Co-Creating Value with Customers:
A Study of Mobile Hotel Bookings in China

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Abstract

**Purpose** — This study aimed to develop a framework to explain the reciprocity of the value co-creation process in mobile hotel booking context, and to clarify values for customer and supplier.

**Design/methodology/approach** — A research framework was developed based on the previous literature to derive insights on value co-creation process. Online surveys were conducted among mobile hotel bookers in China. Confirmatory factor analysis and structural equation modeling were used to test the proposed framework.
**Findings** — The findings suggested that suppliers should improve the values for customers (Functionality, Usability, and Perceived Value) to achieve values for themselves [Customer Lifetime Value (CLV), Customer Knowledge Value (CKV), Customer Referral Value (CRV), and Customer Influencer Value (CIV)]. The relation between satisfaction and CLV was moderated by the CIV from other customers.

**Practical implications** — Suppliers should enhance customer value from the aspects of functionality, usability, and perceived value to earn a competitive advantage. Moreover, for suppliers, non-transactional values such as other Customer’s Influencer Value play an increasingly critical role apart from economic value for development.

**Originality/value** — This study not only added empirical analysis on value co-creation in m-Tourism, but also extended the current literature by validating a research model which integrates website evaluation research with Kumar *et al.* (2010)’s Customer Engagement Value framework. Instead of serving as a mediator, mobile App was regarded as one of the indispensable actors involved in value co-creation.

**Key words:** service-dominant logic, value co-creation, mobile App, hotel booking, e-Tourism, China

**Paper type:** Research paper

1. **Introduction**

With the increasing choices of mobile Applications (Apps) for hotel booking, it is essential for industry operators to be aware of the changes of hotel bookers’ preferences and how to retain
online bookers for ensuring long-term profits. Thus, enhancing the understanding of customer value and determining the processes wherein value is co-created with mobile bookers are critical.

With growing research attentions to value co-creation in tourism and hospitality research (Chathoth et al., 2013; Cabiddu et al., 2013), there have been a few empirical efforts that attempt to investigate co-creation (Oliveira and Panyik, 2015; Mathis et al., 2016; Morosan and DeFranco, 2016) and the role of IT has been identified and discussed in recent research on e-Tourism (Cabiddu et al., 2013) and m-Tourism (Morosan, 2015). Although existing co-creation research addressed the management of value co-creation (Chathoth et al., 2013) and demonstrated the influence of co-creation on customer satisfaction and loyalty (Grissemann and Stokburger-Sauer, 2012; Mathis et al., 2016), the adopted perspective is predominantly that of the antecedents of value co-creation or the outcomes of value co-creation (Oliveira and Panyik, 2015; Mathis et al., 2016; Morosan, 2015). What the different beneficiaries value and how they co-create value needs to be further explicated. According to Gupta and Lehman (2005), value for customers and value for suppliers are two sides of the value creation coin. However, previous research either studied customer value or supplier value, thus lacking the analysis of the reciprocity of the different beneficiaries in value co-creation process. Emerging m-Tourism research examined the role of mobile device in facilitating value co-creation during a hotel staying experience, which focused on the hotel-guest interaction (Morosan, 2015; Morosan and DeFranco, 2016). If we turn our research focus from the holistic hotel stay experience to the hotel reservation experience, how customers co-create value with mobile App are yet to be known. That is, there is a lack of research on the “mobile App-consumer” interaction.

It is suggested that mobile business solutions transformed the values for tourist as well as customer relationship management in e-Tourism (Beritelli and Schuppisser, 2006). In light of the
features of mobile technologies that provide location-based services and a more dynamic customer-supplier interaction (Law et al., 2009), the influential factors of mobile booker’s satisfaction may differ from that of computer booker’s. Though prior e-Tourism literature identified functionality, usability and perceived value as important dimensions for booking hotel through computer website (Kim et al., 2015; Law et al., 2014), fewer efforts have been made to examine the role of these values as the antecedents of mobile booker’s satisfaction (Kuo et al., 2009; Lee and Mills, 2010). Moreover, there is less agreement on whether service quality variables (functionality and usability) indirectly influence online booker’s satisfaction through perceived value or directly affects satisfaction together with customer’s perceived value.

In previous research, customer loyalty (or Customer Lifetime Value, CLV) is mostly considered as the focal value that suppliers pursue in a value co-creation process, while it is argued that assessing values for suppliers solely upon transactional value may not be sufficient (Ladhari and Michaud, 2015; Kumar and Reinartz, 2016), and customer can contribute in many ways such as Customer Knowledge Value (CKV), Customer Referral Value (CRV), and Customer Influencer Value (CIV). Though Kumar et al. (2010) established a Customer Engagement Value (CEV) framework which includes CLV, CKV, CRV and CIV, fewer empirical evidences were provided. Moreover, compared to what those values may result in suppliers, fewer attentions have been paid to the antecedent of those values. According to PhoCusWright (2015), the proportion of m-Tourism in China is ahead of other countries and becoming the largest market. However, Chinese customers’ particular preferences for mobile booking are not yet well understood. It is suggested that cultural differences may influence consumers’ pre-travel expectations as well as their post-trip perceptions of value (Li et al., 2011).
In addition, most previous studies on m-Tourism are conducted in Western countries and empirical evidence from China is scarce.

Thus, in response to the above research gaps, this paper is to develop and test an empirical model which emphasizes the reciprocity of value creation process in the mobile hotel booking context. Given that Grönroos (2012) proposed a conceptual model of value co-creation which enables researchers to analyze the joint and interactive phase of value creation between customer and supplier, this study adapted the model by combining the CEV framework (Kumar et al., 2010). Specifically, we analyze the joint activities among three actors: mobile App, focal customers, and other customers, by examining the links between values for customer (functionality, usability and perceived value) and values for supplier (CLV, CKV, CRV and CIV). Furthermore, we consider the possibility that influence from other customers (Other Customers’ Influencer Value, OCIV) may moderate the mobile App-customer relationship.

2. Literature Review

2.1 Service-Dominant Logic and Value Co-Creation

Informed by Service-Dominant logic (S-D logic), the concept of value co-creation suggests that value is always co-created by customers (Vargo and Lusch, 2008). With the development of S-D logic research during the past 12 years, S-D logic continues to be further elaborated and extended (Vargo and Lusch, 2016). Emerging S-D logic studies broadened the perspective of firm-customer exchange to service ecosystem perspective, in which all the beneficiaries involved are resource integrators co-creating mutual value (Lusch and Vargo, 2014).
S-D logic has not been universally adopted among service marketers and service logic as a different paradigm was advocated by Grönroos (2008). Service logic proponents define value co-creation differently by suggesting value only gets created in customer processes (Ellway and Dean, 2016). Value is defined as value-in-use by service logic scholars. In contrast, the S-D logic asserted that value is dynamically co-created with customers as either “value-in-use” (Vargo and Lusch, 2004) or “value-in-context” (Vargo et al., 2008). Considering the nature of this study, we adopted the recent S-D logic perspective throughout the study. Since context is regarded as a critical dimension of value co-creation in S-D logic literature and value-in-context implies that value is interactive, relativistic, and meaning-laden in a given context (Chandler and Vargo, 2011), it is “value-in-context” that was used in the current study, which comprises two actor separation of value-in-use (customer centric) and value-in-exchange (supplier centric) into value co-creation networks (Gummesson and Mele, 2010). This study defines a value co-creation process as an ongoing process where the beneficiaries act together in an interactive way which generates value not only for customers but also for suppliers. Values for customers and values for suppliers will be further clarified in later sections.

2.2 Customer Engagement Value Framework

Emerging research argued that focusing merely on purchasing value is an undervaluation of customers (Kumar et al., 2010; Kumar and Reinartz, 2016). In addition to purchase behavior, customers can contribute values to a supplier by offering suggestions for improvement, providing positive word-of-mouth, and recommending products/services to other customers (Kumar and Mirchandani, 2012; Ladhari and Michaud, 2015). While those values have been identified in various contexts, limited studies have integrated both the economic value as well as the non-transactional values into one framework and empirically examined their relations with
values for customer. Kumar et al. (2010) proposed a Customer Engagement Value (CEV) framework which constitutes both the customer’s transactional and non-transactional values: (1) Customer Lifetime Value (CLV) represents the customer’s purchasing contribution to the suppliers; (2) Customer Knowledge Value (CKV) refers to the ideas and feedback from customers, which suppliers can utilize for innovations and improvements; (3) Customer Referral Value (CRV) specifically relates to incentivized referral of new customers; (4) Customer Influencer Value (CIV) denotes the effects of word-of-mouth by customers.

Based on Kumar et al.’s (2010) CEV framework, customer engagement values (CLV, CKV, CRV, and CIV) can be maximized through factors such as customer satisfaction and value perceptions. Functionality performance and usability performance of the online platforms have been indicated in prior research on e-Tourism as important customer-based drivers for engagement behaviors (Law et al., 2010). Moreover, in the context of mobile hotel booking, customers are also motivated to contribute to values for suppliers if benefits are perceived (Wang and Wang, 2010). Previous research indicated that customer satisfaction is affected by their perception of the value creation partners’ contribution, and related to a higher/lower value for suppliers (Grissemann and Stokburger-Sauer, 2012). Drawing on the above analysis, functionality, usability and perceived value are expected as critical antecedents of customer satisfaction towards mobile Apps.

2.3 How to Co-Create Value with Customers?

Value co-creation presents the idea that value is created through the reciprocal-service of customers and suppliers, which is not dyadic but rather a multi-actor phenomenon (Vargo and Lusch, 2016). However, prior research either considered value from the perspective of customers or suppliers, yet clear conceptualizations of how these actors contribute to value co-creation
process are left unknown (Grönroos and Voima, 2013). Emerging research argued that equating value co-creation with customer’s active participation in the supplier’s creation might be a misunderstanding. In the value co-creation process, the multiple actors often contribute to each other’s well-being even without being aware (Vargo and Lusch, 2016), while previous empirical studies on value co-creation mostly regarded co-creation as a specific variable not a reciprocal process (Morosan, 2015; Morosan and DeFranco, 2016). Before answering how the actors co-create value in the mobile hotel booking context, we explicitly clarified the actors involved as well as the value for each. As stated in the previous section, both value-in-use (customer centric) and value-in-exchange (supplier centric) are components of value-in-context in co-creation networks. Accordingly, values for customers should be related to value-in-use, while values for suppliers should be related to value-in-exchange but not limited to. Based on Grönroos’ (2012) conceptual models of value co-creation in service, we explained the process in the mobile hotel booking context, as illustrated in Figure 1.

***Please place Figure 1 here***

In Figure 1, the area inside the dotted circle represents the value co-creation system in which the mobile App (service provider), the focal customer and other customers jointly create values. In line with the different interactive communication actors, the value co-creation process of mobile hotel booking includes distinct joint activities: (1) The mobile App provides the resources (hotel room and other service) for the needs of the focal customer, who in turn returns value to the supplier through profits (Gupta and Lehman, 2005); (2) The Electronic-Word-Of-Mouth (EWOM) from other customers are important reference resources that affect hotel bookers on the use of a certain App as the focal customer contributes to the influencer value as
(3) The mobile App provides booking service to customers, whereas the feedback of other customers provide valuable information to the mobile App (Vargo and Lusch, 2008).

The top half of Figure 1 shows the value-creation process of the supplier (mobile App), which flows from left to right. In the mobile hotel booking context, the starting point of the process is a service concept that includes various booking information and a platform to achieve the reservation needs of customers. That is, what the supplier offers and for whom (Grönroos, 2012). The part inside the dotted circle presents the direct collaborations with all the actors involved in value co-creation (mobile App, focal customer and other customers). The value for suppliers is the end point referring to the benefits that a mobile App aims to achieve. In terms of the value for suppliers, extensive previous research investigated customer loyalty (transactional value) as the focal value, whereas emerging research argued that customers can contribute value for suppliers indirectly through the non-transactional actions (Kumar et al., 2010; Kumar and Reinartz, 2016). Values for suppliers such as CIV, CRV and CKV may play a significant role apart from CLV.

In contrast, the value-creation process of the customer flows from right to left as illustrated at the bottom half of Figure 1. The process begins with customer engagement values and ends with values for customer. According to the S-D logic argument, values for customer can be defined as customer’s perceived value-in-use, which refer to the performances against the service attributes, for which customers are prepared to pay (Macdonald et al., 2011). Similar to the supplier value-creation process, the area inside the dotted circle refers to the joint actions of the involved actors. Note that Value for Supplier and Value for Customer differ in the value co-creation network. On the one hand, suppliers should elaborately design their service concept to increase values for customer, thereby gaining value for themselves. On the other hand, customers
constantly weigh values through the balance between value-in-use and required sacrifices; the manner in which they engage in value co-creation also determines the values for suppliers. With customer engagement, suppliers can speed up the development and increase competitive advantages (Kumar et al., 2010). Notably, satisfaction may provide a missing link between value for customers and value for suppliers.

3. Research Hypotheses

3.1 Value for Customer

As discussed above, functionality performance, usability performance, and perceived value might be the dimensions that hotel e-bookers value the most. As such, we investigated these values for customers in the mobile hotel booking context and their effects on customer satisfaction and loyalty.

Functionality and Usability

Functionality refers to website content, especially relevant information relating to company products and services, which has been widely asserted as one of the most important dimensions to evaluate website quality (Leung et al., 2016). In hospitality literature, functionality performance of hotel website was found to be a critical antecedent of consumer satisfaction (Bai et al., 2008; Tsang et al., 2010). Despite limited evidence of whether App functionality is of great significance in m-Tourism, emerging service research suggested that informational value is one of the dimensions what mobile users value most. Recent research on hotel-related mobile App revealed that functionality performance and usability performance of App are indispensable features (Wang et al., 2016).

Usability performance refers to website design, which was considered as another critical factor influencing website quality (Bai et al., 2008). It is indicated usability is an important
dimension for assessing customer perceptions of tourism websites. Usability has not only been successfully examined as the antecedent of consumer satisfaction in e-Tourism, but also investigated as an influencing factor in m-Tourism (Stienmetz et al., 2013). However, fewer studies examined the impact of the usability performance of mobile App on consumer satisfaction. Thus, we determine the role of the functionality performance and usability performance of mobile Apps for hotel booking, and proposed Hypothesis 1 and Hypothesis 2 as:

**H1:** Functionality performance positively affects consumer satisfaction in mobile hotel booking context.

**H2:** Usability performance positively affects consumer satisfaction in mobile hotel booking context.

*Perceived Value*

Numerous tourism and hospitality studies have demonstrated the positive relationship between perceived value and customer satisfaction (Chen and Chen, 2010). It is known that the higher the quality in relation to the price paid, the greater the value perceived by customers. In hotel industry, price (perceived value for money) has a positive association with hotel booker’s online reservation intentions. Notably, perceived value is a context-specific variable which implies customers decide their usage based on a value trade-off under different contexts (Wang and Wang, 2010). Today’s hotel online bookers can increasingly choose the prices they are willing to pay. Specifically, in m-Tourism context, mobile channels provide consumers the opportunity to choose among competing offers from various hotels within one mobile App. As such, mobile Apps that fail to satisfy customer’s perceived value have the potential of losing in the marketing share competition (Ye et al., 2014). Furthermore, it has been indicated that
perceived value positively influences customer satisfaction in mobile value-added service (Kuo et al., 2009). Drawing on the discussed literature review, it is posited that:

**H3**: Perceived value positively affects consumer satisfaction in mobile hotel booking context.

### 3.2 Value for Supplier

**Customer Lifetime Value**

Recent research has indicated the role of loyalty in service marketing (Kumar and Reinartz, 2016) and Kumar et al. (2010) defined customer loyalty as CLV, which presents the customer’s purchasing value to the firms over time. Given that the development of Internet and mobile technologies has provided immediate and multiple options for people, today’s customers can switch brand alternatives easier than before, which means that CLV is particularly important in e-Tourism. Emerging studies have examined the affecting factors of CLV based on the online hotel booking context, where customer satisfaction, perceived value, and other variables have proven directly influence loyalty (Bai et al., 2008). The relationship between satisfaction and loyalty has attracted immense interest from scholars. Prior studies have indicated that satisfaction positively impacts loyalty in m-commerce (Lee and Mills, 2010). In this study, we aim to examine the relationship between satisfaction and loyalty based on the mobile hotel booking context:

**H4**: Consumer satisfaction positively affects CLV in mobile hotel booking context.

**Customer Knowledge Value**

When it comes to regarding customer as an important partner in the value co-creation process, CKV should be further specified. Kumar et al. (2010) asserted that CKV is not limited
to service innovation and creation but also vital to service improvement efforts. However, prior e-Tourism research mostly focused on customer’s feedback toward hotel rather than the online booking platform (e.g. mobile App) and little is yet known about CKV for mobile booking (Ye et al., 2011). Moreover, it was suggested that instead of focusing on knowledge about customers, knowledge residing in customers appears as a more important and valuable resource for companies. Compared to what CKV may result in for suppliers, less attention has been paid to the antecedent factor of CKV. It is expected that the outcome of customer satisfaction will increase the desire to help the supplier by sharing valuable information or providing feedback. Additionally, it has been demonstrated in emerging hospitality research that a feeling of satisfaction is an important factor for encouraging customer’s online knowledge sharing and electronic word-of-mouth (Yang, 2017). Thus, it is posited that:

**H5:** Consumer satisfaction positively affects CKV in mobile hotel booking context..

*Customer Referral Value*

CRV should be distinguished from CIV because of the different motives that customers possess to engage in EWOM behavior. Based on previous studies, self enhancement and economic rewards are the two major concrete motives for customers to contribute value (Chan et al., 2014). Another difference is that CRV is more realized in the acquisition process by bringing new customers, whereas CIV is created more by affecting existing customers to expand purchasing and by encouraging prospects (Kumar et al., 2010). In the tourism and hospitality context, the role of CRV has been researched on its influence on customer’s purchase intention for travel (Fan et al., 2014). Albeit previous studies have examined the driving factors of referrals from a referrer’s perspective (Chan et al., 2014), fewer evidences were found in m-Tourism context. Prior research has further indicated that customers with higher satisfaction
levels are more inclined to have higher CLVs and more potential to recommend purchase to other customers (Kumar and Reinartz, 2016). Based on the above literature review, H6 is proposed:

**H6:** Consumer satisfaction positively affects CRV in mobile hotel booking context.

*Customer Influencer Value*

An extensive body of research has demonstrated that word-of-mouth plays a significant role in diffusing products among customers, thereby increasing company sales and profits (Ye *et al.*, 2011). Prior studies have also suggested that every time a customer voluntarily engages in word-of-mouth communication about the company, CIV is realized (Kumar *et al.*, 2010). Note that the impact of CIV can either be positive or negative to the supplier, which differed from CRV. CRV is related to extrinsic rewards, whereas CIV is mostly driven by the intrinsic motivation of customers. For instance, when a customer perceives a higher benefit from the supplier, the customer will attempt to give the supplier something in return such as offering WOM or EWOM. Conversely, if the customer feels a lower output ratio than the supplier, a bad WOM is generated for the equalization need. Since the hotel industry is largely influenced by EWOM, a number of studies flourished on the impact of EWOM (Ladhari and Michaud, 2015). Prior hospitality research also provided various evidences of what factors drive CIV and customer satisfaction level has been indicated to directly influence the extent to which the customer contributes to CIV (Cantallops and Salvi, 2014). As for the impact of other customers’ CIV, substantial evidences from tourism and hospitality studies have shown that the purchase intention of customers and their continued usage can be affected by the WOM of other customers (Ye *et al.*, 2011; Ladhari and Michaud, 2015). Moreover, prior online hotel booking research asserted the predicting
power of satisfaction to CLV is influenced by other customers’ CIV. Drawing on the preceding arguments, we propose that:

**H7:** Consumer satisfaction positively affects CIV in mobile hotel booking context.

**H8:** Other customers’ CIV moderately affect the satisfaction of the focal customer’s CLV in mobile hotel booking context, showing that the relationship between satisfaction and loyalty is stronger when the focal customer perceives a higher CIV level among other customers.

Considering the above arguments, the conceptual model is proposed as follows:

***Please place Figure 2 here***

4. Methods

4.1 Sample and Procedure

The target population of the study is Chinese customers who have experienced hotel booking through mobile channels. Given that consumers favor mobile Apps rather than mobile websites when they purchase products and services through mobile devices (Tourism-review, 2014), this study focuses on mobile App rather than mobile websites. To evaluate the appropriateness of the original instrument, a pretest was first conducted. Academic experts, industry practitioners, and customers with hotel booking experiences through mobile App were invited. Based on the pretest results, the wording was improved and the question sequence was changed. An online survey with a convenience and snowball sampling design was conducted to obtain representation from individuals in most of the regions in China. The questionnaires were distributed via Wenjuanxing [www.sojump.com](http://www.sojump.com), a website like SurveyMonkey which is one of the most professional survey platforms in China. Participants who were interested in the survey could complete the questionnaire via a website link provided by Wenjuanxing and were asked to
recruit other potential respondents. According to the requirement of Structure Equation Modeling (SEM), the ratio of one measurement needs at least five observations (Hair et al., 2010). Thus, the minimum sample size should be 155 for the 31 items in this study.

The respondents were asked to specify their region of residence and whether or not they booked a hotel room via mobile devices in the past 12 months. Only those who answered “yes” were asked to continue with the questionnaire. Initially, 382 people agreed to participate in the survey, but only 317 respondents had hotel booking experience through online channels (computer website or mobile App), among whom 18 respondents only used computer website for booking instead of mobile App. Thus, 299 valid responses were included for further analysis. Among the 299 respondents, 51.5% were male and 48.5% were female. More than half of the respondents (61.2%) were aged from 26 to 35. Most respondents have a Bachelor’s degree or above (99.0%). The average monthly household income was around 10,000 RMB (RMB is the Chinese currency) or US$ 1,507.66 at time of writing.

***Please place Table 1 here***

4.2 Measures

The instrument includes the following nine constructs: Functionality, Usability, Perceived Value, Satisfaction, CLV, CKV, CRV, CIV, and Other Customers’ Influencer Value. A back-translation method was employed to complete the English-to-Chinese and Chinese-to-English translations, thereby ensuring content validity (Brislin, 1980). Moreover, all the items for the constructs were substantiated by a detailed analysis of relevant literature, which can ensure content validity as well. Both content validity and face validity were assessed by asking experts
(including academia and practitioners) to examine whether the statements of the questionnaire reflected the constructs to be measured. Additionally, whether the exclusion of an item improved the corresponding alpha value was adopted as another criterion to decide whether the item should be deleted (Parasuraman et al., 1988).

Functionality performance of the mobile App was measured using five items, which were adapted from Ip et al. (2012). The scale for usability performance was adapted from Bai et al., (2008) and included five items. Perceived value included three items from Lin and Wang (2006). The satisfaction measurement included three items which were adapted from Bai et al. (2008) and Kim et al. (2015). The CLV was measured using five items taken from Pritchard et al. (1999). A two-item scale was adapted from Kumar et al. (2010) to measure the CKV of visitors. The CRV was measured by three items adapted from Kumar et al. (2010). A three-item scale was adapted from Kumar et al. (2010) to measure the focal customer’s CIV. Correspondingly, we measure Other customers’ CIV by adapting from Kumar et al. (2010) using three items. All the scales were developed based on the existing literature on marketing and e-Tourism, which have confirmed their validity in prior empirical research. Scale items can be found in Table 2.

Notably, the item “Even if close friends recommended another Mobile App, my preference for this App would not change” was regarded as irrelevant by expert opinions and eliminated from future analysis, which is consistent with emerging studies measuring loyalty (Izogo, 2016). The Cronbach alpha of CLV increased to 0.910, accordingly. A seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) was used to measure the items in seven factors: Perceived Value, Satisfaction, Customer Lifetime Value, Customer Knowledge Value, Customer Referral Value, Customer Influencer Value, and Other Customers’ Influencer Value. A seven-
point Likert scale was also used for the Functionality and Usability variables, ranging from 1 (not good at all) to 7 (very good).

4.3 Data Analysis

The data analysis was performed using SPSS 22.0 and Amos 17.0 software. Descriptive statistics were used to evaluate the respondent profiles and the correlations between factors. Amos 17.0 was utilized to assess the model fit, as well as the reliability and validity of the factors. Confirmatory factor analysis (CFA) was accomplished in Amos 17.0. To test the research hypotheses, SEM was employed to examine the relationships between constructs given its advantage of simultaneously analyzing more than one relationship. To test the moderating effect of other customers’ CIV on the relationship between satisfaction and CLV, procedures by Jöreskog (1998) were followed and Amos 17.0 was employed to compare the subgroups.

5. Results

5.1 CFA

Exploratory Factor Analysis (EFA) is more useful when there is a lack of sufficiently theoretical support on the relations of the observed variables to the latent constructs (Sureshchandar et al., 2002). Thus, this study adopted Confirmatory Factor Analysis (CFA) rather than EFA, due to the fact that the proposed model is based on logic and substantial theoretical findings (Bentler, 1995). The CFA results showed a good model fit: Chi-square = 945.48 (p < .01), df = 398; RMSEA = 0.07, CFI = 0.95, TLI = 0.94 (Byrne, 1998). The validity and reliability of the research constructs are confirmed based on CFA and presented in Table 1.

***Please place Table 2 here***

The Cronbach’s alpha values for all constructs are greater than the recommended value of 0.80, and the construct’s composite reliability values ranged from 0.895 to 0.963, thereby
demonstrating good reliability (Hair et al., 2010). All standardized factor loadings are significantly greater than 0.70 and the Average Variance Extracted (AVE) of each construct exceeded 0.60, confirming the convergent validity. Additionally, all the square roots of AVEs on the diagonal are greater than the inter-correlations between the corresponding latent constructs (see Table 2), which suggests good discriminant validity.

**Please place Table 3 here**

Prior to hypothesis testing, we followed a procedure recommended by Podsakoff et al. (2003) to address the concern of common method bias, which has been widely employed in management literature as well as recent e-Tourism research (Morosan and DeFranco, 2016). The logic underlying this approach is that if common method bias poses a serious threat, a single latent factor should emerge from a factor analysis (Podsakoff et al., 2003). Thus, we conducted a confirmatory factor analysis (CFA) with all the items loading on a single latent factor. If common method variance is present, the one-factor model should have a good model fit; while a worse fit for the one-factor model would suggest that common method bias is not a concern (Slater et al., 2006). The results indicated that the one-factor model did not fit the data well (Chi-square=5464.21, df=560, p<0.001; RMSEA=0.17, CFI=0.61, TLI=0.59), whereas the hypothesized nine-factor model showed a significantly better model fit (Chi-square=945.48, df=398, p<0.01; RMSEA=0.07, CFI=0.95, TLI=0.94). Therefore, common method bias is less likely to be a threat to interpret the research findings in this study.

5.2 Structural Model and Hypotheses Testing

The goodness-of-fit indices of the proposed model are as follows: Chi-square = 1029.79 (p < .01), df = 340; RMSEA = 0.08; CFI = 0.93; TLI = 0.92. According to Byrne (1998), to represent a good model fit, CFI and TLI should be larger than 0.90, whereas the recommended
RMSEA value is 0.08. Based on the above rules and results, the model fit of the conceptual model is reasonable.

Figure 3 presents the standardized paths linking functionality, usability, perceived value, satisfaction, CLV, CKV, CRV, and CIV, as well as the moderating effect of Other Customers’ CIV. The SEM results indicated that all the direct paths proposed in the conceptual model are statistically significant: (1) as hypothesized, functionality ($\beta = 0.54$, $p < .001$), usability ($\beta = 0.30$, $p < .01$), and perceived value ($\beta = 0.20$, $p < .01$) positively affected customer satisfaction, among which functionality performance of a mobile App shows the strongest predicting power on customer’s satisfaction level; (2) In terms of the relationships between the satisfaction and the engagement values of customers, also as hypothesized, satisfaction is found to have a strong positive influence on CLV ($\beta = 0.66$, $p < .001$), CKV ($\beta = 0.56$, $p < .001$), CRV ($\beta = 0.54$, $p < .001$), and CIV ($\beta = 0.58$, $p < .001$). Thus, hypotheses 1–7 cannot be rejected, which proposed the causal relationships among functionality, usability, perceived value, satisfaction, CLV, CKV, CRV, and CIV. The above results offered support that satisfaction level of using a mobile App is determined by the following values for customer: functionality, usability, and perceived value, wherein functionality performance of a mobile app appeared as the value that customers treasure most, followed by usability performance, and perceived value. The findings of H4–H7 also confirmed that a focal customer’s satisfaction level positively determines the manners in which they engage in the value co-creation process or they co-create value with the supplier. Specifically, a focal customer’s engagement values (CLV, CKV, CRV, and CIV) were enhanced by customer satisfaction level (Kumar et al., 2010).

***Please place Figure 3 here***
Hypothesis 8 predicted that the CIV from other customers will moderate the relationship between the focal customer’s satisfaction and CLV, such that it will be stronger when Other Customers’ Influence Value is high. According to the analysis procedure by Jöreskog (1998), the moderating effect of Other Customers’ Influencer Value (OCIV) was measured through the comparison of subgroups. As suggested by Dabholkar and Bagozzi (2002), the total sample was divided into two groups based on a median split: low OCIV and high OCIV group. Amos 17.0 was used to compute the un-strained model for both low and high groups, with $\chi^2$ for the model is 1418.1 with 680 degrees of freedom ($\chi^2$/df=2.09, $p<.01$). Then, we named the parameter with the factor loadings to assess the strained model, with $\chi^2$ for the model is 1451.2 with 700 degrees of freedom ($\chi^2$/df=2.07, $p<.01$). The results of $\chi^2$ difference comparisons between the un-strained and strained model provided evidence that it is significantly different between the two models ($\Delta\chi^2=33.1$, $\Delta$df=20, $p<.05$), suggesting significant moderating effect of Other Customers’ Influencer Value (OCIV) as indicated in Table 4. Thus, the relation between satisfaction and CLV is more positive for mobile hotel bookers with high perception of OCIV than those with low level of perception. As such, we cannot reject Hypothesis 8 as well.

***Please place Table 4 here***

6. Discussion and conclusions

6.1 Conclusions

Based on value co-creation literature, the findings of this paper provided empirical evidences to validate the research framework we established on how customers co-create value with suppliers. Specifically, the research model which explains the value co-creation process in the mobile hotel booking context and its eight hypotheses were assessed. The results explicitly
clarified the *Value for Customer* and *Value for Supplier* in this study and shed light on the reciprocity of the involved parties.

Consistent with Vargo and Lusch (2016), the actors involved in the value co-creation process often contribute each other’s well-being unawares. As noted by Grönroos (2008), service provider (mobile App) offers resources (hotel products/services) to consumers who constantly evaluate the values they consider as important during the value co-creation process. In this research, a focal customer utilizes hotel products and services or information that a hotel booking App provides. The improvements in the dimensions of functionality performance, usability performance, and perceived value increased the customer's propensity to provide a positive assessment, while the focal customer’s satisfaction level affects his/her engagement values (CLV, CKV, CRV, and CIV) that contribute to providers. As prior research has asserted, customer engagement values are values that customers contribute to providers (Kumar and Mirchandani, 2012). Thus, these values can be seen as *Values for Supplier*. Coinciding with website evaluation literature (Tsang et al., 2010), functionality is the dimension customers value most when they make a hotel reservation via mobile App, which means whether the information of a mobile App could satisfy consumer is crucial in mobile hotel booking context. Though prior research asserted service quality factors affect customer satisfaction through perceived value (Kuo et al., 2009), this study found that functionality, usability and perceived value were all *Values for Customers* which can directly influence customer satisfaction together, and functionality has the greatest predicting power. The results of this study also revealed that in addition to financial value as prior study demonstrated (Gupta and Lehmann, 2005), non-transactional values (CKV, CRV, and CIV) can be generated, which is in line with recent arguments from Kumar and Reinartz (2016). Satisfaction has been found a significant antecedent of all the four customer engagement
value (CLV, CKV, CRV, and CIV). Specifically, similar to emerging e-Tourism research (Yang, 2017; Cantallops and Salvi, 2014), this study validated that a satisfied customer is more likely to share their knowledge, get new customers, and provide EWOM for the supplier (mobile App). Considering the above, the findings confirmed that a focal customer’s satisfaction is enhanced by the functionality and usability performances of a mobile App, as well as by perceived value, and in turn the satisfaction level determines both the transactional (CLV) and non-transactional values (CKV, CRV, and CIV) for the mobile App suppliers, which is consistent with the Value for Customer—Satisfaction—Value for Supplier scheme that conceptually guided this research. As Figure 1 illustrated, three actors (mobile App, focal customer, and other customer) were involved in the value co-creation process of mobile hotel booking context, which goes beyond existing m-Tourism research on value co-creation (Morosan, 2015; Morosan and DeFranco, 2016). Apart from direct interaction of mobile App—focal customer, other customers were found to jointly create values in the process by interfering the relationship between supplier (mobile App) and focal customer, which empirically supports the statement from Grönroos’s (2012) study.

6.2 Theoretical Implications

This study not only provided empirical analysis of value co-creation process in m-Tourism context, it also explicitly clarified the roles of different actors in the process. Different from previous value co-creation research that either investigated the outcomes or the antecedents of co-creation (Mathis et al., 2016; Morosan, 2015), this study shed light upon the reciprocity of different parties in the value co-creation process, in which the emergence of Value for Customer
has the potential to generate Value for Supplier. The findings also support Vargo and Lusch’s (2016) argument that there is no necessary to examine co-creation as a specific factor but a process, since the beneficiaries in co-creation process often contribute to each other’s value without being aware of.

From the theoretical point of view, this study extended current literature on m-Tourism by identifying the important dimensions that mobile hotel bookers value most. While prior m-Tourism research focusing on hotel-guest interaction in which mobile device plays as a mediator to facilitate customer’s co-creation experience (Morosan, 2015; Morosan and DeFranco, 2016), the present study particularly centered on mobile App-customer interaction in which mobile device is one of the actors involved in value co-creation process. Specifically, functionality, usability, and perceived value were found to be the influencing factors (values for customer) of customer satisfaction, among which functionality performance of a mobile App is most important.

Another significant contribution of this study is the integration of the literature on website evaluation and the framework of Customer Engagement Value by Kumar et al. (2010), thereby generating an in-depth assessment of the relations between Value for Customer and Value for Supplier in the value co-creation process of mobile hotel booking. Notably, three parties were involved in the process: mobile App, focal customer, and other customer. This study also contributes to research on CEV framework, by providing empirical evidence based on the m-Tourism context, and identifying satisfaction as an important antecedent of values from Kumar et al.’ (2010) CEV framework (CLV, CKV, CRV and CIV). The results of moderating effect showed that Other Customers’ Influencer Value positively impacted the conversion of customer satisfaction into long-term loyalty. Moreover, besides financial value, non-transactional values
were incorporated into the analysis, which helps to advance the understanding of what is value for supplier in value co-creation literature.

6.3 Practical Implications

From a practical standpoint, the findings of this study suggest several important implications for the mobile market. First, according to the findings, mobile App operators should elaborately consider latent variables such as functionality, usability, and perceived value, which are the fundamental factors of enhancing customer satisfaction and loyalty. Specifically, based on the results of this study, mobile hotel bookers value the information quality most but not the price of products/services, thus suggesting industry practitioners should step back from the price war to focus on how to enhance their competitive advantages by providing products/services of good quality.

To target Chinese online customers, who are the largest mobile tourism market, the study revealed that Chinese hotel bookers appear to be more interested in other customers’ online reviews and the reservation information of the hotels when they use a mobile App for hotel booking. The findings also suggested that striving for customer satisfaction was still crucial to increase values for supplier in m-Tourism. If a customer is satisfied, he/she will be more willing to contribute to customer engagement values (CLV, CKV, CRV and CIV) which are vital for supplier’s business success. Furthermore, non-transactional value plays an increasingly critical role for suppliers to speed up their development apart from economic value. For instance, EWOM offers useful information for mobile App and facilitates the transformation from satisfaction to loyalty, thereby increasing long-term benefits. Thus, industry practitioners should pay more attentions to non-transactional values such as CKV, CRV, and CIV by enhancing the accessibility of contributing knowledge and comments or by improving the incentives.
6.4 Limitations and Future Research

This study includes a number of limitations, which suggest areas for further research. This study targeted customers with mobile hotel booking experiences, including mobile bookers (who only used mobile App for hotel booking) as well as online bookers (who used both computer website and mobile App for hotel booking). Thus, to determine whether hotel bookers’ preferences are different, future work should consider identifying the distinctions among three groups: computer bookers (use computer website only), mobile bookers (use mobile App only), and online bookers (use both computer and mobile channels). Moreover, since it is not the objective of this paper to focus on the role of satisfaction but rather to clarify values for customer and supplier in value co-creation process, the mediating effect of satisfaction has not been examined but is recommended in future research as well.

REFERENCES


Morosan, C., and DeFranco, A. (2016), “Co-creating value in hotels using mobile devices: A


Figure 1. Conceptual framework of value co-creation in the mobile booking context
Figure 2. Conceptual model
Figure 3. Conceptual model results

*Note:* *p < 0.05, **p < 0.01, ***p < 0.001
Table 1. Description of the respondents

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total (N=382)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Non-target respondents</strong> (N=83)</td>
<td></td>
</tr>
<tr>
<td>Computer booker</td>
<td>18</td>
</tr>
<tr>
<td>Non-booker</td>
<td>65</td>
</tr>
<tr>
<td><strong>Target respondents</strong></td>
<td></td>
</tr>
<tr>
<td>(N=299)</td>
<td></td>
</tr>
<tr>
<td>Online booker</td>
<td>212</td>
</tr>
<tr>
<td>Mobile booker</td>
<td>87</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>154 (51.5%)</td>
</tr>
<tr>
<td>Female</td>
<td>145 (48.5%)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>16–25</td>
<td>80 (26.8%)</td>
</tr>
<tr>
<td>26–35</td>
<td>183 (61.2%)</td>
</tr>
<tr>
<td>36–45</td>
<td>29 (9.7%)</td>
</tr>
<tr>
<td>46 or above</td>
<td>7 (2.3%)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
</tr>
<tr>
<td>Secondary/high school or below</td>
<td>3 (1.0%)</td>
</tr>
<tr>
<td>College/university</td>
<td>155 (51.8%)</td>
</tr>
<tr>
<td>Postgraduate or above</td>
<td>141 (41.2%)</td>
</tr>
<tr>
<td><strong>Monthly income (RMB)</strong></td>
<td></td>
</tr>
<tr>
<td>≤1,000(≈US$151)</td>
<td>9 (3.0%)</td>
</tr>
<tr>
<td>1,001-5,000</td>
<td>51 (17.1%)</td>
</tr>
<tr>
<td>5,001-10,000</td>
<td>79 (26.4%)</td>
</tr>
<tr>
<td>10,001-15,000</td>
<td>67 (22.4%)</td>
</tr>
<tr>
<td>&gt;15,000(≈US$2264)</td>
<td>93 (31.1%)</td>
</tr>
</tbody>
</table>

Note:

a. Computer booker refers to those only used computer websites for hotel booking.

b. Online booker refers to those used both computer websites and mobile Apps for hotel booking.

c. Mobile booker refers to those only used mobile Apps for hotel booking.
<table>
<thead>
<tr>
<th>Construct</th>
<th>Item</th>
<th>Factor loading</th>
<th>AVE</th>
<th>Composite reliability</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction</td>
<td>I am satisfied with the mobile App</td>
<td>.935</td>
<td>0.877</td>
<td>0.955</td>
<td>0.954</td>
</tr>
<tr>
<td></td>
<td>I am satisfied with my experience with the mobile App</td>
<td>.962</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The content of the hotel products in the App</td>
<td>.911</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyalty (customer lifetime value)</td>
<td>My preference for this mobile App would not change</td>
<td>.702</td>
<td>0.710</td>
<td>0.905</td>
<td>0.910</td>
</tr>
<tr>
<td></td>
<td>It would be difficult to change my beliefs about this mobile App</td>
<td>.689</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I will buy from this mobile App the next time when I book a hotel room</td>
<td>.965</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I intend to keep using this mobile App for booking hotel</td>
<td>.971</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functionality</td>
<td>The reservation information in the mobile App</td>
<td>.842</td>
<td>0.685</td>
<td>0.916</td>
<td>0.916</td>
</tr>
<tr>
<td></td>
<td>The products information in the mobile App</td>
<td>.779</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The user-generated information in the mobile App</td>
<td>.847</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The surrounding area information in the mobile App</td>
<td>.832</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The contact information in the mobile App</td>
<td>.836</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usability</td>
<td>The language of the mobile App</td>
<td>.871</td>
<td>0.840</td>
<td>0.963</td>
<td>0.963</td>
</tr>
<tr>
<td></td>
<td>The layout and graphics of the mobile App</td>
<td>.929</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The information architecture of the mobile App</td>
<td>.918</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The user interface and navigation of the mobile App</td>
<td>.927</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The general features of the mobile App</td>
<td>.937</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Influencer Value</td>
<td>I said positive things about this App to others</td>
<td>.879</td>
<td>0.827</td>
<td>0.935</td>
<td>0.933</td>
</tr>
<tr>
<td>Perceived Value</td>
<td>I recommended this App to others</td>
<td>.927</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I encouraged my friends and relatives to use this App</td>
<td>.921</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The product in this mobile App is good value for money</td>
<td>.936</td>
<td>0.845</td>
<td>0.943</td>
<td>0.942</td>
</tr>
<tr>
<td></td>
<td>Price in this mobile App are acceptable</td>
<td>.914</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Booking from this mobile App is considered to be a good buy</td>
<td>.908</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Knowledge Value</td>
<td>I am willing to provide feedback about this App</td>
<td>.943</td>
<td>0.873</td>
<td>0.932</td>
<td>0.933</td>
</tr>
<tr>
<td>Customer Referral Value</td>
<td>If I have a useful idea on how to improve this App, I am happy to share</td>
<td>.926</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I will recommend my friends to sign up to this App, if bonus points were offered</td>
<td>.883</td>
<td>0.835</td>
<td>0.938</td>
<td>0.938</td>
</tr>
<tr>
<td></td>
<td>I will recommend my friends to sign up to this App, if any discount was offered</td>
<td>.937</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I will recommend my friends to sign up to this App, if any gift was offered</td>
<td>.921</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Customers’ Influencer Value</td>
<td>I heard positive things about this App from others</td>
<td>.891</td>
<td>0.740</td>
<td>0.895</td>
<td>0.893</td>
</tr>
<tr>
<td></td>
<td>I was recommended this App by others</td>
<td>.890</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I was encouraged by friends and relatives to use this App</td>
<td>.797</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: AVE = average variance extracted.
Table 3. Correlations among variables

<table>
<thead>
<tr>
<th></th>
<th>SAT</th>
<th>LOY</th>
<th>F</th>
<th>U</th>
<th>PV</th>
<th>CIVF</th>
<th>CKV</th>
<th>CRV</th>
<th>OCIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAT</td>
<td>(0.936)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOY</td>
<td>0.709**</td>
<td>(0.843)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0.769**</td>
<td>0.652**</td>
<td>(0.828)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>0.766**</td>
<td>0.653**</td>
<td>0.823**</td>
<td>(0.917)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PV</td>
<td>0.720**</td>
<td>0.607**</td>
<td>0.768**</td>
<td>0.772**</td>
<td>(0.919)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIVF</td>
<td>0.542**</td>
<td>0.477**</td>
<td>0.579**</td>
<td>0.622**</td>
<td>0.571**</td>
<td>(0.909)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CKV</td>
<td>0.474**</td>
<td>0.430**</td>
<td>0.504**</td>
<td>0.544**</td>
<td>0.554**</td>
<td>0.582**</td>
<td>(0.935)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRV</td>
<td>0.465**</td>
<td>0.410**</td>
<td>0.538**</td>
<td>0.546**</td>
<td>0.536**</td>
<td>0.645**</td>
<td>0.676**</td>
<td>(0.914)</td>
<td></td>
</tr>
<tr>
<td>OCIV</td>
<td>0.470**</td>
<td>0.456**</td>
<td>0.513**</td>
<td>0.554**</td>
<td>0.510**</td>
<td>0.806**</td>
<td>0.610**</td>
<td>0.637**</td>
<td>(0.860)</td>
</tr>
</tbody>
</table>

Note: a. **p < 0.01 b. The numbers enclosed in parentheses and presented diagonally indicate the squared root of the AVEs. c. SAT=Satisfaction, LOY=Loyalty (Customer Lifetime Value), F=Functionality, U=Usability, PV=Perceived Value, CIVF=Customer Influencer Value, CKV=Customer Knowledge Value, CRV=Customer Referral Value, OCIV=Other Customers’ Influencer Value

Table 4. Testing the moderating effect of Other Customers’ Influencer Value

<table>
<thead>
<tr>
<th></th>
<th>Un-strained model</th>
<th>Strained model</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2$</td>
<td>1418.1***</td>
<td>1451.2***</td>
<td>33.1*</td>
</tr>
<tr>
<td>df</td>
<td>680</td>
<td>700</td>
<td>20</td>
</tr>
</tbody>
</table>

Note: *p < 0.05, **p < 0.01, ***p < 0.001