From Information Technology to Mobile Information Technology: Applications in Hospitality and Tourism

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Abstract

This study reviewed a total of 71 mobile technology related articles starting from the first article published in hospitality and tourism journals (i.e., 2005). First, a paradigm funnel was employed to categorize the articles reviewed. Second, content analysis was applied for analyzing the mobile technology applications. The findings indicate that most previous studies applied a single theory in investigating mobile technology in hospitality and tourism. Furthermore, limited attention of mobile technology applications is given in the hospitality industry. Future studies are encouraged to improve the two-way communication and to satisfy the changing needs of customers.

Keywords: information technology, mobile information technology, application, hospitality, tourism, literature review.

1 Introduction

The rapid growth of information and communication technologies has been continuing to evolve and gaining increasing attention from academic researchers. It has brought dramatic revolutions to the hospitality and tourism industry; and recently mobile e-commerce has become a trendy topic (Law, Buhalis, & Cobanoglu, 2014; Ozturk, Bilgihan, Nusair, & Okumus, 2016). In the recent five years, mobile device usage has increased remarkably, and mobile applications in the tourism industry have proliferated because it allows customers to obtain information on products or to purchase products anywhere at any time (Jung, Chung, & Leue, 2015). The remarkable advances in smartphones have assisted customers who are seeking customized tourism services, whereas travel suppliers can stay in touch with their clients through social, local, and mobile channels (Thakran & Verma, 2013).

Although mobile technology application has been examined in hospitality and tourism, a thorough review of the related articles is lacked of. Thus, this study addresses the deficiency through summarizing the previous literature using a paradigm funnel to analyze the mobile technology applications. The advantages of applying a paradigm funnel model is that it can be used to categorize the literature without the limitation of time, and it differentiates four levels, ranging from "explicit" (i.e., observable) to "implicit" (i.e., unobservable) (Berthon, Nairn, & Money, 2003). In the present study, the term "mobile technology applications" means mobile technology in general, which encompasses both smartphones (e.g., mobile apps) and mobile devices (e.g.,

tablets). The objectives of this study are to categorize the reviewed mobile technology application articles in hospitality and tourism since their introduction (that is, the first publication year of a paper in hospitality and tourism journal) based on a paradigm funnel (Berthon et al., 2003; Kuhn, 1970), to analyze the content of mobile technology-related articles, and to summarize the applications of previous studies, and provide future research directions to stay in touch with the industry.

2   Literature Review

Mobile technology, mainly refers to mobile media, information search, and information sharing, has been widely adopted in different industries in recent years. It also plays a vital role in the hospitality and tourism industry (Mintz, Branch, March, & Lerman, 2012; Morosan & DeFranco, 2016). Different types of data such as texts, videos, and voices are oftentimes applied for media transmission (Lu, Yao, & Yu, 2005). It has greatly changed the communication between suppliers and consumers along with the proliferation of smartphone use and the development of travel-related apps. In other words, it does not only extend the Internet to the wireless medium, but also provide greater flexibility to hospitality and tourism suppliers and customers for information sharing, communication, and collaboration (Sheng, Nah, & Siau, 2005). For example, Okazaki, Campo, Andreu, and Romero (2014) unearthed that two important attributes that can attract tourists to use hospitality-related mobile applications are immediacy and information access.

Nevertheless, the categorization of mobile technology applications is not clear, and previous studies rarely tracked the changes of mobile technology development in hospitality and tourism along with the transition of mobile information technology in the recent years. Furthermore, it is argued that this topic needs to be further investigated to improve the theoretical knowledge since strong papers need to have a sound theoretical foundation (Wang, Xiang, & Fesenmaier, 2014). Paradigm funnel is a particular tool that is applied in this study to summarize the previous literature. Thus, the present study will be based on a paradigm funnel to categorize the reviewed articles. Content analysis was then adopted to examine the selected articles for key topics in mobile technology-related articles, mobile technology application(s), and to indicate future research directions.

3   Methodology

Data were collected from September 2014 to June 2016. Keywords related to mobile technology such as *"mobile phone", "smartphone", "mobile application"/"mobile app", "mobile technology", "hotel", "hospitality", "tourism",* and the combination of these key words were used to search for mobile technology-related articles. ScienceDirect (http://www.sciencedirect.com) and Google Scholar (http://scholar.google.com.hk), two of the largest and most popular online databases, were selected to retrieve relevant published articles starting from the first mobile technology-related article in hospitality and tourism (i.e., 2005). Articles were then selected based on two criteria. First, only full-length articles were included in the present study. Second, only article published in hospitality and tourism journals were included for further analysis (Yoo, Lee, & Bai, 2011). After that, the authors carefully read each article to determine the direct relevance and to decide whether it should be included for analysis. Multiple authors discussed and reached an agreement of the final data set. Accordingly, the final data set includes 71 mobile technology-related articles in 26 hospitality and tourism journals.

4 Findings and Discussions

4.1 Categorization of Reviewed Articles

A paradigm funnel was employed to categorize the reviewed articles. Among the literature reviewed, Level 1 (i.e., empirical research) contains 49/71 (67.6%) mobile technology-related empirical studies. The significant facts among these articles are mobile technology system, mobile information communication and user interface. For Level 2 (i.e., analytical methods), the percentage of the funnel is 40.0 %. The primary goal of these articles is to introduce and evaluate the methodologies applied in term of mobile technology in hospitality and tourism. For example, using latent class model, Okazaki et al. (2014) examined the use of travel-related mobile Internet services among travelers and identified the behavioral similarities among different types of respondents. Level 3 (i.e., applied theories) includes 25.4 % of reviewed articles. The focus point in this level is the application of previous theories or the implementation of theories. Technology acceptance model (i.e., TAM) is the most common theoretical framework adopted in previous studies to evaluate the acceptance of a certain type of mobile technology (e.g., e-menu adoption in mobile tablet) among tourists. The theoretical framework is thus restricted to TAM. Only 11.3 % of the reviewed articles belong to Level 4 (i.e., core assumption), the core assumption level. The aim of the articles in this level is questioning the deep ontological assumptions in terms of theories or methodologies. For example, Wang, Li, Li, and Zhang (2016) challenged TAM-based studies which focus solely on cognitive perspectives of tourists and used a modified adaptive structuration theory to have a fully understanding of post-adoption behavior when mobile technology is integrated among travelers. The findings showed that a majority of articles belong to Level 1 and Level 2, only a limited number of articles belong to Level 3 and Level 4. In other words, most of the previous studies investigated a certain topic relate to mobile technology applications, but the application of theoretical framework and the challenge of core assumption parts are weak or lacked of. Thus, future studies should apply different theoretical models, and investigate the applicability of previous theoretical model to mobile technology to encourage hotel and tourism research advancement.

4.2 Mobile Technology Application(s)

The key topics of mobile technology in hospitality and tourism include the *mobile technology* (n = 25), *mobile technology system* (n = 14), *mobile information communication* (n = 15), *tourist navigation* (n = 7), and *user interface* (n =18). The total number of articles added in terms of the key topics (n = 79) exceeded the total number of articles (n = 71) because some articles covered more than one topic. To be specific, in terms of *mobile technology*, smartphone information delivery was commonly addressed in previous studies. For instance, No and Kim (2014) explored the determinants of travelers' intention to use travel-related information on smartphones and found that usefulness, ease of use, social influence are the most critical factors. Another four key topics are somehow interconnected with the main topic mobile technology. For *mobile technology system*, for example, Ricci (2010) argued that recommender systems are a kind of the mobile systems that can increase the usability of mobile systems when personalized information is provided to tourists. *Mobile information communication* was then discussed as time required, which mainly includes information search and information sharing. Taking the study of Okazaki and Hirose (2009) as an example, through latent analysis, it is found that compared with males, females show a more habitual usage of mobile Internet to search travel-related information. In reference to *tourist navigation*, location-based mobile service and GPS positioning are the principal methods. Considering *user*

interface, mobile technology usefulness and ease of use were the popular topics discussed for a long time. For instance, Kim, Park, and Morrison (2008) proved that the technology experience positively affects travelers' attitudes towards using smartphones and influences tourists' perceived ease of use.

Nonetheless, most of the articles introduced or applied only one type of mobile technology, the applications of the combination of different types of mobile technologies (e.g., recommender system + navigation system + instant communication system) can be further investigated to enhance the efficiency of mobile technology applications in hospitality and tourism. Furthermore, most articles focused on mobile technology applications in tourism, and only a limited number of articles indicated applications in hospitality. Researchers should devote more efforts in investigating mobile technology application in hospitality. Furthermore, taking advantages of the feedbacks from end users about the use of mobile technologies may a healthy two-way information circulation system between suppliers and customers.

5   Implications

5.1   Theoretical and Practical Implications

Theoretically, this study first categorized the previous literature based on a paradigm funnel, which was originally advocated by Kuhn (1970) and adopted in marketing research by Berthon et al. (2003). Subsequently, this study applied content analysis to analyze the articles in terms of mobile technology applications. This study extends the paradigm funnel by summarizing the previous literature and showing the percentage change in four levels in mobile technology in less investigated hospitality and tourism field. Practically, the present study can provide some insights for hospitality and tourism practitioners. In essence, mobile technology suppliers have the priority of retrieving the first-hand customer feedbacks in time by taking advantage of mobile technologies such as mobile apps developed by suppliers. Hence, industry practitioners may get invaluable feedbacks from customers and take corresponding measures by analyzing the feedbacks to facilitate the progress of two-way communications.

6   Conclusions and Future Research

Through applying a paradigm funnel, this study categorized the reviewed articles in four levels. The findings showed that more theoretical framework such as innovation diffusion theory and adaptive structuration theory are recommended to be adopted in future studies. In addition, challenging the assumption of theories applied in previous studies can be a step forward in hospitality and tourism. Thus, innovative methods (e.g., online/mobile questionnaire survey) were worth further investigation. Moreover, research efforts on the improvement of theoretical knowledge is recommended in future studies (Wang, Xiang, & Fesenmaier, 2016). On the other hand, the findings showed that mobile technology applications (e.g., smartphones) are tightly connected to the supply and demand sides based on a review of the included articles. Despite finding that a two-way communication was effective, previous studies ignored the direction from demand to supply, such as a platform (e.g., a mobile app) that immediately provides customer feedback. Thus, industry practitioners should take advantage of mobile technology to gain feedback from customers in time. A major limitation of this study is the limited number of articles reviewed. Moreover, publications from conference proceedings, book chapters, and other non-hospitality/tourism journals were not included. Future research can thus include

other publication outlets to compare and contrast findings from different outlets. Hospitality and tourism researchers are expected to make advances in the industries when researching on applications in other fields (e.g. computer science).

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