

# Customer Reactions to Service Separation

Recent research suggests that inseparability is not a universal distinguishing characteristic of services and that the consumption of many services is or can be separated from their production. This research defines service separation as customers' absence from service production, which denotes the spatial separation between service production and consumption. In a series of qualitative and quantitative studies across different services, the authors examine customer reactions to service separation. The results indicate that service separation increases customers' perceptions of not only access convenience and benefit convenience but also performance risk and psychological risk. Furthermore, these effects differ across services. Specifically, relative to experience services, for credence services, the effects of separation on service convenience are mitigated, and the effects on perceived risk are magnified. Subsequently, the convenience and risk perceptions induced by service separation can influence customers' purchase decisions and postexperience evaluations. Customers prefer separation for experience services and when they have an established relationship with the service provider. Finally, the authors discuss the theoretical contributions and managerial implications and offer directions for further research.

*Keywords:* service separation, inseparability, service convenience, perceived risk, perceived value

In distinguishing services from goods, many researchers characterize services on the basis of intangibility, heterogeneity, inseparability, and perishability, which collectively form the IHIP paradigm that has legitimized the field for more than two decades (Grove, Fisk, and John 2003; Zeithaml, Parasuraman, and Berry 1985). More recently, however, some scholars have begun to question the validity and relevance of this received wisdom. For example, Vargo and Lusch (2004) contend that IHIP are remnants of the goods-based marketing model and lead to inappropriate normative strategies for service marketers. Drawing on anecdotal evidence, Lovelock and Gummesson (2004) also demonstrate that the IHIP paradigm fails to effectively and universally distinguish services from goods.

The current research focuses on one service characteristic—inseparability, which means that production and consumption of a service take place simultaneously, often in the presence of the customer who views and may even take part in the service production process (Zeithaml and Bitner 2003). Despite its importance, service inseparability is not well understood in the literature. Consider the following contrasting examples: When a customer visits a spa, he or she relaxes and unwinds during a massage. This service is

unseparated because the customer is physically involved and consumes the service as it is being produced. In contrast, after a customer drops off a malfunctioning laptop computer at a retail repair site, repair is performed in his or her absence. Thus, this service is separated in the sense of the spatial decoupling between its production and its consumption.

In line with our observations, Betancourt and Gautschi (2001) claim that production and consumption of a service can be joined or separated along two dimensions: time and space. For example, “A live prize fight that may be viewed in a specific geographic region only in studios connected to the fight arena by closed circuit [television] joins production, consumption, and distribution of the event in time, and joins consumption and distribution in space while keeping production separate in this dimension” (Betancourt and Gautschi 2001, p. 166). Similarly, Lovelock and Gummesson (2004, p. 29) assert that “there is a large group of separable services that do not involve the customer directly, with the result that production and consumption need not be simultaneous.” Examples include freight transportation, dry cleaning, and routine maintenance on a wide array of equipment and facilities, in which the customers are absent during service production.

Despite the separability claim for some services, previous research has neither elaborated on nor empirically examined its implications for customers. Consider the banking service of making an account transfer: Customers can obtain the service either at the counter of a bank branch (i.e., unseparated mode) or through telephone banking at home (i.e., separated mode). Will customers react to these two delivery modes differently? Which one will they prefer and why? Unfortunately, the extant literature does not provide explicit answers to these questions, and conflicting views exist on the desirability of service separation for cus-

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tomers (cf. Lovelock and Gummesson 2004; Vargo and Lusch 2004).

In addressing this void, the current research attempts to answer two questions: (1) What are the benefits and downsides of service separation to customers? and (2) How do customers' reactions to service separation affect their purchase decisions and postexperience evaluations? In this research, we define service separation as customers' absence from service production. Specifically, our definition of separation hinges on the spatial decoupling between service production and consumption. This conceptualization is consistent with Lovelock and Gummesson's (2004) observations of separable services and reflects Betancourt and Gautschi's (2001) spatial dimension of service separation.

To the best of our knowledge, this research is the first to empirically investigate service separation and its effects on customer reactions. The findings contribute to a better understanding of how the delivery mode of services can influence customer perceptions and behaviors and provide empirical evidence of the marketing value of service separation. Beyond their theoretical contributions, the findings can also help service providers design the appropriate mode of service delivery. Thus, this research has major implications for both marketing literature and managerial practice.

## Theoretical Background

Inseparability has long been considered an important defining characteristic of services. As opposed to goods, which are usually produced first and then sold and consumed, "most services are sold first and then produced and consumed simultaneously" (Zeithaml and Bitner 2003, p. 21). Service inseparability also implies that customers are present while the service is being produced and are often involved in the production process by interacting with the employees and other customers (Bitner et al. 1997; Kelley, Donnelly, and Skinner 1990).

Although inseparability is typically presented as received wisdom in the literature, its generalizability to all services has not been empirically validated (Lovelock and Gummesson 2004). Given the rapid development and innovation of the service sector in modern economies, it behooves service scholars to reexamine the nature of services and question the tenability of inseparability (Grove, Fisk, and John 2003). In a systematic analysis of the separa-

tion of service production, distribution, and consumption, Betancourt and Gautschi (2001) demonstrate that service inseparability is neither a necessary nor a sufficient condition to distinguish services from tangible products. In the same vein, Lovelock and Gummesson (2004) adopt Lovelock's (1983) classification of services and conclude that only one category of services—physical acts to customers' bodies—is inseparable. In each of the other three categories, consumption can be separated from production, if so desired, and designed into the system (see Table 1).

Although the arguments and examples presented here establish that numerous services are indeed separated, in the sense that customers are absent during service production, controversy remains on the value of service separation to customers. The proponents contend that separated services can benefit customers by allowing a professional to do the job better than they could themselves, thus saving time and effort (Lovelock and Gummesson 2004). However, the opponents argue that service separation limits marketability and is undesirable because offerings produced without customer involvement are at a disadvantage (Vargo and Lusch 2004). To resolve this debate, it is imperative to empirically investigate customer reactions to service separation and the subsequent effects on purchase decisions and postexperience evaluations.

Drawing on the classification of services shown in Table 1, we examine separation for two types of services—nonphysical acts to customers' minds and information processing—for the following reasons: First, services on physical acts to customers' bodies, such as hairstyling and dental surgery, are inseparable by nature, meaning that separation of production and consumption is impossible. Second, for services on physical acts to owned objects, such as dry cleaning, automobile repair, and freight transportation, customers purchase them intentionally to avoid involving themselves in these tasks. In other words, these services are inherently separated and, in general, are produced only in the absence of customers. As such, these two types of services (i.e., intrinsically inseparable and intrinsically separated) fall beyond the scope of our investigation. Finally, services involving nonphysical acts to customers' minds and information processing can be performed both separately and inseparately, which enables us to compare customer reactions across these two modes of service delivery

**TABLE 1**  
**Service Separation in Different Service Categories**

	Physical Acts to Customers' Bodies	Physical Acts to Owned Objects	Nonphysical Acts to Customers' Minds	Processing of Information
Exemplars	<ul style="list-style-type: none"> <li>•Passenger transport</li> <li>•Lodging</li> <li>•Health care</li> <li>•Beauty salons</li> </ul>	<ul style="list-style-type: none"> <li>•Freight transport</li> <li>•Repair/maintenance</li> <li>•Warehousing</li> <li>•Laundry and cleaning</li> </ul>	<ul style="list-style-type: none"> <li>•Entertainment</li> <li>•News</li> <li>•Education</li> <li>•Consulting</li> </ul>	<ul style="list-style-type: none"> <li>•Internet banking</li> <li>•Accounting</li> <li>•Insurance</li> <li>•Research</li> </ul>
Inseparability	Yes	No—customer usually absent during production	Only when performance is delivered "live"	Many exceptions—customers often absent during production

Notes: Adapted from Lovelock and Gummesson (2004).

and allows service providers the flexibility of designing and choosing either or both service delivery modes. Therefore, focusing on these two types of services is both theoretically meaningful and managerially relevant.

## A Qualitative Study

To explore customer reactions to service separation—a topic on which relatively little had been documented—we first conducted in-depth interviews. This form of unstructured, direct, and personal method is particularly helpful for glean-ing customer perceptions of service separation (Malhotra 2007). Four well-trained researchers conducted in-depth interviews in Beijing from September 2006 to February 2007, during which they collected data over three rounds until they obtained no new information of interest. The first round of interviews yielded 30 responses, the second round yielded 15 responses, and the final round yielded 9 responses. Of the 54 interviewees, 66.7% were male. Their ages ranged from 20 to 55 years, with a mean of 33.15 years and a median of 30 years. In terms of education, 14.81% had a high school education or lower, 53.70% had a bachelor's degree, 27.78% had a master's degree, and the rest had a doctoral degree. The interviewees came from a wide range of socioeconomic backgrounds, and their annual incomes ranged from RMB48,000 to RMB600,000.<sup>1</sup>

Each interviewer randomly approached strangers in fast-food restaurants, cafés, or airport lounges and invited them to participate in a face-to-face interview about their service experiences. The whole process comprised three stages. In the first stage, the researcher held an informal conversation with the respondent to break the ice. In the second stage, the researcher gradually transitioned the discussion to service experiences, introducing the concept of service separation and asking the respondent to list some separated services based on the definition provided. In the third stage, the respondent was asked to recall a familiar service that could be delivered both separately and inseparately, to describe his or her experiences with both delivery modes, to compare their pros and cons, and finally to indicate the conditions under which he or she would prefer the separated mode. Each interview was recorded and lasted from one to one-and-a-half hours. At the end, the respondents were each given a token of appreciation for their participation and were debriefed and dismissed.

Two marketing doctoral students who were unaware of the research purpose transcribed the recordings and conducted content analysis. From the interviewees' responses, we found that customers viewed many services as separated. The most frequently cited separated services included calling for food delivery (e.g., the order is received and the food is produced at the restaurant, while the customer enjoys the meal at his or her residence or workplace) (N = 13), repair services (e.g., restoration of computers, automobiles, and furniture is produced in the absence of the customer) (N = 12), online shopping (e.g., Web design, product assortment, order fulfillment, and payment processing are produced by the online retailer's back office, while the cus-

tomers can consume these services from anyplace with an Internet connection) (N = 10), and telephone banking (e.g., the services of balance checking, account transfer, and bill payment are produced without the customer needing to visit the bank physically) (N = 9).

In comparing the separated and unseparated service delivery modes, the two raters categorized respondents' thoughts into four groups along two dimensions: (1) advantages versus disadvantages and (2) general across services versus specific to certain services. The interrater reliability was .93, and discrepancies were resolved through discussions. The results showed that most of the respondents believed that, for services in general, the separated mode was superior to the unseparated mode in terms of effort and time savings when accessing and completing the service and in terms of choosing the service time and place. However, the separated mode increased the risk of service failure and anxiety in using the service.

For some specific services, the favorable aspects of the separated mode included lower price (e.g., online ticket agency) and higher-quality service (e.g., online shopping), while its drawbacks included reduced interaction with the service employee (e.g., online language training), delayed service recovery (e.g., calling for food delivery), and a limited set of service options (e.g., telephone banking). Table 2 summarizes the major advantages and disadvantages of separated services and the representative statements from the in-depth interviews.

Furthermore, the content analysis revealed that customers' preference for service separation was dependent on time constraint (N = 50) (e.g., "When I have little time to spare, I would go shopping online") and length of relationship with the service provider (N = 21) (e.g., "If I have an established relationship with the bank and trust its service quality, I will not hesitate to use its telephone banking service"). In conclusion, this qualitative study confirmed the existence of separated services from the customer's perspective and shed preliminary insights into customer reactions to service separation.

## Hypotheses Development

On the basis of the findings of the qualitative study, we abstracted service convenience and perceived risk to reflect customers' positive and negative reactions to service separation, respectively. Next, we review the relevant literature and develop testable hypotheses.

### *The Effects of Separation on Service Convenience*

As Table 2 shows, service convenience is related to customers' time and effort perceptions when buying or using a service and can influence customer satisfaction and behavioral intentions (Berry, Seiders, and Grewal 2002; Seiders et al. 2007). Building on prior research (e.g., Kelley 1958), Berry, Seiders, and Grewal (2002) propose that service convenience is a multidimensional construct consisting of decision, access, transaction, benefit, and postbenefit conveniences, which reflect customers' perceived time and effort expenditure in making purchase decisions (e.g., deciding

<sup>1</sup>US\$1 = RMB6.831 (August 2009).

**TABLE 2**  
**The Advantages and Disadvantages of Separated Services (Qualitative Study, N = 54)**

General Versus Specific	Advantages Versus Disadvantages	Respondents' Thoughts (Number of Statements)	Definitions	Typical Statements
General	Advantages	Saving time or effort (52)	Customers can spend less time and effort to access the service provider and complete the service process.	"I do my securities investment online.... Compared with visiting the brokerage, it saves me a lot of time and effort on both commuting and talking to a broker."
		Flexibility (22)	Customers perceive it flexible to use the separated services whenever and wherever they need.	"I like buying drinks from a vending machine. It is convenient and is available 24 hours a day, 7 days a week. Therefore, I can buy drinks whenever I want."
	Disadvantages	High risk (47)	Customers are uncertain if the separated services can perform as promised, which means high possibility of service failure.	"Paying bills by telephone banking is cool.... But, it does not work well all the time. Sometimes my bills were not processed on time and I ended up paying extra for the delay."
		Anxiety (29)	Customers feel worried and less confident when choosing and using separated services.	"I always feel anxious when buying cosmetics online. As I cannot have a trial, I am concerned that the color may not look good on me, or my skin may be allergic to certain products."
Specific	Advantages	Lower price (8)	Customers can get some discounts and pay less for the separated services.	"I usually buy movie tickets from the theater's website to get discounts.... They charge the full price if I buy the tickets from the box office."
		Higher quality (4)	Customers can enjoy higher quality of the separated services because they can obtain certain beneficial features that cannot be had from unseparated services.	"Many online stores enable product comparison.... It means I can easily compare alternatives in terms of their brands, models, prices, and other features.... This could be really difficult if I shop in an offline store."
	Disadvantages	Reduced interactions (9)	Customers have few interactions with the service employee and other customers.	"I have used online education before, but it was really bad.... Whenever I had a problem, I could not ask questions or discuss with the instructor."
		Delayed recovery (8)	Following service failures, customers cannot obtain service recovery immediately and may have to wait for recovery or compensation long after service completion.	"I often call a restaurant close to my apartment for delivery.... Sometimes, the receptionist makes mistakes when writing down my orders. The problem is that I only realize the mistake when I get the food, and it's too much of a hassle to get a replacement order. This will not happen if I go to the restaurant and place the order on the spot."
		Fewer services (6)	Customers cannot get certain services that are not suited for separated delivery.	"Telephone banking can only deal with some simple activities, such as checking balance or making a transfer.... It cannot provide services like opening an account or applying for loans."



which restaurant to patronize), reaching the service provider and requesting the service (e.g., placing the food order at the restaurant), securing the right to use the service (e.g., paying by cash), experiencing the service's core benefit (i.e., enjoying the food), and reinitiating contact with the service provider after obtaining the benefit (e.g., complaining to the restaurant), respectively.

Berry, Seiders, and Grewal (2002) further suggest that customers' perceived convenience is determined by service characteristics such as consequentiality and inseparability, which can influence customer evaluations of satisfaction, service quality, and fairness. Subsequently, Seiders and colleagues (2007) develop the SERVCON scale to measure and validate this five-dimensional construct in retailing and identify its antecedents and effects on customer satisfaction and behavioral intention for each type of convenience.

Along this line, the current research examines how service separation affects access convenience and benefit convenience. Access convenience is critical because nothing will happen until customers get in touch with the service provider. It is determined by the service's physical location, operating hours, and remote contact options (Berry, Seiders, and Grewal 2002). Service separation has obvious implications on access convenience. For unseparated services, customers must visit the "service factory" in person, whereas for separated services, customers can gain access remotely through the Internet, telephone, or other means. As such, the different delivery modes entail customers expending varying amounts of time and effort to reach the service provider, which will influence their perceptions of access convenience.

Benefit convenience is related to the time and effort customers expend on the service experience, which plays the most significant role in customer evaluation (Berry, Seiders, and Grewal 2002). Service separation has a direct bearing on benefit convenience because it determines the way customers obtain the service benefit, including their participation in service production and their interactions with service employees and other customers. All these activities require the exertion of time and effort. Therefore, customers will perceive different levels of benefit convenience across separated versus unseparated services.

We omit the other three forms of convenience for the following reasons: (1) Decision convenience is salient before actual service exchange and is determined by the availability and quality of information about the service provider and its competitors, (2) transaction convenience focuses strictly on the actions customers must take to pay for the service, and (3) postbenefit convenience is assessed only when the customer needs to reestablish contact with the service provider as a result of service failure and recovery (Berry, Seiders, and Grewal 2002). These three types of convenience do not directly pertain to the activities of service production and consumption. Thus, we study only the effects of service separation on access and benefit conveniences.

With the exception of hedonic experiential services, in which customers associate higher amounts of time and effort with greater enjoyment (e.g., skiing, using the spa) (Holbrook and Lehmann 1981), we posit that customers will perceive greater access convenience and benefit convenience

from the separated service than from the unseparated service. The rationale is that separation provides customers with the flexibility of buying and consuming the service at their convenience, which leads to time and effort savings. Customers do not need to visit the physical location of the service provider during its operating hours only and thus can allocate time and effort more efficiently and effectively. In addition, separation will increase benefit convenience as a result of reduced interactions with employees and other customers, and the time and effort savings imply that the customer can experience the service more efficiently. In contrast, service inseparation heightens a customer's time and effort in obtaining the service, particularly when service availability is limited, thus lowering perceived convenience (Berry, Seiders, and Grewal 2002).

There are many examples indicating the positive impact of separation on service convenience. For example, a major factor explaining the success of Amazon.com is that customers prefer buying books at their own leisure and not being constrained by store operating hours (Kannan, Chang, and Whinston 2001). Similarly, increasing numbers of customers prefer online banking because they do not need to visit the bank's retail branch during their precious lunch hours (China Financial Certification Authority 2006). On the basis of this discussion, we hypothesize the following:

H<sub>1</sub>: Customers perceive separated services as having greater access convenience than unseparated services.

H<sub>2</sub>: Customers perceive separated services as having greater benefit convenience than unseparated services.

### ***The Effects of Separation on Perceived Risk***

Perceived risk is a function of adverse consequence and uncertainty; adverse consequence refers to the amount of costs involved in attempting to achieve a set of purchase goals in a buying situation, and uncertainty is customers' probabilistic beliefs in the occurrence of adverse consequence (Dowling 1986; Peter and Tarpey 1975). Two key components of perceived risk are performance risk and psychological risk (Mitchell and Grotorex 1993; Stone and Gronhaug 1993).

Specifically, performance risk is related to whether the service can perform as expected and thus satisfy customer needs, and psychological risk pertains to the possible loss of psychological well-being due to using this service. For example, a survey suggests that customers who are reluctant to use online banking tend to be concerned about information security (i.e., performance risk) and their mental uneasiness in using the service (i.e., psychological risk) (China Financial Certification Authority 2006). These two types of risk are directly pertinent to service separation and correspond to the findings in our qualitative study. We argue that service separation, which increases intangibility and decreases customers' perceived control over the service, leads to higher performance risk and psychological risk.

Intangibility means that services cannot be seen, felt, tasted, touched, or smelled before purchase (Zeithaml, Parasuraman, and Berry 1985), which gives rise to prepurchase uncertainty for customers (Zeithaml 1981). Although services are intangible performances by nature, tangible attrib-

utes in service production play an important role in signaling service quality and reducing risk perception (Bitner 1990, 1992; Rapoport 1982). For example, Rapoport (1982) finds that customers often use the tangible environment to judge a service provider's capability and quality before purchase. Similarly, Bitner (1992) proposes that servicescapes influence customers' cognitive, affective, and physiological responses during the service encounter.

For separated services, customers' absence from production means that they sense fewer tangible attributes of the service encounter, compared with their presence during production for unseparated services. To illustrate, a customer can choose to dine in at a restaurant or call for delivery. When dining in, the customer can observe the physical environment (e.g., lighting, atmosphere), facilities (e.g., kitchen, dinnerware, furniture), and symbols (e.g., brand logo, sign) to evaluate the trustworthiness of the restaurant (Bitner 1992). However, when the food is delivered, the tangible cues the customer relies on to make a judgment are significantly decreased, resulting in higher risk perception.

In addition, separating consumption from production decreases customers' perceived control over the service, thus increasing risk perception. As one of the basic motivations of human activities, perceived control refers to the need to demonstrate human competency, superiority, and mastery over the environment (White 1959). According to Averill (1973), perceived control includes (1) behavioral control, which indicates the extent to which a person's responses to an uncertain event can directly influence or modify the objective characteristics of the event, and (2) cognitive control, which involves a person's prediction and explanation for the uncertain event. Previous research in services marketing indicates a negative association between customers' perceived control and perceived risk (Hui and Bateson 1991).

For unseparated services, customers are present at the service encounter and even become a coproducer by closely interacting with the service employee (Bendapudi and Leone 2003; Bitner et al. 1997). Consequently, it is easier for them to influence the service process and predict its outcome. For separated services, however, customers perceive lower control because of their absence from service production and reduced interface with the service employee. To illustrate, consider again the case of food delivery. When dining in the restaurant, customers can communicate with the waitstaff whenever they have questions about the food; however, such interactions and control are reduced for food delivery. Therefore, separation between service production and consumption leads customers to perceive lower control, which in turn results in higher performance risk and psychological risk. Accordingly, we hypothesize the following:

H<sub>3</sub>: Customers perceive separated services as having greater performance risk than unseparated services.

H<sub>4</sub>: Customers perceive separated services as having greater psychological risk than unseparated services.

### ***The Differential Effects of Separation Across Services***

While the qualitative study revealed that service separation leads customers to perceive greater service convenience and higher risk, it did not address whether the magnitude of these effects varies across different services. For example, would service convenience and perceived risk brought about by separation be greater for online education than for food delivery? Investigating this issue will provide a more nuanced understanding of the customer implications of separation for a range of services. Toward this end, we compare the impacts of separation on service convenience and perceived risk across experience and credence services.

The experience-credence typology is based on the way customers collect information for evaluation (Darby and Karni 1973; Zeithaml 1981). For experience services, such as having a haircut or visiting a restaurant, customers can obtain the relevant information by way of experience and form their judgment accordingly. For credence services, such as education and consulting, however, customers are not able to gather enough information from personal experience and therefore have difficulty making confident evaluations, even after purchasing or experiencing the service (Ostrom and Iacobucci 1995; Zeithaml 1981).

We postulate that separation will lead to less perceived benefit convenience for credence services than for experience services. Compared with experience services, credence services tend to be more difficult to assess (Zeithaml 1981). If the hurdle is raised by having the credence service delivered separately, customers will need to spend even more time and effort to search for information on the service to compensate for the reduced information due to their absence from service production. Consequently, the favorable effect of service separation on benefit convenience may, to some extent, be offset by the additional burden of information search. As for access convenience, we posit that the impact of separation will not vary across experience and credence services. This is because the resultant time and effort savings in not having to be present during service production will be equally applicable for both service types. On the basis of this discussion, we hypothesize the following:

H<sub>5</sub>: The positive effect of service separation on customers' access convenience does not vary for credence services and experience services.

H<sub>6</sub>: The positive effect of service separation on customers' benefit convenience is weaker for credence services than for experience services.

In contrast, we predict that the effects of separation on performance risk and psychological risk are more profound for credence services than for experience services. The reason is that customers' intrinsic uncertainty about credence services will exacerbate the perceived risk caused by separation because their absence from service production will not only mean sensing fewer tangible cues and perceiving less control but also reduce their confidence in perceptions and evaluations of the service. Therefore, we hypothesize the following:

H<sub>7</sub>: The positive effect of service separation on customers' performance risk is stronger for credence services than for experience services.

H<sub>8</sub>: The positive effect of service separation on customers' psychological risk is stronger for credence services than for experience services.

## Study 1

The purpose of Study 1 is to examine the effects of service separation on perceived convenience and risk for experience and credence services. Following previous research (e.g., Bitner 1990; Ostrom and Iacobucci 1995), we used a scenario-based experiment to compare customer reactions to the separated versus the unseparated service delivery modes.

### Experimental Design

Study 1 used a 2 (service separation)  $\times$  2 (service category) mixed factorial design. Service separation was a within-subject variable, and we operationalized it as either a separated or an unseparated mode of delivery for the same service. Service category was a between-subjects variable, comprising experience and credence services.

To identify the representative service for each category, we conducted a pretest in which 70 respondents, consisting of 32 MBA, 20 postgraduate, and 18 undergraduate students, were asked to classify a list of 36 services into one of the two categories from the definitions we provided. Specifically, we defined experience services as those for which customers can collect service information by way of experience and make judgments after purchase or experience. We defined credence services as those for which customers have difficulties in collecting service information by way of experience and cannot make confident evaluations even after purchase or experience. We used three criteria to select the representative services: (1) the services can be delivered both separately and inseparately, (2) the services are familiar to the respondents (i.e., college students), and (3) frequency analysis reflected consistent views on service categorization. Subsequently, we selected Chinese-style fast food and a training program on interview skills to represent experience and credence services, respectively.

We manipulated service separation by having two modes of delivery for each service. Specifically, we operationalized the fast-food service as in-restaurant dining (i.e., unseparated mode) or calling for delivery (i.e., separated mode), and the training program was in the form of in-class instruction (i.e., unseparated mode) or watching a Webcast of the session (i.e., separated mode) (see Appendix A). These manipulations were based on our definition of service separation and reflected the typical separated and unseparated services mentioned by the participants in our qualitative study. For each service, we randomized the order of the two modes. To rule out the noise of service brand, we used fictitious brands for each service.

### Experimental Procedure and Measures

*Sample.* We conducted the experiment in a large public university in Beijing. Participants were recruited by an online advertisement on the bulletin board system of the

university, which invited students to participate in a marketing experiment with a compensation of RMB20. The final sample comprised 100 participants, 45% of whom were male, 47% of whom were undergraduate students, 49% of whom were research or doctoral students, and 4% of whom were MBA students. In terms of age, 16% were less than 20 years, 69% were between the ages of 21 and 29, and 15% were over the age of 30. During the experiment, the participants were randomly assigned into two groups, each with 50 people.

*Procedure.* The booklet consisted of experiment instructions, a service scenario, and measures for hypotheses testing. The participants were asked to evaluate access convenience, benefit convenience, performance risk, and psychological risk for both separated and unseparated modes. Finally, they were asked to write down any thoughts they had during the experiment. The whole experiment lasted about half an hour.

*Measures.* We adopted the measures for access and benefit convenience from Berry, Seiders, and Grewal (2002) and Seiders and colleagues (2007); each construct had a three-item seven-point "agree/disagree" scale. We used three items to measure performance risk and four items to assess psychological risk (Dowling 1986; Stone and Gronhaug 1993) (see Appendix B).

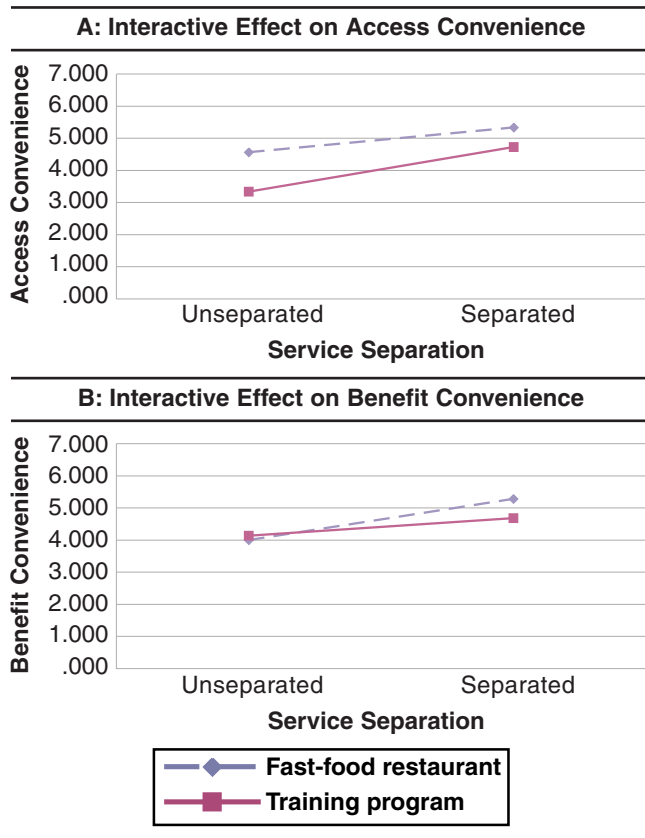
### Results

We performed a repeated measures analysis of variance (ANOVA) to test for the main and interactive effects of service separation. The results show that separation had main effects on access convenience ( $F(1, 98) = 45.169, p < .001$ ), benefit convenience ( $F(1, 98) = 35.098, p < .001$ ), performance risk ( $F(1, 98) = 93.394, p < .001$ ), and psychological risk ( $F(1, 98) = 51.635, p < .001$ ). The respondents considered it more convenient to access separated services ( $M = 5.03, SD = 1.29$ ) than unseparated services ( $M = 3.95, SD = 1.38$ ), in support of H<sub>1</sub>. Similarly, they perceived greater benefit convenience for separated services ( $M = 4.98, SD = .96$ ) than for unseparated services ( $M = 4.07, SD = .96$ ), in support of H<sub>2</sub>.

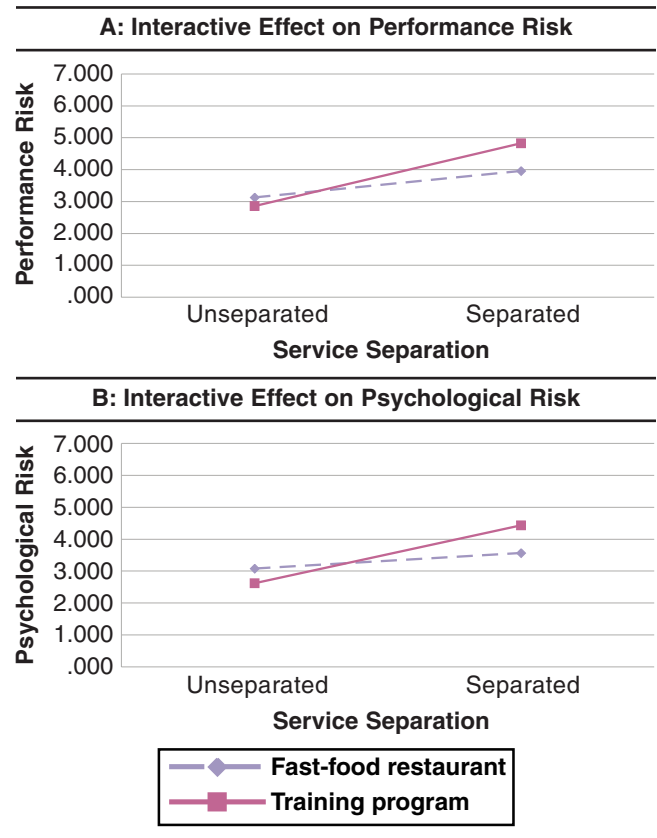
Consistent with H<sub>3</sub>, respondents perceived higher performance risk for separated services ( $M = 4.39, SD = 1.23$ ) than for unseparated services ( $M = 2.99, SD = 1.12$ ). We also found higher psychological risk for separated services ( $M = 4.00, SD = 1.29$ ) than for unseparated services ( $M = 2.85, SD = .96$ ), in support of H<sub>4</sub>.

Furthermore, our results show that except for access convenience ( $F(1, 98) = 3.642, p = .059$ ), the interactions between service category and separation were significant for all the other three variables (for benefit convenience,  $F(1, 98) = 5.657, p = .019$ ; for performance risk,  $F(1, 98) = 15.301, p < .001$ ; and for psychological risk,  $F(1, 98) = 17.062, p < .001$ ), which implies that separation leads to varying magnitudes of benefit convenience, performance risk, and psychological risk across experience and credence services. As Figure 1, Panel A, shows, there was no significant difference in the favorable effect of separation on access convenience across fast food and the training program, in support of H<sub>5</sub>. However, Figure 1, Panel B, indi-

**FIGURE 1**  
Interaction of Service Separation and Service Category on Service Convenience (Study 1, N = 100)



**FIGURE 2**  
Interaction of Service Separation and Service Category on Perceived Risk (Study 1, N = 100)



cates that separation resulted in greater benefit convenience for fast food than for the training program, in support of H<sub>6</sub>. As Figure 2 shows, the effect patterns for performance risk and psychological risk were similar; the impacts of separation were more salient for the training program than for fast food. Therefore, H<sub>7</sub> and H<sub>8</sub> were supported.

### Discussion

Study 1 indicates that service separation can be a double-edged sword. On the one hand, it can increase service convenience and allows customers the flexibility of choosing when and where to consume the service. On the other hand, customers who are absent from service production will perceive higher risk. Furthermore, the effects of separation depend on service category. While separation leads to similar access convenience across experience (i.e., fast food) and credence (i.e., the training program) services, the favorable effect of separation on benefit convenience is less salient for credence services. Conversely, the unfavorable consequences of separation in terms of performance and psychological risks are magnified for credence services. Taken together, the findings from Study 1 provide initial empirical evidence that service separation has significant effects on service convenience and perceived risk and that its effect magnitudes are contingent on the experience versus credence qualities of services.

## Study 2

Although Study 1 reveals the favorable and unfavorable aspects of service separation, it leaves several issues unaddressed. First, given the effect of separation on perceived risk, a managerially important question for service firms is, What can they do to reduce customers' risk perceptions? In this regard, the qualitative data from our interviews and Study 1 offered some clues. In the qualitative study, 21 interviewees mentioned that their preference for separated services depended on their previous interactions with the service provider. Similarly, from the thought-listing task in Study 1, several participants wrote that their relationships with the service provider might influence their perceptions (e.g., "I think whether this service is risky or not depends on how long I have been using this service ... and how satisfied I am with past interactions"). These findings imply that the undesirable impact of separation on perceived risk may be counteracted by effective customer relationship management.

Second, although Study 1 indicates that customers perceive separated versus unseparated modes of service delivery differently, little is known about how these perceptions will influence their purchase decision when both modes are available. Knowing this can help service firms better predict customers' heterogeneous preferences for service separation and accordingly customize delivery to increase their purchase intention (Franke, Keinz, and Steger 2009). Finally,



Study 1 examines only two services (i.e., fast food and the training program); additional services are needed to show the robustness of our findings. We conduct Study 2 to address these issues.

### **Hypotheses Development**

*Customer–service provider relationship.* The customer–service provider relationship is an accumulation of experiences and reflects customers’ confidence in the service provider’s future performance (Crosby and Stephens 1987). Prior studies have indicated the negative effect of the customer–service provider relationship on perceived risk (Gwinner, Gremler, and Bitner 1998; Zeithaml 1981). In this vein, we propose that the strength of the customer–service provider relationship lowers the effect of service separation on perceived risk. This is because even when customers are absent from service production, an established relationship based on the track record of the service provider can allow customers to make confident predictions of service quality and consequently offset their risk perceptions (Desai, Kalra, and Murthi 2008). Thus, we hypothesize the following:

- H<sub>9</sub>: An established customer–service provider relationship mitigates the positive effect of service separation on performance risk.
- H<sub>10</sub>: An established customer–service provider relationship mitigates the positive effect of service separation on psychological risk.

*Customers’ purchase decisions for separated services.* When customers are faced with service alternatives, they consider both the expected utility and the costs associated with them. Peter and Tarpey (1975) show that when selecting among brands, customers recognize the expected utility and perceived risk of each brand and make decisions on their differences, or the “net return.” Such trading off between the service benefits and the sacrifices expended to acquire the service is known as the “perceived value” (Sirdeshmukh, Singh, and Sabol 2002; Zeithaml 1988). In our case, perceived value is positively related to service convenience, which enables customers to conserve their limited resources of time and effort (Berry, Seiders, and Grewal 2002), and negatively related to perceived risk, because it highlights the costs associated with purchasing a service that has uncertain outcomes (Agarwal and Teas 2001).

Study 1 indicates that for credence services, the desirable effect of service separation on benefit convenience is attenuated, while its undesirable effect on risk perceptions is heightened. Conversely, separation for experience services is appealing because customers can enjoy the advantage of service convenience at low risks. This implies that customers will have lower purchase probability of separated credence services because they bear greater perceived risks but receive less convenience benefit. Along this line, we also argue that customers in an established relationship with the service provider are more likely to purchase the separated mode than new customers because their previous interactions can mitigate the negative consequence of separation and thus increase its perceived value.

H<sub>11</sub>: Customers are more likely to purchase the separated mode of experience services than the separated mode of credence services.

H<sub>12</sub>: Customers in an established relationship with the service provider are more likely to purchase the separated mode of both experience and credence services than new customers.

### **Experimental Design**

Study 2 used a 2 (service separation) × 2 (service category) × 2 (customer–service provider relationship) mixed experimental design. Service separation served as a within-subject factor, and service category and customer relationship were between-subjects factors. On the basis of the same pretest described in Study 1, we selected a ticket agency and a student counseling service to represent new experience and credence categories, respectively. Each service came in two modes: Customers could purchase airline tickets by going to the ticket office or by buying them over the telephone, and they could visit the counselor’s office or seek online counseling by communicating with the counselor through an instant-messaging system.

Following Hui and colleagues (2004), we manipulated customer–service provider relationship by specifying either a long-term relationship (i.e., a five-year customer) or a new relationship (i.e., a new customer). To rule out the effects of service price and quality on the participants’ choices, the scenarios stated that both service modes charged the same price and promised the same quality (see Appendix A).

### **Experimental Procedure and Measures**

*Sample.* Study 2 was also conducted at a large public university in Beijing. We recruited 68 university students through the bulletin board system, 70.6% of whom were undergraduate students, 18.6% of whom were research or doctoral students, and the remaining 11.8% of whom were MBA students. Of these, 41.2% were male, 17.6% were below the age of 20, 69.1% were between the ages of 21 and 29, and 13.3% were above the age of 30. The participants were compensated RMB20 for their participation.

*Procedure.* During the experiment, the participants were randomly assigned to the four cells, with 17 in each. Study 2 followed the same procedure as Study 1, except that participants were asked to make a purchase decision after rating service convenience and perceived risk. Finally, participants were asked to answer some questions as manipulation checks (detailed next) and provided demographic information. The whole experiment lasted about half an hour.

*Measures.* Because of the methodological problems associated with using difference scores (Peter, Churchill, and Brown 1993), we used the direct comparison approach to assess participants’ attitudes toward the separated and unseparated service modes. Specifically, they were asked to evaluate service convenience and perceived risk of the separated mode using seven-point Likert scales (1 = “much less ... than the unseparated mode,” 4 = “no difference,” and 7 = “much more ... than the unseparated mode”) (Brown, Churchill, and Peter 1993).

To measure participants' purchase decisions, we asked them to allocate 100 points between the separated and the unseparated modes to indicate their purchase probability of each. Reliability tests showed that all measures had high internal consistency (see Appendix B). As manipulation checks, we asked participants to recall the duration of their relationships with the service provider (i.e., a five-year customer/a new customer/not sure) and whether they were offered the same price (i.e., "For these two different modes of services, the service provider charged the same price/different prices") and service quality (i.e., "For these two different modes of services, the service provider promised/did not promise the same service quality") for both the separated and the unseparated modes.

## Results

Manipulation check results show that all participants could correctly recall the duration of customer-service provider relationship and indicated that the service provider offered the same price and quality assurance for the separated and unseparated service modes. Because the comparative scores reflected differences between the separated and the unseparated modes in terms of service convenience and perceived risk, the main effects of service category and customer-service provider relationship implied that the differences varied across service categories and customer relationships. In other words, service category and customer-service provider relationship moderated the effects of service separation. Because we had multiple dependent variables, we used a multivariate ANOVA to test the hypotheses.

The results show that service category influenced the perceived differences in benefit convenience ( $F(1, 64) = 22.039, p < .001$ ; for ticket agency,  $M = 5.412, SD = .939$ ; for student counseling,  $M = 4.353, SD = .967$ ), performance risk ( $F(1, 64) = 10.751, p = .002$ ; for ticket agency,  $M = 4.029, SD = 1.304$ ; for student counseling,  $M = 4.843, SD = .744$ ), and psychological risk ( $F(1, 64) = 7.548, p = .008$ ; for ticket agency,  $M = 3.441, SD = 1.442$ ; for student counseling,  $M = 4.316, SD = 1.296$ ). These findings were consistent with Study 1, thus providing additional evidence for  $H_6, H_7,$  and  $H_8$ . As we predicted, the effect of service category on access convenience was not significant ( $F(1, 64) = 2.991, p = .089$ ; for ticket agency,  $M = 5.628, SD = .942$ ; for student counseling,  $M = 5.206, SD = 1.068$ ), in support of  $H_5$ .

In addition, participants who had long-term relationships with the service provider reported less difference in performance risk ( $F(1, 64) = 7.006, p = .010$ ; for long-term relationships,  $M = 4.108, SD = 1.011$ ; for new relationships,  $M = 4.765, SD = 1.126$ ) and psychological risk ( $F(1, 64) = 7.548, p = .008$ ; for long-term relationships,  $M = 3.441, SD = 1.264$ ; for new relationships,  $M = 4.316, SD = 1.470$ ) between the separated and the unseparated modes, implying that the relationship could diminish the negative consequences of separation. Thus,  $H_9$  and  $H_{10}$  were supported. The results also indicated that customer-service provider relationship could magnify the effect of separation on benefit convenience ( $F(1, 64) = 5.109, p = .027$ ) but not on access convenience ( $F(1, 64) = 1.982, p = .164$ ). No interaction effects were significant.

Recall that  $H_{11}$  predicted differential customer preferences for separation across experience and credence services. To test this hypothesis, we computed an index using the logarithmic ratio of the purchase probabilities of the separated and unseparated modes. The advantages of this index were that it was a monotonic increasing function of the purchase probability of the separated mode and had a normal distribution. Because two participants did not report their purchase probabilities as requested, we conducted an ANOVA on the remaining 66 responses to compare participants' purchase probabilities of the separated mode across service categories and customer-service provider relationships.

The results showed that both service category ( $F(1, 62) = 19.563, p < .001$ ) and customer-service provider relationship ( $F(1, 62) = 10.696, p = .002$ ) had main effects, and there was no significant interaction found ( $F(1, 62) = .068, p = .795$ ). In particular, participants were more likely to purchase the separated mode for the ticket agency service ( $M = 65.32\%, SD = 23.60\%$ ) than for the online student counseling service ( $M = 42.65\%, SD = 22.74\%$ ). Therefore,  $H_{11}$  was supported. We also found that participants had a higher purchase probability for the separated mode when they had a five-year relationship with the service provider ( $M = 62.35\%, SD = 26.52\%$ ) than when they were new customers ( $M = 45.62\%, SD = 22.16\%$ ), in support of  $H_{12}$ .

## Discussion

Study 2 confirms that customer relationship management can effectively reduce the unfavorable consequences (i.e., perceived risks) of separation for both experience and credence services. Furthermore, when both separated and unseparated modes are available, customers' preference for separation varies across service categories and customer-service provider relationships. Specifically, customers are more likely to purchase the separated mode for experience services and when they have an established relationship with the service provider. More important, using new measures and different services from Study 1, Study 2 provides consistent results pertaining to the moderating role of service category on customer reactions to service separation. Thus, it bolsters the generalizability and robustness of our findings.

## Study 3

We conducted Study 3 for three reasons. First, thus far, the separated services in our experiments were all delivered by machine (i.e., telephone and computer), and a potentially valid concern is whether service separation is essentially an issue of machine- versus person-delivered services. In other words, our findings that customers considered separated services more convenient and risky may also be explained by the need to use technology-based machines to complete these services. Second, Studies 1 and 2 relied on scenario-based experiments and student samples, and the external validity of our findings requires substantiation. Third,  $H_{11}$  and  $H_{12}$  in Study 2 were based on the trade-offs between service convenience and perceived risk in influencing per-

ceived value, but we did not measure these effects directly. Study 3 aims to overcome these limitations.

### **Experimental Design**

We used a quasi-experimental design to investigate customers' actual experiences with separated and unseparated services. We selected three services whose separated and unseparated modes were familiar to urban Chinese consumers. Two were typical experience services—counter banking versus telephone banking and in-store shopping versus online shopping—and the third was a credence service—in-class education versus online education.

To control for the effect of service brands, we specified a particular service provider for each service category (i.e., ICBC Bank, Gome Electrical Appliances, and the New Oriental School).<sup>2</sup> The final sample consisted of 47 banking services, 42 retailer services, and 44 education services, 65 of which were delivered inseparately and 68 of which were delivered separately.

### **Experimental Procedure and Measures**

*Sample.* We recruited participants in executive development and executive MBA programs (all full-time employees or entrepreneurs) at a major university in Beijing to complete the survey. After the removal of incomplete surveys, 133 questionnaires were coded for final analysis. Of the respondents, 58.6% were male, 47.4% were between the ages of 24 and 30, 44.4% were between the ages of 31 and 40, and the rest were ages 41 and older. The sample was well educated: 36.1% had bachelor's degrees, and 62.4% had master's degrees, with the remaining having finished high school.

*Procedure.* We prepared two versions of the questionnaire for each service. The survey began with a filter question that we used to identify qualified respondents who had experienced a separated or unseparated banking, shopping, or education service over the past three months. Then, respondents were asked to recall and describe details of the service, including its time, location, usage frequency, and duration. They were asked to evaluate service convenience, perceived risk, and perceived value using a set of seven-point Likert scales. To control for the effect of technology, we measured the respondents' technology anxiety, which reflected individual differences in perceived role clarity, motivation level, and perceptions of ability when using technology-based services (Meuter et al. 2005). Finally, we asked some questions on demographic information.

*Measures.* The measures of service convenience and perceived risk were the same as those in Studies 1 and 2. We assessed perceived value using three items adopted from Sirdeshmukh, Singh, and Sabol (2002) and technology anxiety using four items Meuter and colleagues (2005)

<sup>2</sup>The Industrial and Commercial Bank of China (ICBC) is the most valuable bank in the world in terms of market capitalization (US\$254 billion in July 2007). Gome is one of the largest electrical appliance retailers in China, the equivalent of Best Buy in the United States. The New Oriental School is a provider of private educational services in China, famous for its preparatory tests and English-language instruction.

developed (see Appendix B). To test measurement validity, we followed Gerbing and Anderson's (1988) approach and ran a confirmatory factor analysis. Specifically, we tested convergent validity by estimating a six-factor confirmatory measurement model in which all the constructs were allowed to be related while the items and errors were not. The results showed that all items loaded onto the expected factors only, with highly significant factor loadings (see Appendix B), which verified the unidimensionality of the measures. In addition, the model provided an acceptable fit to the data:  $\chi^2 = 342.217$  (d.f. = 155,  $\chi^2/\text{d.f.} = 2.208$ ), comparative fit index = .906, normed fit index = .844, incremental fit index = .908, Tucker–Lewis index = .872, and root mean square error of approximation = .096, indicating that the measures demonstrated adequate convergent validity and reliability. To assess discriminant validity, we ran chi-square difference tests for all the constructs in pairs (15 tests) to determine whether the restricted model (correlation fixed as one) was significantly worse than the unrestricted model (correlation estimated freely). All chi-square differences were highly significant ( $p < .001$ ), providing evidence of discriminant validity.

### **Results**

We used structural equation modeling to test the hypotheses. The results showed that technology anxiety had positive effects on performance risk ( $\beta = .273$ ,  $p = .003$ ) and access convenience ( $\beta = -.194$ ,  $p = .039$ ) but had no effect on either psychological risk ( $\beta = .058$ ,  $p = .429$ ) or benefit convenience ( $\beta = -.100$ ,  $p = .264$ ). More important, even after we controlled for the effect of technology and respondents' usage frequency and demographic characteristics, we found that service separation still generated favorable effects on access convenience ( $\beta = .279$ ,  $p = .002$ ) and benefit convenience ( $\beta = .325$ ,  $p < .001$ ), both of which increased perceived value (for access convenience,  $\beta = .243$ ,  $p < .001$ ; for benefit convenience,  $\beta = .642$ ,  $p < .001$ ).

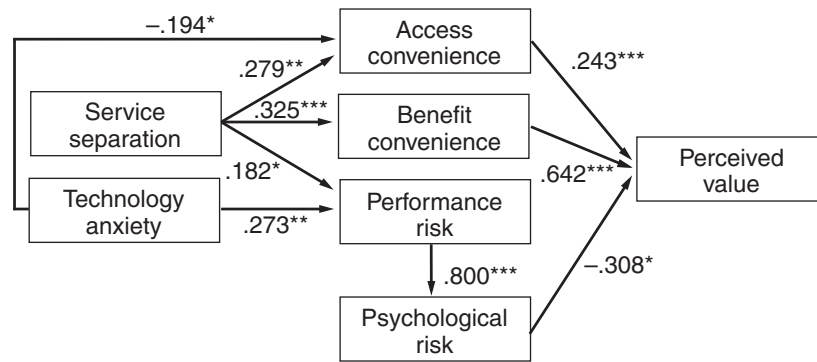
The results for perceived risk were more complex. Separation had no direct effect on psychological risk ( $\beta = -.106$ ,  $p = .120$ ) but significantly increased performance risk ( $\beta = .182$ ,  $p = .036$ ), which was closely related to psychological risk ( $\beta = .800$ ,  $p < .001$ ). Notably, we found gender differences in risk perception; female respondents gave much lower judgments of both performance risk ( $\beta = -.210$ ,  $p = .016$ ) and psychological risk ( $\beta = -.272$ ,  $p = .002$ ) than male respondents for separated services. Furthermore, psychological risk had a negative impact on perceived value ( $\beta = -.308$ ,  $p = .029$ ) and also bridged the effect of performance risk on perceived value. Together, service convenience and perceived risk explained 63.1% of the variance of perceived value. We summarize all significant results in Figure 3.

### **Discussion**

Overall, the results of Study 3 were consistent with the preceding studies except for the nonsignificant effect of separation on psychological risk. This discrepancy is probably due to the causality between psychological risk and performance risk. In the literature, some researchers suggest that psychological risk reflects customers' overall mental uncer-



**FIGURE 3**  
**The Structural Model and Estimation Results (Study 3, N = 133)**



\* $p < .05$ .  
 \*\* $p < .01$ .  
 \*\*\* $p < .001$ .

tainties, and performance risk can be considered an antecedent of psychological risk (Mitchell and Greatorex 1993; Stone and Gronhaug 1993). In Study 3, performance risk acted as a mediator in linking service separation and psychological risk.

## General Discussion

This research provides the first empirical examination on customer reactions to service separation. From in-depth interviews and the literature, we conduct three quantitative studies to investigate the effects of service separation on service convenience (i.e., access convenience and benefit convenience) and perceived risk (i.e., performance risk and psychological risk), which subsequently influence customers' purchase decisions and postexperience evaluations.

Specifically, Study 1 demonstrates that service separation not only can increase access and benefit conveniences but also leads to higher performance and psychological risks. Moreover, for credence services, its favorable effects are diminished, while its unfavorable effects are augmented. Study 2 shows that when both separated and unseparated service modes are available, customers will make trade-offs between the benefits and the shortcomings of service separation. We find that customers are more likely to purchase the separated mode of experience services and from the service provider with whom they have established long-term relationships. In Study 3, we retest our hypotheses using a quasi experiment on nonstudent customers and obtain consistent findings.

### Theoretical Contributions

Although recent research has acknowledged the existence of separated services (Betancourt and Gautschi 2001; Lovelock and Gummesson 2004), until now, little was known about the implications of service separation for customers. As we noted previously, there are conflicting views on the marketing value of service separation. Lovelock and Gummesson (2004) contend that customers can benefit from separated services by saving time and effort and by enjoying a higher quality of work done by professionals.

However, Vargo and Lusch (2004, p. 330) assert that "[t]he characteristic of separability is primarily important only from the manufacturer's perspective. From a consumer perspective, and thus what should be the marketing perspective, separability is not only undesirable; it is also impossible." As compelling as the logical reasoning of both sides is, the lack of corroborating empirical evidence has meant that the dispute on the desirability of service separation could not be effectively resolved.

The current research empirically investigates service separation from the customer's perspective. Our findings support Lovelock and Gummesson's (2004) contention and demonstrate the positive impact of separation on service convenience for both experience and credence services. At the same time, we observe the undesirable effect of service separation in raising risk perceptions. Furthermore, we examine how the advantages and disadvantages of service separation influence customers' purchase decisions and postexperience evaluations. Overall, the three studies in this research, using various samples, methodologies, and contexts, provide a set of consistent evidence indicating the robustness and generalizability of our findings. As such, our empirical results contribute to a clearer understanding of service separation and its implications on customer perceptions and behaviors.

The findings also suggest a link between service separation and technology-delivered services. Technologies such as pay-at-the-pump, mobile banking, and the Internet can facilitate service separation by dramatically changing the traditional ways of service delivery (Hoffman and Novak 1996; Meuter et al. 2005). When service separation is actualized by using technologies, customers' reactions to service separation may be confounded by their attitude toward technologies.<sup>3</sup> Bearing this caveat in mind, in Study 3, we control for customers' technology anxiety and still find the significant impacts of separation on service convenience and perceived risk. This leads us to conclude that separated services are not synonymous with technology-delivered services. In addition, while some services may benefit from

<sup>3</sup>We thank the reviewers for this observation.



technologies to create a separated delivery mode, service separation does not necessarily depend on technology or machine. This is illustrated by intrinsically separated services, such as freight transportation, dry cleaning, and repair services, for which the service separation is less reliant on high-tech machines or the Internet.

### **Managerial Implications**

We note that some services do not lend themselves to separation, which means that firms are not always able to provide a separated version of services, such as haircuts, massages, and other physical acts to customers' bodies (Lovelock and Gummesson 2004). However, for services that can be delivered both separately and inseparately—that is, services involving nonphysical acts to customers' minds and information processing—it is imperative to deliberate on the appropriate delivery mode.

For experience services, the results indicate a higher purchase probability (65.32%) for the separated mode, suggesting that the advantages of separation outweigh its shortcomings. Notably, a survey reports that 40% of Generation Y (i.e., the demographic of people ages 18–25 years) in the United States claim that the provision of mobile financial services is an important factor in their choice of bank (*Teller Vision* 2007). Moreover, separation can improve service efficiency and reduce service variability, in that customers are not intimately involved in the production system (Chase 1978). Therefore, in these cases, separation may be a win–win strategy for both firms and customers.

The consulting firm Celent observes that customer service inquiry through mobile banking has become an impetus for U.S. banks to embrace this new channel (*Teller Vision* 2007). In the area of online grocery shopping, the British retailer Tesco claims that it has one million regular online customers who “love our unrivalled delivery area... convenient delivery times and efficient service” (Skapinker 2009, p. 15). Tesco's experience is reflective of the positive effects of service separation on access and benefit convenience. To offset the unfavorable consequences of separation, we suggest building strong brands, offering service guarantees, and instituting service recovery as effective strategies to lower perceived risk.

However, providers of credence services should carefully weigh which delivery mode to offer. Our findings show that for credence services, the downside of separation is magnified, while its advantage is mitigated. Not surprisingly, our data indicate that a lower proportion (42.65%) of customers choose unseparated services to satisfy their desire for participation and interpersonal interactions. Evidence suggests that the limitation of separation for credence services is recognized by service providers. For example, in relating his experiences with patients, a psychiatrist notes that “Internet-based therapy, whether by e-mail or live chat, seems like a poor substitute for a real human bond with all its nonverbal cues and face-to-face exchanges.... So here is what e-mail with my patients has taught me: if you need to reschedule an appointment or need a routine medication refill, please push ‘send’; if you have something on your mind you want to talk about, please call me—the old-fashioned way” (Friedman 2008). This example implies that

providers of credence services may use different delivery modes, depending on the criticality of the task. To illustrate, for reservations, appointments, payments, or other routine activities, firms can provide a separated option to increase convenience and flexibility for customers; for delivering the core benefit, the unseparated mode may be more effective to convey personal interaction and care.

Finally, we suggest that regardless of service category, firms can reduce the perceived risk attributable to separation by instituting customer relationship management. The results indicate that customers having long-term relationships with the service provider are more likely to use the separated option because of greater trust in the provider's service quality and/or recovery. As such, when both separated and unseparated modes of the same service are available, the firm may target different segments. To attract new customers, for example, the firm may offer the unseparated mode to prospective customers to diminish their perceived risk and thus increase purchase probability. For long-standing customers, however, the firm can encourage them to use the separated mode by emphasizing its greater convenience.

### **Future Research Directions**

Although most of our hypotheses are supported, there are several limitations in the current research that present opportunities for further research. First, we define service separation as customers' absence from service production, focusing on the spatial decoupling of service production and consumption. While this conceptualization is consistent with recent views on service separability and can distinguish separated services from unseparated ones, it overlooks the possibility of service separation in terms of time (Betancourt and Gautschi 2001). To illustrate, for certain services, consumption of benefits can take place only either before (e.g., using the credit card) or after (e.g., cleaning, repair) production has been completed (Lovelock and Gummesson 2004). The concept of temporal separation merits further examination because it would be useful to know in what ways temporal separation is different from spatial separation.

Second, this research focuses on service convenience and perceived risk as the main consequences of separation. It is conceivable that service separation may lead to other customer outcomes as well. For example, separation may exert varying effects on the five dimensions of service quality (Parasuraman, Zeithaml, and Berry 1988). Specifically, separation may negatively influence tangibles because customers would miss tangible cues, such as the ambience and service facilities when they are absent from service production. Customers would also perceive less empathy and responsiveness for separated services than for unseparated services because of the reduced personal interactions. The effects of separation on reliability and assurance would be more complex because they may depend on service characteristics and other contextual factors.

Third, the services examined in this research are utilitarian or functional in nature, such that customers are inclined to save time and effort. However, for hedonic experiential services, such as going to the spa and skiing, customers actually prefer spending more time and effort to better enjoy

the experience (Berry, Seiders, and Grewal 2002; Holbrook and Lehmann 1981). Yet such hedonic services tend to involve physical acts to customers' bodies, which are largely inseparable in nature and therefore excluded from our analysis. Nonetheless, it would be worthwhile to examine if and under what conditions hedonic services can be separated because there may be differences in the consequences of separation between utilitarian and hedonic services.

Finally, it is possible that service separation has varying implications across cultures. Research reveals that consumers from diverse cultural backgrounds hold different values (e.g., Chiu et al. 2009), which include perceptions of

time and risk. For example, the idea that certain times can be allocated for specific tasks in a way that maximizes utility seems natural to European Americans, but it is unnatural or even impenetrable to others, such as Hispanics and American Indians (Graham 1981). Cross-culturally, Weber and Hsee (1998) show that people from collectivist cultures have different risk perceptions from those who are individualists. Specifically, for the same options, Chinese consumers tend to perceive lower risk than U.S. consumers. As such, the effects of service separation on service convenience and perceived risk may benefit from cross-cultural validation (Keh and Sun 2008).

## APPENDIX A Experimental Scenarios in Study 1 and Study 2

	Experience Services	Credence Services
Study 1	<p><i>Fast-Food Restaurant</i></p> <p>You just finished class this morning, and would like to have lunch. You know there is a fast-food restaurant not far away from your school. It provides both dine in and delivery services. Therefore, you can either go to the restaurant for lunch or call the restaurant, place an order with the receptionist, and ask for food delivery.</p>	<p><i>Training Program</i></p> <p>You will graduate next year and are now preparing for job interviews. You would like to attend a training program on interview skills provided by a human resources consulting company. This company provides two modes of services: you can either go to the company and attend the training course there, or you can use their long-distance services, for which you need to access its website and watch the uploaded webcast of the training program.</p>
	<p><i>Ticket Agency</i></p> <p>You want to make a flight reservation through a travel agent. You have been using this agent's ticket reservation services for five years (this is your first time to use this agent's ticket reservation services). You know that it provides two modes of services: you can either go to its retail outlet and buy the ticket, or you can call them and ask for ticket delivery. The agent charges the same price (delivery is free) and promises the same service quality for these two modes.</p>	<p><i>Student Counseling</i></p> <p>You will be taking an important exam in a few days' time and want to visit a counselor to calm your nerves. You have been using his counseling services for five years (this is your first time to use his counseling services). You know that this counselor provides two modes of services: you can either visit his office and receive face-to-face counseling, or you can log on to his website and get the counseling service through "live chat" via an instant-messaging system. The counselor charges the same price and promises the same service quality for these two modes.</p>
Study 2		

## APPENDIX B Construct Descriptions and Measurements

Constructs	Item Descriptions	Factor Loadings <sup>a</sup>	Construct Reliability
Access convenience	1. It was easy to contact the service provider.	.763	.932 <sup>b</sup> /.827 <sup>c</sup> /.846 <sup>d</sup>
	2. It did not take much time to reach the service provider.	.822	
	3. I was able to get to the service provider's location quickly.	.888	
Benefit convenience	1. I was able to get the benefits of the service with minimal effort.	.889	.812 <sup>b</sup> /.822 <sup>c</sup> /.929 <sup>d</sup>
	2. The service was easy to use.	.934	
	3. The time required to receive the benefits of the service was appropriate.	.886	
Performance risk	1. There was a high chance that there would be something wrong with this service or that it would not be delivered as promised.	.820	.881 <sup>b</sup> /.857 <sup>c</sup> /.897 <sup>d</sup>
	2. There was a high chance that I would suffer some loss because this service would not be used well.	.940	
	3. This service was extremely risky in terms of how it would perform.	.853	

**APPENDIX B**  
**Continued**

Constructs	Item Descriptions	Factor Loadings <sup>a</sup>	Construct Reliability
Psychological risk	1. The thought of using this service made me feel psychologically uncomfortable.	.683	.895 <sup>b</sup> /.940 <sup>c</sup> /.845 <sup>d</sup>
	2. The thought of using this service gave me a feeling of unwanted anxiety.	.823	
	3. The thought of using this service caused me to experience unnecessary tension.	.745	
	4. I would worry a lot when buying this service.	.771	
Perceived value	1. For the time you spent to use this service, would you say this service is ("highly unreasonable/highly reasonable")?	.875	.904 <sup>d</sup>
	2. For the effort involved in using this service, would you say this service is ("not at all worthwhile/very worthwhile")?	.838	
	3. How you would rate your overall experience with this service ("extremely poor value/extremely good value")?	.900	
Technology anxiety	1. I feel apprehensive about using technology.	.884	.896 <sup>d</sup>
	2. Technical terms sound like confusing jargon to me.	.807	
	3. I have avoided technology because it is unfamiliar to me.	.845	
	4. I hesitate to use most forms of technology for fear of making mistakes I cannot correct.	.785	

<sup>a</sup>Factor loadings in Study 3.

<sup>b</sup>Average Cronbach's alpha of measures for separated and unseparated services in Study 1.

<sup>c</sup>Cronbach's alpha of measures in Study 2.

<sup>d</sup>Cronbach's alpha of measures in Study 3.

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