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Infusion of Smartphone Technologies in Hospitality Service Experience

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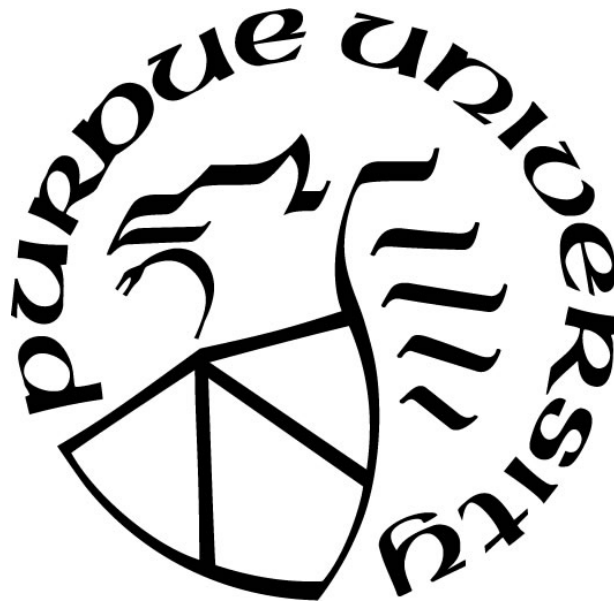
**INFUSION OF SMARTPHONE TECHNOLOGIES IN
HOSPITALITY SERVICE EXPERIENCE**

by
Lei Nie

A Thesis

*Submitted to the Faculty of Purdue University
In Partial Fulfillment of the Requirements for the degree of*

Master of Science



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TABLE OF CONTENTS

LIST OF TABLES	vii
LIST OF FIGURES	viii
ABSTRACT	ix
INTRODUCTION	1
LITERATURE REVIEW	5
Smartphone Technology Infusion into the Service Experience.....	5
Customers’ Motivational Drivers of Smartphone Usage in Service Experience.....	7
The Effect of Infusion of Smartphone Technologies on Customers’ Subjective Experience	9
Infusion of Smartphone Technologies in Customers’ Perceived Outcomes	12
Summary.....	13
METHODOLOGY	15
RESULTS	20
Motivational Drivers of Smartphone Usage in Hospitality Service Experience	20
Perceived Dominance	20
Snob Effect.....	22
Digital Companionship	24
Smartphone-Equipped Customers’ Subjective Experience during Hospitality Service Experiences.....	26
Shifting Dependence.....	26
Simultaneity of Deliberate and Spontaneous Consumption	28
Learned Helplessness.....	29
Permeable Personal Bubble	30
Ephemeral and Superficial Interaction.....	33
Smartphone-Equipped Customers’ Perceived Outcomes of Hospitality Service Experiences.....	36
Expectation Spiral.....	36
Polarizing Perceptions	39

Multichannel SERVQUAL.....	41
Fading Authenticity	46
DISCUSSION AND PROPOSITIONS	48
Smartphone as the Extended Self	49
Infusion in Service-Related Functional Experience	50
Infusion in Social Experience	52
Infusion in Service Processes	53
Theoretical Implications	56
Managerial Implications	59
Limitations and Future Research	60
REFERENCES	63

LIST OF TABLES

Table 1: Information on Interview Participants	17
Table 2: Examples of Data Coding.....	19

LIST OF FIGURES

Figure 1: Smartphone as a permeable personal bubble.	31
Figure 2: The expectation spiral.	36
Figure 3: Polarizing perceptions.	39
Figure 4: The infusion of smartphone technologies in smartphone-equipped customers’ hospitality service experience.	48
Figure 5: The infusion of smartphone technologies into service-related functional experiences and the resulting shifts in dependence.	50
Figure 6: The infusion of smartphone technologies in service-related functional experiences during mobile service failures.	51
Figure 7: The infusion of smartphone technologies into the social experience when smartphones are in use.	52
Figure 8: The infusion of smartphone technologies into the social experience when smartphones are not in use.	53
Figure 9: The planning and checking activities of smartphone-empowered customer during different hospitality service processes.	54
Figure 10: Smartphone-empowered customers’ expectations and perceptions during different hospitality service processes.	55

ABSTRACT

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This study explored the infusion of smartphone technologies into hospitality service experience from a phenomenological approach. In-depth interviews were conducted with smartphone users who had firsthand hospitality service experience. Data analysis revealed four unique patterns within smartphone-equipped customers' service experiences: the extended control facilitated by smartphone technologies, the functional gap between mediated and interpersonal services, the infusion of solitude into a communal experience, and the interactions among different service processes. Based on these results, this study developed a conceptual framework of the infusion of smartphone technologies in hospitality service experience. Theoretical and managerial implications of the findings were also discussed.

Keywords: smartphone technology, service experience, motivational drivers, subjective experience, perceived service outcomes, hospitality industry

INTRODUCTION

In the hospitality industry, smartphone technologies have become increasingly integrated into the daily operations of the field; this infusion of smartphone technologies is an irreversible trend, and it is altering the essence of the service experience, formerly anchored in a “low-tech, high-touch” paradigm (Bitner, Brown, & Meuter, 2000). According to Pew Research Center’s data from 2015 (Smith, 2015), the ownership rate of smartphone devices has reached 64% in the United States. Currently, it is fairly common for customers to use their smartphones in places like restaurants and hotels and during flights. Meanwhile, the various functions of smartphone technologies, such as facilitating customers’ needs in the areas of self-service, information acquisition, entertainment, and social interactions, are reaching into almost every aspect of customers’ service experience. These functions improve the efficiency of the service while distracting customers from their physical environment (Bitner et al., 2000). It is imperative to understand the influence of the integration of smartphone technologies into the service industry, and particularly to understand the effects of such an infusion of technology on smartphone-equipped customers’ hospitality service experience.

Apart from the actual usage of the devices, smartphone technologies’ infusion into the service experience manifests through customers’ subjective experiences. While the infusion of smartphone technologies increases the efficiency of the actual service through mobile self-services (Zhao, L., Lu, Y., Zhang, L., & Chau, P. Y., 2012), it also heightens smartphone users’ expected level of service efficiency. For example, because smartphone owners are used to getting information instantly, they may get impatient in a restaurant, where they need to wait for servers whenever they have a question or request. While the implications of smartphone technologies have attracted much attention in service research (Bitner, Brown & Meuter, 2000; Chen, Huang, Park, & Yen, 2015; Edvardsson, Enquist, & Johnston, 2005), the influence of this infusion of smartphone technologies on customers’ subjective service experience has not yet been studied.

Behind this lack of research is the absence of service studies that consider smartphones as possessions. While most research in the hospitality industry has focused

on smartphone technologies' role in offering mobile value-added service (Zhao, Lu, Zhang, & Chau, 2012), sociological research has pointed out that as possessions, smartphone technologies extend their owners' sense of self and hence affect the owners' social relationships and subjective experiences (Campbell & Kwak, 2011; Katz, 2008; Rettie, 2008). One of the major contributions this theory has brought to studies of smartphone technology is to associate smartphone users' subjective experience with their motivational drivers of mobile usage. For instance, Belk (2013) recognized the sense of control as a driver for mobile usage. Mobile technologies can help their users to control the experience and environment in which they are engaged (Katz & Aakhus, 2002). In general, the extended-self theory (Belk, 1988) has been applied to studies of smartphone owners' social interactions (Misra, Cheng, Genevie, & Yuan, 2016). However, in service settings, smartphone technologies are both possessions and service tools for smartphone-equipped customers. This research is among the first to apply the extended-self theory to the hospitality service setting by exploring smartphone-equipped customers' motivational drivers of smartphone usage during their hospitality service experience.

A similar void exists in the understanding of the smartphone-equipped customers' perceived service outcomes. Existing research in the service industry has focused on examining customers' acceptance of smartphone technology usage in service settings and on the relationships between that acceptance and other service outcomes. Without considering smartphone technologies' infusion into customers' subjective experiences, these studies are restricted to the traditional analysis models, which have overlooked the changing dynamic underlying smartphone-equipped customers' service evaluations. Not only have smartphone-equipped customers' expectations regarding their service experience changed, but the key service performances related to these customers' perceived outcomes have also transformed (Yu & Kong, 2016). Re-examining the perceived outcomes of smartphone-equipped customers is essential to providing up-to-date theoretical guidelines for industry practices.

Even though the hospitality industry is passionate about the use and implications of smartphone technology, there is a gap between customers' and managers' perceptions of how smartphone technologies can be infused usefully into the field (Nicholls, 2010). Since the launch of the first iPhone in 2007, hospitality companies, including hotels,

restaurants, and airlines, have been enthusiastic about developing and applying mobile services for smartphone-equipped customers. Based on 2016 data from Hotels.com (STR, 2016), 42% of U.S. travelers book hotel reservations on their smartphone devices. However, most applications are just mobile versions of hotel companies' websites. (Adukaite, Reimann, Marchiori & Cantoni, 2013). Because they do not consider the changes smartphones have brought to customers' perception of their service experiences, these mobile apps fail to engage adequately with the new technology, providing experiences tailored to the needs and expectations of smartphone-equipped customers (Tussyadiah, 2015). Moreover, the usage of smartphones technologies is changing the interaction dynamic in the service setting. For example, the Ritz-Carlton Hotel Company reported that smartphones reduced their employees' opportunities to interact with customers due to the self-service functions of smartphone apps, which threatens their ability to form interpersonal bonds with customers (Chen, Knecht, & Murphy, 2015). Today, the hospitality industry is calling for a greater understanding of customers' perceptions of smartphone technologies' application within the industry to guide service management in real-life practice.

To that end, this study aims to examine the influence of smartphone technologies on hospitality service experience from the perspective of smartphone-equipped customers. Specifically, the study seeks to achieve the following objectives:

- Identify motivational drivers of smartphone-equipped customers' smartphone usage in their hospitality service experience;
- Examine subjective experiences of smartphone-equipped customers in their hospitality service experience; and
- Uncover the realities of smartphone-equipped customers' perceived service outcomes during their hospitality service experience.

In the following sections, a literature review on the infusion of smartphone technologies will first be presented with a focus on the hospitality industry. Second, a qualitative empirical study featuring in-depth interviews will be described in detail. Research findings and a proposed framework for smartphone technologies' infusion into customers' service experiences with propositions for the interconnection among the research objectives will then be elaborated upon. The thesis concludes by discussing the

results, theoretical and practical implications of the findings, the study's limitations, and avenues for future research.

LITERATURE REVIEW

Infusion of Smartphone Technologies into the Service Experience

Although the hospitality industry traditionally features a “low-tech, high-touch” approach due to the intangible nature of hospitality service, recent observations from both industrial and academic communities have challenged this philosophy. It has been noted that hospitality customers today use their smartphones during their service experience for a variety of purposes, such as self-service, information acquisition, online socializing, and entertainment (Campbell & Kwak, 2011). The academic attention to smartphone technologies’ infusion into the service experience originated at the beginning of this century in a variety of service management studies on mobile technology. The original research approach used in those seminal studies focused on customers’ mobile use in different service stages, including the pre-service stage (Edvardsson et al., 2005), during-service stage (Wang, Lin, & Luarn, 2006; Chen et al., 2015), and after-service stage (Warren, Weerasinghe, Maddison, & Wang, 2011). The literature has presented many implications of mobile technologies in service settings, including their use to facilitate self-service, enable customization, and manage failure recovery during service (Bitner et al., 2000). However, this process-based approach is limited by one assumption: the mobile-infused service still proceeds in a strict chronological order. In fact, compared to traditional mobile technologies, such as sending messages and making phone calls with a cell phone, smartphone technologies have significantly enhanced the flexibility of mobile technologies. By allowing people to access a tailored app whenever and wherever they choose, smartphones enable customers to proceed with their service regardless of time and location. For instance, Adukaite, Reimann, Marchiori, and Cantoni (2013) proposed that the chronological order in traditional public experience is being diluted due to smartphone technologies because people can multitask and coordinate almost anytime and anywhere. As a result, service management research has shifted its attention from service process to service outcomes.

The outcome-based approach focuses on customers’ evaluation models and perceived outcomes of the total service experience. A literature review shows that the

outcome-based research on mobile infusion is centered around the examination of customers' acceptance of mobile technology (López-Nicolás, Molina-Castillo, & Bouwman, 2008). This initial focus on functional cues had an immediate value to the industry because mobile technology infusion into the hospitality sector was still rare in the early 2000s (Thong, Hong, & Tam, 2006). However, emotional cues during service and customers' subjective experience remain neglected in recent literature (Wunderlich, Wangenheim, & Bitner, 2013; Yu & Kong, 2016).

To develop a thorough comprehension of mobile-equipped customers' subjective experience, a phenomenological approach is needed. This study uses that lens, as established later in this paper, to illustrate customers' responses to both functional and emotional cues during their service experiences. This approach originates in the field of psychology. The descriptive phenomenological approach, which differs from the interpretive approach, is widely applied to qualitative studies. Instead of focusing on individual differences and connections among these differences, the descriptive phenomenological approach seeks the most invariant meanings for a context and uses those invariant findings to guide the analysis of individual narratives (Husserl, 1970). The phenomenological approach mentioned in the rest of this paper is referring to the descriptive phenomenological approach.

The phenomenological approach considers smartphone technologies' infusion into service as a phenomenon. Its definition is derived from the phenomenological characteristic of service experience in general, "a statement of consciousness" carrying the "meanings, hedonic responses, and aesthetic criteria" of the consumer (Holbrook & Hirschman, 1982, p. 135). Unlike traditional approaches examining the deployment and use of mobile technologies, recent service studies on smartphone technologies have revealed that the behavior and perception patterns developed by customers through daily smartphone usage has affected their statement of consciousness, which is reflected in their behavioral, emotional, and cognitive responses toward their service experience (Diplom-Kaufmann, 2014; Helkkula, Kelleher, & Pihlström, 2012). As a result, this approach shifts research attention from a managerial perspective to customers' perspectives of smartphone technologies' use in the industry. Furthermore, as smartphone technologies' infusion into the service experience may be based on internal subjective

experiences, the study of the smartphone technologies' infusion needs to be connected to a real experience in which a service provider and a customer directly interact with each other (Wunderlich, Wangenheim, & Bitner, 2013). The phenomenological approach thereby focuses on the value of co-creation between different social roles: smartphone-equipped focal customers, service providers, and other customers (Sochor, Strömberg, & Karlsson, 2015).

With the objective of examining smartphone-equipped customers' subjective experience, this research took a phenomenological approach to study the infusion of smartphone technologies into customers' service experience. Even though existing literature has provided some insights into the total service experience, few attempts have been made in the literature to connect smartphone-equipped customers' subjective experience with their motivational drivers and perceived outcomes. To offer hospitality practitioners a more thorough comprehension of the influences of smartphone technologies' infusion into their industry, this research looked into smartphone-equipped customers' subjective experience, motivational drivers, and perceived outcomes during their service experience, as well as the connections among them.

Customers' Motivational Drivers of Smartphone Usage in Service Experience

The motivational drivers of smartphone usage during users' real-life experiences play an important role in elucidating the psychological activities behind their subjective experience (Walsh, White, & McD Young, 2010). To a larger extent, these psychological needs guide users' perceptions and evaluations of the experience (Hoffner, Lee, & Park, 2015). A review of the related literature regarding the service industry suggested that extant studies on smartphone usage during the service experience have primarily focused on the functions of smartphone technologies and the benefits customers gain from these functions (Leung & Wei, 2000; Wang, Xiang, & Fesenmaier, 2014). For instance, Leung and Wei (2000) identified planning, information acquisition, entertainment, and sharing as travelers' motives for mobile usage. Wang et al. grouped these motives into two categories: intrinsic (social) motives and instrumental (functional) motives. However, the psychological activities underpinning these social and functional motives are still unknown, though research examining mobile technologies' role as the "extended self" of

their users does provide a glimpse into the psychological drivers behind smartphone usage.

The extended-self theory was originally generated by Belk in 1988 to explain people's relationships with their possessions. He proposed that one's possessions, whether knowingly or unknowingly, can become an extension of one's self. Belk illustrated his theory by referring to McClelland (1951), who suggested that external objects become part of the self when we can exercise power or control over them, just as we might control an arm or leg. Later, the theory was applied to mobile relationship studies (Dedeoglu, 2004; Walsh et al., 2010; Wehmeyer, 2007). In explaining the phenomenon of mobilization, Harkin (2003) proposed that mobile technologies are important to the modern sense of self because they "function as comfort objects, antidotes to the hostile terrain of wider society" (p. 56), and are capable of representing "an extension of our physical selves—an umbilical cord, anchoring the information society's digital infrastructure to our very bodies" (p. 173). According to the literature, smartphone technologies are infused into our lives in two ways: into our sense of self, and into our social relationships and subjective experiences. The infusion of smartphone technologies is influencing our cognitive, affective, and behavioral responses to events in our lives gradually but significantly (Sugiyama, 2013).

The application of extended-self theory to smartphone technologies' infusion research has emphasized the importance of understanding users' motivational drivers as antecedents of their relationships with their mobile devices and of their mobile usage behaviors. The craving for power was one of the first motivational drivers to be recognized. According to Belk's (2013) extended-self theory, smartphone owners can exercise power over their devices (their extended selves) and generate a sense of control via their extended selves. Belk also introduced the concept of "the embodiment of the self" (p. 482), which is manifested by the power smartphone users exercise via mobile technologies over their digital possessions, such as online information, potential contacts, and commercial products and services. A similar conclusion was revealed in service experience studies: mobile technologies expand users' real-life experiences by providing opportunities for new experiences (Campbell & Kwak, 2011; Katz, 2008; Rettie, 2008). These studies also found that the power offered by our digital possessions may lead to a

high level of dependence on our digital extended selves. In recent years, scholars have discovered more about the social needs behind the digital selves (Hoffner et al., 2015; Turkle, 2011; Wang, et al., 2014). In *Alone Together*, Turkle (2011) presented her research on mobile technology infusion in modern life, recognizing users' craving for belonging as a significant motivational driver among mobile users, especially those of younger generations. Hoffner et al. (2015) also found that mobile users gain relief from the anxiety of being alone by constantly seeking connections with the outside world. Other motivational drivers recognized in the literature include self-expression (Campbell & Kwak, 2011; Katz, 2008) and recognition, both of which particularly motivate online sharing behaviors (Gergen, 2010). The idea behind these findings is that mobile technologies provide an alternative to physical experiences for fulfilling users' psychological needs in a digital world (Hoffner et al., 2015). Given that the service sector is premised on its ability to fill customers' needs, it becomes clear from these motivational drivers that addressing the importance of smartphone technologies in customers' lives is critical to the modern service industry. Understanding customers' motivational drivers behind smartphone usage is fundamental to understanding the interactions between customers and smartphone technologies, as well as the interactions between focal customers and the environment with which they are presented as part of the service experience.

The Effect of Infusion of Smartphone Technologies on Customers' Subjective Experience

As discussed earlier, the approach which views smartphone technologies' infusion into the service experience as a phenomenon provides a thorough understanding of customers' subjective experience during the total service experience (Helkkula et al., 2012). However, to the best of the author's knowledge, only a few service studies to date have attempted to explore smartphone-equipped customers' subjective experiences from the phenomenological approach, although studies based on service outcomes and processes have revealed some influences of mobile technologies on customers' subjective service experience. A review of the related literature suggested two streams of research in this area: (a) functional service experience and (b) social experience in a service setting.

The functional service experience refers to customers' task-oriented subjective experience during the service. For example, it has been found that smartphone-equipped customers tend to engage in more planning activities during their service experience, such as searching for information on their next destination and conducting online bookings (Bean, 2016; Smith, Li, Oan, Witte, & Doherty, 2015). Dipl-Kfm's 2014 study on customers of a fast food restaurant found that smartphone-equipped customers had a higher acceptance rate of in-store self-service technologies than did those without mobile devices. Park and Han (2013) also found that due to easy access to self-service via smartphones, smartphone-equipped customers take individual responsibility during service, avoiding unnecessary encounters with service providers. Among studies on customers' acceptance of mobile technologies and adaptations in the service industry, one issue has frequently arisen: service failures on mobile platforms (Thong et al., 2006; Nicholls, 2010; Zhao et al., 2012). Customers often feel frustration over these mobile service failures during their service experience (Nicholls, 2010), which has a negative influence on customers' trust of mobile services (Zhao et al., 2012).

In addition to affecting the functional service experience, smartphone technologies have a significant impact on customers' social experience in service settings (Sochor et al., 2015; Wunderlich et al., 2013). Although research is lacking on the service interactions of smartphone-equipped customers, literature on mobile technologies' influence on users' social interactions has provided insights into smartphone users' social interactions in service settings. The related literature has suggested three streams of research in this area: smartphone users' social interactions in (a) the interpersonal encounter, (b) the mediated encounter, and (c) the dual encounter, where the two coexist.

First, smartphone technologies infuse into users' interpersonal encounters through the mere presence of mobile devices such as smartphones (Misra et al., 2016). Though mostly ignored in the literature, the mere presence of a smartphone device is playing an increasingly important role in social interaction research. For instance, Przybylski and Weinstein (2013) found that having a phone nearby, even if it is not used, may hinder interpersonal closeness and trust, which would affect users' perceived empathy from their companions, leading to a distraction conflict. Also, the mere presence of smartphone devices may lead to a decrease in the efficiency and quality of interactions (Misra et al.,

2014). Yet the distraction conflict effect has not been examined in hospitality service settings. Second, the mediated encounter refers to customers' interactions with others via smartphone platforms. The academic focus on mediated encounters deals largely with online sociality. For instance, Wittel (2001) conceptualized the phenomenon of network sociality as an individualism-centered society where social interactions are fragmentary yet intense. Studies of the service industry have paid extra attention to mediated encounters due to the marketing value of the directly and indirectly mediated interactions between customers and companies (Dabholkar, Shepherd, & Thorpe, 2000). Rayport and Sviokls (1995) established the term *market space* to replace the traditional term *marketplace transaction*. They identified market space as "a virtual realm where products and services exist as digital information and can be delivered through information-based channels" (p. 75). However, research on self-service technologies has challenged the dominance of this notion by pointing out that the interpersonal employee-customer interaction is a fundamental channel for service marketing, and its value cannot be replaced by technology-mediated interactions (Bitner et al., 2000; Dabholkar et al., 2000).

Hence, dual encounters, where mediated and interpersonal encounters coexist in a given setting, are attracting more attention in service studies. They are also the foundation for the phenomenological approach of studying smartphone technologies' infusion into the service industry. The main focuses of this approach are the interactions between smartphone users and other social roles via mediated and interpersonal encounters and the conflicts among customers' self-identities in different encounters. Gergen (2008) suggested that the use of mobile technologies could create a dual-stage experience where physical and mediated stages are interacting with each other. This perception was later applied to studies in service settings (Gergen, 2010; Misra et al., 2016). For example, Bean's (2016) study on the Uber service experience innovatively attempted to illustrate the influence of smartphone usage on a dual-encounter service experience. In this case, smartphone technology provided not just a connection between customers and service providers, but an extended sense of customers' selves. Conflicts between customers' engagements in smartphone activities and interactions with service providers may have a negative impact on customer loyalty and place attachment

(Maghnati, Ling, & Nasermodeli, 2012). Moreover, Zhao et al. (2012) studied interpersonal service experiences separately from smartphone-mediated experiences and suggested that the adoption of smartphone self-service may shift the service encounter interaction focus away from customer-provider interaction and toward customer-to-customer interaction. This finding broadened existing research by investigating the dynamic among interactions during service experiences.

In sum, the present study sought to address certain gaps in the literature regarding customers' subjective experiences during both functional service experiences and social interactions in service settings. Notably, hospitality service experience is a gathering of interpersonal and mediated encounters that occur individually and simultaneously (Gregen, 2010), because customers are usually required to be present to consume the service. Current research on subjective experience applies a transient micro-approach to its examination of the service experience. With the findings from this section, this study attempted to provide an integrated picture of smartphone technologies' infusion into hospitality customers' subjective experience.

Infusion of Smartphone Technologies in Customers' Perceived Outcomes

In addition to customers' motivational drivers and subjective experiences, the infusion of smartphone technologies into the hospitality industry influences how customers evaluate service (Berry, Seiders, & Grewal, 2002; Helkkula et al., 2012). Existing literature has typically used quantitative techniques to investigate the links between customers' subjective experience and service outcomes. The literature shows that before the 2010s, research on the effect of mobile technologies on service evaluation was centered around the application of the technology acceptance model (TAM), which measures customers' acceptance of mobile technology through their perception of its usefulness and ease of use, as well as their attitudes toward the technology and intention to continue using it. Recently, however, there has been a shift of attention from evaluations of functional cues, such as acceptance of technological implications, to those of emotional cues, such as customers' satisfaction, trust, and engagement. For instance, Bellman, Treleaven-Hassard, Robinson, Varan, and Potter (2013) investigated students' online service experience as a moderator between service failure and service recovery,

which offers informants a higher level of perceived assurance. Similarly, Zhao et al. (2012) related service experiences to consumer cognition, expectations, and emotions. In their final conceptual model, Zhao et al. separated interpersonal service experience from smartphone-mediated experience by adding the quality of interactions into the model and suggested that smartphone-equipped customers' perception of the interaction quality of the service experience was biased due to the lack of interpersonal interactions in the service setting. On a similar note, by comparing customers' life value (the ultimate goals they are pursuing in daily life) and user value (the goals they are pursuing during consumptions), Park and Han (2013) implied that conflicts might occur between perceived efficiency and intimacy when customers are interacting with other customers in the service setting. The limitations of current research on service outcomes have been recognized in the literature. Bitner et al. (2000) mentioned in their modified SD-logic model that after mobile technologies are added into the value co-creation frame, the traditional models and criteria may not fit reality. However, existing research on customers' perceived outcomes remains restricted by the traditional analysis models and findings regarding the service experience. Smartphone technologies' infusion into the service experience calls for a re-examination of the well-developed conceptual models in this field.

Summary

Overall, although the infusion of smartphone technologies into the service experience has been recognized in service management and hospitality literature, its influences on customers' motivational drivers, subjective experience, and perceived outcomes are under-investigated. In contrast to the traditional focus on the implications of mobile technologies during different service processes and customers' acceptance of these technologies, the phenomenological approach sheds light on the influences of smartphone technologies on different aspects of the service experience. Overlooking customers' relationships with their smartphones could lead to poor management of mediated and interpersonal service encounters, which would cost hospitality companies opportunities to build loyal relationships with their customers (Park & Han, 2013).

Therefore, it is theoretically and practically imperative to explore the effects of smartphone technologies on customers' perceived hospitality service experience.

METHODOLOGY

This study utilized the qualitative method of in-depth interviews to investigate customers' perception of smartphone technologies' influences on their hospitality service experience. For the purpose of this study, the sample was restricted to smartphone owners. The research samples were recruited through a voluntary recruitment system with the compensation arrangement (\$10 Amazon gift card). The recruitment process is as follows. First, a recruitment page was created on a local news website whose target audience is residents of a city located in the Midwest region of the United States. After being contacted by potential informants via e-mails or text messages, the researcher then asked for the brand and model information of respondents' smartphones to confirm whether they fit the sample requirement. Third, researcher introduced the research purpose, interview content, procedure, and compensation to respondents through e-mails before the potential informants decided if they were willing to participate. Finally, those who agreed to participate scheduled their interviews with the researcher at a location where they felt comfortable talking; this location varied among study participants.

Based on the literature review and our research questions, an outline of interview questions was developed (Benard, 2002). After the first few interviews had been conducted, the interview questions were reviewed and revised to complete the structure of the future interviews. On average, each interview lasted about 45 minutes and was audiotaped with the participant's approval. The semi-structured interviews were guided by the following outline:

1. Questions regarding the relationship between informants and their smartphones. They were asked to use metaphor to describe their smartphones, and further questions were asked concerning their choices of metaphor.

2. Questions about informants' utilizations of smartphones during their hospitality service experience and the motivations behind the utilizations. Informants were asked: "What do you use your smartphone for during your hospitality experience, such as dining in a restaurant, staying in a hotel, or taking a flight?" and "Why do you use your smartphone for that?"

3. Questions regarding the influences of smartphone technologies on informants' own hospitality experiences were asked: "How do you think your smartphone affects your hospitality experience, such as dining in a restaurant, staying in a hotel, or taking a flight?" "How do you think your smartphone affects the way you interact with the servers/hotel employees/flight attendants?" "How do you think your smartphone affects the way you interact with other customers/your companions?"

4. Questions regarding the influences of smartphone technologies on informants' perceptions of service outcomes were asked: "How would you evaluate your experience?" "What do you think hospitality companies can do to serve customers with smartphones better?"

To obtain a rich understanding of customers' perception of the infusion of smartphone technologies into the service industry, this study used a theoretical sampling method (Corbin & Strauss, 2008) in the data collection procedure. Interviews were immediately transcribed, coded, and analyzed upon completed. The categories developed through the analysis provided new directions for the questions asked in the following interview. The theoretical sampling process in this study stopped at the point when the responses of informants became repetitive (Corbin & Strauss, 2008). In the end, 33 interviews were conducted, with a total of 164 pages of interview transcripts. Information on interview participants is listed in Table 1.

Table 1: Information on Interview Participants

Name	Gender	Age
Isaac	Male	19
Stephanie	Female	22
John	Male	21
Abdullah	Male	27
Hemil	Male	19
Marianne	Female	58
Jessica	Female	29
Alicia	Female	27
Tabitha	Female	36
Chad	Male	45
Sydni	Female	50
Karla	Female	24
Arlene	Female	27
Kristyn	Female	32
Pat	Male	55
Cassie	Female	24
Donna	Female	55
Jennifer	Female	32
Margaret	Female	31
Julia	Female	53
Paulette	Female	69
Colleen	Female	21
Rahul	Male	18
Sarah	Female	22
Jai	Male	22
Radhika	Female	18
Patricia	Female	60
Kira	Female	24
Kristopher	Male	40
Megan	Female	19
Lila	Female	71
Meredith	Female	20
Anthony	Male	27

This study's data analysis process was guided by the "constant comparison" analysis approach (Corbin & Strauss, 2008). Accordingly, the data coding processes included three steps: open coding, axial coding, and selective coding (Corbin & Strauss, 2008). During the open coding process, researchers read the full transcripts of all interviews carefully before generating a list of preliminary categories using terms derived from the theoretical background of the study. The categories included types of motivational drivers, subjective experience, and perceived outcomes. Later, the researchers deconstructed the primary categories that resulted from the open coding in the axial coding process. For example, three motivational drivers were identified within that primary category: perceived dominance, snob effect, and digital companionship. The last process was selective coding when the researchers identified the differences and commonalities among the subcategories. Subcategories that were found to be conceptually similar were combined and given the same conceptual label. For example: under the category of "perceived outcomes," mediated assurance, hindered responsiveness, and digital empathy were combined into a mid-level group labeled SERVQUAL (short for "service quality").

The validity of the data analysis was supported by constant checking throughout the stages of knowledge production (Brinkmann & Kvale, 2015), a continual process of comparison between interview notes, interpretations, existing theory, and past literature. After each interview was transcribed, the transcript and interview notes were sent to the participant engaged in that interview. He or she was asked to check whether the transcript truthfully and accurately reported his or her narratives. In total, 24 out of 33 participants returned their feedback, and 100% of the feedback notes confirmed the accuracy of the interview transcriptions (Guba & Lincoln, 1989). The reliability of the analysis results was tested through measuring the intercoder reliability using the proportional reduction in loss (PRL) approach (Rust & Cooil, 1994). The analysis of the interview data was conducted by the author and one independent coder. The author took an inductive approach during the open coding procedure and coded the data individually (Corbin & Strauss, 2008), developing his own codebook for future analysis. The independent coder, who was not engaged in the previous work, was asked to code the data independently. The reliability of the data analysis was first measured by comparing the coding results

from these two coders; the intercoder reliability is 91.89%, indicating a robust consistency of the qualitative data analysis. Furthermore, the proportional reduction in loss (PRL) approach (Rust & Cooil, 1994) is used to measure the intercoder reliability in this study. PRL reliability is a measure for general qualitative data analysis that needs multiple coders to work on multiple items. The PRL approach, as a general criterion of reliability, considers the expected loss to a study from wrong decisions (Rust & Cooil, 1994). Based on the computational formula provided by Rust and Cooil (1994, p. 4), the PRL reliability for this study is 0.89, which is much higher than the cutoff value of PRL reliability, 0.7 (Rust & Cooil, 1994, p. 9), thus validating the reliability of data coding for this research. The advisor audited the entire data-coding process, and verified the results. In Table 2, examples of coding categories are listed.

Table 2: Examples of Data Coding

Motivational Drivers of Smartphone Usage	
Perceived Dominance	I want to be able to choose what I want without being tricked to pay for the dish that turned out to be something not as good as advertised . . . I feel empowered by the fact that I can choose to go or not to go to this place. (Sarah, Female, 22)
Subjective Experience of Smartphone Infusion	
Permeable Personal Bubble	If you are using your smartphone for music, you'll feel more private in a public place. It makes you forget the fact that you are surrounded by strangers, like at an airport. Your smartphone can help you stay in your own bubble. (Margaret, Female, 31)
Perceived Outcomes of Smartphone Infusion	
Expectation Spiral	I realize mobile technologies are catching up to all different kinds of needs; they can tailor the searching results and website ads based on your searching history and your location. It's kind of scary, though. All those websites can get a hand on your information. There's no privacy. (Kristopher, Male, 40)

RESULTS

The results of the data analysis show findings related to smartphone-equipped customers' motivational drivers of smartphone usage, their subjective experience, and their perceived outcomes from hospitality service experience. In this section, the mediated and physical activities related to each category are identified to support the findings.

Motivational Drivers of Smartphone Usage in Hospitality Service Experience

The data analysis process identified three distinct motivational drivers based on the informants' narratives of their hospitality service experiences and the intentions behind their smartphone usage: perceived dominance, snob effect, and digital companionship. The definitions and results of these drivers are discussed in detail below.

Perceived Dominance

The notion of perceived dominance is derived from control theory, which suggests a dominant power over informants' behaviors and surroundings (White, 1992). In this case, informants expressed the desire to be in control of their service experience, especially their decision-making processes. During their accounts of their actual service experience, our informants repeatedly confirmed that smartphone technologies empowered them by offering access to online information and alternative options during both their consumption and social experience. This was the most common motivational driver of smartphone usage indicated during interviews: the sense of perceived dominance was mentioned by 20 out of 33 informants (60.60%). In this category, our informants associated the need for perceived dominance with two specific behaviors: independent judgment and supervision. For instance:

I tried mobile ordering in an Olive Garden recently. . . I don't need to listen to servers' recommendations or be attracted only by those dishes with pictures. Maybe those dishes are not good at all. It's just that they can produce a higher profit. I don't like that. I want to be able to choose what I

want without being tricked to pay for the dish that turned out to be something not as good as advertised . . . I feel empowered by the fact that I can choose what I want to order all by myself. (Sarah, Female, 22)

I believe when I use my smartphone, I intend to gain more control over the whole service process. It's empowering when you can choose between talking to a server and using your smartphone for self-service. (Anthony, Male, 27)

Like several of our informants, Sarah and Anthony associated the sense of control with freedom of choice during their consumption decision-making processes. In particular, Sarah perceived a sense of dominance when making independent consumption decisions without being influenced by other factors (in her case, menu design and service providers' opinions). Thus, the smartphone technology enhanced her freedom of choice and reduced her risk of encountering deceptive advertising. Anthony, on the other hand, gained a sense of control by choosing the service delivery channel with which he felt comfortable. In general, they were both empowered by the freedom of choice because they felt more in control when using the alternative option their smartphones offered.

Similarly, the factor of independent judgment occurred during informants' social experience:

Sometimes, when people are having conversations, I might back out of it a little bit because I am not interested in what they are talking about. I can choose to talk to someone I want to interact with via my smartphone. But I can still come back to the conversation if I want to participate again. I guess now I have the choice of whether to participate or not. (Alicia, Female, 27)

The example above shows that Alicia benefited from choosing whether to participate in a face-to-face interaction. This finding was common when informants talked about their social interactions in the hospitality settings. Alicia's example indicated that smartphone technologies provided informants with alternative social experiences (mediated interactions) which could be more attractive than the experience offered by their physical environment. In the end, smartphone technologies seem to offer informants alternative options and the power of decision.

The second distinct factor in this category was supervision of activities, in which informants were informed about the status of a service or product via mobile applications or messages. In this case, the sense of control is an ongoing process rather than an end state (Richins, 2005). For example, the following statement from Lila indicates that even though she was not engaged with any decision-making during her service experience, she still felt involved and in control of the service due to her access to up-to-date information.

With my phone, I feel more in control. I'm not there waiting for something to happen to me, and I'm more informed about what's going on during the service. I can check when the flight is going to take off anytime and anywhere and get notified when there's a gate change. (Lila, Female, 71)

As also indicated by some other informants, Pat revealed that whether he was actively seeking or passively receiving information, he considered himself to be "supervising the entire process:"

It makes me feel like I'm supervising the entire process, even though I am not the one who makes it happen, and I'm smart to what's going on. (Pat, Male, 55)

Snob Effect

The notion of the snob effect originated with the theory of consumer demand (Leibenstein, 1950), referring to situations in which customers are attracted by products or services that are only available to a few individuals. The snob effect has often been studied in luxury consumption scenarios where people are driven by their vanity and their desire to be separated from their peers (Kastanakis & Balabanis, 2011). By extending the original definition, this study labeled informants' vanity underlying the desire to be separated from their peer customers as "snob effect." Due to the variety of smartphone applications and online information resources, it takes time and effort to find certain mobile services and information. Thus, informants expressed a need to be recognized and take credit for their efforts. During interviews, 12 out of 33 informants (36.36%) admitted that they feel superior to other customers in certain ways when using mobile hospitality services:

I don't think most people know how to use their smartphone to check into hotels or order in restaurants. Usually, only people who are technology-savvy know about those functions... I think young people use them more than customers from earlier generations because we are more technology-savvy. (Tabitha, Female, 36)

Sometimes when I went out with some other guys, we ordered the same food, but I pulled out my phone and got a free drink with the coupon on my app. It makes you feel empowered if you know where to look. Even though everyone has a smartphone right now, most people don't know how to use it in restaurants. (Chad, Male, 45)

The two examples above revealed two sources for snob effect recognized during interviews: technology and information. Tabitha considered herself and her generation to be more technology-savvy than others because she could access and operate mobile hospitality services such as mobile check-in, while Chad illustrated how accessing coupons via mobile app supports his vanity in being more knowledgeable than his companions. Central to their accounts is the perception of being superior to other customers, which fed the informants' vanity.

In addition to customers' inner perception, a common consequence of snob effect is the desire for recognition from service providers and service companies due to their use of mobile services. Like six other informants, Jai and Tabitha felt entitled to the recognitions and benefits of using mobile services in their hospitality experience. Jai considered going through the service process "faster than other people" as the "VIP" privilege of mobile service users. Tabitha, on the other hand, expected to gain financial rewards ("a discount") for her use of mobile services.

[Using a smartphone] makes me feel like a powerful businessman. As a kid, you saw these guys with a briefcase and everything they did is just very smooth. Using a smartphone makes you feel like a VIP because, back in the day, only VIPs had the privilege to go through check-in faster than other people. Nowadays, you can just show people your phone and just go. (Jai, Male, 22)

Like the Starbucks app: it's very convenient to load money on your app and pay with your phone at the counter. Now you can even get a discount after a few mobile purchases. I think it feels like we are being rewarded for using our smartphone. That is something that makes you want to go back to Starbucks. (Tabitha, Female, 36)

Digital Companionship

The findings of this study reveal that, during their social experience in hospitality settings, some informants are looking for digital companionship while using their smartphones for social activities, such as basic phone calls, messages, and social media. Unlike the physical companionship offered by other customers and service providers in the physical locale, digital companionship via smartphones offers informants a sense of familiarity and constant attention from others. Like the other two motivational drivers, the desire for digital companionship in hospitality settings reflects informants' relationships with smartphone technologies in their daily life. During interviews, 18 informants (54.55%) described their smartphones as their companions (including metaphors such as "a friend," "best friend," or "a companion") in both hospitality experiences and everyday experiences. For example:

My phone is like a companion to me. If I'm alone somewhere, being on my phone makes me feel less alone. [...] I think it brings a little bit of home with me to make things more comfortable when I'm in hotels. I can listen to music and contact people at home. (Margaret, Female, 31)

Like ten other informants, Margaret used the term "companion" to describe her relationship with her smartphone. According to her, in daily life, access to smartphone technologies relieved her fear of being "alone." In her hospitality experience, smartphone technologies provided her with companionship and further relieved her fear of being alone due to the sense of familiarity the technology provided. In particular, smartphone technologies "bring a little bit of home" with her by creating a similar experience in hospitality settings to her experience at home ("listening to music" and communicating with people from home).

The second factor related to digital companionship is the constant attention from a potential audience via digital channels. By comparing digital and physical companionship, Colleen confirmed that the social functions of smartphone technologies (such as social media) fulfilled her need for constant attention, which is a common statement among the informants from relatively younger generations:

It's nice to be able to talk to my friends via Facebook and Snapchat when I'm out. At least, you know you have their full attention . . . In restaurants, you just have to wait for servers and employees to notice you, and sometimes you have to fight for their attention. I like having my phone with me because you know there will always be an audience for your Snapchat. (Colleen, Female, 21)

Based on these results, digital companionship has a positive effect on relieving customers' social anxiety during service. In this study, five informants who described themselves as "introverted" or "socially awkward" all expressed a stronger need for digital companionships in service settings than did other informants. For instance, Isaac explained that his smartphone helped him avoid stressful interpersonal interactions and relieved his social anxiety. During interviews, these five informants all talked about the comfort smartphone technologies brought to them by protecting them from social discomfort (such as "talking to strangers"). For other informants (such as Sydni), smartphone technologies sometimes relieved them of the pressure to convey a false self-image in the public setting (performing "the perfect self").

When I am using my phone in places like airport or restaurants, I feel relieved from the pressure of interacting with people in person. To be honest, I am not a very social person. I would rather have my phone as my company than talk to strangers next to me. (Isaac, Male, 19)

When I'm with my phone, I feel relaxed. I need to be my perfect self in front of people; I can act however I like when I'm with my smartphone, like when I'm with a good friend. (Sydni, Female, 50)

Smartphone-Equipped Customers' Subjective Experience during Hospitality Service Experiences

Analysis of the data suggested five dimensions of smartphone-equipped customers' subjective experience during their hospitality service experience, which manifest in the two broad dimensions of functional and social experience (Nicholls, 2010). The subjective functional experience includes dependence transfer, simultaneity of deliberate and spontaneous consumptions, and learned helplessness. The subjective social experience includes a permeable personal bubble and ephemeral and superficial interaction. Both broader dimensions are associated with different activities conducted on a smartphone during hospitality service experiences. The detailed findings are discussed below.

Shifting Dependence

Shifting dependence describes a situation when informants tend to depend on their smartphone technologies, becoming independent from service providers during hospitality service experience. Under this category, informants engaged in task-oriented activities, such as self-service and information acquisition. This finding uncovered a fundamental change in the dynamic among customers, technologies, and service providers: while 11 informants (33.33%) reported an independent service experience, even more informants (13 informants, 39.39%) agreed that the instant accessibility of smartphone technologies leads to customers' over-dependence on their smartphones. For instance:

When I have questions, I can just go to my smartphone for answers, which makes me feel independent because I don't need to ask other people and can solve everything by myself, especially while interacting with servers.
(John, Male, 21)

I'm glad that I can just check on my phone when I have a question instead of bothering other people. Most of the time, the employees in a hotel look very busy and I don't want to bother them with a simple question.
(Stephanie, Female, 22)

Central to John and Stephanie's accounts are the benefits of solving problems independently. To John, this independence is a sense of achievement generated by accomplishing tasks during self-service. To Stephanie, her independent consumption benefits the service providers by saving them time and effort and enabling them to serve people more in need. During interviews, the shift to an independent consumption experience was a key finding, created as more and more consumers are becoming familiar with mobile hospitality services.

However, the independence from service providers also leads to dependence on smartphone technologies. Later in their interviews, both John and Stephanie stressed a sense of enslavement that accompanied the sense of independence felt during their hospitality service experience. The constant connection to technological support increased their fear of losing that support. Hence, more than half of the informants (n=21, 63.64%) expressed concern over being attached to their smartphones. For instance, Stephanie stressed her lack of the skills necessary to plan her service experience without technological support ("don't know how to find a hotel or restaurant"):

This instant gratification is very appealing. But I will be scared if I don't have my smartphone with me when I go traveling. I don't know how to find a hotel or restaurant without my phone now. I think sometimes it makes people too attached to their devices. (Stephanie, Female, 22)

If I don't have my smartphone with me when I go to a restaurant, I would feel like I lost something, which is terrible. I think people are, in fact, more and more dependent on their smartphone. (John, Male, 21)

The sense of enslavement caused by smartphone technologies is also challenging informants' consumption experience. According to Radhika, while she benefited from taking control over her consumption decisions, the unlimited choices online could also cause her to waste more time on making the final decision. Like some other informants, she was sometimes "buried" by the massive amount of information, and felt overwhelmed when she needed to make a decision, such as which restaurant to visit, which dish to order, etc.

People think they are supposed to know what they should do or want to order since they have all the information they want. But the more

information you get, the more confused you are. Like before we go to a restaurant, we would look up reviews online but always end up spending too much time choosing among these choices. (Radhika, Female, 18)

Simultaneity of Deliberate and Spontaneous Consumption

Smartphone technologies can be employed as effective planning tools, allowing informants to better coordinate different activities both before and during service. Smartphone-equipped customers tend to engage in more planning activities during their service experience (Bean, 2016), such as searching for information about destinations, reading reviews, and making online bookings. By planning ahead, informants become more cautious about what they are going to experience. The access to information during their consumption also provides customers with a chance to make, update, and refine their plans simultaneously. Due to smartphone usage, the coexistence of planning and improvisation makes informants' consumption process more complicated than ever. For example, Margaret and Colleen both mentioned the experience of simultaneity:

I would do research ahead of time and come up with a plan before I go . . . Speaking of planning, I guess I would leave things more open now. I used to have a Google Doc with all the details and places I want to go. But if I know I have Internet there, I wouldn't have a plan that detailed. But I would still have a plan and use my phone as an alternative information resource. (Margaret, Female, 31)

Before my smartphone, I would have to make plans at home before I go. Now, if I want to change my destination along the way, I can still do that because I know I can always find a hotel and get the lowest price on my phone. (Colleen, Female, 21)

According to Margaret, using her smartphone created a deliberate yet spontaneous service experience by making her plan "more open" without having to have all the details planned before her trip. Since she defined the smartphone's role in planning as an "alternative information resource," she could plan her experience along the way—a conclusion similar to that expressed by seven other informants (24.24%). Similarly, Colleen pointed out that her plan could be modified at any time before the moment she

receives the service. This pattern—modifying plans on the road—is common among the data, diminishing customers’ risk of uncontrolled plan changes during consumption. By comparing their accounts, we could conclude that there are common patterns of deliberate yet spontaneous consumptions involving deliberate planning at spontaneous moments.

This pattern also leads to a decline in perceived adventurousness during informants’ hospitality experience. Due to customers’ constant connection to information and alternatives, completely spontaneous consumption behaviors are becoming extinct. While informants are avoiding the risk of an unpleasant service experience through planning, four of them mentioned that they missed out on surprises and discoveries during service:

We won’t be able to get quite that level of adventuring because we all have all the information at our fingertips. We are used to it. I always want to walk into a random restaurant and try a random dish. If it’s a good restaurant, I’ll be very excited because it’s like something I discovered.
(Jennifer, Female, 32)

Today, we just immediately want to know everything instead of taking a risk. (Kira, Female, 24)

Jennifer used the spontaneous restaurant experience as an example (“walk into a random restaurant and try a random dish”) and pointed out that people are missing having a completely spontaneous experience, discovering a good service, and “taking a risk.”

Learned Helplessness

When informants believed that situations are out of control and do not attempt to respond, they experience the condition of learned helplessness (Maier & Seligman, 1976). In this study, informants often indicated that there was nothing they could do to prevent or change service failures when using mobile services during their hospitality experience, such as booking hotels via a mobile app.

During interviews, more than half of the informants (n=17, 51.52%) mentioned their experiences with such mobile service failures. The most common situations included online payment failures, information errors (e.g., restaurant availability), and

technical breakdowns (“break down during operation”). All the informants expressed a negative emotion toward mobile service failures during their hospitality experience:

I don't like to use those hotels' mobile apps for booking or anything because there is always something wrong with the online payment. (Karla, Female, 24)

I remember once I used a mobile app to make reservation at a restaurant. It was shown that there were several seats available at that time. But when I checked with the host, she told me they were fully occupied. I ended up waiting for two hours. (Kristopher, Male, 40)

When you use the mobile app, you expect the app to function properly, but sometimes there are some errors and problems with the app, and they could break down during your operation. (Abdullah, Male, 27)

Beyond the negative emotions, the sense of learned helplessness was the most common response among this study's informants toward mobile service failures, a feeling mentioned by eight informants during interviews. The perceived loss of control resulted in their frustration with these service failures and passive attitude toward solving the problems (“nothing you can do”) and toward using these mobile services in the future (“not inclined to use them”):

I used to book my hotel rooms with this Starwood mobile app. It is very frustrating when something went wrong because you have to call their hotline and go through the booking all over again. It is even more complicated when there's something wrong with your payment. But this is just how it is, because they are software. There is nothing you can do. (Abdullah, Male, 27)

Every time I use those apps, something went wrong. There's nothing I can do about it, but I know I'm not inclined to use them in the future. (Radhika, Female, 18)

Permeable Personal Bubble

During our informants' social interactions with service providers and other customers as part of their hospitality service experience, both the actual use and the mere

presence of smartphone technologies created a private barrier between the subject and other social roles in the public service setting. Informants' behavior and emotional expression related to their virtual communication sometimes distracted them from their current environment. The personal bubble was transparent and could be switched on and off at any time by its owner (see Fig. 1).

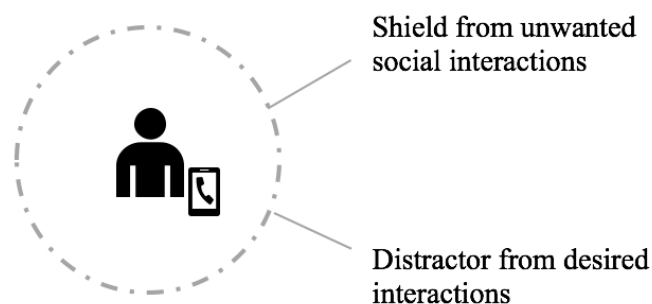


Figure 1: Smartphone as a permeable personal bubble. (Nie, 2016)

According to our data, informants utilized the smartphone bubble both as a shield from unwanted social interactions and a distractor from desired social interactions. The notion of smartphones' role as a "permeable bubble" is inspired by Margaret's account below:

Margaret: If you are using your smartphone for music, you'll feel more private in a public place. It makes you forget the fact that you are surrounded by strangers, like at an airport. Your smartphone can help you stay in your own bubble.

Interviewer: Why would you say it's like your own bubble?

Margaret: People can still intrude and you can let your guard down when you want to. Usually I don't get interactive with stranger next to me unless they initiate the conversation. (Margaret, Female, 31)

Margaret's smartphone creates a temporary private space in the public setting by allowing her to listen to music on her phone. During interviews, informants repeatedly confirmed the creation of such a social barrier whenever they start using their smartphone for entertainment, communication, or any other focusing activities. According to Margaret, the reason this personal barrier is akin to a "bubble" is that it's transparent and other people around her can still see through that "bubble" when they need to intrude.

More importantly, the switch for this imaginary barrier is controlled by Margaret, who can choose to put down her phone and participate in any given interaction. The following are two similar examples:

I feel safe from intrusion and awkwardness because you know you can avoid the interaction, and sometimes I just don't feel like being social. I would rather miss out on more interaction than have the interactions I don't want. My phone helps in that sense... I think people don't necessarily want to interact with someone they don't know, especially people I don't know. You have to move out of your own comfort zone. I think that's part of why smartphones are so popular, because you can avoid this kind of interactions. (Cassie, Female, 24)

In airports... I would think it's a good idea to just do it on my phone without waiting for a person because, at that point, the person who's checking people would be aggravated and everyone in the line would be aggravated as well. Besides saving us time, checking in on my phone can save us from that. (Donna, Female, 55)

Unlike Margaret, Cassie, and Donna, and other 11 informants (n=13, 39.39%) used their smartphones as a shield to actively avoid potential unwanted interactions. Using a smartphone is sending a "do not disturb signal to other people" (Rahul, Male, 18), indicating that they are not interested in interactions. Cassie concluded that the incentives for using a smartphone as a shield are to avoid intrusion and awkwardness and the need to be introverted in certain situations. Throughout the interviews, informants mostly discussed using their smartphone as a shield when they encounter unwanted interaction with other customers in the service setting. In general, informants reported gaining a sense of control from using their smartphone as a self-protection device. Cassie implied that the universal need for privacy led to the popularity of smartphone, which also indicated that such active avoidance behavior is socially acceptable today. Donna added more reasons for using a smartphone as a shield during customer-provider encounters, which are to increase efficiency and to avoid unpleasant service interactions with service providers.

Beyond acting as a shield, smartphones also function as a distractor for desired social interactions in the service setting. The “distractor” function of smartphones is discovered by more informants than the “shield” function (n=18, 54.55%) because it is effective no matter informants are using and not using their smartphones. For example:

Even when you are sitting in a restaurant, you think about your phone all the time. It’s like a magnet... you think you are missing out on things somewhere else... it’s really distracting sometimes. When I’m with people, I need to constantly remind myself that I can’t take out my phone because it’s rude and disrespectful to the person I’m with. (Karla, Female, 24)

If I’m on my phone in airport or restaurant, I won’t pay much attention to my surroundings, including servers. I got distracted sometimes when I’m supposed to order with a server, which is bad for service efficiency. (Rahul, Male, 18)

Throughout her interview, Karla explained the “magnet effect” of her smartphone, which is the constant distraction of her smartphone and the information she can access through it. The constant distraction stems from both potential information she might be missing and the need to self-regulate during interactions. On the other hand, Rahul mentioned the distraction caused by his smartphone affecting his surroundings and interactions with service providers, which could retard the procedure, leading to an inefficient service.

Ephemeral and Superficial Interaction

The last dimension in play in this study is the ephemerality and superficiality of social interactions between informants and other social roles, including service providers and other customers. Central to this finding is the information-based interaction style, which is the consequence of mediated interactions’ infusion into interpersonal interactions. The current study revealed two consequences of the infusion of information-based communications into interpersonal social interactions in the hospitality settings: ephemerality and superficiality. We noticed that the 15 informants who mentioned this

finding are mostly from older generations. The following examples will illustrate the connections between information-based communication and these two factors:

First, the ephemerality feature represents the short duration of interactions, which is a consequence of the fragmented social interactions during informants' hospitality experience. For instance,

I think our interactions with people are becoming short and always off-and-on. Like when we are in restaurants or hotels, we are getting impatient about communicating with people around us, or even with our servers, because we are so used to getting quick information. (Donna, Female, 55)
It's rare for us to have long and nice conversations nowadays when we get together in places like restaurants. We are just jumping from conversations to conversations. Like, one minute, we are asking Friend A in person for something; the next minute, we will be asking Friend B via smartphone about something else. (Arlene, Female, 27)

Donna and Arlene's examples show how information-based interactions have infused into their social interactions with service providers and other customers, respectively. In particular, Donna explained that such information-based interactions heightened her expectancy level for communication efficiency, which leads to "short and always off-and-on" ephemeral interactions in hospitality settings. Arlene, on the other hand, pointed out that multiple information resources hindered her from having "long and nice" conversations because people today are "jumping from conversations to conversations" among different channels.

Second, the superficiality feature of social interactions in hospitality experience refers to the estranged social relationships between the informants and other social roles in the hospitality setting. According to our informants, information-based communication between hospitality companies and their customers is replacing interpersonal interactions between customers and other social roles in the setting. For instance, Chad expressed his concern regarding the loss of intimacy in current company-customer relationships:

I think it's kind of sad that we don't have that many interactions with other people anymore. I think, back in the 1980s, people knew people in places like restaurants. When you walked in a restaurant, you would hear servers

yelling “You want your usual, Chad?” Nowadays, we have more opportunities to communicate with companies and they can provide quick information and it’s just cut to the chase, but we don’t share that intimacy anymore. The relationships we used to have with such places are becoming superficial. (Chad, Male, 45)

The distant social relationship informants have with service providers and other customers is likely due to the prevalence of superficial digital friend-making channels and ultra-brief modes of social media. After he compared interactions before and after the infusion of smartphone technology into daily life, Chad revealed the distant relationship between customers and service providers today. While technology provides the chance to communicate with service companies directly, Chad pointed out that his interactions with servers are restricted only to necessary task-related encounters. In his interview, Chad attributes this estranged service sociality to the eroding effect of online sociality.

Another possible condition for superficial interactions in service settings was mentioned by Meredith and two other informants: the smartphone usage behavior is contagious in group settings and hinders relationship-building among friends and family:

When I hang out with friends in restaurants or cafés, sometimes, we just sit side by side and play with our smartphone. Even when we are talking, the conversations are usually superficial because someone is always on her phone. (Meredith, Female, 20)

I seem to recall a lot of times when someone took out his phone and others would just follow him. Because, at that moment, for the rest of us, it seems like we have nothing to do but take out our phones as well. (Kira, Female, 40)

During her account, Meredith pointed out the influences on group interactions when one or more group members were on their smartphones. Smartphone usage behaviors could attract attention from people who are present in the setting, especially in group settings where the quality of interactions relies on the participation of members (Gregen, 2010). Furthermore, Kira explained that the contagion of smartphone usage in a group setting is usually initiated by someone in the group, then spread by other followers.

Most informants (n=23, 69.70%) agreed that the presence of a smartphone hindered relationship-building among friends and family.

Smartphone-Equipped Customers' Perceived Outcomes of Hospitality Service Experiences

The perceived outcomes of smartphone-equipped customers' hospitality service experience that emerged from the data analysis resolved into two streams: customers' expectations of the service experience and the factors related to their perceived quality of the service experience. In the current study, two influences of smartphone technologies on customers' expectations were recognized: an expectation spiral and polarizing perceptions. Findings related to perceived service quality included two dimensions: evolving service quality and fading authenticity, which are based on reexaminations of traditional models of measuring service outcomes.

Expectation Spiral

An expectation spiral refers to customers' evolving expectations for hospitality services, which follows an upward spiral (see Fig. 2).

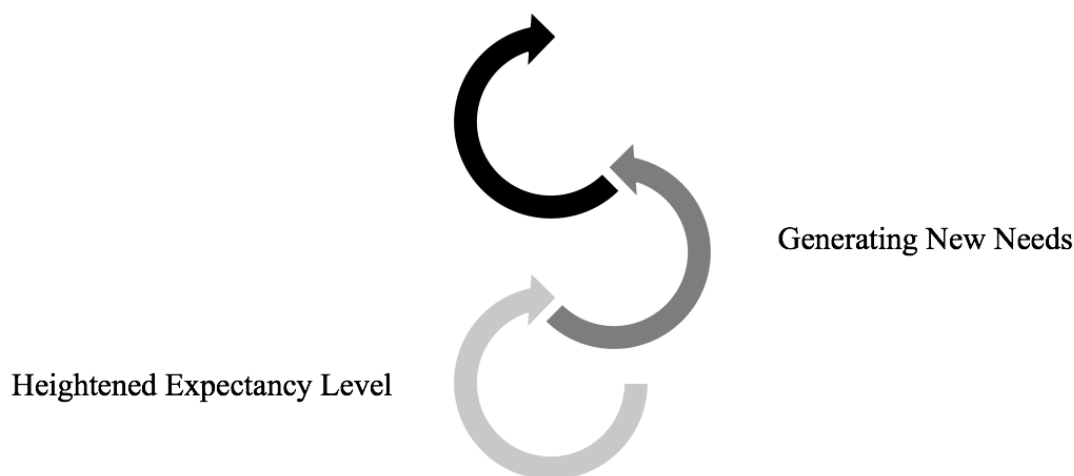


Figure 2: The expectation spiral. (Nie, 2016)

Informants increased their expectation level for hospitality services over time, and new needs are generated once their current need is fulfilled. Our data from the interviews explicitly showed that most informants (n=28, 84.85%) expect ““smarter” mobile services which cater to their need for a better and smoother experience provided by

service companies. In addition to the increasing level of expectations, informants' expectations are shifting to different objectives, and new needs are generated once a previous one is fulfilled. The following is an example from Jessica about her ideal service experience:

It's a good thing that at restaurants you have those apps you can use now. I remember I used to search their website for coupons before. It is so much easier to do that on a mobile app. But some other functions are still hard to use, like ordering. They probably need to put more effort into designing a user-friendly app. (Jennifer, Female, 32)

According to our data analysis, informants share higher expectations of performance for the mobile services sponsored by service companies. Jessica pointed out that she expects service companies to provide access to information and mobile technologies, and to provide service tailored to smartphone users. After several experiences using mobile hospitality services, Jessica's expectancy level for mobile service has heightened toward her ideal consumption experience.

In the following example, Rahul presents his understanding of this heightened expectancy level. In his account, Rahul associates his increased expectations with the instant gratification made possible by up-to-date technologies. With the ever-increasing performance of mobile technology, informants' expectations are being heightened every time they encounter something new. Since informants are always seeking applications that cater to their interest, they judge the performance of a hospitality property based on the advanced technologies they witness being used in this industry:

I want to go to a hotel with latest technologies because that's just how other hotels are doing it and I like that instant gratification. Once you experience something advanced, you will find it hard to go back to the original version... I feel more comfortable with the company using technologies because it just feels like they are more technologically advanced. They are up-to-date with the society moving. Even though I might not use that, I still like the company that has those as an option for me. (Rahul, Male, 18)

Another pattern of an expectation spiral was also identified: several informants encountered a similar dilemma during their service experience in that new problems need to be solved whenever the mobile service reaches the previous expectancy level. With the expectancy level ascending, new needs will be generated as current needs are fulfilled. The following two interview passages explain how informants generated new needs:

Although I realize mobile technologies are catching up to these needs. They can tailor the searching results and website ads based on your searching history and your location. It's kind of scary, though. All those websites can get a hand on your information. There's no privacy.
(Kristopher, Male, 40)

Text messages provide a wonderful way to have efficient conversations when you are out dining or traveling. You can just get to the point and share very quick information. I like that aspect of it. It's just a rarity to have a nice conversation with servers because everybody's used to quick information... I think there can be something done by these companies to offer more human interactions during service, like adding more touch points between servers and customers to encourage conversations. (Pat, Male, 55)

According to the first passage above, when Kristopher's need for accessing information was met, he started to be concerned with privacy and information security issues, which is a common concern among informants (n=20, 60.61%). Easy access to tailored service and information via smartphone requires informants to provide their personal information online, leading to potential online safety issues. Given regular news reports about security breakdown and hackers, the dangers of too much online sharing are acknowledged by our informants; this concern has caused additional assessment of online information safety during our informants' consumption episodes. Similarly, during the process of adapting to texting communication, Pat's need for direct and efficient communication is fulfilled, but he then encountered a new need for more human interactions during service. The craving for human touch was shared by six other informants (21.21%) during the interviews, which could even lead to further expectations for a more interpersonal interaction design for service providers.

Polarizing Perceptions

The analysis of interview transcripts reveals that one of the distinctive attributes of the overall service experience in smartphone-infused service encounters is that smartphone-enabled information access tends to lead to increasingly biased consumption perceptions. This attribute was labeled as “polarizing consumption perceptions” (Fig. 3).

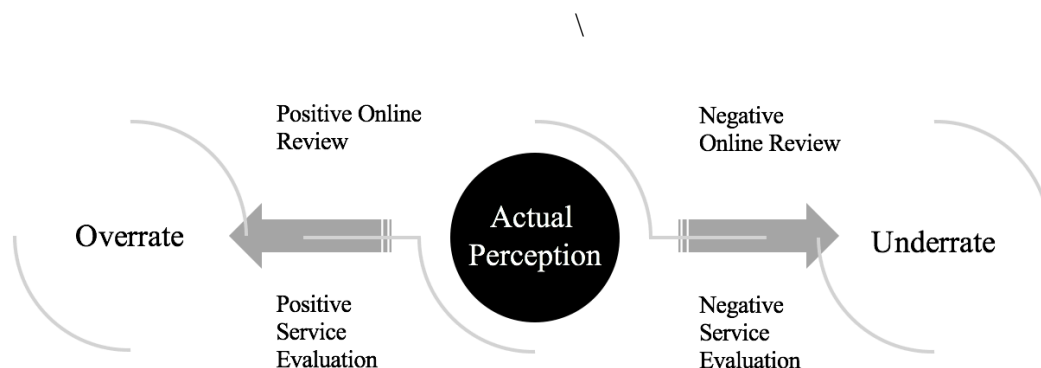


Figure 3: Polarizing perceptions. (Nie, 2016)

Our data reveals that pre-consumption perception polarizes the service evaluation when they share the same direction (both positive or both negative). This effect happened as a result of the polarizing online reviews accessed via smartphones and the distraction of customers’ attention during evaluation. By indicating this phenomenon, several informants implied that they optimize their satisfaction through expectation management. Central to this attribute is the anchoring effect of online information and ratings. For instance:

Jai: I would check online reviews on my phone before I go to a hospitality place.

Interviewer: How does that affect the way you receive the service?

Jai: There’s pros and cons. If you can get the service matching what you saw on your phone, it’s good. If you go to a restaurant with a five-star review but the actual service is just above a three-star, you might feel like you had a five-star experience. But if the service feels like two-star or even worse, I wouldn’t feel like it’s good just because of its positive review. On the other hand, if my experience is better than the one described on the reviews, I would assume that they came to the restaurant

on a bad day. Anyway, it kind of heightens the overrate and underrate. It influences our instinct. (Jai, Male, 20)

According to Jai, the polarization of his perception occurs when he is influenced by his first impression of the service based on online reviews, also known as the anchoring effect (Tversky & Kahneman, 1974). Jai's perception of his service experience is guided by the direction of the first piece of information (anchor) he received via his smartphone, which in this example is an overrated "five-star" review. Furthermore, he mentions that his evaluation and the anchor share the same direction. During an evaluation, informants would first confirm whether the anchor was a matching answer to this situation. If not, informants would then generate their own conclusions. Aside from sharing the same direction, Jai's expression, "heightens the overrate and underrate," reveals another feature of this attribute: skewness of perceptions.

Another example from Kristyn demonstrates a similar phenomenon. Throughout her interview, Kristyn presents two potential causes for her skewed assessment. First, the polarization of perceptions derives from the polarization of online reviews. Several informants mentioned the tendency of only writing reviews about "super good or super bad" experiences and only have an impression given by these extreme reviews, which naturally leads to polarizing perceptions. Polarized perceptions caused biased evaluation not only by misleading the informants, but also by distracting them from other aspects of service performance. As Kristyn mentions, being "slow in service" presents a negative impression. While she was focusing on finding the evidence of "slow service" during her own experience, she overlooked other service aspects and concluded with an "unfair" assessment:

If I read reviews on my phone before I go and the reviews are all saying that the service is slow, I might be looking for the slightest clue to prove that the service is slow, like the coffee takes five minutes, instead of four. Because I already have the expectation from reading reviews, my assessment toward the service would be based on comparison between the reality and what reviews said. (Kristyn, Female, 32)

Even if they are not actively aware of polarization, informants make subconscious efforts to apply the theory to manage their pre-consumption perceptions. The implication of this is identified in Radhika's passage below:

After I decide which restaurant I'll go to, I would usually go to the bad reviews first. The opinion I want to hear is the one from people who have something to complain about. I get a lot of realistic conclusions on bad reviews over the good ones. (Radhika, Female, 18)

By reading negative reviews ahead of her service experience, Redhika seeks to avoid this polarizing effect by neutralizing any overrated rating with "realistic" negative reviews. By reading negative reviews of high-rating properties, Radhika created a relatively low pre-consumption perception compared to Jai and Kristyn. Combining the "realistic conclusions" with an overall positive anchor, Radhika's perception is more likely to be adjacent to the perceived performance, leading to a more assuring and secure experience.

Multichannel SERVQUAL

The results related to perceived service quality were manifested in the reexaminations of three original dimensions of the traditional SERVQUAL model (Parasuraman, Zeithaml, & Berry, 1985, 1988). The results were labeled as *mediated assurance*, *hindered responsiveness*, and *digital empathy*. The results of data analysis revealed that during their evaluation of service quality, informants assessed the service performance from different channels as an aggregate and generated an overall result regarding different dimensions of the SERVQUAL model. The following section will include assessments of the performance of interpersonal service, mediated service, and the technology design.

Mediated Assurance

According to the SERVQUAL model (Parasuraman et al., 1988), the factor of *assurance* is defined as the knowledge and courtesy of employees and their ability to instill trust and confidence in the customer. According to our data analysis, the current study shows that the requirements for assurance were mostly fulfilled by smartphone

technologies. During the interviews, the element of mediated assurance came out as the most significant finding among the perceived outcomes, mentioned by 16 out of 33 informants (48.48%). Many informants claimed that the instant access to information enabled via their smartphones provides them with a sense of assurance during their service experience. For instance,

I think it's reassuring when companies give you updates on things via your phone. It's nice to know right away if you are in airports and the gate changes, so you don't have to waste a lot of time trying to find an employee to talk to... I do trust most information I get from my phone and having access to information all the time is very reassuring. (John, Male, 21)

I like using a smartphone whenever I'm dealing with booking of hotels or restaurants because I always have paper trails in my smartphone for the bookings. Any time I need to prove anything, I just pull out my phone and show them the confirmation e-mails or messages they sent me. It's very assuring. (Marianne, Female, 58)

John and Marianne's examples stressed the importance of accessing information when evaluating the assurance level of their hospitality service experience. By comparing approaching employees in the airport with accessing "gates change" information via his phone, John indicated that his expectation of assurance is satisfied by the positive performance of his smartphone. In fact, John indicates that the performance of service providers in this area is disappointing by referring to it as a "waste of time." But the gap between expectation and perceived assurance is minimized because service providers' performance was not significant in John's service evaluation. Marianne's example presented a significant kind of information utilized during her experience, the "paper trail" of her consumption. Several other informants mentioned that they used to "need to print everything" (Cassie, Female, 24). In such cases, smartphone technologies provided the sense of assurance by saving them time and effort for consumption confirmation.

A condition of mediated assurance discovered in the study is informants' trust in online information. During interviews, informants who don't trust online information usually didn't recognize the mediated assurance of smartphone technologies. Comparing

the following passage with John's example, it's not hard to surmise that, unlike John, Rahul doesn't find online resources "reliable" and trustworthy. Thus, while evaluating the assurance dimension of service quality, Rahul adds "confirmation on the information online" to his expectation of service providers' performance, as he has a higher level of trust in the service provider during person-to-person consumption.

I feel like information online is not reliable as speaking to a person. I feel more assured when I got a server's confirmation on the information online. For example, when I go to a restaurant, if I find some reviews online saying the burger here is popular, I would check with server before I order. If he says that it is indeed something people order a lot here, I would trust him. But if he recommends something else, I would probably listen to his advice. (Rahul, Male, 18)

Hindered Responsiveness

The *responsiveness* dimension in the SERVQUAL model (Parasuraman et al., 1988) is defined as service providers' willingness to help customers and their ability to provide prompt help when service failures occur. Many informants (n=10, 30.30% in total and 58.82% in informants mentioned their experience with mobile service failures) experienced difficulties reaching service providers in person or via smartphones when they encountered service failures during mobile service. Central to this attribute is a lack of cooperation between mediated service and interpersonal service in the hospitality industry today. In this case, the informants expected a higher level of responsiveness while interacting with service providers. For instance:

I think most people, like me, are not very familiar with those mobile functions. It happens a lot when you want to do something on your phone and it gets stuck. If there are servers who could notice that immediately, you will be less frustrated. But the truth is there are fewer people working at service positions nowadays because companies think technologies are helping to do their servers' job so that they can save money. (Karla, Female, 24)

It is almost impossible to get to talk to an employee when you call [hospitality companies'] hotline. They always make you go through a lot of extra steps, like providing all the irrelevant information. I just want to ask someone in person when something wrong happened with their mobile services. (Anthony, Male, 27)

Karla and Anthony both expressed disappointment regarding service recovery when encountering mobile service failure in hospitality experience. While Karla's experience suggested that the service recovery was hindered in interpersonal scenarios, Anthony showed the lack of responsiveness in technology-mediated service recovery. Like several other informants, Karla expressed her concern over service providers' incompetence in the area of service recovery, and further attributed the issue to a failure in service management.

At the same time, some informants indicated that rather than ask service providers for help, they tended to reach out to other customers for support when they encountered difficulties during service. For instance, Julia talked about this shift during her account. She believed that other customers are more experienced with smartphone technologies and mobile services than service providers:

I think I ask other customers more whenever I have trouble using my smartphone for self-service. I feel like they might have had the same experience as me or probably they are more familiar with smartphones than some servers. Actually, servers are not the ones I turn to when I have questions about my smartphone. (Julia, Female, 53)

Digital Empathy

The original definition of empathy focuses on service providers' efforts to understand each customer's needs and their ability to provide customized services (Parasuraman et al., 1988). According to our data analysis, some informants (n=4, 12.12%) from younger generations reported that during their hospitality service experience, mobile hospitality services were able to deliver a sense of understanding in digital form. Through GPS-based mobile service provisions and analyzing informants' consumption history, smartphone technologies can predict the service preference of their

users. The following examples from Kira and John showed their experiences with digital empathy:

Taking the Starbucks app as an example, I think that's a really good practice because you can track your purchase history and remind you when you are near a Starbucks store. It's almost like your phone knows what you need and what you like. That's an incentive. That app just gets me. (Kira, Female, 24)

Today, almost everyone has smartphone. My phone is more familiar to me. It's like a friend who can be helpful... Your smartphone is personalized and therefore it's more personal sometimes. You can customize however you want by downloading apps... I think my phone replaces some server's job when it comes to customization. I actually prefer to customize it on my phone rather than getting a lot of attention from servers. (John, Male, 21)

Throughout their interviews, Kira and John revealed how their smartphones satisfied their desire for empathy during service. Kira stated that her smartphone empathized with her by tracking her purchase history and meeting her needs. According to her, a successful mobile technology application can produce a sense of understanding and lead to repurchase intentions. Similar to Kira's perspective, instead of expecting empathy from interaction with service providers, John states that he could gain understanding from his phone through the sense of familiarity during service customization. According to our data, informants who are satisfied with smartphone-mediated empathy are mostly young informants like John, who are technology-savvy and introverted (3 out of 4, 75%).

Even though smartphone technologies can facilitate service customization, they can only perform customization at a basic level in situations where informants' requests can be associated with direct answers, such as the choice between a smoking room and a non-smoking room. At the same time, informants indicated that they would prefer to interact with service providers when they have complicated and detailed requests, such as rescheduling their flights. In fact, as Arlene mentioned in her interview, the expected level of empathy is heightened when she is interacting with service providers because the

requests were more complicated. In the end, Arlene presented the gap between expectation and perceived performance on empathy: higher expectancy level with poor delivery of understanding during customer-to-service-provider interactions:

I think, for most of the time, I do go to hotel front desks to check in, instead of doing that on my phone, because I believe those employees are able to understand better if you have some special requests . . . I mean, my smartphone can tell me about good restaurants around that hotel, but what if I want to know a restaurant where I can have gluten-free food? That's something you don't expect your smartphone to answer. But the truth is, servers today are getting worse at their service skills. I won't be surprised if they don't know how to answer that question either. (Arlene, Female, 27)

Fading Authenticity

Due to their smartphone usage, informants' sense of authenticity is weakened during their service experience. In this study, informants associated the sense of authenticity with a genuine experience in a physical setting. For instance, in his interview, Pat (Male, 55) described an authentic hospitality experience as one in which he perceived the service experience through his own senses ("The experience is not authentic if I'm not the one who interacts with the environment, tastes the food, sees the scenes, and chats with people there"). During data analysis, we recognized two factors related to the fading of authenticity: lack of tangibility and lack of ritualism during service. For instance, Julia and Rahul's examples below stressed the first factor:

It's kind of like a nostalgia thing. I know, these days, people get excited over an actual envelope instead of an e-mail, because it's like staying connected to their route in the past. Maybe it's a nostalgic thing. It feels more real when checking into a flight in person because you can get an actual paper boarding pass rather than a bar code on the smartphone screen. I like that tangible feeling. It feels more authentic. (Julia, Female, 53)

If I'm swiping a card, I'll know in my mind that I did swipe the card. If I did it on my smartphone, I'll be thinking "Did I swipe it? Did it go through?" The whole experience is not authentic to me. I guess an e-mail confirmation helps, but it's still all electronic. I still don't have any physical evidence that I did do it. I'd rather have a receipt than have an e-mail telling me. (Rahul, Male, 18)

The first environmental cue we recognized related to this issue was tangibility, referring to visible service facilities informants encountered during their service experience. Informants revealed that the implementation of smartphone technologies had replaced some traditional physical service facilities, such as a "paper boarding pass" and "receipt." According to Julia, the "nostalgic" feeling, as in people's connection to their past, is the key behind tangibility in her hospitality experience. Rahul added that such tangible facilities could provide physical evidence for his intangible experience, thus leading to a higher sense of authenticity.

The second environmental cue associated with fading authenticity was the lack of ritualism during service processes, such as checking in and checking out in person or presenting boarding passes for scanning. For example, in his example above, Rahul mentioned that the act of swiping a card could increase the sense of authenticity during the purchasing experience. The ritualism is also critical to some informants' interactions with service providers. According to these individuals, the self-service functions on smartphones have taken away some opportunities for customers to directly interact with service providers by replacing certain service rituals. For example, Hemil preferred to "hand boarding pass to an officer" in airports rather than scan it himself. The physical interactions during this ritual offered him a sense of authenticity, which is taken away by smartphone technologies:

I don't like to use an electronic boarding pass. I know it's good because you don't need to worry about an extra paper. For me, I just like the way I hand my boarding pass to an officer and she tears it apart. It's like a ritual to me. I just need to have that authentic experience. (Hemil, Male, 19)

DISCUSSION AND PROPOSITIONS

This research examined the infusion of smartphone technologies in hospitality service experience from the perspective of smartphone-equipped customers. Our findings contribute to the understanding of smartphone-empowered customers' functional (task-oriented) and social experiences in hospitality settings in several ways. We identified three broad motivational factors (perceived dominance, snob effect, and digital companionship) that drive smartphone usage during customers' hospitality experience. This research revealed that smartphone-empowered customers utilize smartphone technologies to design their own service experience, guided by their psychological needs. In articulating our findings, we also provide an overarching framework for understanding smartphone-empowered customers' subjective experiences and service evaluations (Fig. 4). Figure 4 listed four elements of service interactions in smartphone-infused hospitality experience: a focal customer, smartphone technologies, service providers, and other customers. A smartphone-infused service experience is consist of the interactions between a focal customer and other three elements. Our findings demonstrate the role of smartphone technologies as a permeable barrier during customers' service-related functional, and social interactions with other social roles, including service providers and other customers (see Fig. 4).

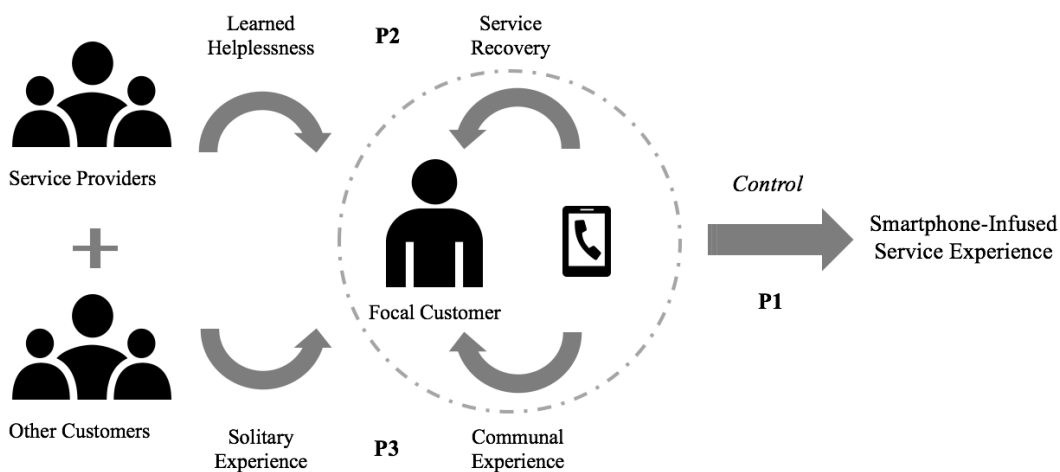


Figure 4: The infusion of smartphone technologies in smartphone-equipped customers' hospitality service experience. (Nie, 2016)

Figure 4 also demonstrates how smartphone technologies have been infused into different aspects of a focal customer's hospitality experience: individual activities facilitated by smartphone technologies, the functional experience with service providers and other customers, and the social experience. We will discuss the findings from these three aspects separately.

Smartphone as the Extended Self

This research examined the infusion of smartphone technologies into hospitality service experience from the perspective of smartphone-equipped customers who considered smartphone technologies as their extended selves. As Belk proposed his study on digital self-identities (2013), the information and technologies people access via their digital devices can become an embodiment of themselves. During a focal customer's hospitality experience, smartphone technologies provide him or her with technological and social support to control the smartphone-infused service experience. At the same time, smartphone owners can exercise power over their extended selves and generate a sense of control via their extended selves (Belk, 2013). For instance, customers use smartphone technologies as sources for alternative options to design their own service. The results of this study show that customers' sense of control was extended by smartphone technologies to different aspects of their service experience. That is, smartphone-equipped customers had dominance when facing both consumption and social decisions. The results also suggested that the power of control was extended on the following levels:

- (a) Customers can make independent decisions without being influenced by service providers and other customers' opinions;
- (b) Customers can choose whether to engage in social interactions and can choose their preferred interaction channel (via smartphones or in person);
- (c) Customers always have alternatives to their current option, allowing them to modify the entire experience;
- (d) Customers can supervise changes during the experience. However, these customers developed a dependence on smartphone technologies out of their fear of losing control during their service experience.

As a result, while smartphone-equipped customers tried to maintain their independence from the potential influences physically around them, they were vulnerable to the influences from their extended selves; thus, customers become enslaved to smartphone technologies. For instance, customers' perceptions of their service experience could be polarized by online reviews. Accordingly, this study addresses the following proposition:

Proposition 1: Smartphone technologies, as the extended selves of their users, facilitated customers to control their service experience, even as customers develop a dependence on their extended selves.

Infusion of Smartphone Technologies in Service-Related Functional Experience

During the service-related functional experience, smartphone technologies created a permeable barrier between a focal customer and other social roles on two levels. First, the barrier ensures the focal customer's independence during service, but costs him or her the balance between mediated and interpersonal interactions in the hospitality settings. Specifically, the task-oriented interactions between the focal customer and other roles (mostly service providers) are partially replaced by mediated service (Fig. 5). In fact, customers' access to online information and mobile services offered them a sense of mediated assurance and digital empathy during service.

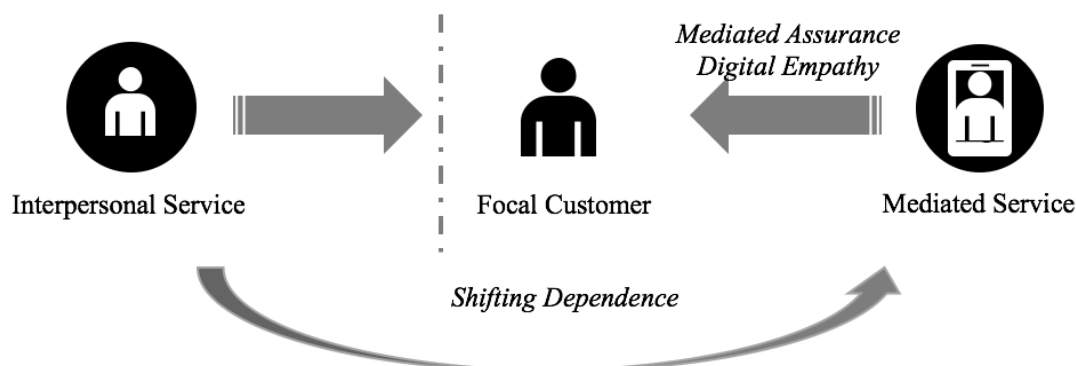


Figure 5: The infusion of smartphone technologies into service-related functional experiences and the resulting shifts in dependence. (Nie, 2016)

Second, a barrier develops in smartphone-empowered customers' perceptions of their hospitality experience. During the service-related functional experience, customers developed a dependence on smartphone technologies. For instance, our category of

shifting dependence shows that customers are increasingly inclined to find answers to their questions by searching on smartphones to avoid the potential awkwardness and unnecessary inconvenience of interacting with service providers (Fig. 5). The subjective barrier is highly reflected during mobile service failures (Fig. 6).

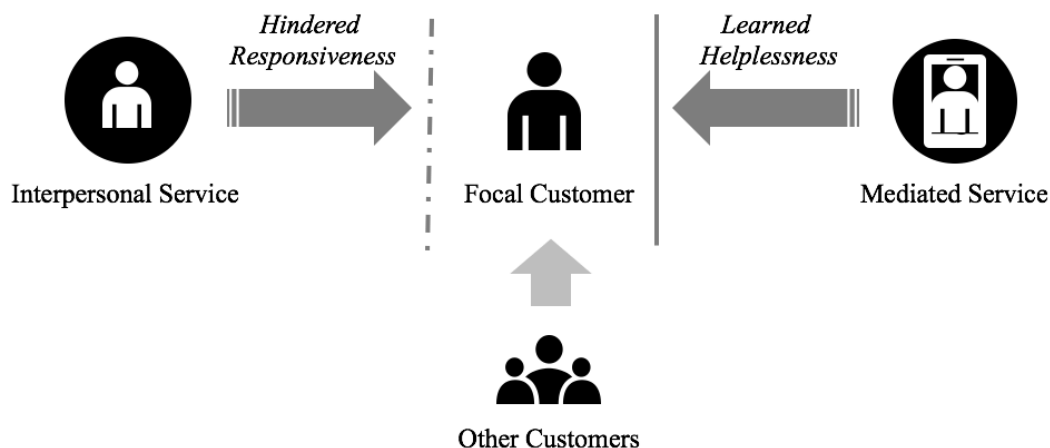


Figure 6: The infusion of smartphone technologies in service-related functional experiences during mobile service failures. (Nie, 2016)

Figure 6 shows that customers are cut off from smartphone technologies' support when mobile service failures occur. However, most informants expressed a passive attitude (learned helplessness) toward solving such problems. At the same time, these informants believed that service providers fail to provide effective service recovery when mobile service failures occur, resulting in a functional gap between mediated service and interpersonal service. For instance, Karla (Female, 24) mentioned that she couldn't approach servers for help when her smartphone "stuck" during self-service. The results further suggest the possible reason behind this gap: poor service management of different service channels. Since our findings revealed that customers evaluate service quality based on the overall service performance experienced via multiple channels: interpersonal service, mediated service, and the technology design, the management among different channels is critical to customers' overall service evaluation.

In addition, this study suggests that other customers can make contributions to fill this gap. Zhao et al. (2012) studied interpersonal service experiences and proposed that the adoption of smartphone self-service may shift the service encounter interaction focus away from customer-provider and toward customer-to-customer. Even though the finding is not critical in this study (only four informants, 12.12%, mentioned the interaction

pattern), it is fundamental for understanding the new dynamic of service interactions in the hospitality setting. Accordingly, this study addresses the following proposition:

Proposition 2: A functional gap exists between mediated and interpersonal services: smartphone-equipped customers are hindered from effective service recovery when they encounter mobile service failures.

Infusion of Smartphone Technologies in Social Experience

A similar gap exists in customers' social experiences in a hospitality setting. The results of this study showed an infusion of solitude in smartphone-equipped customers' communal service experience. Before further discussion, the solitary experience in this study is different from the term, *solitude*, discussed in previous literature. While solitude refers to the condition when people are cut off from any outside interactions, and communicating only with themselves (Turkle, 2011), the solitary experience in this research only creates an illusion of solitude. While customers believe that they are independent and alone in the setting, they are indeed getting digital companionship and constant attention from the potential audience via their smartphones.

The solitary experience can be understood from two different levels. First, when customers use their smartphones, they tend to create barriers to separate themselves from the service environment and other social roles, including service providers and other customers. As illustrated in figure 7, our findings suggest that customers' need for companionship is fulfilled partially by online sociality, including mediated social interactions and online sharing behaviors (such as posting on social media). At the same time, the permeable barrier can act as a shield or a distractor to hinder customers from engaging in interpersonal social interactions in a hospitality setting, allowing customers to disengage themselves from such interactions intentionally.

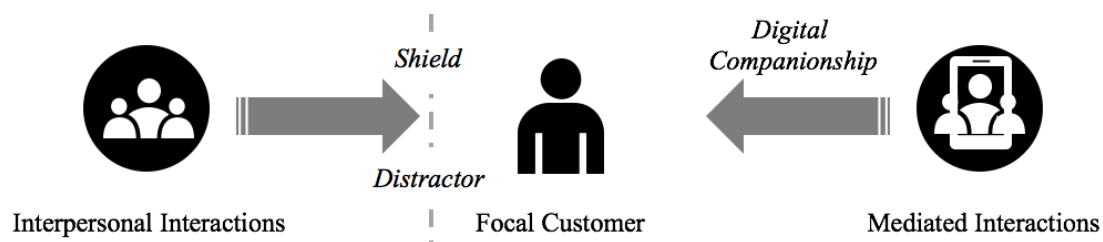


Figure 7: The infusion of smartphone technologies into the social experience when smartphones are in use. (Nie, 2016)

Moreover, the study suggests that the infusion of solitude occurs even when smartphones are not in use. In other words, the social barrier exists even when customers are not connected to smartphone technologies (Fig. 8):

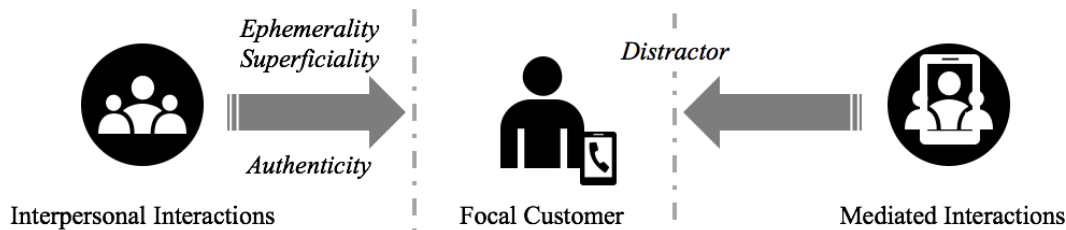


Figure 8: The infusion of smartphone technologies into the social experience when smartphones are not in use. (Nie, 2016)

As illustrated in figure 8, this study shared the same conclusion with Misra et al.'s research (2016): the mere presence of smartphones can cause an attentional distraction during customers' interpersonal interactions. The influence of technology on customers' perceptions could be a reflection of the unique role smartphone technologies play in hospitality service experience; they are considered the extended selves of smartphone-equipped customers. In general, smartphone users feel more in control of the mediated interactions provided by their extended selves than over physical interactions (Turkle, 2011). Thus, smartphone users, customers, are used to keeping an emotional distance from sources of physical companionship (Przybylski & Weinstein, 2013), such as service providers and other customers in the hospitality settings. Consequentially, the social interactions between customers and other social roles lack emotional results (Przybylski & Weinstein, 2013), such as empathy and authenticity, and become ephemeral and superficial. The following proposition summarizes the relationships discussed above:

Proposition 3: During their hospitality service experience, smartphone-equipped customers tend to engage in solitary experiences while using smartphones. Even when smartphones are not in use, smartphone technologies still distract customers from authentic interpersonal interactions.

Infusion of Smartphone Technologies in Service Processes

Apart from analyzing different aspects of hospitality service experience, our findings also shed light on the infusion of smartphone technologies into different service

processes. By combining series of service encounters into a flow of experience, we discovered certain connections among different service processes: before, during, and after service. Even though this finding does not adhere to the phenomenological approach, it still offers insight that may lead to a better understanding of smartphone technologies' infusion into hospitality service experience.

The elements associated with different service processes are grouped into two themes in this section: planning and checking and expectation and perceptions. Two conclusions are generated from the findings, and they offer different perspectives into smartphone-infused service processes: a chronological perspective and a developing perspective, respectively.

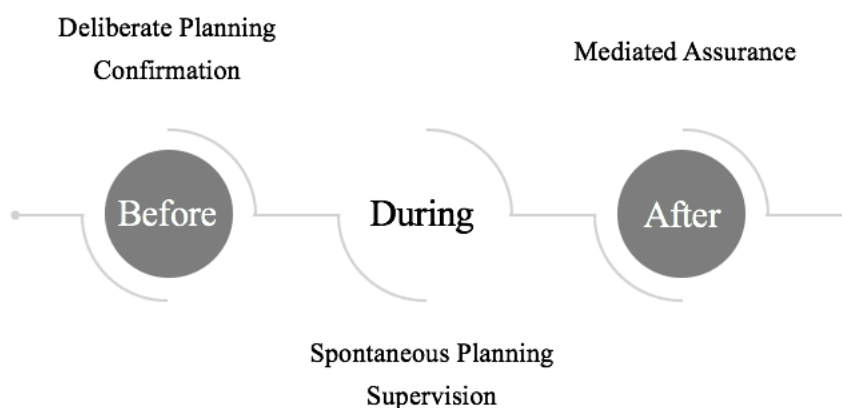


Figure 9: The planning and checking activities of smartphone-empowered customer during different hospitality service processes. (Nie, 2016)

First, figure 9 shows that planning and checking activities are extended to different service processes. Adukaite, Reimann, Marchiori and Cantoni (2013) proposed that the time orders in traditional public experience are being diluted due to smartphone technologies because people can multitask and coordinate almost anytime and anywhere. In hospitality experience, customers engage in deliberate planning and confirmation before service when they access online information related to a future experience and interact with service companies to confirm information and bookings. During service, customers can modify their plan and supervise the service via their smartphones. The checking process might even continue after the service, such as confirming payment information after consumption. Such continuous planning and checking offer a sense of mediated assurance throughout the entire experience.

Due to their constant access to online information and reviews, smartphone-empowered customers' perceptions and expectations are changing during different service processes. The developing pattern of customers' perceptions and expectations are also revealed in our findings (Fig. 10):

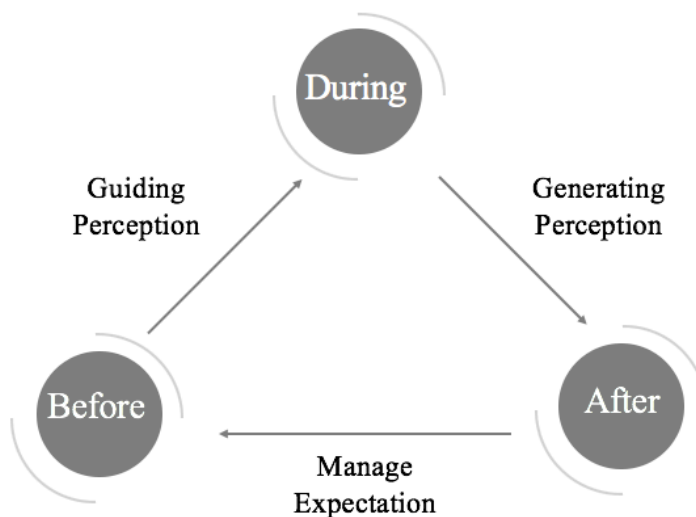


Figure 10: Smartphone-empowered customers' expectations and perceptions during different hospitality service processes. (Nie, 2016)

Figure 10 shows that hospitality service processes are influencing each other in the following order: first, the impressions and expectations generated before service are guiding customers' perceptions on the experience during service (for example, our data shows that online reviews could polarize customers' perception of the service experience, causing them to overrate or underrate based on the anchor point); next, while customers are generating their perception during the service, they are also generating new expectations for their evaluation of this experience and future ones (for instance, our findings point out that informants who had experienced mobile service failures expressed a need for effective service recovery); finally, after each service encounter, customers gather their perceptions on their last experience and modify their expectations for future experience (for instance, during the interviews, informants mentioned that they would expect service properties to be equipped with up-to-date technologies based on their past experiences with mobile services). The results even indicated that customers attempt to adjust the gap between their expectation and perception by reading the negative reviews to eliminate the polarizing effect. The expectation management is strong evidence for the interconnection between two service processes: before and after service.

In addition, the long-term influences illustrated in figure 10 accumulate after several smartphone-infused service experiences, which differs from the influences in figure 9. Compared to the planning and checking activities described previously, figure 10 revealed the evolving nature of smartphone-empowered customers, which is both enlightening and challenging for future studies on service evaluation. Accordingly, the following proposition summarizes the relationships discussed above:

Proposition 4: Smartphone technologies enable service-related activities such as planning and checking to be extended into different service processes. Thus, customers' expectations and perceptions are changing along the course of these processes, developing in ways that will affect future experiences.

Theoretical Implications

This study makes several theoretical contributions to the literature on mobile technologies and service management. First, this research explored the infusion of smartphone technologies into hospitality service experience from a descriptive phenomenological standpoint concerning customers' motivational drivers, subjective experience, and perceived outcomes. Most existing research on mobile technologies in a service context has employed either an outcome-based or a process-based approach. For instance, in their study of the tourism industry, Edvardsson et al. (2005) examined the capacities of mobile technologies with a focus on mobile technology implications in different service stages. Thong et al. (2006) took an outcome-based approach to technology infusion by studying customers' acceptance of mobile payment service in a bank setting. In contrast, this study investigated the infusion of smartphone technologies by looking at the interactions among technology-empowered customers and other roles in the service setting, including with service providers and other customers. Specifically, the role of smartphones as an extended self (Belk, 1988) provides customers with dual engagement, allowing them to engage in both physical and digital interactions with others. Interpretation of technology infusion from a phenomenological perspective contributes to previous research by investigating the motivations, subjective experience, and outcomes perceived by an integrated self (i.e., the user and their mobile technology as a whole). In this case, the scope of technologies involved in the study extended to all

the mobile technologies that can be accessed by customers in service settings instead of being restricted to service-related applications. Due to this integrated phenomenological approach, findings from this study can be applied to smartphone technologies' infusion in different service settings.

Second, this study revealed the cooperation among smartphone-mediated service encounters and traditional interpersonal service encounters. While previous research shared the consensus of applying "high-tech, low-touch" approaches in service encounters, this study challenges that conclusion by suggesting that the cooperation between mediated and interpersonal interactions may improve overall service satisfaction. For example, while smartphone-equipped customers benefit from customizing their service on smartphones, such as by accessing a personal ordering history online, service providers are also expected to offer empathy with customers' more complicated requests, such as by providing supplementary information about the service product.

In particular, this study recognized a gap between mediated and interpersonal service interactions in the case of mobile service failures, when customers are cut off from both mediated and interpersonal support due to the service providers' failure to offer effective service recovery. In general, this research studied the complementary relationship between mediated and in-person service channels from a perspective that combined micro and macro approaches. Existing research on service interactions have either focused on traditional one-to-one encounters (Fisk, Brown, & Bitner, 1993) or dynamic many-to-many service systems (Gummesson, 2008). The current study, however, combined these two perspectives to illustrate focal customers' interactions with individual employees and other customers both in person and with groups of these two roles via technological mediation. Accordingly, this research contributes to the existing literature by outlining a theoretical foundation for exploring how focal customers engage in one-to-many macro service interactions in a micro service setting, which will build connections between findings from industrial analysis and those from property management research.

Third, this research recognized different dimensions for the infusion of smartphone technologies: direct influences from mediated resources, direct influences

from technologies, and indirect influences on users' perceptions. Unlike traditional research that approaches these dimensions individually (Misra et al., 2016; Przybylski & Weinstein, 2013; Zhao et al., 2012), this research analyzed the influences of smartphone technologies from different channels. When customers use smartphones, they interact with both smartphone-mediated resources and the smartphone technologies themselves. This creates several interesting avenues for investigation. For instance, by comparing mediated assurance and digital empathy, we can uncover the differences between these two direct influences; informants feel reassured due to their constant access to information they need, while their sense of empathy can be triggered by automatic analysis systems and GPS-based technologies that tailor the experience to their needs and preferences.

Beyond the implementation of smartphone technologies, this research recognized that the infusion of smartphone technologies in real-life experiences occurs through users' perceptions, developed during daily encounters with smartphone technologies. For example, the tendency toward ephemeral and superficial social interactions suggested that the relationships between smartphone-equipped customers and other social roles have become estranged because these customers are used to brief, information-based communication even when they are not using their phones. Unlike previous studies' focus on the infusion of smartphone technologies into users' behaviors, the findings of this study may attract academic attention to the infusion of smartphone technologies into users' perceptions. In addition, these findings make a connection between social-psychological studies of mobile technologies and industrial studies of real-life experience by revealing the characteristics of the smartphone infusion into real-life experience. The results can be applied to reexamining traditional conclusions regarding customers' perceptions in different scenarios and industries.

Finally, the last proposition revealed the interconnectedness among different service processes. Adukaite, Reimann, Marchiori, and Cantoni (2013) proposed that the time orders in traditional public experience are being diluted due to smartphone technologies because people can multitask and coordinate almost any time and anywhere. Extending their findings, this research proposed a developing perspective of studying customers' expectations for service outcomes. While existing research shed light on the

changing etiquette and scripts in service settings due to the infusion of mobile technologies (Campbell, 2007; Ling & Haddon, 2003; Turner, Love, & Howell, 2008), this research challenges the existing approach by pointing out the evolving nature of smartphone-empowered customers' service evaluations. This proposition questions the traditional approach to measuring service outcomes. Without stating the service expectations of technology-empowered customers, their evaluations of service outcomes are taken out of context. In particular, the variation in individuals' access to online information and among their levels of technological knowledge and comfort should be considered when measuring service outcomes.

Managerial Implications

The findings of this study have significant managerial implications for firms in the service industry. Service companies should improve the ability of their mobile offerings to provide prompt service. The findings suggest that smartphone technologies can help service companies to fulfill their customers' need for service efficiency and sometimes provide users with digital empathy and a sense of companionship. Accordingly, smartphones are an ideal platform for implementing service recovery. As suggested by most informants during their interviews, current mobile offerings by service companies lack the ability to offer help when service failures occur. For instance, Pat stated:

I really want my smartphone to be smarter when I'm traveling . . . I wish these [service companies] could have more humanized designs on their mobile apps so that I can do more with them instead of just downloading coupons and reading reviews. For example, they can design a pop-up window whenever I'm having trouble with the app, and I can get the answer I need through a link, or get to talk to someone directly about my problems. (Pat, Male, 55)

The "pop-up help window" Pat mentioned is a great example of enabling technologies to provide prompt service by performing an automatic diagnosis of service failures. In this example, the gap between interpersonal interaction and mediated interactions could also be filled by providing a direct connection to interpersonal

services, such as adding an icon to the mobile app layout for calling service representatives.

Additionally, when designing a mobile service offering, service managers should consider the cooperative relationship between technologies and employees. Whereas human interactions can be inefficient and error-prone during high-volume hours, mediated interactions can be helpful in speeding up the service process and may facilitate customer control over the service experience. Moreover, because smartphone technologies perform poorly in delivering authentic and empathetic interactions, in-person interactions can be a supplement to self-service when customers encounter technology failures or require additional information on service products. Immediate and effective service recovery is a critical moment of truth that can help to retain customers (Smith & Bolton, 1998). As a result, when designing a mobile offering, managers should ensure that at least one employee can be approached during customers' self-service process.

The results also indicate that managers should put more effort into educating customers on mobile hospitality service through tailored training and employee empowerment. First, managers can consider providing incentives for customers to use mobile services, such as offering financial benefits or service upgrades. Second, service employees should be trained to guide customers, especially those from older generations, through the usage of mobile services, which requires the employees to be technology-savvy and familiar with the mobile services. With more and more self-service applications in service settings, service companies are missing opportunities to gain firsthand feedback from customers and lacking chances to engage in face-to-face promotions of their brand images. Interpersonal customer education is a great opportunity for employees to build a close and personal connection with customers. Moreover, the impact of learned helplessness can also be relieved by educating customers about mobile hospitality services.

Limitations and Future Research

Several limitations should be acknowledged in this study. The first is the lack of representative sampling because all interview subjects were recruited in a small

Midwestern city as a result of convenience sampling. Because recruiting information was released on a campus-based news website, most of the informants were students or staff from the same university, which may have caused a bias in the results. Future studies should examine a larger sample of users from diverse backgrounds. The second limitation addresses how the in-depth interviews were conducted. Informants were required to provide their perceptions on the influences of smartphone usage on the service experience. However, unconscious or unnoted influences were neglected. The fact that smartphone users are accustomed to using their smartphones in any setting makes them insensitive to the changes going on around them regarding technological infusion. This research was also limited in that it focused on service settings in the hospitality industry, including hotels, restaurants, airports, and theme parks.

There are other interesting angles for future research on smartphone technologies' infusion into the service experience. First, this study looks into customers' service experiences regardless of the differences among service settings. Patrício, Fisk, and Cunha (2008) found that differences among service products could lead to significant differences in customers' service experiences. By choosing a particular service setting as the research subject, researchers could add results related to customers' emotional responses and coping strategies to their conclusions, helping to build a universal model to demonstrate the realities of the smartphone-infused service experience.

Second, the current research revealed the gap between mediated and interpersonal interactions during mobile service failures and social interactions. It would be insightful to look into the gap between mediated and interpersonal interactions during traditional service procedures. For instance, the results mentioned that customers are satisfied with mobile service when it comes to "bureaucratic questions" (Sarah, Female, 22), such as the location of the closest restaurant, but they still expect interpersonal service while dealing with specific and unusual requests, such as food allergy. Future studies could explore smartphone-empowered customers' pattern of choosing between two kinds of service and the gap in industry practices.

Third, the current research focused on the activities around certain service procedures in public settings; it would be fruitful to look into how daily communication and interaction styles in the digital age are taking over traditional service interactions. For

instance, the mediated delivery of empathy via smartphone technologies can be applied to other interpersonal service encounters, such as health care service encounters.

Finally, this research revealed that customers' expectations regarding the service experience accumulate after several experiences. It could be valuable to take an empirical approach to analyzing the changes among different service experiences and the reasons behind them. The discussion about the development of customers' expectation and perception in a long-term perspective is inspiring to studies on customer expectation management and customers' long-term relationship with hospitality brands. While customers set their expectation based on their perception of previous experiences, the brand image they perceive is accumulating based on their past encounter with the brand and the competitive brands. For instance, after customers benefit from mobile ordering in a McDonald's, they will expect the similar service during their next consumption at a Wendy's. While considering customers' past encounters with a certain brand, studies on brand image and expectation could take customers' encounters with competitive brands into consideration as well.

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