ENGAGING CUSTOMERS IN VALUE CO-CREATION THROUGH MOBILE

INSTANT MESSAGING IN THE TOURISM AND HOSPITALITY INDUSTRY

ABSTRACT

Tourism and hospitality service providers have been seeking ways to engage customers in the value creation process to deliver personalized experiences. Such practices have been facilitated by the rapid development of information communication technology. Extant research on online customer engagement focuses mostly on computer-based platforms. Mobile instant messaging (IM) has rarely been explored despite its substantial potential for firm–customer interactions. On the basis of service-dominant logic and computer-mediated communication theories, this study examines customers' perceived co-creation experience facilitated by mobile IM. It empirically tests the influencing factors and effects of such co-creation experience. The findings extend the theoretical framework of value co-creation to a context mediated by mobile IM. Managerial suggestions are provided for tourism and hospitality organizations.

KEYWORDS: online customer engagement, mobile instant messaging, value co-creation experience, service-dominant logic, computer mediated communication

INTRODUCTION

Increasingly fierce market competition has forced tourism and hospitality service providers to move beyond mimicking each other to creating unique value for customers. In the era of the experience economy, customers' perceived value of a product or service is largely dependent on their consumption experience rather than pre-designed value propositions (Prahalad & Ramaswamy, 2004a; Vargo & Lusch, 2004). Thus, various strategies, from providing personal customer services (Ritz-Carlton, 2016) to loyalty programs that go beyond rewards (Hyken, 2017), have been employed to make customer experiences more inimitable and memorable. Meanwhile, consumers have become more sophisticated and now prefer personalized or one-to-one marketing over standardized or "one-size-fits-all" offerings (Chathoth, Altinay, Harrington, Okumus, & Chan, 2013).

To facilitate one-to-one marketing and personalized customer experience, the tourism and hospitality industry has widely adopted information communication technology (ICT), featuring superior computation and connection capability (Buhalis & Law, 2008). A recent trend is the extended application of mobile instant messaging (IM) from regular daily lives into commercial contexts. Examples include the "Anything Else" IM function embedded in the official Marriott mobile application (app) (Ting, 2016), and multiple chatting channels (e.g., WhatsApp, Facebook, WeChat, SMS) offered by Four Seasons Hotels and Resorts (Tuite, 2017). These endeavors aim to engage customers in personalized interaction and service consumption.

The practice of providing accessible resources to help customers create their own experiences by collaborating with the service provider is called value co-creation. Its emphasis on the customer's role in value creation is grounded in service-dominant (S-D) logic (Vargo & Lusch, 2004). By distinguishing between service providers' value propositions and customers' value-in-use, S-D logic suggests that value is phenomenologically determined by customers in

context rather than embedded in a good or service (Vargo & Lusch, 2008). In this sense, interactions between customers and service providers become the locus of value creation. They allow service providers to better understand their customers and subsequently personalize customer experience (Prahalad & Ramaswamy, 2004a). Engaging customers to interact and collaborate with the service providers is critical to value creation because engaged customers tend to contribute more resources (e.g., action, time, and money) that benefit both parties (Van Doorn et al., 2010).

The unique features of mobile technologies have largely extended co-creation opportunities in the spatial and temporal dimensions (e.g., Buhalis & Law, 2008; Neuhofer, Buhalis, & Ladkin, 2015; Wang & Fesenmaier, 2013). However, as a computer-mediated communication (CMC) channel, mobile IM has been recognized as a "lean" medium as it filters nonverbal cues, such as facial expression and body language (Walther, 1996). This uniqueness warrants an investigation of consumer value co-creation experiences mediated through the mobile IM channel. Limited research has been conducted to investigate the use of mobile IM for firm-customer interaction in tourism and hospitality contexts.

As such, two questions remain unanswered: *(1) What factors influence customers' co-creation experience via mobile IM? (2) How does customers' co-creation experience via mobile IM shape their perceived value?* This study aims to answer these questions and thus contribute to knowledge of online customer engagement in value co-creation in tourism and hospitality. Specifically, the study models and examines the driving factors and outcomes of customers' co-creation experience based on survey data collected from Chinese customers who have interacted with a tourism and hospitality service provider through mobile IM.

LITERATURE REVIEW

S-D Logic, Value Co-creation, and Customer Engagement

S-D logic emphasizes the role of service given that tangible goods alone cannot generate value without being used in producing services (Vargo & Lusch, 2004). Therefore, a service provider's competitiveness depends on its capability to make better value propositions to serve all stakeholders and beneficiaries. In this sense, a firm's competitive advantage is derived from its operant (e.g., human skills and knowledge) rather than operand resources (e.g., raw materials or physical goods) (Vargo, Lusch, & Akaka, 2010). Following this logic, value is not embedded in the good or service. Customers or users contextually determine it. One natural inference of S-D logic is that firms should engage customers in an interactive dialogue through which customers' needs can be better understood and the value of the service offerings can be maximized (Prahalad & Ramaswamy, 2004a, 2004b; Vargo & Lusch, 2004). Such "joint creation of value by the company and the customer, allowing the customer to co-construct the service experience to suit the context", is termed the "co-creation" of value (Prahalad & Ramaswamy, 2004b, p. 8).

A successful value co-creation process is dependent on customer engagement. Engaged customers tend to be more active in sharing information and seeking opportunities to co-construct their experiences (Ostrom et al., 2010). Jaakkola and Alexander (2014) conceptualized the role of customer engagement behavior in value co-creation as "the customer provision of resources during non-transactional, joint value processes that occur in interaction with the focal firm and/or other stakeholders, thereby affecting their respective value processes and outcomes" (p.254). Customer engagement is highly driven by the quality of firm–customer interactions that critically influence customer experience and perceived value (Brodie, Hollebeek, Jurić, & Ilić, 2011; Prahalad & Ramaswamy, 2004a).

Interactions through Mobile IM as a Unique Form of Value Co-creation

Mobile IM is a specific type of CMC. It refers to applications that enable users to conduct online dialogue through typing messages back and forth to one another using mobile devices (Chen & Morgan, 2008). IM is an example of synchronous and symmetric communication, meaning that interlocutors can exchange the same type of message in real-time (Chen & Morgan, 2008). With its unique nature, mobile IM has the potential to facilitate value co-creation in tourism and hospitality. First, the combination of the power of social media and mobile technology has dramatically changed travel behaviors (Buhalis & Law, 2008; Law, Buhalis, & Cobanoglu, 2014; Wang & Fesenmaier, 2013). Second, instant information exchange has been recognized as a critical element to personalize tourist experience (Buhalis & Amaranggana, 2015). By empowering customers to communicate anything, anytime, and anywhere, mobile IM provides a platform for on-the-go travelers to communicate their contextual needs ubiquitously (Lamsfus, Wang, Alzua-Sorzabal, & Xiang, 2014; Wang, Xiang, & Fesenmaier, 2014). These significant merits set mobile IM apart from offline and other CMC channels.

In the tourism and hospitality literature, scholars have identified customers' habits, involvement, privacy concerns, and perceived personalization (Morosan, 2015; Morosan & DeFranco, 2016) as the antecedents of using mobile technology for value co-creation. However, few studies have examined what affects customers' co-creation experience, particularly in a mobile setting. Additionally, previous studies on online customer engagement tend to focus on certain contexts such as social network sites (Dijkmans, Kerkhof, & Beukeboom, 2005; Park & Allen, 2013; Schmallegger & Carson, 2008; Wei, Miao, & Huang, 2013; Ye, Law, & Gu, 2009), online communities (Zhang, Kandampully, & Bilgihan, 2015), and brands (Harrigan, Evers, Miles, & Daly, 2017; So et al., 2014). This conversation should be investigated from more service contexts, especially when new channels such as mobile IM are emerging.

Perceived Co-creation Experience and Personalization

S-D logic suggests that successful firm–customer value co-creation leads to more personalized experiences beyond functional benefits (Vargo & Lusch, 2004; Prahalad & Ramaswamy, 2004a, 2004b; Ranjan & Read, 2016). While the interactions occurred during the co-creation process can be a source of unique value, value-in-use is actualized when customers consume the product or service offering. Hence, following S-D logic interpretation, personalization is operationalized to measure the extent to which customers perceive the product or service as meeting their personal needs and wants. In the tourism and hospitality literature, scholars have elaborated how moving from co-production to co-creation can lead to more personalized customer experience (Chathoth et al., 2013). They have generally agreed that firms can co-create with customers by providing accessible resources through which customers can co-design the product/service offering (Binkhorst & Den Dekker, 2009; Chathoth, Ungson, Harrington, & Chan, 2016). Hence, the following hypotheses are proposed:

H1o: Perceived co-creation experience through mobile IM is not related to perceived value of personalization.

H1a: Perceived co-creation experience through mobile IM is positively related to perceived value of personalization.

CMC Media Traits and Customers' Perceived Co-creation Experience

Traditionally, CMC channels are criticized as being "lean" compared with face-to-face interactions that feature "rich" communication (Culnan & Markus, 1987). Thus, CMC channels such as mobile IM could be less effective for communication in situations where more personal interactions are required (Garton & Wellman, 1995; Straus, 1996). CMC channels could be preferred when efficient task completion is a priority, as they eliminate unnecessary social

interactions (Jonassen & Kwon, 2001; Light & Light, 1999). Despite the above findings, it is still unknown whether customer experience is affected by the nature of CMC in a co-creation context associated with tourism and hospitality service. The highly context-based nature of customer experience and the distinctive features of mobile IM necessitate a context-specific investigation.

The differences between CMC and traditional communication are generally discussed in terms of media richness and social presence. Media richness measures the capacity of a medium to deliver information accurately and facilitate mutual understanding (Lengel & Daft, 1984). A medium is considered rich if it allows the users to "overcome different frames of reference or clarify ambiguous issues to change understanding in a timely manner" (Daft & Lengel, 1986, p. 560). Rich media, such as the telephone, are more suitable for resolving complex or equivocal issues, whereas lean media, such as mobile IM, are more appropriate for exchanging simple messages (Daft & Lengel, 1986). Generally, users are more likely to adopt a communication medium with higher level of perceived media richness.

Social presence is defined by the CMC literature as the extent to which interlocutors are aware of one another as being psychologically present as a "real person" during the dialogue (Fulk, Steinfield, Schmitz, & Power, 1987; Short et al., 1976). Social presence measures the capacity of communication media to transmit human elements and sense of personalness. The interlocutors feel less warmth and are less involved with each other due to lack of nonverbal cues when social presence is low (Short et al., 1976). Studies in ICT have commonly found significant impacts of media richness and social presence on the customer experience of using mobile IM (Ogara, Koh, & Prybutok, 2014; Wang, Hsieh, & Song, 2012).

The existing literature generally suggests a positive link between media richness and social presence. The degree of social presence often depends on how rich the medium is, or the capability of the medium in delivering additional cues to enhance social perceptions and contextual characteristics (Short, Williams, & Christie, 1976). Daft and Lengel (1984) suggested that higher feedback immediacy facilitates more interactive and effective communication. The more verbal and nonverbal cues that can be exchanged, the more interactive the communication is and thus the higher degree of presence the interlocutors can feel from each other (Ogara, Koh, & Prybutok, 2014).

In the tourism and hospitality literature, recent research has started investigating the impact of social presence and media richness on users' evaluation of websites and social media platforms. Strong social presence is generally related to more favorable user reactions such as emotional affections (Chung, Han, & Koo, 2015), trust, positive word-of-mouth and behavioral intentions (Aslanzadeh & Keating, 2014; Ye, Ying, Zhou, & Wang, 2019). Similarly, media richness also significantly predicts users' perception and evaluation of travel websites and social media sites (Ayeh, 2013; Tsai, Chou, & Lai, 2010). Tourism and hospitality scholars have called for more research on the effects of social presence across different online environments (Aslanzadeh & Keating, 2014; Lee & Jeong, 2012; Ye et al., 2019). Therefore, this study also hypothesizes the following:

H2o: Perceived media richness of mobile IM is not related to perceived co-creation experience through mobile IM.

H2a: Perceived media richness of mobile IM is positively related to perceived co-creation experience through mobile IM.

H3o: Perceived social presence of mobile IM is not related to perceived co-creation experience through mobile IM.

H3a: Perceived social presence of mobile IM is positively related to perceived co-creation experience through mobile IM.

H4o: Perceived media richness of mobile IM is not related to perceived social presence of mobile IM.

H4a: Perceived media richness of mobile IM is positively related to perceived social presence of mobile IM.

Effects of User and Task Characteristics

Previous studies have documented that users' prior experiences with a technology affect their perception and use experience of the technology. For instance, channel expansion theory posits that the more experience the user has with a CMC medium, the higher the user's perceived richness of the medium (Carlson & Zmud, 1999). As experienced users have developed a knowledge base that enables them to encode and decode messages through a channel, they can engage in richer communication which further enhances their perceived richness toward the channel (Carlson & Zmud, 1999). As users become familiar with a mediated communication environment, their perceived richness of such medium increases overtime (e.g. Ogara et al., 2014). Thus, the following hypothesis is presented:

H5o: Prior experience using mobile IM is not related to perceived media richness of mobile IM.

H5a: Prior experience using mobile IM is positively related to perceived media richness of mobile IM.

Situational factors also have roles in influencing a communication medium's effectiveness. When the task is demanding and the related communication is complicated with higher ambiguity and uncertainty (McKeen, Guimaraes, & Wetherbe, 1994), a rich medium is more capable in facilitating mutual understanding and engaging users in personal interaction

(Koo, Wati, & Jung, 2011; Sheer & Chen, 2004). Similarly, if the task is urgent, users tend to prefer a rich medium that affords timely information processing and instant feedback (Dennis & Kinney, 1998; Koo et al., 2011; Picot, Klingenberg, & Kranzle, 1982; Trevino, Lengel, & Daft, 1987). In the meantime, avoidance of unnecessary social interaction is preferred under urgent conditions (Dennis & Kinney, 1998). Therefore, the impact of customers' perceived media richness on their mobile IM co-creation experience will be greater when the communication need is urgent. The impact of customers' perceived social presence on their mobile IM co-creation experience, by contrast, will be weakened in an urgent communication setting where the priority is efficiency and not socialization. On the basis of the above reasoning, the following hypotheses are developed:

H6o: Task complexity has no impact on the relationship between customers' perceived media richness of mobile IM and their perceived co-creation experience through mobile IM.

H6a: Task complexity positively moderates the relationship between customers' perceived media richness of mobile IM and their perceived co-creation experience through mobile IM.

H7o: Task complexity has no impact on the relationship between customers' perceived social presence of mobile IM and their perceived co-creation experience through mobile IM.

H7a. Task complexity positively moderates the relationship between customers' perceived social presence of mobile IM and their perceived co-creation experience through mobile IM.

H8o: Task urgency has no impact on the relationship between customers' perceived media richness of mobile IM and their perceived co-creation experience through mobile IM.

H8a: Task urgency positively moderates the relationship between customers' perceived media richness of mobile IM and their perceived co-creation experience through mobile IM.

H9o: Task urgency has no relationship between customers' perceived social presence of mobile IM and their perceived co-creation experience through mobile IM.

H9a: Task urgency negatively moderates the relationship between customers' perceived social presence of mobile IM and their perceived co-creation experience through mobile IM.

Figure 1 demonstrates the conceptual model to be tested in this study.

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METHDOLOGY

Research Context, Measurement, and Data

This study was conducted in Mainland China where the adoption rate of mobile IM applications among businesses is particularly high. A quantitative research design was adopted to test the above hypothesized model using self-reported data. The measurement items of the hypothesized model's constructs were adapted from previous studies but were slightly modified to fit this study's context (Table 1).

Please insert Table 1 here

Data was collected through a popular web-based survey platform in China, *Sojump*, which have been used by studies in different research areas (e.g., Chen, Ma, Jin, & Fosh, 2013; Fong, Lam, & Law, 2017; Zhou, Wu, Zhang, & Xu, 2013). The survey targeted consumers who had used mobile IM to communicate with tourism and hospitality organizations (hotels, restaurants, travel agents, travel service companies, attractions) for service issues in the past 12 months. Prior to data collection, the questionnaire was first translated into Chinese. Face validity was then confirmed by individuals who shared commonalities with the target participants.

Two waves of survey were launched in October 2017 and March 2019 respectively. The final sample size was 543. Several tactics were applied to ensure data quality. First, participants who did not pass the attention check questions were removed from the sample. Second, a series of screening questions was placed at the beginning of the survey to ensure all participants were qualified as target respondents. The participants were asked about the purposes and means of their communications with the service providers. Respondents who only had one-way communication, such as making a complaint, booking or simple enquiry, were excluded as co-creation involves two-way interactions in which customers co-design their experiences. Participants who did not use mobile IM as the communication medium were removed from the data set. Finally, to control the consistency between the participants' and researchers' understanding of mobile IM, participants who did not use the given options (WeChat, QQ and the hotel mobile app IM function) but used "others" were discarded from the sample.

Data Analysis

Two-step moderated structural equation modeling (SEM) was employed to analyze the data using the AMOS 17.0 software package. Conventionally, the moderation effects of latent variables were tested using regression analysis with product terms generated on the basis of the summed indicators of independent variables (Cohen, Cohen, West, & Aiken, 1983) or using multiple group SEM that separates the cases into different subgroups and then tests the differences (Jaccad, Turrisi, & Wan, 1990). Despite its popularity, product term regression analysis has been criticized for lacking the statistical power to measure latent variables with errors (Aiken & West, 1991; Busemeyer & Jones, 1983). Similarly, multiple group SEM has been criticized for trimming information and reducing power in detecting type II errors due to artificial grouping (Fitzsimmons, 2008).

Therefore, moderated structural equation modeling (MSEM) has been suggested as an appropriate substitute method. MSEM creates latent interaction variables by using the products of indicants (Kenny & Judd, 1984), and thereby considers measurement errors and retains the continuous nature of the moderator, which in turn can better detect the moderating effect than multi-group SEM (Holmbeck, 1997; Hoyle & Smith, 1994). This study adopted the single-indicant MSEM approach developed by Pine (1995) and Cortina, Chen and Dunlap (2001). The single-indicant interaction term was created with the following equation:

$$XZ = \sum_{n=1}^{i} Sx_n \times \sum_{m=1}^{j} Sz_m,$$

where X is the latent independent variable with i indicators, Z denotes the latent moderator with j indicators, and Sx and Sz represent the standardized values of the indicators of X and Z, respectively.

Thereafter, the path coefficient from latent interaction XZ to indicator xz was fixed with the following equation,

$$\lambda_{XZ} = \sum_{n=1}^{i} \lambda x_n \times \sum_{m=1}^{j} \lambda z_m,$$

where λx_n is the path coefficient from latent independent variable X to its indicators and λz_m is the path coefficient from latent moderator Z to its indicators.

Finally, the random measurement error for interaction indicator xz was determined by the following equation, where $Var\ (X)$ and $Var\ (Z)$ denote the estimated variance of X and Y, respectively, and θx_n and θz_m are the random measurement errors of the indicators of X and Z, respectively.

$$\theta xz = (\sum_{n=1}^{i} \lambda x_n)^2 \times Var(X) \times \sum_{m=1}^{j} \theta z_m + (\sum_{m=1}^{j} \lambda z_m)^2 \times Var(Z) \times \sum_{n=1}^{i} \theta x_n +$$

$$\sum_{m=1}^{j} \theta z_m \times \sum_{n=1}^{i} \theta x_n.$$

RESULTS

Descriptive Data Analysis

Most participants are aged between 26 to 30 years (37.2%) and between 31 to 40 years (41.1%). The participants come from 34 provinces in Mainland China, and the top four sources are Guangdong (20.8%), Beijing (9.2%), Shanghai (8.1%) and Jiangsu (8.1%). Over 90% of the participants have a Bachelor's degree or above. Most of the respondents work as administrative (51.4%) or management staff (33.3%). Most respondents earn a monthly income between 5,001 and 15,000 RMB (74.1%). All measurement items were scored using 7-point Likert scales.

Measurement Model

The measurement models were assessed for reliability and validity by confirmatory factor analysis (CFA). A full model was constructed to incorporate all the items for every construct. Overall, the full measurement model demonstrates good fitness in all indices (λ^2/df=2.564, p=0.000; CFI=0.912; RMSEA=0.054), except for the significant λ^2. Given that λ^2 tends to be sensitive to sample size and would commonly be significant when a sample size is large, other indices were assessed instead, and results corroborated that the overall fitness was acceptable. Table 2 shows the factor loadings, reliability, and validity of the measurement model. All factor loadings were significant. However, some factor loading values were still lower than 0.7 (the lowest value was 0.574), and the Average Variance Extracted (AVE) values for personalization (PER), task complexity (Tcom), and task urgency (Turge) were lower than 0.5. Meanwhile, the AVE values for co-creation experience (CE), media richness (MR), personalization (PER), and social presence (SP) were lower than their squared multiple inter-correlations, indicating relatively poor discriminant validity for these constructs.

The poor convergent validity of the full CFA model indicates that the original measurement scales for all the six constructs are in need of purification by removing those poorly-fit items (Churchill, 1979; Frohlich, 2002; Wieland et al., 2017). The scale purification was done with the assistance of Exploratory Factor Analysis, and all items with factor loadings below 0.7 were identified. These items were carefully reviewed by the authors on issues such as wording and expression, factor loadings, error variance, so as to determine whether they should be retained or eliminated. This process resulted in the elimination of nine items, including CE2, CE4, Turge, Turge2, Tcom1, SP1, MR2, EXP4, and PER3.

Another CFA model with the reduced item sets was constructed to test the reliability and validity of the purified scale. The purified measurement model demonstrates increased overall fitness (λ^2=313.409, df=155, p<0.01; CFI=0.964; RSMEA=0.043) and much improved reliability and validity (Table 3). The average factor loading is larger than 0.7 for all constructs. The Compositional Reliability (CR) values and AVE values for CE, EXP, MR, PER and SP all surpass the critical values of 0.7 and 0.5 respectively, implying good convergent reliability for the five constructs. The two moderators (Tcom and Turge) have also been improved in convergent validity, but their CR and AVE values have yet to pass the critical values due to the large error variance values. Such as it is, the AVE value for each construct (including Tcom and Turge) is larger than all squared multiple correlations, implying good discriminant validity (Fornell & Larcker, 1981).

Please insert Tables 2 and 3 here

Moderated Structural Equation Modeling

The reduced item sets were incorporated into the MSEM model to test the hypothesized relationships. Overall, the model demonstrates good fitness in most indices (λ^2=310.098, df=141,

p<0.01; CFI=0.957; RSMEA=0.047). All the hypothesized relationships were supported except the moderating effects of task urgency. Therefore, this full model was then compared with one nested model where the moderating effects of task urgency (Turge) were constrained to zero. Figure 2 shows the result of the MSEM analysis and model comparison. The λ^2-difference test demonstrates that the constrained model does not see significant drop in fitness compared with the original full model ($\Delta\lambda^2$=2.200, Δdf=2, p=0.333; ΔNFI=0.001, ΔIFI=0.001, ΔRFI=-0.001, ΔTLI=-0.001). Therefore, the estimated coefficients of the constrained/nested model are interpreted.

According to the nested model, customers' perceived co-creation experience (CE) has significant, positive effect on personalization (PER) (0.730, p<0.01), providing support for hypothesis 1. Perceived media richness (MR) has significant, positive, and direct effects on customers' perceived co-creation experience (CE) (0.424, p<0.01) and social presence (0.482, p<0.01). Meanwhile, social presence (SP) positively affects perceived co-creation experience (0.558, p<0.01). Therefore, hypotheses 2, 3, and 4 are supported. Perceived media richness is positively affected by users' prior experience of using mobile IM (EXP) (0.716, p>0.01); thus, hypothesis 5 is also supported. The interaction terms imply the potential moderating effects of task complexity. The results only support the moderating effect of task complexity between social presence and co-creation experience, and it can significantly reduce the relationship between social presence and co-creation experience (-0.146, p<0.01). Hence, hypothesis 6 is supported while hypothesis 7 is not supported. Task urgency has no significant moderating effects, and thus hypotheses 8 and 9 are also not supported.

Please insert Figure 2 here

DISCUSSION

Based on the data analysis, all hypothesized relationships were significant except for the moderating effects of task urgency on the relationship between CMC media traits and co-creation experience, and the moderating effect of task complexity on the relationship between media richness and co-creation experience. Customers' co-creation experience via mobile IM significantly and positively affects their perceived value of personalization. This finding is consistent with the conceptualization of mobile technology as a unique operant resource that facilitates personalized customer experiences (Buhalis & Foerste, 2015; Neuhofer, Buhalis, & Ladkin, 2015). Mobile IM, therefore, is distinguished from the other types of mobile technologies that solely create functional value for customers. The firm–customer interactions facilitated through mobile IM are thus a unique form of co-creation that fosters personal relationship building and empowers customers to personalize the product/service offering based on their contextual needs.

The positive effects of perceived media richness and perceived social presence on the customer co-creation experience echo the CMC literature that emphasizes the marked differences between traditional and CMC interactions. This finding implies that a high level of media richness and social presence should be ensured throughout the conversation to engage customers in the co-creation experience through mobile IM. This is consistent with prior research which found speedy management responses can boost further interactions and lead to customers sharing more thoughts (Li, Cui, & Peng, 2017). These significant relationships are also consistent with S-D logic, which stresses that competitive advantage relies on unique and inimitable operant resources (Prahalad & Ramaswamy, 2004a; Vargo & Lusch, 2004). Although the power of mobile technologies has created unprecedented opportunities for firms to reach consumers, that power depends on firms' strategic approaches to cultivating high-quality interactions and

successfully co-creating value with customers. The significant positive impact of users' prior use experience on perceived media richness echoes channel expansion theory and previous studies. Hence, customers with more knowledge and experience with mobile IM are assumed to perceive higher level of media richness that subsequently enhances their perceived co-creation experience.

The hypothesized moderating effects of task attributes are partially supported. The findings surprisingly show a negative moderating effect of task complexity on the relationship between social presence and co-creation experience, which is contradict with the hypothesized positive moderating effect. This is an interesting finding given the mixed results from previous studies and relatively less amount of research examining such relationship. While hypothesis 6 was developed based on the assumption that more social cues can help facilitate better interaction and collaboration, the findings imply when the task-related communication gets more complicated, the effect of social presence on co-creation experience decreases. A further literature analysis reveals that such finding can be related and traced back to the distraction-conflict theory proposed by Baron, Moore and Sanders (1978). Based upon earlier studies which suggest that the presence of others impairs performance on complex poorly learned tasks (Cottrell, 1972; Geen & Gange, 1977), Baron *et al.* (1978) further found that the presence of others may distract individuals who may want to attend others when trying to focus on completing a task at the same time (Sanders & Baron, 1975). Based on the distraction-conflict theory, it can be explained that when the task is complex, people need a rich medium that can facilitate communication but not necessarily socialization as the goal is to reach mutual understanding and solve a problem. High socialization under such situation may distract people and result in ineffective communication.

The hypothesized moderating effect of task complexity on the relationship between media richness and co-creation experience was not supported. The second task attribute, task

urgency, also demonstrates no significant moderating effects. The effects of CMC media traits on customers' co-creation experience do not vary with different levels of task urgency. There are several explanations of these findings. First, this study focuses on users' actual use experience at the post-adoption stage instead of pre-adoption decision making, which is different from previous studies that reported the significant effects of task complexity and urgency on users' adoption of CMC media. Additionally, advanced mobile IM features timely information processing and instant feedback at any place and any time. These advantages in efficiency and flexibility of communication are probably sufficient to mitigate the additional ambiguity and uncertainty embedded brought by higher task complexity and urgency. The actual users in this study have reported high scores of media richness and social presence. Therefore, the increased contributions of social presence and media richness towards co-creation experience under complex and urgent situations, which may have been found in other contexts, may be eclipsed in mobile IM interactions. Second, previous findings were mostly contextualized in organizational settings (i.e., communications among employees) rather than commercial settings (i.e., communications between companies and customers). Given that customers usually favor quick and helpful responses, they may often perceive their communications as urgent. This assumption is confirmed by the reported high scores of task urgency by the participants.

The findings from this study unearth new factors affecting customer engagement in the context of mobile-IM value co-creation in tourism and hospitality. Although previous studies have identified a number of factors that affect online customer engagement, these factors are context-specific. For example, scholars have identified factors such as brand equity, sense of community and monetary incentive influence customer engagement in online communities (Zhang et al., 2015). Customer involvement (i.e., identification, enthusiasm, attention, absorption, interaction) affect customer engagement with social media tourism brands (Harrigan, Evers,

Miles, Daly, 2017; So, King, & Sparks, 2014). Factors such as media-type and content-type affect customer engagement level on social network sites (Lei, Pratt, & Wang, 2017). Audience control, altruistic and community-related motivations influence online tourism experience sharing through social media (Munar & Jacobsen, 2014). Given that context-based factors such as social and technological aspects can be the antecedents of customer engagement (Van Doorn et al., 2010), this study investigated how mobile-IM attributes influence the effectiveness of the firm-customer co-creation process facilitated by mobile IM.

CONCLUSION

The primary limitation of this study is its single data source. Future studies can test the hypothesized relationships in different cultural contexts to triangulate the findings. Additionally, as this study adopts a quantitative research design, certain information embedded in the data was possibly overlooked during the process of quantification. Qualitative research is strongly suggested to examine how the identified effects are exerted. Qualitative research approaches can also help discover more potential factors that affect firm-customer value co-creation through mobile IM to improve the explanatory power of this study's conceptual framework. Lastly, given that this study draws on individuals' perceptions and interpretations of task complexity and urgency, the moderating effects of situational factors have not been fully tested due to inadequate variance. Future studies can apply objective measures or experimental design to capture effectively the effects of these contextual variables. Finally, the authors would like to raise the caution while interpreting the moderating effects of task complexity and task urgency, due to the relatively weak measure (convergent validity) of these two constructs. The authors suggest

further researches develop context-based measures for these two constructs, as they are highly dependent on the task nature.

This study examines customers' value co-creation experience via mobile IM in the tourism and hospitality context. Specifically, this study models and tests the driving factors of customers' perceived co-creation experience through mobile IM and its effects on customers' perceived value of personalization. As a further development on previous research, this study incorporates CMC media traits into the theoretical framework. To the best of our knowledge, this study is among the first to examine value co-creation facilitated by mobile IM. Theoretically, it makes two main contributions to the current literature. First, this study goes beyond examining user adoption and satisfaction to understanding what affects actual use experience. Second, as customer experience and customer engagement are context-specific, this study responds to previous studies' call for more research on these concepts across different contexts. The findings contribute to online customer engagement research in tourism and hospitality by unearthing the critical factors (i.e., media richness and social presence) for engaging customers in value co-creation facilitated by mobile IM.

This study provides practical suggestions for tourism and hospitality service providers to improve their customer engagement strategy through mobile IM. First, practitioners may improve the design of their mobile IM channels by enhancing the media richness and social presence features. For instance, they may consider incorporating functions that can deliver information in various formats (e.g., location, images, animations) or deliver multiple social cues (e.g., expression icons). Identifying attributes in the mobile IM interface that can be utilized to strengthen human personality may also be helpful (e.g., showing employees' names or photos). Second, training is necessary to educate employees the importance of prompt reply and lively conversation. A balance between the former and latter is necessary, as the findings indicate both

are equally important. Employees should be well-trained to react professionally, especially in cases when customer requests are unexpected. Policies can be developed to ensure timely responses are provided to customers who expect immediate feedback. Lastly, the non-significant moderating effects of task urgency imply that practitioners should ensure that customers can perceive a high level of media richness and social presence, regardless of the urgency level of their communication needs.

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Figure 1

Conceptual Model
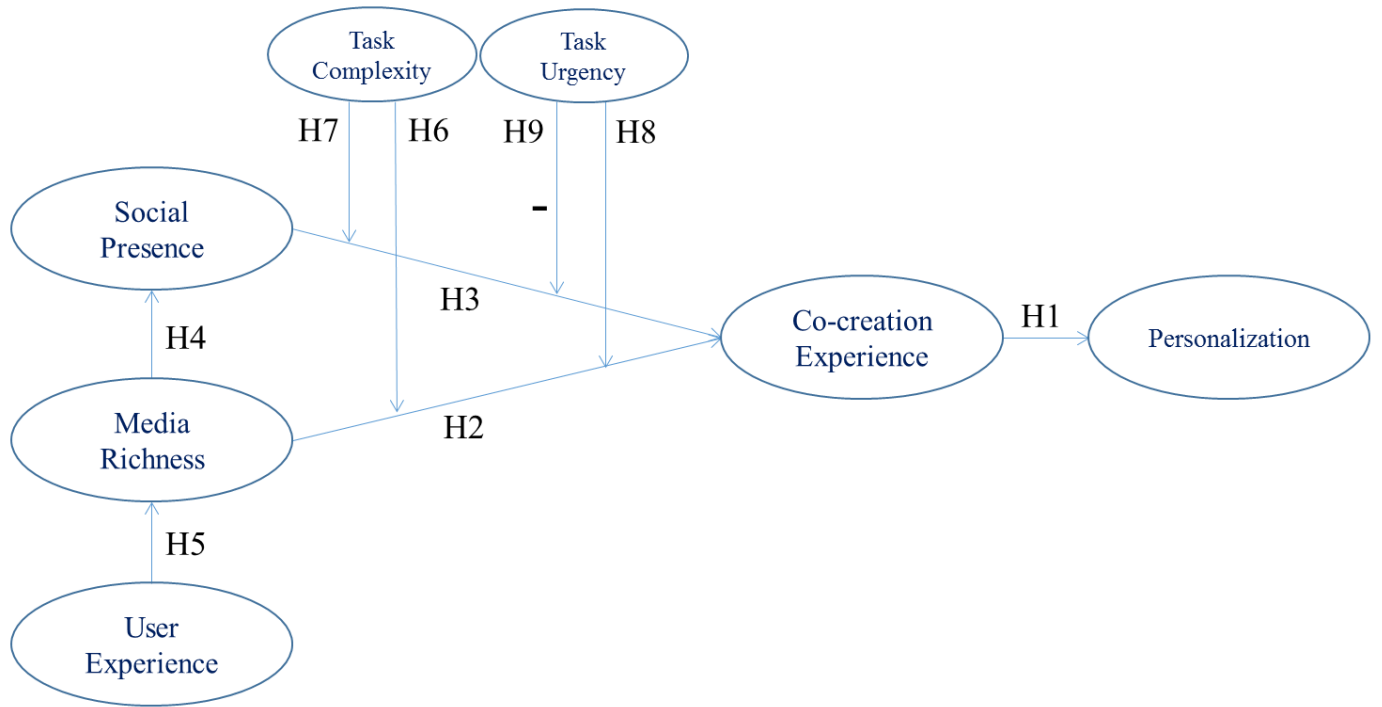
Table 1

Measurements

Variables		Sources
Perceived Social Presence (SP)		Gefen & Straub, 2003; Short et al., 1976
SP1	There was a sense of sociability during the communication through IM.	
SP2	There was a sense of human sensitivity during the communication through IM.	
SP3	There was a sense of human warmth during the communication through IM.	
SP4	There was a sense of the personalness during the communication through IM.	
Perceived Media Richness (MR)		Daft & Lengel, 1984
MR1	IM allows us to use rich and varied language in our messages.	
MR2	IM allows us to communicate a variety of different cues in our messages.	
MR3	IM allows us to tailor our messages to our personal requirements.	
MR4	IM allows us to give and receive timely feedback.	
Co-creation Experience (CE)		Mathis, Kim, Uysal, Sirgy, & Prebensen, 2016
CE1	Working with the staff allowed me to have greater social interaction, which I enjoyed.	
CE2	I felt comfortable working with the staff member regarding my special arrangements.	
CE3	The digital communication environment allowed us to collaborate effectively.	
CE4	My overall experience was enhanced because I specified my personal needs and preferences.	
CE5	I felt confident in my ability to collaborate with the staff member.	
Perceived Personalization (PER)		Ball, Coelho, & Vilares, 2006; Chellappa & Sin, 2005
PER1	My overall experience was more memorable.	
PER2	My experience of consuming the product/service was tailored to me.	
PER3	The company offered me products and services that satisfy my specific needs.	
PER4	The company personalized my experience based on the information that I shared.	
User Experience (EXP)		Carlson & Zmud, 1999
EXP1	I am very experienced using IM.	
EXP2	I felt that IM is easy to use.	
EXP3	I felt competent using IM.	
EXP4	I understood how to use all of the features of IM.	
EXP5	I felt comfortable using IM.	
Task Complexity (Tcom)		Koo et al., 2011
Tcom1	Our conversation can be done on the basis of breadth and depth of knowledge.	
Tcom2	Our conversation requires a variety of information.	
Tcom3	Our conversation requires various kinds of experience.	
Tcom4	Our conversation is linked to several other tasks.	
Task Urgency (Turge)		Koo et al., 2011
Turge1	Our conversation requires fast feedback.	
Turge2	Our conversation should be carried out concurrently.	
Turge3	Our conversation should be carried out on a real-time basis.	
Turge4	Our conversation is always accessible at any time.	

Table 2

CFA modeling with full items

Items	Load	Mean	C.R.	AVE	Squared multiple correlations						
					CE	EXP	MR	PER	SP	Tcom	Turge
CE1	0.667	5.440	0.837	0.507							
CE2	0.678	5.780									
CE3	0.685	5.580									
CE4	0.697	5.780									
CE5	0.739	5.690									
EXP1	0.691	5.930	0.856	0.544	0.298						
EXP2	0.764	6.140									
EXP3	0.721	6.220									
EXP4	0.612	5.700									
EXP5	0.727	6.040									
MR1	0.739	5.930	0.836	0.56	*0.654*	0.537					
MR2	0.676	5.740									
MR3	0.708	5.860									
MR4	0.709	5.980									
PER1	0.725	5.480	0.763	0.446	*0.551*	0.141	0.306				
PER2	0.694	5.360									
PER3	0.648	5.490									
PER4	0.698	5.100									
SP1	0.730	5.660	0.814	0.523	*0.648*	0.173	0.375	*0.531*			
SP2	0.783	5.360									
SP3	0.721	5.090									
SP4	0.719	5.430									
Tcom1	0.662	5.140	0.736	0.411	0.228	0.042	0.094	0.277	0.15		
Tcom2	0.726	4.990									
Tcom3	0.774	5.140									
Tcom4	0.689	4.880									
Turge1	0.574	5.710	0.722	0.395	0.272	0.224	0.304	0.225	0.161	0.229	
Turge2	0.655	5.490									
Turge3	0.668	5.270									
Turge4	0.666	5.480									

Table 3

CFA modeling with reduced items

Items	Load	Var.	C.R.	AVE	Squared multiple correlations						
					CE	EXP	MR	PER	SP	Tcom	Turge
CE1	0.686	0.527	0.764	0.520							
CE3	0.699	0.466									
CE5	0.736	0.395									
EXP1	0.690	0.455	0.850	0.586	0.222						
EXP2	0.773	0.333									
EXP3	0.724	0.352									
EXP5	0.707	0.339									
MR1	0.760	0.335	0.812	0.591	0.486	0.508					
MR3	0.694	0.404									
MR4	0.726	0.359									
PER1	0.704	0.506	0.751	0.501	0.479	0.097	0.207				
PER2	0.702	0.516									
PER4	0.732	0.496									
SP2	0.768	0.508	0.781	0.543	0.514	0.108	0.237	0.438			
SP3	0.779	0.502									
SP4	0.743	0.462									
Tcom2	0.729	0.706	_0.696_	_0.433_	0.222	0.032	0.056	0.300	0.138		
Tcom3	0.743	0.676									
Tcom4	0.728	0.733									
Turge3	0.653	0.705	_0.648_	_0.481_	0.194	0.183	0.211	0.228	0.106	0.194	
Turge4	0.779	0.410									

Figure 2

Result of MSEM Analysis

Full model:
With moderation of
task urgency

Nested model:
Without moderation
of task urgency