer, K., Plattfaut, R., Cleven, A. (2009). Reconstructing the giant: On the importance of rigour in documenting the literature search process. *ECIS (European Conference on Information Systems) 9*, 2206–2217.
- Wani, M., Raghavan, V., Abraham, D., & Kleist, V. (2017). Beyond utilitarian factors: User experience and travel company website successes. *Information Systems Frontiers*, 19(4), 769-785.
- Wei Wei, Edwin N Torres, Nan Hua, (2017) "The power of self-service technologies in creating transcendent service experiences: the paradox of extrinsic attributes", *International Journal of Contemporary Hospitality Management*, Vol. 29 Issue: 6.

- Wu MY, Pearce PL (2016) Tourism blogging motivations: why do chinese tourists create little “lonely planets”? *J Travel Res* 55(4):537–549.
- Xiang Z, Gretzel U (2010) Role of social media in online travel information search. *Tour Manag* 31(2):179–188.
- Yu-Chih Huang, LanLan Chang, Chia-Pin Yu & Joseph Chen (2019): Examining an extended technology acceptance model with experience construct on hotel consumers’ adoption of mobile applications, *Journal of Hospitality Marketing & Management*.
- Zach, F. J., Gretzel, U., & Xiang, Z. (2010). Innovation in web marketing programs of American convention and visitor bureaus. In U. Gretzel, R. Law, & M. Fuchs (Eds.), *Information and communication technologies in tourism 2010* (pp. 47–63). Vienna: Springer.