VALUE CO-CREATION THROUGH
ICT-FACILITATED SERVICE IN HOTELS

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CERTIFICATE OF ORIGINALITY

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Sut Ieng LEI

ABSTRACT

Facing an increasingly competitive market and sophisticated customers, hoteliers frequently rely on information and communication technologies (ICT) to improve customer service. In the modern era, in which information and knowledge are shared intensively, consumers are no longer passive but actively search out product or service offerings that are of value and relevance. In response, hoteliers have launched a series of ICT-facilitated service, seeking to interact and communicate more with customers to better understand their idiosyncratic needs and wants.

The practice of providing accessible resources to allow customers to create their unique experiences through interacting with the service provider is known as the co-creation of value. This practice stems from a service-dominant (S-D) logic, which holds that by co-creating value with customers, service suppliers can incorporate customers' personal needs and wants into their service offerings so as to personalize customers' experience and differentiate themselves from competitors. Allowing customers to participate in co-creating service offerings results in a more memorable and special experience, as customers do not merely select the best available option among those designed by the service provider.

While previous studies in the hospitality literature have emphasized the importance of service providers' co-creating value with customers, little is known about how value is actually co-created. Furthermore, these studies have mainly focused on customers' adoption of or intention to use technologies, but paid limited attention to customers' actual use experiences. As the computational power of ICTs offers unprecedented opportunities for firm-customer connections and interactions, this study fills the void in the literature by exploring the value co-creation process through ICT-facilitated service in the hotel context. Following an interpretivist

paradigm and guided by the lens of S-D logic and sociomateriality, this study adopts a qualitative research design to understand the underlying mechanism behind the hotel-customer value co-creation process supported by ICT-facilitated service.

Data were collected through semi-structured in-depth interviews with hoteliers and customers from a common pool of best-practice hotel companies. Data were analyzed following narrative thematic analysis with the help of Nvivo 11. The findings provide a rich description of the entire value co-creation process supported by ICT-facilitated service in the hotel context. They unearth the underlying structure of the core elements of value co-creation—hoteliers' unique role, customers' participation and collaboration, the resulting co-created value, and the contextual elements that influence the co-creation process. The findings highlight how hoteliers' role and customers' experience are transformed when they co-create value with each other. The unique forms of co-creation in this study context are discussed. From customers' perspective, this study discovers factors that can potentially hinder customers' participation and collaboration. Customers' actual use experience can deviate from hoteliers' expectations due to these contextual factors, which ultimately affects the co-created value. By combining hoteliers' facilitation efforts and customers' actual experiences, this study reveals the important collaboration elements that narrow the gap and maximize customers' value-in-use.

This study contributes to the hospitality literature on value co-creation by delineating the underlying mechanism of the hotel-customer value co-creation process facilitated by ICTs. Empirical evidence is provided to explain how perceived technology affordances link with value-in-use. In response to scholars' call for more research focusing on the fundamental identity of technologies and the human intelligence behind technology design, this study explores the phenomenon from both the social and material perspectives and sheds light on the important role

of hoteliers' reasoning and intention behind their service design. Rather than treating technology as a tool that produces an effect, this study considers it an effect resulting from the amalgamation of human commitments and technology materiality. By integrating hoteliers' practices with customers' experiences, this study demonstrates how the former can be connected with the latter. This study provides a foundation for future research to pursue this stream of research. Concerning practical implications, hoteliers seeking to co-create with customers using ICTs can take the insights provided from best-practice companies in this study as reference points. The factors identified as influential to the co-creation process can also guide best-practice companies in enhancing their current practices and strategies.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

CHAPTER 1: INTRODUCTION

1.1 Research Background

In response to the continual development and growing popularity of information and communication technologies (ICTs) in the 21st century, the hotel industry continues to make significant investments in developing and implementing services facilitated by ICTs. There is ample evidence of hotels' endeavors to attain the benefits of such technologies, ranging from improving operational efficiency and enhancing service quality to obtaining higher profits (e.g., Anuar, Musa, & Khalid, 2014; Chen, Knecht, & Murphy, 2015; Law & Jogaratnam, 2005; Orfila-Sintes, Crespí-Cladera, & Martínez-Ros, 2005; Sahadev & Islam, 2005; Sirirak, Islam, & Ba Khang, 2011). Recent activities of industry players indicate a trend toward continuous expansion in ICT investments in the near future. For example, Marriott International has announced a plan to continuously upgrade its official mobile app to provide a more personalized guest experience (Wolf, 2017); Hilton Worldwide has unveiled a US $550 million plan to enhance guests' digital experience (Coleman, 2014); and Intercontinental Hotel Group has invested heavily in its Internet initiative to offer more seamless Internet access to customers (Ting, 2016b). Accor also announced a US $280 million, five-year investment plan to upgrade its digital services (Chesters, 2015).

Hoteliers aim to deliver greater value to customers by providing services facilitated by ICTs. Contemporary customers are well-informed and educated. They have become more sophisticated, and they demand higher-quality service offerings that better fit their use context (Law & Jogaratnam, 2005). Realizing that growth and competitive advantage come from creating unique value propositions and consumption experiences for the customer (Walls, Okumus, Wang, & Kwun, 2011), the hospitality industry is switching from being firm-centric

and product-focused to being customer-centric and experience-focused (Knutson, Beck, Kim, & Cha, 2007). Furthermore, as the products and services provided by a hotel are highly imitable, it is crucial for hospitality service providers to find ways to differentiate themselves from competitors (Chathoth, Altinay, Harrington, Okumus, & Chan, 2013). ICTs can provide the means through which hoteliers can differentiate themselves by encouraging firm-customer interactions and customer participation (Neuhofer, Buhalis, & Ladkin, 2013; Ting, 2016a; Tuite, 2017).

An emphasis on developing competitive advantage by creating unique value for customers through superior services is at the core of service-dominant (S-D) logic (Vargo & Lusch, 2004). The central idea of S-D logic is the co-creation of value, which refers to the practice of providing customers with the resources to participate in co-designing or co-developing their own experiences through interacting with the service provider. Empowering customers to contribute their input (e.g., ideas, opinions, personal information) through effective communications and interactions with the service provider means that their consumption experience is unique, as their personal needs and preferences are integrated during the collaboration process (Prahalad & Ramaswamy, 2004a; Vargo & Lusch, 2004). Research has identified three sources of value that service suppliers can obtain by engaging customers in co-creation activities. First, firms can obtain economic value, such as productivity gains through efficiency. For example, by collecting opinions from customers, firms can better understand customers' needs and respond more effectively by producing service offerings that better meet their requirements (Carbonell, Rodríguez-Escudero, & Pujari, 2009). Second, engaging customers in personal conversations may lead to relationship value, such as higher customer loyalty and greater trust toward the service provider (Rosenbaum, Ostrom, & Kuntze, 2005).

Third, empowering customers to design products or services to their liking enhances the effectiveness of product/service offerings. For example, researchers have found that customers are more willing to pay for self-designed products due to a stronger sense of ownership (Franke, Schreier, & Kaiser, 2010).

In the hospitality literature, research has demonstrated the emergence of value co-creation practices in the industry (Shaw, Bailey, & Williams, 2011). Scholars have suggested that hospitality service providers move from merely treating customers as physical recipients of services to the co-creation end of the continuum to maximize customer value (Chathoth et al., 2013). They have suggested co-creation as a preferred way to deliver customer value, as customers' involvement in the collaboration process enhances mutual understanding between service supplier and customer. The result is a win-win situation in which both parties are better off, as co-created value outcomes are more beneficial for them. For example, the service provider gains loyal customers who contribute to the business's long-term growth, while the customer perceives greater value-in-use from personalized firm-customer interactions and service offerings (Jarvenpaa & Tuunainen, 2013; Jeon, Park, & Yi, 2016).

ICTs' potential for facilitating value co-creation in the tourism and hospitality industry has been highlighted (Buhalis & Foerste, 2013; Morosan & DeFranco, 2016a; Schmidt-Rauch & Schwabe, 2014). Technology has been proposed as a platform for facilitating the co-creation of personalized high-touch guest experiences (Neuhofer, Buhalis, & Ladkin, 2012; Neuhofer et al., 2013). The elimination of several traditional constraints on firm-customer interactions, such as cost, distance, and time difference, has created unprecedented opportunities for firms to reach and interact with individual customers and engage in one-to-one marketing. This development is particularly relevant in the tourism and hospitality context, as consumers might have different

communication needs during the travel process (i.e., before, during, and after a trip). Different contextual needs might emerge when "on-the-go" travelers visit unfamiliar places.

Co-creating value with customers is a challenging task, for several reasons. First, value co-creation is still an abstract and elusive concept. Challenges in operationalizing its constructs not only make further theory development difficult, but also hinder practitioners from learning more about the benefits of value co-creation and how to implement it effectively (Grönroos, 2012). Second, while companies and customers often have different goals and interests, customers might not be willing to share too much information due to privacy and security concerns (Chellappa & Sin, 2005; Morosan & DeFranco, 2016b). Third, achieving value co-creation involves the integration of various resources, such as the service provider's support for customer participation and the customer's competence to utilize the tools or resources provided (Shaw et al., 2011). Finally, the current conversation about value co-creation facilitated by ICTs is dominated by conceptual studies. More empirical evidence is needed to further understand the phenomenon and advance the theory in this area.

1.2 Research Gaps

Value co-creation studies in the hospitality literature are still in their infancy. Although the number of studies has increased slightly, research focusing on value co-creation facilitated by ICTs is still limited. Previous studies have mainly focused on measuring the antecedents and consequences of customers' participation in co-creation. Some scholars have attempted to explain the enhanced customer experience resulted from value co-creation through different technological platforms such as social media and smart technologies. However, research that explores the entire process of firm-customer value co-creation facilitated by ICTs in the hotel context is difficult to find. Little is known about how hotels co-create value with customers

through services facilitated by ICTs and how they can move forward on this journey. Furthermore, despite the potential for ICTs to address travelers' contextual needs through co-creation, researchers have rarely investigated how services facilitated by ICTs personalize travelers' experiences by addressing their contextual needs.

Previous studies have often investigated service suppliers' practices and customers' participation behaviors separately, without identifying the links between them. It is still unclear which aspects of the firm's facilitation efforts and the environment created by the firm to facilitate value co-creation actually lead to customer participation and value-in-use. An explanation is still needed for how firms' facilitation efforts and practices link to customer participation and collaboration in value co-creation. It is important to fill this gap by bridging the former and latter to obtain a more complete explanation.

Last but not least, little is known about customers' value-in-use as a result of their participation in firm-customer value co-creation facilitated by ICTs. There is ample evidence of the connection between customer perceived value and the use of technologies, yet these findings are not sufficient to explain customers' value-in-use, as customer perceived value is often measured by customers' one-way consumption of pre-designed product/services without involvement in the co-design or co-development process. Value-in-use is a different concept, yet it has received little attention in prior research.

1.3 Objectives of the Study

This thesis aims to fill these gaps by investigating the following research questions: *(1) How do hotels exert the potential of ICTs to facilitate value co-creation activities? (2) How is value co-created through the provision of ICT-facilitated service in hotels?* The overall goal is to develop a theoretical framework to explain the phenomenon, so that the relationships among

the elements of value co-creation (i.e., actors, resources, contexts, and value-in-use) can be identified. For the sake of readability, the term "ICT-facilitated service" is used in place of "services facilitated by ICTs that support value co-creation activities" in the rest of the discussion. To answer the research questions, this study pursues the following objectives: (1) to describe hoteliers' efforts/practices to support customers' value-creation activities through the application of ICTs, (2) to explore customers' involvement and participation in ICT-facilitated service, (3) to examine the collaboration between the hotel and customers through ICT-facilitated service, (4) to identify customers' value-in-use as a result of the co-creation process, and (5) to analyze the characteristics of the contexts within which exchanges occur and value-in-use emerges.

1.4 Significance of the Study

While previous studies often cannot explain the linkages among important components of the value co-creation process, this study empirically explores the relationships among the elements of value co-creation through ICTs in the hospitality context. Theoretically, this study enriches the value co-creation concept by explaining how hoteliers can transform their service environment to co-create value that benefits both customers and themselves. The findings from this study present a rich description of the underlying structure of the value co-creation process by linking hoteliers' facilitation efforts, the transformed experience environment, customers' participation, firm-customer collaboration, and customers' value-in-use. Practically, the results from this study will help hoteliers to understand (1) the ways through which they can co-create value with customers through ICT-facilitated service, (2) the value they can provide customers through ICT-facilitated service, and (3) how their current strategies can be improved to enhance customer participation and value-in-use.

CHAPTER 2: LITERATURE REVIEW

2.1 Customer Perceived Value and Value-in-use

2.1.1 The Origin of Customer Perceived Value

The term "value" has different meanings for consumers and practitioners and is used in diverse contexts (Parasuraman, 1997; Wikstrom & Normann, 1994; Woodruff & Gardial, 1996; Zeithaml, 1988). Gaining a comprehensive understanding of customer value has long been a challenge (Anderson & Narus, 1998). Among the various uses of the term "value," there are two dominant streams in the literature: value for the customer and value for the firm (Smith & Colgate, 2007). Research studying value from the customer's perspective investigates customer perceived value or customer received value. Research studying value from the firm's perspective investigates the value of the customer or customer lifetime value; the economic worth of a customer is thus the matter of interest (Berger & Nasr, 1998). This thesis focuses on the former due to the important role of the customer in value creation and the strong influence of customer perceived value on customer behaviors (Lin, Sher, & Shih, 2005; McDougall & Levesque, 2000; Oh, 1999; Vargo & Lusch, 2004; Woodruff, 1997).

The terms "customer value" and "customer perceived value" are often used interchangeably. The definition of customer perceived value has evolved from its early stages as a product-oriented concept to a relationship-oriented concept and finally to a customer-driven concept (Table 1). Originally rooted in equity theory and price-based studies, customer perceived value was first defined in terms of a quality-price relationship, whereby value was conceptualized as a "cognitive trade-off between the perception of quality and sacrifice" (Dodds, Monroe, & Grewal, 1991, p. 308). Applying Gutman's (1982) means-end theory to Dodds and Monroe's (1985) model, which conceptualizes value based on the quality-price relationship,

Zeithaml (1988) defined customer perceived value as a trade-off between what is received and what is sacrificed. The conceptualization of customer perceived value in the earlier stage was product-oriented, emphasizing that customer perceived value is influenced by the intrinsic and extrinsic factors of a product (Graf & Maas, 2008). Intrinsic factors (e.g., quality) are part of the product and thus remain constant, and can only be changed if the product is modified. Extrinsic factors (e.g., price and brand name) are not inherent in the product itself and can change over time. In this conceptualization, intrinsic factors were considered a mediator in the relationship between customer perceived value and all extrinsic factors.

TABLE 1. Definitions of Customer Perceived Value

Source	Definition
Zeithaml (1988, p. 14)	"Value is the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given". Based on a means-end model, perceived value is an antecedent of a purchase decision and a consequence of perceived service quality.
Monroe (1990, p. 46)	"Buyers' perceptions of value represent a tradeoff between the quality or benefits they perceive in the product relative to the sacrifice they perceive by paying the price." The sacrifice may include psychological as well as monetary sacrifice (Dodds et al., 1991).
Anderson, Jain, and Chintagunta (1993, p. 5)	"Value in business markets is the perceived worth in monetary units of the set of economic, technical, service and social benefits received by a customer firm in exchange for the price paid for a product, taking into consideration the available suppliers' offerings and prices."
Gale (1994, p. xiv)	"Customer value is market perceived quality adjusted for the relative price of your product."
Butz and Goodstein (1996, p. 63)	"By customer value, we mean the emotional bond established between a customer and a producer after the customer has used a salient product or service produced by that supplier and found the product to provide an added value."
Woodruff (1997, p. 142)	"Customer value is a customer's perceived preference for and evaluation of those product attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations." Customer value resides in every level of the customer value hierarchy model (consumption goals, consequences, and attributes), which can be evaluated before and after the purchase or use of a product or service.
Holbrook (2005, p. 46)	Customer value is "an interactive, relativistic preference and experience." Value is perceived uniquely by individuals, conditional/contextual, relative, and dynamic.

As the concept of customer perceived value has matured, researchers have broadened and enhanced the concept to include components such as relationship (Ravald & Grönroos, 1996), process (Lai, 1995), and risk (Cronin, Brady, Brand, Hightower Jr, & Shemwell, 1997). Scholars realized that customer-firm relationships, post-purchase behaviors, and potential negative post-purchase consequences also have a strong influence on customer perceived value. Later, based

on a means-end model, Woodruff (1997) developed a hierarchical model that links product attributes with goal-oriented consumers' use situations and consequences. The definition of customer perceived value developed by Woodruff emphasizes that value stems from a customer's learned perceptions, preferences, and evaluations, which is measured as attribute-based desires that will consequently influence purchase. Compared with earlier definitions, researchers consider the definition developed by Woodruff (1997) as providing a richer explanation, as it incorporates multiple contexts (pre- and post-use) and multiple assessment criteria (attributes, performances, and consequences) and supplements previous definitions that primarily focused on evaluations based on "giving" and "getting" (Parasuraman, 1997). Lastly, the definition developed by Holbrook (2005) attempted to capture key characteristics of customer perceived value that had not previously been incorporated. Holbrook suggested that several interrelated facets of customer perceived value—interactivity, relativism, affectivity, and the consumption experience—combine to constitute customer value (Holbrook, 1999). Holbrook's definition implies the shift of the meaning of value from a firm-centric view to personalized customer experience (Prahalad & Ramaswamy, 2004b), which further stresses the role of the customer in the value creation process and consumption experience.

Although customer perceived value has been constantly revisited by researchers during the last two decades, the understanding of the concept is incomplete while new theoretical directions are still emerging (Gallarza & Saura, 2006). Customer perceived value is a vague and elusive concept that is difficult to define and measure (Carù & Cova, 2003; Sánchez-Fernández & Iniesta-Bonillo, 2007; Weinstein, 1999; Woodall, 2003; Woodruff, 1997). There is no commonly agreed-upon definition, definitive conceptualization, framework, or typology of customer value (Smith & Colgate, 2007). Fortunately, some common ground exists among these

definitions, which allows the concept to be further studied and developed. First, customer perceived value is derived from the consumption of a product or service, which is different from those personal or organizational "values" that are centrally held and enduring beliefs (Burns, 1995). Second, customer value is not objectively determined by suppliers' assumptions but is perceived by individual consumers (Anderson & Narus, 1998; Holbrook, 1999; Woodruff & Gardial, 1996; Zeithaml, 1988).

Delivering customer value is of vital importance for business success because customer value has important consequences such as customer satisfaction, repurchase intention, and customer loyalty (Gallarza & Saura, 2006; Oh, 1999; Tarn, 1999; Wang, Lo, & Yang, 2004; Woodall, 2003). Given that the delivery of superior customer value has been recognized as a competitive advantage (Flagestad & Hope, 2001; Ryan, 2002; Woodruff, 1997), maximizing customer value has widely been accepted as the ultimate goal for businesses. Moreover, previous studies have generally agreed that customer perceived value better explains customer behavior than other constructs such as satisfaction and service quality. First, while customer satisfaction does not always lead to repurchase intention and positive word of mouth, perceived value is a more powerful variable for explaining consumer behaviors such as product choice (Zeithaml, 1988) and repeat purchasing (Nilson, 1992). Second, although service quality is traditionally regarded as an important variable in determining relationship outcomes such as customer satisfaction, scholars have recognized that there is a missing link between them. Current service quality measurements assume that value is embedded at the moment of service delivery, instead of emerging from the outcome of the consumer's consumption of the service (Macdonald, Wilson, Martinez, & Toossi, 2011). In other words, measurements of service quality such as SERVQUAL measure customer perceived value by asking customers to evaluate product and

service attributes pre-designed by the service provider. The fit between the pre-designed service and the customer's unique context of use, and the quality of the actual use process, are ignored. Hence, service quality does not consider customers' "value-in-use" by capturing customers' involvement and consumption experience during the actual usage process (Macdonald, Kleinaltenkamp, & Wilson, 2016; Macdonald et al., 2011).

2.1.2 Value-in-use

The notion of "value-in-use" is rooted in S-D logic, which proposes that value actually means "value-in-use" and is fundamentally derived and determined in use rather than in the exchange of units (e.g., money or goods) (Sandström, Edvardsson, Kristensson, & Magnusson, 2008; Vargo & Lusch, 2004). S-D logic has generated a considerable response in the marketing and service literatures since Vargo and Lusch first published their work in 2004. S-D logic has shifted the traditional perspective, in which service is merely viewed as an activity, to a perspective of service as value creation (Edvardsson, Gustafsson, & Roos, 2005), removing the differences between goods and services by recognizing the fact that customers "buy offerings (including goods or services) which render services which create value" (Gummesson, 1994, p. 250). From the S-D logic perspective, service is the application of competences (knowledge and skills) through deeds, processes, and performances by one entity for the benefit of another (Vargo & Lusch, 2004, 2006). In this interpretation, value is thus "always co-created, jointly and reciprocally, in interactions among providers and beneficiaries through the integration of resources and application of competences" (Vargo, Maglio, & Akaka, 2008, p. 146). There is no more distinction between goods and services, as all goods are tools that serve to facilitate the exchange of services.

As all exchange is based on service, there is no fundamental difference in purpose between buying goods and services, as both assist customers with other services that create value for them. All goods are used as resources by the customer to create the services that they want to "get something out of it." Hence, value is not embedded in goods or services but is created when customers use those goods or services (Svensson & Grönroos, 2008). When consuming a good or service, customers create value by integrating and applying resources in a specific context to get something of value for themselves (Vargo et al., 2008). Value is thus uniquely and phenomenologically determined by users, and is interpreted differently under different contexts (Sweeney & Soutar, 2001; Vargo et al., 2008). The central notions of S-D logic are grounded in human interactions through the exchange of operant resources (e.g., knowledge and skills) (Table 2). The focus is no longer only on profit-generating businesses, but also on understanding societal exchange processes that are beyond the scope of commerce (Vargo & Lusch, 2008).

TABLE 2. Foundational Premises of S-D Logic (Vargo & Lusch, 2008)

FPs	Foundational Premises	Explanation
FP1	Service is the fundamental basis of exchange	The application of operant resources (knowledge and skills), "service," as defined in S-D logic, is the basis for all exchange. Service is exchanged for service.
FP2	Indirect exchange masks the fundamental basis of exchange	Because service is provided through complex combinations of goods, money, and institutions, the service basis of exchange is not always apparent.
FP3	Goods are a distribution mechanism for service provision	Goods (both durable and non-durable) derive their value through use - the service they provide.
FP4	Operant resources are the fundamental source of competitive advantage	The comparative ability to cause desired change drives competition.
FP5	All economies are service economies	Service (singular) is only now becoming more apparent with increased specialization and outsourcing.
FP6	The customer is always a co-creator of value	Implies value creation is interactional
FP7	The enterprise cannot deliver value, but only offer value propositions	Enterprises can offer their applied resources for value creation and collaboratively (interactively) create value following acceptance of value propositions, but cannot create and/or deliver value independently.
FP8	A service-centered view is inherently customer oriented and relational	Because service is defined in terms of customer-determined benefit and co-created it is inherently customer oriented and relational.
FP9	All social and economic actors are resource integrators	Implies the context of value creation is networks of networks.
FP10	Value is always uniquely and phenomenologically determined by the beneficiary	Value is idiosyncratic, experiential, contextual, and meaning laden.

S-D logic is influential because it acknowledges that the value created when products or services are used (value-in-use) is more important for both the service provider and consumer than the value exchanged between them (value-in-exchange). If the product or service offered by the firm is not useful to a customer, its value-in-exchange is nil, meaningless, or even negative (Svensson & Grönroos, 2008). Theoretically, value-in-exchange should be viewed as a function

of value-in-use, and it thus only exists if value-in-use is created (Ravald, 2001). Value-in-use highlights individual consumers' actual consumption experience, and the unique value results from their input during the service delivery process (Vargo & Lusch, 2004). The value-in-use concept particularly suits the service industry, in which value is realized when the service is consumed by contributing to the consumer's experience rather than being embedded in goods. The focus of exchange is no longer tangible units but operant resources.

The importance of value-in-use has been highlighted by a recent review in the service literature. Scholars identify "creating and enhancing tools for capturing value-in-use for services and communicating value to customers" as one of the key research priorities (Ostrom et al., 2010, p.26). S-D logic views customer perceived value differently from the traditional goods-dominant (G-D) logic, which measures value as a ratio between service quality and cost and assumes that value is embedded in products or services as value-in-exchange. The G-D logic originally emphasizes the unit of tangible output (goods) as the central component of exchange (Smith, 1776). The production and export of surplus tangible commodities is responsible for the growth of the economy and businesses, and is fundamental to the creation of national wealth. Economics is thus a science of the exchange of objects, which are measured in terms of price and value-in-exchange.

While value-in-use has been studied in the marketing and service literature (Gummerus & Pihlström, 2011; Macdonald et al., 2016; Macdonald et al., 2011), a review of customer perceived value studies in tourism and hospitality reveals that researchers in this field are still at the beginning of the journey. Often service quality, instead of customer value, receives the majority of research attention; measurement scales such as SERVQUAL and SERVPERF are widely adopted (Gallarza & Saura, 2006). Nevertheless, a general consensus exists regarding the

relationship between service quality and customer perceived value. In this view, service quality is an input to customer perceived value, which is the major antecedent of customer satisfaction. For example, Gallarza and Saura (2006) investigated the relationships between constructs including customer perceived value, service quality, and customer satisfaction, and confirmed the existence of a "quality-value-satisfaction-loyalty" chain. Oh (1999) also found that customer perceived value is an immediate antecedent to customer satisfaction and repurchase intention, implying that customer perceived value and service quality in combination may mediate customer perception and satisfaction.

Not surprisingly, within the tourism and hospitality literature, the concept of customer value is still somewhat vague "due to the large number and varied users of the term" (Murphy, Pritchard, & Smith, 2000, p.43) (Table 3). Empirical studies that capture customers' value-in-use are difficult to find; value-in-use is often given as an example in conceptual studies or implied through the findings in co-creation studies. Previous studies mostly investigated customer perceived value of pre-designed products/services. Customer participation that contributes to products/services' ultimate value-in-use has rarely been taken into consideration. In addition, while the determination of value is largely affected by context, previous studies often do not relate the significant impact of contextual factors on value outcomes. The customer perceived value identified by these studies is the result of one-way communication, i.e., it is a function of the customer's assessment or evaluation based on the perception of the utility of the product or service itself. The process is thus unidirectional because the customer only gets to experience what is already available.

TABLE 3. Previous Studies in Customer Perceived Value in Tourism and Hospitality

Dimensions	Context	Sources
Value for money	Destination, hotel, restaurant, cruise	Ashton et al. (2010); Ryu et al. (2008); Duman & Mattila (2005); Kwun & Oh (2004); McDougall & Levesque (2000); Murphy & Oh (2000); Tarn (1999); Pritchard (1997)
Functional value Emotional value Social value Epistemic value Conditional value	Convention, heritage, festival tourism, adventure tourism, destination, organic food, tourism package, airline, medical tourism	Lee & Min (2013); Lee, Lee & Choi (2011); Hallem & Barth (2011); Chen & Chen (2010); Williams & Soutar (2009); Lee, Yoon & Lee (2007); Finch (2006); Sanchez et al. (2006); Long & Schiffman (2000)
Utilitarian value Hedonic value	Travel, restaurant, festival	Hyun, Kim, & Lee (2011); Gursoy, Spangenberg, & Rutherford (2006); Park (2004); Babin & Kim (2001)
Behavioral price Monetary price Emotional Response Quality Reputation	Leisure service	Petrick (2002)
Cognitive Value Affective Value	Cruise	Yi et al. (2014)
Acquisition value Transaction value	Golf, hotel, restaurant	Al-Sabbahy et al. (2004); Petrick & Backman (2002)
Reputation for quality Value for money Prestige	Hotel	Nasution & Mavondo (2008)
Efficiency Service Quality Play Aesthetics Social Value Time & Effort Spent	Hotel, travel	Gallarza et al. (2015); Gallarza & Saura (2006)
Practical (extrinsic) value Emotional (intrinsic) value Logical value	Restaurant	Lemmink, de Ruyter, & Wetzels (1998)
Functional value Social value Hedonic value Ethical value	Food product	Perrea, Grunery, & Krystallis (2015)
Perceived benefits Perceived sacrifice	Hotel (mobile reservation application)	Wang & Wang (2010)

2.1.3 Operationalization of Customer Value

As shown in Table 3, there are two major approaches to the operationalization of customer perceived value in tourism and hospitality research. The first operationalizes customer perceived value as a one-dimensional construct, considering customer perceived value as a single concept that can be measured by one self-reported item or set of items. This stream of the literature, viewing customer perceived value as a single concept, represents the early stages of the study of customer perceived value. In this approach, value is considered from a utilitarian perspective by assessing relevant benefits and costs based on economic and cognitive reasoning (Sánchez-Fernández & Iniesta-Bonillo, 2007).

The second approach operationalizes customer perceived value as a multidimensional construct, which is an approach preferred by the majority of researchers. In this approach, customer perceived value is conceived of as an aggregate concept formed by multiple interrelated attributes or dimensions. Such a multidimensional approach to studying customer perceived value is recognized as more suitable than a unidimensional approach because value is context-dependent and varied based on consumer characteristics and the consumption situation (Sánchez-Fernández & Iniesta-Bonillo, 2007). Furthermore, the view of customer value as a trade-off between price and quality has been criticized as too simplistic, as it fails to capture the customer's emotional response and other important aspects. The multidimensional approach also overcomes the problem of the traditional approach's excessive concentration on economic utility (Chen & Dubinsky, 2003).

The theory of consumption values developed by Sheth, Newman, and Gross (1991) seems to be most adopted by tourism and hospitality researchers. Based on this theory, value perception is regarded as a multidimensional outcome influenced by both cognitive and

sociopsychological perspectives. The theory of consumption value was originally developed in the business literature to explain and predict consumption behavior. It suggests that consumer choice behavior is a function of five consumption value dimensions—functional, social, emotional, epistemic, and conditional value—and each dimension contributes differently to consumers' choice decisions across situations. Their theoretical framework has been regarded as a robust foundation for extending value constructs, as it was developed through a rigorous process and validated in a variety of fields. Furthermore, their multidimensional perspective is supported by the Cognition-Affect-Behavior paradigm, which posits that individuals' thoughts and feelings influence the consequences of consumption (Sanchez et al., 2006). As Table 3 shows, incorporating affective components in the conceptualization of customer perceived value has become a general trend. There seems to be a growing consensus that customer perceived value should be measured using both functional and affective dimensions (Sanchez et al., 2006).

2.2 Service-Dominant (S-D) Logic

2.2.1 The Origin of S-D Logic

S-D logic is a relatively new conceptual lens derived from the marketing literature. It originates in new perspectives that focus on relationships, intangible resources, and the co-creation of value (Vargo & Lusch, 2004). These new perspectives show noticeable differences from those of traditional G-D logic, a model based on the exchange of goods that focuses on transactions, tangible resources, and embedded value. In the 1990s, the traditional G-D model's relevance to marketing practice and theory was questioned, as it failed to recognize marketing as an innovative force and to align with new lines of thought such as relationship marketing and networks (Webster Jr, 1992). Scholars began to suggest that "an alternative paradigm of marketing is needed, a paradigm that can account for the continuous nature of relationships

among marketing actors" (Sheth & Parvatiyar, 2000, p. 140). The S-D logic "represents a reoriented philosophy that is applicable to all marketing offerings, including those that involve tangible output (goods) in the process of service provision" (Vargo & Lusch, 2004, p. 2).

S-D logic derives from a shift in the primacy of resources, from operand to operant. The shift from viewing resources as "stuff" to the perspective that everything is neutral until a human learns what to do with it (Zimmermann, 1951) has helped in the development of a new dominant logic of marketing (Vargo & Lusch, 2004). In ancient times, when the world was still relatively simple, resources were limited to natural resources such as land, plants, and minerals. Resources were essentially "stuff" that was tangible and static. Human tribes or nations that possessed more natural resources (i.e., operand resources) were considered wealthier, as they could convert their natural resources into a higher number of outputs. Thus, beginning in ancient times, the focus has been on operand resources (factors of production such as natural resources), while operant resources (production knowhow such as technology) have been a minor concern. Such a perspective, in which operand resources are considered primary, is the foundation of the goods-centered dominant logic, which focuses on goods as the unit of exchange (Shostack, 1977).

Early marketing thought was compatible with G-D logic because economics at that time was driven by the exchange of agricultural products or other physical goods. The emphasis of marketing was thus to optimize the production and distribution process to maximize profit from the sale of goods. The utility of goods was seen as an innate property residing within the good itself, which was measured by price and value-in-exchange (Lusch, Vargo, & O'Brien, 2007). Customers were considered something to be captured and acted on; for example, marketers were concerned about how customers should be segmented or how the target market should be penetrated (Vargo & Lusch, 2004). The classical marketing mix of the Four P's—Product, Price,

Place, and Promotion—is a typical example of a framework based on G-D logic (Shostack, 1977). Competitive advantage was seen as a function of "utility maximization through embedding value in products by superior manipulation of the Four P's, with an assumed passive consumer in mind" (Lusch et al., 2007, p. 6). While the traditional marketing literature views value or utility as being embedded in goods during the production process, marketing scholars started to doubt the role of marketing in terms of value contribution if value was something embedded in goods (Shaw, 1915; Shaw, 1994).

2.2.2 Why S-D Logic?

Gradually, people started to realize that knowledge and skills (i.e., operant resources) were more important than operand resources (Zimmermann, 1951) because the resources themselves can never produce effects; they do so only through services that are rendered by resources (Penrose, 1995). As emphasized by Vargo and Lusch (2004), resources *are* not; they *become*. S-D logic perceives services (i.e., operant resources) as primary because they produce effects. Unlike operand resources, operant resources are often invisible, dynamic, and difficult to imitate. Knowhow (the core competences of a company) is the essential component of differentiation, one which is difficult to transfer and therefore a source of sustainable competitive advantage (Lusch & Nambisan, 2015; Vargo & Lusch, 2004). Hence, a firm's ability to integrate and apply its operant resources determines whether it can strengthen its competitive advantage.

Grounded in resource advantage theory (Conner & Prahalad, 1996; Hunt, 1999; Srivastava, Fahey, & Christensen, 2001) and core competency theory (Day, 1994; Prahalad & Hamel, 1993), S-D logic implies that "marketing is a continuous series of social and economic processes that is largely focused on operant resources with which the firm is constantly striving to make better value propositions than its competitors" (Vargo & Lusch, 2004, p. 5). The new

perspective views knowledge and skills as providing competitive advantage, emphasizing the importance of companies' identifying and developing their own core competences. Because operant resources are intangible, invisible, dynamic, and infinite, they may consequently evolve and multiply (Vargo, Lusch, & Akaka, 2010). Moreover, S-D logic regards customers and other relevant entities such as employees and partners as operant resources, underlying a collaborative process in which the service provider and all exchange partners are engaged in the co-creation of value (Lusch et al., 2007). Evolving from a "market to" to a "market with" philosophy, S-D logic views marketing as a continuous learning process in which service providers should strive to improve their operant resources through collaborating with customers and all relevant exchange partners (Lusch et al., 2007).

As Lusch and Vargo (2006) explained, S-D logic does not argue that services are more important than goods or that one marketing paradigm is superior to another, but it attempts to recognize the role of service in re-conceptualizing the value creation and exchange process. Using the singular form of "service" instead of the plural form "services," S-D logic emphasizes the relationship between service and good but not the differences between the two. Lusch et al. (2007) argued that in this definition of service, services are no longer viewed as aids to the production of goods or value-added activities that are done in conjunction with goods, as in traditional G-D logic. Using the concept of service as the foundation of exchange, S-D logic offers a reminder of what marketing is all about: providing service to all stakeholders, including customers, stockholders, and employees (Lusch & Vargo, 2006). Emphasizing the process of serving others, S-D logic reminds marketing scholars and practitioners that competitive advantage comes from providing high-quality service (i.e., operant resources), not by increasing

outputs (Lusch et al., 2007). At the end of the day, customers do not buy a product, but the benefits or solutions that they can obtain through the use of the product.

2.3 Customer Value Creation and Co-creation

2.3.1 The Traditional vs. Contemporary Perspectives

The creation of value is the central process and essential purpose of economic exchange (Vargo et al., 2008) and has been recognized as a fundamental concept in marketing (Woodruff, 1997). Value creation is in general a process of increasing the consumer's well-being, leading them to become better off in some respect (Stauss, Nordin, & Kowalkowski, 2010; Svensson & Grönroos, 2008; Vargo et al., 2008). Traditional views assume that consumers are "outside the firm" and value creation occurs "inside the firm" (Prahalad & Ramaswamy, 2004b, p. 6). Value creation is controlled by the service provider through actions such as embedding attributes that can solve customers' problems into the product or service at the production stage. In this view, value is created following the traditional sequence for a firm's creation of its value proposition: product design–marketing–fulfillment–evaluation (Grönroos & Voima, 2013).

In contrast, in the S-D logic view, both the firm and customer play a role in bringing a value foundation to value creation. Because value is perceived subjectively and phenomenologically (i.e., it is contextual- and experiential-based), customers create their own value by themselves through the use of their own resources (e.g., skills and knowledge) and the resources provided by the firm. In other words, value is no longer created solely by the service provider but in customer practices or in the customer's sphere. The customer is the creator of their own value, while the firm acts as a value facilitator and can only create value propositions but not value-in-use (Svensson & Grönroos, 2008). Firms facilitate their customers' value creation by providing the value foundation to be utilized by customers, who proceed in the value

23

creation process by adding their own resources if they accept the value proposition offered by the firm (Grönroos, 2006).

When customers use the goods or services provided by firms, they become creators of value through a value facilitation process created by the firms. When customers use these goods or services and add other resources (e.g., skill and knowledge), they develop the value potential of the firm's offerings into value-in-use (Svensson & Grönroos, 2008). According to the notion of value-in-use, the focus of value creation is no longer the product or service bundle itself but customers' experiences and their ability to created value-in-use by themselves through the use of the product or service along with other resources. Value becomes a function of the interaction between the individual consumer, other human beings (e.g., the company, other consumers), and objects (e.g., resources, tools). The creation of value is hence personal and contextual, and resides in the consumer's use or consumption experience (Echeverri & Skålén, 2011). Value creation is thus the process of increasing the customer's well-being, creating value-in-use out of the resources that customers integrate in their consumption processes to become better off in some respect (Grönroos & Ravald, 2011; Svensson & Grönroos, 2008; Vargo et al., 2008). Value is created in the users' sphere when they consume goods and services and thus can only be determined by consumers (Grönroos, 2000; Lusch et al., 2007; Vargo & Lusch, 2008).

In other words, value-in-use is not created and delivered by the supplier but instead emerges when users consume the service during the value creation process (Ballantyne & Varey, 2006; Grönroos, 1979, 2006; Gummesson, 2007; Svensson & Grönroos, 2008; Vargo & Lusch, 2004). The role of the service supplier is to facilitate value creation, providing consumers with the necessary resources and gradually taking part in the value creation process as value facilitators (Svensson & Grönroos, 2008). Hence, the focus should be on customer experience,

and value should be considered a byproduct of the customer experience. The user's experience during the design or consumption process is a core component of the realization of the product's actual value (Vargo & Lusch, 2004). As users phenomenologically determine value based on their own experience of consuming a service, being involved in and contributing to the service design and development enhance the overall value of the service, as the user's personal needs can be incorporated.

Contrary to the traditional G-D logic of embedded value (value-in-exchange), S-D logic advocates that value only occurs when the service offering is useful to the customer or beneficial in a particular context (Lusch & Nambisan, 2015; Vargo & Lusch, 2004). For instance, the value of traveling with one's family is realized through the memorable experiences that occur during the trip. In this case, value-in-use occurs subsequent to the service delivery process and thus is not embedded in tangible goods. As the customer is always a co-creator of value, the value of the consumption of a service comes from the consumer's experience (Lee, Saunders, Addis, & Podestà, 2005); the customer's participation is thus indispensable for the creation of value (Vega-Vazquez, Ángeles Revilla-Camacho, & Cossío-Silva, 2013). Hence, applying the S-D logic view, the creation of value for a customer in this thesis is defined as "the customer's creation of value-in-use" (Grönroos, 2012, p. 1520), which "increases the customer's well-being" (Svensson & Grönroos, 2008, p. 303). The customer's value creation process is defined as "a series of activities performed by the customer to achieve a particular goal" (Payne, Storbacka, & Frow, 2008, p. 86).

2.3.2 Value Co-creation

Grönroos (2000) explained how service providers can focus on understanding how customers use goods and services to learn how to support their creation of value-in-use. As value

is created in the customer's sphere, firms should focus on supporting customer value creation in customer practice. Thus the firm's offerings should be supportive, in the sense that they are accessible to customers and can facilitate interactions with customers. Facilitating firm-customer interactions transforms the firm's role in the value creation process from being only a value facilitator to a value co-creator. If no interaction occurs, the supplier is restricted to acting as merely a value facilitator, without opportunities to influence the customer's value creation process. In other words, by facilitating interactions, firms create opportunities to engage with their customers' value creation process and thereby becoming a co-creator of value with their customers.

Prahalad and Ramaswamy (2004b) defined value co-creation as the "joint creation of value by the company and the customer; allowing the customer to co-construct the service experience to suit her context" (p. 8). When service supplier and consumer collaborate with each other during the value creation process, value is jointly created by both parties and value co-creation occurs (Prahalad & Ramaswamy, 2004b). Focusing on joint collaboration, Grönroos (2012) defined value co-creation as "joint collaborative activities by parties involved in direct interactions, aiming to contribute to the value that emerges for one or both parties" (p. 1523). This definition emphasizes interactive activities between service providers and consumers. Value co-creation is an all-encompassing process wherein all actors co-create value together (Grönroos, 2011; Grönroos & Ravald, 2011; Svensson & Grönroos, 2008). The literature indicates that true value creation involves joint collaboration, in which consumers and service providers interact with each other and value is accumulated throughout the value creation process (Grönroos & Voima, 2013).

Based on S-D logic, co-creation is the basis for value creation (Prahalad & Ramaswamy, 2004b). The view that value derives from the beneficial application of resources indicates that value is co-created through the combined effort of different entities related to any given exchange (Vargo & Lusch, 2004). All participants involved in the value-creation process contribute to the creation of value for both themselves and others, eliminating the distinction between producer and consumer (Vargo et al., 2008). As a result, value creation is no longer a linear process (i.e., product design–marketing–fulfillment–evaluation) (Grönroos & Voima, 2013), but takes place at a network level (Vargo & Lusch, 2004, 2006, 2008). Value creation is no longer one-way, but two-way or multidirectional, as the customer becomes part of the process. The firm starts by proposing value propositions through providing products or services to the customer. At the same time, the customer is also provided with resources for engaging in the service delivery process and co-creating experiences together with the firm. The outcome is value-in-use, which is the result of the combination of the service itself and the contribution made by the customer. The value-in-use generated through such a multidirectional process (or network approach) is much more meaningful from the perspective of both customers and marketing activities. The shift of focus in service experience from traditional one-way, firm-produced customer perceived value to multidimensional, customer co-created value implies that the rules of the game have changed and a new value creation process has emerged (Neuhofer et al., 2012).

Co-creation is customer- and experience-centric (Chathoth et al., 2013), meaning that the customer is regarded as a productive resource during the co-creation process (Harris, Russell-Bennett, Plé, & Cáceres, 2010) and is always a co-creator of value who co-creates value-in-use (Payne et al., 2008; Vargo & Lusch, 2004; Woodruff & Flint, 2006). If the customer can be

involved in the production process of a service and personalize it as he or she desires, its ultimate value can be enhanced (Lusch et al., 2007). In this case, the main focus of business is no longer the value chain, but the point of interaction between the firm and the customer (Vega-Vazquez et al., 2013). The essence of co-creation is collaboration between stakeholders, with customers being active partners during the service production process (Lusch et al., 2007). Thus, the value co-creation process normally starts with firms seeking ways to engage customers in an active dialog, through which firms can learn from them on a continuous basis (Ballantyne, 2004). Success is then dependent on how well the firm is able to collect and use information provided by customers to deliver services that meet customer-specific needs and wants (Kristensson, Matthing, & Johansson, 2008).

Collaborating with customers is critical because only through such interactions can their needs be understood by service suppliers, who can then provide relevant resources for customers to generate their own unique, personalized experience (Kristensson et al., 2008). Researchers in this area have described the process of value co-creation as the basis for value and the future of innovation (Prahalad & Ramaswamy, 2004c); some have suggested that customers' experience of involvement in the service production process can be a source of unique value for the customers themselves and an important source of competitive advantage for the firm (Vargo & Lusch, 2008). Therefore, firms should strive to involve themselves in customers' value creation process through engaging in continuous dialog with customers and learning from them (Matthing, Sandén, & Edvardsson, 2004; Normann, 2001; Yen, Gwinner, & Su, 2004). As Svensson and Grönroos (2008) stated, "it is not the customers who get opportunities to engage themselves in the supplier's process, but rather the supplier which can create opportunities to engage itself with its customers' value-generating processes" (p.307). It is the responsibility of the service supplier

to adopt a service logic and actively develop interactions to become a co-creator of value with its customers (Lehtinen & Lehtinen, 1991).

In the general literature, co-creation studies are mostly conceptual while empirical research is still emerging (Edvardsson, Tronvoll, & Gruber, 2011; Grönroos, 2011; Lusch & Nambisan, 2015; Payne et al., 2008; Prahalad & Ramaswamy, 2004b; Vargo et al., 2008). Researchers who have studied co-creation from a firm's perspective have found that fostering a culture of organizational learning and customer relationship management is important to successful co-creation (Payne et al., 2008). Researchers investigating co-creation from the customers' perspective have mainly focused on identifying the antecedents of customer involvement through different approaches. For example, through the uses and gratifications (U&G) approach, it was found that learning benefits, social integrative benefits, personal integrative benefits, and hedonic benefits are motivators that stimulate customers' willingness to participate in co-creation with an organization (Lorenzo-Romero, Constantinides, & Brünink, 2014).

Researchers focusing on the customer's perspective have found a positive direct relationship between customer value co-creation behavior and customer satisfaction in the context of a service experience and concluded that service firms should encourage customers to actively participate in the value creation process (Vega-Vazquez et al., 2013). Researchers have identified two types of co-creation behavior—participation behavior and citizenship behavior—as two dimensions of the customer co-creation behavior construct (Yi & Gong, 2013). Participation behavior refers to customers' behavior during the service encounter, which is made up of four factors: information seeking, information sharing, responsible behavior, and personal interaction. The second dimension, citizenship behavior, involves behaviors that can create

higher value for the firm but are not necessarily related to co-creation (Bove, Pervan, Beatty, &

Shiu, 2009; Groth, 2005). Citizenship behavior includes feedback, advocacy, helping, and

tolerance. Mainstream studies of value co-creation often focus separately on the firms' and

customers' perspective. Only a few empirical studies have discussed the co-creation process and

value-in-use (Ballantyne & Varey, 2006; Gummerus & Pihlström, 2011; Macdonald et al., 2011;

Sandström et al., 2008).

2.3.3 The Co-creation Environment

The co-creation of value stresses the importance of context, as customers uniquely and

phenomenologically evaluate value based on their interactions with context (Woodruff & Gardial,

1996). Chandler and Vargo (2011) defined a specific context as "a set of unique actors with

unique reciprocal links among them" (p. 40). The contextual nature of value (i.e., value is

determined by and derives from context) has been emphasized in the literature (Chandler &

Vargo, 2011; Gummerus & Pihlström, 2011; Savio & Braiterman, 2007; Vargo & Lusch, 2008;

Vargo et al., 2008). First, the distinctive and heterogeneous nature of context influences the

potential for drawing on resources for services (Chandler & Vargo, 2011), which in turn affects

value co-creation (Vargo & Lusch, 2004). For example, some resources may be considered

useful in one particular context but not in another. Similarly, in one specific context, a particular

resource may be helpful for one individual but not for another (Emirbayer & Mische, 1998;

Vargo et al., 2008). Thus some resources may be more valuable in one context than in others

(Chandler & Vargo, 2011). Second, the unique context influences the ability of an individual to

access and leverage resources (Uzzi, 1997). Every value creation process is an instance of the

"unique application of uniquely integrated resources" in a specific context driven by access to resources (Lusch & Vargo, 2006, p. 284).

The relationship between value co-creation and personalization is that pursuing value co-creation is about creating "an experience environment within which individual consumers can create their own unique personalized experience" (Prahalad & Ramaswamy, 2004b, p. 9). The context of this environment is critical, because value co-creation is not limited to existing resources but also involves the integration of environmental resources (Lusch & Vargo, 2006). As was pointed out by Vargo and Lusch (2006), although environment resources such as time and weather are difficult or impossible to control, such resources may still have an impact on the creation of value. However, previous studies often do not describe the experience environment facilitated by the firm, which in turn makes it difficult to identify the relationship between the firm's effort to facilitate value co-creation, the transformed environment, and customer's reactions. Understanding the role of context in value co-creation is complex because resources and services vary in each context (Chandler & Vargo, 2011).

Another reason context is important is the joint integration of resources by multiple actors during an exchange. Because of the nature of service-for-service exchanges, multiple actors often expand or contract the pool of resources when they connect together (Chandler & Vargo, 2011). Thus, connectedness between actors during an exchange is also one type of externally based resource. For example, when multiple actors collaborate and exchange, they may build upon existing resources and develop new resources such as shared information or knowledge (Rindfleisch & Moorman, 2001) that are "externally-based and dynamically determined in the context" (Chandler & Vargo, 2011, p. 38). Such shared information or knowledge is an externally based resource, because it cannot be uniquely owned or controlled by

a single actor (Chandler & Vargo, 2011). Connectedness between multiple actors also leads to different combinations of resources and unique exchange experiences (Granovetter, 1985).

While the analysis of firm facilitation practices and customer participation has often been separated, the connection between firms and customers that is formed and influenced by a specific context has rarely been explored. Studies that investigate customer participation often focus solely on the customers themselves, such as by asking them to recall a specific scenario (Gummerus & Pihlström, 2011), or looking at how their characteristics or personalities lead to participation in value co-creation activities (Yi & Gong, 2013). We still know very little about how a firm's facilitation influences the context that affects customer participation. Taking the environmental atmosphere where interactions and exchanges take place into consideration is important, because consumers can be greatly affected—cognitively, emotionally, and physiologically—by stimuli within the servicescape (Bitner, 1992).

2.3.4 Value Co-creation in Hospitality

After being extensively taken up in the service and marketing literature, S-D logic has gained currency in the tourism and hospitality literature (Binkhorst & Den Dekker, 2009; Shaw et al., 2011). Researchers in the tourism and hospitality industry have also realized that value co-creation is a promising means to deliver customer value. Studies have been conducted to understand the phenomenon from the service supplier's and customer's perspective. Researchers studying co-creation from the firm's perspective have found that strategic fit, synergy, and IT readiness are important factors that determine the success of IT-enabled value co-creation (Cabiddu, Lui, & Piccoli, 2013). Company support for customers also significantly affects the degree of customer co-creation, which consequently affects customer satisfaction, loyalty, and expenditures (Grissemann & Stokburger-Sauer, 2012). Jarvenpaa and Tuunainen (2013) found

that facilitating service co-creation through social media technologies requires firms to engage in parallel activities to strengthen their weaknesses and leverage their strengths.

Researchers studying co-creation from the customer's perspective have found that involvement is a strong element of co-creation intention, while trust, perceived personalization, and personal innovativeness are strong predictors of involvement (Morosan, 2015). Morosan and DeFranco (2016a) empirically identified a significant positive relationship between customers' perceived value of co-creation and their perceived value of the hotel stay experience. Their study also found that customer characteristics such as their habit of using mobile devices influence the degree of value co-creation using mobile devices in hotels. Furthermore, both the perceived value of co-creation and the perceived value of the hotel stay are significant predictors of intention to stay in future. Investigating value co-creation in a coffee shop setting, Jeon, Park, and Yi (2016) tested the relationship between mood, congruence of background music, and co-creation and found that offering customers the chance to co-create background music enhances their perceived mood, which further boosts their approach behavior (i.e., they tend to stay longer and spend more money).

In a hotel context, firms can co-create with customers in two main ways. The first way is to allow customers to personalize the service at the time of consumption. An example is the futuristic hotel rooms offered by Obic Design Hotels, where hotel guests can change the color of their room based on their mood (Kristensson et al., 2008). The second way is to co-design or co-produce the service with the customer. An example is Starwood Hotels, which involved customers in co-creating the design of the Aloft Hotel through a virtual setting in Second Life (Chathoth et al., 2013). In short, the literature shows that hoteliers can co-create with customers by providing them with accessible resources through which they can personalize (1) their

consumption experience and (2) the product/service offering. The majority of value co-creation studies in tourism and hospitality remain conceptual (Binkhorst & Den Dekker, 2009; Chathoth et al., 2013; Chathoth, Ungson, Harrington, & Chan, 2016; Neuhofer, Buhalis, & Ladkin, 2014). The body of knowledge in this area is still emerging.

In a conceptual study, Chathoth et al. (2013) highlighted the benefits of hotels' embracing S-D logic. The researchers developed a matrix that guides hotels towards the co-creation end of the service production continuum. They suggested that in reality, a hotel's approach to value creation may lie at any point on the co-production to co-creation continuum, yet most of the time, hotels are at the G-D end of the co-production continuum. Through co-creation, hotels can provide less substitutable service offerings and create barriers to imitation. Currently, hotels essentially define and prepare all services (such as rooms and beds) in advance and fulfill customers' needs with whatever is available. Often, the only customization provided for the customer is allowing them to choose "the best available option." Even luxury hotels offering customized services may neglect certain idiosyncratic customer-related needs if those customers are not involved in the co-creation process.

Chathoth et al. (2013) proposed four approaches to producing services in the co-production to co-creation continuum—co-production, firm-driven service innovation, customer-driven customization, and co-creation (Figure 1). First, co-production is firm-centric and relies mainly on the physical environment provided by the hotel; it involves minimal customer involvement in the service design process. The customer simply shows up to physically receive the service and value is derived at the co-production stage. Communication between the firm and customer is predominantly firm-driven and sporadic. Second, firm-driven service innovation occurs when the firm reviews or tests potential service innovations over a short period of time.

Third, value creation in customization occurs when the customer's role is less active, and is usually restricted to the end of the service production process and involves giving suggestions for subsidiary changes (Kristensson et al., 2008; Lusch et al., 2007; Michel, Brown, & Gallan, 2008). Value creation through customization is in line with the G-D logic perspective, in which value is seen as something embedded into a product or service before customers' consumption (Kristensson et al., 2008). Lastly, value creation through co-creation takes place during customers' consumption or usage process; resources are provided for customers to participate at the production or consumption stages on a continuous basis (Kristensson et al., 2008; Lusch et al., 2007; Michel et al., 2008).

FIGURE 1. Co-production to co-creation matrix (Chathoth et al., 2013)

	Production Process	Consumption/Usage Process
Customer-Firm: Continuous	Customer-driven Customisation	Co-creation Approach
Firm-Customer: Sporadic	Co-production Approach	Firm-driven Service Innovation

Involvement/Dialogue Type (vertical axis)

Primary Value Creation (horizontal axis)

Although hotels today provide a wider array of products and services than ever before, customers are still often dissatisfied, as they are usually only given whatever is available instead of personalized services (Chathoth et al., 2013; Prahalad & Ramaswamy, 2004b). In most cases,

value is created by customers in isolation from the suppliers, who have no direct involvement in customers' consumption process and therefore cannot influence value creation in that process (Svensson & Grönroos, 2008). Taking a value-in-use approach, these suppliers are not even co-creators of value but merely value facilitators. Dissatisfied with "the best available option" and supported by new tools, consumers want to interact with firms and co-create their own experience (Prahalad & Ramaswamy, 2004b).

Achieving successful value co-creation is challenging, as it requires integration of resources and interests and active cooperation between service providers and customers. It also requires service suppliers to understand and learn from their customers through continuous dialog (Ballantyne, 2004). Furthermore, not all firms can provide personalized services due to limited resources and inability to bear higher costs (Prahalad & Ramaswamy, 2004b). As a result, most hotels are still far from achieving value co-creation. The major problem of the co-production approach is that it fails to meet customers' idiosyncratic needs and compromises their satisfaction level. By maintaining the co-production approach, firms may continue to ignore the importance of firm-customer collaboration and reciprocity and their mutual dependence on service production (Chathoth et al., 2013). Moreover, as customer expectations are constantly changing, the ability of a service provider to anticipate and respond to changeable customer expectations depends on a systematic and strategic approach to cooperating closely with customers (Vargo et al., 2008).

2.4 ICT as Operant Resources

2.4.1 Conceptualizing ICT as Operant Resources

Scholars have called for a better appreciation of the role of ICTs as operant resources in facilitating the value co-creation process (Lusch et al., 2007). Information technology has

enabled more entities to be connected, which in turn facilitates more interactions and collaborations. New technology is developed through identifying innovative ways to embed operant resources in operand resources or the other way around (Normann, 2001). The value of a particular technology (e.g., solving a problem for customer) is dependent on the specific context within which it is applied, the competence of the beneficiary, and other contextual factors such as time, location, and social and cultural issues (Zimmermann, 1951). In other words, in agreement with previous studies stating that "resources *are* not, they *become*" (Vargo & Lusch, 2004, p. 2), a particular technology can be considered as potential operant resources for value co-creation or as potential resistance, depending on the particular actor and specific context (Akaka & Vargo, 2014).

Akaka and Vargo (2014) explored the role and scope of technology in value co-creation based on a structurational model of technology (Orlikowski, 1992). They defined technology as a collection of practices and processes (Arthur, 2009) and an outcome of human action and interaction that are drawn upon to serve a human purpose, which implies that technology is a way of creating value. As technology can influence and can be influenced by institutions and the practices of social and economic actors, and facilitate and constrain human action, reco In other words, technology can be conceptualized as both an operant and operand resource, because it can be both a medium and an outcome of human action (Akaka & Vargo, 2014; Lusch & Nambisan, 2015). As a central construct in service systems, technology plays an important role in facilitating value co-creation by "enabling the sharing of information within and across service systems" (Akaka & Vargo, 2014, p. 368). Recognizing the role of technology as an operant resource is critical, because although operand resources often contribute to value co-creation, it

cannot occur without the application of operant resources such as competences, knowledge, and skills (Vargo & Lusch, 2004).

Arthur (2009) offered a broader view and suggested that technology can be considered as a process rather than a product. His three-part conceptualization of technology argued that it is "(1) a means (e.g., process) to fulfill a human purpose, (2) an assemblage of practices and components, and (3) the entire collection of devices and engineering practices available to a culture" (p. 28). His example of a technology-plural form (electronics) shows how technology can function by decomposing itself, changing its parts and practices to produce new forms of solutions. For him, technology as a general term refers to the "whole collection of all technologies that ever existed past and present, [which] originates from the use of natural phenomena and builds up organically with new elements forming by combination from old ones" (p. 29). Such a definition implies the role of technology in facilitating a process of combining or recombining resources to innovate new resources and ways of value creation. Arthur's view also suggests that although technology can be applied as an operand resource in service provision, it is in fact the firm's role to transform technology into an operant resource by integrating its resources in innovative ways, to result in larger value creation.

Lusch and Nambisan (2015) emphasized the dual role of information technology as a facilitator/enabler (i.e., operand resource) and initiator/actor (i.e., operant resource) in service innovation. They proposed that information technology fosters service innovation by enabling the establishment of a value network and the sharing and integrating of knowledge and resources. New technologies fostered by knowledge are also the most fundamental operant resource. The digitalization of IT elements also reflects the emerging role of IT as an initiator that triggers innovation. The emphasis is on the application of specialized knowledge and skills to deliver

benefits through "operant-resource based" technology, meaning that the focus should be on the human knowledge embedded into technology rather than the technological artifact itself. In other words, humans create technology with specialized knowledge, which in turn can become an operant resource that often also creates new operand resources (Lusch & Nambisan, 2015). It is thus beneficial to examine how service providers should design or configure digital resources to create an operant-based ICT-facilitated service that can trigger effects.

2.4.2 Value Co-creation through ICTs in Hospitality

In view of the important role of customers in the value creation process, hospitality companies should provide service that supports customers' value creation and allows them to involve in co-creating their own experiences. Thus it is important to provide appropriate communication channels or interaction tools to foster customer involvement in the design or production of the service. Appreciating the power of ICTs in collecting, consolidating, manipulating, and analyzing consumer needs to maximize tailor-made experiences (Piccoli, O'Connor, Capaccioli, & Alvarez, 2003), hospitality service suppliers have never stopped implementing new technologies and re-engineering new methods of service delivery to better meet customer needs and wants (Buhalis & Law, 2008).

Adopting ICTs is not a new trend in the hotel industry. The room reservation system was first implemented in the 1970s, for instance (Buhalis & Law, 2008). The emergence of new technologies in the 21st century is changing how hotels design and adopt ICTs. Facing more intense competition and sophisticated customers who expect more control in the creation of their own unique experience (Ramaswamy & Gouillart, 2008), hospitality service providers nowadays apply ICTs not only to optimize operational efficiency but also facilitate more effective communications with customers (Neuhofer, Buhalis, & Ladkin, 2015). The emergence of the

Internet and new forms of social interaction technologies has empowered customers to involve themselves actively in the conversation and share personal preferences with service providers (Buhalis, 2003) and thereby create their own unique experiences (Alt & Klein, 2011) through playing a participatory role in the service design and consumption processes (Ritzer & Jurgenson, 2010).

Realizing the need for more means to interact with customers, so as to satisfy their inherent needs and wants (Buhalis & Law, 2008), hospitality firms provide ICT-facilitated service to create interactions and communicate with their customers more effectively; in this way, they can learn about customers' idiosyncratic needs to provide better services and enhance customer experience. The ultimate goal is to increase competitiveness through enhancing customer experiences and creating added customer value (Neuhofer et al., 2012). As a potential catalyst for change, ICTs create opportunities for businesses to turn standardized services into more flexible and personalized customer experiences. ICTs, specifically smart technologies such as smartphone and mobile applications (apps), have transformed the tourist experience and created new opportunities for businesses to enhance customer experience (Tussyadiah & Fesenmaier, 2009; Wang & Fesenmaier, 2013; Wang, Park, & Fesenmaier, 2012). Using the example of Hotel Lugano Dante, Neufoher et al. (2014) conceptualized the use of ICTs, particularly smart technologies, to enhance the level of interaction between the hotel and customers throughout the entire hotel stay experience (Figure 2). The Happy Guest Relationship Management (HGRM) is a digital customer relationship management system that enables guests to share relevant information for a more personalized experience at multiple touch points, including the pre-arrival, hotel stay, and post-departure stages. Such interaction and exchange of information at multiple touch points leads to more personalized interactions and results in more

valuable overall guest experience. The role of ICTs is considered central to the whole journey due to their unique characteristics, which enable them to accompany tourists from the anticipatory stage to the recollection phase (Gretzel & Jamal, 2009; Tussyadiah & Fesenmaier, 2009). The collaborative dimensions of technologies enable firms and customers to become interconnected in the travel process and thereby co-create value together (Neuhofer et al., 2012).

FIGURE 2. Technology-Enhanced Tourism Experiences (Neuhofer et al., 2014)
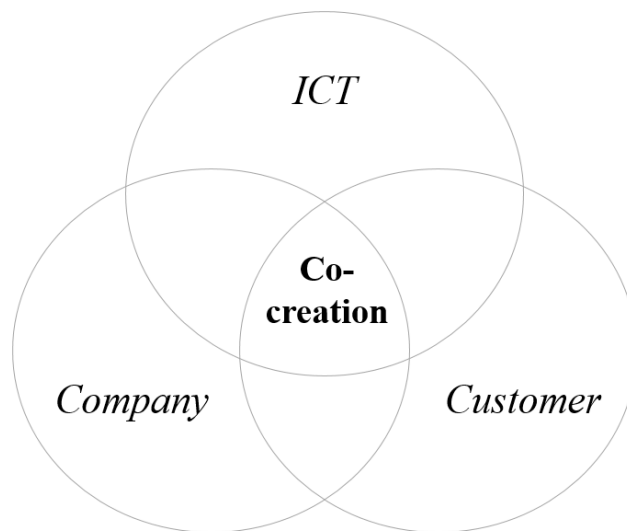
The potential of ICTs to mediate experiences and facilitate value co-creation during the entire tourist experience has also been specifically highlighted in the literature. For example, researchers have stressed that "the ability of a hotel firm to move along the co-production/co-creation continuum is dependent on its ability to successfully integrated ICT platforms in ways that facilitate organizational learning to enhance customer experiences and co-create services" (Chathoth et al., 2013, p. 17). According to Neuhofer et al. (2012), "ICTs, by accompanying the tourist with any device, anywhere, anytime, are dispersing interactions by introducing new possibilities to co-create experiences everywhere along the value creation system, i.e. the whole customer journey" (p. 41). Hence the creation of value is not restricted to particular service

encounters on-site but is extended to the whole experience: it begins before the actual service encounters in the experience space (i.e., the hotel) and continues after the guest returns home.

The proliferation of innovative technologies has changed the traditional structures, roles, and processes of experience creation (Neuhofer et al., 2012), transforming travelers from passive recipients of services to active "prosumers" (O'Leary, Gretzel, & Fesenmaier, 2006). ICTs have changed the nature of the tourism experience by enabling tourists to enhance their travel experience through conducting travel-related activities such as information searches, decision-making, and communication and sharing of experiences (Buhalis & Law, 2008; O'Leary et al., 2006). Neuhofer, Buhalis, and Ladkin (2012) have argued that technology is a key instrument to adopt for value co-creation. ICTs, in particular the Internet, have drastically affected how consumers interact with service suppliers (Buhalis, 2003) and have great potential to be adopted as a vehicle that facilitates travelers to better communicate and co-create value with organizations (Buhalis & Law, 2008). In other words, ICT-facilitated service empowers tourists to co-create more unique and personal experiences throughout the entire journey (Gretzel & Jamal, 2009).

Studies have suggested that ICTs can support co-creation in a number of different ways. First, ICTs such as social media platforms can function as an interactive platform between the service supplier and consumer to foster communication, social interaction and experience co-creation (Buhalis & Licata, 2002; Hultkrantz, 2002). Second, companies can provide tailor-made services based on customer needs and preferences collected and analyzed through ICTs. Hotel Lugano Dante's Happy Guest Relationship Management system facilitates information exchange before guests' arrival, asking questions to identify guests' special needs, requirements, and personal preferences. The system stores all customer information for every department of the

hotel to provide personalized services during the service encounter throughout the entire hotel stay. Third, ICTs can be used to stimulate needs and wants by momentarily interrupting the traveler with a notification or offer. For instance, a hotel may send a message to the guest's mobile phone notifying them of a birthday promotion offer. The guest can participate in the co-creation of experience by telling the hotel the special thing they want for their birthday.

Limited studies have explored the co-created value as a result of the co-creation process facilitated by ICTs. A relevant study by Mohd-Any et al. (2015) introduced a multidimensional measurement to capture the co-created customer value for a travel website; it is probably the first tourism and hospitality study to quantify and measure customer co-created value on an e-commerce basis. Based on previous studies that used a multidimensional approach and the theory of consumption value (Sheth et al., 1991), they conceptualized e-value as a second-order formative measure based on six first-order e-value dimensions. They proposed that e-value is influenced by a user's participation, which was measured by actual and perceived participation. Actual participation was measured as an index based on the number of features or functions that the user has actually used, and perceived participation is measured by a six-item measurement derived from previous studies. Their results confirmed the relationship between participation and the four dimensions of e-value, namely cognitive effort, utilitarian value/control, emotional value, and value for money. They also found that e-value co-creation positively influences customer satisfaction and behavioral intentions.

Although it is beyond the scope of tourism and hospitality, a relevant study by Gummerus and Pihlstrom (2011) on the creation of value-in-use in the context of mobile services is worth mentioning. Their study is one of the few empirical studies to relate contextual elements and conditional value to value-in-use. They explored the nature of use situations and

conceptualize value-in-use as being created through interaction between the service user, contextual elements, and conditional value. Figure 3 presents the mobile value framework developed by Gummerus and Pihlstrom (2011), which demonstrates the relationship between context, conditional value, and in-use value. They found that contextual elements (time, location, lack of alternatives, uncertain conditions) significantly influence the value of mobile services by generating conditional value, which is created when contextual elements enhance the user's value-in-use (emotional, esteem, financial, convenience, and performance value). For instance, excess of time (contextual element) makes the user feel that mobile service is valuable, because he/she can play with the mobile phone to have fun (conditional value), which results in emotional value (in-use value). The relationship between contextual elements, conditional value, and in-use value helps marketers to understand when, how, and why mobile services are used by consumers.

FIGURE 3. The Mobile Value Framework (Gummerus & Pihlstrom, 2011)
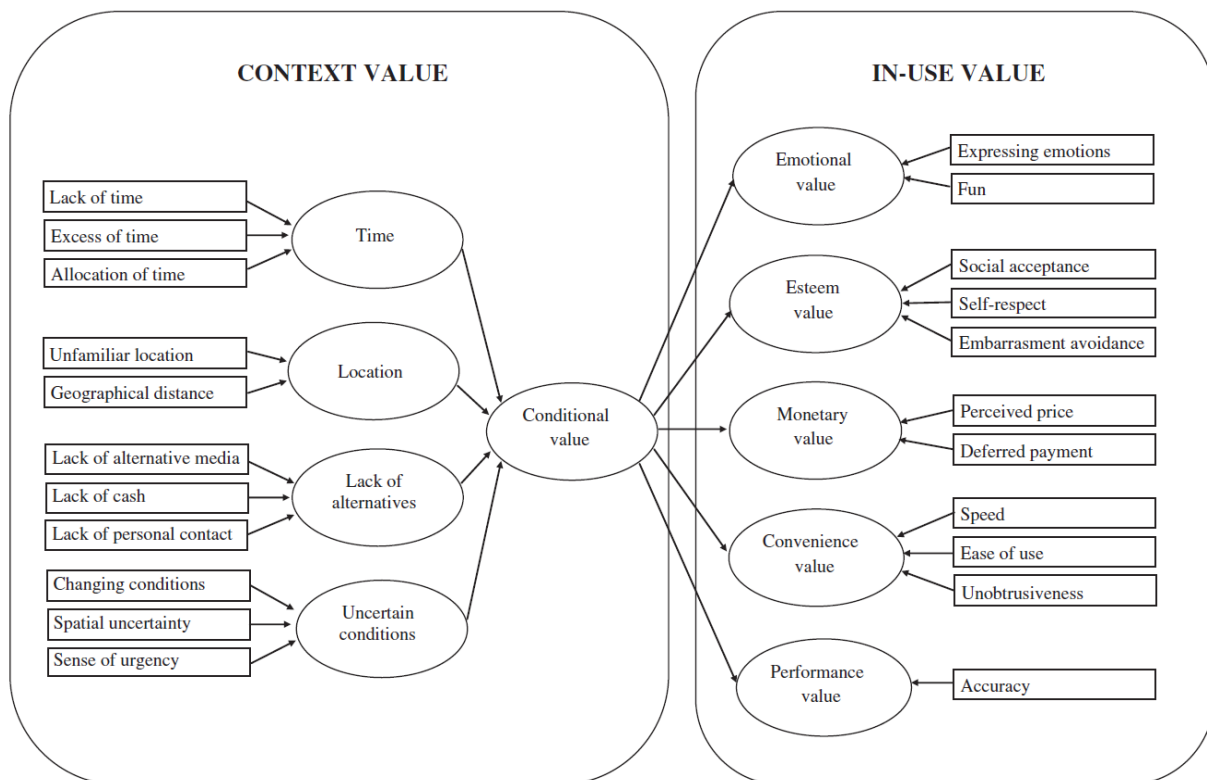
In general, there are three types of services enabled by ICTs that support interactions and information exchanges between the service supplier and consumer in the hospitality context: self-service technologies (SST), ICT-mediated services, and ICT-facilitated/ICT-enabled services. SST is defined as "technological interfaces that enable customers to produce a service independent of direct service employee involvement" (Meuter, Ostrom, Roundtree, & Bitner, 2000, p. 50). Examples of SSTs in the hospitality industry include automated self-check-in/check-out kiosks (Beatson, Coote, & Rudd, 2006), smartphone room key and any other hotel self-service kiosks such as concierge kiosks (Kim & Qu, 2014). ICT-mediated services refer to technology-mediated encounters in which the customer is aware of the presence of a direct interaction between him/herself and a human communication partner (Scherer, Wünderlich, & von Wangenheim, 2015). An example is service delivered through the telephone, which mediates the interaction between two human counterparts. Lastly, as discussed in the introduction, this study refers ICT-facilitated service to services facilitated by ICTs that can lead to value co-creation activities. These services facilitated by ICTs are neither designed to replace human services nor do they merely serve as communication tools. Rather, they are resources that are provided to customers to act on to involve them in the service design and delivery process.

As this study is concerned with value co-creation, the focus is on ICT-facilitated service with the highest potential to be used as resources by the customer in their practices. Therefore, technologies designed for management or back of house are beyond the scope of this study and are excluded. For instance, managerial technologies such as MIS and front desk reservation systems are designed mainly for backstage usage; intangible ICTs such as Wi-Fi and Beacon are not specifically designed for customers but are technologies that enable other services such as connecting to the Internet; a power bank provided in a hotel room is merely a tool for recharging

batteries, which is not relevant to the scope of this study. Our interest is in ICT-facilitated service that can be used by customers as resources to enter into collaboration with the service provider in the service design and delivery process.

The literature has shown that ICT-facilitated service such as social media and mobile devices have high potential to enrich the service experience by empowering individuals to participate in the co-creation process (Jarvenpaa & Tuunainen, 2013). First, guests' access to new tools that offer high levels of access can facilitate a complex set of interactions (Morosan, 2015). For instance, a free handy smartphone allows guests to upload digital content to social networking websites to share their hotel stay experiences (Hui, Au, & Law, 2016). Second, ICT-facilitated service has the potential to facilitate transparency, providing valuable information to hotels and better service to guests. For example, mobile devices can provide customers' preference and consumption information to the hotel at the individual level instead of the "party" or "room" level (Morosan, 2015; Prahalad & Ramaswamy, 2004b). Morosan and DeFranco (2016a) found that customers' perceived value of co-creation through mobile devices in hotels influences the perceived value of the hotel stay and their intention to stay in hotels that facilitate value co-creation through the mobile environment. Third, as interaction between customers and firms becomes the locus of value creation, creating touch points becomes important in a service setting. ICT-facilitated service has potential for value creation and for creating touch points for interaction with customers. Neuhofer et al. (2015) demonstrated how hotel services in scenarios related to room comfort, front-desk welcomes, and restaurant visits can be personalized through the use of smart technologies. They concluded that three main characteristics of ICTs (information aggregation, ubiquitous mobile connectedness, and real time synchronization) foster richer and more personalized experiences.

In sum, ICT-facilitated service has high potential to allow customers to co-create value by inputting operant resources such as their opinions and needs, which results in promising customer experiences. Conceptualizing ICT-facilitated service as an important resource in the context of value co-creation is also particularly useful for understanding firms' facilitation of the value co-creation process; as Vargo (2008) has pointed out, "firm activity is best understood in terms of input for the customer's resource integrating, value-creation activities rather than it is in terms of its own integration of customer resources for the 'production' of value output" (p. 214). ICT-facilitated service is unique in that it is technological in nature but embed the capability of delivering service to customers, at the same time that it allows customers to co-create value with the service provider. ICT-facilitated service is also highly customer-focused and closely related to users, and thus has great potential to have different levels of impact on the consumer experience. It should be emphasized that the role of ICT in value co-creation is not to replace services provided by humans, but instead to reinforce and create more human services through recognizing the needs of customers. ICT-facilitated service fits this purpose, in that it is designed to facilitate human interactions and collaborations between the service supplier and customer. As Neuhofer et al. (2013) stated, "The implementation of high-tech is a crucial determinant for high-touch experiences" (p. 297); ICTs thus work to close the gap between hotel staff and customers by intensify personal touch. Industry experts also hold similar opinions on the use of ICTs to help create an experience. Technologies are not merely put in place to cut down on staff; rather, they are implemented in areas where guests want them. Recognizing service as the heart of hospitality, practitioners nowadays provide guests with the option of choosing how to engage and communicate with the hotel by offering them ICT-facilitated service. Creating a mobile concierge app does not mean that the concierge desk will be removed; rather, the app caters to

customers who are more tech-savvy and prefer to minimize interaction with others. "Our vision is to bring our legendary personalized service experience to our guests through their smartphones—not to replace our services with the smartphone," said Ed French, the Chief Sales and Marketing Officer of The Ritz-Carlton Hotel Company L.L.C. (Solomon, 2014).

Realizing the potential of ICTs for enabling the combination of competences, capabilities, and knowledge (Srivastava & Gnyawali, 2011), scholars have called for more attention to their role in value co-creation (Chathoth et al., 2013; Kohli & Grover, 2008; Payne et al., 2008). Neuhofer, Buhalis, and Ladkin (2013) pointed out that the critical question for companies is "how to facilitate processes that allow consumers to co-create meaningful experiences" (p. 3). While ICTs can be useful for facilitating interaction and collecting important customer information (Buhalis & Law, 2008), there is still a limited understanding of the process of co-creation and the operationalization of co-creation activities.

2.4.3 Core Elements of Value Co-creation

From an extensive literature review in the contexts of tourism and hospitality, marketing, consumer behavior, and management to explore the fundamental concepts, meanings, and elements of value co-creation, six major core elements emerge as the fundamental theoretical foundation of value co-creation—firm facilitation, ICT-facilitated service, customer participation, collaboration, value-in-use, and contextual factors (Figure 4). As discussed in the literature review, value co-creation is the joint creation of value through direct and indirect collaboration between the company and the customer (Prahalad & Ramaswamy, 2004b); it emphasizes active customer participation in the production and consumption process so that customers' idiosyncratic needs can be satisfied (Hoyer, Chandy, Dorotic, Krafft, & Singh, 2010; Payne et al., 2008). Collaborative and interactive activities between the service provider and customer are the

key to value creation. Thus, this study focuses on co-creation activities supported by ICT-facilitated service during customers' hotel stays. The co-creation activities of interest aim to ease and increase hotel-customer interactions and communications.

FIGURE 4. Theoretical Foundation: Core Elements of Value Co-creation
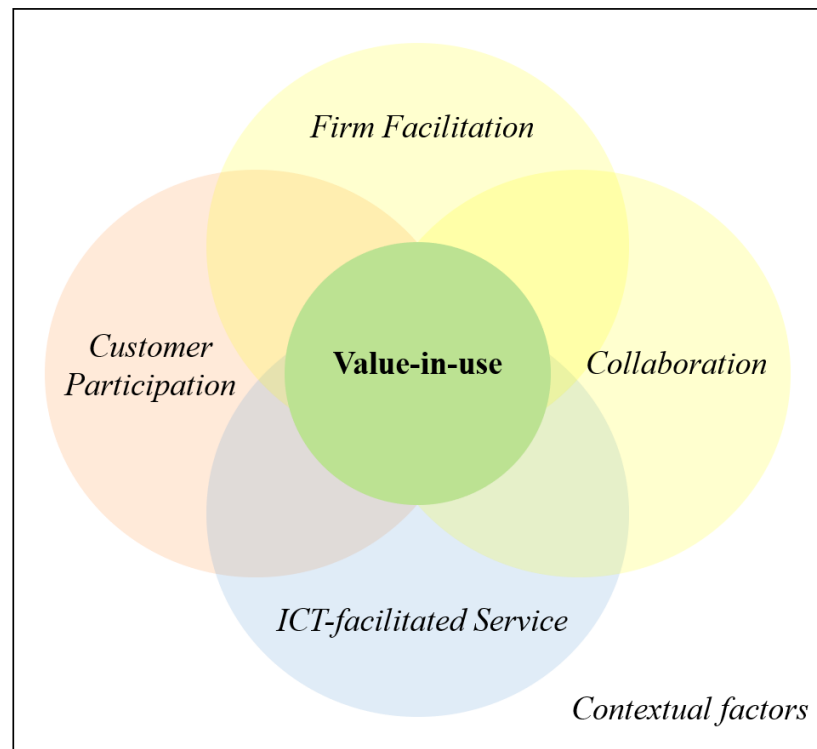
The literature shows that there are many ways that the service provider can facilitate value co-creation with customers. The key is that the firm, or service provider, must always play a supportive and facilitative role in the value co-creation process. Some scholars have argued that the value co-creation process starts from customers actively seeking to involve themselves in the service process, while others suggest that the process should start with the firm offering value propositions. The important point is that customers cannot co-create without access to the necessary resources provided by the firm. Thus, **firm facilitation** is defined in this study as the firm's integration and provision of resources to facilitate and support customers' value creation activities.

Once the service provider offers value propositions and accessible resources, customers' participation is required to kick off the co-creation process. Yi and Gong (2013) have identified customer participation as "required (in-role) behavior necessary for successful value co-creation" (p. 1279). As is stressed by S-D logic, the customer is always a co-creator of value. Customer participation is important because it allows the service provider to better understand the customer, so as to provide personalized services that suit customers' idiosyncratic needs. Firms should encourage customer participation, as without it value co-creation cannot occur and value can only be presented as value proposition by the firm. Customer participation has been defined as a behavioral construct measuring "the extent to which customers provide/share information, make suggestions, and become involved in decision making" (Chan, Yim, & Lam, 2010, p. 49). Dabholkar (1990) has defined customer participation as "the degree to which the customer is involved in producing and delivering the service" (p. 484). Silpakit, Patriya, and Raymond (1985) defined customer participation in more detail as "the degree of consumer's effort and involvement, both mental and physical, necessary to participate in production and delivery of service" (p. 15).

In general, prior research has shown that participating customers are more satisfied than nonparticipators (Bendapudi & Leone, 2003; Chan et al., 2010). Thus, it is assumed that by encouraging higher customer participation, customer satisfaction will increase as a result of enhanced value creation. Customer participation is operationalized by a customer's time and effort spent on involvement in the service process through actions such as making suggestions and expressing needs (Chan et al., 2010). While participation often means that the customer must sacrifice time and effort, research suggests that customers only participate if they perceive the benefits of doing so. Such benefits could be perceived as the net gain between the

economic/psychological benefits and transaction costs/risks of participating in cooperation (Smith, Carroll, & Ashford, 1995). As previous research has shown, this consideration presents a challenge for hospitality organizations (Chathoth et al., 2013). As the service provider and customer often have different interests and goals, collecting information from customers and engaging them to cooperate is not always easy or successful, due to factors such as privacy concerns and customers' lack of interest. Lusch et al. (2007) suggested six key motivation factors that can explain a customer's desire to participate in co-creation: expertise, control, physical capital, risk taking, psychic benefits, and economic benefits. Customers are more likely to participate if they possess the requisite competences (e.g., knowledge and skills); want higher control over the process or outcome of the service; possess the required physical capital; or perceive lower risks, psychic (experiential) benefits, and economic benefits from engaging in the co-creation process. Yi and Gong (2013) proposed two second-order dimensions—customer participation behavior and customer citizenship behavior—as components of value co-creation behavior, as has been discussed in more detail above. As the co-creation of value and customer engagement are context-dependent concepts, **customer participation** is conceptualized in this study as a behavioral construct that is manifested by the ways in which customers involve themselves in the service development or consumption process through inputting or integrating resources (Chan et al., 2010).

Customers' participation in the co-creation process does not necessarily imply that the process will be successful and that value will emerge. Some researchers have pointed out that interactions do not always lead to value co-creation but can result in value co-destruction (Plé & Chumpitaz Cáceres, 2010). The well-being of either party may decline due to misuse of resources during interaction or collaboration. Successful value co-creation is thus dependent on

the congruency between the actions taken by one party and the expectation of the other party. From the S-D logic perspective, value is co-created through the combined efforts of different parties, including firms, employees, customers, and any other entities involved in the exchange. In other words, co-creation is always a collaborative process that involves exchange partners (Lusch & Nambisan, 2015). Such process of **collaboration** is executed through communications and dialog to "integrate mutual resources into value configuration" (Ranjan & Read, 2016, p. 292). While the term "co-production" involves different parties participating together in the development of the core offering (Lusch & Vargo, 2006; Lusch et al., 2007), it does not incorporate the collaborative nature of co-created value or value-in-use. Thus, in this study, collaboration represents the processes in which customers integrate and apply their own resources to hoteliers' facilitation efforts to create value for themselves.

As was pointed out earlier, beneficiaries determine **value-in-use** phenomenologically by themselves. That is, value is experiential in nature. It is created, perceived, and interpreted uniquely and is contextually dependent on the particular individual and situation (Vargo & Lusch, 2008). Value-in-use emerges as a result of customers' interactions with service bundles in use situations. It is derived from the customer's use context and is co-created in use, because customers determine the value of a service based on the specificity of their usage (Edvardsson et al., 2011; Vargo & Lusch, 2004). While the definition of value-in-use in the literature varies and is still broadly defined on an abstract level, scholars generally agree that value-in-use results from two-way interactions. That is, value-in-use is a result of customers' participation and collaboration with the service provider, in the development or practical use of the service offering to generate reciprocal betterment. This concept is different from traditional thinking, which assumes value is embedded in the product or service itself. The traditional way of

measuring customer perceived value is to ask customers to evaluate pre-designed product and service attributes, which are often fixed. Customers' participation and collaboration process has often been ignored. In this study, we adopt Macdonald's (2016) definition of value-in-use as all of the customer-perceived consequences resulting from the consumption of a product/service offering. Lastly, the value co-creation process is influenced by a number of **contextual factors**. Certain factors may enable or inhibit the co-creation process (Sarker, Sarker, Sahaym, & Bjørn-Andersen, 2012).

2.5 Sociomateriality

2.5.1 *Sociomateriality as a Tool to Understand Technology*

The lens of sociomateriality helps understand technologies by distinguishing the role of humans and the unique features of technologies. It emphasizes the importance of human intelligence in shaping the effect of technologies. Humans approach a technology based on what they believe it can do for them (i.e., perceived technology affordances) (Norman, 2007). The social and the material become entangled, so that human agency and material agency "become interlocked in sequences that produce the empirical phenomena we call technologies" (Leonardi, 2012, p.35). The theory of sociomateriality suggests that technologies and their effects have a certain materiality, one shaped by social practices. The term "materiality" does not simply refer to the physical materials of a technology, but to "the arrangement of an artifact's physical and/or digital materials into particular forms that endure across differences in place and time and are important to users" (Leonardi, 2012, p. 31). Such a definition suggests that technologies have their own inherent features that are constant across time and location and available to all users in the same way. It is important to recognize that technology has a fixed materiality that makes certain actions possible, which enables scholars to empirically study and compare the use of the

same technology by different users (Faraj & Azad, 2012). This stabilization of materiality enables different users to work on the same task (typing, drawing, data inputting) and share their work with each other. Such stabilized materiality does not mean that the materiality of a technology never changes, but implies that such materiality remains constant for a certain period of time. Furthermore, the importance of studying the materiality of technologies is more obvious when the technology of interest has no physical existence, such as Microsoft Office. The physical artifacts that make software applications accessible (e.g., monitor and keyboard) do not actually change the materials of the non-physical artifact (e.g., an instant messaging app is still used for instant communication whether it is accessed through a laptop or smartphone).

In previous studies, scholars were able to draw conclusions from the use of technology by different entities. For example, they could conclude that one organization is using the same technology differently and better than another organization in achieving certain goals (e.g., increasing customer loyalty through mobile services). Scholars were able to do so because the materiality of a particular technology was the same in both organizations. The particular materials used to construct a technological object are not necessarily useful for all individuals in a certain context. Some researchers argue that a technology is materialized when its special features matter or have consequence in a particular setting (Cooren, Fairhurst, & Huët, 2012; Pentland & Singh, 2012). For example, a smartphone can be used for directions when a tourist is lost at a destination, or for taking photos in daily life. A person who never likes to take photos will find that the latter function is not relevant, meaning that the materiality of photo-taking does not matter to this particular individual or in a particular setting. Leonardi (2010) has suggested that when examining the use of technologies, researchers should ask which features are "material" (significant) and why they are significant for a particular person in a specific context.

TABLE 4. Key Terms of Sociomateriality (Leonardi, 2012)

Key Terms	Descriptions
Materiality (What it does)	The arrangement of an artifact's physical and/or digital materials into particular forms that endure across differences in place and time and are important to users.
Sociomateriality	Enactment of a particular set of activities that meld materiality with institutions, norms, discourses, and all other phenomena we typically define as "social."
Sociomaterial Practice	The space in which multiple human (social) agencies and material agencies are imbricated (also called a "technical subsystem").
Social Agency	Coordinated human intentionality formed in partial response to perceptions of a technology's material agency.
Material Agency (How it does)	Ways in which a technology's materiality acts. Material agency is activated as humans approach technology with particular intentions and decide which elements of its materiality to use at a given time.
Socio-Technical System	Recognition of a recursive (not simultaneous) shaping of abstract social constructs and a technical infrastructure that includes technology's materiality and people's localized responses to it.

The recognition of the materiality of technology leads researchers to explore how it affects individuals' perception of what is important to their work (Leonardi, 2012). While materiality represents the properties or features of a technology, the term "sociomateriality" indicates that "enactment of a particular set of activities that meld materiality with institutions, norms, discourses, and all other phenomena we typically define as 'social'" (p. 34). According to Leonardi (2012), the reason for not using the simple term "technology" is because the theory of sociomateriality advocates that all materiality is created through social processes, and that all social action is possible because of materiality. In other words, although technologies have their own unique and fixed materiality, they do not cause something to happen; instead, humans decide how they want the technology to influence their work.

Sociomateriality emphasizes that, when studying effects of technologies, one should recognize that the materiality of a technology and its effects is shaped by social practices and interpreted in social context. While the materiality of a technology (what it is) is fixed and does not change across different contexts, the functions it affords or constrains (what it does) will change as people realize materiality with diverse goals. The function, or "material agency," of technology is "a construction that depends, in part, on materiality but also depends on one's perceptions of whether materiality affords her the ability to achieve her goals or places a constraint upon her" (Leonardi, 2012, p. 37).

FIGURE 5. Sociomateriality (Leonardi, 2012) and Value Co-creation Through ICT-facilitated Service
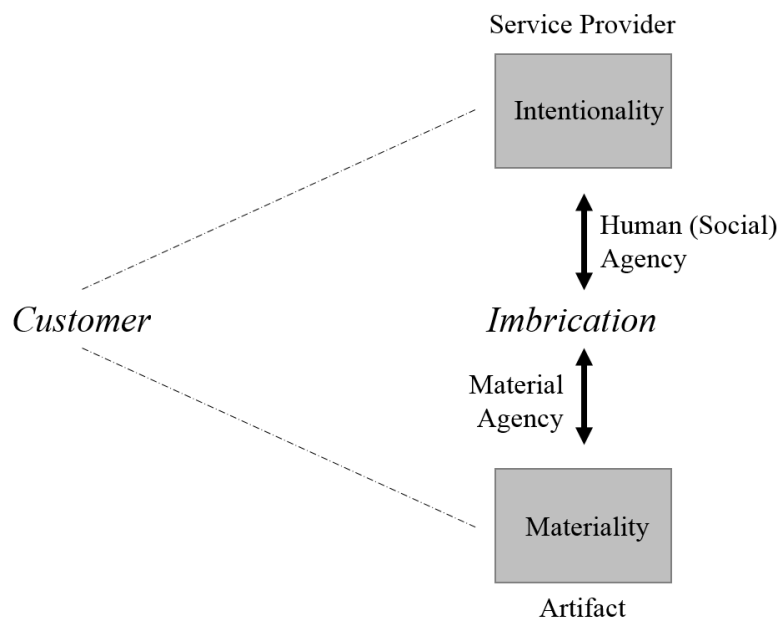
Figure 5 illustrates how sociomateriality can be adapted to explain the co-creation process between the service provider, the customer, and the technology. While the concept of sociomateriality originally emerged from the field of organization management, it is logical to include the customer as part of the imbrication, because ICT-facilitated service is specifically designed for the customer to use and the customer takes an important role during the service

56

consumption process. Indeed, Figure 5 and the theoretical foundation of value co-creation show no clear distinction between the customer and the service provider in terms of who provides the service, as they all co-create the process together and "merge" as one unifying process.

The intentionality of the service provider emerges when coming up with a new idea to better serve the customer. The idea is executed through the exercise of human agency (i.e., the ability to form and realize one's goal) and imbricated with the materiality of the artifact exercised by its material agency. The effect of the imbrication, which is completed through the platform of the space of practice, occurs at the point of interaction between the customer, the service provider, and the facilitated service (Orlikowski, 2010). In this case, the social space of practice refers to the experience of using facilitated services during a hotel stay. Such effects are shaped by the sociomateriality and the unique features of the technology, which is dependent upon individual users and specific contextual elements. The materiality of technology is independent and fixed, but not its affordance or constraints, which are determined by the person who uses the particular technology for a specific purpose.

While the sociomateriality of ICT-facilitated service enables the service provider to produce certain effects to achieve particular goals through the imbrication of human and material agency, it is necessary to explore how a certain idea is implemented, through which technologies, to achieve what types of goal, so as to truly understand how a specific value-in-use results (Leonardi, 2012). Social and material agencies are dependent on one another and form the foundation of the imbrication of sociomaterial practices; thus they should be analyzed separately. Recognizing that the sociomaterial can be broken down into the "social" and "material" is beneficial for understanding how different use of technology differently might improve people's lives (Leonardi & Rodriguez-Lluesma, 2012). Only through such disentangling can what

happens inside the "black box" be analyzed. As Bijker (1994) has indicated, research into the development of new technologies should aim to open the black box of the underlying structure and evolution of technology.

In recent years, more researchers in the IT field have incorporated the sociomateriality lens into their work. For example, Scott and Orlikowski (2012) studied the materiality of social media tools and concluded that their materiality enables users to immediately broadcast their posts to an unknown audience on a large scale. Hauptmann and Steger (2013) studied social media and human resource management through two qualitative case studies by analyzing social and technical factors separately to demonstrate how the two structures are intertwined. Leonardi and Barley (2010) studied mobile devices and knowledge workers and highlighted the importance of the concept of sociomateriality in the implications section. Some researchers have studied smartphones and have applied sociomaterial practices in knowledge sharing to frame the research design (Feldman & Orlikowski, 2011; Orlikowski & Scott, 2008).

As has been stressed by Leonardi (2012), researchers studying technologies often do not describe the technologies under study, even though they acknowledge that the difference between various technologies is the reason for conducting the study. They often do not answer questions such as: What is the intrinsic feature or materiality of the technology under study? How has it shaped the user experience? How the functional identity of a given technology is directly linked to a particular type of change? Researchers often could not answer such questions because they did not touch the fundamental identity of a technology but merely treated it as an agent of change manipulated by humans.

Because it is important to understand the use of technology from a "social" and "material" perspective, technology affordance is a promising approach for studying the technology

appropriation process, as the concept takes account of materiality in a more holistic way (Faraj & Azad, 2012). Technology affordances are the action potentials and opportunities that humans can realize with a particular technology (Majchrzak & Markus, 2012). The concept was originally developed by Gibson (1979), who explained that "An affordance is neither an objective property nor a subjective property; or it is both if you like. An affordance cuts across the dichotomy of subject-objective and helps us to understand its inadequacy. It is equally a fact of the environment and a fact of behavior. It is both physical and psychical, yet neither. An affordance points both ways, to the environment and to the observer" (p. 129).

Thus, affordances link the relationship between people and the materiality of technological artifacts by taking into account that individuals often approach the same technology with diverse goals, which might lead to different perceived possibilities for action (Hutchby, 2001). When users interact with a technology, they perceive what the technology does and the ways they can interact with it. Although it's physical properties are common to all users, individual users perceive technology affordances differently depending on their goals, capability, and context of use. Based on their perceived affordances, users then take action differently, which might lead to different use outcomes. Therefore, affordances need to be perceived as useful and meaningful (Norman, 2007).

2.5.2 The Potential of Mobile-based Service to Facilitate Value Co-creation in Hotels

To identify potential ICT-facilitated service in hotels, we narrow our scope and focus on ICT services available during a hotel stay. The during-stay period represents the most interaction-intensive stage, where most service encounters occur (Neuhofer et al., 2013). Services enabled by ICTs can be implemented either at the backstage or the front stage; our focus is on those provided at the front stage, as they contribute to the creation and enhancement

of guest experience. We do not focus on those implemented at the back of house, which are mainly systems provided for employees and are hidden from customers (Benckendorff, Moscardo, & Murphy, 2005). To capture the latest trend of technology use in hotels, a web search through search engine was conducted to identify the current technologies used in hotels. The searching process started from the search of relevant generic key words (e.g. hotel technologies, hospitality IT). A total of 16 innovative technologies were identified from approximately 40 online sources (e.g., online magazine, news, blogs, etc.), and were further categorized into four main groups based on their functions and features (Table 5). Each of these technologies was used as key words and the search continued until repetition occurred and information started to show irrelevance. As pointed out in earlier sections, the focus is on services that facilitate hotel-customer interaction and collaboration. Self-service technologies (e.g., ATM machines) and ICT-mediated technologies (e.g., telephones) are not the main focus of this study. Four categories thus emerge: wearables, interactive media, concierge apps, and carry-on devices.

TABLE 5. Potential ICT-facilitated Services Available During a Hotel Stay

Services	Description of General Functions
Wearables	
iWatch	iWatch can be used as a key to unlock hotel room door, which most
Magic Band	of the time must be connected to a smartphone. Example include Starwood's SPG keyless. Disney's magic band embeds a variety of functions. It can be used as a key to unlock hotel room door, tickets or fast-pass in the park, storage for photos, and payment for food and merchandise in the resort. Guests can personalize their magic band by choosing the color they want and add their names.
Interactive Media	
Interactive media display	Some hotels install interactive media display in the hotel lobby for
Smart mirror	guests to interact with both the hotel staff and other guests. For example, Hotel Indigo sees their staff as local experts and empower them to share useful information to guests such as recommendations for restaurants and attractions. Using the interactive media display, guests can also share photos and reviews to other guests staying in the sister properties of Hotel Indigo. This enables guests to create their own global community through which their travel experiences

can be enhanced with the help from others. The smart mirror introduced by Starwood allows guests to check a variety of information such as news headlines and weather condition.

Concierge Applications 　　Information kiosks/devices 　　In-room touch screen concierge 　　Concierge mobile apps 　　Texting service 　　E-butler	Concierge apps provide rich information about the hotel as well as the destination to the customers. They also provide a variety of means that enable hotel-customer interactions and communications. For example, Marriott's "Anything Else" is a two-way, real-time instant messaging function with the hotel staff that allows guests to make requests before, during, or after their hotel stay; the Conrad concierge app enables guests to order exactly what they want for room service or specify their pillow preference; St. Regis' E-butler app allows guests to communicate with hotel in real time through the "chat" function; The SPG app by Starwood also allows guests to FaceTime with the SPG support team 24/7 for assistance; The Lucy app adopted by Virgin Hotel enables guests to specify their preferred mini-bar items prior to arrival; The Ritz-Carlton app encourages guests to create "shareable experiences" through functions that support photo sharing to social media; At Hyatt Regency Bellevue, guests can text their requests to a SMS-based platforms where a staff member can receive and respond in real-time. Some hotels embed self-service functions (check-in/out and room access) into the concierge app through which guests can use their own smartphone to check-in/out and unlock room at the same time.
Carry-on Devices 　　Handy Smartphone	Many hotels now prepare free handy smartphones for guest to use inside and outside the property. The handy phone is usually equipped with call and data plan so that guests can use to communicate with others as well as search directions or attractions. Some further embed a function asking the guests to rate their overall stay experience and provide feedback to the hotel.

Through the lens of sociomateriality, we understand that different technologies have their own unique substances, which remain constant across place and time and are important for end users. It is this stabilized materiality that enables a particular technology to act in ways (material agency) that humans want (human agency). Thus, the materiality of a particular technology determines whether it can enable co-creation activities. From this starting-point, we explore and analyze the materiality of different ICT services in an attempt to identify ICT-facilitated services that carry potential for value co-creation to occur. According to the literature, ICT-facilitated services with certain features have higher potential to facilitate value co-creation. Neuhofer et al.

(2015) suggested that mobility is a key requirement for smart technology to be used in creating personalized experience. Mobility means that the technology is "portable, mobile and accessible" (p. 248) for a person to use anywhere and at any time. Previous studies in value co-creation in the hotel industry have also recognized that the mobile system stands out for its ability to facilitate firm-customer interactions (Grönroos, 2011; D. Wang et al., 2012).

Such mobility also allows the technology to build ubiquitous connections, through which individuals are interconnected and can communicate with each other on the move. Such always-on connectivity creates enormous opportunities for the service provider to interact with customers and provide more personalized and contextualized services (Buhalis & Law, 2008), which leads to the second prerequisite for a ICT service to facilitate value co-creation—ubiquitous connectivity (Neuhofer et al., 2015). Without connectivity, the user cannot communicate with others nor obtain useful information through the mobile device. One reason that travelers use smartphones is their strong computational capability, which enables them to connect to the Internet (Wang & Fesenmaier, 2013). The requirement of connectivity leads to the third prerequisite—real-time synchronization of information (Neuhofer et al., 2015). Because information and communication can be synchronized, "experiences are no longer static and pre-designed in advance by the hotel provider, but are dynamically co-created and personalized between guests and employees at the service encounter in real time" (Neuhofer et al., 2015, p. 249). Information is no longer limited to a static, a priori exchange but can be dynamically delivered in real time whenever the customer desires.

We have therefore excluded services that do not encompass these three elements, because they have lower potential to facilitate value co-creation activities. First, although wearables are mobile technologies that are highly accessible and portable, they have low affordance for

ubiquitous connectivity. For example, when tourists experience needs during their stay, these wearables have limited ability to help them solve problems, connect them to others for help, or connect them to the Internet to search for information. Furthermore, these wearables do not necessarily involve customers in the service design process. Rather, their affordances tend to be self-services that mostly focus on fulfilling users' functional needs (e.g., unlocking doors, making payments and records). As wearables have rarely been discussed in the literature, their affordances are still unclear. In this study, although these wearables might contain personalized elements (e.g., customers can put their names on the wristband or choose their favorite color), we exclude them due to their limited capacity for ubiquitous connections and interactions.

Moving to the next category, interactive media display is an interactive touch screen virtual concierge that serves as a travel guide and is normally installed in hotel lobbies. The pioneer hotel providing this service has been the Hotel Indigo owned by the InterContinental Hotels Group. The hotel recognizes that their hotel staff, from the bartender to the room attendant, are experts on the local destination, and encourages them to contribute recommendations to guests through the interactive media display. The hotel believes that by doing so, staff can build a unique image by telling their own stories that reflect the neighborhood, providing guests with something unique and different that they cannot find on their own devices.

Through interactive media, guests can engage in a variety of activities. For example, they can learn about the locations of other Indigo Hotels, and look up local restaurants, bars, clubs, and entertainment venues. Guests can also interact with each other at the same hotel or at other sister properties around the world. Guests can directly send directions from the display to their own smartphone by email or by scanning a QR code through an integrated Google Maps function. Guests can also take and share photos on social media via the kiosk camera, and leave

messages and reviews for other guests at other Hotel Indigo properties. The interactive touch-screen display is designed to create awareness and promote the brand by spreading unique stories created at different hotel properties. The sharing function enables the hotel to connect their guests and the neighborhood, creating a community of guests who can co-create their travel experience together. By inviting them to explore other properties, the company hopes to entice customers to book with them when visiting another city.

The stabilized constituent features of the interactive media display available to all users are thus connectivity, real time synchronization, and the ability to show abundant information to travelers. In the case of Hotel Indigo, with the goal of promoting Hotel Indigo properties and connecting guests to the local neighborhood, hoteliers use an interactive media display, which is configured to enable easy information searching and sharing. However, the lack of mobility decreases the potential of the interactive media display for facilitating co-creation activities. As it is usually installed and stationed in a hotel lobby, the interactive media display can only be used at one specific location by one individual at one time; it has no capacity for customers to be connected ubiquitously through the materiality of mobility, as discussed in previous studies.

Concierge app is a popular ICT-facilitated service adopted by hotels. Specifically, many hotels offer their own official mobile apps to attract direct bookings and loyal customers. Moving away from merely serving traditional functions such as room reservations, hoteliers have shifted focus from the pre-consumption phase to the consumption stage, where "during-stay functionalities" are emphasized. By providing these services, hoteliers hope to ease the travel process and engage in active dialog with customers. The purpose of this type of service is not to replace human services with technology, but instead to stimulate the use of more services by

enhancing the flexibility through which guests can get things done, request services, and communicate with hotel staff.

Aside from increasing the number of activities customers can do with apps, hoteliers are also seeking to engage in one-to-one marketing through apps. For example, through the "Anything Else" two-way instant messaging function embedded in the official Marriott mobile app, the company aims to provide more "personalized, adaptive, and responsive" customer service (Ting, 2016a). Hilton Worldwide has developed the HHonors mobile app to allow customers to better control and personalize their stay experiences (Hilton Worldwide, 2015). InterContinental Hotels Group also tries to give their guests a more personalized and interactive experience with IHG mobile apps (InterContinental Hotels Group, 2015).

Finally, the handy smartphone is a portable mobile device placed inside guest rooms; guests can enjoy using it just as in their daily life. Mostly provided as a free complimentary offer, each handy smartphone is preloaded with a wide range of functions for guests to enjoy Internet connectivity and local and international calls. Similar to a concierge app, the functions preloaded in each handy smartphone usually include a range of hotel services, social networking, destination and hotel information, basic utilities (e.g., camera, clock, calculator), and connectivity tools (e.g., Bluetooth, Wi-Fi hotspot) (Handy.Travel, 2016; Hui et al., 2016). Hotels can also deliver in-house or ad-hoc promotional messages to guests through the handy smartphone. Some hotels such as Hotel ICON in Hong Kong incorporate the concierge app inside the handy smartphone, offering an "all-in-one" package so that the customer can enjoy the functions of both the handy smartphone and the concierge app. Furthermore, some hotels invite guests to rate their overall stay and provide feedback before checking out through the handy smartphone. The handy smartphone is currently available in a number of cities including Hong

Kong, Macau, Singapore, Rome, Los Angeles, Paris, Prague, Bangkok, Dubai, London, Milan, New York, Vienna, Barcelona, and Istanbul (Handy.Travel, 2016). A selection of existing hotel partners that offer handy smartphones on their properties is given in Table 6.

TABLE 6. A Selection of Hotels Offering Handy Smartphone (Handy.Travel, 2016)

Sofitel Hotels & Resorts	Hyatt
Shangri-La Hotels & Resorts	The Montcalm Luxury Hotels
W Hotels	Movenpick
Marriott	Gran Melia Hotels & Resorts
St. Regis	The Ritz-Carlton
Millennium	Sheraton
InterContinental	Marco Polo Hotels
Holiday Inn	Meridien
Hotel ICON	

A glance at the different types of hotel services enabled by ICTs shows that mobile concierge apps and handy smartphones have higher potential to facilitate co-creation activities, as they possess the necessary type of materiality—mobility, ubiquity, and real-time synchronization. Such materiality enables multiple services to be integrated in a single interface that guests can access anytime and anywhere. To stimulate opportunities for hoteliers to interact and communicate with their guests throughout the entire journey, hoteliers adopt these mobile technologies to enhance the visibility of their services to customers, making hotel services easier to request.

2.6 Conceptual Framework

In this section, we develop a conceptual framework based on the theoretical foundation already outlined (the core elements of value co-creation) to guide the design of this study (Figure 6). The flow of the conceptual framework starts from hoteliers acting as facilitators by providing the resources necessary for customers to participate in the interaction and collaboration process. Thus, in the conceptual framework, firms' facilitation efforts in providing ICT-facilitated service allow customers to enter the stage of collaboration, supported by certain ICT attributes that may facilitate value co-creation activities. The firm's facilitation efforts (i.e., resources and practices) and the application of ICT-facilitated service constitute the firm's value-creating process, which is to say "the processes, resources and practices which the supplier uses to manage its business and its relationships with customer and other relevant stakeholders" (Payne et al., 2008, p. 85). The customers also get a chance to participate in co-creation activities in the new personalized experience environment facilitated by firms' efforts. When the customer's input is integrated, both the firm and the customer collaborate to co-produce the service offering, which leads to the co-creation of value-in-use. The customer's participation and value-in-use facilitated by the firm's efforts form the customer's value-creating process, i.e., "the processes, resources, and practices which customers use to manage their activities" (Payne et al., 2008, p. 85). Contextual factors are highly relevant throughout the whole process of value co-creation; they are not limited to one exchange but might occur throughout a series of resource integrations within a particular context (Vargo et al., 2008).

FIGURE 6. Conceptual Framework—The Process of Value Co-creation through ICT-facilitated Service in Hotels
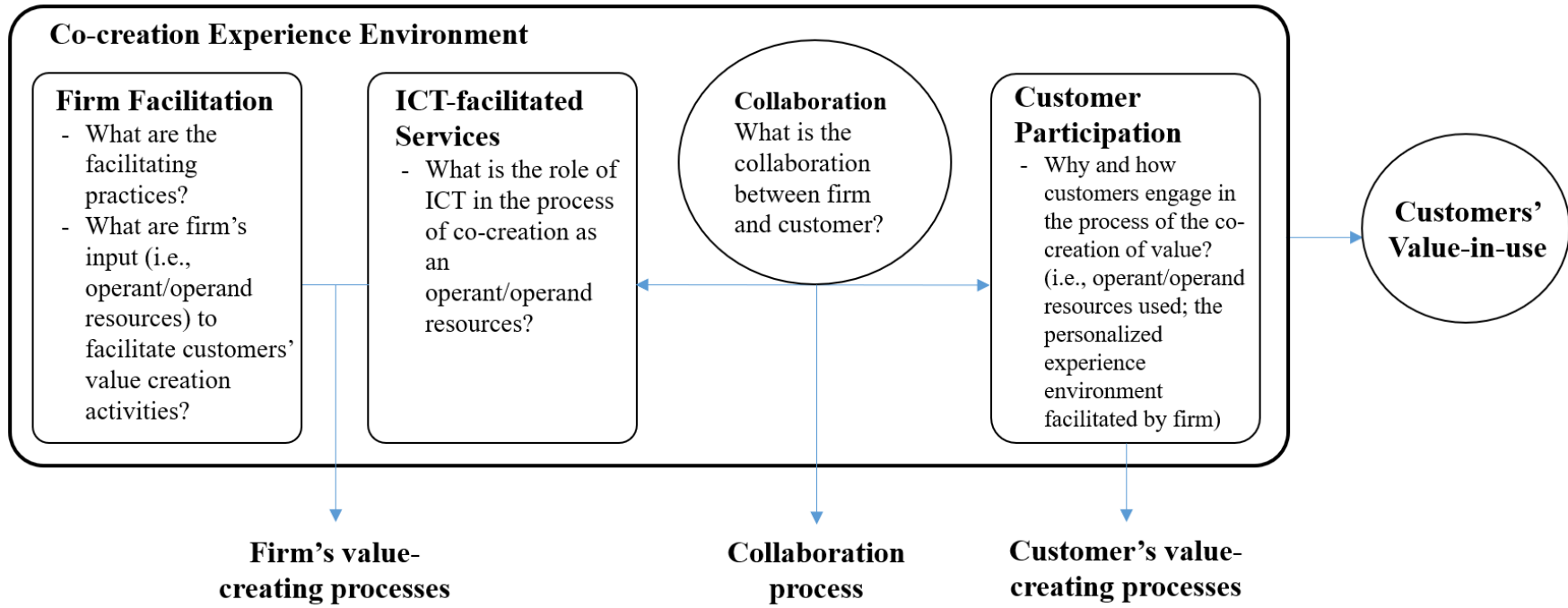
To recap, while ICT-facilitated service continues to be an important investment in the hotel industry, little is known about its impact on hotel customers. Furthermore, although ICT-facilitated service has high potential to facilitate hotel-customer value co-creation, there has been limited research exploring the process of value co-creation and to understand how and what value is co-created. Theoretically, this study contributes to the literature on value co-creation by exploring the underlying mechanism of the value co-creation process supported by ICT-facilitated service. Practically, this study will help hoteliers to understand how they can better utilize the potential of ICTs for co-creation with customers. They can then adjust their strategies and improve their services to enhance customer engagement and maximize customers' value-in-use. As scholars have stressed the importance of value co-creation for hospitality service providers, and the central role of ICTs in facilitating value co-creation, this thesis fills the research gap in the literature by answering two research questions: *(1) How do hotels exert the potential of ICTs to facilitate value co-creation activities? (2) How is value co-created through the provision of ICT-facilitated service in hotels?* The overall goal of this study is to develop a theoretical framework by examining hotel-customer co-creation through ICT-facilitated service to identify and explain the relationships among the elements of value co-creation (i.e., actors, resources, contexts, and value-in-use). This study will answer the research questions by fulfilling five research objectives: (1) to describe firms' efforts/practices to support customers' value-creation activities through the application of ICTs; (2) to explore customers' involvement and participation in ICT-facilitated service; (3) to elaborate the collaboration between the hotel and customers through ICT-facilitated service; (4) to identify customers' value-in-use as a result of the co-creation process; and (5) to analyze the characteristics of the context(s) within which exchanges occur and value-in-use emerges.

CHAPTER 3: RESEARCH DESIGN & METHODOLOGY

3.1 Research Design

3.1.1 The Research Lens of Constructivism

Based on the research goal and objectives, this study adopts a constructivist research paradigm to guide its design and methodology. This paradigm is suitable because it is based upon the belief that "reality is a product of one's own creation" (Savin-Baden & Major, 2013, p. 63), which perfectly matches the concept of value creation (i.e., individuals subjectively perceive and create their own value). Constructivism assumes that humans are fundamentally subjective beings who learn about and interpret the world through their own personal experience (Rychlak, 1990).

Embracing an ontological assumption of idealism (Savin-Baden & Major, 2013), constructivists believe that reality is experiential and subjective (Guba & Lincoln, 1994) and only knowable by exploring the meanings constructed by the human mind (Ritchie, Lewis, Nicholls, & Ormston, 2013). Truth and knowledge are created by each individual who internally assigns meanings to their experiences, as opposed to being discovered from existing facts, as in the positivist perspective (Savin-Baden & Major, 2013). In other words, knowledge and reality are constructed or interpreted by the knower based on his or her perceptions (Jonassen, 1991). Human beings first mentally sense the world then interpret and form knowledge based on the perceptions from their experiences of interacting with the external environment (Bruner & Minds, 1986). Thus, through the lens of constructivism, knowledge and reality are mentally constructed in the minds of individuals (Bodner, 1986).

As humans construct their own realities, constructivist research focuses on how individuals construct knowledge and emphasizes collecting data to understand how individuals

make and assign meanings (Jonassen, 1991). By understanding how individuals mentally construct meanings, knowledge is formed jointly by the participant and the researcher rather than discovered in the world (Savin-Baden & Major, 2013). The epistemological assumption is that "meaning is a function of how the individual creates meaning from his or her experiences" (Jonassen, 1991, p. 10). In contrast to objectivists, constructivists assume that there is no single or objective reality, because we each create our own personal world. It is our mind that interprets objects, environments, and perspectives in the world, through which our individualistic and personal knowledge base is constructed (Jonassen, 1991). Thus, in a constructivist paradigm, the world and knowledge are known through interpretation. There are no law-like regularities, and knowledge can only be obtained by the researcher who explores the social world by studying the participant's construction of meanings (Ritchie et al., 2013). As the researcher approaches participants, the findings will inevitably be influenced by the researcher's values and perspective (Ritchie et al., 2013).

As the purpose of constructivist research is to understand individuals' construction of meanings, this research paradigm particularly suits with the goal of this study, which is to explore individuals' experience of value co-creation. The assumption of the paradigm that each individual constructs his or her own reality, and may develop different meanings and understandings in their shared worlds, supports the theoretical foundation of value co-creation, which argues that individuals perceive value phenomenologically, and thus they want to become involved to personalize their own experiences and maximize value-in-use.

3.1.2 Research Design—Narrative Approach

In the past, social science researchers have often adopted a positivist philosophy in their studies (Savin-Baden & Major, 2013). Focusing on statistics and causal relationships, positivists embrace quantitative methods and believe that they can prove the truth through hypothesis testing. While quantitative techniques have advantages, such as more concrete measures of data consistency and accuracy, some researchers have begun to acknowledge that humans experience the world qualitatively. For example, the processes through which individuals change their feelings toward something or someone, and through which individuals shape their own thoughts and actions, are "wicked problems" that cannot be "solved" by statistical formulas to obtain single, correct answers (Savin-Baden & Major, 2013). Knowledge is not always neutral, and understanding the social world involves subjectivity (Ryan, 2006). The complexity of human actions and experience requires new ways of conceptualizing wicked problems and conducting research (Savin-Baden & Major, 2013).

Recognizing the inadequacy of quantitative approaches to address research problems in the social sciences, scholars started to suggest new approaches in the late 1960s (Ryan, 2006). Researchers started to recognize that individuals are aware of themselves, able to behave differently across situations, and "capable of naming their own world and constructing knowledge" (Ryan, 2006, p. 17). Thus, because human beings behave differently and subjectively, facts in society are not always objective and observable. Qualitative researchers believe that the social world is not the same as the natural world (Savin-Baden & Major, 2013). They believe that the best they can do is explain and describe individuals by understanding their experiences and perceptions (Savin-Baden & Major, 2013).

Exploratory qualitative studies are useful when "very little or no data exists on the phenomenon being investigated" (Jennings, 2001, p. 71). Qualitative research is an interpretive, naturalistic approach (Denzin & Lincoln, 2005) usually adopted to address "how," "why," or "what" research questions (Hair, Babin, Money, & Samouel, 2003; Hesse-Biber & Leavy, 2010) that require deep understanding and explanation of phenomena in our social world (Ritchie et al., 2013). An exploratory research approach is suitable for this study, as few studies have explored the co-creation of value through ICTs in a hotel context. The task for qualitative researchers is to extract meanings from the data collected (Hesse-Biber & Leavy, 2010), rather than making conclusions based on statistical tests. Believing that knowledge can be obtained through induction from human experiences (Ritchie et al., 2013), qualitative researchers focus on understanding how people interpret their senses (Kant, 1908) and attach meanings to phenomena within their social worlds (Bryman, Bresnen, Beardsworth, & Keil, 1988; Ritchie et al., 2013). Qualitative research aims to obtain richly detailed information to understand people's lived experiences (Ritchie et al., 2013).

This study adopts a narrative qualitative research design, as its focus is on hoteliers' practices and customers' use experiences. Narrative research is most appropriate when participants' detailed stories can help understand the research problem (Creswell, Hanson, Plano, & Morales, 2007). Supported by narrative theory (which holds that meaning is made through narratives), scholars define narrative approaches as "the way in which researchers conceive, capture and convey the stories and experiences of individuals" (Savin-Baden & Major, 2013, p. 231). Narrative researchers believe that our lives are full of stories (Clandinin & Connelly, 2000). Individuals produce meaning through narratives, and the narrative approach involves creating meaning and knowledge through stories of people's lived experiences produced subjectively

(Bruner & Minds, 1986; Polkinghorne, 1995). In sum, narrative is a research approach to understanding human experience.

Data collection in narrative research focuses on collecting stories from individuals to understand experiences and how such experiences are interpreted. The data collection process involves asking participants to tell the stories of their experiences in detail, which enables the researcher to analyze and extract meanings from the stories (Savin-Baden & Major, 2013). The data collected are usually texts that can be used for further analysis to explain and describe people's lived experience (Colyar & Holley, 2010). While narrative research can be conducted in many ways, most narrative studies share several characteristics. First, most narrative approaches focus on the individual level. That is, narrative researchers tend to focus on the stories of each individual rather than a group, so that the voice of minorities can be heard (Creswell, 2013). Second, narrative research focuses on stories that contain elements such as characters, context, turning points, and resolutions (Savin-Baden & Major, 2013). Third, narrative research is flexible, allowing room to adjust research questions during the process (Clandinin & Connelly, 2000). Lastly, narrative research emphasizes writing. Narrative researchers sometimes may use special writing techniques such as metaphors to deliver complex ideas that contain multilayered meanings (Creswell, 2013).

3.1.3 Methodology

In qualitative research, the methods used to collect data should usually involve close contact and interaction between the participants and researcher (Ritchie et al., 2013). Especially due to this study's use of a constructivist research paradigm and narrative research design, interviews were adopted as a data collection method. In qualitative research, interviews are among the most used strategies to explore complex concepts in the human and social sciences

(DiCicco-Bloom & Crabtree, 2006). An interview is a professional conversational practice where "knowledge is produced through the interaction between an interviewer and an interviewee or a group of interviewees" (Brinkmann, 2014, p. 1009). Through eliciting stories from respondents (DiCicco-Bloom & Crabtree, 2006), researchers use interviews to glean abstract, conceptual, and theoretical meanings from the life experience of individuals that cannot be directly observed (Patton, 1990). Interviewing is useful for understanding individuals and human experience, because we cannot observe everything, especially intangibles such as intentions, thoughts, and feelings (Patton, 1990).

In-depth interviews, or in-depth conversations are often adopted by researchers working with a narrative research approach (McCormack, 2004). In depth interviews are "most appropriate for situations in which you want to ask open-ended questions that elicit depth of information from relatively few people" (Guion et al., 2001, p.1). In-depth interviews enable researchers to acquire rich information by exploring the participants' feelings and perspectives deeply, which is normally associated with the use of open-ended questions, semi-structured format, recorded responses, and active listening (Guion et al., 2001). "In-depth" means that the conversation is not only about asking yes or no questions or simple answers, but detailed and long interactions which allow insightful information to be obtained.

The ultimate purpose of in-depth interviewing is not to acquire answers to questions but to understand the lived experience of participants and the meanings they assign to their experience (Seidman, 2013) by entering into their perspectives (Patton, 1990). An interest in other people's stories is the basis of interviewing research (Seidman, 2013). During an interview, researchers engage in active and supportive listening to learn about respondents' perceptions, emotions, experiences, and relationships; such information cannot be easily obtained through

other methods (Louise Barriball & While, 1994). As is stressed by some researchers, interviewing is a valuable way (often the only one) of learning about human behaviors in the past, particularly in situations that could not be observed by the researcher (Maxwell, 2012).

According to Legard, Keegan, and Ward (2003), in-depth interviews have several key features: flexibility, interactiveness, multiple techniques, generativeness, and naturalness. First, because the fundamental reason for engaging in in-depth interviews is to explore individuals' experiences or feelings, flexibility is necessary even in structured interviews. There is always room for the researcher to make adjustments and be responsive to important issues that emerge during the interview. Second, qualitative data is generated by interaction between the participant and the researcher. The role of the researcher is to facilitate conversation and encourage the participant to speak freely when responding to questions. Third, during interviews, the researcher can use certain tools or techniques to obtain deeper answers from participants. For example, follow-up questions, or "in-depth" interview formats in which participants are asked the reasons for their answers, are useful for obtaining deeper and more meaningful answers. Fourth, in-depth interviews are generative in nature, as it is likely that at some stage during the conversation new ideas or thoughts will be provoked. Lastly, knowing the world by understanding interviewees' interpretations implies that it is important to capture data in their original or natural format to avoid bias and inaccuracy when interpreting such data.

There are three major types of interviews: the structured or standardized interview, the semi-structured or focused interview, and the unstructured or non-standardized interview (Baird, 2014; Brinkmann, 2014; Crabtree & Miller, 1999). While structured interviews are generally adopted to obtain quantitative data, researchers generally apply a semi-structured or unstructured approach in qualitative research (DiCicco-Bloom & Crabtree, 2006). Because the unstructured

approach is usually chosen when the researcher does not know exactly what she does not know (Polit & Hungler, 1994), and an unstructured interview is usually associated with a higher amount of "dross" (Baird, 2014), the semi-structured in-depth interview is the most widely adopted approach for qualitative researchers (DiCicco-Bloom & Crabtree, 2006). The semi-structured interview approach enables the researcher to collect similar types of data across respondents with a lower "dross" rate compared with unstructured interviews (Baird, 2014). Typically, researchers conducting semi-structured interviews prepare an interview schedule or guide with a set of predetermined open-ended questions (usually between 5 and 10). An interview guide is a set of topical areas and questions that predesigned by the researcher for use during the interview. The style of the conversation is flexible, allowing room for the interviewee's spontaneous answers (Brinkmann, 2014) and for extra unplanned questions to emerge from the dialog to facilitate the conversation (DiCicco-Bloom & Crabtree, 2006). The goal is to encourage the respondent to provide as much information as possible (Johnson, 2002) and ensure that the responses are not directive or misleading (Warren & Karner, 2005). A semi-structured in-depth interview typically takes between 30 minutes to several hours to finish (DiCicco-Bloom & Crabtree, 2006).

In semi-structured in-depth interviews, the goal is to produce meaning through conversations between the interviewer and interviewee based on a set of predesigned questions (Hesse-Biber & Leavy, 2010). The researcher guides the participant by keeping the conversation within the scope of the interview guide. However, in semi-structured in-depth interviews, the process is flexible, giving room for interviewees to talk about information or knowledge that the researcher has not anticipated, which enables new topics to be unearthed and explored (Hesse-Biber & Leavy, 2010). For interviewing to be effective, the design of the interview guide is thus

crucial. The researcher should ask respondents to describe specific events or actions to retrieve their experiences (Weiss, 1994). When appropriate, asking questions about past events is useful to elicit what actually happened at a specific time and location so as to obtain a greater depth of understanding.

The interview guide in this study was developed based on the theoretical and conceptual framework grounded in the core elements of value co-creation. This framework was not used for deductive testing or proof, but to provide sensitizing concepts to guide data collection and analysis. Sensitizing concepts are "those background ideas that inform the overall research problem" (Charmaz, Denzin, & Lincoln, 2003, p. 259). Given the limited prior research in this specific area, sensitizing concepts provide ways to understand the phenomenon and can be used as a guide for research. Thus, as a starting point for this study, these core elements were used as sensitizing concepts to help direct and shape the research (Glaser, 1978). As the research developed, these sensitizing concepts were not strictly followed, as the goal of an exploratory study is to discover insights and meanings. As explained by Padgett (2004), the use of sensitizing concepts is dependent on "where the data take us; emergent concepts may supplement or displace them altogether" (p. 301). Thus, all findings were obtained by allowing meanings to emerge from data.

This study's research had two main stages. First, semi-structured interviews were conducted with hotel managers to obtain detailed insights about current ICT-facilitated service available in the targeted hotels. In the second stage, another round of semi-structured interviews was conducted with hotel guests who had stayed in the targeted hotels to understand their use and perception of ICT-facilitated service available in the hotels, and their perceived value-in-use as the result of using such service.

3.2 Data Collection

3.2.1 Selection of Participants – Three Best Practice International Hotel Companies

Sampling is an important step in which researchers must carefully decide the number of participants (sample size) and how to select them (sampling scheme). The sampling design can affect the quality of inferences from the data (Onwuegbuzie & Collins, 2007). In qualitative research, the sample should be small in scale, and participants should be selected based on particular features of the target population (Ritchie et al., 2013). As the purpose of interviewing is to obtain an in-depth understanding of individuals' experiences that can address the research questions, the selection is thus based on whether an individual meets certain criteria that provide relevant information to the researcher. Such a selection process is referred to as purposeful or purposive sampling, in which the researcher purposefully selects respondents who have experiences with the phenomenon being explored (Crabtree & Miller, 1999; Creswell & Clark, 2007; Sarantakos, 2012).

Researchers deliberately select particular individuals, activities, or settings that are relevant to the research goals and can provide the necessary information to answer the research questions (Maxwell, 2012). The sample should contain a small number of homogenous participants who share critical similarities that help the researcher to maximize the richness of the data and discover meanings (Crabtree & Miller, 1999). In qualitative research, a small group of respondents does not compromise the quality of the research, because the purpose of data collection at this stage is to obtain the in-depth views of individuals, rather than to measure variables or attributes (Field & Morse, 1985). A smaller sample group (or panel) also offers more detailed information and greater accuracy because only a small number of units is dealt with (Sarantakos, 2012).

In purposive sampling, there are no specific procedures for the selection of respondents; the selection is determined by the judgement of the researcher (Sarantakos, 2012). The researcher selects participants who can provide useful and adequate information to address the research questions. Thus, the suitability of respondents depends on criteria such as individual knowledge and expertise. As all types of sampling are purposive in qualitative research (Coyne, 1997; Patton, 1990), several common types of purposive sampling are used by qualitative researchers: convenience sampling, judgement sampling, and theoretical sampling (Marshall, 1996). This study adopts theoretical sampling in both the first and the second stage to select interview participants.

The participants in this study were selected through theoretical sampling based on the potential of informants to maximize opportunities to illuminate variations and relationships among concepts (Eisenhardt & Graebner, 2007, p. 27; Glaser & Strauss, 1971). Theoretical sampling differs from other sampling methods, as it involves "purposeful selection of a sample according to the developing categories and emerging theory" (Coyne, 1997, p. 629). That is, theoretical sampling is a type of purposive sampling and is theoretically oriented (Dip, 2009). Guided by emerging data, theoretical sampling aims at densifying the properties of emerging categories as data collection proceeds (Strauss & Corbin, 1990). When more specific information is obtained, the researcher can start identifying gaps that require further elaboration and deliberately look for informants who can help to further integrate and refine the emerging theory (Sandelowski, Holditch-Davis, & Harris, 1992).

As was pointed out by Cot (2009), "theoretical sampling progressively and systematically tailors data collection to serve the emergent theory" (p. 118). Theoretical sampling involves an iterative process in which new samples are selected based on the data that emerge (Marshall,

1996; Ritchie et al., 2013). The initial stages of theoretical sampling usually involve purposive sampling. The researcher initially approaches individuals who may possess general knowledge of the topic of interest (Coyne, 1997). However, as data collection continues, the ways in which participants are selected may change depending on the theoretical needs signified by the collected data (Morse, 2008). The researcher then selects the next sample based on the derived data to develop the emerging categories and theories (Ritchie et al., 2013). In other words, researchers using theoretical sampling usually cannot specify who should be sampled but can only make decisions based on where the data lead (Glaser, 1978). We adopted theoretical sampling in this study because it was unclear how data would emerge and which direction they would guide us.

As the core of this study is how technologies facilitate value co-creation in the hotel context, we centered on technologies as the criteria for selecting interview participants. The flow of participant selection following a theoretical sampling strategy is illustrated in Figure 7. First, as the starting point of this study is the consideration of technologies whose materiality can facilitate value co-creation (i.e., mobility, connectivity, and real-time synchronization), the lens of sociomateriality helped to identify the focal ICT-facilitated service in this study—handy smartphones and hotel mobile apps.

FIGURE 7. Selection of Participants—Flow Chart
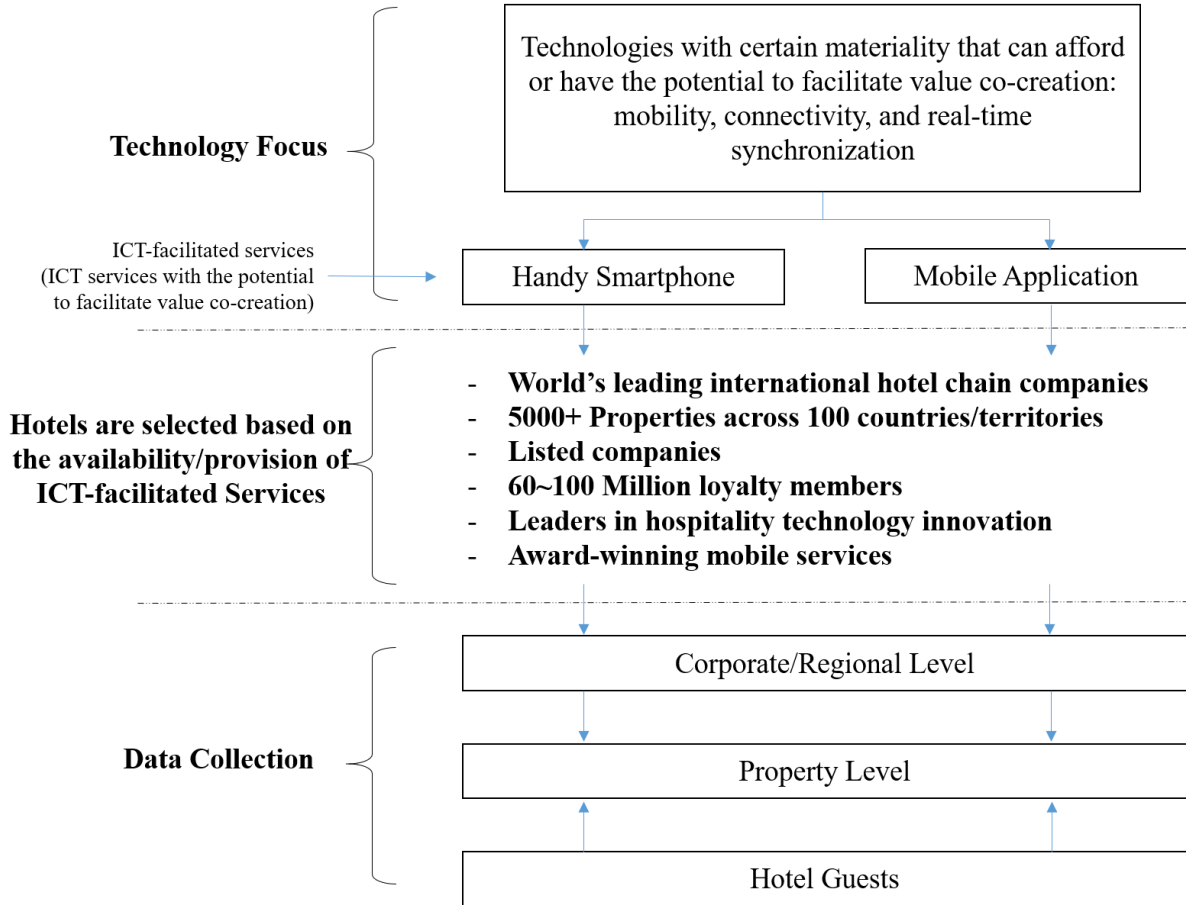
Second, after identifying handy smartphones and mobile apps as the focal ICT-facilitated service in this study, we targeted hotels that provide these services. Specifically, we targeted best practice companies based on their reputation for implementing ICT services and their representativeness in the international hotel industry. Selecting leading hotel companies with reputations for providing ICT services matches the theoretical sampling requirement that cases be selected based on their potential to generate opportunities to access unusual information (Yin, 2013). Further, selecting multiple cases is beneficial in terms of building more robust theory, because it allows for comparisons among cases and broader exploration of the research problem.

The detailed descriptions of each selected hotel are given in Appendix III, section A. The names of the focal hotel companies are not revealed in this study to protect the confidentiality of

the interviewees, especially when corporate level managers are involved. Based on the pool of targeted hotels, we identified potential hotel managers who could provide insights into the development and implementation of the focal ICT-facilitated service. As we wanted to understand hotel practices both in front of and behind the scenes, we approached management at both the corporate/regional and property levels to ensure the richness of the data. After obtaining a good level of understanding about hotels' provision of ICT-facilitated service, we searched out hotel customers who have experienced such services as our customer interviewees.

3.2.2 Interviews with Hotel Managers

Based on the pool of targeted hotels, hotel managers who could provide deep insights into the provision of ICT-facilitated service were identified. The list of hotel manager interviewees is given in Appendix III, section B. A total of 13 manager interviews were conducted between November 2016 and April 2017, running between 30 minutes and one hour long. These managers were in charge of several areas, including marketing, IT, and operations. Approaching managers at both the corporate and regional levels provided a more complete picture, as corporate management tends to make major decisions which are then implemented by management at the property level. For example, the official mobile apps provided by these focal companies were first designed by corporate headquarters and then shared by all properties around the world. The hotel managers were approached mainly through convenience sampling (e.g., recommendation by acquaintances) due to the difficulty to reach these professionals (they have to be knowledgeable about the design/operations of the focal hotel mobile apps). Some interviewees were successfully approached through cold emails. Through searching online news/articles, the author was able to identify those individuals in charge of or play a role in developing/managing the focal apps. A list of potential interviewees who had publicly talked

about their official mobile apps were then contacted through email invitations. This method successfully reached 1 corporate level manager and 2 property level managers. Cold invitations also successfully invited one property level manager through social network (Linkin). The formats of the interviews included face-to-face, telephone, and Skype interviews. The interviews were conducted following a pre-designed interview guide (Appendix I, section A). The stage of interviewing hotel managers ended when the collected data appeared to be saturated, as no more new information could be discovered. The interviews were transcribed by the researcher and imported into Nvivo 11 for further analysis.

3.2.3 Interviews with Hotel Customers

Another interview guide (Appendix I, section B) was prepared for interviewing hotel customers who had experience using ICT-facilitated service provided by the same pool of targeted hotels. Based on the data that emerged from the interviews with hotel managers, customer participants were selected at this stage using theoretical sampling. That is, based on the particular functions/features of the mobile services provided by hotels that facilitate co-creation activities, we specifically searched for customers who had experienced the focal ICT-facilitated service provided by these hotels.

Hotel customers who met the following two criteria were invited for an interview: (1) they had had experience using the mobile services (i.e., mobile apps/handy smartphones) provided by the hotel; and (2) their experience using these mobile services was within the preceding six months. Searching for customer participants who met three criteria was challenging. The usage rate of official hotel mobile apps has remained relatively low compared with other types of travel apps such as OTA apps (McMillin, 2017; Ting, 2017). Many customers would not use the handy smartphone if their own smartphones had a connection at the

destination. Moreover, high-end hotels' strict policy of protecting customer privacy made it difficult to identify customers who were hotel mobile app users.

In response to these challenges, several tactics were applied to spot potential participants. First, the researcher searched online through social network sites and online travel communities. By using keywords such as "handy phone" or the name of the focal official hotel mobile apps, the researcher was able to connect to individuals who had shared their experiences using these mobile services. The researcher informed these individuals about the purpose of the study and arranged for interviews with those who were interested in participating. Some customer interviews in this study were conducted through telephone or video calls, due to their different geographical locations. Second, a snowball method was applied, wherein the researcher spread the word of the need to recruit respondents for a research study. The researcher was able to recruit several suitable participants introduced by acquaintances. Lastly, the researcher approached acquaintances who were planning to travel in the near future and asked about their accommodation preferences. Those who were interested in staying with the focal hotels were identified as potential customer interviewees.

Through these efforts, a total of 20 interviews were conducted between November 2016 and July 2017 with hotel customers who had stayed with the focal hotels and experienced the ICT-facilitated service provided by the hotels within the six months prior to the interview date. The list of customer interviewees is given in Appendix III, section C. The customer participants include people from both Eastern and Western countries; both leisure and business travelers; approximately half male and female; age between 20s to 50s; and first-time and frequent mobile app users. The interviews were conducted through various means, including face-to-face, telephone conversations, and video calls. The interviews were conducted in English and Chinese.

All transcripts were recorded, transcribed, and translated by the researcher. The length of the interviews ranged from approximately 30 to 75 minutes. The collection of data stopped at the point when no new information emerged from the data.

3.2.4 Pilot Interviews

Pilot interviews were conducted to verify and improve the clarity, readability, and conciseness of the interview guides. The pilot interviews were conducted in two special administrative regions of China—Hong Kong and Macau. The interviewees who participated in the pilot interviews had similar requirements to those in the main interviews. Face-to-face interviews were conducted with 3 hotel managers and 10 hotel customers. All interviews were recorded and transcribed for further analysis.

The preliminary results from the pilot studies unearthed important hints and evidence that guided the direction of the main study. The results indicated extremely limited hotel-customer interactions and communications facilitated by the services provided through handy smartphones. Although the handy smartphone has three unique features for facilitating co-creation activities, it seems that its materiality was approached by people in a very different way compared with mobile apps. From hotel managers' point of view, the handy smartphone functions mainly as a portable Wi-Fi device. They provide the service to allow customers to conveniently connect to the Internet, or call the hotel during their travels. The services pre-loaded inside the device were not designed to allow customers to involve themselves in the service design process, as the device is only available after customers' arrival at the hotel. All three managers explained that they did not intend to have too many interactions with customers through the handy smartphone. The pre-loaded services were not designed by the hoteliers but the company that invented the handy smartphone. Hotel managers believed that the handy cellphone was a "nice-to-have"

service that might enhance customer satisfaction. The relatively low cost of acquiring and maintaining handy smartphone services was the major reason for the provision of the handy smartphone.

From customers' point of view, the handy smartphone is exciting and innovative, especially for those who have never seen or used such a service in a hotel before. However, customers only used handy smartphones when their own smartphones had no connection at the destination, as there was little they could do with the handy smartphone except using it for Internet connection and calling. If customers' own smartphones had connection, they felt more comfortable using them. Also, customers found the information and pre-loaded services on the handy smartphone limited and rarely useful. Moreover, most of them did not perceive the affordance of using the handy device to interact with the hotel. Thus, during customers' use of the handy smartphone, hotel-customer interactions have rarely occurred. Customers' use of the handy smartphone was restricted to only a few functions (e.g., Wi-Fi hotspots and calls), and their use was restricted by time and location (only during their hotel stay).

In contrast, managers indicated that the hotel official mobile app was the signature service that the company focused on developing and promoting. The official hotel mobile apps were designed to connect with customers long before their arrival. Compared with handy smartphones, hoteliers put into much more resources into developing and implementing the mobile apps. The goal of providing a range of mobile services exclusive to members is to encourage customers to sign up as loyalty program members, who would then book directly with the hotels in the future. From customized booking to one-to-one communication functions, hoteliers provided the apps as a tool for customers to personalize their own stay experiences. Therefore, as neither hoteliers and customers perceived the affordance of handy smartphones for

co-creating value through interactions and collaborations, it was decided to focus on hoteliers' provision and customers' use of ICT-facilitated service provided through official hotel mobile apps. The interview guides were adjusted based on the results and comments from the pilot interviews.

3.3 Data Analysis – A Focus on Hotel Mobile Apps

The process of data analysis began immediately after the first interview was completed. All of the interviews used in this study were transcribed by the researcher. The transcripts were organized and stored in Nvivo 11, a qualitative data analysis software program. The data analysis strategy follows the narrative analysis approach suggested by Creswell (2013) (Table 7). Narrative analysis refers to "a family of methods for interpreting texts that have in common a storied form" (Riessman, 2008, p. 11). The focus of narrative analysis is on individuals' stories (i.e., their experience of using the app and interacting with hotels through it) and the consequential linking of events or ideas in these stories (Riessman, 2008). Thus, the researcher has paid particular attention to isolating and organizing the relevant episodes from these stories. By focusing on the stories and experiences shared by respondents, narrative analysis aims to unearth the patterns and key factors that shape respondents' experiences from the narrative segments. Thus, the overall structure of data analysis in this study focuses on the process and themes of the stories, actors' actions, contextual elements, and theories related to participants' shared experiences.

TABLE 7. Data Analysis and Representation–Narrative Approach (Creswell, 2013)

Data Analysis and Representation	Narrative
Data organization	Create and organize files for data
Reading, memoing	Read through text, make margin notes, form initial codes
Describing the data into codes and themes	Describe the story or objective set of experiences and place it in a chronology
Classifying the data into codes and themes	Identify stories; Locate epiphanies; identify contextual materials
Interpreting the data	Interpret the larger meaning of the story
Representing, visualizing the data	Present narration focusing on processes, theories, and unique and general features of the life

When data are collected from oral respondents (i.e., textual data), thematic analysis is the most popular approach in narrative studies (Riessman, 2008). The overall writing structure in thematic analysis is the presentation of important themes (Creswell, 2013; Riessman, 2008), which construct the body of the final explanatory framework. The themes or categories are inductively obtained from the data and deductively analyzed based on the conceptual framework. Strauss and Corbin (1990) explained that when conducting qualitative data analysis, it is appropriate for the researcher to move between inductive and deductive thinking so as to locate and link concepts. This study follows Riessman's (2008) thematic analysis strategy in narrative analysis. When conducting thematic analysis with narrative data, the primary focus is on what is said by the participants, rather than how it was said. The general themes and patterns that emerged across interview participants were identified and compared.

Before coding began, the researcher first repeatedly read through all of the interview transcripts and immersed herself in the data. The benefit of this "first run through the data" technique (Hesse-Biber & Leavy, 2010) is that the researcher can try to sense what is behind these stories and get a general picture of the data (Savin-Baden & Major, 2013). Then the coding analysis process began, following guidance provided by Corbin and Strauss (2008) and Creswell (2013). As narrative analysis is highly flexible, individual researchers tend to follow their own analysis methods (McLeod and Balamoutsou, 2000). In this study, other than focusing on individuals' stories, the author also followed Corbin and Strauss's guidance due to the robustness and rigorousness of the grounded theory method. The emerging codes and themes were aligned with the core stories told by participants (i.e., the beginning, middle, end and key factors of stories). Such flexible combination of methods helped unearth more details from the raw data and further enrich the emerging constructs (i.e., their underlying dimensions and properties). The researcher started with open coding, meaning that a brainstorming approach was adopted to consider all potential meanings. Open coding is an important starting point to allow the data to speak for themselves to form a solid basis for analysis. The researcher then aggregated and labeled the raw data with codes. The codes were named based on both the researcher's understanding of the ideas behind the data and the exact words used by respondents (in-vivo codes). These initial labels or blocks of raw data were then further conceptualized and classified into lower-level and higher-level concepts, which are also called categories/themes. Throughout the process, the concepts and categories were constantly compared against each other (i.e., axial coding) to build connections and relationships between codes. Writing notes and memos was particularly useful to help the researcher to reflect on and question the meaning of the data.

These notes and memos were also prepared for the later step, when everything was integrated to build a final explanatory framework.

When theoretical sampling is adopted, the data analysis of the first participant serves as the foundation for the researcher to determine where to find the next data sources and what questions to ask in the following rounds of interviews. Hence, the direction of the research will move is dependent on the analytic "trail," guided by the collected data and the emergent concepts (Corbin & Strauss, 2008). Data collection and analysis are thus an iterative process, as deciding what new data to collect and how to do so is "responsive to the data rather than established before the research begins" (Corbin & Strauss, 2008, p. 144). Based on the concepts and themes derived from the collected data, the researcher continued to acquire new data to develop the concepts' properties and dimensions. As the number of respondents increased, the data started to become redundant, and the researcher stopped collecting new data when the codes generated no more new categories or relevant themes (i.e., the saturation point) (Kendall, 1999).

By breaking apart the data in the analysis stage and producing themes and concepts, the researcher at the same time interprets and translates these themes and concepts to uncover meanings. At this stage, the researcher shifts to understanding the underlying meanings of the whole study (Coffey & Atkinson, 1996; Savin-Baden & Major, 2013). Also at this stage, the literature and previous findings are used to help the researchers frame their own interpretations (Savin-Baden & Major, 2013). The final stage of data analysis is the integration of the codes and categories for theory-building. In this case, the researcher put all the data back, and pulled out all the memos and examined them together. The goal of this final stage is to extract meaning and discover a theory by constructing a final framework to explain the phenomenon under

investigation (Hesse-Biber & Leavy, 2010). This final framework should enable the researcher to answer the research questions and reflect on the literature (Savin-Baden & Major, 2013).

3.4 Trustworthiness

One reason that qualitative research studies are often criticized and challenged is the failure of researchers to explain and justify the soundness of their methods and findings (Decrop, 1999). Decrop (1999) proposed triangulation as a way to strengthen qualitative findings by considering multiple independent sources of data. By looking at the phenomenon from different angles and using richer interpretations, triangulation helps the researcher to reduce personal bias and enhance the study's trustworthiness.

According to Decrop (1999), qualitative researchers can embrace triangulation in four ways: data, method, investigator, and theoretical triangulation (Denzin, 1978). Data triangulation means that the researcher collects different types of data from different sources—for example, a combination of primary and secondary data such as interview transcripts, written reports, video, or photographs. Method triangulation involves the use of multiple data collection techniques, such as a combination of interviews, observation, and focus groups. Investigator triangulation involves collaboration with others. The researcher can invite other researchers to read through the data to see if different interpretations result. The researcher can also invite their informants to read a summary of their transcripts to double-check if any misunderstanding occurred. Lastly, researchers can enhance their study's generalizability through theoretical triangulation, i.e., examining data from different theoretical perspectives. In this study, member check was adopted as a triangulation approach to enhance the validity of the findings (Appendix IV). A summary of the main findings was sent to interview participants to peruse and comment.

The reliability and validity of qualitative research also lies in the depth and rigorousness of researchers' reflections on the data. The researcher iteratively went back and forth among the data to ensure the trustworthiness and authenticity of the analysis and interpretation (Denzin & Lincoln, 2011). The researcher also went through a period of reflection, in which the meanings that emerged from the data were pondered over and over. Morse and colleagues (2002) suggest that this strategy is an appropriate way for qualitative researchers to ensure validity and reliability by moving "back and forth between design and implementation to ensure congruence among question formulation, literature, recruitment, data collection strategies, and analysis" (p. 17). In the following sections, the detailed coding frames are presented to demonstrate the "building blocks" from the data that form that basis for the explanations. Doing so allows the readers to understand the researcher's interpretation and the logic behind the construction of the properties and dimensions of a higher-level construct (Ritchie and Lewis, 2003).

CHAPTER 4: HOTELIERS' FACILITATION

Hoteliers initiate the value co-creation process by providing accessible resources for customers to participate in co-creation activities. This chapter reports on hoteliers' facilitation efforts and practices to support customers' value-creation activities through the provision of ICT-facilitated service (i.e., mobile services embedded in hotel mobile apps). The following themes, which are derived from the data, are discussed in this chapter: hoteliers' understanding of mobile app services as a means to value co-creation; their strategic considerations; and the supportive elements behind the provision of mobile app services. This chapter ends by presenting a framework to explain hoteliers' service design that aims to let customers involve themselves in value co-creation.

4.1 Hoteliers' Understanding of Mobile App Services

4.1.1 Hoteliers' Perceived Affordances

Hoteliers focus on four main functions when discussing the hotel mobile apps. The four main functions are room reservation, information, self-check-in/out and room access, and service request. The following sections discuss managers' expectations of how customers would use these functions (i.e., hoteliers' perceived affordances of mobile app services for customers' value creation activities). The coding frame for hoteliers' perceived affordances is summarized in Table 8.

4.1.1.1 Room Reservation

The in-app room reservation function allows customers to make easy bookings anytime, anywhere. Customers can book a variety of hotels in different areas around the world owned by the same hotel company. The function allows customers to book directly with the hotel company without having to deal with intermediaries. Once the booking process begins, communication

starts between the customer and the hotel. For instance, other than basic information such as title, name, check-in/out dates, and number of guests, the in-app reservation interface also asks customers to specify certain preferences such as preferred room type (e.g., ocean/city view, smoking/non-smoking), room location (e.g., near/away from elevator, high/low floor), and bed type (e.g., king/queen/twin/single). More detailed questions are also asked, such as customers' preferred pillow type, their purpose of travel, and their favorite music bands. Depending on how much detail hoteliers want to get into, they ask different questions to better understand their customers' stay and travel preferences. By doing so, hoteliers aim to personalize customers' stay experience:

> *"So with the room selection, you know, they can select the room if they want to be near the pool, or if they want to be near the meeting room, they can personalize it for that stay, because we don't always know what they want." (Manager Informant #23)*

Because they can specify a variety of preferences relevant to their stays prior to arrival, customers can settle things in advance by giving the hotel enough time to customize their stay. Customers can also use the app to become members of the hotel's loyalty program and access exclusive benefits. Whenever members book through direct channels such as the official hotel mobile apps, their transaction activities are recorded and members are rewarded based on their account activity. For example, the most popular rewards to members are points accumulation and redemption. Members accumulate points by making transactions and redeem benefits using their accumulated points. Often, hoteliers offer points or point packages that are exclusive for mobile app users to attract more direct bookings and sign-ups. The details of the membership benefits offered to mobile app users vary among hoteliers, yet they share the same logic and goal—to reward loyal customers and attract more new members and direct bookings. Lastly, by making

reservations through the app, customers can receive notifications related to their bookings through the app. For instance, some hotels notify customers when their rooms are ready for check-in by messaging the customers through the app.

4.1.1.2 Information

Customers can access a variety of information related to their hotel stay through the apps. Customers can access generic information about the hotel (e.g., hotel facilities, address, and contact number) and hotel promotions (e.g., food and beverage promotions). Customers also have access to more specific information such as their personal profile/account information, booking/transaction activities, and membership status. As the in-app information is directly managed by hotels, the apps provide the most up-to-date information and synchronize customers' account information in real time. Providing access to a range of important information through one single device, the variety of in-app information helps remind customers of important information related to their hotel stays. Customers thus have a storehouse of information without having to drop notes or search somewhere else. Lastly, other than searching and browsing information, customers can also consume personalized contents through the app. As indicated by informant #33, a senior director of digital marketing at the regional level in company A, the corporate office would offer customized information based on customers' past records and their personal preferences. Through in-app information, customers would be able to consume contents relevant to their personal interests:

> *"We see from historical data that this guest usually likes to stay in city during the weekdays, but sometimes also likes to extend the stay over the weekend. We see this as an opportunity and we may try to send push promotions to him/her, and try to personalize his/her experience." (Manager Informant #33)*

4.1.1.3 Self-Check-In/Out and Room Access

Customers can use the self-check-in function to notify hotels in advance of their specific arrival time, to ensure their room is ready upon arrival. In some hotels, the self-check-in function is linked with a digital key which allows customers to skip the entire traditional check-in procedure at the front desk. Customers can simply head straight to their rooms and use their own smartphone to unlock the room doors without interacting with hotel staff. Similarly, the self-check-out function available in some hotels allows customers to check out and receive their bills without having to visit the front desk. Regardless of the mild differences among these self-service functions, hoteliers provide them for three main reasons. First, hoteliers design these functions to help customers speed up the check-in/out process. Second, these functions are designed to give customers greater control by letting them manage different tasks in their preferred ways. For example, customers can choose to self-check-in if they do not feel like socializing with hotel staff. Third, by letting customers choose how to interact with the hotel and how they want to get things done, hoteliers expect that customers will be in control of personalizing their own experiences. As manager informant #23 explained:

> *"We really see digital tools and the mobile app serving as the remote control for the guest stay, and really reaching the guest where they want to be, in the palm of their hands. And through mobile, we can do that and give them a more personalized experience by doing things like letting them choose their own room or letting them decide how they want to check in."*

4.1.1.4 Service Request

The apps allow customers to make service requests in two forms. First, customers can order from a service menu that includes a range of housekeeping/concierge items such as room

amenities, transportation arrangements, and wake-up calls. Second, customers can make freestyle or open-ended service requests. In the focal hotel mobile apps, there are usually two ways to do so: customers either place open requests through a one-way text box on the reservation page when they make the booking, or chat with hotel staff through a two-way instant messaging function. Hotel managers expect customers to specify their personal needs or preferences through these "free" or open communication channels:

> *"They can type everything in the column; for example, what time the flight is, what time they expect to arrive, they expect the room to be ready by 5pm or 6pm, etc." (Manager Informant #25)*

Hoteliers understand that mobile communication technologies have changed consumer behaviors. This is especially true for the younger generation, which has become used to communicating through social media and might not always prefer direct or face-to-face communications. In addition, when customers interact with hotels in traditional ways (e.g., phone calls or face-to-face), often more time and effort is required from the customer (e.g., the line is busy, the staff need to check and confirm the request, customers need to walk all the way to the front desk). Hoteliers thus design the service request functions as an alternative option for customers to communicate when they prefer to make requests "silently" (i.e., communicate with hotel staff without face-to-face interactions). Hence, because customers have different needs and wants at different points during their travel process, hoteliers expect them to use these service request functions as an extra channel to communicate their needs and preferences anytime, anywhere, before and during their trip:

"Beginning from the time that they book till they arrive, during their stay, after they check out, the guest can talk to the hotel, let us know if they need anything, if they have any special requests" (Manager Informant #23)

While communications through telephone calls or face-to-face might lead to misunderstandings or potential conflicts (e.g., due to lack of written documentation), replacing talking with writing enables customers to communicate more clearly with hotels by giving more accurate instructions. This shift is particularly relevant when the behaviors of many customers nowadays have changed along with the rise of instant communication technologies. Manager informant #28 pointed out that many customers today often prefer not to talk to people about certain needs. Rather, these customers prefer to give clearer, more accurate instructions through writing. By allowing customers to communicate with hotels before their arrival and throughout their stay, the service request functions enable customers to settle things ahead of time and ensure that their accommodation arrangements are ready for their arrival. As customers' contextual needs can be recognized and satisfied through their preferred ways of communications anytime, anywhere, hoteliers believe that they are putting customers in control of personalizing their own experiences:

"When you think about the proliferation of technology, it's kind of shifted the travelers' expectations of when and how they want to be communicated with, and the type of experience they expect from our hotels. So that's why we try to offer a wide variety of digital features, and really it is about putting the guests in control of personalizing their stay." (Manager Informant #23)

TABLE 8. Hoteliers' Perceived Affordances—Coding Frame

Themes	No. of Informants
Perceived Affordances	
Room Reservation Function	
Specify personal preferences	11
Join membership	8
Book anytime anywhere	7
Make arrangements ahead	7
Make direct bookings	5
Receive notifications	4
Information Function	
Check personal information	5
Browse generic information	4
Receive most updated info	1
Consume personalized contents	1
Self-Check-in/out Functions	
Self-check-in/out	7
Self-control/manage	7
Personalize ways to do tasks	6
Make arrangements ahead	6
Skip human interactions	6
Speed up process	6
Unlock room doors	4
Service Request Functions	
Request anything else	12
Order service items	9
Extra communication channel	9
Make arrangements ahead	6
Avoid human interactions	4
Personalize own experiences	4
Make instant requests	3
Communicate anytime anywhere	3
Make more accurate request	1

4.1.2 Hoteliers' Value Propositions

S-D logic differentiates service providers' value propositions from customers' embodied value-in-use. This section reports on hoteliers' value propositions, that is, the promises they make to customers, or the value they expect customers will perceive from using the hotel mobile apps. From the interviews with hotel managers, five different categories of value propositions emerged—functional value, emotional value, social value, epistemic value, and value of personalization. These different types of value are categorized in five dimensions to facilitate explanations in the following sections. We follow the dimensions and definitions of value developed by Sheth et al. (1991) and Sweeney and Soutar (2001) (Table 9). The definition of personalization follows S-D logic, which suggests that personalization is achieved by understanding and satisfying customers' idiosyncratic needs and wants (Prahalad & Ramaswamy, 2004b; Vargo & Lusch, 2004). The value of personalization is thus defined as a unique form of consumption value that involves benefits beyond basic functional value (Chellappa & Sin, 2005; Ranjan & Read, 2016). The coding frame for hoteliers' value propositions is presented in Table 10.

TABLE 9. Dimensions and Definitions of Customer Perceived Value

Functional Value	Price/value for money – the utility derived from the product due to the reduction of its perceived short term and longer term costs Performance/quality – the utility derived from the perceived quality and expected performance of the product	Sweeney & Soutar, 2001
Emotional Value	The utility derived from the feelings or affective states that a product generates	Sweeney & Soutar, 2001
Social Value	The utility derived from the product's ability to enhance social self-concept	Sweeney & Soutar, 2001
Epistemic Value	The perceived utility acquired from an alternative's capacity to arouse curiosity, provide novelty, and/or satisfy a desire for knowledge.	Sheth, Newman & Gross, 1991
Value of Personalization	A unique value derived from the consumption of products or services that are tailored to individual consumers based on their personal information.	Chellappa & Sin, 2005; Ranjan & Read, 2016

4.1.2.1 Functional Value

Hoteliers expected that customers would perceive functional value, which consists mainly of financial benefits and an easier travel experience. The financial benefits come from membership. After customers join the hotel membership program, they enjoy a variety of financial benefits from promotions and discounts to points redemption. The role of the app as an extra communication channel also eliminates some costs which might otherwise be incurred if customers made phone calls for enquiries or service requests:

"*I mean, if you take [the app] out the guest would like, oh I need this but I have to call, oh it's a long distance call, oh forget it, I would not tell the hotel; but see, when they think like that, that means you've already missed the opportunity" (Manager Informant #30).*

Customers also have a more convenient and efficient overall travel experience as a result of greater control. They are able to make bookings, consume in-app information, self-check-in/out, and make service requests through the app almost anytime, anywhere, by themselves without having to rely on someone else. Customers can do things in more direct ways without human interaction, and save time and effort. The convenience and efficiency also come from the apps' ability to store everything in one single platform, which serves as a reminder for users. The ability to make special requests through the apps also allows customers' requests to be fulfilled accurately and prepared in advance by the hotel before their arrival. In short, the apps make things easier for customers and remove many potential troubles during their trip.

4.1.2.2 Emotional Value

Another type of value hoteliers expect customers to perceive is emotional value. The fact that all app functions and membership benefits are offered exclusively to members makes customers feel engaged and remain loyal to the hotel company. Specifically, the extra communication channels that enable customers to make requests "silently" bring higher comfort to customers. As pointed out earlier, the elimination of human interactions removes some of the concerns that customers might have interacting face-to-face or on the telephone with service representatives. The extra services offered through the app also show the hotels' thoughtfulness and care for their customers. They hope that by offering these extra services, customers will have a more comfortable stay. Altogether, when customers have a simpler and more seamless experience, they are expected to be delighted.

> *"When they get to the property and engage with the app, for example, they pre-check-in and they pre-order some room service to arrive at the same time or unlock their room*

using the digital key. When all of these happen seamlessly, they are delighted, and they

increase their loyalty to your company." (Manager Informant #32)

Another element that contributes to the creation of emotional value is the surprise factor. When the hotels can remember customers' preferences or satisfy their unique needs and wants, hoteliers expect customers to be surprised and "wowed" by the hotels' extra care and attention to detail:

"If I ask you for something out of the blue, like I ask you can you give me two tulips, but

tulips are not in season in HK, but you manage to find two tulips for me—then I am going

to be wowed by the fact that through messaging I got you to help me find two tulips."

(Manager Informant #29)

4.1.2.3 Social Value

When mobile app users can access the various functions and membership benefits available only to them, hoteliers expect these customers to perceive social value, as they feel privileged to be recognized as loyalty program members. For example, manager informant #29 explained the hotel company's focus on recognizing loyal customers. The company's strategy is to ensure that loyalty program members are recognized through a series of things that the company does for them. Another corporate level manager explained how the company measured the extent to which customers feel their loyalty have been recognized:

"Our scores have consistently shown us that with guests who have done mobile check-in,

if the hotel has executed it flawlessly, the right way, the guests are giving us much higher

check-in scores and elite recognition scores, which means they say 'I had a very good

check-in experience, I feel more valued as an elite member because I sensed that the

hotel truly went out of their way to prepare the stay for me when I arrived.'" (Manager

Informant #30).

4.1.2.4 Epistemic Value

The last category of value that emerged from the interviews with hotel managers is epistemic value. Hoteliers expect customers to perceive epistemic value, as the mobile app services are new, trendy, innovative, and interesting. In particular, as these services are designed to satisfy future generations who will grow up with technologies and are more tech-savvy, hoteliers expect their young customers to particularly like these app services:

> *"So these customers may also be simply looking for a nice room, a comfortable bed; however, if you give them something interesting to play with, they may like it even more. So you know, these generations, they may not appreciate as much how you nicely make the bed as the mobile services that you provide to them. For example, if they can turn on the light by clapping their hands, they may also like stuff like this. So the mobile services are designed for these future generations." (Manager Informant #31)*

4.1.2.5 Value of Personalization

One key reason for providing the hotel mobile apps is to deliver the value of personalization to customers. Hoteliers believe they can do so by recognizing customers' personal needs and preferences at the individual level, providing consistent customer experience based on customers' personal needs and preferences, giving customers more, and having personal interactions with customers.

Recognizing customers' personal needs and preferences at the individual level. By satisfying customer needs and preferences at the individual level, hoteliers believe that they can deliver a personalized stay and the value of personalization to customers. Doing so is particularly beneficial for giant hotel chain companies, which can accumulate big data and share it among sister properties. By carefully integrating the app functions with human services (e.g., checking daily arrival reports manually), a number of opportunities are created for hoteliers to deliver the value of personalization:

> *"Our main objective is that we hope our guests feel that we can cater to their needs and that we recognize them as individual distinguished guests…Our objective is to receive comments from our guests saying that [the hotel company] can understand our needs and deliver a personalized stay." (Manager Informant #33)*

As discussed in the section on hoteliers' value propositions, hoteliers expect that all of the four functions will serve to recognize individual customers' needs and preferences. Hoteliers expect customers will perceive the value of personalization when they can specify personal preferences during the booking process; when they receive personalized contents relevant to their interests; and when they feel empowered to control the ways things get done. Lastly, the service request function enables customers to communicate with the hotel regarding almost anything at

anytime and anywhere throughout their stay. As customers' contextual needs and wants can be attended to at the individual level, managers expect that customers will perceive the value of personalization.

Providing Consistent Personalized Customer Experiences. Hoteliers believe that serving customers based on their personal needs and wants on a consistent basis is a way to deliver the value of personalization. Thus hoteliers put great effort into collecting, recording, and tracking customers' personal needs and preferences. Hoteliers want to understand customers' past, then predict what the customers might want in the future. They believe doing so can impress customers by showing them the hotel staff remember them and treat them as valuable guests:

> *"Since our group has 4,000 to 5,000 hotel properties around the world, we have a huge database. If a guest is our member and we have his record, every time when he comes, we can see his report about his past history including information such as which property he has stayed at, what his room preference is (for example, smoking/non-smoking), or his spending behavior. So from this information we can identify some guests as F&B spenders, then we can ask our F&B colleagues to brief them about our hotel's F&B services—for example, we have Italian and Chinese restaurants and would you like us to reserve a table for you." (Manager Informant #26)*

Aside from regular customer preferences, hotel managers believe that one of the biggest advantages of the app service is the open service request function, which helps in recognizing customers' special needs. By consistently satisfying customers' special needs, hoteliers believe that customers can perceive the value of personalization:

"For example, we had some VIP guests in the past, since we only have certain types of newspapers we use Press Reader, where guests can read newspapers online. But on Press Reader there is no Oriental Daily news, which is what our guest wanted. So we helped this guest to make a preference. After that every time when the guest comes, we prepare Oriental Daily for him. So ever since the first time they made this request, every time we have arranged Oriental Daily for him." (Manager Informant #25)

Customers Have More. By offering a variety of digital functions for their customers to enjoy higher flexibility in self-managing their own activities, the value of personalization for customers comes from the fact that more resources are available to them. Even though customers might not necessarily need to use these resources, the fact that hoteliers make an effort to provide extra services and resources is expected to result in positive customer emotions. When customers realize that there are a variety of resources that they can make use of anytime, anywhere, they feel they have more and can do more during their trip:

"When someone buys a condo, you need to have a swimming pool. Whether I use it or not, that's really not your concern, I just want the pool to be there, I will use it when I want it. It's the same thing now, do you have mobile check-in? No, but do you have it? But I would use it sometime, so I want to know if you have it available." (Manager Informant #30)

Some managers used the word "everything" or a "24/7 personal assistant" to describe what customers can do with the apps. Because nowadays many people have their own smartphones, users can get everything done on their own without having to rely on someone else. Such elimination of human interactions removes some of the concerns customers might have had in the past when trying to reach hotels or make special requests (e.g., worrying about causing

trouble to others). Hoteliers expect customers will have a seamless experience when they can do everything on the app from pre-check-in to self-check-out:

> *"In terms of the apps' value for guests, I would say the whole experience is more seamless. From pre-check-in to arrival, the guests can do everything on the app. They can also keep track of their member status such as redemption. So really they can do everything through the app." (Manager Informant #27)*

Personal Interactions. Hoteliers expect that the value of personalization is also delivered when customers have personal interactions with hotels. For example, manager informant #21 explained that when customers make requests through apps, it creates opportunities for the hotel to interact personally with them. Manager informant #23 explained that although nowadays many guests prefer the convenience and efficiency of skipping the front desk by checking in online, the hotel can still have personal interaction with them with the mobile instant messaging function:

> *"There is a personal element that gets removed when you do that. If they aren't going to the front desk when they check in, then we've lost that opportunity to engage with the guest, so now as an industry we have to find new ways to engage with the guest. One of the ways that we can do that is through messaging in the app."*

Lastly, the apps' ability to collect customer information such as customer requests and preferences enables hotels to prepare for customers' stay in advance of their arrival. When customers arrive at a hotel, rather than spending time preparing documents and checking customers in, front desk agents can spend time interacting and engaging with them. In other words, because the app helps operations to prepare for customers' arrival, front line employees

can now spend their time on personal conversations with customers rather than working on computers while the customer is standing there waiting. As explained by manager informant #30:

> *"So all the little gestures, the key is ready, check-in is expedited, and the associate has the time to engage with the customer and is not looking for a room, printing the registration card. All of these steps are gone when you have the mobile check-in process available."*

TABLE 10. Hoteliers' Value Propositions—Coding Frame

Themes	No. of Informants
Value Propositions	
Functional Value	
Save time and effort	11
Convenience/efficiency	10
Fewer troubles	6
Monetary benefits	3
Value of Personalization	
Recognize individual customers	13
Provide consistent, personalized experiences	7
Customers have more	7
Personal interactions	4
Emotional Value	
Comfortable	2
Delighted	1
Engaged	1
Surprised	1
Social Value	
Feel privileged	2
Being recognized	2
Epistemic Value	
New	1
Trendy	1
Innovative	1
Interesting/fun/cool	1

4.2 Hoteliers' Core Co-creation Strategies

Hoteliers' perceived technology affordances and value propositions imply two core strategies for their interactions with customers. Not only do hoteliers provide a tool for customers to do things by themselves; there are also higher-level strategic considerations behind the provision of such services. Through interacting and communicating with customers through the apps, hoteliers aim to collect mass customer data and interact one-to-one with individual customers. The following discussion focuses on these two major strategies. The coding frames of this section are presented at the end of this section in Table 11.

4.2.1 Mass Customer Data Collection

One purpose of hoteliers' provision of hotel mobile apps is to collect big data on customer behavior. The integration between the mobile apps and hotels' management information systems helps hoteliers to acquire a huge amount of customer data, in a manner previously almost impossible to achieve. Managers pointed out that in the past, hotels relied on staff members to memorize guests' preferences. It used to be extremely difficult to keep track of these preferences, especially when a company owned thousands of properties with mobile guests and staff. Moreover, mobile apps replace front desk reception in tracking customers' preferences when customers decide to skip the check-in process at front desk. Business travelers in particular usually prefer efficiency over human interactions when traveling. They tend to be more willing to share information through technologies.

When customers use the app, from making bookings to specifying preferences, ordering amenities, and making special requests, it records the information in the system for later analysis by hotel management. Such information is normally synchronized or transmitted to a management property system or other information system that integrates customer data coming

from the hotel mobile apps. Hoteliers then rely on such information to plan and arrange each customer's stay:

"If you know that a business customer booked a limousine, gave you all the flight details, let you know the wake-up call in advance, and told you what time they want to check out, you know that this customer has got a profile that is very strictly based on timelines. What we need to do then is to pay attention to all these details, and make sure we execute on time for the guests…if you have a customer that gives you everything, use that information and deliver based on that information." (Manager Informant #29)

Furthermore, as customers' profiles are linked to their membership accounts, gathering mass customer data is especially beneficial for international hotel chain companies, which can share information among their properties. Being able to collect big data also helps hoteliers to implement more effective marketing plans. Corporate management looks into these data to search for trends or patterns that provide insights into customer behaviors. These trends or patterns play a critical role in hoteliers' future planning for service development and provision:

"The app is actually linked to the member accounts behind which we can track a lot of things. For example, room preference, or any other information that guests fill out in the app, all our properties around the world will know this. So we know this guest doesn't want a smoking room and likes to stay far away from elevators, also his dietary restrictions. For the guest, they feel that they have consistent experience not only in this hotel property, but with the entire brand or hotel group. So they have a much higher brand loyalty…For those requests that guests have inputted into the mobile app, that is information we share with our properties all over the world." (Manager Informant #27)

Although one major purpose of providing mobile apps is to collect information from individual customers, some managers emphasized the importance of human interactions in understanding customers' personal needs and wants. They stressed that the apps only supplemented human services and could not themselves provide good customer service. For example, manager informant #24 explained that even though open communication channels were available in their mobile apps, he still preferred to interact with customers through face-to-face interactions:

"If you ask are there any risks involved in getting less details from guests though the app, since we are not interacting with them face-to-face, I would say yes… When they arrive we prefer to interact and communicate with them face-to-face…Why? Because many details you can only discover through human interactions, especially in hotels. Very often it's not just about how much your guests tell you but it's about after you listen to the guests, how much more you observe. If we rely on these technologies, which cannot really see the real person, many times we miss the details." (Manager Informant #24)

Human interactions are especially important when customers might not necessarily mention everything they need. Manager informant #31 emphasized that interacting with customers and observing customer needs is not only the responsibility of front line staff but of all staff members. Recognizing the limitations of ICTs, some managers reaffirmed human interactions as an important source of customer information, based on which the hotel staff can provide extra care to customers. Most of the time, customers might not state in detail what they really want. Often, it is employees' observations that reveal customers' special needs:

"If I see that you are sneezing or coughing, this type of thing, you may not tell me that you are feeling sick or you need something. So these types of details we can only observe through human interactions." (Manager Informant #24)

4.2.1.1 Store and Share Customer Data

Hoteliers strive to store and share the information collected from customers through the mobile apps. At the property level, customer information is integrated into the property management system and organized by individual customer profiles. Hotel operations review these profiles on a daily basis to prepare for each upcoming guest stay. Individual hotel properties are able to record specific, personal customer information/preferences/needs/requests in detail for future guest stays. Managers emphasize that this daily procedure is not only performed for VIP guests but every single guest who has input special preferences or requests through the mobile apps. Other than storing individual customers' information, hoteliers also share it among sister properties, so as to serve customers consistently. As customers' profiles are linked with their membership accounts, the sister properties under the same hotel brand can understand more about their customers by consulting their specific profiles. Although some hoteliers are still working to develop platforms through which customer information can be fully integrated and shared among properties, this trend will clearly be a key development in the future.

4.2.1.2 Review and Analyze Customer Data

After customer data are stored, they are used for reviewing and analyzing purposes from the hotel property level to the corporate level. At the property level, hotels review customer profiles on a daily basis. As discussed in the previous section, hotels review every guest's profile to ensure that their stay is prepared for based on their personal needs and preferences. Through this reviewing and analyzing process, hotel employees and management gain knowledge about

individual customers. For example, manager informant #24 said that for repeated guests, front desk colleagues would check their profiles and assign rooms based on past preferences. If they noticed an elderly guest had booked a room located on a lower floor, they would make special arrangements, such as putting an anti-skid mat in the washroom to show extra care. Manager informant #30 said that personalizing a customer's experience is about "finding preferences." For instance, because management knew that a guest was coming for business travel, they started analyzing and identifying the customer's preferences:

> *"If you know this guest comes to your hotel every single time for business, what's the most important thing to a business traveler? It's for the shower to be working, I have good pressure, all my lights are working, my Wi-Fi is working perfectly, I have a clean desk in front of me, maybe my favorite magazine for me to read, that's personalization…we want to make sure that we personalize every stay for the one-offs and also the repeat guests." (Manager Informant #30)*

> *"Certainly, as I mentioned, the app is integrated with the PMS and the PMS databases of the guests' stay, so it records all the invoices, all those sorts of things. So through analysis of the ordering, and not specifically the app, but the app is included, we can obviously find out all the likes and dislikes and then anticipate based on those data." (Manager Informant #32)*

Aside from analyzing customers' regular and special needs/preferences, hoteliers also analyze customers' stay behaviors. For example, hoteliers analyze customers' post-stay feedback and their invoices to obtain insights regarding customers' behaviors during their stays, such as spending behaviors. Furthermore, hoteliers track whether customers are having a good or bad experience based on the data collected. Hoteliers also analyze customer patterns at an aggregate

level. By doing so, hoteliers are able to see the general trend of customer behaviors and opinions, which enables them to focus on what is most important to customers. Analyzing customer behavioral patterns also helps hoteliers to conduct more effective and efficient marketing at the corporate level:

> *"We do portfolio marketing, so the whole portfolio gets it. Some hotels may be in a certain market if you know. In Tokyo, it's all Saturday vacations in hotels. Then you know people make the decision the week before or two weeks out, they make the decision for what to do two weeks out. So depending on the profile of the guest, and based on data how far out they book, what do they do, how they spend their money, how they spend their points, when we get all this information, the system analytic should be able to give us some profile reviews, high-level strategies, targeted audience, and then be able to help us decide what promotion or what campaigns or what marketing strategies we should put together for a certain group of people in whichever country. For example, we know the Japanese plan longer, whereas the Chinese plan this week for next week, so there might be a different profile of thinking. From there we can know how to target them."*
> *(Manager Informant #29)*

4.2.1.3 Anticipate Customers' Needs and Preferences

After storing, sharing, reviewing, and analyzing customer data, hoteliers can anticipate individual customers' needs in their future stays by preparing things in advance without customers having to ask every time. For example, hoteliers can greet customers by name, anticipate their usual preferences (e.g., non-smoking, high floor, time for room make-up) or special preferences, which enables them to provide a consistent customer experience. Hoteliers

believed that consistently providing customers with an experience that is unique to them is a way of personalizing customer experiences:

> *"For example, if we observe that the guest usually calls for laundry at around 10 am, and also the guest would request the room to be made up the same time, then we can proactively ask the guest, saying, oh, we see that you normally like to place these requests at 10 am every morning; would you like me to help to make these arrangements for you from now on? Something like that. So if you are the guest, you feel good. These are customized services." (Manager Informant #31)*

4.2.1.4 Going the Extra Mile Based on Existing Information

Aside from simply taking orders from customers, hoteliers went the extra mile by using their intuition and doing more than what guests asked for. For example, manager informant #26 shared his experiences of going the extra mile based on known information:

> *"One of our guests just arrived today and we are still working on his request. He wanted to propose today in our hotel and asked us to help him buy a bunch of flowers, and he said we could just charge him for the flowers. Our staff who received this message said, well, we have a customer who wanted to propose today; why don't we wow him? So how should we wow him? Maybe decorating his room, or we can fold some paper swans and flowers and put on their bed? These kind of things which we can do we will do more. So it doesn't necessarily depend on the guest's requests, like this case the guest doesn't know we will wow him by preparing something extra beyond what he had requested, just to surprise him." (Manager Informant #26).*

4.2.1.5 Service Recovery at Individual Levels

The information collected from customers through the apps is also used for service recovery. By integrating such information with customers' profiles in the PMS, hoteliers can make special note of specific issues or problems that a particular customer had during his or her stay. By doing so, hoteliers can avoid repeating mistakes, provide extra care to individual customers, and improve individual guest experience. In short, only making notes on customers' problematic experiences is not sufficient for providing high-quality service. Before customers come again, hoteliers strive to ensure that prior issues have been resolved. Hotel employees double-check customers' profiles to ensure that the same mistake is not repeated. According to managers, such action is taken on a daily basis. Before each guest's arrival, the operations team checks the arrival report to find out if this guest was dissatisfied with anything in previous stays. Hotels improve their customer service based on such data. In one of the three focal apps, a "post-stay feedback" function is available to customers to evaluate their stay experience by answering a survey. In hotels that provide such a function, this information is taken into consideration in the preparation of customers' future stays. For example, manager informant #24 stated:

"Every day, no matter if they give us 10 or 9 or 1 point, we input all these ratings manually in our profile to make sure that when they come next time, for example if I see that this time they gave 10 pts, then next time when they come I make sure they will continue give us 10 pts. If I see that last time they gave us 7 or 8 pts, this time I will pay more attention to the hiccups they mentioned last time and make sure this time I can satisfy them."

Even hotels without such a post-stay feedback function in their mobile apps strive to improve guest experience by rectifying deficiencies, based on information about customers'

previous stay experiences collected through a variety of information sources including the mobile apps:

> *"If the guest has had a problem, or they are not happy with something, it's in the profile, you know, and you can make sure that experience doesn't happen again." (Manager Informant #22)*

4.2.2 One-to-One Communications

Another strategic consideration behind the provision of the mobile apps is having one-to-one communications with customers. Through the apps, hoteliers engage customers in one-to-one interactions throughout the travel journey. Hoteliers not only want data but also a personal relationship with individual customers. The hotel mobile apps help hoteliers to reach and communicate with customers at the individual level. The various functions embedded in the apps were designed for customers to communicate directly and indirectly with hotels. For example, customers communicate indirectly with hotels when entering basic information (e.g., name, salutation) or when specifying preferences. These types of communications tend are indirect, as they do not necessarily require feedback or immediate responses from the hotel until the customers arrive. Customers can also communicate with hotels in more direct ways through the apps' service request functions. In this case, timely feedback is usually required from the hotel. For example, customers can communicate anything else they need through an open text box (i.e., asking them to specify any special request when making the reservation) or through a two-way instant messaging function. If customers specify their special requests through a one-way open channel, then depending on the nature of the request, the hotel will contact them for further details if necessary.

4.2.2.1 Proactive Conversation

Although communicating with customers is one way of collecting customer information, the one-to-one interaction enabled by the two-way instant messaging service request function goes beyond simple customer data collection, as it opens the door to interactions between the customer and the hotel. Such an open channel allows the customers and hotel staff to initiate personal conversations with each other without limitations in terms of time and location. Hoteliers see such an opportunity as a chance for them to proactively engage with customers and start building a relationship with them:

> *"Or guests would actually send a text or a chat message that proactively says that, 'Hey, I am coming, can I have this and this and this?' And this opens a door for the associates to ask leading questions, so that they can proactively plan for this stay. We want that information, we want that connection, and once we have that connection, we can proactively say 'yes' or 'no' in a polite way; we honor their requests." (Manager Informant #30)*

Mobile technologies offer a good opportunity for hoteliers to solve customer problems in real time when they occur. Manager informant #23 pointed out the importance of getting feedback from customers in the moment during their stay. Rather than hearing negative comments from customers weeks after their stay, mobile technologies allow hotels to spot customer problems and handle them promptly before they leave the hotel. Here is one example of engaging customers in the moment:

> *"We will be able to proactively engage with the guest because, you know, we want to be able to engage with guests and understand if there is any issue that we can resolve for*

them, or you know, honor any of their needs, and we want to do that before they leave the

hotel." (Manager Informant #23)

However, analysis of hotel managers' interview transcripts reveals that hotels' desire to proactively reach customers through the in-app instant messaging function is limited to after customers initiate the conversation. That is, the analysis shows that hotel managers perceive it mainly as an extra communication channel for customers to seek help when they have needs or problems, rather than for the hotel to approach customers to find out if they have any needs or problems. Hoteliers are proactive in terms of helping customers to solve problems and following up, but not proactive in terms of starting a conversation. Such a limitation is reasonable considering the normal size of the human resource department at a hotel, regardless of its size. In addition, hotel staff normally wait for customers to initiate conversation to avoid "annoying" customers. As stated by customer informant #30,

"*You need to have a need to chat. People don't chat for the sake of chatting with you*

unless they need something. So we cannot say, oh, because people are not using it people

don't have a request; what we want to focus more is when the chat comes in, our

associates deal with those chats promptly."

Hotels normally assign a dedicated team of staff members to take care of customers' instant messages. These employees are experienced and well trained before taking the responsibility of handling instant communications with customers. A supervisor is normally there to support team members when they are in doubt. There is no standard way to handle a conversation, because each is unique. Customers talk about different things, from checking whether they have left anything behind to simply having a casual chat with the employee. Most

of the time, employees use common sense and their instincts in interacting spontaneously with customers.

Hotel managers' opinions about communicating with customers through instant messaging are divided. Some managers perceive this type of communication as more direct and personalized compared with traditional communication methods, because instant messaging allows mobile connectedness and instant feedback. For example, manager informant #26 indicated that customers' response rate to the hotel's messages increases after the hotel adopted instant messaging. Other managers prefer face-to-face or telephone communications with customers, due to situational factors that influence their practices.

The importance of having social interactions with customers also influences hotels' decisions about the means of communication with customers. For example, manager informant #24 stated that after guests arrived at the hotel during their stay, he would encourage them to communicate with the hotel through direct channels such as telephone calls or face-to-face. He believed that the app is mainly for communicating with customers prior to arrival. More human interaction is needed when customers actually arrive, and that is when hotels can have a direct, interpersonal relationship with them. Manager informant #22 also stressed the importance of human interactions in developing long-term customer relationships. He implied that although technologies have made it easier to initiate communication, building relationships required more personal human interaction. Human intelligence is needed to understand and solve problems. Human sensitivity is also needed to show caring and consolation:

> *"If your only interaction with the guests is handing over the key cards, then you don't get to know your guests…In the future, you can send a message and say 'I'm not happy.' But at the end, you still have someone to call you back." (Manager Informant #22)*

4.2.2.2 Acknowledge Sudden Needs

If customers specify their special requests through a two-way channel (the instant chat/messaging function, which is usually available from several days before the check-in date until the check-out date), they can communicate freely with the hotel about any sudden needs or ideas anytime and anywhere. For example, customers might ask questions about the destination, seek help on urgent matters, or talk with the hotel about personal preferences. Customers then enter into a conversation with the hotel staff, who are expected to provide instant or at least timely responses. Offering such an open channel not only helps to satisfy customers' special needs that the hotel could not anticipate, but also helps hoteliers to collect more specific information about individual customers to personalize customer experiences.

4.2.2.3 Provide Prompt Feedback

The importance of providing prompt feedback and conversing in a timely manner with customers affects how hotels interact with customers. In general, managers agree that the apps provide instant gratification for customers. For example, when a booking is made, customers immediately receive a booking confirmation; when customers request extra amenities, clicking buttons through the apps implies a "silent yes" to the customers; the mobile instant messaging service request function is also designed for instant communications. For example, as explained by manager informants #24 and #30:

> *"We can provide an instant response. This is the most important benefit because one person can only do so much work. Once you click the item it means that the hotel is saying "yes" to your request and then they will make the arrangement for you. So the step where you need to call the hotel and ask them, and then explain what you need and then wait for them to say yes, is eliminated." (Manager Informant #24)*

"[The app] allows instant communications that allow instant reply, that's what our travelers are looking for: instant gratification. I want it and I want it now, I want an answer and I want an answer now. So that allows us to do that." (Manager Informant #30)

As providing prompt feedback to customers is critical, managers mentioned there are certain situations in which the apps might be constrained to provide instant feedback. For example, manager informant #31 pointed out that if the number of responses gets too high when texting with customers, the hotel will ask for customers' phone number to continue the conversation through telephone and shorten the interaction process. Manager informant #25 also perceived telephone calls as a more efficient means of communication, as it might take several days or longer to settle customer issues through texting instead of talking. Manager informant #21 mentioned that customers preferred more direct communications with hotels. When customers are at the property, most of the time they would prefer to just press "0" and speak directly with the front desk, which is faster than texting.

4.2.2.4 Reach Mutual Understanding

The purpose of communicating with customers at the individual level is to better understand their unique personal needs and wants. The apps allow the exchange of a variety of information, and even latent customer needs that hoteliers might not think of. Thus, the importance of reaching mutual understanding with customers is the second factor that affects how hotels interact with customers. As stated earlier, although hoteliers design the service request function to allow customers to request anything else they need, there are times when human interactions might prevail. Hotel managers thus emphasize the importance of human interactions. For example, manager informant #26 stated that for more important or complicated

arrangements, the hotel prefers to confirm with guests directly when checking them in. Manager informant #32 explained that when communication gets more complicated, guests prefer to interact with a real person or through a telephone call rather than through the apps. Manager informant #22 indicated that when a mobile conversation goes into great detail, for example, if customers want to make a reservation at a certain restaurant at a certain time, the hotel staff usually ask the customer to switch to an email conversation.

TABLE 11. Hoteliers' Co-creation Strategies—Coding Frame

Themes	No. of Informants
Mass Customer Data Collection	
Store and Share Customer Data	
Store data in systems	6
Share data among properties	6
Review and Analyze Customer Data	
Analyze individual customers' needs/preferences	6
Review customer data on regular basis	5
Analyze customers' aggregate behavioral patterns	2
Anticipate Customer Needs and Preferences	
Provide consistent, personalized guest experience	7
Anticipate customers' regular needs/preferences	6
Anticipate customers' special needs/preferences	4
Go Extra Miles Based on Existing Information	
Be intuitive	2
Do more than what customers have asked	1
Service Recovery at Individual Levels	
Provide extra care	2
Improve customers' future stay experiences	2
Avoid repeating mistakes	1
One-to-One Interactions	
Proactive conversation	5
Acknowledge sudden needs/issues	3
Provide prompt feedback	3
Reach mutual understanding	3

4.3 Supportive Elements

4.3.1 Proactive Engagement

4.3.1.1 Exclusivity of Apps

Hoteliers in general drive usage through reinforcing the app's exclusivity and "stickiness." First, hotel managers emphasized the members-only benefits and exclusive status from booking through direct channels. Furthermore, there are certain members-only benefits that are only available to mobile app members. Members gain functional benefits, as they have access to a variety of service functions that are not available to normal customers:

> "*Bringing these features to life in the app encourages our guests to use the app and to book with us…and when they do that, we also give them these, we give these features exclusively to our loyalty program members…which of course benefit the hotel and then benefit the guests, because they have better and more personalized experience.*" *(Manager Informant #23)*

In particular, hotel managers emphasized the financial benefits customers could receive if they booked directly through the app. Such a strategy is critical, especially when hotels are competing with OTAs, which normally offer lower prices. The loyalty program offered by the focal hotels in this study offers customers the chance to redeem their points for benefits from free meals to a hotel stay. These reward point systems also provide customers the flexibility to choose between making a purchase or redeeming points. Some hotels conduct marketing campaigns that highlight the financial benefits to attract more users to the apps. For example, according to manager informant #27, the cheapest price is offered if customers book directly with the company. Members get an extra 5% off if they book through certain channels such as the mobile apps, which is something that OTA cannot offer. Manager informant #24 highlighted the

promotions and reward points offered only to members who book through the apps. Manager informant #30 explained how corporate management has been driving usage through marketing campaigns such as sweepstakes.

Aside from functional and financial benefits, the exclusivity of the apps is also represented by the higher status that hoteliers attached to their loyalty program members. Loyalty program members who make multiple bookings through the official mobile apps are better understood by hoteliers, who record loyal customers' special needs and personal preferences from their past stays:

> *"Everything that we do and streamline to push messaging to the consumers is always about the rewards members. As a member you will get more benefits, you get more status when you come stay with us. We recognize you better because we have got your information." (Manager Informant #29)*

Altogether, hoteliers put great effort into enhancing their service quality for loyal customers. By providing members-only functional benefits, financial benefits, and other ancillary services (ranging from a free cookie to an express check-in counter), hoteliers hope to make member customers feel their loyalty is appreciated and their status well-recognized. By doing so, hoteliers hope that such higher recognition of member customers can attract non-members to join the hotels' membership programs:

> *"We don't give it to anybody, we only give it to members. So members feel privileged to join our membership program, and feel engaged and stay loyal." (Manager Informant #29)*

> *"Our app is for our reward members, so one advantage is that this also encourages our non-member guests to join our loyalty program." (Manager Informant #31)*

4.3.1.2 Stickiness of Apps

Hoteliers recognize that mobile devices have become a commodity for regular individuals. In particular, the future generation of customers will have grown up with mobile technologies. Therefore, hoteliers build extra capabilities on top of a single platform through which customers can get multiple things done more easily:

> *"Our goal is not to explore other apps, but to look at how we can enhance the app itself to create that one stop shop for all of our travelers, whether it's through bookings, or once you book, what are the services that we can enhance, that can immediately allow us to connect with Next Gen travelers." (Manager Informant #30)*

Mobile technologies are widespread because of their convenience, and hoteliers want to increase this convenience through hotel mobile apps. Hoteliers want customers to perceive that the hotel mobile app is a tool through which they can do everything without having to look for other resources:

> *"We are trying to create everything in the app because we want the app to be 'sticky.' Once you create the stickiness for the guest, you don't have to do much. The guest would automatically go into the app to do everything." (Manager Informant #30)*

4.3.2 Resources Contributed

This section discusses the various resources hoteliers devoted to facilitating co-creation activities with customers. The various types of resources unearthed from the data analysis can be categorized into three main types—human resources, corporate resources, and IT resources. The following sections discuss in detail how these resources are uniquely associated with the facilitation of hotel-customer value co-creation.

4.3.2.1 Human Resources

Hotel managers mentioned four types of human resources required for facilitating co-creation activities with customers—manpower, intelligence, empowerment, and training.

Manpower. It is not difficult to relate co-creating with customers to a heavy demand on manpower. After launching their mobile app services, hotels must spare a portion of their manpower to take care of customers' information flow from the app. The ease of making service requests through the apps for customers implies more follow-up work by hotel staff. Furthermore, the fact that customers can make "free" or open-ended requests with few restrictions poses further challenges for hotel staff. Staff members are not only handling service requests that simply require execution, but also conducting real-time conversation with customers, which requires timely and careful responses. Manager informant #31 recalled his experience of handling an incoming chat with a customer:

> "*Sometimes I need to take care of the chat, while I am also dealing with other tasks on hand. And as I only have one brain, when I am working on one task, I may not be able to handle others, I cannot do two things at the same time. If I stop all other things and only focus on interacting with guests on the chat, I create an extra burden for my colleagues, who then cannot take care of regular phone calls.*"

To provide a seamless experience to customers, staff members need to be in harmony with the app functions. From promoting the apps to executing app services in daily operations, many extra procedures are involved, especially for the operations team. For instance, for every customer request sent through the app, operations need to follow up on it by taking appropriate actions. It is also the responsibility of operations to ensure the connection between app services

and physical services. Manager informant #21 shared the daily responsibilities of his operations team:

"Two days before a guest's arrival, we send a message to them, inviting the guest to use [online check-in]. Once the guest clicks on that and then starts to check-in around 2 pm, for example, that message is transferred to our system here. So we have a code here for check-in. Once we have received this information, the rooms controller in the morning will post the report, who's the guest using mobile check-in. Some of the guests leave specific information about which business phone or personal phone they are using, and once the room is ready we will notify the guest. The reservation will send an email to guests who are not using the mobile check-in. For example, today, I will check for tomorrow's arrivals. Some of them already chose mobile check-in, some of them not, but if they are our members, we will send a reminder to the guest to invite them to use this function." (Manager Informant #21)

Intelligence. The coding analysis reveals human intelligence as another specific type of human resources required for the facilitation of hotel-customer co-creation. Many types of human intelligence—including competency, determination, intuition, and creativity—were mentioned by hotel managers during the interviews. These types of intelligence or qualification are particularly important, especially when customers' open requests are unanticipated. The staff members handling these requests need to be competent and capable of interacting spontaneously with customers:

"You also have to have someone behind the scene to chat; it's not a generic thing that sorts things out automatically when they come up." (Manager Informant #22)

When interacting with customers through instant messaging, the front line employee in charge needs to be very careful when responding, especially when their facial expressions and body gestures cannot be observed by customers. For example, when a particular service request cannot be handled by the hotel, the service representative needs to be careful when explaining why. He/she must be quick-witted and determined to provide a responsive and appropriate solution to customers:

> *"The important thing is, how to turn those unsatisfied customers into satisfied ones by making them satisfied with the way we handle the issue…I always teach our staff that we want our guests to be satisfied with the solutions we provide them" (Manager Informant #26).*

As discussed before, some managers pointed out that the information from the apps could be limited in terms of the level of detail. Therefore, handling customer information from the apps often requires intuition, which was mentioned as an important human resource for providing quality customer service. Based on information collected through the app, hotel staff may need to further analyze an individual customer's needs and wants using other methods (e.g., observation) to acquire a more complete understanding. For examples, less information might be collected about business customers who book online or through their secretary or travel agent. In these situations, more intuitive service and on-site anticipation is needed to understand the customer. Therefore, the approach to interacting with customers and personalizing their stay varies depending on hotel type and the purpose of the stay.

Lastly, creativity was mentioned as a necessary human resource. It could be associated with the flexibility needed for employees to handle unexpected situations. As customers can

initiate conversation almost anytime and anywhere, frontline staff must be flexible and provide creative solutions. Manager informant #29 stated:

> "*I think it all goes back to creativity. So the customers have changed to gen Y, the workforce has also changed to gen Y, right? So then how do you use the creativity of the generation to serve the new creative requests from the same group of customer? Number two, more focus on creative solutions because people don't want to hear the word 'no' in our industry. You can say no in a very nice fashion by giving alternatives.*"

Empowerment. Management stated that employees who are competent, determined, intuitive, and creative need to be empowered to face customers who have also been empowered with easier access to express a wide range of needs. In this way, employees can make creative experiences for customers. When individual customers are empowered to initiate interactions with hotels, it is almost impossible for the hotel to handle all customer interactions without giving a certain level of power to a team of staff members. Thus, empowered and competent employees ease the stress on higher management. Manager informant #26 explained that his team members are given the authority to go ahead with things that will wow their guests. They can seek official approval later on, so they will not miss the perfect moment. Managers emphasized hiring the right talent as an important starting point of staff empowerment:

> "*Be creative, feel empowered to create an experience, it is all in your hands, so hiring the right talents and the right profiles of associates is getting more and more important.*" *(Manager Informant #29)*

Training. Lastly, managers pointed out that even intelligent, empowered employees require training, especially when new technologies are involved. Manager informant #33 mentioned the many "growing pains" that a company might face when developing and launching

new technologies. Manager informant #21 explained how online training helps inform employees why the company is offering certain technologies so that they can give clearer explanations to customers. Providing training to intelligent employees helps them determine the right thing to do in different situations. When customers are empowered to participate in and initiate conversations, training helps hotel employees to be prepared. Providing training to employees also helps ensure delivery of consistent service. Such considerations are relevant even for senior or more experienced staff:

> *"Well, no matter what level you are at, you always face some difficult questions from guests where you are hesitant and need to think. So it is really based on your experience. Also, training is important. In five-star hotels, basic training lasts for at least three months. It takes perhaps about half a year until the time you can handle a guest on your own. So we also encourage our staff to ask more senior colleagues when they are uncertain." (Manager Informant #24)*

> "*Now they can already send a request to the mobile app…and in there is also something that is related to free-form texts…how operationally we can execute that well is through training, through leadership, and through what we call pre-arrival planning." (Manager Informant #29)*

More specifically, hoteliers train their employees to have a flexible mindset to interact with customers with diverse needs and wants. By paying attention to details such as the purpose of a customer's stay, employees can, for example, complement this purpose instead of delivering a generic experience. Especially when what customers ask for might not be feasible, management relies on training to ensure employees know how to react. The ultimate goal is to make things easy for the customer, and come up with a solution to customers' problems.

4.3.2.2 Corporate Resources

The second type of resource is corporate resources, of which managers emphasized four types—adaptation, monitoring and learning, standards and guidelines, and internal coordination.

Adaptation. Top management must have a corporate culture that embraces change and dynamics, especially in today's fast-changing world where technology has dramatically transformed human behavior. Hoteliers must also be willing to adjust their existing practices after introducing new technological services such as mobile apps. The digital environment has forced businesses to change their habits. Manager informant #32 emphasized adapting and changing to meet customer expectations:

"If it [the chat] becomes very popular then you need to start adapting…So the power, business dynamics is changing. And I think that's one thing, that as a hotel we always have to think about adapting and changing…Now everybody thinks that email should be instantaneous, email should come back within five minutes. I emailed you, why didn't you respond? So we have to keep changing the way that we do business." (Manager Informant #22)

It takes time for hoteliers to adapt to and master the use of mobile apps to achieve their goals and to drive higher customer usage. Manager informant #31 pointed out that although the usage rate of some digital services is still low, once the company has gained more experience with them it can more easily target customer groups.

Monitoring and Learning. To improve customer experience using big data collected from customers, hoteliers need to undergo a monitoring and learning process. Hoteliers first monitor and analyze customers' use of the mobile app based on the data, then decide how to

improve customer experience. As the mobile app is relatively new, hoteliers need to understand how customers' mobile app usage experience influences their stay experience:

> "*You have got to make sure that everything is standardized, see how it is implemented, and also how is it followed up and tracked. Because unless you are tracking, you won't see any results. You know, it has to be measurable. When you ask me about how the mobile chat is doing, I know the number, because I stand behind the supervisor every day and I will see the list of how many are coming in, and how many mobile check-ins we get." (Manager Informant #22)*

Hoteliers use a number of different methods to understand customers' mobile app usage experience. The most prevalent is guest surveys, which are normally randomly sent to mobile app users or loyal customers. Such a monitoring and learning process is on-going at both the property and corporate level. At the corporate level, hoteliers look at the bigger picture by measuring the use of the mobile app against important outcomes such as guest satisfaction and revenues. For example, manager informant #32 shared how his company keeps track of customers' evaluation of their stay experience:

> "*The actual result of that has often been that they actually rate their property experience higher if they interact with the app than if they don't…This is interesting, because if the guest orders something digitally without interacting with any human they rate their experience higher. They are 11% more likely to stay again with us. These numbers are very interesting." (Manager Informant #32)*

Corporate management also makes improvements to the app and designs new functions based on customers' feedback. Guest surveys are an important source of information for hoteliers on what additional features and functions to bring to life. At the property level, hotel managers

look at specific details such as customer usage rate and staff response time to monitor these digital services. By closely monitoring customers' experience and responses to the apps, management can decide what actions to take to make improvements and thus achieve their goals.

Understanding customers' needs and preferences by using the app to collect customer data and communicate with customers also engages hotels in a continuous learning process. As hotels interact more with customers, they get to know them better. Manager informant #31 explained that this process involves accumulating knowledge about customers' preferences; for example, knowing that a customer normally requests a make-up room at a certain time, the hotel can proactively ask if the customer would like this arrangement in future stays.

Standards and Guidelines. Setting standards and guidelines for individual hotel properties to follow when delivering services related to mobile apps is necessary, especially when the official apps are used across thousands of properties. The corporate headquarters sets standards and guidelines to ensure customers receive consistent services. For example, manager informant #22 explained the standard for replying to a customer message sent through the instant messaging function. The guideline is to respond within 90 seconds, as the function is supposed to work like a real chat.

Setting standards and guidelines also helps ensure that operations proceed smoothly and efficiently. Manager informant #22 further explained that the standard that guides employees to reply to general enquiries through instant messaging helps operations to save time and ensure efficiency:

"*Fortunately, we built templates in, so you have a template list you can copy and paste in…So when the chat starts coming through, if it is very general, it is very much like, I*

just want a non-smoking room, thank you very much for your message, well noted, your

request will be updated in your reservation…Then the chat is finished."

When conversation with customers through the mobile apps goes beyond a simple, general enquiry, there are also standards for employees to follow to ensure customers are taken care of appropriately. For example, as further explained by manager informant #22, when the conversation goes into more detail (for example, if the customer wants to make a reservation for a particular restaurant at a certain time), the hotel will normally email the customer directly. Aside from ensuring consistency and efficiency, standards and guidelines are also provided for staff members who wish to deliver special services or create surprises for customers. For example, manager informant #26 shared how his colleagues used customer information to provide personalized service by following company guidelines:

"Yes, they have all the guidelines to follow. For example, if we have the guest's profile

and we know when the guest's birthday is, or when they check-in our staff see on their

passport that today is their birthday, they know that there is a guideline 'cake for every

birthday' without having to come and ask me."

Having standards and guidelines helps employees function more effectively in dynamic situations, especially when employees make use of individual customer information at large hotel properties. Moreover, standards are set for individual hotel properties to achieve goals related to the provision of mobile app services. Manager informant #29 mentioned that setting goals is also important to motivate and guide the employees to understand how best to work in harmony with the mobile app services:

"If you tell them mobile check-in is just another method of checking in, mobile service

request chat is only another way of communication, this will become an optional item.

But if you tell people that this is the way that we are going to drive the future of success

for guest experience, now everybody is going to focus on that."

Setting standards and guidelines is especially important when individual customer information is involved. Hoteliers must ensure that employees do not violate boundaries when using customers' personal information. Standards and guidelines established to protect customer's privacy also apply when the aim is to promote customized content. Managers are particularly sensitive to customer privacy, as careless actions can lead to legal issues. Hence, hoteliers set restrictive privacy policies. If customers indicate they do not want to receive promotional offers, for example, hotels must stop sending promotional offers, including email notifications. Hotels also never disclose personal identifiable information, which they take extensive measures to protect.

Internal Coordination. Managers indicated the importance of vertical and horizontal internal coordination to provide hotel mobile app services. Vertical coordination means that there must be harmony from individual properties to the corporate level, to ensure that app services are executed consistently throughout the globe. The hotel mobile apps investigated in this study were developed by corporate headquarters. Launching the apps at individual properties requires employees at each individual property to deliver the service by adhering to corporate guidelines. Individual properties work closely with corporate headquarters by reporting problems or providing feedback based on the daily observations of the apps.

The provision of services through a hotel mobile app involves a number of departments with different responsibilities. In general, it requires operations to act on customers' input; marketing to deliver the message and attract higher usage; IT to provide maintenance and support; and research and development to look into what customers want and to test the app

functions. Providing services through the app requires teamwork at the property level to deliver consistent service to guests. Such teamwork is especially important when a large number of customers and a huge amount of requests are involved. Teamwork is particularly important when the goal is to deliver personalized and consistent customer service. Team members strive to maintain and act on data in a consistent manner for mutual benefit:

> *"And our colleagues in different positions also know about these special preferences. For example, if a colleague is on leave today, other colleagues who take over also know what the specific preferences are for the guest." (Manager Informant #27)*

> *"Updating guest profiles is key, not just for yourself, but the next person, who is going to do your job, and the next team member that takes over, for the future teams." (Manager Informant #22)*

Lastly, internal coordination also means that even though providing a service might benefit customers, hoteliers need to consider whether their employees are capable of handling the service. For example, manager informant #30 explained that before rolling out a new mobile service, in addition to making sure that customers would love to use it, they also ensured it would work for their employees at the back end:

> *"So our staff can say no, it's very clunky for me because I used to do this at three steps. With this, the customers may gain from it, but from my end, it would create a lot more work. So we have to make sure we find that balance where we provide a service to the customers where they like it and they use it, but also help our staff for executing from the back end."*

4.3.2.3 IT Resources

IT support is undoubtedly a fundamental resource for supporting value co-creation activities facilitated by the hotel mobile app. Specifically, hoteliers stated that IT's role in monitoring app performance and supporting an integrated system for storing and organizing data is vital to successfully providing customer service through the app. First, IT support helps hoteliers to identify defects within the app functions. IT testing helps identify and eliminate system errors or bugs. Second, most hotel managers pointed out that having an integrated system across all hotel properties is critical to delivering successful services through the app. If the customer data collected through the app cannot be shared among different properties, it is difficult to deliver consistent services and anticipate customers' needs based on past stays:

> "*But really, the number one thing that I think is required to make this kind of capability successful—and to do them well—is to have a highly integrated systems across our hotels, so that we can have a consistent platform across all of our hotels that our mobile app can integrate with." (Manager Informant #23)*

Some hotel companies are still in the process of building an integrated system that can connect customer information among all individual properties—an important work-in-progress that will provide huge benefits for the hotel company in the future.

> "*I think the main issue is the lack of connectivity in our property management system. The app as it is today is an independent system; there is no interface to the system that our guests check in with. So a lot of this is done manually. We are in the process of trying to bridge that integration, but it's going to take some time to get there." (Manager Informant #28)*

4.3.3 Challenges and Constraints

Managers pointed out different types of challenges and constraints when collaborating with customers through the apps. They include limited resources, technological deficiency, empowered customers, and other factors (risks, legal issues, system issues, standardization, customer privacy, and customer awareness).

4.3.3.1 Limited Resources

Hoteliers need a variety of resources to collaborate with customers. However, these resources are often limited because mobile services are not the only product or service offered to customers. Employees often multitask when looking after incoming information from the apps. Limited human resources might affect the delivery of mobile services. For example, hotels might have a slow response time to customers' mobile messages when nobody is checking incoming messages, as can happen when hotel employees multitask. The service representative might not be able to engage in personalized conversation with customers when multitasking.

In addition to challenges due to limited human resources, the limited nature of hotels' products and services (e.g., there is a fixed number of rooms) is another constraint. Several managers pointed out the difficulty of satisfying customers' requests for early check-in when the hotels often have a high occupancy rate. In addition, hotels must also consider costs when deciding how to handle customer requests. Therefore, service requests in hotels are subject to availability:

> *"This type of things will happen for sure, even for requests as simple as smoking/non-smoking rooms. As I said just now, we do our best to accommodate them, but if this cannot be done then that's the way it is." (Manager Informant #26)*

When customers can make open-ended requests, the unpredictability poses an even greater challenge to hotels. As customers can basically request anything, hoteliers cannot satisfy all requests:

"It is impossible for us to handle all requests or satisfy every single guest's special preference. Of course the hotel is flexible, so we will see, for example, there are many things we can analyze and consider. For example, how much the guests paid, what their trip's purpose is, or if the hotel actually possesses any resources that can satisfy what they want." (Manager Informant #24)

Therefore, due to limited human resources and other types of resources, even though the app is available to all members, hotels might not be able take care of every single customer communication through the app but must prioritize based on guests' status. Service requests are not guaranteed but depend on availability:

"Very hard to do it for everybody. You know, for your VIP guests, for your multiple stay guests, guests that are here every week…you can't do it for, like, every person that comes in, you can if you are a small hotel, you can do that. For a bigger hotel, if you have got such high volume of guests, it is very difficult to do it for everybody." (Manager Informant #22)

"At the end of the day it's all about doing business. We look at the costs. If we already have the resources that can be used to satisfy guests' preferences, if we have manpower and time, then we definitely can make it happen. So whether we can satisfy a guest's preference is very personal and depends on the situation…But if the guest is our diamond member or if they always stay with us, for example, if this is their 50th or 60th stay, I will die for that." (Manager Informant #24)

The limited time that hoteliers have to prepare for customers' stays also poses challenges for hoteliers in satisfying customers. If customers choose to make service requests through hotel mobile apps, they can only do so when making reservations or several days before their check-in date. In other words, if customers make a booking relatively late or if they message their request to the hotels several days before their stay, hotels might not have enough time to prepare for them.

4.3.3.2 Technological Capability

While one advantage of collecting mass customer data is to share information among sister properties, large hotel groups with thousands of properties around the world might have difficulty disseminating information. Informant #24 pointed out that a highly integrated system is required for giant international hotel chain companies that have thousands of properties around the world:

> *"We have 4,000+ properties around the world, and there are different types; some are management properties, some are franchise properties, some are wholly owned properties. The information is not shared between all three types of properties. So it really depends on the geographical location." (Manager Informant #24)*

Manager informant #29 made a similar comment. At the corporate level, her company is currently working on an integrative CRM for the entire company to combine the portfolios of all members under different loyalty programs into a single platform to be able to identify guests no matter which of the company's properties they stay at around the globe. The goal is to recognize loyal customers, not only in terms of their identity but also their profiles, preferences, and past activities. Manager informant #29 pointed out many types of customer information that the company would be able to analyze when an integrative CRM system is available—for example,

how many days they normally book in advance, the ways they usually travel, who they usually travel with, their normal travel purpose, their favorite hotel brand and city, and how frequently they redeem stays.

4.3.3.3 The Empowered Customer

Hoteliers originally design apps to make things easier for customers. When things become much easier, however, customers make more demanding requests:

"Now many guests are spoiled, especially when these mobile apps provide so much freedom for them to choose so many options…even though if they order 20 to 30 items, we still need to do our best to satisfy their desire. So to me, one problem of the app is there is no limit. The app decreases your considerations toward human interactions, where you may think that if you ask too much you are causing trouble to people. So when you are using the app, you don't have this scruple anymore. A lot of people actually forget that behind the app, there are actually many real-life people fulfilling these orders. Even for myself, when I use the app, I feel that it's really convenient that I just need to press, press, press. Then I can request many things and I feel I deserve all these things because I have made a reservation." (Manager Informant #24)

The ease with which customers can make requests also puts extra pressure on operations when often customers do not actually need such service. According to hotel managers, customers might make requests because it is easy for them to do so:

"If they can provide us the arrival time, when we finish making up a clean room, we can first assign the room to guests who will arrive earlier. But I can tell you that there is a 50% chance the guests will not show up according to their reported arrival time, based on operations statistics." (Manager Informant #24)

The fact that hotels have limited resources and that service requests are not guaranteed but subject to availability leads to conflicts and customer complaints when customers cannot get what they have requested:

"When the guests cannot get what they have requested on the app they will complain for sure. They will say, well, I ordered something on special request: why you didn't give it to me? Well, I think placing a request there doesn't necessarily mean you will get it; this is true for even our members." (Manager Informant #25)

Because "open" channels allow customers to make open communications, sometimes hotels have difficulty deciding how to respond, especially when impolite language is involved. The fact that mobile open channels make it easier for customers to raise concerns has increased the chance that hotel management might face difficult questions from customers. Manager informant #31 stated that sometimes customers might send irrelevant messages. In those cases, it was difficult for the hotels to decide how to react.

Lastly, some self-service functions allow customers to skip human interactions to achieve higher efficiency and convenience. However, this feature sometimes poses challenges for hotels when customers simply leave the hotel without confirming their bill at the front desk:

"We don't want to charge them extra or less. A lot of guests consume some mini bar items and then express check out, and say they didn't consume anything, while actually they cleared out the entire refrigerator. So in that case, what should we do? Fortunately, we still have their credit card, so we can charge them back. So there are pros and cons to these technologies. One benefit is that we can receive guaranteed payment. The downside is that no one confirms if the billing is correct. By the time somebody finds out the

problem, it takes a month to solve the problem and redo everything again." (Manager

Informant #24)

4.3.3.4 Other Factors

The managers mentioned a number of other issues related to collaborating with customers through the hotel mobile apps. For example, manager informant #22 explained that the hotel company faces a high level of risk associated with hardware renovation, which involves substantial investment. Providing digital services also involves legal issues. For example, manager informant #22 pointed out that the implementation of digital keys involves anti-trust laws and copyright protection. While hotels can control traditional key cards and make sure that customers are safe, the process becomes more complicated when the key can be accessed on customers' own smartphones. Another constraint related to legal concerns is that in some countries, customers are not allowed to skip the front desk entirely when checking in at the hotel. Some governments require hotel companies to scan customers' passports for their immigration chop. System capacity also leads to certain constraints. For example, technical issues might cause inconsistency between the information shown in the customer's app and the information shown in the hotel's system, which might frustrate customers. Lastly, some property-level management informants pointed out the constraints due to the standardization of the app. Because the apps are managed and developed by the corporate headquarters and are designed for the whole hotel group, the level of control that an individual property has is relatively low:

"All functions available to guests are pre-set by the group. Even the push messages I

mentioned to you just now, we need to submit the contents for the group's approval…for

individual properties, we have relatively low control over them…at the corporate level

our group, of course they want to maintain a certain level of control over the app."

(Manager Informant #27)

Even if hotels want to provide more personalized customer service, they need to be careful not to infringe on customers' privacy. Intelligent employees are needed to determine whether a certain practice or a request for a certain type of information is appropriate. Manager informant #30 explained that he believed personalization is good as long as it does not make customers feel uncomfortable:

"If you knew hotels would go on Google and find out about this guest, and then find out his family, they go through your Facebook page, find your family photo, print it and put in in the bedroom. The intention is good, they want you to feel a sense of home, but again from the customer's perspective, how did you get that photo? That is something that is very personal to me, right? And the guest may get offended, because you have infringed on that privacy. So there is a fine line, where personalization can go across the line, and that can be very offensive to some of our customers...if you never get permission from the customers, you may be asking for trouble."

Several managers indicated that customer awareness of and demand for app functions are still relatively low at this stage. Manager informant #22 cited an approximately 10 percent daily usage rate for mobile check-in through the apps, which has steadily increased since the function was first introduced. Manager informant #22 also pointed out a relatively low usage rate of the instant messaging chat function. The function is not popular yet and is still in its infancy. Likewise, manager informant #24 pointed out the extremely low usage rate of the various app functions, as most customers still prefer to communicate through traditional channels. Manager

informant #30 pointed out an approximately 3 percent usage rate for the instant messaging function at his hotel company.

TABLE 12. Hoteliers' Supportive Elements—Coding Frame

Themes	No. of Informants
Proactive Engagements	
Exclusivity of Apps	
Members-only	9
Members appreciation	2
Stickiness of Apps	
Get things done easily	4
Get everything done in a single platform	1
Resources Contributed	
Human Resources	
Training	5
Manpower	4
Intelligence	4
Empowerment	2
Corporate Resources	
Monitoring and learning	13
Internal coordination	12
Standards and guidelines	8
Adaptation	4
IT Resources	
Develop integrated system	8
Monitor app performance	7
Challenges and Constraints	
Limited resources	11
Other factors	10
Technological capability	7
The empowered customer	5

4.4 Hoteliers' Service Design for Value Co-creation

After describing hoteliers' facilitation efforts and practices, we understand that the exchange of information and one-to-one interaction is the basis of hoteliers' co-creation strategies. But how is value expected to be co-created through this service design? What makes hoteliers uniquely able to facilitate value co-creation using these various types of mobile services? This section discusses the unique forms of co-creation that emerged in this study context, by connecting the basis of co-creation (i.e., mass customer data collection and one-to-one customer interaction) with ICT-facilitated service (i.e., hotel mobile app services). As discussed, hoteliers center on two core strategies to co-create value with customers: mass customer data collection and one-to-one interaction with customers. Hoteliers embed their intentions and value propositions into the design of their mobile app services. The imbrication between hoteliers' intention and the unique features of mobile technologies forms the foundation for value co-creation. The following sections analyze such imbrication between human intention and technology materiality and delineate the forms in which value is expected to be co-created in this study context.

4.4.1 The Co-development of Service Patterns

When discussing hoteliers' perceived technology affordances, we know what the mobile apps can do for customers and how they are expected to be used. To connect the apps with the basis of co-creation, we will discuss how information is exchanged and how one-to-one interactions occur with the support of the apps. Figure 8 revisits the technology affordances of the apps by separating them into two groups according to the basis of co-creation following hoteliers' strategies. One group involves customers' simple provision of information, where hotels' response is normally not necessary but implied. This group of affordances is labeled

"functional," as these customer actions mainly bring functional value. The other group is labeled "interactional." When customers use the apps for these actions, hotels' prompt responses are normally required. Both group of affordances are designed for customers to exchange information and interact with hotels throughout the entire travel process. First of all, customers' actions as a result of functional affordances are basically self-service. There is barely any interaction between them and the hotels. So how do hoteliers involve customers in co-creation through these technology affordances when there is barely any interaction? How are these self-serving features with a functional nature associated with the co-creation of value?

FIGURE 8. Functional and Interactional Affordances
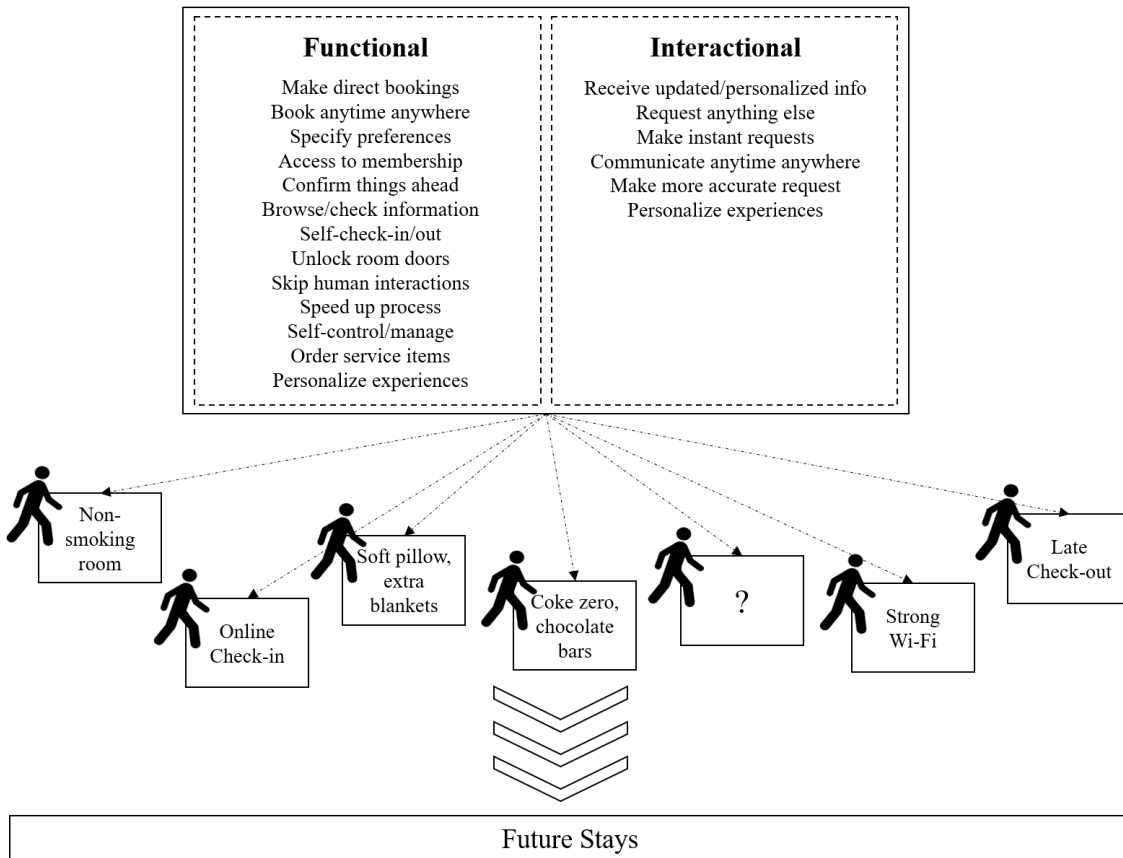
The ways in which the data were collected suggest several explanations for this form of co-creation. With the apps' materiality of mobility, ubiquitous connections, and real-time synchronization of information, hoteliers are able to collect useful information at different key

points during a customer's journey and react appropriately upon receiving such information. The various services embedded in the mobile apps represent some of the most important service encounters during a hotel stay. The reservation function is presented at the starting point of the journey, the self-check-in/out and room access functions replace the traditional check-in, the service request functions represent the hotel concierge and housekeeping services, and the in-app information is available for the customer throughout the entire journey. Hoteliers are able to collect relevant information at each important service encounter: for example, customers' room preferences, their preferred check-in time, their preferred pillow type, their need for extra in-room amenities, their dining preferences, and any problems they had during their stay (e.g., a Wi-Fi problem). Designing services that represent some of the most important service encounters during a hotel stay entices customers to share information while enabling hoteliers to provide meaningful services based on the useful information customers shared through the various app services.

By consistently collecting and acting upon customers' information, hoteliers are actually allowing customers to build their own service pattern. That is, customers are allowed to specify what they want, at which key point during their stay. Each individual customer's stay pattern is unique. In fact, customers do not develop their own service pattern but co-develop their service pattern with hoteliers. Customers' service patterns could not be determined without corresponding action from hotels. Shaping unique customer service patterns depends on hotels' appropriate responses to provide what customers have asked for.

Thus, through this category of action potentials afforded by mobile technology, hotels and customers are "connecting the dots" between the important points during a hotel stay in a systemic way. Such "dot-connecting" appears to be feasible for the present stay and future stays.

151

Hoteliers save an individual customer's service pattern for future use. For example, knowing a customer always prefers a particular room type, hotel staff remember this and personalize customers' future stay by preparing the room they want. Knowing that a particular customer always needs extra pillows and bottles of water, hotels always prepare accordingly for this customer; this approach is what hoteliers consider the personalization of customer experience. Knowing that a customer complains about slow Wi-Fi, hotels then mark it down in the system for service recovery and ensure that when this customer visits again in the future, the same problem will not occur.

The co-development of service patterns explains the rationale behind the "seamless experience" that hotel managers describe as the biggest benefit of the apps for the customers. The co-creation efforts between hotels and customers connect the dots between these important service encounters that result in a seamless experience for individual mobile app users. At the aggregate level, hoteliers also design their future service provision based on customers' behavioral patterns. A number of manager interviewees mentioned a number of times how they used customer data to detect trends. Hoteliers also rely on customer aggregate data to evaluate their current practices and decide what their next service development should be. Examples include customers' spending patterns in general, the usage rate of different mobile app functions, the evaluation of mobile app services, customers' post-stay feedback ratings, and the new app functions that customers might prefer. Hoteliers tend to measure these at an aggregate level rather than at individual levels to be efficient and save costs.

4.4.2 Improvisation of Experiences

The other group of affordances shown in Figure 8 is associated with interactions. They afford hotel-customer two-way interactions almost anytime and anywhere during a hotel stay.

Hoteliers strive to maximize the freedom and flexibility for customers to decide what to do. The mobility nature of the hotel mobile app makes it always accessible to customers; its ubiquitous connectivity allows customers to reach hotels at all times; its real-time synchronization enables both customers and hotels to react immediately to the information sent and received through the apps. In addition, such design empowers customers to interact with hotels in unexpected ways thanks to the open communication functions. Managers recalled how customer interactions happened out of the blue. For example, a customer sent in a request for the darkest room in the hotel with a photo of Elmo stuck on the TV; another customer wanted a picture of Lionel Richie on the nightstand.

ICT-facilitated service further magnifies the number of possible service encounters, meaning that co-creation opportunities have largely been extended in spatial and temporal dimensions. Customer-hotel encounters are no longer restricted to hotel premises but also occur outside when customers are traveling. When hotel-customer interactions can be two-way, simultaneous, and "always-on" throughout the entire travel process, the door is open to a series of unpredictable and uncontrollable interactions. The many examples in this study show that interactions between hotels and customers are no longer restricted to traditional communications such as making bookings, reserving tables, making up beds, or arranging transportation. The freedom and flexibility provided to customers implies that the service supplier also needs to be flexible enough to respond.

Such a unique form of co-creation has transformed the travel environment into an improvisatory experience, wherein what could happen in the next moment remains unpredictable and difficult to control. For this reason, hotel managers pointed out the importance of intelligent, experienced, empowered, and well-trained employees in handling co-creation activities. They

have to be fully prepared for customers' improvising their own experiences anytime, anywhere, with the hotel mobile apps. In addition to the customers, hotels are also improvising through this form of co-creation. Hotels try to analyze and understand customers even with only small amounts of information. Each individual customer has unique characteristics and goals, which forces hotels to improvise according to whatever they know about a specific customer. As shown in some of the examples, when the hotel only knows that a customer wants to stay in the quietest room, what else should be prepared for this guest? When the same customer stays again but in a different part of the world, should a different experience be delivered, given that the customer is coming for leisure and might want to experience the local culture? There are many examples from the interviews showing that hoteliers improvise based on bits and pieces of customer information, which is valuable for them and which opens up interactions with customers. According to hotel managers, the reactions in these types of situations depend on the guests' status, hotels' resources, and other situational factors. This finding is consistent with hotel managers' comments on the need for creative solutions to deal with the dynamic environment in which they must improvise solutions and customer experiences.

4.5 Chapter Summary

The structure of hoteliers' service design in this unique study context is demonstrated in Figure 9. With an intention of improving customer service and delivering greater value for the customers, hoteliers approach mobile technology due to the power of its unique features— portability, ubiquitousness, and the ability to exchange information in real-time (i.e., the materiality of mobile technologies). Hoteliers embed their goals and intention into the development of mobile app services, which are built to facilitate hoteliers' core co-creation strategies (i.e., mass customer data collection and one-to-one interactions with customers). To

154

provide these services and facilitate value co-creation, hoteliers highlighted the requirement of a range of elements to support their practices (i.e., proactive engagement, certain types of resources, and the need to face specific challenges). In other words, the design of the four main functions that hoteliers focus on (i.e., reservation, information, self-check-in/out, service request) incorporates their goals and expectations (i.e., customers' expected ways of use). Hoteliers believe the affordances of their mobile app services would empower customers to perceive the value propositions (an overall enhanced customer experience and greater customer value). In particular, if customers can specify personal preferences, consume personalized content, maintain higher control, and communicate with hotels anytime and anywhere, the result is a more personalized customer experience. Through the app services, value is expected to be co-created in two unique forms: the co-development of service patterns and improvisation of experiences.

FIGURE 9. Hoteliers' Service Design for Mobile-Based Value Co-Creation
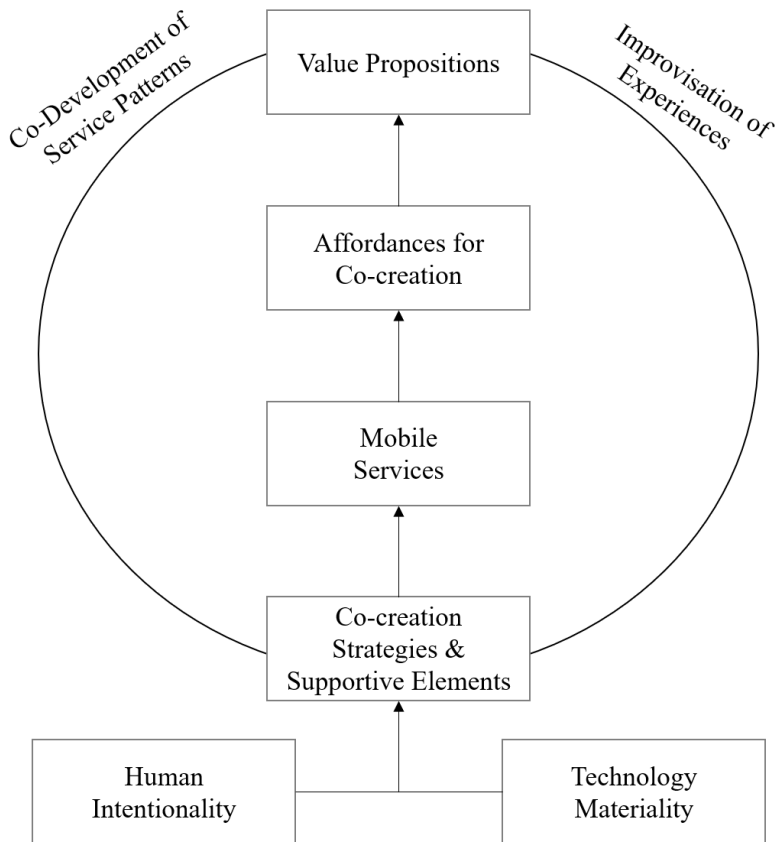
Value Propositions:
Functional, emotional, social, epistemic, personalization value

Affordances for Co-creation:
Specify personal preferences, consume personalized content, self-control, "open" communications anytime and anywhere

Mobile Services:
Four main functions: reservations, information, self-check-in/out, service requests

Co-creation Strategies:
Mass data collection; one-to-one interactions

Supportive Elements:
Proactive engagement, resources devoted, challenges and constraints

Technology Materiality:
Mobility; ubiquitous connectivity; real-time synchronization

Human Intentionality:
Enhance value for customers

CHAPTER 5: CUSTOMER PARTICIPATION AND COLLABORATION

Hoteliers' facilitation efforts require responses from customers to activate the co-creation process. That is, while the service provider shows the desire to co-create with customers by offering them accessible tools for participation, whether value can be co-created depends heavily on customers' participation and collaboration with the firm. Customer participation in value co-creation is understood as the "required (in-role) behavior necessary for successful value co-creation" (Yi & Gong, 2013, p. 1279). Collaboration refers to the execution through communications and dialog to "integrate mutual resources into value configuration" (Ranjan & Read, 2016, p. 292). This chapter reports how customers participate in the co-creation process, and how they collaborate through interactions with hoteliers to co-create value.

5.1 Customers' Perceived Affordances

5.1.1 Room Reservation

Like hoteliers, customers discussed their use of hotel mobile apps in relation to four major functions—room reservation, information, self-check-in/out and room access, and service requests. First, customers used the reservation function to make direct bookings anytime, anywhere, access membership benefits or activities, customize room preference, receive booking related notifications, and prepare for things ahead. While the ways of customers' use of the apps generally match hoteliers' expectations, the majority of the customer interviewees did not associate the room preferences options (e.g., room type, bed type, room location, room view) as "personalized options." Instead, informants described these options as basic and general choices that a normal hotel would offer. Some customers felt that these options were limited:

"But indeed, the options that you can choose from these preferences are very limited. For

example, there is an option for you to choose the distance between your room and the

elevator, whether you want to be close to or far away from the elevator. There is also an option for you to choose your floor preferences. Actually, regarding this floor preferences, the options they provide are very limited: only bottom, low or high floor." (Customer Informant #19)

5.1.2 Information

As hoteliers expected, customers used the apps to access a variety of important information related to their hotel stay. Customers checked their reservation information, hotel information such as hotel location and facilities, promotional information, membership profile, past transaction activities, and destination or travel-related information. However, differing from managers' expectations, none of the customer participants mentioned that they used the app to consume personalized information. In contrast, some customers complained about the quality of the in-app information, which they found of limited use and relevance. For example, as customer informant #1 stated:

"For example, if I am hungry and cannot think of what I want to eat, they can make very spot-on recommendations. My experience this time, what they recommended to us wasn't very useful. But what I mean is that actually they can make things more accurate. It's just like if you come to Macau, I won't recommend tourist restaurants to you but some local places or some personal opinions that are at least different from the most famous ones you can find on the Internet. They are too perfunctory. The function itself is good; if they can improve the way they use it, the entire experience will be better, and absolutely people will rely on it."

5.1.3 Self-Check-in/out and Room Access

As was expected by hoteliers, customers also used the self-check-in/out and room access functions to prepare things in advance, avoid human interactions, shorten their wait time, and be in control. While hoteliers also expected that customers would use these self-service functions to personalize their own experiences, customer participants in this study had different opinions regarding this topic. The majority of customer participants did not perceive that hoteliers offered the self-service function for them to personalize their own experiences. Instead, customers perceived they were completing tasks by themselves. For example, customer informant #11 used an ATM machine as a metaphor to explain why hoteliers offered such self-service functions to customers:

> *"You know the ATM machine that we get our money from, they didn't put those ATM machines in for us, they put them to have fewer people at the counter…I am sure you have seen lines in the hotel right behind the red rope: 'Oh I am sorry, can I have a smoking room, you know what, I don't want a smoking room, can you bring my dog?'…With the app, you don't have to wait in line. [The company] is also doing it for their own sake because they can use technology to add efficiency to their service." (Customer Informant #11)*

Customer informant #12 explained that while he could control his own activities, he did not feel that he was personalizing his own experience when using these self-service functions. He could not think of any way that it felt personal:

> *"I don't really feel like they tailored anything to me. I mean, it's just, I can't think of anyway that is personal. I pick the hotel, I pick the room, I don't deal with anybody, so I don't really get a personal feeling with it." (Customer Informant #12)*

Only one customer interviewee mentioned that the self-service functions allowed him to personalize his own experience:

"It allows me to personalize it just the way I want it. I can choose to have a little or large or no human interactions, and that's very valuable." (Customer Informant #14)

5.1.4 Service Request

Customers used the service request functions (housekeeping menu and open service request functions) to access an extra communication channel through which they could communicate anytime and anywhere about anything else they might need, avoid human interactions, obtain an immediate reply, confirm things in advance, and make more specific requests, which altogether allowed them to personalize their own experiences. These perceived affordances are consistent with hoteliers' expectations. However, one noticeable difference between hoteliers' and customers' perceived affordance of the service request function is the two groups' perception toward using the function to request anything needed. While hoteliers expected that customers would be able to request anything almost anytime and anywhere, coding analysis reveals that customers are hindered from doing so. First, the majority of customers perceive the options provided on the service menu as limited. Second, even though customers could freely communicate with hotels through the open channels, the majority of them were not motivated to do so. Most of them were concerned about using the function. Third, most of those who used these functions to communicate with hotels during their stay perceived a restricted but not flexible use of the functions.

TABLE 13. Customers' Perceived Affordances—Coding Frame

Customers' Perceived Affordances	No. of Informants
Room Reservation	
Specify room preferences	12
Make direct bookings anytime anywhere	10
Access membership benefits/activities	9
Confirm things ahead	3
Received booking-related notifications	1
Information	
Browse/search all important information	13
Self-Check-in/out & Room Access	
Self-control/manage	5
Speed up process	4
Avoid human interactions	3
Prepare things ahead	2
Service Requests	
Extra communication channel	9
Communicate anytime anywhere during stay	6
Avoid human interactions	5
Prepare things ahead	4
Make instant requests	3
Request anything they need	2
Make more accurate request	1
Personalize their own experiences	1

5.2 Customers' Value-in-use

Customers create their own value-in-use from the use of the hotel mobile apps. This section reports on how customers' value-in-use emerged from their use of the apps and their collaborations with hotels through the apps. We report customers' value-in-use by functions to be consistent with previous discussion of their perceived affordances of the apps. Similar to hotel managers' expectation, five categories of value emerged from customers' data—functional value, emotional value, epistemic value, social value, and the value of personalization. The definitions of these value categories follow the previous ones in Table 9.

5.2.1 Functional Value

Convenience and Efficiency. Most customer participants perceive the apps as convenient and efficient, saving them time and effort. Customers are able to start communicating with hotels prior to arrival through the apps, and appreciate hoteliers' efforts to get everything ready before their arrival. Other than easy bookings, customers particularly enjoyed the convenience of being able to manage their hotel stay through "a few clicks." Access to their membership account brings flexibility for them when making purchases (e.g., they could choose to pay cash or redeem points). Being able to keep track of different things such as their membership status and information relevant to their trips through a single platform is also convenient. Customers in general perceived a higher level of control of their own activities. Specifically, customers enjoyed the communications with hotels anytime, anywhere, especially when they had sudden needs while traveling in the area. The majority of customers valued the fact that they could communicate with hotels "silently" without human interaction, which helped eliminate

friction during their stay (e.g., having to make a phone call, being transferred to different service representatives, lining up at the front desk, waiting for someone to help).

The two-way, real time, open communication channel (i.e., instant messaging) also saved customers time and effort when they could seek advice from hotels instead of searching out solutions by themselves (e.g., some customers sought hotels' advice to plan their trip itinerary). The majority of customers particularly liked the fact that they could solve issues without having to talk or interact with anyone but simply through typing. As texting has become a norm in human communications, some customers perceived typing a few words as more convenient than talking face-to-face even when they were at the hotel. Customers used the function for a wide range of needs, from celebrating special occasions and making restaurant reservations to seeking advice about things to do at the destination. Customer participants in general found the apps made things easier for their travel:

> *"It's interesting because it's not humanized, because the best experience that I have doesn't involve a human at all. I do online check-in, I use the key app, and I have my bill delivered to me electronically when I check out. I have a tool that takes care of the hotel copy of the receipt, the Folio. So that handles my expense report, and from there things get automatically paid from my checking account, and my credit card gets automatically paid from my checking account. So I have to do nothing, it all happens by itself. And that's the way I want it to be."* *(Customer Informant #14)*

Financial Benefits. Customers enjoyed the special offers when they booked through the apps. Most of them liked that they could earn and flexibly use their points

when booking through the apps. Hotels offer different types of packages for customers to decide the balance between spending money and points on each stay. Some customers believed they could get the cheapest price by booking through the apps. Often, hotels offer free upgrades or other complementary benefits to loyalty program members. Mobile app users also enjoyed discount benefits when spending at hotel outlets. Financial benefits also come from the elimination of long distance phone calls when customers have an extra direct channel to communicate with hotels through the apps. Some customers perceived that higher service quality was provided to members than to non-members.

Easier Experience. Customers perceived that their travel experience as a whole had become much easier. Some customers used the words "frictionless" and "hassle-free" to describe their experience when they could get a variety of tasks done through the apps. The apps help customers to avoid the parts they dislike on trips (e.g., wasted time, crowds, impolite employees at the front desk). Instead, customers could spend their time and energy on more important things and create better experiences.

This frictionless experience was also attributed to the fact that customers' sudden needs could be taken care of through the apps. For example, customer informant #13 forgot to check out when she was in a rush to catch a flight. With the app, she was able to obtain the receipt directly after departing the hotel. Being able to make arrangements ahead of time smooths out guests' experiences. For instance, customer informant #14 described his "incredible" arrival experience. He was amazed by how as soon as he walked into the hotel, the system automatically recognized that he had arrived using NFC technology. He was delighted that his digital key was immediately shown on his phone,

and all he needed to do was touch a button to enter his room. Customer informant #12 stated that even when he didn't plan his trip at all, he could still complete the whole process—searching for, booking, and getting into his room—within 15 minutes:

> *"If I am in a city and if I don't know where I am staying that night, I can pull up the app and find a hotel near me, pick the closest one, check in, use my phone to get in the room, and make the reservation and be in the room within 15 minutes. So the fact that I can find the closest hotel can check in and unlock the door with the phone makes things really easy." (Customer Informant #12)*

5.2.2 Emotional Value

Comfortable and Peaceful. The comfort and peace mainly come from the elimination of human interactions and disturbances. Customers had the flexibility to decide how and when they wanted to be reached and communicated with. They also liked the option to communicate with hotels without having to respond immediately. The majority of customers in this study felt more comfortable communicating through the apps than through face-to-face interactions. In particular, customers felt more comfortable initiating extra communications during a hotel stay that were optional or inessential. For example, customer informant #1 felt "guilty" asking the hotel staff to help book a table through face-to-face or telephone communication, but felt more comfortable making this request by texting through the instant messaging channel:

> *"When I was talking to the machine, I felt comfortable. A lot of requests, for example, where you wanted to have dinner or you wanted to book a table, when you talked about these things through the chat, it's more natural and you feel like things were taken for granted." (Customer Informant #1)*

"I didn't feel I was annoying them at all, as I thought that after my stay, they wouldn't even remember who I was, so I feel very comfortable talking nonsense with them." (Customer Informant #7)

Thus, when engaging in extra communications with hotels, the majority of customers in this study preferred using the apps. Several customers used the term "less embarrassed" to describe their feelings when using the app to replace face-to-face interactions:

"I actually felt a bit embarrassed when I was making the request, and I thought by using the app, I would feel less embarrassed, as I could type without seeing the face or hearing the voice of the other person. So through the app, I felt more comfortable requesting something that is more private; this is something good." (Customer Informant #6)

"Calling is very embarrassing…if you called them and asked them to plan a trip for you, these people didn't even know you. They were not travel agents, and they were not your friends. If you asked your friends for travel suggestions, of course your friends would give you more detailed advice. But since here we know the hotel was not a travel agent and they were not your friends…I didn't want to talk alone with a person I didn't even know." (Customer Informant #2)

"If I wanted a towel, I just needed to click a button. I didn't need to call someone and feel embarrassed, you know, calling down just for a towel." (Customer Informant #3)

The comfort also comes from the convenience of using the apps to complete tasks almost anytime, anywhere. Especially for travelers who usually feel tired after traveling,

the apps bring comfort by allowing them to rest right upon arrival, as everything has been settled ahead of time.

Worry-Free. Customers felt less worried and stressed with the help of the apps. Customers perceived the apps as an official channel to communicate with hotels, and thus they worried less about mistakes or conflicts that might arise. Being able to save time by getting things done quickly also reduced customers' stress. For example, as was explained by customer informant #10:

"If I am stuck in a long line, I am thinking about how much I could be doing, so that could be frustrating. I think that allows me some time to work on the various responsibilities that I have and helps to take away the stress from not being able to do it."

The apps' role in simplifying the travel process also frees customers from worrying about minor issues or things they might suddenly need during their stay. For example, customer informant #11 explained that there was no longer a need to *"get the little piece of paper they slip under your door."* Customer informant #14 did not have to worry about losing his room key or forgetting his room number. Customer informant #4 did not need to worry about preparing for her stay prior to arrival:

"For example, how I wanted my bed to look, how many body washes or blankets I wanted, I didn't need to bother thinking about these kind of things before the trip when I made the booking. I could just request them upon arrival when I was at the hotel." (Customer Informant #4)

Delighted, Impressed, and Surprised. The adjectives "delighted," "impressed," and "surprised" also emerged from customers' transcripts. Customers were delighted

when they had smoother and simplified travel experiences. Some felt excitement that they could keep track of their account activities, which were synchronized in real time. Customer informant #15 felt happy when a need of his was well taken care of by the hotel. Customers were also impressed by the attention to detail and responsiveness shown by hotels' reactions to customers' actions on the apps. They were impressed by how the hotels were able to save them time and effort through the app services. For example, customer informant #1 was impressed that the hotel was able to deliver the room amenities requested through the apps in five minutes. Customer informant #3 did not expect the hotel to respond so quickly to requests made through the app. Customers who did not have high expectations of hotels' reactions were particularly impressed by the unexpected attentiveness and timely feedback.

5.2.3 Epistemic Value

Some customer informants mentioned the perception of epistemic value when using the apps. Customer informant #1 stated that it was his first time using the app, and he had never thought about this type of service in hotels. Although he had stayed at high-end hotels before, he had never experienced this type of service. Customer informant #15 was also a first-time hotel app user. He perceived novelty value when he received personalized service from the hotel after initiating communication through the app. Similarly, customer informants #4 and #5 found the function innovative, as they could not recall any other hotels that provided this service. Customer informants #7, #11, #12, and #14 found use of the app functions "cool" and "fun." Some of them showed an inclination to promote the function to others:

"Maybe I will stay again just to show my friends how they can use this app, because of its novelty. Most of my friends have never seen something like this before…so during their stay experience they got something new to try out and it's not just about sleeping in the room." (Customer Informant #7)

"If you were with somebody, he never stayed in a hotel where you can unlock your door on the phone, so it is kind of fancy and you don't even need a key, you just hold your phone up there." (Customer Informant #12)

"I've written and talked to people about, for example, the digital key thing. It makes me smile every time I use it. I come to my room, push the button, and I smile, and walk around and say look, I just push the button, and the door opens. It's cool, it's fun." (Customer Informant #14)

5.2.4 Social Value

Although not many customer respondents reported the perception of social value, it is worth noting here, as six customer respondents did mention the perception of higher attention and respect. These customers also perceived being treated as special and important guests. For example, when customer informant #15's special request was acknowledged by the hotel, he felt that he was a VIP and premium guest. He also mentioned that as a member of the hotel, he enjoyed the exclusiveness of being able to use the app. Customer informant #13 also said that if hotels were responsive to her special needs communicated through the app, she felt she was being treated as an important customer. Customer informants #3, #4, and #5 stated that because they were being taken care of around the clock, they received higher attention than a normal customer.

5.2.5 *Value of Personalization*

Special and Memorable Experience. Some customers perceived their hotel stay experience with the app as "special" and "memorable." This perception mainly resulted from customers' comparison between stay experiences in different hotels. For example, Customer informants #3, #4, and #5 felt that they were not *"simply staying at a regular hotel."* Customer informant #4 recalled her stay in hotels where a handy smartphone was available. She described this type of technology as "rigid," and she could only get "whatever is there." In contrast, she perceived the hotel mobile apps as more special and personalized. Customer informant #15 compared his stay experiences in different hotels and shared similar opinions:

> *"Other hotels, I just sleep one night, and I won't have the feeling I will go again next time, and I won't have any memorable moments. This time, when I booked with [hotel name], it was memorable because I got all these special things I could do with the app. Not only pillows and blankets—in the app you can choose much more, for example, breakfast and wine and other things. I think these are all good."* (Customer Informant #15)

Customer informant #3 also perceived her experience as special and memorable because of the apps' instant messaging function. The fact that she could receive prompt responses from the hotel when she needed help and advice was the number one reason her trip was memorable. She specifically stressed the importance of the service for travelers who might not be familiar with the destination. The instant messaging function made it possible for her to seek instant help whenever needed. Customer informant #5 compared her experience of using the hotel mobile apps with OTA mobile apps. She

explained that although OTA apps also feature functions such as mobile bookings, they mostly do not take care of details such as arrangements for in-room amenities. Therefore, she perceived her stay experience with the apps as more memorable, as all of the details were taken care of by the hotel services provided through the apps.

Personal Relationship. The value of personalization emerged from the more personal relationship with the hotel perceived by customers. The use of the hotel mobile apps reduced the distance between hotel guests and hotel service representatives. For example, customer informant #15 recalled the warm-hearted welcome and service provided by a hotel employee who surprised him by responding to his personal needs communicated through the apps. He felt the hotel staff members were his friends and family and he felt like he was home. Through the use of the instant messaging function, customer informants #3 and #4 perceived a more direct and personal relationship with the hotel, as they were able to chat with a real person anytime, anywhere, throughout the entire stay, which was unlike talking to a chatbot. The fact that whenever and whatever they needed, real service personnel on the other side would respond to their needs made their experience more personalized:

> *"It was personalized in the sense that whenever I asked a question, someone would answer immediately" (Customer Informant #3)*

Intimate Services. Some customers perceived more intimate service, as they were attended by an exclusive and personal housekeeper. Regardless of whether they might have any communication needs during their trip, they felt that they had someone to talk to no matter what. Especially when they were outside the hotel in an unfamiliar environment, customers found it particularly valuable to have someone to talk, to just like

171

having an "exclusive butler" to take care of their needs. Customer informant #4 stated that whenever she needed something she "just asked" for it. Customers also perceived more personalized services when they were able to seek personalized advices or opinions. As mentioned earlier, several participants sought hotels' help to plan their trips. From attractions and dining options to things to do at destinations, customers sought hotels' help through the instant messaging function, and found it particularly helpful, especially when they did not plan well before arrival.

"Yes, I think so, as they helped us plan our trip…I think asking them through the chat is better because if we searched by ourselves, we might get lost in the Internet and might not be able to find the places we actually wanted to visit. We asked them to make suggestions for our travel itinerary. They gave us a list of popular attractions. If I had to search by myself on the Internet, the information would be something like one-day trip information and stuff like that; I didn't think I would find these useful. The suggestions provided by the hotel were more practical for me, and I preferred that." (Customer Informant #2)

Anything Becomes Possible. When customers could initiate open conversations at will, some perceived that anything was possible if they could interact with hotels anytime, anywhere through the apps. For example, customer informant #5 believed that basically she could get whatever she needed through interacting with hotels using the app:

"I would say this app is more personalized, because compared with the rigid functions in the handy smartphone, where you only get whatever's there, you talk to a real person through the app, which can turn impossible into possible." (Customer Informant #4)

172

Customer informant #3 perceived herself as getting something new every day because of the availability of the app:

"It seemed that no matter what we requested, there was no obstacle in our way, the hotel unconditionally provided anything we needed…and I got something new every day." (Customer Informant #3)

I Have More. Lastly, the value of personalization also comes from customers' perception that they got more and could do more by having the apps. For example, as explained by customer informant #144:

"Sometimes even if we could think of something that we might need, we might not request it, but with this instant chat function, we become more aggressive in making service requests." (Customer informant #5)

Even if there is little difference between options A and B, customers appreciate the fact that they are given more:

"In the past, normally I would just take whatever is available in the room; if there was only one bath towel, then I could just keep using it for a couple of days. But now when such a new service function is available, I realize that I could actually request more." (Customer Informant #1)

Customers' reliance on mobile technologies further magnified their perceptions of how much they can do with the apps:

"The app is very important to me because I travel so much. Sometimes I have to make or change arrangements while I am traveling, so in many situations where I am using the app while on the plane traveling to the destination, I am booking my flight right there. The same is true when I am at the airport. If and I can do it right

on my phone, right on my app, instead of picking up the phone and calling somebody. It just speeds up so much and you can't always open up the computer and find Internet, so having the app just provides an option for me, and I do take advantage of it quite a bit to search for the nearest hotels, find another shuttle, look at the availability, compare places, you know. The whole thing is very quick and very convenient and that saves me time, and that's really the number one thing that I am looking for." (Customer Informant #10)

Customer informant #13 further explained how the "stickiness" of the app helped manage her hotel stays in the past and future. The ability of the app to record a user's past transactions and other important information is another reason customers stick with the apps. Thus, other than the benefits of one-time use, the various contents stored by the app also motivate customers to use the apps over the long term:

"Being a frequent guest, I like the fact that I have instant access to my account activity. I love that. I can in a minute see how many points I have, if I can book a room. I do love it a whole lot, it makes my life very efficient…With the app I can also review the receipts of my past stays; also for future bookings, I can see at a glance my future bookings in my app, so it does keep me in touch with my activity." (Customer Informant #13)

TABLE 14. Customers' Perceived Value-in-use—Coding Frame

Customers' Value-in-use	No. of Informants
Functional Value	
Convenience/Efficiency	18
Monetary benefits	12
Easier travel experience	8
Emotional Value	
Comfortable and peaceful	9
Delighted, impressed and surprised	9
Relax and worry-free	6
Epistemic Value	
Novel/new experience	6
Cool and fun	3
Innovative	2
Creative	1
Social Value	
More important customer	5
Feel special	1
Exclusive	1
Value of Personalization	
I have more	14
Intimate service	8
Memorable experience	5
Personal relationship	4
Anything is possible	3

5.3 Factors Affecting Customer Participation and Collaboration

After obtaining an understanding of customers' actual use of the app functions, we analyzed what affects their usage and their interactions with hotels through the apps. The data reveal that customers do not always perceive hoteliers' value propositions depending on the situation. Table 15 presents an example of the stage of data analysis on the scenarios of customers' different ways of using the mobile app services. These scenarios were identified from each customers' data set. Customers use the app services at different locations and different stages during their travel process. A series of factors were unearthed from the analysis as influential on customers' use of the apps, which ultimately affect their perceived value. This section summarizes the contextual factors that influence the collaboration process, which were identified based on constant comparison between events throughout data analysis.

TABLE 15. An Example of Scenario Analysis

Informant#	Scenario#	Time/Location	Functions	Interactions/Exchange	Process	Influential Factors	Perceived value (positive/negative)
1	1	Before trip	Service request (menu)	Prepare room amenities (memory pillow, blankets, towels)	- We reserved some (18) "basic" hotel room amenities. - Didn't need to (3) make a special call for things like this. All you need is clicking. - Very helpful for (2) shy people. - If the app could (1) simply help me add amenities in my room before arrival, I wasn't particularly impressed. It's (1) not necessary. - We have never used this before in our (11) previous hotel stay experience - I found I could actually do more than that by clicking extra things that I want such as pillows and blankets.	(18) Function nature (3) Media richness (2) Communication habit and preferences (1) Task importance (11) Prior experience	Convenient Comfortable Higher service quality Never thought about this before I realize I can do more
	2	Upon arrival	Online check-in	Check-in time	- What the function is used for? We still need to show them our id, and then they still need to spend some time to write something, then we head to our room just like normal check-in experience. (4) I didn't feel any differences at all compare with normal check-in.	(4) Perceived benefits	Confused
	3	During stay, inside hotel	Service request (instant messaging)	Ad hoc/sudden needs: extra room amenities; conditioners and shampoos	- (3) Just five minutes after we made the request they brought our stuff to our room. - If their responses through the instant messaging is (3) fast enough, absolutely I will choose the instant messaging, - Since I am quite (2) introverted. When talking face-to-face, I feel a bit strange. But (4) when I am talking to machine, I feel comfortable, and feel like things are taken for granted. - However, by the time they replied it's (3) already the next day morning. And also you need to use the question mark "?" to follow up, because (3) they have no reply. - We asked them to make our room, or add extra amenities. But (1) for things like these, it's not always necessary.	(3) Media richness (2) Communication habit and preferences (4) Social presence (1) Task importance	Impressed Speed Comfort New Innovative Concerned
	4	During stay, inside and outside hotel	Service request (instant messaging)	Travel itinerary/trip planning/destination things to do, routes, dining options	- I worried about international call charges so I used the app. - I have never thought about they would offer such service. - They pasted the website of a whatever travel agency, then I told them no (6) that's not what I was looking for, and I asked them to recommend me something local citizens would go. Then they found me something again which I could immediately tell were search results from the Internet. The information they provided were very (3) rigid and (6) completely useless. (3) Their answers were quite general, (4) feel like they were brushing me off. - Requests like more shampoos, restaurant reservation, these kind of (5) easy requests they may be able to help you with. But exactly to make these type of (5) easy requests, I don't have to use the app to make. If your requests is a bit more (5) difficult, they cannot help you. - Although I wasn't very satisfied with my experience this time, I could notice the difference between hotels that offer this service and hotels that don't. This time, (10) we were surprised that the hotel could actually help plan out trip. - We (7) didn't think about at all where to go. (6) We did visit one of the attractions they recommended to us. - They were too (3) perfunctory. - If they could provide more (6) spot-on responses, our entire travel experience would be much better.	(4) Social presence (3) Media richness (5) Task complexity (6) Personal/Contextual dependent (10) Hoteliers' role (7) Trip nature	No call charges Never thought about this before Surprised Unhelpful Mechanized Service quality
	5	During stay, inside hotel before heading out for sightseeing	Service request (instant messaging)	Make up room	- I remember (3) they didn't reply me, then I followed up by typing a "?".If I couldn't see their reply, I didn't know what to do, it seemed unreasonable to urge them. - The problem is that if this is the case then everything has already been (8) delayed. If they could (3) respond immediately, the app would be very helpful. - I could feel that they were just (4) patronizing me because they had to reply guests' messages. In hotels where they do this service well, you can feel their (4) sincerity. - They "pasted" a webpage. Then I told them (6) that's not what I want, then they "pasted" another website again which I don't know where they found it from. Then I said I wanted them to suggest some local places. After that they (4) reluctantly searched again. If they could show more (4) sincerity to reply my question, things would turn out differently. - If they could reply (3) instantly and help you out, I would be more willing to use this app. My experience this time was that their responses were not (3) fast enough, and their answers were perfunctory, I would rather depend on myself.	(3) Media richness (8) Task urgency (4) Social presence (6) Personal/Contextual dependent	Concerned Swamped

5.3.1 Customer Perception and Characteristics

5.3.1.1 Perceived Benefits and Needs

Chapter 4 discussed how hoteliers attempt to co-create with customers by collecting information from them and having one-to-one interactions with them. However, some customers were unsure about or unaware of the benefits of communicating and sharing information with hotels through the hotel mobile apps. For example, customer informants #15 and #16 did not perceive much difference between ordering a service item through the apps before arrival, and calling down to housekeeping upon arrival. Customer informant #17 thought that ordering service items through the apps was a "waste of time" and calling was much faster for him. For him, such type of service was a "gimmick" with few actual benefits:

> *"I think the gimmick of this would be bigger than the actual practical meaning. Think about it: normally when you go travel, you are most likely with your friends and family, or if you are a business traveler, you have work. How much time would you have to message with the hotel?… I really think a normal guest would not waste their time chatting with you on the app unless they really have nothing to do."*

Customer informants #1, #5, and #9 recalled how they were confused by the self-check-in function. They could not perceive much difference between ordinary check-in at the front desk and online check-in through the apps. As stated by customer informant #1:

> *"Actually, what the function is used for? I still need to check in at the front desk, they still need to register our information, we still need to show them our IDs, and then they still need to spend some time to write something, and then we head to*

our room just like the normal check-in experience. I didn't feel any difference at all compared with normal check-in." (Customer Informant #1)

Apparently, these customers could not perceive the benefits expected by hoteliers (e.g., confirming things in advance so that customers are expected when they arrive and everything is ready for them). Another example was shared by customer informant #19, who felt "strange" after answering a series of questions during the booking process. The questions covered a range of topics from the purpose of the trip to his favorite music band. He was unsure about the benefits he would gain during his hotel stay by answering these questions:

"This special interest menu is another strange option. They asked me to choose my favorite band. Then I wrote down the name of my favorite band...Answering these questions may not be very helpful for my stay. For example, I told them my favorite band, I told them which kind of view I like the most among ocean, mountain, or park. Even if I answer these questions, I don't think it influences my stay. I don't think it will influence my stay in the long term, either...It seems that these settings and options do not have much impact on my stay, and at the same time they consumed my time when I made the booking." (Customer Informant #19)

Customer informant #5 had similar doubts about the benefit of providing specific information to hotels:

"Even if I tell them that I like a particular singer, they won't buy me a concert ticket anyways."

Some customer informants thought that interacting with hotels through the app could not benefit them much, because what hotels could do for them was "replaceable."

That is, some customer informants thought that even though they did not interact with the hotels, they could still get things done and achieve their goals some other way. Customer informants #1, #2, and #11 provided concrete explanations:

"A lot of requests that I made, I could actually do it by myself. I just googled by clicking several buttons, which was faster than their reply…The communications that we made, restaurant recommendations and making restaurant reservations, it would be very simple for me to get these things done. I could search for restaurants by myself, I could also book a dinner table by myself, easy. So maybe I would pay more attention to the extra things that they could do for us—for example, things that happen outside the hotel." (Customer Informant #1)

"Because they were not the only one that could do these types of things. For example, the trip itinerary: if I were more motivated, I could search online by myself; hotel booking I could also do by myself. These things could be done not only by them. So both their role and the app were not unique. I can't think of anything that can exclusively be done only by the hotel—probably the instant messaging function, which helped me avoid face-to-face communications." *(Customer Informant #2)*

Customers perceived the importance of different task-related communications differently. While some customers were upset when their service request was not acknowledged, some were totally fine, as they did not perceive such a small request as an important part of their travel or stay experience. If customers do not perceive their task-related communication as important, their perceived benefits of using the app and their perceived value as a result of the collaboration process will be relatively low. For

example, customer informant #19 could only think of his personal *"preferences but not necessities,"* and thus even if the hotels could not give him what he asked for, he was totally fine. Customer informant #3 recalled that because the issue that the hotel could not help her with was "not a big deal," it did not really matter to her. The majority of customers considered things such as room amenities as "basic," "dispensable," and "unnecessary." When asked about their expectations for interaction with hotels through the app, customer informants #20 and #10 explained:

"It depends on how much you care about the request that you made. For example, to me, whether the pillow was hard enough was quite important, so I might have higher expectations. At that time we also placed a request hoping that the view of our room could be better, but in reality, the view wasn't really that good. But this request about the view wasn't very important. So even if the hotel couldn't give it to us it's ok. I didn't feel any disappointment, or I didn't see the need to continue to communicate with the hotel to ask for a better view." (Customer Informant #20)

"Well, I think the biggest thing is that I haven't made any request that, you know, has had a huge impact on my stay. So if I was traveling with a pet for instance, or service dog or I need a handicap room, those things would be really important, but I haven't needed to make any of those requests." (Customer Informant #10)

Whether customers initiate a conversation and share information with hotels through hotel mobile apps is also influenced by customers' perceived needs for interacting and sharing information with hotels. These customer participants were either uncertain about what they would actually need during a hotel stay or might not have thought of extra things that they would need. Some customers pointed out that they were

unsure what to communicate with the hotels even though they were given an extra communication channel through which to express their needs and preferences. For example, customer informant #17 appreciated the offer of such extra communication channels, but he was unsure what he should communicate. He pointed out the role of the hoteliers in providing advice on what customers might need during a hotel stay:

"For a professional hospitality business, they should be able to design options that customers would be interested in and let them choose the options, because there is something that the customers cannot think of, including my own preferences, because I am not a professional; I am only a customer."

Second, some informants thought that communicating with hotels through hotel mobile apps was not necessary. For example, customer informant #11 is a business traveler who travels frequently and values time savings and efficiency. His need to communicate with hotels seems to be even lower. He explained that "no experience is needed" for him most of the time when staying in hotels:

"*For me as a business traveler, as you can imagine, it's highly transactional. I, I, you know, let's say I am coming to Narita. I am landing in Narita at you know, 9 pm. I get to my hotel at 10:30, I plug into Wi-Fi, go to sleep in my clothes, wake up in the morning, deliver my speech, on a plane the day later, back to New York, no experience needed. I just need a bed, and Wi-Fi, and a bathroom, that's it."*

Customer informant #12, who is also a business traveler, explained that he could not think of anything he would need during a hotel stay:

"I normally don't need anything. Usually when I am traveling, it's just me. And I am just there long enough to, like, sleep and have breakfast then I go work out, and I am gone. I couldn't think of anything that I would need from a hotel."

The data reveal that even leisure travelers might not necessarily perceive the need to communicate with hotels. Some stated that what they needed during a hotel stay was quite general, and thus they might not need extra communications with hotels. For example, customer informant #1 explained that he was usually fine with the default option as long as there were no big problems. Customer informant #17 shared a similar opinion that usually all he needs is a king-size bed and a smoking room. Customer informant #8 also shared similar comments, saying that most of the time, the most important thing during a hotel stay is just to sleep. Customer informant #6 further commented that extra communications were normally not necessary during a hotel stay:

"For hotels, I think the communications are all very basic, and sometimes I just feel the same as business travelers, that I don't really want to communicate with the hotel too much." (Customer Informant #6)

5.3.1.2 Perception of Hotel Service

Coding analysis reveals another factor that influences customers' interaction and collaboration with hotels through the apps, which is related to customers' perception of a typical hotel. Even if customers perceive the need to interact with hotels and the benefit of doing so, they might hesitate for three major reasons: uncertainties about hoteliers' scope of service, uncertainties about the appropriateness of their requests, and reluctance to share information.

Uncertainties about hoteliers' scope of service. Some customers were unsure about what hotels could and could not do. For example, customer informant #9 shared her experience of having such a concern: ultimately, she chose to remain silent, because she was not sure if the hotel could give her what she wanted:

"*Indeed I wanted to tell them that my skin was a bit dry and I was thinking to ask if the hotel can provide some body oil to me…But I didn't ask them this because I thought they might not have it.*"

Customer informant #17 also doubted the consequences of interacting with hotels:

"*Even if I mention to them my special request, can they fulfill my request? If they cannot satisfy my request, then I am basically wasting my time. I wrote there, but they couldn't satisfy me.*"

Customer informant #1 expressed his concern about whether his need would be met, as he understood that hotels often prioritize high-tier customers:

"*What if I gave them my information, and they decided that I wasn't a high-potential customer? Because they don't personalize everyone's service, they only choose the potential ones, right? Even if I share my private information with them, if I don't meet the requirements for them to consider me an important customer, they wouldn't do anything special for me, I guess.*"

Uncertainties about requests. Customers also had uncertainties regarding the nature of their service request itself. These customers worried about whether their requests would be considered "special" enough, and how hotels would react upon their messages. For example, customer informant #15 worried that his request was not "special" enough to be communicated through a "special request" service function.

"Well, I think since that's a special request function, a normal person would not put something non-special there. If you put something normal and non-special like that, I think it's annoying."

Customer informant #8 was concerned about the number of requests he should make. Although the app allowed him to make unlimited requests, he did not "dare" to make too many requests, as he thought that would be unreasonable. Customer informant #10 also mentioned he did not want to abuse the service request function if he did not have any "special" needs to communicate.

Willingness to share information. Lastly, some customers were not willing to share specific or personal information, which they believed to be unnecessary in a hotel context. Customers varied in terms of the type of information they were willing to share with hotels. For example, customer informant #1 thought it was fine to share his birthday with hotels in exchange for birthday treats, but anything beyond that was considered unnecessary:

"I might not share information with them. Maybe they can just remember what I need this time and ask me if I need similar things again next time? This type is ok, but not too personal or too private. If you want to surprise me, I don't think it's necessary. I would be very happy if they just treat me with a dinner on my birthday. Doing this, they don't need to get any personal information from me."

Customer informant #2 did not even want to share her birthday or email address, as she did not want to receive any promotional information from hotels. Customer informant #15 said that even if he was sick or he had some personal problems, he would not tell the hotel about this, as he wished to preserve his privacy.

5.3.1.3 Communication Habit and Preference

Customers vary in terms of their communication habits and preferences, which affect their use of mobile apps to interact and collaborate with hotels. Several customers said that their habit of using instant messaging apps in their daily lives made the function helpful during a hotel stay, as they were already used to this communication channel. Customer informant #6 echoed this point and explained that she also preferred texting due to the characteristics of the younger generation, which is accustomed to different types of electronic devices. Customers' personalities also affect their communication preferences, as indicated by a few customers. For example, customer informant #1 used "shy" and "introverted" to describe himself, and he felt much more comfortable talking with machines than with real human beings. In contrast, some customers preferred face-to-face to digital communication with hotels. For example, customer informant #17 preferred face-to-face human interactions, describing himself as a "more traditional" person. Customer informant #10 preferred to be attended by real service representatives and said that a chat window would annoy him. Lastly, customer informant #9 preferred face-to-face communications with hotel staff. It was through this type of communication that she could perceive herself as an important customer.

Customers' communication habits and personality come into play in the context of real-time hotel-customer communications through the in-app instant messaging function. For some customers, mobile communications had become a habit. Customers from regions with high mobile penetration are more likely to communicate through mobile phones:

"Yes, it is related to habit. People in Mainland China do not usually use email. When we book hotels in Mainland China, if we want to make some personal requests, we normally call or send messages." (Customer Informant #20)

"Because in our daily life we like to text others using WeChat, for example, which is very convenient in the sense that you don't need to call anyone anymore and whenever you think of something, you immediately put it down." (Customer Informant #1)

"I would prefer texting. I think it's because of the characteristics of the young generation. We are so used to using all these electronic technologies nowadays." (Customer Informant #6)

5.3.1.4 Personality and Style

Hoteliers wanted to collect customer information and interact with customers to better understand them and prepare personalized stays for them in the future. However, data analysis reveals that differences between customers in terms of their regularity affect their co-creation behavior in this study context. Customers who required low regularity when traveling around or during a hotel stay indicated lower perceived needs and benefits of interacting with and sharing information with hotels. For example, as explained by customer informant #17:

"I believe there are people who like to have everything well prepared before they arrive so they feel they are more respected and more VIP, but I don't have such a need…To me, these functions are simply too trivial. These don't really matter to me."

The regularity of a customer not only affects his or her perceived needs and benefits to co-create but also the ultimate perceived value-in-use. That is, customers who do not care about the regularity of hotel service might not perceive much value-in-use even if their hotel rooms are perfectly arranged every single time. This group of customers indicated that they were not demanding customers who expected a personalized setting every time when they stay in hotels. For example, customer informant #1 explained that because he was not a "choosy" or "fussy" person, he usually did not need any special arrangements. Customer informant #3 described himself as an "independent" person, and customer informants #4, #6, #7, and #8 said they were very "casual" people and would not demand anything special to be ready in their rooms upon arrival. Customer informants #6 and #7 stated that they were relatively casual customers who did not expect much from a hotel stay. Specifically, customer informant #7 said that when she travels, she tends to look for new things and experiences that are different from her personal daily life. When asked for their opinions about sharing information such as personal preferences with hotels in exchange for a personalized stay experience, customer informants #3 and #6 said:

> "Personally, it doesn't matter to me. But I believe there must be people who like to receive more attention and meticulous care. I think as an upscale hotel, they should provide this level of service. But personally for myself, I don't think it's necessary." (Customer Informant #3)

> "I am not that type of person who demands a lot of things. I don't have to drink a cup of coffee every day at the exact time, or I don't have to sleep on the same pillow every time, I don't have allergy to anything. Some people are allergic to

something and the hotel needs to change everything for them. So for those people

the app is more useful." (Customer Informant #6)

Customers with a greater desire for trying out new things and new technologies showed a higher propensity to co-create with hotels though the apps. For example, customer informant #13 described herself as a fan of technology and said that she truly loved using the hotel mobile apps. Customer informant #4 introduced himself as a technologist and said that his passion for technology influences his perception toward hotel technologies:

"I am a CPA and technologist. I see technology applied to make the process

better and it makes me very, very happy. Also, using the app itself makes me

happy because I see how much friction it takes out from the business process. And

how much better it makes it for guests in a hotel and how much better it's going to

be for the hotel ultimately in terms of reduced staff and costs. I think it's

absolutely wonderful."

In fact, these customer behaviors are expected by hotel managers. For example, manager informants #22 and #31 consistently commented on them. They expected that the apps might not be as popular for the older generation as for younger customers, who tend to be more tech-savvy. Manager informant #31 indicated the impact of customers' sensitivity to new technologies on their adoption of hotel mobile apps:

"This actually also depends on our customer type; some of our loyalty guests are

very sensitive to these new innovations. Once we have something new, some of

these guests will try it out immediately. So for this type of guest, it's easier for us."

5.3.2 Trip Characteristics

5.3.2.1 Location

Customers' locations affect their perception of the usefulness of the apps for interacting and communicating with hotels. First, the majority of customer participants found the apps more useful as a communication tool when they were off the hotel premises. These customers considered using the in-room telephone faster and more efficient for interacting with hotels when they were at the hotel. In this study, most customer participants' interactions and communications with the hotel happened off the hotel premises. This observation helps explain the apps' affordances to satisfy customers' contextual needs—customers had relatively more communication needs when they were on-the-go. There were multiple cases in which customers suddenly thought of something and managed to get it done through the apps.

Several customers pointed out the impact of visiting an unfamiliar location as a tourist. They found the apps particularly useful and important when they had never been to a particular destination. Travelers unfamiliar with the destination who did not plan their trip well showed a higher need to communicate with hotels using the apps:

> "*When you are at a new and unfamiliar place, you don't know much about everything, and if you don't have friends there, the hotel is in a position to help you out.*" (Customer Informant #9)

> "*It will be more useful, especially when your trip is not planned well, so you get someone to ask questions.*" (Customer Informant #7)

5.3.2.2 Trip Purpose

Differences in travel purposes also had an impact on customers' perceived needs and the benefits of collaborating with hotels through the apps. Business travelers are normally busy and in a rush. The business travelers in this study did not show any inclination to make special arrangements for their rooms. They perceived the apps mainly as efficiency tools for speeding up the travel process, avoiding human interactions and maintaining control. They perceived relatively lower needs for extra communications with hotels. They went further to explain the differences between business and leisure trips.

> *"For a business trip, I choose pure convenience. If my wife and I are going to stay in a resort, um, I might want to actually visit the front desk, and I want to talk to the concierge, you know, I wouldn't do it the same way." (Customer Informant #14)*

> *"I use that when I am traveling with my family because when there are more people there may be some special request. When it's on my own, the only time I would put anything in that is if I know I am going to be looking for an early check-in or late check-out—then I may make a note. But if it's on business then usually there isn't any special request that I have." (Customer Informant #10)*

Lastly, length of stay also emerged as a factor that influences travelers' perceived needs to interact with hotels. Customers mentioned that they might have more need for interaction and communication if they were staying longer.

> *"For the regular business customers who are just in and out, it's only a small part of the experience. But I think if I am there for three or four days, if the app is fully*

integrated, let's say I am going to shop and get a Coca-Cola at the, um, gift shop,

and the app is integrated into there, woo, that's interesting. That's interesting.

You know I am at the pool, and you know, whatever, and I can just check in at the

pool or all these things." (Customer Informant #11)

5.3.2.3 Travel Companion

The keywords "family" and "friends" emerged from the transcripts of both leisure

and business travelers. Travelers seemed to have more need for extra interaction and

communication with hotels through the apps when traveling with families and friends.

For example, customer informant #11 mentioned that although during business travel, he

normally might not have any need to interact with hotels through the apps, if he was

traveling with his wife, that is when "the experience can be added to." Customer

informant #13, who normally travels for business, also indicated the need for making

special requests when traveling with a family member who is mobility impaired.

Customer informant #7 would communicate with the hotel next time before the trip to ask

for a crib if she was traveling with her children. Customer informant #6 further

commented:

> *"I think the app would be more useful for families or people who travel with kids.*
>
> *For people like us who simply go shopping and who already are quite familiar*
>
> *with the destination, we really don't have much need to use the functions within*
>
> *the app…for travelers with kids it provides convenience; the hotel can ask a lot of*
>
> *questions in advance." (Customer Informant #6)*

5.3.3 Computer-mediated Communication (CMC) and Task Characteristics

The co-creation process is also influenced by the differences between digital and traditional communications. Some customers hesitate to communicate with hotels through the apps as they worry about not receiving feedback. Furthermore, customers react to hotels' responses through the apps based on criteria such as timely replies and hotels' politeness. These observations imply that when co-creation happens online through technologies, the co-creation environment is different from the traditional offline face-to-face setting. Such differences can be attributed to the fundamental differences between technology-mediated communications and face-to-face interactions.

5.3.3.1 Feedback and Contents

Timely and Proper Feedback. Customers' experiences of interacting with hotels through the apps were affected by whether they could receive timely feedback. In general, the majority of customers liked the idea of a real-time instant messaging service. The "instant" element was also customers' favorite feature. For example, customer informant #3 perceived instant messaging as a more direct and less troublesome communication channel compared with the telephone, due to its immediacy:

> *"Any of my questions they can answer immediately. I no longer need to call someone who may transfer me to somewhere else, be it the front desk or room service, which sounds very troublesome. Communicating through the instant messaging function is more direct."*

Customer informant #4 was also able to receive prompt reply through the instant messaging function. As a tourist who might need sudden help, she was particularly

impressed by the function's ability to send a message and receive an immediate response from the hotel:

"As a tourist, at the destination, if you have someone who can help you anytime, anywhere, with immediate response, this is the biggest advantage." (Customer Informant #4)

Customer informants #3 and #5 said they were too "lazy" to make phone calls or visit the front desk, and thus they felt that texting through instant messaging was faster. Customer informant #9 found instant messaging particularly useful when she could get an immediate response from the hotel:

"At that time I was eating at a restaurant, and we wanted to know when the last MTR was; it wouldn't make much sense for us to walk over to the MTR station and ask them what time is the last MTR, right, so in that case if the chat function can help us to get an immediate response this is quite good indeed…the best thing about the app is when you need immediate help from the hotel and they immediately reply."

While some customers reported a positive experience, others experienced the opposite. Customer informant #16 represents most concerned customers when attempting to use the apps to interact with hotels—they were unsure what would happen next. From specifying room preferences to ordering room amenities to chatting with hotel staff through the instant messaging function, whether hotels provide appropriate feedback influences customers' interactions with hotels. For example, customer informant #16 ordered a specific type of pillow before arrival and expected that the pillow would already be inside the guest room when he arrived. However, after checking in at the front

desk and entering his room, he could not find the pillow he had ordered. He used the word "partition" to describe communication through the apps. After placing the order, no one informed him whether his request had been received, not even the front desk agent when he checked in. Customer informant #16 further commented:

"I don't know whether they actually read my special request message…I thought they didn't read it for some reason, so I called them directly and asked for the foam pillow…perhaps I should say even though I placed the request on the app, I didn't expect the request would certainly be fulfilled. It's just a bit weird that they didn't bring the pillow to me even after I called them directly…Placing the request through the app is like having a partition in between, as you cannot get immediate feedback and cannot figure out whether the hotel can actually do what you want them to do."

Customer informant #17 also commented on the service request functions:

"If you ask me to fill in my preferences in the apps, I worry very much about not receiving any feedback. For example, if I requested something and they didn't give it to me, I really feel I am wasting my time. If they gave me a form to fill at check-in, I would feel they are taking this seriously by recording my information, which will be helpful for my next stay."

When customers received late or delayed replies from hotels, they felt that the "instant" element became less meaningful when hotels were not responsive. For example, as recalled by customer informant #1:

"Before our arrival we asked them something; by the time they replied it's already the next day morning…And also you need to use the question mark '?' to

follow up, because they have no reply one hour after you said something. They

probably forgot about it already. I didn't know what to do, it sounds

unreasonable to urge them, maybe after half an hour I could follow up, then

perhaps they would apologize and attend to my request. But the problem is that if

this is the case then everything has already been delayed." (Customer Informant

#1)

Customer informant #2 described the speed of hotels' replies as dependent on the

situation. She was irritated by the hotel's slow response; sometimes she did not even

receive a reply at all. In her experience, when she did not receive a reply from the hotel,

she could live without it and depend on herself. Customer informant #4 recalled a

situation where she did not receive a timely response from the hotel. She was traveling

around the city around midnight, and suddenly thought of something she might need after

getting back to the hotel. She was unsure whether she should purchase it from a

convenience store or seek the hotel's help. She used instant messaging to contact the

hotel when the convenience stores started closing. She was anxious, as she did not know

whether to wait for the hotel's reply or simply buy what she needed before the shops

were closed:

"I don't know what happened when it got close to around 12 am, I feel they

started replying to me a bit slowly. Were they changing shifts or something? They

held the conversation for a while and still nobody replied to me, and meanwhile

the shops outside were starting to close, and we started feeling anxious and were

uncertain whether we should buy what we needed or wait for the hotel's reply."

(Customer Informant #4)

Customer informant #17 recalled ordering room amenities during his stay. He preferred calling directly to housekeeping rather than ordering through the service menu on the hotel mobile apps. For him, in that situation, using the telephone is much faster than the apps:

"I don't like making the request by pressing one button, because even though their app seems like they have a lot of functions with very rich content, the problem is that I don't think their usage rate is high. If I can order easily through calling them, why do I need to do something extra by requesting through tapping on my screen?"

Customer informant #8 passed by the gym when walking around the hotel. He wanted to ask some questions about the gym and used instant messaging to contact the hotel staff. However, because he did not receive any reply, he simply left the gym. Customer informant #9 wanted some special decorations in her room for a special occasion. She contacted the hotel two days prior to her arrival through instant messaging but received no reply. As a result, the instant messaging service seemed unreliable when customers did not receive timely feedback. These customers who had a negative experience indicated their intention to switch communication channels (e.g., use phone calls instead) in future. These customers' concern about the speed of the instant messaging channel echoes hotel managers' earlier comments that in certain situations, customers prefer to communicate with hotels through other communication channels. Customers' negative experience interacting with hotels through instant messaging also reflects the limited human resources at a hotel, which was pointed out by hotel managers.

Rich Content. Another factor that affects customers' opinion of real-time interaction with hotels through the instant messaging channel is the degree to which rich content can be exchanged. The many examples emerging from this study reflect the impact of the richness level of the hotel mobile apps as an interaction tool on customers' usage of the app and the co-creation process. Such an impact echoes hotel managers' concern about relying solely on apps to collect customer preferences. Some customers perceived instant messaging as rich in the hotel-customer communication context in that they could get more and clearer contents through the channel. For example, customer informant #4 pointed out that she was able to check word by word to ensure that her message was understood correctly. Customer informant #6 appreciated the fact that the hotel staff were able to chat with her in different languages. Customer informant #20 raised the point that through digital communications, hotels could provide rich information related to attractions, things to do, or specific issues by sharing GPS locations or images. With instant messaging, the communications between hotels and customers could go beyond text or words and involve contextual information in formats such as graphics or animation:

> *"If you don't build up the in-app communications, it becomes very difficult for the hotel to deliver information such as attraction and restaurant recommendations. It's very difficult to do this through telephone calls…For example, the area in front of the hotel will have a huge protest today. So when things like this happen, hotels can more proactively inform the customers." (Customer Informant #20)*

However, some customers found it difficult to reach mutual understanding with hotels through instant messaging communications. For example, as shared by informant #2:

"Sometimes I felt like I was asking them one thing, and they answered me another thing." (Customer Informant #2)

Customer informants #6 and #9 recalled that after they typed something in the chat function, the service representative had to call them to find out what they actually wanted. It seemed that the hotel did not understand what they were asking for:

"*When I typed it on the chat function, the person on the other side didn't understand what I was requesting. So they called me immediately to find out what it was." (Customer Informant #6)*

"*I chatted with them again and I asked which floor their swimming pool was and what time it would close. Then they called up to our room and told us which floor the swimming pool was on; maybe they knew our room number. Then I asked them how to use the coffee machine, as I didn't know how to use it, then immediately they called me back and said they would send somebody up to help us with that." (Customer Informant #9)*

Some customers recalled that even though they texted the hotel, staff would still call them instead of replying through text messaging. Customer informant #8 realized that the limitations of texting were likely the reason for the switch of channel. He believed it would be beneficial if other functions such as voice messaging or audio calling were available. For him, texting was troublesome, and what he could do through texting was limited:

"When we arrived at our room, we messaged the hotel, but they wouldn't reply to us through the app; instead they called to our room directly…If I can leave them a voice message and then they can voice message me back I think that would be better. While the app is so simple, you can only do limited things on it: there are no pictures, no audio, no location that you can make use of; all you can do is text."
(Customer Informant #8)

Even if mutual understanding can be reached through in-app communications, the perceived richness could be affected by situational factors. For example, customer informant #8 recalled seeking advice about transportation from the hotel using the instant messaging function:

"I asked them which floor the gym was on and what time we needed to check out; all of these things they were able to reply to pretty quickly and immediately. But their replies were quite long-winded. For example, every time after you send them something, a sentence pop-up saying something like 'your request has been taken care of at this moment,' something like that, and after this sentence you wait for a while, then their reply will pop up."

5.3.3.2 Elimination of Social Context Cues

Customers' reactions to hotels' responses through instant messaging are affected by the degree to which they perceive the conversation as personal. Some customers felt they were talking to a "real" person through instant messaging. When communicating with hotel instant messaging, customer informant #7 felt that she was communicating with a friend who was nice and polite. Customer informant #3 felt that someone was standing by and ready to handle her questions anytime:

"I felt good about this. I felt there was really someone ready to handle my questions instead of, for example, sending an email randomly to an unattended mail box where people only attend to you when they are free." (Customer Informant #3)

However, some customers shared negative emotions and perceptions resulting from the elimination of social context cues. As hotels were not able to supplement their response to customers with a smile, sincere eye contact, or a gentle voice, customers could only judge their service based on the words received through the apps. For example, customer informant #1 could not feel the sincerity of the service representative, while customer informant #9 did not "dare" to initiate a conversation, as she felt she was annoying the hotel staff; customer informant #4 felt like she was talking with a Wiki rather than a real human being:

"It's just like using Wiki, you ask something then it answers whatever you asked. It's not like those energetic personalities who will ask if you need anything else. I didn't feel that."

Customer informant #9 felt that she was annoying the hotel staff by reading their responses through instant messaging. She preferred telephone communications, which made her feel more respected:

"Actually, I feel when you message them, they wouldn't really respond to you like a VIP guest, they simply reply like talking to a normal person…By reading their reply you can tell they didn't reply in a very passionate tone, which makes me feel I am annoying them, and sometimes I don't dare to use this function too often. It

seems that I keep asking them too many questions and I am afraid that they would

feel that I am annoying."

Lastly, customer informant #5 explained why she did not feel that talking through mobile instant messaging with the hotel staff was like talking with a friend. She shared her experience that sometimes, the responses from the hotel staff could be quite "cold":

"I felt like I was talking to a staff member, because the way they talked wasn't

very passionate. For example when I asked them about the nearby cafes, they just

replied one word, 'Starbucks,' you get what I mean? I was feeling like, ok, that

was cold."

Some customers were dissatisfied with the hotels' "mechanized" and rigid replies. These customer reactions echo hotel managers' concerns about relying on technologies to build social relationships with customers. For example, customer informant #1 shared his experience of being "brushed off" through instant messaging:

"I don't know how they operate at the back, probably people reply to the instant

messages while they are already working on something else. You can feel that

they are just patronizing me because they have to reply to guests' messages. I

asked them to recommend some places for us since we are overseas

tourists…They pasted a webpage. Then I told them that's not what I want, then

they pasted another website…Then I said I wanted them to suggest some local

places. After that they reluctantly searched again and found something probably

from websites about free independent travelers, I could tell from the wording

since it was quite obvious indeed. So, actually after I initiated a question, if they

could show more sincerity in replying to my question, things would turn out

differently.”

Interestingly, the elimination of social context cues was seen as an advantage for customers who were shy and introverted. Customers who preferred to interact through the app felt comfortable when they did not need to interact face-to-face. In particular, in this specific study context, some customers felt less embarrassed to talk with the hotel through apps rather than face-to-face. These customers felt guilty when requesting something they believed to be unusual. Such a lack of human interaction encouraged them to speak up about their true needs. For example, some customers preferred to interact with hotels through the apps concerning unusual issues that made them feel "guilty" and "embarrassed." Customer informant #1 felt he was giving "orders" to the service representatives if he communicated with them through telephone calls or face-to-face. He felt much more natural using the apps. Customer informant #2 felt that because hotel employees were not her friends, she was embarrassed asking the service representative to help plan her trip. As customer informant 7 explained:

"The app is like an agent or intermediary when you don't want to face-to-face

communicate or when your request is a bit unusual, which makes you feel

embarrassed. You don't need to worry about how to explain to them."

When using apps to communicate unusual matters, customers felt that things were more "taken for granted" and found it more comfortable to communicate without face-to-face interactions. Thus, when talking about things that were more personal and private to the customer, their perceived value-in-use of collaboration through the apps could be enhanced.

5.3.3.3 Task Characteristics

Task Importance. Task characteristics affect customers' choice and use experience of communication channels. For example, customer informant #16 mentioned that if something was important, he would use other communication channels such as the telephone because he could receive instant feedback. If it was something minor, he might just forget about it without even initiating communication. This observation is consistent with the discussion regarding customers' need for instant feedback. Customer informant #19 shared a similar view:

> *"For important requests such as health-related issues, or arrangements for my next business trip, especially if I am making arrangements for people who have higher status or who are my customers, if they have any special health-related problems, as a host, we need to take care of them well, which requires us to pay high attention to detail. In this case, this is something important to me, because this involves my work responsibility. In this case I would call the hotel to confirm every detail carefully. If there are any special requests, I would ask and confirm if the hotel could really do it or not. If there is something that they cannot handle, at least I have time to come up with something else immediately…special things such as birthdays, honeymoons, or marriage proposals, of course I need to call them. I am ok if the hotel charges me for these types of services, but for sure I need to call them in these important scenarios."*

Task Complexity. Customers interacted with hotels regarding a wide range of issues, from specifying check-in times and ordering in-room amenities to asking for special arrangements for celebrations. Although customers' communication purposes are

unpredictable, the data show that customers perceive different complexity levels in their communications and that task complexity level influences their collaboration process and perceived value-in-use. First, task complexity affects customers' co-creation by influencing the reach of mutual understanding between customers and hotels. Customers found it difficult to reach mutual understanding with the hotel through the apps when communicating complicated matters. This observation is in line with the previous discussion, which indicated that customers seek to exchange rich content when collaborating with hotels through the apps. Several examples in this study show that most of the time when customers express complicated needs through the apps, the hotel either called them back or did not understand. As customer informant #9 stated:

> "The app is mainly for making the booking, and after that they help you to make some simple requests, and the rest I feel was not that convenient."

When customers could only communicate simple matters through the apps, they perceived lower value-in-use from the apps because they mostly perceived these as a minor part of their experience. As customer informant #5 explained:

> "I just go there to relax and have fun, so my requests about the sleepers were just….you know…I didn't feel these were big part of my entire experience."

When customers could only exchange simple information, the perceived value of the apps decreased, as they did not need the app:

> "The requests you make like more shampoos, booking tables, these kind of easy requests they may be able to help you with. But to make these types of easy requests, I don't have to use the app…Requests such as extra room amenities and making up the room they may handle better, but for requests such as planning a

trip itinerary, they can't do much. But as I said, we don't necessarily need the app

if we can get things done by ourselves. If your request is a bit more difficult, they

cannot help you." (Customer Informant #1)

Task Urgency. While one of the apps' biggest benefits is the availability of communication almost anytime and anywhere, some customers found this feature unstable, and the urgency of their tasks influenced their experiences. Customer informant #2 recalled that she needed to take into consideration the speed of the hotels' reply. If her situation needed an immediate response, she might not use an app to communicate with the hotel:

"I think their replies were a bit slow. It depends on the situation. If you need

something urgent, they may not get back to you immediately. By the time they get

back to you, you've already found another way to solve your problem."

In urgent situations, interacting through apps might make customers worry. Customer informant #8 worried about missing the check-out time, as the hotel did not reply quickly. Customer informant #4 shared a similar experience:

"I remember before 12 am, the hotel's response was very quick, but I don't know

what happened when it got close to around 12 am. I felt that they were slow in

replying. Were they changing shifts or something? They held the conversation for

a while and still nobody replied to me."

Thus, both customers' collaboration process and value-in-use could be affected by the urgency of task-related communication. Customer informant #3 confirmed this observation:

"In urgent situations, texting is just a waste of time. I can just call down to the front desk to ask for help by clicking one button."

Customers had a better experience when their task-related communication was not urgent:

"Perhaps because I didn't make any urgent requests, I wasn't impatient and anxious about getting a response from them. If you are anxious and impatient, you feel like it takes five minutes when it's only a three-minute wait."

Customer Informant #8 illustrated a situation where his problem could not be solved through instant messaging:

"I asked them about transportation. They first asked me where I was going to, and then they asked which MTR line I was taking. I didn't even know which line I was taking myself...anyways they couldn't give me the answer I wanted. I told them I was at Mok Kok and the time I wanted to return to the hotel. When they did reply back to me, it was a bit too late." (Customer Informant #8)

Customers' narratives regarding their perceptions of instant messaging showed that they perceived it as a lean communication medium in two specific situations—when the matter being communicated is important and complex and when the communication situation is urgent. This observation is consistent with hotel managers' opinions stated in previous sections that there are times when they prefer direct communication with customers, especially when a matter is complicated. Even when hotels can immediately react to and satisfy customers' needs through the apps, the limitation of the apps as an CMC channel means that customers' experience might still be affected, especially when the communications involve important, complex, and urgent tasks.

TABLE 16. Contextual Factors—Coding Frame

Contextual Factors	No. of Informants
Customer Perception and Characteristics	
Perceived Benefits and Needs	18
Perception of Hotel Service	8
Communication Habit and Preferences	8
Personality and Style	7
Trip Characteristics	
Location	16
Travel Companion	10
Trip Purpose	10
Task-related Communication Characteristics	
Feedback and Contents	11
Task Characteristics	9
Elimination of Social Context Cues	3

5.4 A Comparison of Hoteliers and Customers

Individual customers approach hotel mobile apps differently. Depending on their personal characteristics, goals, and context of use, they perceived what they could do with the apps differently. According to technology affordance theory, users' perceived affordances of a technology affect their behaviors when approaching or using it (Gaver, 1991). In this study context, such differences between individuals' perceived technology affordances separate customers' actual ways of using the apps from hoteliers' expectations. A series of factors that affect how customers use the mobile app functions was unearthed. Customers perceive the affordances of the mobile app functions differently due to variances in their personal perceptions and characteristics, trip characteristics, and the match of CMC channels with their particular communication situations. The following sections compare customers' actual usage with hoteliers' expectations. The contextual factors are integrated to explain the gap between customers' and hoteliers' perceived affordances of hotel mobile apps. The following sections also compare hoteliers' value propositions with customers' embodied value-in-use and highlight the differences due to customers' different methods of use.

5.4.1 Expected Use vs. Actual Use

Hoteliers incorporated their assumptions about customers' perceived affordances into the design of the hotel mobile apps. However, technology affordance theory suggests that users perceive the affordances of a technology differently depending on a variety of factors, such as their prior experiences, specific goals, and conditions (Faraj & Azad, 2012). Hence, the actual use of the hotel mobile apps depends on what customers perceive the technology is good for, which determines how they interact with it (Leonardi,

2011; Norman, 2007). Table 17 revisits and compares hoteliers' and customers' perceived affordances of the hotel mobile apps, as discussed in previous chapters. Although the two groups' perceived affordances are mostly similar, noticeable differences are found that center on the two groups' perceptions of the apps' affordances for personalization.

Hoteliers expect customers to personalize their stay preferences when making reservations. By allowing customers to specify their preferred room type, room location, room view, and other preferences, hoteliers believe that customers can use the apps to specify their personal preferences, which personalizes their stay. However, from the customers' point of view, these various settings seem not to be personal enough to be considered personal preferences. As discussed in section 5.3.1.1, the majority of customer participants in this study did not perceive that they were stating personal preferences when specifying these options. Rather, most perceived these as basic options that a normal hotel should offer. Some customers commented that the design of these options was quite simple and that there was actually not much they could do at this reservation stage. Customer informant #19's statement illustrates this gap:

"I think to me what this app is doing now tends to focus more on common customer requests but not on personalized needs."

TABLE 17. Comparison of Hoteliers' and Customers' Perceived Affordances

Room Reservation Function	
Make direct bookings anytime anywhere	Make direct bookings anytime anywhere
Specify personal preferences	**Specify basic preferences**
Join membership	Join membership
Received booking-related notifications	Received booking-related notifications
Information Function	
Browse/search all important information related to a hotel stay	Browse/search all important information related to a hotel stay
Consume personalized contents	
Self-Check-in/out & Room Access Functions	
Confirm things ahead	Prepare things ahead
Skip human interactions	Avoid human interactions
Speed up process	Speed up process
Self-control/manage	Self-control/manage
Personalize one's own experience	
Service Request Functions	
Request anything else	**Make request with concerns**
Avoid human interactions	Avoid human interactions
Make instant requests	Make instant requests
Extra communication channel	Extra communication channel
Communicate anytime anywhere	Communicate anytime anywhere
Make more accurate request	Make more accurate request
Confirm things ahead	Prepare things ahead
Personalize one's own experiences	Personalize one's own experience

Second, in regard to the information function, while hoteliers expect customers to use the app to consume and engage in personalized content, none of the customer participants mentioned such affordances during the interview. Although they were aware that personal information such as their booking history and membership profile was available online, they were not aware that the in-app information had been personalized based on their personal interests. For example, customer informant #19 explained that he did not find the app particularly designed for the consumption of personalized information, as he did not receive any feedback after answering a series of personal questions from the app. Even though he told the hotel about his personal interests, he did not receive any information of interest. A significant number of customer participants

were searching for travel information. For example, they asked the hotel staff's advice regarding restaurants and things to do through the instant messaging channel. Customers did not perceive the in-app information as personalized for them, as they desired more precise, contextual information to facilitate their travel experience.

Third, hoteliers expected customers to use the self-check-in/out and room access functions to personalize their own experiences, as these give customers greater control. Nonetheless, the majority of customer participants did not perceive such an affordance, as most did not relate self-serving to experience personalization. Some leisure travelers were confused about the purpose behind the design.

Fourth, hoteliers expected customers to use the service request functions to communicate with hotels about anything else they needed during their trip. From the customers' point of view, although they could use the service request functions to request almost anything they needed, whether they would actually do so was affected by several factors, as discussed in section 5.3. That is, whether customers use the function depends on their perception characteristics, trip characteristics, and specific communication situations. These factors contribute to customers' concerns and hesitations when using the channel to interact with hotels. Due to the different types of uncertainty (e.g., the hotel's scope of service, what to request, the risk of sharing information, whether the hotel would reply), customers often did not use the service request functions to request anything else needed. Moreover, the majority of customers perceived the items on the service menu as general and limited.

5.4.2 Value Propositions vs. Value-in-use

Technology affordance theory corresponds with S-D logic in that both theories imply that value is realized in actual use and varies among individuals. Both suggest a difference between value propositions pre-designed by service suppliers and value-in-use perceived by users from actual consumption. When customers perceive different affordances from hoteliers, their actual use of the apps is different from hoteliers' expectations, which leads to an ultimate value-in-use unanticipated by hoteliers. In short, customers' different perceived affordances result in unexpected uses and value-in-use. Table 18 compares hoteliers' value propositions and customers' value-in-use of hotel mobile apps by function.

TABLE 18. A Comparison of Value Propositions and Value-in-use

Hoteliers' Value Propositions	Customers' Value-in-use
Room Reservation Function	
Value of personalization Customers can specify personal preferences	**N/A** Customer participants in this study perceived such preferences as "basic" and "general." Some were confused about the benefits of filling out a serious of questions about their stay information.
Information Function	
Value of personalization Customers can consume personalized contents	**N/A** Customer participants in this study did not perceive the in-app information were personalized based on their personal interests. Leisure travelers who traveled first time to a destination felt this function particularly unhelpful.
Self-Check-in/out & Room Access Functions	
Value of personalization Customers can personalize the way they want to get things done	**N/A** Business travelers who value efficiency perceived that they were simply doing everything by themselves; the majority of leisure travelers were neither confused or did not perceive the need or benefits to use this function.
Service Request Functions	
Value of personalization Customers can personalize their stay experience by interacting with the hotel regarding anything they need anytime anywhere	**Value of personalization (under special circumstances)** Whether customers would perceive such value is affected by a number of factors. Customers' communication habit/preferences and personality/style affect their benefit benefits of using this channel to interact with hotels. Customers hesitated to contact hotels because of their perception of typical hotel services. Leisure travelers who traveled to unfamiliar locations with family and friends found this function particularly useful. Lastly, customers might not perceive the value of personalization from this function if their communications is affected by the unique nature of mediated-communications.

The bolded differences in perceived value highlighted in Table 18 correspond with the bolded differences in perceived affordances in Table 17. Table 18 shows that customers perceived the value of personalization mainly through service request

functions. The majority of customers did not perceive the value of personalization from the rest of the functions due to their different perceived affordances, as discussed earlier (i.e., they did not perceive room preferences as personal but generic/basic options; they did not perceive the in-app contents as personalized based on their interests; they did not perceive self-serving as personalizing experiences). When customers use the room reservation, information, and self-check-in/out and room access functions, these functional affordances mainly bring them functional value such as convenience and efficiency. Lastly, although customers did perceive the value of personalization when using the open service request functions, the majority only perceived this value under highly restricted conditions. Customers with particular personal characteristics, perceptions of hotel services, and trip purposes, whose communication conditions are not affected by CMC characteristics, have the highest potential to perceive the value of personalization through this function.

5.5 The Collaboration Impasse

Customers' sensitivity to contextual factors emerged throughout the co-creation process, which implies that hotel-customer co-creation is not a straightforward path but a winding road with many twists and turns. Why are customers so sensitive to contextual factors? Why is it not simple to get customers to interact and exchange information with hotels? Isn't co-creation all about maximizing customer value, which is supposed to be something good for customers? The findings from this study suggest two explanations for the "impasse" in this specific study context.

5.5.1 *The Lack of Stimuli for Interaction*

The interactive element is among the most important in the co-creation process. Without interactive or exchange elements, customers are simply serving themselves. We understand that customers might be hesitant even if they want to interact with hotels using the hotel mobile apps. Managers have mentioned that they can proactively approach customers through the apps to ask whether they have any needs and wants. Managers also pointed out that their proactive engagement is limited because it only occurs after being alerted that a customer needs something. Hoteliers mostly do not proactively reach out to customers to avoid annoying and interrupting them. In this sense, there is no bridge between customers' initiation and managers' proactive engagement. Hotels probably would not realize certain customer needs if the customers themselves did not speak out. Furthermore, the interviews with customers reveal that they might not always know what they want, especially when traveling to a strange and unfamiliar place. For example, a high percentage of customer participants in this study mentioned that they expected to receive information about the major things to do and attractions at the destination through the apps but rarely did.

FIGURE 10. The Co-creation "Impasse"—Lack of Stimuli for Interactions
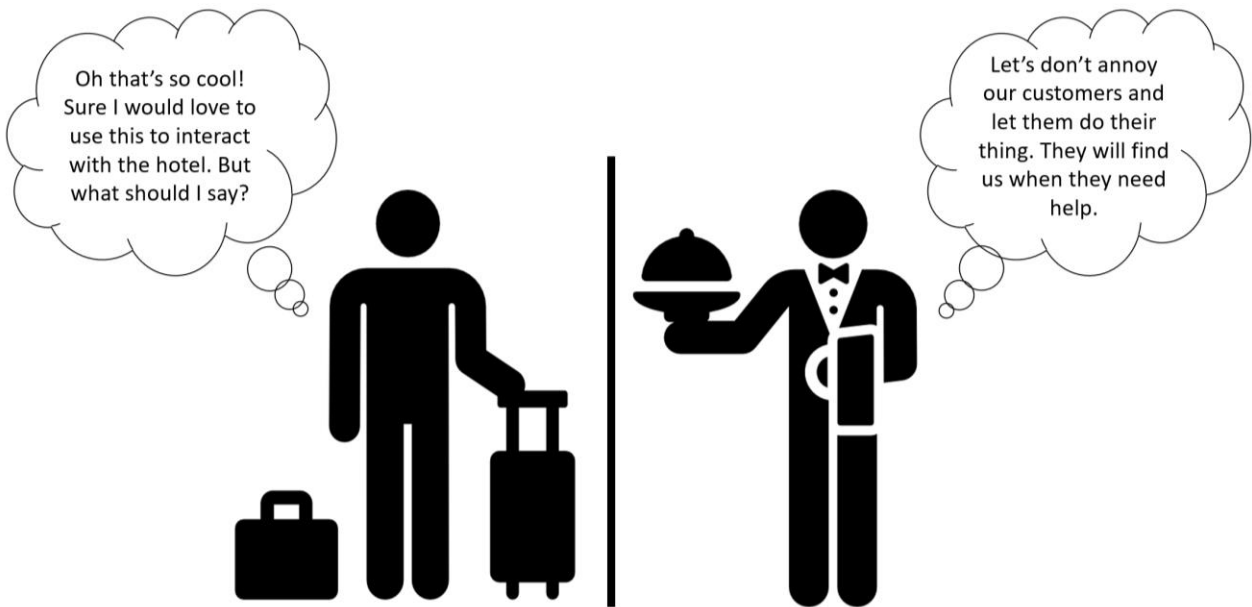
These issues explain why hotel managers mentioned the importance of human interactions in observing customers' latent needs and wants and echoed hotel managers' concerns about the limitations of collecting customer preferences from the apps. However, if customers' needs and wants can only be recognized through human observations, the potential of the apps cannot be maximized. The apps have high potential for satisfying customers' contextual needs. For leisure travelers, an unfamiliar environment is full of uncertainties. For example, customer informant #17 pointed out he was just a customer but not an expert in hospitality service. He had limited knowledge of how to make his trip better. Customer informant #20 expected that as a hospitality business, the hotel should actively provide advice and offers. He further commented, "*If you need the customers themselves to look for ways that they can send requests to the hotels, this is…bad user experience.*" He provided a detailed explanation regarding his expectations for hotels' proactive interactions with customers through the apps:

"Everyone's senses are different; some people may put many personal interests, preferences, habits into the app the first time they use it. They may proactively give you all this information. But many people may not proactively do this. Many people may not proactively explore what's inside the app…I would prefer the hotel to provide information about the traffic conditions, the main attractions, and restaurants; for example, there are two separate islands in Macau. When I arrived at these places, I felt a bit lost, and I hoped they could proactively provide some suggestions, for example, festivals or events, especially those that only take place once a year during a specific period of time. Things such as special activities, performances—I hope that they could actively provide information about things like this. There are many things that we don't know about this place. Some people may like to discover things by themselves, but some people are more passive when come to things like this."

Customers found it particularly difficult to initiate a conversation through the apps in a hotel context. Many had to think about where to start. Some customers indicated that when they traveled, they spent most of their time outside the hotel. The most important part of their travel experience was what they did outside, exploring the destination. For this reason, some customers said they were "indifferent" as to whether or not personalized service was provided at the hotel. Customer informant #15 said, *"at the end of the day, a hotel is a hotel,"* and customer informant #8 remarked, *"If I am staying in a hotel, the most important thing is to sleep."* These statements indicate the customers' expectations. For business travelers, it seems to be even more difficult. For example, customer informant #11 explained that for business travelers like him, no special

experience is needed. He just needed a shelter for a night. Hence, for guests like him, having extra interactions with hotels seems to be even less necessary:

"Like now that I think of it, airlines, I want to be interrupted. Your flight is delayed, your flight is not coming, your flight got canceled. Please interrupt me. But a hotel, it's a bit different. I travel, right, you make your hotel booking, there's not much more that I need to know about from [the hotel]. You know, it's good to know the weather, you know, that's cute that's nice, you know, ok do you want to tell me the local restaurants nearby, but then it becomes a bit….annoying because those things we already have, right? We already know what restaurants to go to thanks to Google, that's already here. I don't need the [hotel] app to do that, that makes sense…a hotel and an airline are slightly different of course, [there's] a big difference. Airline, there is a danger of missing my flight. I am not going to miss my hotel because the hotel is a fixed object, of course. So, just one thing, you know the hotel is not going to be affected by weather. The hotel is not going to get overbooked. So the airline app has a big difference because of the need, and because it's an airplane, right, you know, TSA, no TSA in the US, all these things. So it's a different aspect, so that's why I said it depends on customer segment. For the regular business customers who are just in and out, ah, it's part of the experience."

From the analysis of hoteliers' proactive engagement, it is noticeable that these efforts are more related to engaging customers to use the app but less relevant to engaging customers to initiate interactions through the apps. The linkage between firm's facilitation efforts and customers' participation in interacting and collaborating with

hotels seems to be indirect. That is, hoteliers engage customers in the value co-creation process mainly by encouraging them to use the apps but not by encouraging customers to initiate interactions through the apps. In other words, hoteliers also play a role in developing this impasse during the co-creation process.

The implication is not that hoteliers should immediately change their strategy and message every single guest who comes in. This type of proactive engagement with customers needs to be conducted with special care. How hoteliers can do so effectively and successfully is beyond the scope of this study. The key here is to point out the existence of a dilemma caused by a lack of stimuli for interaction. Hoteliers play an important role in it, as evidenced by customer participants' interviews. The comment made by customer informant #6 offers a good conclusion for this section:

> *"People who are indifferent cannot think of what they need. If you can think for them and decide for them, then they know what they need." (Customer Informant #6)*

5.5.2 *Erratic Customer Expectations*

The second reason contributing to the co-creation impasse is erratic customer expectations. As discussed, even when customers are willing to participate and hoteliers respond promptly and appropriately (or at least hoteliers believe they have done so), customers still might not be happy about the result of this co-creation effort, due to an expectation-reality discrepancy. That is, even though customers are willing to participate, an effective co-creation tool is provided, and hoteliers show willingness to serve, an ideal outcome might not necessarily result, as has been shown in the many examples in this study.

FIGURE 11. The Co-creation "Impasse"—Erratic Customer Expectations
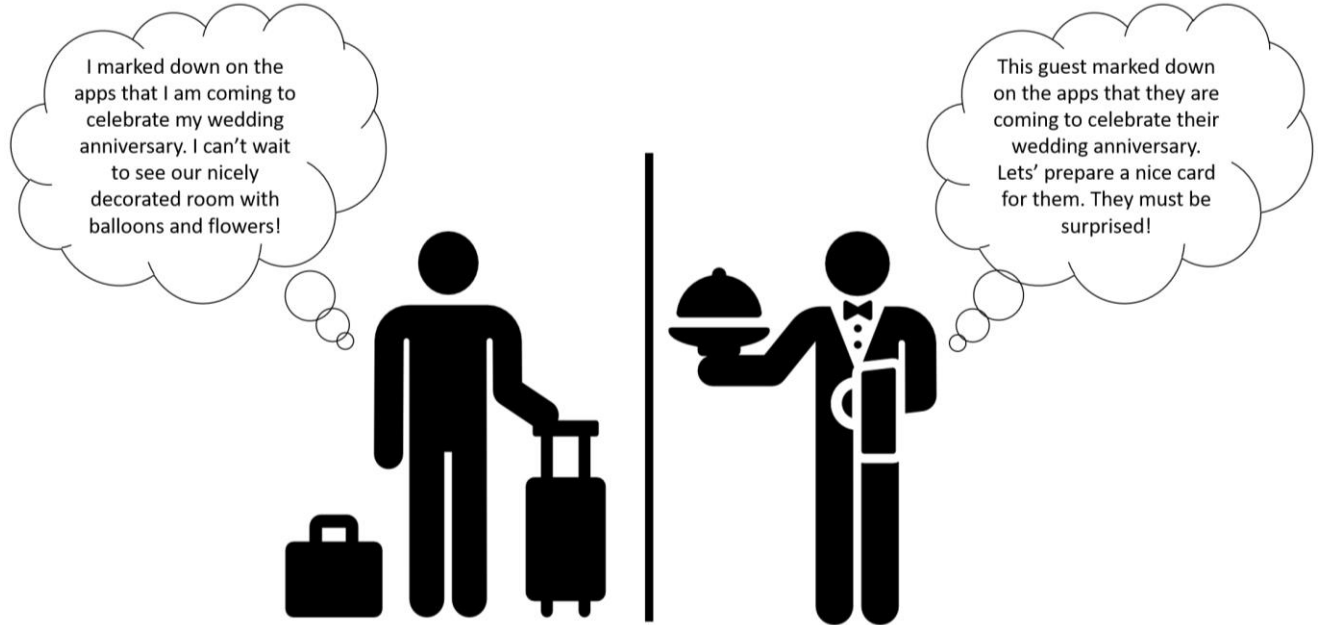
As shown in a number of examples in this study, offering services that customers do not expect can have a number of negative consequences. Customers were dissatisfied, disappointed, and even angry, as they thought their time and effort had been wasted. They were upset due to the discrepancy between what they expected and what they received. As discussed in Chapter 4, according to hotel managers, every time a special service request is received, the responsible team would decide how to handle it based on factors such as the guest's status, the hotel's available resources, and whether the request is feasible. Of course, the ultimate goal is to maximize customer satisfaction. However, based on hotel managers' narratives, whether their service offering could meet customers' expectations was not one of the criteria considered when deciding how to react to customers' wants. As a result, a number of customers received service they did not expect. For example, customer informant #5, who asked for a cafe recommendation, received "Starbucks" as an answer. In her case, the hotel staff might think that Starbucks is a

popular brand with international recognition; however, for customer informant #5, the answer was hilarious. Customer informant #9 shared another example of expectation-reality discrepancy:

"I was actually expecting something more than a card. I was thinking maybe they would put some decorations inside my room or I thought they would do something to make my room look nicer. I wasn't expecting much, I was only expecting two flowers or balloons which wouldn't cost much. But it ended up that they only gave me a card. So I was thinking such a big company like [the hotel] gave me a card like that, you know, to me it's dispensable. I can go buy and write a card myself."

The experience shared by customer informant #1 further supports the importance of understanding customers' real needs when co-creating with them through the apps:

"I asked them to recommend me somewhere local citizens would go. Then they found me something again that I could immediately tell was search results from the Internet. The answers they gave me were absolutely not helpful. I would rather just search by myself. The information they provided was very rigid and completely useless. They told me about Lady's Market and Victoria Peak? It was just like I recommend that you visit Ruins of St. Paul's or A Ma Temple in Macau. During the trip when you chat with them, how should I describe, requests like more shampoos, book a table—these kinds of easy requests they may be able to help you with. But precisely for these types of easy things, I don't have to use the app."

When customers initiate a conversation, finding out what they really need and what they are actually seeking before interacting with them and providing solutions is

crucial. It is risky for a business to use trial and error because a single disappointment can lose a customer forever. Customers' disappointment can go beyond dissatisfaction when the service received does not meet their expectations. Compensating customers after they are dissatisfied might not always be effective, as shown in some examples in this study. For example, customer informant #9 was angry when sharing her experience:

"I told them it was my anniversary and asked if they could help me to decorate my room a bit. I believe they did receive my message. but they didn't reply to me nor confirm with me if it is doable. They didn't ask me what anniversary it is and didn't ask me more details about how I wanted to celebrate…Then when we arrived, they said, sorry, we had a lot of guests today…Then they said they would give us some fruit for free as compensation…the fruits were on a plate. I think that was really nonsense. It was completely unrelated to what I originally requested, it was so strange! I wanted to ask, could they actually give me something else? It was so perfunctory, and throughout the process, they didn't follow up with me how I felt."

This problem is probably due to the improvisatory form of co-creation through hotel mobile apps, especially when there is a "partition" between the two interlocutors. As customers ask for things randomly, hotels have no specific blueprint to follow in evaluating each special situation. It is difficult to judge the best way to handle each type of situation. Acquiring sufficient understanding of customer expectations is thus important because every single situation can be unique. The comments shared by customer informant #3 shows that a customer's reaction could be different for every

situation depending on the individual, which increases the difficulty for hotels in satisfying customers through co-creation:

"Perhaps it's just me who doesn't feel satisfied with what they recommend. Maybe other people would feel ok." (Customer Informant #3)

As the co-creation environment is affected by a number of contextual factors, it is not difficult to imagine the result of hotel-customer co-creation in this study as an outcome depending on probability. Individual customers have different expectations. Based on their desires and goals, they demand different things from hoteliers, who might not know what these customers really want due to the "partition" between them (i.e., the fundamental nature of CMC communications). Often, customers do not explicitly state their true needs. This observation echoes hotel managers' comments on the risk associated with relying on technology to understand customer needs and preferences. For example, when customer informant #1 asked hotels about things to do, he actually meant unusual things to do that one cannot easily find on the Internet. When customer informant #5 asked about restaurant recommendations, she meant local ones, not Starbucks. Perhaps customers have not yet developed the habit of explaining their personal wants in detail through CMC channels, especially when they are affected by their perception of typical hotel service. That is, reasonable customers understand the limits of such service and thus their expectations might not be high. The many examples from this study show that if hoteliers aim to master such service and maximize customers' value-in-use, they must enhance their capability to understand customers' real needs and manage customer expectations.

For specific personal communications, customers in general did not have high expectations concerning hotels' delivery of service based upon the information provided. The majority of customers were reasonable and understood that hotel services are subject to availability. For example, as a frequent traveler, customer informant #10 understood hotel policies and what hotels usually could and could not do:

"Yeah, I just feel fine. I don't know if leisure travelers would feel the same way, but because I travel so much, I understand the hotel policy, and I know pretty much what they can do and what they can't do and if there are availability issues, anything like that." (Customer Informant #10)

Customer informant #19 stated that he was "a bit looking forward to it" and didn't expect the hotel would take care of his message. Customer informant #15 had never tried communicating with hotels through the official hotel mobile app and did not have high expectations on his first try:

"When I first saw this, I thought it was a novel idea. I didn't expect too much from it. When I made the request, I was thinking, ok, maybe I could get what I want, but maybe not." (Customer Informant #15)

Customer informant #16 also had low expectations of this function, as he understood that even high-end hotels could differ greatly. While one hotel might be able to handle this type of service well, others might not. Thus, he was unsure that what he asked for could be taken care of. Customer informant #3 shared similar views. She did not expect the hotel to respond to what she ordered from the room amenities menu:

"I actually thought that the hotel wouldn't care about our request regarding the hairdryer, but unexpectedly, they really brought us a hairdryer."

Customer informant #6 understood how busy a hotel normally is and thus could understand the hotels' situation if they could not satisfy every single customer:

"Perhaps because I am also working in the hospitality industry, I understand how tight the demand is for hotel rooms, especially when they are busy." (Customer Informant #6)

Finally, while some customers were highly satisfied when what they asked for was supplied, some did not, because their requests were not acknowledged. When asked whether he was disappointed that his request for a special pillow was not acknowledged, customer informant #16 indicated his relatively low perceived importance of the function:

"A little bit. If the hotel didn't offer this special request option in the first place, it would be just fine."

Customer informant #3 did not expect the hotel to respond to her message through the instant messaging function. She was surprised when it was acknowledged. Similarly, customer informant #8 mentioned that he considered this service something extra that the hotel offered to customers. He believed that because a hotel is only a place where he stays for a night, he should be responsible for his own personal issues rather than relying on the hotel. In addition, he understood how difficult it is for hotels to handle instant messaging from customers:

"I actually can imagine it doesn't make sense if they stay online on that instant messaging for a long period of time, it's very difficult as they also have other tasks. If they cannot reply to me immediately, that's normal and reasonable, which I can understand." (Customer Informant #8)

"Actually I didn't expect they could help us much, and indeed they couldn't help us much." (Customer Informant #1)

5.6 Chapter Summary

This chapter has discussed customers' participation and collaboration with hoteliers through the hotel mobile apps. Customers' actual ways of using the apps and their perceived value-in-use were discussed. The analysis of customers' use scenarios unearthed the factors that affect customers' use and collaboration with hotels, which in turn influence their perceived value-in-use from the app services. First, customers perceive the benefits and needs of interacting with hotels differently. Some were confused about the purpose behind the app design, while some simply did not know what they might need during a hotel stay. Second, customers' perception of what a typical hotel can do for them restricted their interactions with hotels. Customers hesitated when they were uncertain about hotel staff's reactions to their messages. Third, customers' personality and communication habits/preferences affect the perceived benefits of interacting with hotels through the apps. The second group of contextual factors related to trip characteristics. Customers' location affects how they use the apps to interact with hotels. The data analysis revealed that customers found such interaction most useful when not on the hotel premises. Leisure travelers who are first-time visitors or unfamiliar with a location found this form of interaction most helpful. When traveling with family and friends, customers perceived most need to interact with hotels. The third group of contextual factors relates to the characteristics of communications mediated by technologies. Whether customers find such interactions helpful is dependent on whether they receive timely and proper feedback, exchange rich content, and receive personal

responses. Customers found the interactions through the apps particularly unhelpful when their communication need was complex, urgent, and important. In contrast, customers liked using the app to interact with hotels regarding unusual issues, which made them feel less embarrassed and more comfortable.

This chapter has shown that customers might not necessarily involve themselves in co-creation activities using the apps if they cannot perceive the benefits and the need to do so. Even if they do, they might not necessarily receive the value proposition, which is dependent on a number of factors. While hoteliers expect that all four of the main functions can create the value of personalization to customers, the customer participants in this study mainly perceived functional value from the apps, and only perceived the value of personalization under highly specific circumstances. The contextual factors explain why customers' use of the apps might be different from hoteliers' expectations (Figure 12). The comparison of hoteliers' expected use and customers' actual use found that although customers also focus on the four main app functions, they use them in slightly different ways from those expected by hotel managers. The main differences are: (1) customers did not perceive room preferences as "personalized" options; (2) customers were not aware of any information that was personalized based on their interests in the apps; (3) customers did not associate self-serving with personalizing one's own experience; and (4) customers did not perceive they could communicate anything they wanted with hotels anytime and anywhere.

FIGURE 12. Contextual Factors Influencing Customer Participation and Collaboration
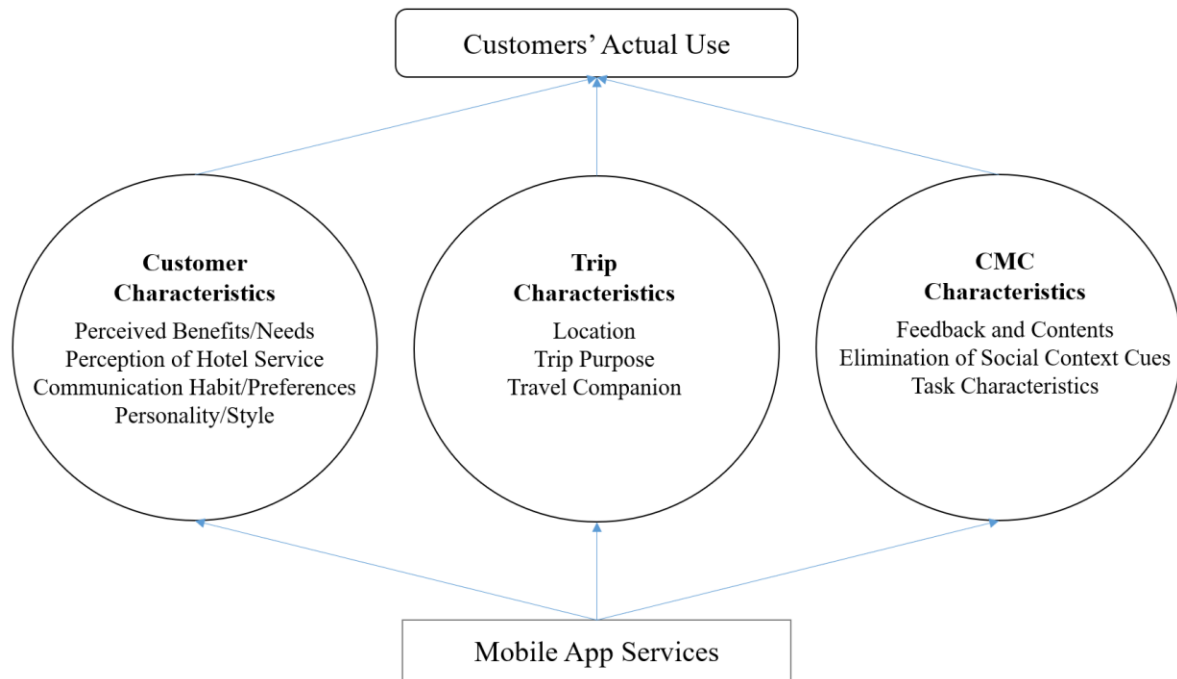
Consistent with hoteliers' expectations, customers also perceived five types of value-in-use: functional value, emotional value, epistemic value, social value, and value of personalization. However, customers' perceived value from the apps was mainly functional value. The functional value comes from the apps' convenience and efficiency, which save customers time and effort, which in turn gives customers an easier overall travel experience. The perceived emotional value is a result of customers' feeling comfortable, peaceful, more relaxed, and less worried when they have higher control and the option to avoid human interactions. Some of them were delighted, impressed, and surprised when their communications through the app were acknowledged by the hotel. Some customers also perceived the apps as creative and innovative. They perceived using the apps as a new, cool, and fun experience. This perception of social value was pointed out by several customers. These customers felt they were exclusive, special, and important. Customers perceived the value of personalization through the service request

functions. Through interacting anytime, anywhere, with hotels, they perceived that anything became possible; they were given more overall; they received intimate service; they formed a personal relationship with hotels; and they had more memorable experiences. These findings show that hotel-customer co-creation in this study context is a dynamic process. Customers' participation, their collaboration with hotels, and their perceived value-in-use are affected by contextual factors (i.e., customer, trip, and CMC characteristics). Throughout the entire co-creation process, these contextual factors further impose uncertainties and instability on hotel practices and customer behaviors. This uncertainty further amplifies the challenges for hoteliers in co-creating with customers and personalize customer experiences.

A comparison of hoteliers' expectations and customers' actual use experience discovers two main reasons that contribute to the gap between hoteliers' practices and customers' actual use. This study found that hotel-customer collaboration is affected by lack of stimuli for interactions and erratic customer expectation. In a travel context, customers need contextual information that can address their variety of needs based on time and location. They desire contextual travel information such as things to do at the destination. However, customers might not always actively seek advice from hotels. To maximize the potential of hotel mobile apps, customers need to be approached at the right place at the right time, through the right ways. Erratic customer expectations reflect how hoteliers might not always truly understand customers' real needs and wants from the interactions and communications through the apps. To maximize the potential of the apps, customer expectations need to be better understood and managed to avoid unnecessary customer dissatisfaction and disappointment.

5.7 Validity and Reliability of Findings

As discussed in section 3.4, the reliability and validity of qualitative research lies in the depth and rigorousness of the researchers' handling of the data. While the researcher interpreted the data based on her understanding on the interviewee's narratives, previous literature as well as the goals and objectives of this study, the importance of allowing the data to speak for themselves and preserving the originality of the meanings expressed by participants have been kept firmly in the author's mind throughout the entire data analysis process. Tactics such as constant comparison and questioning the true meanings behind the data have enabled the researcher to link the important points together and present the following discussions that provide a rich explanation on the phenomenon based on the data collected. By following the tables that show the coding frames which form the building blocks of the result sections, readers can better understand the logic behind the development of the properties and dimensions of constructs. Each coding frame is attached to its relevant text throughout the result sections. Furthermore, member check was also conducted to ensure that the researcher did not distort the participants' interpretations. Two summaries were prepared separately for manager informants and customer informants (i.e., the manager informants were invited to read and comment on a summary of findings based on the interviews with hotel managers; and the customer informants were invited to read and comment on a summary of findings based on the interviews with hotel customers). A total of eight participants returned their feedback. Their positive evaluations support the author's interpretation of their narratives in general (Appendix IV).

CHAPTER 6: DISCUSSION

6.1 The New Role of Hoteliers

Anatomizing the co-creation process facilitated by technologies in the hotel context through the lens of sociomateriality sheds lights on the unique role of hoteliers in service design and provision. The findings provide a more complete explanation of the structure of such service design and how value is expected to be co-created. This study found that through the various mobile app services, hoteliers co-create new experiences with customers, which explains how hoteliers are able to differentiate themselves from others. Through co-developing service patterns and improvising experiences with customers, hoteliers are no longer merely service designers and executors. They become *analysts*, *fast-thinkers*, and *all-rounders*. First, the role of analysts stems from hoteliers' efforts to explore and discover customer behaviors. Hoteliers analyze customer behaviors at both the individual and aggregated customer levels. At the individual level, hoteliers try to understand and remember a customer's personal needs and preferences to enhance his or her stay experience. Based on the bits and pieces of existing information about a specific customer, they further analyze what other elements should be incorporated into the customer's experience. At the aggregate level, hoteliers analyze customers' generic behavioral patterns for current practice adjustment and future planning. Second, hoteliers are forced to become fast thinkers after they decide to open the door for customers to "throw in" their personal information and messages. Hoteliers have to be highly flexible and agile to face unpredictable interactions with customers, especially when a customer's desire cannot be satisfied. Hoteliers need to react quickly to provide appropriate and responsive alternatives. Third, the new forms of co-creation unveiled in this study have

transformed hoteliers into all-rounders. Interactions between hotels and customers are no longer restricted to traditional communications such as making bookings or arranging transportation. The role of hoteliers had been transformed into one that must perform the tasks of tourism organizations (e.g., when customers ask hotels to help trip planning) or event organizers (e.g., when customers ask hotels to help organize celebrations). Perhaps hoteliers themselves cannot accurately estimate how many extra roles they have taken since the introduction of the open communication service. Hotel employees even become social workers when customers simply wanted somebody to talk with. Although customers might not necessarily ask for anything for various reasons such as their perceived needs or hesitation, as discussed earlier, the fact is that the combination of hotels' unique role (i.e., customers trust hotel professionals), the affordances of the hotel mobile apps, and customers' ubiquitous needs in a hospitality and travel context have opened a new sphere for value co-creation to occur.

Previous studies often emphasize the importance of organizations' co-creating value with customers, yet the forms in which co-creation can happen have rarely been discussed. This study identifies two unique forms of value co-creation supported by ICT-facilitated service in the hotel context (i.e., the co-development of service patterns and improvisation of experiences). Furthermore, research has often focused on the process rather than the configuration of a service provision. That is, technology has often been treated as a tool that has an effect by itself. The human intelligence and effort behind the design of technology has often been ignored. This study supplements previous studies by delineating the mechanism of hoteliers' service design for value co-creation with customers through mobile app services. Rather than treating technology as a tool, this

study analyzes the phenomenon by considering it as an effect resulting from the amalgamation of human intelligence and technology materiality. The unique service designs unearthed in this study are distinct from those identified in previous studies. For example, Sarker, Sarker, and Sahaym (2012) explored value co-creation in a B2B context between an ERP vendor and its partners through a case study. They discovered that co-creation occurred in three ways: exchange, addition, and synergistic integration. In the context of new product development, Ohern and Rindfleisch (2010) discussed four distinct types of customer co-creation: collaborating, tinkering, co-designing, and submitting. The findings from these prior studies cannot be fully applied in this study context, however, as the technology of focus and purpose of use are different.

Hoteliers' unique role in the provision of ICT-facilitated service is consistent with previous studies that discuss how experiences can be co-created in an "agile" manner using smart technologies. The co-creation of experience is no longer restricted to certain points during the travel process (e.g., check-in) but can happen at numerous service encounters in real time (Buhalis & Foerste, 2015; Buhalis & Law, 2008; Neuhofer et al., 2015). Co-developing service patterns with customers, as a unique form of value co-creation through ICT-facilitated service, reflects the importance of the capability of collecting customer information emphasized in prior studies (Buhalis & Law, 2008; Neuhofer et al., 2015). Such a unique form of co-creation also echoes the importance of accumulating customer knowledge for experience personalization (Niininen, Buhalis, & March, 2007; Shen & Dwayne Ball, 2009). Delivering higher customer value by continuously learning customers' behavioral patterns is an example of continuity personalization, which is an ongoing practice of customizing service based on adaptive

learning about customers' goals and preferences (Shen & Ball, 2009). New experiences are co-created when the service providers have acquired new spheres of customer knowledge and formalize their service provision based on individual customers' needs and wants (Gallouj, 2002).

Hoteliers' service design for customers to improvise their own experiences echoes previous studies' conceptualization of mobile technologies as a powerful catalyst for personalized interactions (Buhalis & Foerste, 2015; Neuhofer et al., 2015). By allowing interactions to occur in an ad hoc manner (Gallouj, 2002), mobile technologies help service providers to uncover customers' latent needs and new value-added opportunities (Bettencourt, Brown, & Sirianni, 2013). Such personalized interactions facilitated by mobile technologies help address the "building blocks" of value co-creation suggested by Prahalad and Ramaswamy (2004b), who emphasize open, continuous, and transparent conversation as essential for engaging customers in value co-creation.

6.2 Customers' Actual Use and Technology Effectiveness

This study integrates and compares hoteliers' and customers' perceptions of ICT-facilitated service (i.e., hotel mobile app services) to provide a big picture to explain the phenomenon. Providing empirical evidence that links app functions with perceived affordances and value, this study supplements previous studies on S-D logic and technology affordance theory which have been dominated by conceptual studies. Furthermore, this study advances the research stream of hotel mobile technologies by moving beyond users' pre-adoption stage to explore their actual use experiences and perceptions. Based on S-D logic's proposed differences between value propositions and value-in-use, the findings identify the reasons for the discrepancy between hoteliers' and

customers' expectations from and perceptions of the apps. That is, several facets of customers' actual use deviate from hoteliers' expectations, which ultimately affect customers' perceived value-in-use. The main differences between the two groups rest on their perceived potential of the apps for personalization. Although both the hoteliers and customers perceive that the apps can create functional value (e.g., a more convenient and efficient trip), emotional value (e.g., a more comfortable and less-worried stay), epistemic value (e.g., new experience and innovative service), and social value (e.g., a more important customer), the majority of customer participants only perceived the value of personalization to a limited extent in a few very special circumstances. By bridging technological functions and values with technology affordances, this study presents the underlying mechanism of humans' interpretations of their perception of technological functions, which explains how customers' underlying thinking regarding a technological function influenced their use experience and value-in-use. The findings of this study complement those of previous studies, which are mostly quantitative. By collecting empirical evidence following a qualitative research design, the findings of this study provide more details in context.

This study has found that customers mainly perceive functional benefits from the use of the hotel mobile apps, which is consistent with the findings of previous studies (Adukaite, Reimann, Marchiori, & Cantoni, 2013; Chen, Hsu, & Wu, 2012; Chen, Murphy, & Knecht, 2016; Wang, Xiang, Law, & Ki, 2016). The potential of hotel mobile apps for customer experience personalization also echoes earlier research findings (Morosan, 2015; Neuhofer et al., 2013). Personalizing customer experience is challenging, as it relies on customers' willingness to exchange information (Morosan & DeFranco,

2015). This study not only expands on previous ones but also contributes new findings to research on hotel mobile apps. First, this study has found that the effectiveness of technology should not be measured only by factors in the current literature such as customer adoption (e.g., Chen et al., 2012; Mo Kwon, Bae & Blum, 2013) and perception of technology performance (Adukaite et al., 2013; Chen et al., 2015). Customers' actual use experience should also be considered a critical factor that affects the success of a technology. As has been shown in this study, customers' actual ways of using the app mean that their ultimate value-in-use deviates from hoteliers' expectations. Focusing on technology adoption or perception alone does not provide complete explanations of why and how customers perceive certain types of value-in-use from a technology function. As emphasized in previous research, the effectiveness of a technology should be evaluated by factors beyond functionalities (Wang, Xiang, & Fesenmaier, 2014). Second, this study discovers a number of extra factors that affect the delivery of personalized customer experience through hotel mobile apps. Aside from customers' willingness to share information and privacy concern, factors such as customers' interpretation of personalization and their concerns about hotels' responses affect the delivery of personalized customer service. This finding supplements the findings of prior research, which has often focused on customers' pre-adoption stage. Third, previous studies have rarely integrated hoteliers and customers' perspectives toward the use of hotel technologies (Adukaite et al., 2013; Kim, Connolly, & Blum, 2014; Leung & Law, 2013; Wang, Li, Li, & Zhang, 2016). By combining the two, analyzing the similarities and differences between hoteliers' and customers' perceptions supplements previous studies that focus on a single perspective.

The evidence of customers' frequent failure to perceive the value of personalization echoes prior S-D logic literature. First, scholars have explained that delivering personalized experience should involve more than a company's a la carte menu (Chathoth et al., 2013; Prahalad & Ramaswamy, 2004c). Providing pre-designed "options," "selections," or "menus" for customers to "select" from should be considered customization but not personalization. As individual customers' needs are idiosyncratic, pre-designed items have limited potential in terms of co-creating personalized experience with customers. Second, customers' failure to relate self-serving to personalizing one's own experience has also been discussed in the literature on the relatively passive role of the customer when consuming self-service, in contrast with the active customer in an effective co-creation environment (Chathoth et al., 2013). The role of the customer when consuming self-service technologies is simply to be physically present to produce the service or for the service to occur. In such situations, the customers' role should be associated with co-production but not co-creation. The customers are not involved in co-designing or co-developing their consumption experience, but are merely present to receive the service offering (Chathoth et al., 2013). Third, the majority of customer participants in this study did not perceive that they could communicate with hotels freely. When attempting to use the service request functions, some customers hesitated while others simply did not perceive any benefits to doing so. As a result, the majority of customers only perceived the value of personalization in highly specific situations. Such issues related to communication echo the DART model (dialog, access, risk-benefits, transparency) in the S-D logic literature (Prahalad & Ramaswamy, 2004b). According to the DART model, transparent, continuous, and open dialogs are important building

blocks for successful value co-creation. The service provider should ensure that sufficient resources are provided for the customers to be engaged in the interaction process (Prahalad & Ramaswamy, 2004a).

The DART model also helps explain the collaboration elements required to bridge the service provider and consumer unearthed in this study: the need for interaction stimuli and customer expectation management. When both the consumers and service suppliers face uncertainty, an open and continuous dialog is essential for successful collaboration and value co-creation. Co-creating value is challenging. Both the service providers and consumers need to show ability and willingness to engage each other in deep dialog, which is difficult if consumers do not have access to transparent information. With interactive dialog and access to transparent information, consumers have a better understanding and estimation of the risk involved. Such an understanding is necessary for consumers, as they now have a partial role in making their own decisions.

6.3 Face-to-Face and Computer-Mediated Communications

Some customers had low expectations when interacting with hotels through the apps and described them as a "partition." This perception is due to the fundamental differences between traditional face-to-face and computer-mediated communications (CMC). CMC is a collective term for network-based communication tools. A number of CMC theories have been developed to explain users' media choice and the effectiveness of different media in different situations (Walther, 1996, 2011). The original "cues-filtered-out" theories suggest that CMC filters the variety of social context cues that can be transmitted through traditional face-to-face interactions. For example, when

communicating through mediated channels such as emailing and texting, interlocutors can no longer observe each other's facial expressions and body language.

When interacting with hotels through the apps, customers' experiences were affected by (1) timely feedback; (2) rich information; and (3) their perception of the service representative on the other end. The first and second criteria are associated with media richness theory, in which perceived media richness refers to the extent to which a communication medium is able to reproduce the information sent over it without loss or distortion (Daft & Lengel, 1986). Communication media vary in terms of the number of verbal and nonverbal cue systems that can be supported. The required richness of a communication medium is different depending on the degree of equivocality and uncertainty of the communication situation (Daft & Lengel, 1986). Equivocality refers to ambiguous and confusing communication situations in which meanings are difficult to interpret. In equivocal and uncertain communication situations, face-to-face communication is preferred as it allows the rapid exchange of information among interlocutors and reduces the rules for interpretation (Daft & Weick, 1984; Weick, 1969). Media richness theory suggests that the match between the richness of the medium and task complexity affects communication effectiveness (Daft, Lengel, & Trevino, 1987). The richness of a medium is measured by four dimensions: the exchange of timely feedback, the potential for natural language, the delivery of different cues, and the use of rich and varied languages to make a message specific for the recipient (Carlson & Zmud, 1999; Walther, 2011).

As indicated earlier, customers' experiences interacting with hotels through the apps were also affected by their perception toward the service representative. This

240

observation is associated with another theory in CMC studies—social presence theory. Social presence refers to the extent to which a medium allows the users to experience one another as being psychologically present or a "real person" in mediated communications (Fulk, Steinfield, Schmitz, & Power, 1987; Gunawardena, 1995). Communication media have different levels of capacity to transmit nonverbal cues such as personal, sociable, or sensitive human elements (Gefen & Straub, 2004; Short, Williams, & Christie, 1976). Face-to-face communication is considered as having the highest degree of social presence, as it allows interlocutors to transmit a wide range of nonverbal cues (Short et al., 1976). Social presence is measured by four dimensions— sense of sociability, human sensitivity, human warmth, and personalness during the conversation (Gefen & Straub, 2004).

Value co-creation requires collaborative dialog that allows the customer's personal and idiosyncratic needs to be understood. Identifying individual customers' unique needs and wants is not a simple task; it requires communication channels that allow customers to clearly articulate their needs and expectations. Previous studies have found evidence to support this proposition. For example, Wang, Hsieh, and Song (2012) examined user satisfaction with instant messaging in building social relationships. The researchers found perceived media richness and perceived social presence as significant positive attributes that affect users' perceived enjoyment and the perceived usefulness of using instant messaging. Value co-creation also emphasizes personal interaction between the consumer and service supplier as the locus of value creation. Successful firm-customer value co-creation requires personalized interactions between the two parties. Hence, it is argued that more personal interactions rather than impersonal ones should be preferred in this context. Perceived social presence has been found to be a strong

influencer on user satisfaction with CMC channels. For example, in a study that investigated students' experience of instant messaging, Ogara, Koh, and Prybutok (2014) found a positive impact for both perceived media richness and perceived social presence on user satisfaction.

The fact that instant messaging is "a one-to-one synchronous form of computer-mediated communication" (Baron, 2004, p. 13) might provide a partial explanation of the problem with the low level of social presence and media richness perceived by customers. From the analysis of customers' perceived affordances and value-in-use, we know that the in-app instant messaging function has the highest potential for customer experience personalization among all app functions. However, the majority of customer participants in this study only perceived the value of personalization under very specific circumstances; the perceived social presence and media richness of the communication mediated through the mobile instant messaging was one major reason. When a communication channel that is supposed to be one-to-one and synchronous is used for one-to-many communications, issues arise, particularly when hoteliers might not have enough resources to handle too many individual instant chats at the same time.

Studies have mostly focused on co-creation through platforms such as online communities (Jarvenpaa & Tuunainen, 2013), generic mobile apps (Morosan & DeFranco, 2016a), and smart technologies (e.g., guest relationship management system) (Neuhofer et al., 2015). Open communication channels such as mobile instant messaging have rarely been explored as a specific means (i.e., two-way, instant, texting, "double-blinded" communication) to facilitate value co-creation. While previous studies have found that factors such as customers' habits, perceived personalization, trust, and

personal innovativeness significantly affect their use of mobile technologies for value co-creation (Morosan, 2015; Morosan & DeFranco, 2016a), these factors do not provide sufficient explanations of customers' co-creation experiences in this study context. This study unearths CMC media traits as influential factors that affect customer engagement in the co-creation process facilitated by mobile communications. The findings from this study suggest that by affording ubiquitous connectivity, real-time synchronization of information, and rich conversations, mobile instant messaging has a unique potential to facilitate the co-creation of personalized interactions and personalized product/service offerings for customers.

The results generated from the data analysis indicate the two-faced impact of the perceived richness and social presence of mobile CMC channels on customers' behaviors. First, while its low perceived media richness might negatively affect user experience, it is also the app's affordance for non-immediate feedback and simple language that makes it attractive to users in general. As discussed earlier, users of mobile CMC like the fact that they do not need to wait for the person on the other side to reply. Instead they can work on something else and let the other person take their time and reply when they are ready. Users also like that they could communicate with the other person whenever they want without being disrupted. For example, customer informant #15 explained that he likes communicating with the hotel through the apps because he can check the hotel's messages when he is free and wants to kill time. In this sense, his private space is not interrupted as in the case of a telephone conversation.

The multifaceted impact of CMC media traits has been recognized in the mixed results found in previous CMC studies (McGrath, 1990). Early CMC research recognized

CMC as lean media for information exchange (Daft & Lengel, 1983) compared with face-to-face interactions (Culnan & Markus, 1987; Rice & Love, 1987); thus, it is not suitable for situations that require personal interactions (Bordia, 1997; Garton & Wellman, 1995; Straus, 1996). However, as ICTs have continued to transform human behavior, researchers gradually found that there are times when CMC is superior to face-to-face interactions (Rhoads, 2010; Walther & Burgoon, 1992). For example, CMC benefits task-oriented interactions by enhancing efficiency and eliminating unnecessary social interactions (Dubrovsky, 1985; Jonassen & Kwon, 2001; Light & Light, 1999; Phillips & Santoro, 1989). In addition, CMC also allows the message receiver to idealize the sender (Jones, 1995) or allows the sender to optimize self-presentation (Walther, 1992). Some research also suggests that the differences between CMC and face-to-face communications diminish as people gradually adapt to the CMC environment over time (Rice & Love, 1987).

6.4 Value Co-creation vs. Co-Destruction

Previous studies have also shown that inappropriate or unexpected use of resources can lead to value co-destruction. Value co-destruction is defined as "an interactional process between service systems that results in a decline in at least one of the systems' well-being (which, given the nature of a service system, can be individual or organizational)" (Plé & Chumpitaz Cáceres, 2010, p. 431). The evidence in this study shows that the firm-customer interaction process facilitated by the hotel mobile apps does not always lead to value co-creation but also value co-destruction. Hoteliers with limited resources and developing technological capability must deal with the empowered customer. The dilemma seems to be more obvious when an open communication channel

is offered but both sides are uncertain about each other's actions. More work is needed to shape customers' expectations so that they will not be disappointed.

Value co-destruction occurs in different forms in different contexts. In this study it occurs when customers are dissatisfied and hotels' resources are wasted by the end of the collaboration stage. We know that hoteliers put effort and resources into facilitating co-creation and collaborating with customers; we also know that customers spend time and effort and have certain expectations when collaborating with hotels. When a customer request or message comes in, hotels need resources to react. When hotels' response is considered inappropriate or unexpected by the customer, it ends in a "lose-lose" situation.

Some of the stories shared by customers explain the process of value co-destruction in this study context. For example, customer informant #9 made use of the open communication channel and told the hotel that she was coming for her anniversary celebration. She did not receive any feedback from the hotel before her arrival; the hotel told her that they were too busy and could not reply to her in a timely manner. They did not have time to decorate her room but instead offered complementary fresh fruit. Customer informant #9 was angry, as she thought the hotel was simply brushing her off; she could not relate a plate of fruits to an anniversary celebration. In this case, value co-destruction occurred when the hotel wasted a fruit tray in exchange for an upset customer who got even angrier. Customer informant #17 provided another detailed example of how the initial intention to co-create turns into the co-destruction of value:

"I requested fresh juice and a map through the app when I made the reservation. When I checked in at the front desk, they didn't even mention anything about this.

I rarely make any special requests, and because I have been ignored I will not make such unnecessary effort to create trouble for myself again in the future. I even doubt if the hotel's reservation system is synchronized with their front desk system…They said they didn't see my request, something like that; I felt like I was ignored. If these types of things cannot be initiatively fulfilled by the hotel, it's quite disappointing…Since those things I requested were not urgent demands, my disappointment came from being ignored by the hotel. At least in the future I will not make such a request again. If my request is urgent, I will be very unhappy."
(Customer Informant #17)

The hotels in these examples lost their resources and hurt their brand image. They lost a chance to engage customers in a long-term use of the apps. The examples in this study show that one bad experience is enough for a customer to abandon the app. The hotel loses its investment on the apps if they cannot boost the usage rate. The hotel also loses employees' time and effort, which could be spent on something else. The angry customers lost their time and effort and were disappointed when the reality did not meet their expectations. Their emotion and trip experience might also be negatively affected.

The importance of understanding customer expectation in the context of value co-creation has been implied by script theory (Solomon, Surprenant, Czepiel, & Gutman, 1985). Loïc and Rubén (2010) explain that "value co-creation occurs when two service systems have congruent expectations of the way in which the available resources should be used in the course of their interactions" (p. 432). Studies have emphasized regular contact and follow-ups between firms and customers for effective communications in value co-creation (Sharma & Patterson, 1999). Customer engagement has been identified

as a strategy to bridge the gap between service providers' understanding of customers and customers' real lives and needs (Chathoth et al., 2016). Without truly understanding customers' needs and wants in a specific context, it is difficult for the service provider to develop stimuli to initiate meaningful interactions with customers. Without understanding customers' needs and wants, service providers might not actualize the benefit of value co-creation if their offering does not match customers' expectations, even when customers are willing to participate and collaborate.

CHAPTER 7: CONCLUSION, IMPLICATIONS, LIMITATIONS, AND FUTURE RESEARCH

7.1 Summary

Figure 13 summarizes the main findings of this study and presents an explanatory framework for hotel-customer value co-creation. The framework explains the phenomenon by linking its core elements together. The properties and dimensions of each core element are unearthed through in-depth data analysis from the qualitative research design. Hoteliers' value-creating process consists of their facilitation efforts in developing and providing ICT-facilitated service. To facilitate value co-creation with customers through ICT-facilitated service, hoteliers embed their intention and goals into their service design. Following their core co-creation strategies, hoteliers believe customers perceive certain types of value by using and interacting with hotels through the app services. Hoteliers devote a range of resources to supporting their facilitation practices. The role of ICT is unique in that it enables the co-development of service patterns and the improvisation of experiences.

FIGURE 13. A Framework for Hotel-Customer Value Co-creation Through ICT-facilitated Service

Contextual Factors (*Customer perception and characteristics; Trip characteristics; CMC characteristics***)**

Firm Facilitation
- Perceived Affordances
- Value Propositions
- Core Strategies
- Supportive Elements

ICT-facilitated Services
- Enabling the co-development of service patterns and
- Improvisation of experiences

Collaboration
Stimuli for Interactions
Customer Expectation
Management

Customer Participation
- Customers' concerns to participate
- Customers' actual way of use

Customers' Value-in-use
Functional value
Emotional value
Social value
Epistemic value
Personalization value

Firm's value-creating processes

Collaboration process

Customer's value-creating processes

Customers create value for themselves by participating in the co-creation process by using the accessible tool provided by hoteliers (i.e., hotel mobile apps). Customers do not always participate; their participation depends on their characteristics and situations. Customers' actual usage shows how they use the apps to exchange information and interact with hoteliers. The collaboration process bridges hoteliers' facilitation efforts with customers' participation. Such participation alone does not necessarily lead to co-created value. There must be stimuli for interaction and customer expectation management during the collaboration process for hoteliers' value propositions to be materialized. Without such collaboration, customers' actual uses can be distant from hoteliers' expectations due to a number of contextual factors. If no operational errors are made, customers' ultimate co-created value-in-use depends on the extent to which their perceived affordances match those of hoteliers' expectations. In other words, the cognitive gap between customers' and hoteliers' perceived affordances of the apps depends largely on the collaboration process.

7.2 Contributions to Theory

This study has explored how hoteliers leverage ICTs to co-create value with customers. Guided by the lens of S-D logic and sociomateriality, this study has explored the entire process of hotel-customer value co-creation through services facilitated by ICTs using a qualitative research approach. The findings delineate the underlying mechanism of value co-creation facilitated by ICT services in a hotel context. They highlight the unique role of hoteliers in the service design of the co-creation experience and the unique forms of co-creation in this particular study context. By combining hoteliers' practices and customers' experiences, the united view reveals the contextual

factors that affect customers' use of the technologies which ultimately affects their value-in-use. The collaboration components play a critical role in narrowing the gap between customers' actual use and expected use so as to maximize co-created value.

This study responds to the call for more research to focus on the fundamental identity of technologies and the role of human intelligence in the configuration of technologies by adopting the lens of sociomateriality. By investigating both the "social" and "material" perspectives, this study discovers how ICT-facilitated value co-creation is shaped through analyzing hoteliers' underlying reasoning and expectations for the design of their mobile apps. The findings demonstrate the process of technology appropriation, linking technology materiality with human intention and value for customers. This study responds to scholars' call for more research that focuses on the fundamental identity and underlying architecture of a technology when studying its use and effectiveness. The findings from this study also provide a foundation for future studies.

This study provides empirical evidence for the impact of perceived technology affordances on value-in-use. As shown by the many examples in this study, customers' perceived technology affordances affect their actual use, which ultimately influences their value-in-use. Customers' perceptions of what the hotel mobile apps could do for them led their actual behaviors to deviate from the expectations of hoteliers. Thus even with accessible resources for participating in value co-creation, such a process might not be successful if consumers do not use the tool in ways that are in harmony with the service provider. While hoteliers expected to co-create with customers in a number of different ways, customers did not hold the same perceptions. While previous studies have mostly focused on customers' adoption of or intention to use a technology, customers'

actual use experience has been understudied. This study implies that the effectiveness of a technology should be determined not only by technology adoption but also customers' actual use experience.

The differences between actors' perceived technology affordances affect the ways through which a technology is used for value co-creation. Such an influence on user behavior and the co-creation process further affects the co-creation outcome and customers' value-in-use. This study integrates the core elements of the value co-creation process to explain the co-creation environment. The co-creation environment in this study context links hoteliers' service design, customers' use experience, and how they collaborate; it requires correspondence between the hoteliers' and customers' perceived technology affordances, assuming no operational errors are made. The differences between hoteliers' and customers' perceived affordances can be attributed to the contextual factors throughout customers' participation and collaboration process.

The exchange of information and interactions afforded by hotel mobile apps not only helps hoteliers to understand customers better but also helps customers to develop more knowledge about what they can do in an innovative service environment. In other words, the apps help hoteliers and customers grow together. Hoteliers learn more about what they can and should do by getting all the relevant information from customers. As manager informant #24 stated, the app *"helps to raise a lot of questions"* for them to think about. From the information acquired, hoteliers learn about things such as frequently asked questions and customer interests. While these data might be related to new product development, they can also simply be related to the accumulation of

knowledge. Knowledge about solving customers' problems, handling complaints, and building competitive advantage by providing outstanding services is not easy to imitate.

Knowledge development also happens among customers when they are exposed to innovative service functions. Some customer participants mentioned they had never thought about the number of things that they could do during a hotel stay other than sleep and eat. Customers in general agreed that they tend to make more requests when the apps are available. As stated by customer informant #6, *"I think first of all, if I did not have this app, I would not have requested so many things."* The evidence collected in this study shows that customers are still in a learning process, trying to figure out how to better co-create with hotels. When asked about their expectations of the hotel mobile apps in the future, customers gave a range of comments and suggestions for hotel-customer collaboration. For example, most customers pointed out that hotels can help more with travel planning, such as recommendations about activities and places. Some suggested adding more interactive functions such as a voice messaging function. Some suggested that hotels provide more "on-the-spot" and "local" information unavailable from the Internet. In general, customers do not dislike hotels' proactive digital disruptions, depending on the form such disruptions take. Investigating how hotels can proactively disrupt customers at the right place and time will be a fruitful area for future research.

7.3 Contribution to Practice

In terms of practical implications, hospitality businesses seeking to co-create value with customers through ICT-facilitated service can refer to the insights collected from best-practice companies in the hotel industry. As hoteliers continue to battle against OTAs, other travel aggregator apps, and high app abandonment rates (McMillin, 2017;

Ting, 2017), the findings of this study provide a number of practical implications for hoteliers who wish to improve the design of their mobile apps. First, users do not necessarily perceive the value propositions even if they adopt the technology. Understanding the context within which the technology is used and embedding such contextual factors into its design is paramount to maximizing customers' value-in-use. Consideration of contextual factors in technology design is particularly relevant in the tourism and hospitality industry, in which travelers have a variety of contextual needs when they are on the go (Lamsfus, Wang, Alzua-Sorzabal, & Xiang, 2014). Second, as the majority of the customer participants in this study failed to perceive the value of personalization from the use of hotel mobile apps, it is unclear the extent to which the apps' current design can deliver the value of personalization. As pointed out earlier, customers might not find pre-designed options helpful in addressing their personal needs (Chathoth et al., 2013; Prahalad & Ramaswamy, 2004c); and their role is relatively passive when consuming self-service (Chathoth et al., 2013). Hoteliers should consider these customer opinions when upgrading their mobile apps. Lastly, when a new service or technological tool is introduced to the customers, they need more instruction and guidance to be engaged. S-D logic emphasizes the importance of providing customers with sufficient resources to ensure effective dialog when pursuing co-creation with them (Prahalad & Ramaswamy, 2004b; Vargo et al., 2008). Hoteliers should consider providing customers with clearer information and instructions to better guide customer expectations.

While previous studies have rarely integrated hoteliers' practices and customers' experiences, this study reveals that there is a better chance to narrow the gap if hoteliers

can break the impasse by introducing more stimuli for interactions and better understanding and managing customer expectations. Investigating how to better understand and manage customer expectations in the context of ICT-facilitated value co-creation is beyond the scope of this study. What is important here is to acknowledge that insufficient understanding and management of customer expectations affects the co-creation outcome. It is easier to recognize the problem than to deal with it, as hotels have limited resources. However, to tackle the co-creation impasse, service providers must learn how to manage these aspects to maximize the potential of their technology investment if their goal is to co-create value with customers and maximize customer value-in-use. This issue can be linked back to S-D logic's understanding of the basis of firms' competitive advantage, and to the explanation of the role of human agency in technology appropriation. Although powerful technology is helpful, it depends on the knowledge and skills of the service provider to maximize its potential. Co-creating with customers is challenging but if a business can manage it well, it becomes a competitive advantage that is difficult to imitate. The apps have created opportunities for hoteliers to stay relevant by connecting with customers and learning what they are looking for. Doing so not only helps the company to innovate but also to stand out from competitors. Manager informant #26 asked, "*Shouldn't we thank these customers for informing us about our problems*?" Even though app services such as open-ended communication channels might lead to challenges, as discussed in previous chapters, managers recognize that they provide as a learning process that helps hotels to grow.

The evidence collected from customers indicates that they are thirsty for information, especially when traveling to an unfamiliar destination. Hoteliers should

strategically approach customers at the right time and place through the right channel to maximize the potential of the apps for collecting customer information and interacting with individual customers. To minimize customer dissatisfaction and disappointment, hoteliers should improve their ability to understand and manage customer expectations. Many examples in this study indicate that customers can be disappointed even though hoteliers believe they have provided appropriate responses. Customer disappointments come from a discrepancy between what they expect to receive and what they actually receive from hoteliers. Hoteliers should acknowledge customers' low usage and erratic expectations of these innovative services. They need to continue to improve existing app services, but also educate customers and shape customer expectations. Hoteliers should maximize the potential of these app services if they continue to rely on these technologies to drive direct bookings and improve customer service.

When a one-to-one communication tool is used for one-to-many communications, the service provider might not be able to provide the expected level of service. For example, hoteliers might want to interact with customers synchronously and personally; but when too many conversations take place, timely feedback might not be provided (i.e., low perceived media richness), and employees might only have time to "cut and paste" standardized responses (i.e., low perceived social presence). If more users adopt the hotel mobile apps, specifically the instant messaging function, hoteliers might need to allocate more resources to services provided through the instant messaging function.

7.4 Limitations and Future Research

As the aim of this study is to understand the underlying structure and process of the hotel-customer value co-creation process through ICT-facilitated service, it is not

designed for purposes of generalization. Future studies may test the variables and relationships unearthed in this study using other research methods. As the objective of this study is to understand human perceptions and experiences, this limitation does not impair its contribution. Future researchers may consider quantifying its findings or conducting a similar study in a different commercial context. While customers' value-in-use might also evolve in the long run, future studies may examine the impact of co-creation on customers' long-term value and benefits. Due to the difficulties in searching and identifying suitable interviewees, this study is limited in terms of the diversity of participants. Future studies may consider to expand the sample size and collect data from customers with different nationality to triangulate the findings of this study.

This study explains how co-creation in a digital environment is different from the traditional offline environment. CMC such as mobile instant messaging differs from traditional communication channels (e.g., face-to-face, telephone) in a number of ways (Walther, 1996). Communication experience in such a mediated setting is constrained due to the lack of social context cues, which facilitate understanding between interlocutors (Daft et al., 1987; Short et al., 1976). However, researchers have gradually found evidence that CMC is not inherently impersonal, but is dependent on the situation. This finding is consistent with this study, as customer participants' perceptions of communications through hotel mobile apps fluctuated across different conditions. Customers need to perceive a high level of richness and social presence to be engaged in the conversation. Although mobile technology has become part of people's daily lives, it still largely depends on service providers' efforts to engage customers in personalized experiences. This observation is consistent with S-D logic, which stresses the importance

of operant resources. Service providers' competitive advantage comes from their unique operant resources that are difficult to imitate (Prahalad & Ramaswamy, 2004a; Vargo & Lusch, 2004). Even though average users use mobile communications frequently in their daily lives, their experience would not be satisfactory without the service provider's contribution (e.g., if the service personnel was not trained to provide timely feedback and genuine care). As the characteristics and use of CMC are still under debate, they are poorly understood and more research is needed to explain the use of CMC in different contexts (Walther, 1996). With the continuous growth of mobile penetration and mobile communications in people's daily lives, the question is how to identify and address the deficiencies of CMC channels (Walther, 1996). More research is needed to understand value co-creation in the context of mediated communications, as distinct from traditional offline settings.

As mentioned above, customers in general do not dislike hotels' proactive digital disruptions for more personalized experience. As studies about personalization in the tourism and hospitality context are still limited, future studies should further explore customers' reactions to different means of personalization so as to better understand the effectiveness of various practices. Future studies can consider developing a measurement scale for customers' perceived personalization toward hotel mobile or digital services. Experimental research will also be particularly helpful to spot the effects of different practices across service encounters.

APPENDICES

APPENDIX I

INTERVIEW GUIDES

A. **Interview Guide for Hotel Managers**

Research Objectives	Objective of Questions	Interview Questions for Hotel Managers
(1) To investigate firm's effort/practices to support customers' value-creation activities through providing ICT-facilitated service	To understand the current practices and strategic considerations behind the provision of ICT-facilitated service.	1. How does the hotel's mobile services (i.e., hotel mobile app/handy smartphone) facilitate hotel-customer interactions/communications? *Probing: Any specific features/functions that can facilitate hotel-customer interactions/communications?* 2. Why is it important for the hotel to provide these services? *Probing: What are the reasons behind providing these services?*
	To understand hotels' contributions (input/resources) to customers' value creation activities through ICT-facilitated service.	3. How were these services designed/developed? *Probing: What are the resources involved (skills/knowledge/competences/investments)?* 4. What did the hotel do to attract/encourage guests to use these services? *Probing: What are the strategies to engage customers to adopt these services?* 5. How does the hotel maintain and monitor these services? 6. What are the challenges/constraints in providing these services?
(2) To examine hotel-customer collaboration through ICT-facilitated service	To understand the hotel-customer collaboration process from hotel managers' point of view.	7. How does the hotel interact with customers through these services? 8. How does the hotel handle customer information obtained through these services? 9. How does the hotel provide more personalized customer experience through providing these services?
(3) To identify the co-created customer value.	To understand hoteliers' value propositions and expectations.	10. What are the benefits* for customers from using these services and why? 11. What are the benefits* for the hotel from providing these services and why?

B. **Interview Guide for Hotel Customers**

Research Objectives	Objectives of Questions	Interview Questions for Hotel Customers
Screening questions		1. Which hotels did you stay within the past six months? 2. Did you use their mobile services such as mobile apps/handy smartphone?
(1) To investigate customer's participation through the use of ICT-facilitated service	To understand guests' actual use experience of ICT-facilitated service	3. Why did you use the mobile services (i.e., app/handy) provided by this hotel? 4. How did you use these services? *Probing: What functions did you use and how?* 5. What did you expect from using these services and why? 6. What did you feel about using these services? *Probing: Was it difficult/easy? Interesting/uninteresting? Enjoyable/boring? Useful/useless? Any other feelings?*
(2) To investigate customers' collaboration with hotels through ICT-facilitated service	To understand the hotel-customer collaboration process from customer's point of view.	7. Did you interact/communicate with the hotel through these services? Why or why not? What was the process? 8. Did you provide any information to the hotel through the use of these services? Why or why not? 9. How did the hotel react? What did you feel about their response? 10. What did you feel about the overall interaction experience with the hotel through the mobile services?
(3) To identify the co-created customer value.	To understand customers' perceptions and value-in-use of ICT-facilitated service.	11. What did you feel about the overall use experience and why? 12. What benefits* did you gain from using these mobile services? Why were these benefits* important to you? 13. Will you interact with the hotel through these mobile services continuously in your future stays? Why or why not?

While "benefit" and "value" have different meanings, the word "benefit" is used here to facilitate participants' understanding as "value" is an illusive concept that is difficult to comprehend. Perceived value is captured by asking participants why their perceived benefits from the apps were important to them. The laddering technique was applied to capture participants' higher-order perceived values.

APPENDIX II

INTERVIEW CONSENT FORM

INFORMATION SHEET

Value Co-creation through ICT-facilitated Service in Hotels

You are invited to participate on a study conducted by Ms. Soey Sut Ieng Lei, who is a PhD candidate of the School of Hotel and Tourism Management in The Hong Kong Polytechnic University. The project has been approved by the Human Subjects Ethics Sub-committee (HSESC) (or its Delegate) of The Hong Kong Polytechnic University (HSESC Reference Number:).

This study is interested in how and what customer value is co-created through ICT-facilitated service in Hotels. The overall goal of this study is to develop a theoretical framework by examining the co-creation of hotel guest's value-in-use through ICT-facilitated service.

The participation should not result in any undue discomfort. All information related to you will remain confidential, and will be identifiable by codes only known to the researcher. You have every right to withdrawn from the study before or during the process without penalty of any kind.

If you would like to get more information about this study, please contact Ms. Soey Sut Ieng Lei on tel. no. (852)34002339; mailing address (17 Science Museum Road, Hong Kong) and email address: soey.lei@

If you have any complaints about the conduct of this research study, please do not hesitate to contact Miss Cherrie Mok, Secretary of the Human Subjects Ethics Sub-Committee of The Hong Kong Polytechnic University in writing (c/o Research Office of the University) stating clearly the responsible person and department of this study.

Thank you for your interest in participating in this study.

Soey Sut Ieng Lei
Principal Investigator/Chief Investigator

CONSENT TO PARTICIPATE IN RESEARCH

Value Co-creation through ICT-facilitated Service in Hotels

I _____ hereby consent to participate in the captioned research conducted by __Ms. Soey Sut Ieng Lei_____.

I understand that information obtained from this research may be used in future research and published. However, my right to privacy will be retained, i.e. my personal details will not be revealed.

The procedure as set out in the attached information sheet has been fully explained. I understand the benefit and risks involved. My participation in the project is voluntary.

I acknowledge that I have the right to question any part of the procedure and can withdraw at any time without penalty of any kind.

Name of participant _____

Signature of participant _____

Name of Parent or Guardian (if applicable) _____

Signature of Parent or Guardian (if applicable) _____

Name of researcher _____

Signature of researcher _____

Date _____

APPENDIX III

PROFILES OF INFORMANTS

A. **Information of Focal Hotel Mobile Apps**

	Company Information[1]	Mobile Services[2]
Company A	A leading international lodging/hospitality company with 5,000+ properties in over 100 countries and territories. A U.S.-based company that has operated for almost one century. The company owns a family of 20+ hotel brands with more than 1 million rooms across the globe. It has 100 million customers registered as members in its loyalty program.	- Designed for customers to manage their accounts, reservations, stays, and bookings. - Main features: easy booking, mobile requests, mobile chat, mobile check-in and check-out, membership enrolment, hotel information, reward points. - Number of installs: 1,000,000 – 5,000,000 (Android) - Rating: 3+ (Android) 4+ (iOS)
Company B	A leading international lodging/hospitality company with 5,000+ properties spreading over 100 countries and territories. A U.S.-based company that has operated for almost one century. The company owns a portfolio of 10+ brands with nearly 1 million rooms around the world. The company has 70+ million members in its loyalty program.	- Designed for customers to have an easy travel experience. - Main features: direct booking, mobile check-in, digital key, speedy booking, mobile request, best rate guaranteed, reward points, hotel and destination information. - Number of installs: 1,000,000 – 5,000,000 (Android) - Rating: 3+ (Android) 4+ (iOS)
Company C	An intentionally recognized hotel company founded 70+ years ago and headquartered in the UK. It owns approximately 5,000 hotel properties with 700K rooms under 10+ individual hotel brands located in nearly 100 countries and territories. Its loyalty program has 150+ million members.	- Designed for customers to easily manage their travel activities. - Main features: speedy booking, mobile exclusive rates, mobile check-out, hotel information, reward points, mobile request. - Number of installs: 1,000,000 – 5,000,000 (Android) - Rating: 3+ (Android) 4+ (iOS)

[1] *Sources: Official hotel websites*
[2] *Sources: Google Play and Apple iTunes Store*

B. **Profile of Manager Informants**

Manager Informant no.	Position	Management Level	Company
21	Front Office Manager	Property Level	Company A
22	Front Office Manager	Property Level	Company A
23	Senior Director, Digital	Corporate Level	Company B
24	Department Head, Operations	Property Level	Company B
25	Front Office Manager	Property Level	Company C
26	Rooms Division Manager	Property Level	Company C
27	Senior Manager, Marketing	Property Level	Company A
28	Vice President, IT	Corporate Level	Company A
29	Vice President, Operations	Corporate Level	Company A
30	Director, Mobile Service	Corporate Level	Company A
31	Concierge Service Manager	Property Level	Company A
32	Senior Director, Branding	Corporate Level	Company B
33	Senior Director, Digital Marketing	Corporate Level	Company A

C. **Profile of Customer Informants**

Customer Informant no.	Traveler Type	Gender	Age Group	Nationality	App used
1	Leisure	Male	20s	Chinese *(HK/Macau SAR)*	Company A
2	Leisure	Female	20s	Chinese *(HK/Macau SAR)*	Company A
3	Leisure	Female	20s	Chinese *(HK/Macau SAR)*	Company A
4	Leisure	Female	30s	Chinese *(HK/Macau SAR)*	Company A
5	Leisure	Female	20s	Chinese *(HK/Macau SAR)*	Company A
6	Leisure	Female	20s	Chinese *(HK/Macau SAR)*	Company A
7	Leisure	Male	30s	Chinese *(HK/Macau SAR)*	Company A
8	Leisure	Female	30s	Chinese *(HK/Macau SAR)*	Company A
9	Leisure	Female	20s	Chinese *(HK/Macau SAR)*	Company A
10	Business	Male	30s	American *(Ohio)*	Company B
11	Business	Male	30s	American *(New York)*	Company B
12	Leisure	Male	30s	American *(Ohio)*	Company B
13	Business	Female	40s	American *(New Orleans)*	Company B
14	Business	Male	50s	American *(South Dakota)*	Company B
15	Leisure	Male	20s	Chinese *(HK/Macau SAR)*	Company B
16	Leisure	Male	20s	Chinese *(Mainland China)*	Company A
17	Leisure	Male	20s	Chinese *(Mainland China)*	Company C
18	Business	Male	20s	Chinese *(Mainland China)*	Company A
19	Leisure	Male	30s	Chinese *(Mainland China)*	Company C
20	Leisure	Male	30s	Chinese *(Mainland China)*	Company C

APPENDIX IV

MEMBER CHECK

VALUE CO-CREATION THROUGH ICT-FACILITATED SERVICE IN HOTELS
(For Participants' Review)

Dear Participants:

Thank you very much again for your great contribution on this research project. The following is a summary of the main findings for your kind perusal. These findings present the common understanding of all interviewees participated in this study. Please feel free to provide any specific feedback and comments. We look forward to your reply. Thank you very much again for your support.

Overview

Facing the increasingly competitive market and sophisticated customers, hoteliers continue to rely on information and communication technologies (ICT) to improve customer service. In the modern era wherein information and knowledge are shared intensively, consumers are no longer passive but actively searching for product or service offerings that are of value and relevant to them. In light of this, hoteliers have launched a series of ICT-facilitated services, hoping to interact and communicate more with customers to better understand their idiosyncratic needs and wants.

Such practice of providing accessible resources for customers to create their unique experiences through interacting with the service provider is referred to as the co-creation of value. Stem from the service-dominant (S-D) logic, the benefit of co-creating value with customers is the ability for the service supplier to incorporate customers' personal needs and wants into the service offerings so as to personalize customer experience and differentiate from competitors. By allowing customers to participate in co-creating the service offering, the result is a more memorable and special experience as

customers are not merely receiving the best available option that is pre-designed by the service provider.

While previous studies in the hospitality literature have emphasized the importance for service providers to co-create value with customers, little is known about how value is actually co-created. Furthermore, previous studies mainly focus on customers' adoption or intention to use technologies, limited attention has been paid on customers' actual use experiences. As the computational power of ICTs has offered unprecedented opportunities for firm-customer connections and interactions, this study aims to fill the void in literature by exploring the value co-creation process through the ICT-facilitated services in the hotel context. Following an interpretivist paradigm, and guided by the lens of the S-D logic and sociomateriality, this study adopted a qualitative research design to understand the underlying mechanism behind the hotel-customer value co-creation process supported by ICT-facilitated services.

This study aims to explore how hoteliers and customers co-create value together through the various services provided through the official hotel mobile apps. To achieve this research goal, this study aims to answer two main research questions: *(1) How are hotels exerting the potential of ICTs to facilitate value co-creation activities? (2) How is value co-created through the provision of ICT-facilitated service in hotels?* Five research objectives were achieved in response to these two main research questions: (1) to describe hoteliers' efforts/practices to support customers' value-creation activities through the application of ICTs; (2) to explore customer's involvement and participation in ICT-facilitated service; (3) to elaborate the collaboration between the hotel and customers through ICT-facilitated service; (4) to identify customers' value-in-use as a

result of the co-creation process; and (5) to analyse the characteristics of the contexts within which exchanges occur and value-in-use emerge. Through in-depth interviews with hotel managers representing best practice companies in the sector, and with hotel customers who have used these focal companies' official mobile apps, the following summarizes the main findings from this study.

Data were collected through semi-structured in-depth interviews with hoteliers and customers based on the same pool of best practice hotel companies. Data were analyzed following narrative thematic analysis with the help of Nvivo 11. The findings provide a rich description of the entire value co-creation process supported by ICT-facilitated service in the hotel context. They unearth the underlying structure of the core elements of value co-creation – hoteliers' unique role, customers' participation and collaboration, the resulting co-created value, and the contextual elements that influence the co-creation process. The findings highlight how both hoteliers' role and customer experience are transformed when they co-create value with each other.

Main Findings

Hoteliers' Perspective

Hoteliers focus on four main functions of the hotel mobile apps – room reservation, in-app information, self-check-in/out and room access functions, and service request functions. Following two main co-creation strategies (i.e., collecting customer big data and interacting one-to-one with customers), hoteliers design these app functions to deliver their value propositions to customers (i.e., a seamless and personalized customer experience). Hoteliers expect customers can perceive functional value (e.g. convenience and efficiency), emotional value (e.g. more comfortable experience), epistemic value (e.g.

new and innovative service), social value (e.g. members are recognized), and value of personalization (e.g. customers' personal needs and wants can be recognized and addressed).

Hoteliers reinforce the apps' exclusiveness and stickiness to drive higher usage. They also dedicate various resources and face certain challenges to facilitate the provision of mobile app services. In terms of resources, managers highlight higher level human intelligence to handle customers' information and service requests sent through the apps. Hotel staff needs to be empowered and well-trained to be coherent with the app services. Managers also point out the importance of corporate and IT resources to support the co-creation activities through the hotel mobile apps. At the corporate level, management needs to continuously adapt new practices while monitor and learn from the existing ones. Standards and guidelines are necessary to ensure service consistency; while horizontal and vertical coordination are critical for successful service delivery. In terms of IT resources, managers stress the need for a highly integrated platform to store and share customer data so as to provide more personalized and consistent customer experiences. Last, hoteliers face certain challenges and constraints including limited resources, technological capability, the empowered customer, and other factors such as investment ricks, legal issues, customer privacy, technical inconsistency, and the constraints of a standardized app.

Through all these facilitation efforts, hoteliers aim to co-create value with customers through collecting mass customer data and interacting one-to-one with customers. Hoteliers believe that through collecting mass data from customers, they can store and share these data to prepare customers' future stay to provide consistent

customer experiences. These data also helps them to gain more insights about customer behaviors. Through interacting one-to-one with customers, hoteliers believe they can build more personal and long-term relationship with customers. More importantly, this helps them reach and communicate with customers at individual levels, which helps develop further understanding about individual customers' idiosyncratic needs and wants.

Hoteliers are able to differentiate from competitors through co-creation with customers. This is because of the two unique forms of co-creation result from the unique features of mobile technologies and hoteliers' design of the app services – the co-development of service patterns and the improvisation of experiences. First, through the apps' mobility, ubiquitous connections and real-time synchronization of information, hoteliers are able to collect useful information at different important points throughout customers' journey and react appropriately upon receiving such information. The various services embedded in the mobile apps represent some of the most important service encounters during a hotel stay, which entice customers to share information while at the same time enable hoteliers to nimbly provide meaningful services. By consistently collecting and acting upon customers' information, hoteliers are actually allowing customers to build their own service pattern. That is, customers are allowed to design what they want at which important point during their stay. Each individual customer' stay pattern is unique. In fact, customers do not develop their own service pattern but they co-develop their own service pattern together with hoteliers. Customers' service pattern could not be materialized without the corresponding action from hotels. It relies on hotels' appropriate responses to complete what customers have asked for to shape unique customer service patterns. Thus, to co-create value, hoteliers and customers "connect the

dots" between the important points during a hotel stay in a systemic way. Such "dots connection" appears to be both feasible for the present stay as well as future stay. Hoteliers "saved" individual customer's service pattern for future use. The co-development of service patterns explains the rationale behind the "seamless experience" that hotel managers used to describe as the biggest benefit of the apps for the customers. It is the co-creation efforts between hotels and customers that connect the dots between these important service encounters that result in a seamless experience for individual mobile app users.

The second unique form of co-creation through the hotel mobile apps is the improvisation of experiences. Functions such as the in-app instant messaging afford hotel-customer two-way interactions almost anytime anywhere during a hotel stay. Hoteliers strive to maximize the freedom and flexibility for customers to decide what to do. The mobility nature of the function makes it always accessible to the customers; its ubiquitous connectivity allows customers to reach hotels at all times; its real-time synchronization enables both customers and hotels react immediately to the information sent and received through the apps. In addition, such design empowers customers to not only interact with hotels in expected ways thanks to the open communication functions. Managers recalled how customer interactions happened out of the blue. For example, a customer sent in a request for the darkest room in the hotel with a photo of Elmo stick on the TV; or a customer wanted a picture of Lionel Richie on the night stand of the bed. Such unique form of co-creation has transformed the travel environment into an improvisatory experience wherein what could happen in the next moment remains unpredictable and difficult to control. This is probably why hotel managers point out the

importance of intelligent, experienced, empowered, and well-trained employees in handling co-creation activities. They have to be fully prepared for customers' improvising their own experiences anytime anywhere. Not only are the customers, hotels are also improvising through this form of co-creation. Hotels would try to analyze and understand customers even with only a small piece of information on hand. Indeed, the fact that each individual customer has unique characteristics and goals forces hotels to improvise according to whatever they know about a specific customer. As shown in some of the examples, when the hotel only knows a customer wants to stay in the quietest room, what else should be prepared for this guest? When the same customer stays again but in different part of the world, should a different experience be delivered as the customer is coming for leisure and may want to experience the local culture? There are many examples from the interviews showing that hoteliers improvise based on bits and pieces of customer information, which is valuable for them and opens up interaction with customers. According to hotel managers, their reactions under these types of situations depend on the guests' status, hotels' resources and other situational factors. This correspond with hotel managers' comments on the need for creative solutions. They need creative solutions to deal with the dynamic environment in which they must improvise solutions and customer experiences.

Through co-developing service patterns and improvising experiences with customers, hoteliers are no longer merely service designers and executors. The app services have designate new roles for the hoteliers: they have become *analysts*, *fast-thinkers*, and *all-rounders*. First, hoteliers explore and analyze customer behaviors at both individual and aggregated level. Second, hoteliers are forced to become fast-thinkers ever

since they decided to open the door for customers to "throw in" their personal information and messages. Hoteliers have to be highly flexible and agile to face any unpredictable interactions with customers. They need to react quickly enough to provide appropriate and responsive alternatives, especially when a customer request cannot be fulfilled. Third, the new forms of co-creation unveiled in this study have transformed hoteliers into all-rounders. Interactions between hotels and customers are no longer restricted to traditional communications such as making bookings or arranging transportation. The role of hoteliers had been transformed into one that even needs to take care of the tasks of tourism organizations (e.g., when customers asked hotels to help trip planning) or event organizers (e.g. when customers asked hotels to help organize celebrations).

Customers' Perspective

Although in general, the customer participants in this study perceived that the apps did help their travel easier to some extent, the majority of them did not perceive their value-in-use in the ways expected by hoteliers. The comparison of hoteliers' expected use and customers' actual use found that although customers also focused on the four main app functions, they used them in slightly different ways as expected by hotel managers. The main differences rest on the majority of customers: (1) did not perceive the room preferences as "personalized" but generic and basic options; (2) were not aware of the information that is personalized based on their interests; (3) did not associate self-serving with personalizing one's own experience; and (4) did not perceive they could communicate anything they want with hotels. As a result, while hoteliers expect to deliver an easier and more personalize travel experience through the various

app functions, customers mainly perceived the functional value (i.e., convenience and efficiency) but limited value of personalization from the use of the apps.

Customers' use experience of the hotel mobile apps is affected by a number of contextual factors. The first group of factors is related to customers' perceptions and characteristics. Customers perceived the benefits and needs of interacting with hotels differently. For example, some were confused about the purpose behind the app design; and some did not perceive the need for a personalized stay. Customers' perception of what a typical hotel could do for them also restricted their interactions with hotels. They hesitated when they were uncertain about hotels' reactions to their messages. Customers' personality and communication habits/preferences also affected their perceived benefits of interacting with hotels through the apps. For the younger generation who grow up with social media and mobile communication tools, they are more likely to prefer interacting with hotels through the apps rather than face-to-face communications.

The second group of contextual factors is related to trip characteristics. Customers' travel location affects how they used the apps to interact with hotels. The data analysis reveals that customers found such interaction most useful when outside the hotel premises. Leisure travelers who were first time visitors or unfamiliar with a location found such interaction most helpful. When traveling with family and friends, customers perceived higher needs to interact with hotels. The third group of contextual factors is related to the characteristics of communications mediated by technologies. Whether customers would find such interactions helpful is dependent on whether they could receive timely and proper feedback, exchange rich contents, and personal responses. Customers found the interactions through the apps particularly unhelpful when their

communication needs were complex, urgent and important. On the other hand, customers liked using the app to interact with hotels regarding unusual issues, which makes them feel less embarrassed and more comfortable.

Consistent with hoteliers' expectations, customers also perceived five types of value-in-use—functional value, emotional value, epistemic value, social value, and value of personalization. However, customers' perceived value from the apps was mainly functional value. The functional value comes from the apps' convenience and efficiency that saves them time and effort which in turn contributes to an easier overall travel experience. The perceived emotional value is a result of customers' feeling comfortable, peaceful, more relax and less worried when they had higher self-control and the option to avoid human interactions. Some of them were delighted, impressed and surprised when their communications through the app were well acknowledged by the hotel. Some customer participants also perceived the apps as creative and innovative, and the experience of using the apps was a new, cool, and fun experience. The perception of social value was pointed out by several customers. These customers felt they were exclusive, special and important. Customers perceived the value of personalization mainly through the service request functions. Through interacting with hotels almost at anytime and anywhere, the value of personalization came from the perception of anything could become possible; they were given more overall; intimate service; personal relationship with hotels; the more memorable experiences. These findings show that the hotel-customer co-creation in this study context is a dynamic process. Customers' participation, their collaboration with hotels, and their perceived value-in-use are affected by the contextual factors (i.e., customer, trip, and CMC characteristics). Throughout the

entire co-creation process, these contextual factors further impose uncertainties and instability on hotel practices and customer behaviours. This further amplifies the challenges for hoteliers to co-create with customers and personalize customer experiences.

A comparison of hoteliers' expectations and customers' actual use experience discovers that more works need to be done to close the gap between hoteliers' practices and customers' actual use to facilitate higher quality interactions. That is, this study found that hotel-customer collaboration is affected by the lack of stimuli for interactions and erratic customer expectation. In a travel context, customers need contextual information that can address their variety of needs based on time and location. They are thirst for contextual travel information such as things-to-do at the destination. However, customers might not always actively seek advice from hotels. To maximize the potential of the hotel mobile apps, customers need to be approached at the right place at the right time through the right ways. The erratic customer expectation reflects how hoteliers might not always truly understand customers' real needs and wants through the interactions and communications through the apps. This is due to the fundamental differences between face-to-face and computer-mediated communications. To maximize the potential of the apps, hoteliers should better manage and understand customer expectations to avoid any unnecessary customer dissatisfactions and disappointments.

Feedback from Participants

Customer Informant #1

Hotels can communicate with customers anytime anywhere through mobile platform, which is a brand new service experience especially for customers who have more needs when travelling. Meanwhile, communicating online can avoid the embarrassment incurred by face-to-face interactions, which is a great news for those who worry about losing face and turn away from expressing their needs. However, hotels should continue to enhance the functions of their apps. For example, they can consider adding voice recording function, which will be more convenient to those customers who do not like to talk or type. Hotels can also consider communicating with customers through WeChat or WhatsApp. In addition, regarding the immediacy and accuracy of feedback, there are lots of room for future improvement. If there is a difference between the service standard of the apps and face-to-face, customers' evaluation of the hotel service would be largely and negatively affected. If hotels want to attract customers using the apps, they should fully apply their service standards and promises on app services, instead of brushing customers off when they no longer need to deal with the customers face-to-face. If hotels can make improvements based on these above issues, I believe they can attract many more different types of customers. I agree with the author's conclusion.

Customer Informant #5

Absolutely agree. The hotel mobile app is more popular among younger users, since they are used to communicate with others through apps or mobile platforms rather than face-to-face. But in regard to targeting young people's loyalty and aiming to personalizing their experience through the apps, hotels need to do more promotions and

research. Young people at this stage only think these types of apps as convenient. In contrast, elder customers would be less excited about these apps as they are not good at using them. They like face-to-face communications. If hotels want to personalize these older customers' experience using the mobile apps, they need to spend more time and marketing initiatives to teach them how to use these technologies.

Customer Informant #6

Generally, my personal experience with the app matches with this summary. However, for the contextual factors related to trip characteristics, although I traveled with my friends, I still did not have higher needs to interact with hotels via the app due to my reliance on other mobile apps such as Google Map and Open Rice. I think these apps understand my needs better than hotel apps (I recall my use of the hotel mobile app asking for the recommendation of a nearby café and the answer is Starbucks, which I found quite disappointing). This discrepancy on expectations can be hardly solved since every customer have different preferences, and hotel apps cannot understand customers' real needs and thinking. One suggestion is that hotels may try to record the nationality (e.g., cultural background), age and gender of customers at check-in. This may help them react more accurately to guests' preferences.

Customer Informant #9

Regarding the review of value co-creation through ICT-facilitated service in hotels, as most hotels have started to use new technologies to enhance their service, it is true that the mobile app can let customers select what they need based on their own preferences. Besides, the relationship between hoteliers and customers becomes closer through the various co-creation activities. Hoteliers mainly focus on four main functions.

They aim to use the apps' elusiveness to create unique experience for each customer. They expect customers can perceive different kinds of value. I think the app can somehow help hoteliers create good experiences to customers. However, the app sometimes may not reach the expectation of all customers. It is difficult to satisfy all customer preferences. They have to concern the number of customers and the number of workers. Is it really possible to give instant responses to all customers? If the customer have high expectation to the app, the hoteliers should find a way to satisfy their high expectation. Overall, my use of this app is positive. It is a new and convenient experience for me. It helps me a lot on my travelling. I believe that hoteliers can make some adjustments to their apps based on this research, which can help them to reach customer expectation more effectively and create unique customer experiences. Hoteliers should also look for ways to encourage higher usage.

Customer Informant #15

After reading the analysis, from my personal point of view, I agree very much with the author's findings and arguments. In terms of functional value, I found the in-app information such as the weather and attraction information particularly useful, which helped me get prepared before the trip. Secondly, in regard to the value of personalization, I understand that hotels have limited resources to satisfy customers' needs. I had this experience when I specified it was our anniversary when I made the booking. When we arrived at the hotel check-in, they gave us a small card, wishing us happy anniversary with our names on it. Although it was just a little card, it was heart touching, and gave me a personalized experience. In conclusion, hotels can better understand customers' needs and collect more comments through the apps; and customers can also express their needs

through the apps. This is a win-win situation. However, this is just the beginning. There is still lots of room for improvement.

Customer Informant #16

In general, I agree with the author's main findings. Regarding the perceived personalization of the in-app information, I felt a bit but not much. Specifically, I totally could not relate my experience of using the app with personalized experience, I didn't know that was what the hotel wanted to deliver. In fact, I did observe that in the app, there were some options related to personal needs, but I totally did not expect that the hotel wanted to enhance personalization through such offer. Personally, I don't think this is an effective way to do so. First, I didn't know what I could do with the app; second, the feedback would be slow from the app; third, even I asked them to do something through the apps, the hotel might not do it anyways.

Manager Informant #28

Thanks for sharing. I think you presented a very comprehensive analysis from consumer insight perspective. I found it quite interesting that the hoteliers also play a part in designing the "connect-the-dots" experience, which makes the whole process more dynamic as well as feasible.

Manager Informant #32

The summary findings look spot-on, well done! Good luck for a great outcome with the thesis.

REFERENCES

Adukaite, A., Reimann, A. M., Marchiori, E., & Cantoni, L. (2013). Hotel mobile apps. The case of 4 and 5 star hotels in European German-speaking countries. In Z. Xiang, & I. Tussyadiah (Eds.), *Information and Communication Technologies in Tourism 2014* (pp. 45-57). Cham, New York: Springer.

Akaka, M. A., & Vargo, S. L. (2014). Technology as an operant resource in service (eco) systems. *Information Systems and e-Business Management, 12*(3), 367-384.

Al-Sabbahy, H. Z., Ekinci, Y., & Riley, M. (2004). An investigation of perceived value dimensions: Implications for hospitality research. *Journal of Travel Research, 42*(3), 226-234.

Alt, R., & Klein, S. (2011). Twenty years of electronic markets research—looking backwards towards the future. *Electronic Markets, 21*(1), 41-51.

Anderson, J. C., Jain, D. C., & Chintagunta, P. K. (1993). Customer value assessment in business markets: A state-of-practice study. *Journal of Business-to-Business Marketing, 1*(1), 3-29.

Anderson, J. C., & Narus, J. A. (1998). Business marketing: Understand what customers value. *Harvard Business Review, 76*, 53-67.

Anuar, J., Musa, M., & Khalid, K. (2014). Smartphone's application adoption benefits using mobile hotel reservation system (MHRS) among 3 to 5-star city hotels in Malaysia. *Procedia – Social and Behavioral Sciences, 130*, 552-557.

Arthur, W. B. (2009). *The nature of technology: What it is and how it evolves*. Simon and Schuster New York.

Ashton, A. S., Scott, N., Solnet, D., & Breakey, N. (2010). Hotel restaurant dining: The relationship between perceived value and intention to purchase. *Tourism and Hospitality Research, 10*(3), 206-218.

Babin, B. J., & Kim, K. (2001). International students' travel behavior: A model of the travel-related consumer/dissatisfaction process. *Journal of Travel & Tourism Marketing, 10*(1), 93-106.

Baird, A. (2014). The qualitative research interview. *Practice Nursing, 10*(9), 8-14. doi: https://doi.org/10.12968/pnur.1999.10.9.8

Ballantyne, D. (2004). Dialogue and its role in the development of relationship specific knowledge. *Journal of Business & Industrial Marketing, 19*(2), 114-123.

Ballantyne, D., & Varey, R. J. (2006). Creating value-in-use through marketing interaction: the exchange logic of relating, communicating and knowing. *Marketing Theory, 6*(3), 335-348.

Ballantyne, D., & Varey, R. J. (2008). The service-dominant logic and the future of marketing. *Journal of the Academy of Marketing Science, 36*(1), 11-14.

Baron, N. S. (2004). See you online: Gender issues in college student use of instant messaging. *Journal of Language and Social Psychology, 23*(4), 397-423.

Beatson, A., Coote, L. V., & Rudd, J. M. (2006). Determining consumer satisfaction and commitment through self-service technology and personal service usage. *Journal of Marketing Management, 22*(7-8), 853-882.

Benckendorff, P., Moscardo, G., & Murphy, L. (2005). High tech versus high touch: Visitor responses to the use of technology in tourist attractions. *Tourism Recreation Research, 30*(3), 37-47.

Bendapudi, N., & Leone, R. P. (2003). Psychological implications of customer participation in co-production. *Journal of Marketing, 67*(1), 14-28.

Berger, P. D., & Nasr, N. I. (1998). Customer lifetime value: Marketing models and applications. *Journal of Interactive Marketing, 12*(1), 17-30.

Bettencourt, L. A., Brown, S. W., & Sirianni, N. J. (2013). The secret to true service innovation. *Business Horizons, 56*(1), 13-22.

Bijker, W. E. (1994). Sociohistorical technology studies, in Jasanoff et al. (Eds), *Handbook of Science and Technology Studies* (pp.229-256). Sage Publications, London.

Binkhorst, E., & Den Dekker, T. (2009). Agenda for co-creation tourism experience research. *Journal of Hospitality Marketing & Management, 18*(2-3), 311-327.

Bitner, M. J. (1992). Servicescapes: The impact of physical surroundings on customers and employees. *Journal of Marketing*, *56*, 57-71.

Bodner, G. M. (1986). Constructivism: A theory of knowledge. *Journal of Chemical Education, 63*(10), 873-878.

Bordia, P. (1997). Face-to-face versus computer-mediated communication: A synthesis of the experimental literature. *The Journal of Business Communication, 34*(1), 99-120.

Bove, L. L., Pervan, S. J., Beatty, S. E., & Shiu, E. (2009). Service worker role in encouraging customer organizational citizenship behaviors. *Journal of Business Research, 62*(7), 698-705.

Brinkmann, S. (2014). Interview. In T Teo (ed.), *Encyclopedia of Critical Psychology* (pp.1008-1010). Springer, New York.

Bruner, J., & Minds, A. (1986). *Possible worlds.* MA: Harvard University Press, Cambridge.

Bryman, A., Bresnen, M., Beardsworth, A., & Keil, T. (1988). Qualitative research and the study of leadership. *Human Relations, 41*(1), 13-29.

Buhalis, D. (2003). *eTourism: Information Technology for Strategic Tourism Management*: Pearson Education (Financial Times/Prentice-Hall).

Buhalis, D., & Foerste, M.-K. (2014). SoCoMo Marketing for Travel and Tourism. In Z. Xiang and I. Tussyadiah (Eds.), *Information and Communication Technologies in Tourism 2014* (pp. 175-185). Springer Heidelberg.

Buhalis, D., & Foerste, M. (2015). SoCoMo marketing for travel and tourism: Empowering co-creation of value. *Journal of Destination Marketing & Management, 4*(3), 151-161.

Buhalis, D., & Law, R. (2008). Progress in information technology and tourism management: 20 years on and 10 years after the Internet—The state of eTourism research. *Tourism Management, 29*(4), 609-623.

Buhalis, D., & Licata, M. C. (2002). The future eTourism intermediaries. *Tourism Management, 23*(3), 207-220.

Burns, M. J. (1995). *Value in Exchange: the Consumer Perspective*: UMI Dissertation Services.

Butz, H. E., & Goodstein, L. D. (1996). Measuring customer value: Gaining the strategic advantage. *Organizational Dynamics, 24*(3), 63-77.

Cabiddu, F., Lui, T.-W., & Piccoli, G. (2013). Managing value co-creation in the tourism industry. *Annals of Tourism Research, 42*, 86-107.

Carbonell, P., Rodríguez-Escudero, A. I., & Pujari, D. (2009). Customer involvement in new service development: An examination of antecedents and outcomes. *Journal of Product Innovation Management, 26*(5), 536-550.

Carlson, J. R., & Zmud, R. W. (1999). Channel expansion theory and the experiential nature of media richness perceptions. *Academy of Management Journal, 42*(2), 153-170.

Carù, A., & Cova, B. (2003). Revisiting consumption experience: A more humble but complete view of the concept. *Marketing Theory, 3*(2), 267-286.

Chan, K. W., Yim, C. K., & Lam, S. S. (2010). Is customer participation in value creation a double-edged sword? Evidence from professional financial services across cultures. *Journal of Marketing, 74*(3), 48-64.

Chandler, J. D., & Vargo, S. L. (2011). Contextualization and value-in-context: How context frames exchange. *Marketing Theory, 11*(1), 35-49.

Charmaz, K., Denzin, N., & Lincoln, Y. (2003). Grounded theory: Objectivist and constructivist methods. In N.K. Denzin & Y.S. Lincoln (Eds.), *Strategies of qualitative inquiry* (2nd ed., pp. 249-291). Thousand Oaks, CA: Sage Publications.

Chathoth, P. K., Altinay, L., Harrington, R. J., Okumus, F., & Chan, E. S. (2013). Co-production versus co-creation: A process based continuum in the hotel service context. *International Journal of Hospitality Management, 32*, 11-20.

Chathoth, P. K., Ungson, G. R., Harrington, R. J., & Chan, E. S. (2016). Co-creation and higher order customer engagement in hospitality and tourism services: A critical review. *International Journal of Contemporary Hospitality Management, 28*(2), 222-245.

Chellappa, R. K., & Sin, R. G. (2005). Personalization versus privacy: An empirical examination of the online consumer's dilemma. *Information Technology and Management, 6*(2-3), 181-202.

Chen, C.-F., & Chen, F.-S. (2010). Experience quality, perceived value, satisfaction and behavioral intentions for heritage tourists. *Tourism Management, 31*(1), 29-35.

Chen, K.-Y., Hsu, Y.-L., & Wu, C.-C. (2012). Mobile phone applications as innovative marketing tools for hotels. *International Journal of Organizational Innovation (Online), 5*(2), 116.

Chen, M.-M., Murphy, H. C., & Knecht, S. (2016). An importance performance analysis of smartphone applications for hotel chains. *Journal of Hospitality and Tourism Management, 29*, 69-79.

Chen, M., Knecht, S., & Murphy, H. C. (2015). An investigation of features and functions of smartphone applications for hotel chains. Paper presented at *ENTER2015, Lugano, Switzerland*.

Chen, Z., & Dubinsky, A. J. (2003). A conceptual model of perceived customer value in e-commerce: A preliminary investigation. *Psychology & Marketing, 20*(4), 323-347.

Chesters, C. (2015). *Marriott CEO comments on Accor's digital strategy.* http://www.hoteliermiddleeast.com/23746-marriott-ceo-comments-on-accors-digital-strategy/ Accessed on 20 April 2016.

Clandinin, D. J., & Connelly, F. M. (2000). *Narrative Inquiry*: San Francisco: Jossey-Bass.

Coffey, A., & Atkinson, P. (1996). *Making sense of qualitative data: Complementary research strategies*. Thousand Oaks: Sage.

Coleman, R. (2014). *The big boys are investing in new hotel technology. Shouldn't You?* http://stayntouch.com/big-boys-investing-new-hotel-technology-shouldnt/ Accessed on 25 Nov 2015.

Colyar, J., & Holley, K. (2010). Narrative theory and the construction of qualitative texts. In Savin-Baden, M., & Major, C. (Eds), *New approaches to qualitative research: Wisdom and uncertainty*, 86-95. London: Routledge.

Conner, K. R., & Prahalad, C. K. (1996). A resource-based theory of the firm: Knowledge versus opportunism. *Organization Science, 7*(5), 477-501.

Cooren, F., Fairhurst, G., & Huët, R. (2012). Why matter always matters in (organizational) communication. In Nardi, B., Leonardi, P.M., & Kallinikos, J. (eds) *Materiality and organizing: Social interaction in a technological world*. Oxford: Oxford University Press, pp. 433-459.

Corbin, J., & Strauss, A. (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory.* Thousand Oaks, CA: Sage.

Coyne, I. T. (1997). Sampling in qualitative research. Purposeful and theoretical sampling; merging or clear boundaries? *Journal of Advanced Nursing, 26*(3), 623-630.

Crabtree, B. F., & Miller, W. L. (1999). *Doing qualitative research*. Newbury Park, CA: Sag.

Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches*. Thousand Oaks, CA: Sage.

Creswell, J. W., & Clark, V. L. P. (2007). *Designing and conducting mixed methods research.* Thousand Oaks, CA: Sage.

Creswell, J. W., Hanson, W. E., Plano, V. L. C., & Morales, A. (2007). Qualitative research designs selection and implementation. *The Counseling Psychologist, 35*(2), 236-264.

Cronin, J. J., Brady, M. K., Brand, R. R., Hightower Jr, R., & Shemwell, D. J. (1997). A cross-sectional test of the effect and conceptualization of service value. *Journal of Services Marketing, 11*(6), 375-391.

Culnan, M. J., & Markus, M. L. (1987). Information technologies. In Jablin, L.W., Putnam, L.L., Roberts K.H., & Porter, L.W., (Eds.), *Handbook of organizational communication: An interdisciplinary perspective*. Newbury Park: CA: Sage.

Dabholkar, P. (1990). How to improve perceived service quality by improving customer participation. In Dunlap, B.J., (Ed.), *Developments in Marketing Science* (pp. 483-87). Cullowhee, NC: Academy of Marketing Science.

Daft, R. L., & Lengel, R. H. (1983). Information richness. A new approach to managerial behavior and organization design: DTIC Document.

Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management Science, 32*(5), 554-571.

Daft, R. L., Lengel, R. H., & Trevino, L. K. (1987). Message equivocality, media selection, and manager performance: Implications for information systems. *MIS Quarterly, 11*(3), 355-366.

Daft, R. L., & Weick, K. E. (1984). Toward a model of organizations as interpretation systems. *Academy of Management Review, 9*(2), 284-295.

Day, G. S. (1994). The capabilities of market-driven organizations. *The Journal of Marketing*, *58*, 37-52.

Decrop, A. (1999). Triangulation in qualitative tourism research. *Tourism Management, 20*(1), 157-161.

Denzin, N. K. (1978). Triangulation: A case for methodological evaluation and combination. In N.K. Denzin (Ed.), *Sociological Methods* (2nd ed., pp. 339-357). New York: McGraw-Hill.

Denzin, N. K., & Lincoln, Y. S. (2005). *The Sage handbook of qualitative research.* Thousand Oaks, CA and London: Sage Publications.

Denzin, N. K., & Lincoln, Y. S. (2011). *The Sage handbook of qualitative research* (2nd ed.). Thousand Oaks, CA: Sage.

DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. *Medical Education, 40*(4), 314-321.

Dip, C. (2009). Demystifying theoretical sampling in grounded theory research. *The Grounded Theory Review, 8(2)*, 113.

Dodds, W. B., & Monroe, K. B. (1985). The effect of brand and price information on subjective product evaluations. *Advances in Consumer Research, 12*(1), 87-90.

Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, *28,* 307-319.

Dubrovsky, V. (1985). Real-time computer-mediated conferencing versus electronic mail. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 29*(4), 380-384, Los Angeles, CA: Sage.

Duman, T., & Mattila, A. S. (2005). The role of affective factors on perceived cruise vacation value. *Tourism Management, 26*(3), 311-323.

Echeverri, P., & Skålén, P. (2011). Co-creation and co-destruction: A practice-theory based study of interactive value formation. *Marketing theory, 11*(3), 351-373.

Edvardsson, B., Gustafsson, A., & Roos, I. (2005). Service portraits in service research: A critical review. *International Journal of Service Industry Management, 16*(1), 107-121.

Edvardsson, B., Tronvoll, B., & Gruber, T. (2011). Expanding understanding of service exchange and value co-creation: A social construction approach. *Journal of the Academy of Marketing Science, 39*(2), 327-339.

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal, 50*(1), 25-32.

Emirbayer, M., & Mische, A. (1998). What is agency? 1. *American Journal of Sociology, 103*(4), 962-1023.

Faraj, S., & Azad, B. (2012). The materiality of technology: An affordance perspective. In Leonardi, P.M., Nardi, B.A., Kallinikos, J. (Eds.), *Materiality and organizing: Social interaction in a technological world*, 237-258. Oxford, UK: Oxford University Press.

Feldman, M. S., & Orlikowski, W. J. (2011). Theorizing practice and practicing theory. *Organization Science, 22*(5), 1240-1253.

Field, P.-A., & Morse, J. M. (1985). *Nursing research: The application of qualitative approaches*. London: Croom & Helm.

Finch, J. E. (2006). The impact of personal consumption values and beliefs on organic food purchase behavior. *Journal of Food Products Marketing, 11*(4), 63-76.

Flagestad, A., & Hope, C. A. (2001). Strategic success in winter sports destinations: a sustainable value creation perspective. *Tourism Management, 22*(5), 445-461.

Franke, N., Schreier, M., & Kaiser, U. (2010). The "I designed it myself" effect in mass customization. *Management Science, 56*(1), 125-140.

Fulk, J., Steinfield, C. W., Schmitz, J., & Power, J. G. (1987). A social information processing model of media use in organizations. *Communication Research, 14*(5), 529-552.

Gale, B., & Wood, R. C. (1994). *Managing customer value: Creating quality and service that customers can see*. New York: Simon and Schuster.

Gallarza, M. G., Arteaga, F., Del Chiappa, G., & Gil-Saura, I. (2015). Value dimensions in consumers' experience: Combining the intra-and inter-variable approaches in the hospitality sector. *International Journal of Hospitality Management, 47*, 140-150.

Gallarza, M. G., & Saura, I. G. (2006). Value dimensions, perceived value, satisfaction and loyalty: An investigation of university students' travel behaviour. *Tourism Management, 27*(3), 437-452.

Gallouj, F. (2002). *Innovation in the service economy: The new wealth of nations*. Cheltenham: Edward Elgar Publishing.

Garton, L., & Wellman, B. (1995). Social impacts of electronic mail in organizations: A review of the research literature. *Annals of the International Communication Association, 18*(1), 434-453.

Gaver, W. W. (1991). Technology affordances. In *Proceedings of the SIGCHI conference on human factors in computing systems: Reaching through technology,* ACM, New Orleans, Louisiana, United States.

Gefen, D., & Straub, D. W. (2004). Consumer trust in B2C e-Commerce and the importance of social presence: experiments in e-Products and e-Services. *Omega, 32*(6), 407-424.

Gibson, J. J. (1979). *The ecological approach to visual perception.* Boston: Houghton Mifflin.

Glaser, B. G. (1978). *Theoretical sensitivity: Advances in the methodology of grounded theory*. Mill Valley, CA: Sociology Press.

Glaser, B. S., & Strauss, A. (1971). *The discovery of grounded theory: Strategies for qualitative research*. Hawthorne, New York: Aldine de Gruyter.

Graf, A., & Maas, P. (2008). Customer value from a customer perspective: A comprehensive review. *Journal für Betriebswirtschaft, 58*(1), 1-20.

Granovetter, M. (1985). Economic action and social structure: The problem of embeddedness. *American Journal of Sociology, 91*(3), 481-510.

Gretzel, U., & Jamal, T. (2009). Conceptualizing the creative tourist class: Technology, mobility, and tourism experiences. *Tourism Analysis, 14*(4), 471-481.

Grissemann, U. S., & Stokburger-Sauer, N. E. (2012). Customer co-creation of travel services: The role of company support and customer satisfaction with the co-creation performance. *Tourism Management, 33*(6), 1483-1492.

Grönroos, C. (1979). *Service marketing: A study of the marketing function in service firms.* (Swedish with an English summary.) Diss. Hanken Swedish School of

Economics Finland, Marketing Technique Centre and Akademilitteratur. Helsinki and Stockholm.

Grönroos, C. (2000). *Service management and marketing: A customer relationship management approach.* London: John Wilet & Sons, Ltd.

Grönroos, C. (2006). Adopting a service logic for marketing. *Marketing Theory, 6*(3), 317-333.

Grönroos, C. (2011). Value co-creation in service logic: A critical analysis. *Marketing Theory, 11*(3), 279-301.

Grönroos, C. (2012). Conceptualising value co-creation: A journey to the 1970s and back to the future. *Journal of Marketing Management, 28*(13-14), 1520-1534.

Grönroos, C., & Ravald, A. (2011). Service as business logic: implications for value creation and marketing. *Journal of Service Management, 22*(1), 5-22.

Grönroos, C., & Voima, P. (2013). Critical service logic: Making sense of value creation and co-creation. *Journal of the Academy of Marketing Science, 41*(2), 133-150.

Groth, M. (2005). Customers as good soldiers: Examining citizenship behaviors in Internet service deliveries. *Journal of Management, 31*(1), 7-27.

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of Qualitative Research, 2*(163-194), 105.

Guion, L. A., Diehl, D. C., & McDonald, D. (2001). *Conducting an in-depth interview.* University of Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, EDIS.

Gummerus, J., & Pihlström, M. (2011). Context and mobile services' value-in-use. *Journal of Retailing and Consumer Services, 18*(6), 521-533.

Gummesson, E. (1994). *Relationship marketing: Its role in the service economy.* In Glynn., W.J., & Barnes, J.G. (Eds.), *Understand services management* (pp.244-268). New York: John Wiley & Sons.

Gummesson, E. (2007). Exit services marketing—enter service marketing. *Journal of Customer Behaviour, 6*(2), 113-141.

Gunawardena, C. N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunications, 1*(2), 147-166.

Gursoy, D., Spangenberg, E. R., & Rutherford, D. G. (2006). The hedonic and utilitarian dimensions of attendees' attitudes toward festivals. *Journal of Hospitality & Tourism Research, 30*(3), 279-294.

Haemoon, O. (2000). Diners' perceptions of quality, value, and satisfaction: A practical viewpoint. *The Cornell Hotel and Restaurant Administration Quarterly, 41*(3), 585-566.

Hair Jr, J. F., Babin, B., Money, A.H., & Samouel, P. (2003), *Essentials of Business Research Methods.* New York: John Wiley & Sons.

Hallem, Y., & Barth, I. (2011). Customer-perceived value of medical tourism: An exploratory study—the case of cosmetic surgery in Tunisia. *Journal of Hospitality and Tourism Management, 18*(1), 121-129.

Handy.Travel. (2016). Retrieved 30 Mar 2016, 2016, from https://handy.travel/#home

Harris, L., Russell-Bennett, R., Plé, L., & Cáceres, R. (2010). Not always co-creation: Introducing interactional co-destruction of value in service-dominant logic. *Journal of Services Marketing, 24*(6), 430-437.

Hauptmann, S., & Steger, T. (2013). "A brave new (digital) world"? Effects of in-house social media on HRM. *Zeitschrift für Personalforschung/German Journal of Research in Human Resource Management, 27*(1), 26-46.

Hesse-Biber, S. N., & Leavy, P. (2010). *The practice of qualitative research*. 2nd Ed. Thousand Oaks, CA: Sage.

Hilton Worldwide. (2015). *Hilton introduces digital key, further enhancing industry-leading hhonors app* [Press release]. Retrieved from http://news.hiltonworldwide.com/index.cfm/news/hilton-introduces-digital-key-further-enhancing-industryleading-hhonors-app- Accessed on 20 Feb 2016.

Holbrook, M. B. (1999). *Consumer value: A framework for analysis and research*. London: Routledge.

Holbrook, M. B. (2005). Customer value and autoethnography: Subjective personal introspection and the meanings of a photograph collection. *Journal of Business Research, 58*(1), 45-61.

Hoyer, W. D., Chandy, R., Dorotic, M., Krafft, M., & Singh, S. S. (2010). Consumer cocreation in new product development. *Journal of Service Research, 13*(3), 283-296.

Hui, T. L. T., Au, N., & Law, R. (2016). Customer experiences with hotel smartphone: A case study of Hong Kong hotels. *Information and Communication Technologies in Tourism 2016* (pp. 455-466): Springer.

Hultkrantz, L. (2002). Will there be a unified wireless marketplace for tourism? *Current Issues in Tourism, 5*(2), 149-161.

Hunt, S. D. (1999). *A general theory of competition: Resources, competences, productivity, economic growth*. Thousand Oaks, CA: Sage.

Hutchby, I. (2001). Technologies, texts and affordances. *Sociology, 35*(2), 441-456.

Hyun, S. S., Kim, W., & Lee, M. J. (2011). The impact of advertising on patrons' emotional responses, perceived value, and behavioral intentions in the chain restaurant industry: The moderating role of advertising-induced arousal. *International Journal of Hospitality Management, 30*(3), 689-700.

InterContinental Hotels Group. (2015). *IHG launches series of mobile and in-hotel digital technology pilots* (News Releases). https://www.ihgplc.com/news-and-media/news-releases/2015/ihg-launches-series-of-mobile-and-in-hotel-digital-technology-pilots Accessed on 15 Jul 2016.

Jarvenpaa, S. L., & Tuunainen, V. K. (2013). How Finnair socialized customers for service co-creation with social media. *MIS Quarterly Executive, 12*(3), 125-136.

Jennings, G. (2001). *Tourism Research*. Australia: John Wiley and Sons Ltd.

Jeon, S., Park, C., & Yi, Y. (2016). Co-creation of background music: A key to innovating coffee shop management. *International Journal of Hospitality Management, 58*, 56-65.

Johnson, J. M. (2002). In-depth interviewing. *Handbook of interview research: Context and method*, 103-119. Thousand Oaks, CA: Sage.

Jonassen, D. H. (1991). Objectivism versus constructivism: Do we need a new philosophical paradigm? *Educational Technology Research and Development, 39*(3), 5-14.

Jonassen, D. H., & Kwon, H. (2001). Communication patterns in computer mediated versus face-to-face group problem solving. *Educational technology research and development, 49*(1), 35-51.

Jones, S. (1995). *Understanding Community in the Information Age.* CA: Sage.

Kant, I. (1908). *Critique of pure reason* (F. M. Muller Trans.). London: Macmillian. (Original work published 1781). 1781.

Kendall, J. (1999). Axial coding and the grounded theory controversy. *Western Journal of Nursing Research, 21*(6), 743-757.

Kim, J., Connolly, D. J., & Blum, S. (2014). Mobile technology: An exploratory study of hotel managers. *International Journal of Hospitality & Tourism Administration, 15*(4), 417-446.

Kim, M., & Qu, H. (2014). Travelers' behavioral intention toward hotel self-service kiosks usage. *International Journal of Contemporary Hospitality Management, 26*(2), 225-245.

Knutson, B. J., Beck, J. A., Kim, S. H., & Cha, J. (2007). Identifying the dimensions of the experience construct. *Journal of Hospitality & Leisure Marketing, 15*(3), 31-47.

Kohli, R., & Grover, V. (2008). Business value of IT: An essay on expanding research directions to keep up with the times. *Journal of the Association for Information Systems, 9*(1), 23.

Kristensson, P., Matthing, J., & Johansson, N. (2008). Key strategies for the successful involvement of customers in the co-creation of new technology-based services. *International Journal of Service Industry Management, 19*(4), 474-491.

Kwun, J.-W., & Oh, H. (2004). Effects of brand, price, and risk on customers' value perceptions and behavioral intentions in the restaurant industry. *Journal of Hospitality & Leisure Marketing, 11*(1), 31-49.

Lai, A. W. (1995). Consumer values, product benefits and customer value: A consumption behavior approach. In Kardes, F.R., & Sujan, M., *Advances in Consumer Research* (Eds.). Provo, UT: Association for Consumer Research (pp.381-388).

Lamsfus, C., Wang, D., Alzua-Sorzabal, A., & Xiang, Z. (2014). Going mobile defining context for on-the-go travelers. *Journal of Travel Research, 54*(6), 691-701.

Law, R., & Jogaratnam, G. (2005). A study of hotel information technology applications. *International Journal of Contemporary Hospitality Management, 17*(2), 170-180.

Lee, C.-K., Yoon, Y.-S., & Lee, S.-K. (2007). Investigating the relationships among perceived value, satisfaction, and recommendations: The case of the Korean DMZ. *Tourism Management, 28*(1), 204-214.

Lee, J.-S., Lee, C.-K., & Choi, Y. (2011). Examining the role of emotional and functional values in festival evaluation. *Journal of Travel Research, 50*(6), 685-696.

Lee, J.-S., & Min, C.-k. (2013). Examining the role of multidimensional value in convention attendee behavior. *Journal of Hospitality & Tourism Research, 37*(3), 402-425.

Lee, N., Saunders, J., Addis, M., & Podestà, S. (2005). Long life to marketing research: a postmodern view. *European Journal of Marketing, 39*(3/4), 386-412.

Legard, R., Keegan, J., & Ward, K. (2003). In-depth interviews. *Qualitative research practice: A guide for social science students and researchers*, London: Sage, 138-169.

Lehtinen, U., & Lehtinen, J. R. (1991). Two approaches to service quality dimensions. *Service Industries Journal, 11*(3), 287-303.

Lemmink, J., de Ruyter, K., & Wetzels, M. (1998). The role of value in the delivery process of hospitality services. *Journal of Economic Psychology, 19*(2), 159-177.

Leonardi, P. M. (2011). When flexible routines meet flexible technologies: Affordance, constraint, and the imbrication of human and material agencies. *MIS Quarterly, 35*(1), 147-167.

Leonardi, P. M. (2012). Materiality, sociomateriality, and socio-technical systems: What do these terms mean? How are they related? Do we need them? *Materiality and organizing: Social interaction in a technological world*, 25-48, Oxford University Press, Oxford.

Leonardi, P. M., & Barley, S. R. (2010). What's under construction here? Social action, materiality, and power in constructivist studies of technology and organizing. *The Academy of Management Annals, 4*(1), 1-51.

Leonardi, P. M., & Rodriguez-Lluesma, C. (2012). Sociomateriality as a lens for design. *Scandinavian Journal of Information Systems, 24*(2), 79-88.

Leung, R., & Law, R. (2013). Evaluation of hotel information technologies and EDI adoption the perspective of hotel IT managers in Hong Kong. *Cornell Hospitality Quarterly, 54*(1), 25-37.

Light, P., & Light, V. (1999). 10 Analysing asynchronous learning interactions. *Learning with computers: Analysing productive interaction*, 162-78, London: Routledge.

Lin, C.-H., Sher, P. J., & Shih, H.-Y. (2005). Past progress and future directions in conceptualizing customer perceived value. *International Journal of Service Industry Management, 16*(4), 318-336.

Long, M. M., & Schiffman, L. G. (2000). Consumption values and relationships: segmenting the market for frequency programs. *Journal of Consumer Marketing, 17*(3), 214-232.

Lorenzo-Romero, C., Constantinides, E., & Brünink, L. A. (2014). Co-creation: Customer integration in social media based product and service development. *Procedia-Social and Behavioral Sciences, 148*, 383-396.

Louise Barriball, K., & While, A. (1994). Collecting data using a semi-structured interview: A discussion paper. *Journal of Advanced Nursing, 19*(2), 328-335.

Lusch, R. F., & Nambisan, S. (2015). Service innovation: A service-dominant logic perspective. *MIS Quarterly, 39*(1), 155-175.

Lusch, R. F., & Vargo, S. L. (2006). Service-dominant logic: Reactions, reflections and refinements. *Marketing Theory, 6*(3), 281-288.

Lusch, R. F. & Vargo, S. L. (2006). Service-dominant logic: What it is, what it is not, what it might be. In Lusch, R.F., & Vargo, S.L. (Eds.), *The Service-Dominant Logic of Marketing: Dialog, Debate and Directions* (pp. 43-56). Armonk, NY: ME Sharpe.

Lusch, R. F., Vargo, S. L., & O'Brien, M. (2007). Competing through service: Insights from service-dominant logic. *Journal of Retailing, 83*(1), 5-18.

Macdonald, E. K., Kleinaltenkamp, M., & Wilson, H. (2016). How business customers judge solutions: Solution quality and value in use. *Journal of Marketing, 80*(3), 96-120.

Macdonald, E. K., Wilson, H., Martinez, V., & Toossi, A. (2011). Assessing value-in-use: A conceptual framework and exploratory study. *Industrial Marketing Management, 40*(5), 671-682.

Majchrzak, A., & Markus, M. L. (2012). Technology affordances and constraints in management information systems (MIS). In Kessler, E., (Ed.), *Encyclopedia of Management Theor,* Thousand Oaks, CA: Sage.

Marshall, M. N. (1996). Sampling for qualitative research. *Family Practice, 13*(6), 522-526.

Matthing, J., Sandén, B., & Edvardsson, B. (2004). New service development: Learning from and with customers. *International Journal of Service Industry Management, 15*(5), 479-498.

Maxwell, J. A. (2012). *Qualitative research design: An interactive approach*. Thousand Oaks, CA: Sage.

McCormack, C. (2004). Storying stories: a narrative approach to in-depth interview conversations. *International Journal of Social Research Methodology, 7*(3), 219-236.

McDougall, G. H., & Levesque, T. (2000). Customer satisfaction with services: Putting perceived value into the equation. *Journal of Services Marketing, 14*(5), 392-410.

McGrath, J. E. (1990). Time matters in groups. *Intellectual teamwork: Social and Technological Foundations of Cooperative Work, 23*, 61.

McLeod, J., & Balamoutsou, S. (2001). A method for qualitative narrative analysis of psychotherapy transcripts. *Psychological Test and Assessment Modeling, 43*(3), 128.

McMillin, D. (2017). *New study shows hotels struggle with mobile-app adoption.* https://www.pcma.org/new-study-shows-hotels-struggle-with-mobile-app-adoption/ Accessed on 22 Jan 2018.

Meuter, M. L., Ostrom, A. L., Roundtree, R. I., & Bitner, M. J. (2000). Self-service technologies: Understanding customer satisfaction with technology-based service encounters. *Journal of Marketing, 64*(3), 50-64.

Michel, S., Brown, S. W., & Gallan, A. S. (2008). An expanded and strategic view of discontinuous innovations: Deploying a service-dominant logic. *Journal of the Academy of Marketing Science, 36*(1), 54-66.

Mo Kwon, J., Bae, J.-I., & Blum, S. C. (2013). Mobile applications in the hospitality industry. *Journal of Hospitality and Tourism Technology, 4*(1), 81-92.

Mohd-Any, A. A., Winklhofer, H., & Ennew, C. (2015). Measuring users' value experience on a travel website (e-value): What value is cocreated by the user? *Journal of Travel Research, 54*(4), 496-510.

Monroe, K. B. (1990). *Pricing: Making Profitable Decisions*. New York: McGraw-Hill.

Morosan, C. (2015). An Empirical Analysis of Intentions to Cocreate Value in Hotels Using Mobile Devices. *Journal of Hospitality & Tourism Research, 39*(3), 1-35.

Morosan, C., & DeFranco, A. (2015). Disclosing personal information via hotel apps: A privacy calculus perspective. *International Journal of Hospitality Management, 47*, 120-130.

Morosan, C., & DeFranco, A. (2016a). Co-creating value in hotels using mobile devices: A conceptual model with empirical validation. *International Journal of Hospitality Management, 52*, 131-142.

Morosan, C., & DeFranco, A. (2016b). Modeling guests' intentions to use mobile apps in hotels: The roles of personalization, privacy, and involvement. *International Journal of Contemporary Hospitality Management, 28*(9), 1968-1991.

Morse, J. M. (2008). "What's your favorite color?" Reporting irrelevant demographics in qualitative research. *Qualitative Health Research, 18*(3), 299-300.

Morse, J. M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2002). Verification strategies for establishing reliability and validity in qualitative research. *International Journal of Qualitative Methods, 1*(2), 13-22.

Murphy, P., Pritchard, M. P., & Smith, B. (2000). The destination product and its impact on traveller perceptions. *Tourism Management, 21*(1), 43-52.

Murphy, P. E., & Pritchard, M. (1997). Destination price-value perceptions: An examination of origin and seasonal influences. *Journal of Travel Research, 35*(3), 16-22.

Nasution, H. N., & Mavondo, F. T. (2008). Customer value in the hotel industry: What managers believe they deliver and what customer experience. *International Journal of Hospitality Management, 27*(2), 204-213.

Neuhofer, B., Buhalis, D., & Ladkin, A. (2012). Conceptualising technology enhanced destination experiences. *Journal of Destination Marketing & Management, 1*(1), 36-46.

Neuhofer, B., Buhalis, D., & Ladkin, A. (2013). *High tech for high touch experiences: A case study from the hospitality industry*. In L. Cantoni & Z. Xiang (Eds.), *Information and Communication Technologies in Tourism 2013*. Proceedings of the International Conference in Innsbruck, Austria, January 22-25 (pp.290-301). Heidelberg: Springer-Verlag.

Neuhofer, B., Buhalis, D., & Ladkin, A. (2014). A typology of technology-enhanced tourism experiences. *International Journal of Tourism Research, 16*(4), 340-350.

Neuhofer, B., Buhalis, D., & Ladkin, A. (2015). Smart technologies for personalized experiences: A case study in the hospitality domain. *Electronic Markets, 25*(3), 243-254.

Niininen, O., Buhalis, D., & March, R. (2007). Customer empowerment in tourism through consumer centric marketing (CCM). *Qualitative Market Research: An International Journal, 10*(3), 265-281.

Nilson, T. H. (1992). *Value-added Marketing: Marketing Management for Superior Results*. London and New York: McGraw-Hill.

Norman, D. (2007). The design of future things. New York: Basic Books.

Normann, R. (2001). *Reframing business: When the map changes the landscape*. Chichester: John Wiley & Sons.

O'Leary, J. T., Gretzel, U., & Fesenmaier, D. (2006). *The transformation of consumer behaviour.* Tourism Business Frontiers: Consumers, Products and Industry (pp.9-18). Burlington, MA: Elsevier.

Oh, H. (1999). Service quality, customer satisfaction, and customer value: A holistic perspective. *International Journal of Hospitality Management, 18*(1), 67-82.

O'Hern, M. S., & Rindfleisch, A. (2010). Customer co-creation: A Typology and Research Agenda, in Malholtra, N.K. (Ed.), *Review of Marketing Research* (pp. 84-106). Armonk, NY: M.E. Sharpe.

Onwuegbuzie, A. J., & Collins, K. M. (2007). A typology of mixed methods sampling designs in social science research. *The Qualitative Report, 12*(2), 281-316.

Orfila-Sintes, F., Crespí-Cladera, R., & Martínez-Ros, E. (2005). Innovation activity in the hotel industry: Evidence from Balearic Islands. *Tourism Management, 26*(6), 851-865.

Orlikowski, W. J. (1992). The duality of technology: Rethinking the concept of technology in organizations. *Organization Science, 3*(3), 398-427.

Orlikowski, W. J. (2010). The sociomateriality of organisational life: Considering technology in management research. *Cambridge Journal of Economics, 34*(1), 125-141.

Orlikowski, W. J., & Scott, S. V. (2008). 10 sociomateriality: Challenging the separation of technology, work and organization. *The Academy of Management Annals, 2*(1), 433-474.

Ostrom, A. L., Bitner, M. J., Brown, S. W., Burkhard, K. A., Goul, M., Smith-Daniels, V., . . . Rabinovich, E. (2010). Moving forward and making a difference: research priorities for the science of service. *Journal of Service Research, 13*(1), 4-36.

Padgett, D. K. (2004). Coming of age: Theoretical thinking, social responsibility, and a global perspective in qualitative research. In D. K. Padgett (Ed.), *The Qualitative Research Experience* (pp. 297-315). Belmont, CA: Wadsworth/Thomson Learning.

Parasuraman, A. (1997). Reflections on gaining competitive advantage through customer value. *Journal of the Academy of Marketing Science, 25*(2), 154-161.

Park, C. (2004). Efficient or enjoyable? Consumer values of eating-out and fast food restaurant consumption in Korea. *International Journal of Hospitality Management, 23*(1), 87-94.

Patton, M. Q. (1990). *Qualitative Evaluation and Research Methods*. Newbury Park, CA: Sage.

Payne, A. F., Storbacka, K., & Frow, P. (2008). Managing the co-creation of value. *Journal of the Academy of Marketing Science, 36*(1), 83-96.

Penrose, E. T. (1995). *The theory of the growth of the firm,* New York: Wiley, 1959.

Pentland, B. T., & Singh, H. (2012). Materiality: What are the consequences? *Materiality and organizing: Social interaction in a technological world*, 287-295. Oxford, UK: Oxford University Press.

Perrea, T., Grunert, K. G., & Krystallis, A. (2015). Consumer value perceptions of food products from emerging processing technologies: A cross-cultural exploration. *Food Quality and Preference, 39*, 95-108.

Petrick, J. F. (2002). Development of a multi-dimensional scale for measuring the perceived value of a service. *Journal of Leisure Research, 34*(2), 119.

Petrick, J. F., & Backman, S. J. (2002). An examination of the construct of perceived value for the prediction of golf travelers' intentions to revisit. *Journal of Travel Research, 41*(1), 38-45.

Phillips, G. M., & Santoro, G. M. (1989). Teaching group discussion via computer-mediated communication. *Communication Education, 38*(2), 151-161.

Piccoli, G., O'Connor, P., Capaccioli, C., & Alvarez, R. (2003). Customer relationship management-a driver for change in the structure of the US lodging industry. *Cornell Hospitality Quarterly, 44*(4), 61.

Plé, L., & Chumpitaz Cáceres, R. (2010). Not always co-creation: Introducing interactional co-destruction of value in service-dominant logic. *Journal of Services Marketing, 24*(6), 430-437.

Polit, D., & Hungler, B. (1994). Essentials of nursing research: Methods, appraisal, asid utilization, 175-178, Philadelphia: Lippincott.

Polkinghorne, D. E. (1995). Narrative configuration in qualitative analysis. *International Journal of Qualitative Studies in Education, 8*(1), 5-23.

Prahalad, C. K., & Hamel, G. (1993). *The core competence of the corporation.* Harvard Business School Pub. Corp., Boston, MA.

Prahalad, C. K., & Ramaswamy, V. (2004a). Co-creating unique value with customers. *Strategy & Leadership, 32*(3), 4-9.

Prahalad, C. K., & Ramaswamy, V. (2004b). Co-creation experiences: The next practice in value creation. *Journal of Interactive Marketing, 18*(3), 5-14.

Prahalad, C. K., & Ramaswamy, V. (2004c). *The future of competition.* Harvard Business School Press, Boston, MA.

Ramaswamy, V., & Gouillart, F. (2008). Co-creating strategy with experience co-creation. *Balanced Scorecard Report, 10*(4), 1-3.

Ranjan, K. R., & Read, S. (2016). Value co-creation: Concept and measurement. *Journal of the Academy of Marketing Science, 44*(3), 290-315.

Ravald, A. (2001). *A view of value—the customer value process.* Paper presented at the Rethinking European Marketing. Proceedings from the 30th EMAC Conference, Bergen, Norway, May.

Ravald, A., & Grönroos, C. (1996). The value concept and relationship marketing. *European Journal of marketing, 30*(2), 19-30.

Rhoads, M. (2010). Face-to-face and computer-mediated communication: What does theory tell us and what have we learned so far? *Journal of Planning Literature, 25*(2), 111-122.

Rice, R. E., & Love, G. (1987). Electronic emotion socioemotional content in a computer-mediated communication network. *Communication Research, 14*(1), 85-108.

Riessman, C. K. (2008). *Narrative methods for the human sciences*. Los Angeles, CA: Sage.

Rindfleisch, A., & Moorman, C. (2001). The acquisition and utilization of information in new product alliances: A strength-of-ties perspective. *Journal of Marketing, 65*(2), 1-18.

Ritchie, J., Lewis, J., Nicholls, C. M., & Ormston, R. (2013). *Qualitative research practice: A guide for social science students and researchers*. London: Sage.

Ritzer, G., & Jurgenson, N. (2010). Production, consumption, prosumption: The nature of capitalism in the age of the digital 'prosumer.' *Journal of Consumer Culture, 10*(1), 13-36.

Rosenbaum, M. S., Ostrom, A. L., & Kuntze, R. (2005). Loyalty programs and a sense of community. *Journal of Services Marketing, 19*(4), 222-233.

Ryan, A. B. (2006). Post-positivist approaches to research. In Antonesa, M., Fallon, H., Ryan, A.B., Ryan, A., Walsh, T., & Borys, L. (Eds.), *Researching and writing your thesis: A guide for postgraduate students* (pp.12-26). MACE (Maynooth Adult and Community Education), National University of Ireland.

Ryan, C. (2002). Equity, management, power sharing and sustainability—issues of the 'new tourism.' *Tourism Management, 23*(1), 17-26.

Rychlak, J. F. (1990). George Kelly and the concept of construction. *International Journal of Personal Construct Psychology, 3*(1), 7-19.

Ryu, K., Han, H., & Kim, T.-H. (2008). The relationships among overall quick-casual restaurant image, perceived value, customer satisfaction, and behavioral intentions. *International Journal of Hospitality Management, 27*(3), 459-469.

Sahadev, S., & Islam, N. (2005). Why hotels adopt ICTs: A study on the ICT adoption propensity of hotels in Thailand. *International Journal of Contemporary Hospitality Management, 17*(5), 391-401.

Sánchez-Fernández, R., & Iniesta-Bonillo, M. Á. (2007). The concept of perceived value: A systematic review of the research. *Marketing Theory, 7*(4), 427-451.

Sanchez, J., Callarisa, L., Rodriguez, R. M., & Moliner, M. A. (2006). Perceived value of the purchase of a tourism product. *Tourism Management, 27*(3), 394-409.

Sandelowski, M., Holditch-Davis, D., & Harris, B. G. (1992). Using qualitative and quantitative methods: The transition to parenthood of infertile couples. *Qualitative Methods in Family Research*, 301-322. Newbury Park, CA: Sage.

Sandström, S., Edvardsson, B., Kristensson, P., & Magnusson, P. (2008). Value in use through service experience. *Managing Service Quality: An International Journal, 18*(2), 112-126.

Sarantakos, S. (2012). *Social research*. Palgrave Macmillan: Basingstoke.

Sarker, S., Sarker, S., Sahaym, A., & Bjørn-Andersen, N. (2012). Exploring value co-creation in relationships between an erp vendor and its partners: A Revelatory case study. *MIS Quarterly, 36*(1).

Savin-Baden, M., & Major, C. H. (2013). Qualitative research: The essential guide to theory and practice. Abindon, UK: Routledge.

Savio, N., & Braiterman, J. (2007). *Design sketch: The context of mobile interaction.* Paper presented at the Mobile HCI, Singapore.

Scherer, A., Wünderlich, N., & von Wangenheim, F. (2015). The value of self-service: Long-term effects of technology-based self-service usage on customer retention. *MIS Quarterly, 39*(1), 177-200.

Schmidt-Rauch, S., & Schwabe, G. (2014). Designing for mobile value co-creation—the case of travel counselling. *Electronic Markets, 24*(1), 5-17.

Scott, S. V., & Orlikowski, W. J. (2012). Great expectations: The materiality of commensurability in social media. *Materiality and organizing: Social interaction in a technological world, 113*-133, London, UK: Oxford University Press.

Seidman, I. (2013). *Interviewing as qualitative research: A guide for researchers in education and the social sciences*: New York: Teachers College Press.

Sharma, N., & Patterson, P. G. (1999). The impact of communication effectiveness and service quality on relationship commitment in consumer, professional services. *Journal of Services Marketing, 13*(2), 151-170.

Shaw, A. W. (1915). *Some problems in market distribution*: Harvard University Press.

Shaw, E. (1994). The utility of the four utilities concept. *Research in Marketing, Supplement, 6*, 47-66.

Shaw, G., Bailey, A., & Williams, A. (2011). Aspects of service-dominant logic and its implications for tourism management: Examples from the hotel industry. *Tourism Management, 32*(2), 207-214.

Shen, A., & Dwayne Ball, A. (2009). Is personalization of services always a good thing? Exploring the role of technology-mediated personalization (TMP) in service relationships. *Journal of Services Marketing, 23*(2), 79-91.

Sheth, J., & Parvatiyar, A. (2000). *Relationship marketing in consumer markets: Antecedents and consequences*. CA: Sage.

Sheth, J. N., Newman, B. I., & Gross, B. L. (1991). Why we buy what we buy: A theory of consumption values. *Journal of Business Research, 22*(2), 159-170.

Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*. London: Wiley.

Shostack, G. L. (1977). Breaking free from product marketing. *The Journal of Marketing*, *41*, 73-80.

Silpakit, P., & Fisk, R. P. (1985). Participatizing the service encounter: A theoretical framework. In Block, T.M., Upah, G.D., & Zeithaml, V.A., (Eds.), *Service Marketing in a Changing Environment, American Marketing Association, Chicago, IL*, pp.117-21.

Sirirak, S., Islam, N., & Ba Khang, D. (2011). Does ICT adoption enhance hotel performance? *Journal of hospitality and Tourism Technology, 2*(1), 34-49.

Smith, A. (1776). An inquiry into the nature and causes of the wealth of nations. Oxford: Clarendon Press.

Smith, J. B., & Colgate, M. (2007). Customer value creation: a practical framework. *Journal of Marketing Theory and Practice, 15*(1), 7-23.

Smith, K. G., Carroll, S. J., & Ashford, S. J. (1995). Intra- and interorganizational cooperation: Toward a research agenda. *Academy of Management Journal, 38*(1), 7-23.

Solomon, M. (2014). *Ritz-Carlton's big announcement and the luxury-mobile paradox.* http://www.forbes.com/sites/williamvanderbloemen/2016/06/22/3-questions-to-ask-before-taking-a-new-job/#24fc0f8f3185 Accessed on 4 Oct 2015.

Solomon, M. R., Surprenant, C., Czepiel, J. A., & Gutman, E. G. (1985). A role theory perspective on dyadic interactions: The service encounter. *The Journal of Marketing, 49*, 99-111.

Srivastava, M. K., & Gnyawali, D. R. (2011). When do relational resources matter? Leveraging portfolio technological resources for breakthrough innovation. *Academy of Management Journal, 54*(4), 797-810.

Srivastava, R. K., Fahey, L., & Christensen, H. K. (2001). The resource-based view and marketing: The role of market-based assets in gaining competitive advantage. *Journal of Management, 27*(6), 777-802.

Stauss, B., Nordin, F., & Kowalkowski, C. (2010). Solutions offerings: A critical review and reconceptualisation. *Journal of Service Management, 21*(4), 441-459.

Straus, S. G. (1996). Getting a clue: The effects of communication media and information distribution on participation and performance in computer-mediated and face-to-face groups. *Small Group Research, 27*(1), 115-142.

Strauss, A., & Corbin, J. (1990). *Basics of Qualitative Research.* Newbury Park, CA: Sage.

Svensson, G., & Grönroos, C. (2008). Service logic revisited: Who creates value? And who co-creates? *European Business Review, 20*(4), 298-314.

Sweeney, J. C., & Soutar, G. N. (2001). Consumer perceived value: The development of a multiple item scale. *Journal of Retailing, 77*(2), 203-220.

Tarn, J. L. (1999). The effects of service quality, perceived value and customer satisfaction on behavioral intentions. *Journal of Hospitality & Leisure Marketing, 6*(4), 31-43.

Ting, D. (2016a). *How smart hotels use messaging to connect with guests.* https://skift.com/2016/08/26/how-smart-hotels-use-messaging-to-connect-with-guests/ Accessed on 4 Jan 2017.

Ting, D. (2016b). *IHG CEO: Our focus is on building up the brands we have.* https://skift.com/2017/02/22/ihg-ceo-our-focus-is-on-building-up-the-brands-we-have/ Accessed on 4 Jan 2017.

Ting, D. (2017). *Most hotel apps still need a radical overhaul.* https://skift.com/2017/08/31/most-hotel-apps-still-need-a-radical-overhaul/ Accessed on 5 Feb 2018.

Tuite, S. (2017). *Let's chat: Four Seasons connects real people in real time with new chat feature* [Press release]. Retrieved from https://press.fourseasons.com/news-releases/2017/four-seasons-chat/ Accessed on 13 Jan 2018.

Tussyadiah, I. P., & Fesenmaier, D. R. (2009). Mediating tourist experiences: Access to places via shared videos. *Annals of Tourism Research, 36*(1), 24-40.

Uzzi, B. (1997). Social structure and competition in interfirm networks: The paradox of embeddedness. *Administrative Science Quarterly, 42*(1), 35-67.

Vargo, S. L. (2008). Customer integration and value creation: Paradigmatic traps and perspectives. *Journal of Service Research, 11*(2), 211-215.

Vargo, S. L., & Lusch, R. F. (2004). Evolving to a new dominant logic for marketing. *Journal of Marketing, 68*(1), 1-17.

Vargo, S. L., & Lusch, R. F. (2008). Service-dominant logic: Continuing the evolution. *Journal of the Academy of Marketing Science, 36*(1), 1-10.

Vargo, S. L., Lusch, R. F., & Akaka, M. A. (2010). Advancing service science with service-dominant logic. *Handbook of Service Science*, 133-156, New York: Springer.

Vargo, S. L., Maglio, P. P., & Akaka, M. A. (2008). On value and value co-creation: A service systems and service logic perspective. *European Management Journal, 26*(3), 145-152.

Vega-Vazquez, M., Ángeles Revilla-Camacho, M., & Cossío-Silva, F. (2013). The value co-creation process as a determinant of customer satisfaction. *Management Decision, 51*(10), 1945-1953.

Walls, A. R., Okumus, F., Wang, Y. R., & Kwun, D. J.-W. (2011). An epistemological view of consumer experiences. *International Journal of Hospitality Management, 30*(1), 10-21.

Walther, J. B. (1992). *A longitudinal experiment on relational tone in computer-mediated and face to face interaction.* Paper presented at the Hawaii International Conference on Systems Sciences.

Walther, J. B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research, 23*(1), 3-43.

Walther, J. B. (2011). Theories of computer-mediated communication and interpersonal relations. *The Handbook of Interpersonal Communication, 4*, 443-479.

Walther, J. B., & Burgoon, J. K. (1992). Relational communication in computer-mediated interaction. *Human Communication Research, 19*(1), 50-88.

Wang, D., & Fesenmaier, D. R. (2013). Transforming the travel experience: The use of smartphones for travel. In Cantoni, L., & Zheng, X. (Eds.), *Information and Communication Technologies in Tourism 2013* (pp. 58-69). Berlin Heidelberg: Springer-Verlag.

Wang, D., Park, S., & Fesenmaier, D. R. (2012). The role of smartphones in mediating the touristic experience. *Journal of Travel Research, 51*(4), 371-387.

Wang, D., Xiang, Z., & Fesenmaier, D. R. (2014). Smartphone use in everyday life and travel. *Journal of Travel Research, 51*(4), 371-87.

Wang, D., Xiang, Z., Law, R., & Ki, T. P. (2016). Assessing hotel-related smartphone apps using online reviews. *Journal of Hospitality Marketing & Management, 25*(3), 291-313.

Wang, H.-Y., & Wang, S.-H. (2010). Predicting mobile hotel reservation adoption: Insight from a perceived value standpoint. *International Journal of Hospitality Management, 29*(4), 598-608.

Wang, W., Hsieh, J. P.-A., & Song, B. (2012). Understanding user satisfaction with instant messaging: An empirical survey study. *International Journal of Human-Computer Interaction, 28*(3), 153-162.

Wang, Y.-S., Li, H.-T., Li, C.-R., & Zhang, D.-Z. (2016). Factors affecting hotels' adoption of mobile reservation systems: A technology-organization-environment framework. *Tourism Management, 53*, 163-172.

Wang, Y., Lo, H.-P., & Yang, Y. (2004). An integrated framework for service quality, customer value, satisfaction: Evidence from China's telecommunication industry. *Information Systems Frontiers, 6*(4), 325-340.

Warren, C. A., & Karner, T. X. (2005). *Discovering Qualitative Methods: Field Research, Interviews, and Analysis*. Los Angles: Roxbury.

Webster Jr, F. E. (1992). The changing role of marketing in the corporation. *The Journal of Marketing, 56*(4), 1-17.

Weick, K. (1969). *The social psychology of organizing.* 1979. Reading, MA: Addison-Wesley.

Weinstein, A. (1999). *Designing and delivering superior customer value: concepts, cases, and applications*: CRC Press.

Weiss, R. S. (1994). Learning from strangers. *The Art and Method of Qualitative Interview Studies.* New York: Free Press.

Wikstrom, S., & Normann, R. (1994). Knowledge and value: A new perspective on corporate transformation. London, UK: Routledge.

Williams, P., & Soutar, G. N. (2009). Value, satisfaction and behavioral intentions in an adventure tourism context. *Annals of Tourism Research, 36*(3), 413-438.

Wolf, J. (2017). *Marriott reimagines its mobile app to meet the needs of modern world travelers* [Press release]. Retrieved from

http://news.marriott.com/2017/02/marriott-reimagines-mobile-app-meet-needs-modern-world-travelers/ Accessed on 4 Feb 2018.

Woodall, T. (2003). Conceptualising 'value for the customer': An attributional, structural and dispositional analysis. *Academy of Marketing Science Review, 12*, 1-42.

Woodruff, R. B. (1997). Customer value: The next source for competitive advantage. *Journal of the Academy of Marketing Science, 25*(2), 139-153.

Woodruff, R. B., & Flint, D. J. (2006). Marketing's service-dominant logic and customer value. *The Service-Dominant Logic of Marketing: Dialog, Debate, and Directions*, 183-195. New York: M.E. Sharpe.

Woodruff, R. B., & Gardial, S. (1996). *Know your customer: New approaches to understanding customer value and satisfaction*. Cambridge, MA: Blackwell Publishers, Inc.

Yen, H. R., Gwinner, K. P., & Su, W. (2004). The impact of customer participation and service expectation on Locus attributions following service failure. *International Journal of Service Industry Management, 15*(1), 7-26.

Yi, S., Day, J., & Cai, L. A. (2014). Exploring tourist perceived value: An investigation of Asian cruise tourists' travel experience. *Journal of Quality Assurance in Hospitality & Tourism, 15*(1), 63-77.

Yi, Y., & Gong, T. (2013). Customer value co-creation behavior: Scale development and validation. *Journal of Business Research, 66*(9), 1279-1284.

Yin, R. K. (2013). *Case Study Research: Design and Methods (5th Ed).* Thousand Oaks, Sage.

Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *The Journal of Marketing, 52*(3), 2-22.

Zimmermann, E. W. (1951). *World resources and industries.* New York: Harper and Brothers.