

The effects of customer participation in co-created service recovery

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Abstract The benefits of customer co-creation of value in the service context are well recognized. However, little is known about service failures in a co-creation context and the consequent roles of both firms and customers in the advent of service recovery. In conceptualizing a new construct, “customer participation in service recovery,” this study proposes a theoretical framework that delineates the consequences of the construct and empirically tests the proposed framework using role-playing experiments. The results indicate that, when customers participate in the service recovery process in self-service technology contexts, they are more likely to report higher levels of role clarity, perceived value of future co-creation, satisfaction with the service recovery, and intention to co-create value in the future. Theoretical and managerial implications of the findings are discussed.

Keywords Customer participation · Service recovery · Services marketing · Co-creation · Service-dominant logic · S-D logic

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Increasingly, customers are actively engaged in value co-creation, either by serving themselves (such as at an ATM) or by cooperating with service providers (e.g., health care; Claycomb et al. 2001). Encouraging customers to be “value co-creators” is considered the next frontier in competitive effectiveness and reflects a major domain shift from goods-centered to service-centered logic in marketing (Bendapudi and Leone 2003; Vargo and Lusch 2004a). Not surprisingly, a large body of marketing literature has focused on customer co-creation of value. Many argue that customer value co-creation is critical for marketing success because, under the service-dominant logic, customers are contributing to the process of marketing, consumption, and delivery of products/services. This emphasizes the shifts from value-added to value co-creation, products to experiences, value delivery to value propositions, and exchange of operand resources to operant resources (Lusch and Vargo 2006a, b; Vargo and Lusch 2004a). Moreover, customer co-creation of value benefits customers (e.g., faster speed and lower prices) as well as firms (e.g., enhanced operating efficiencies and greater service value; Claycomb et al. 2001).

Another stream of marketing research focuses on service recovery. It is argued that, because it is impossible to ensure 100% error-free service, effective recovery from a service failure is vital in order to secure customer satisfaction, deflect negative word-of-mouth, and improve bottom-line performance (Fisk et al. 1993; Tax et al. 1998; Zeithaml and Bitner 2003). Given that the service-dominant logic perspective (see Vargo and Lusch 2004b) asserts that all firms are service in nature and that goods are platforms or distribution mechanisms for service provision, the application of service recovery is a far more reaching issue than previously thought (Lusch and Vargo 2006a, b; Vargo and Lusch 2004b). Customers can actively participate in co-creating a solution when service failure occurs by applying

specialized skills and knowledge. For example, customers can diagnose their laptop problems based on the product's user manual. If a firm fails to transfer specialized skills to customers in the service provision process, service recovery offers the firm a second chance to accomplish this task.

Unfortunately, little in the literature addresses how to encourage customers to participate in future value co-creation when service failures occur. Research on customer participation to date has focused on how to “employ customers” to increase productivity in the service delivery context without consideration of failure (e.g., Prahalad and Ramaswamy 2000; Schneider and Bowen 1995), while service recovery research has concentrated on a service provider's effort to recover from a failure (e.g., Grönroos 1988). The role of customers in recovering from the failure of a co-created service has not been explored, nor has the effect of customer participation in service recovery on the customer's intention to engage in future value co-creation. Given that the value of co-creation has well-recognized benefits and that service recovery is vital to secure customer satisfaction, this lack of research on customer participation in service recovery represents a major gap in the marketing literature.

The purpose of this research is to bridge the gap in the literature by investigating customer participation in service recovery and its effect on customers' future co-creation behaviors. Specifically, by integrating prior work on customer participation and service recovery, we attempt to develop a new construct: *customer participation in service recovery*. Further, we propose a theoretical framework linking this construct to customer satisfaction and intention toward future co-creation, and empirically test our proposed theory. By establishing the relevance of the phenomenon of customer participation in service recovery, we hope to integrate the two important streams in the marketing literature and open a new field for future academic inquiry. In the remainder of this manuscript, we provide a literature review highlighting the importance of customer participation and service recovery. Our new construct is conceptualized and a theoretical model is developed. We follow with a description of research design and role-playing experiments. The analysis and findings of our research are presented. We conclude with a discussion of limitations and managerial and research implications.

Theoretical framework and hypotheses

Customer participation

Customer participation is defined as “the degree to which the customer is involved in producing and delivering the service” (Dabholkar 1990, p. 484). Meuter and Bitner

(1998) distinguished among three types of service production based on the level of customer participation: firm production, joint production, and customer production. The argument suggested by Vargo and Lusch (2004a), that the “customer is always a co-creator,” serves as one of the foundational premises for the emerging dominant logic of marketing. Further, Prahalad and Ramaswamy (2000) advocated co-opting customer competence as a competitive strategy. Customers are no longer “passive audience,” but “active co-producers.” They are actively co-creating values with service providers, through which their personal needs are better served and satisfaction enhanced.

Past research in customer participation is primarily represented by three streams. The first contains studies of why customers should engage in the service provision process, largely from the firm's perspective. This work has mainly addressed the economic benefits of productivity gains by using customers as substitutes for portions of employee labor (e.g., Mills and Morris 1986). Bendapudi and Leone (2003, p. 15) explicitly pointed out that “the logic of these exhortations has relied almost exclusively on an economic rationale.” To address this oversight in the literature, they suggest the need to explore customers' potential psychological responses to participation as well as the impact of those responses on satisfaction.

The second customer participation theme focuses on managing customers as “partial employees” and applying traditional employee management models (Bendapudi and Leone 2003). Drawing on the idea of customer socialization, Claycomb et al. (2001) proposed the idea that as customers participate more actively in service provision, organizational socialization increases correspondingly, leading to greater perceived service quality and enhanced customer satisfaction. Kelley et al. (1990) proposed a conceptual framework of service quality to capture the behavioral and affective outcomes of organizational socialization through customer participation, whereas Dabholkar (1990) suggested that customer participation might enhance service quality perceptions and satisfaction.

The third theme regarding customer participation centers on customer motivation to co-create a service. Bateson (1985) investigated the motivation of self-service consumers. Dabholkar and Bagozzi (2002) examined the effect of consumer traits and situational factors on technology adoption. More recently, Meuter et al. (2005) explored the key factors that influence the initial trial decision of self-service technologies, demonstrating that consumer readiness variables (role clarity, motivation, and ability) are key mediators between the established adoption constructs (innovation characteristics and individual differences) and the likelihood of trial.

Although these studies have shed important light on customer participation and some have addressed successful

and unsuccessful co-created service (e.g., Bendapudi and Leone 2003), they have focused generally on discussing customer participation in successful service encounters. Little research has sought to investigate how customers respond when a co-created service fails. In recognition of this gap in the literature, this paper explicitly discusses service recovery in the context of co-created service failure. Further, empirical research on customer participation is scarce; as Meuter et al. (2005, p. 63) pointed out, “a review of the customer coproduction literature from 1979 to 2000 finds that of the 23 studies, only three are empirical.” It is this dearth of empirical research that has served to motivate our empirical investigation of this aspect of customer participation in service co-creation. Nevertheless, these important findings in the literature on customer participation serve as the theoretical foundation for the framework proposed in this study.

Service recovery

No one in the service industry can entirely escape failure. Even world-class service giants like Starbucks and companies like GE, Toyota, and Sony that follow a service-dominant logic perspective can stumble (Lusch and Vargo 2006a). Fisk et al. (1993) argued that it is impossible to ensure 100% error-free service.

When service failures do occur, the firm’s reaction has the potential to either reinforce a strong customer bond or transform a seemingly minor distraction into a major incident. Thus, service recovery gained increased attention in the late 1990s and early 2000s. As mentioned before, effective recovery can have a dramatic impact on customer satisfaction, deflect the spread of damaging word-of-mouth, and improve bottom-line performance (Tax et al. 1998; Zeithaml and Bitner 2003).

Grönroos (1988) defined service recovery as the actions taken by an organization in response to a service failure. It includes all the activities and efforts employed to rectify, amend, and restore the loss(es) incurred after the failure. Grönroos specified two dimensions of service recovery: outcome and process. The outcome, or technical, dimension is what is done (tangible compensation), whereas the process, or functional, dimension concerns how it is done (employee interaction with the customer). Both influence customer perceptions of service recovery.

The relevant literature on service recovery provides insights into two important areas. First, researchers addressing how service providers react to service failures when they occur have developed classification schemes (Bitner et al. 1990; Kelley et al. 1993). Researchers (e.g., Kelley et al. 1993; Tax et al. 1998) have developed various service recovery strategies and typologies, such as apologies, refunds, price discounts, and upgraded services.

The second service recovery research stream addresses the question of how customers rate the effectiveness of a firm’s recovery efforts. Considerable work (e.g., Tax et al. 1998) has been done to provide correlational or anecdotal support for the effect of service recovery on customer post-recovery evaluation, such as satisfaction, word-of-mouth, and repurchase intention. Building on the justice theory, Tax et al. reported positive influences of customers’ justice evaluations on satisfaction, trust, and commitment after a service complaint experience. Smith et al. (1999) developed a model of customer satisfaction with service failure/recovery encounters based on an exchange framework. Further, these authors suggested that highly effective recovery efforts can produce a “service recovery paradox” in which secondary satisfaction (i.e., satisfaction after a failure and recovery effort) is higher than pre-failure levels.

Although past research has identified various potential positive outcomes resulting from effective service recovery (e.g., Fisk et al. 1993; Tax et al. 1998; Zeithaml and Bitner 2003), recovery has been generally defined as an organization’s response to service failure (Grönroos 1988). Very little attention has been paid to the customer’s role in the recovery process, especially when the services are co-created. With the benefits of customer participation being well recognized, the question becomes: What happens when co-created services fail? More specifically: (1) Will customers be frustrated/discouraged about future value co-creation? (2) Considering the nature of co-created services, what will be the consequences (e.g., future co-creation behavior) if customers continue their participation in service recovery? (3) If the quality of co-created services depends largely on customers’ input, can firms take advantage of recovery as a learning mechanism to enhance customers’ future co-creation expertise and efficacy? and (4) Can service recovery emerge as a separate means for firms to transfer specialized knowledge and skills?

Our study incorporates the idea of customer participation in service recovery by integrating two independent streams of literature. Through our theoretical framework we investigate the effect of such participation on customers’ future co-creation behavior in the context of co-created service. Because previous research has consistently demonstrated the important role of service recovery in achieving satisfaction, positive word-of-mouth, and future purchase intention (Bitner et al. 1990; Smith et al. 1999; Tax et al. 1998), we focus on customer satisfaction with the service recovery in this paper, given its important managerial implications. In addition, customers’ continued participation in service provision is critical to business success, which may be jeopardized in the event of service failure. Hence, this study also centers on the effect of co-recovery on a customer’s intention toward future co-creation. Building on previous work in customer participation

and the customer socialization theory, a set of outcome variables regarding customer readiness to participate in future co-creation are examined as possible mediators.

Customer participation in service production is not a given. It may be influenced by type of service, situational factors, and consumer individual differences. However, the focus of our study is on the phenomenon of this participation and its consequences (future co-creation behaviors). The idea is that if we could first establish the significant implications of customer participation in service recovery on customers' future co-creation behavior (i.e., increased customer ability and intention for future co-creation), it would be more meaningful to try to examine the potential antecedents to such participation in future research. Thus, these potential antecedents are not examined in this paper.

In summary, then, our proposed theoretical model (Fig. 1 in [Appendix](#)) centers on customer participation in service recovery and its consequences (customers' intention toward future co-production) as well as the mediators of customers' readiness to continue to co-create value (customer ability, role clarity, and value) and satisfaction with the recovery.

Customer participation in service recovery

Customer participation has been defined in a general service provision manner (Dabholkar 1990). Drawing on this definition and the definition of *service recovery* (Grönroos 1988), we define *customer participation in service recovery* as “the degree to which the customer is involved in taking actions to respond to a service failure.” Similar to the categorization of customer participation developed by Meuter and Bitner (1998), recovery efforts are classified into three types based on the degree of participation: firm recovery, joint recovery, and customer recovery. All three types may occur when service recovery takes place.

Firm recovery (zero to low level of customer participation) is when the recovery efforts are delivered entirely or mostly by the organization and its employees; customers may only have physical presence or merely offer basic and necessary information (Claycomb et al. 2001; Meuter and Bitner 1998; Zeithaml and Bitner 2003). In this situation, customers turn to the employees for help. In more customized service contexts, customers may need to be physically present, or at the very least provide input into the design process. For example, suppose a customer uses online banking for the first time but fails to complete the task. An employee could obtain all the information from the customer and process the online activities with no contribution by the customer in actual hands-on resolution. Most research focuses on this type of service recovery (e.g., Bitner et al. 1990; Kelley et al. 1993). While service problems may be solved in a timely manner, customers may

have little or no idea of the exact procedures and details required to participate in future service co-creation.

Joint recovery is a situation in which both customers and employees participate in the process of service recovery. When customers aid in recovery, they serve as “partial employees,” contributing effort, time, or other resources to undertake some of the recovery functions (Claycomb et al. 2001; Schneider and Bowen 1995). In the aforementioned example, the customer could be guided through the entire online banking transfer process by working together with an employee. In this situation, the employee may provide guidance to the customer throughout the recovery process, but both parties work together to solve the problem. Firms may adopt a variety of methods in working with customers, such as instructing them step-by-step through a call center, via the Internet, or on-site.

Customer recovery is when the recovery actions are taken entirely by customers, with no contribution from the firm or its employees. In the aforementioned example, this could occur when the customer keeps trying and eventually solves the problem himself. The “actors” could be the customer involved, other customers, and a third party requested by the customer. As long as the firm is not involved in the recovery process (entirely or jointly), recovery efforts directed by the customer are considered customer recovery. The environment could be online (e.g., a network chatting room) or a social environment in the presence of other customers. The key is that the customer initiates and resolves the service failure independent of the service provider.

The effect of customer participation in service recovery on customer ability and role clarity in future value co-creation

As customers work as “partial employees” in the recovery process, their expertise directly influences the quality of the work. The manner in which a customer engages in future value co-creation is determined by the customer's ability, role clarity, and perceived value for future co-creation (Meuter et al. 2005). *Ability in future co-creation* refers to customers' knowledge and skills that enable them to perform effectively in future value co-creation—in other words, what they “can do” rather than what they “want to do” or “know how to do” (Meuter et al. 2005). *Customer role clarity in future co-creation* is defined as the extent to which the procedures, goals, criteria, and knowledge of consequences are clear to a customer and influence his/her likelihood of future co-creation. In addition, the role the customer plays as a value co-creator (“partial employee”) in service recovery will have a direct influence on service quality.

There are mainly two mechanisms underlying the relationships between customer participation in service recovery, customer ability and role clarity in future co-

creation. First, organizational socialization is a common method used to influence employee performance (Claycomb et al. 2001). Drawing from the *customer socialization theory* (Claycomb et al. 2001), involvement of customers in a recovery process serves as another mechanism for organizational socialization, which helps them understand their roles as “partial employees” and learn how to act in the service encounter. When the organization takes on the sole responsibility of recovery, customers may consider it more efficient to let the organization deal with such services in the future. Interacting with an employee is perceived as efficient, convenient, and safe. Meanwhile, there is no improvement in the customer’s ability or role clarity in co-creating value.

As the level of customer participation in service recovery grows (e.g., joint and customer recovery), customers gain a better understanding of their roles and service procedures, which enhances their knowledge and ability. Thus, they will function more efficiently and productively. The improvement of role clarity has been found to lead to enhanced ability through observation, vicarious learning, and modeling (Bandura 1977). Dellande et al. (2004) investigated the service provider’s role in gaining customer compliance and found that as customers gain role clarity, their abilities to perform necessary behaviors increase. This lends further support to our proposition that customer role clarity in value co-creation positively influences customer ability to co-create in the future.

Second, Kotler (1988, p. 648) asserted that “sampling is the most effective and most expensive way to introduce a new product,” implying that direct experience conveys a new product’s attributes better than other communication methods. Thus, we adopt the *product experience theory* (Smith and Swinyard 1982) in service recovery. As customers increase their level of participation in recovery, the firm has an opportunity to shape their perceptions about service delivery and influence their total service experiences through value co-creation (Claycomb et al. 2001; Prahalad and Ramaswamy 2004). Based on the service-dominant logic, knowledge is the fundamental source of competitive advantage and service is a process of knowledge application. Customer participation in service recovery functions as a meaningful avenue for “knowledge transfer” (Vargo and Lusch 2004a), and customer behaviors can be affected by the transition from a “new” customer to an “experienced” one. Thus we propose the following hypotheses:

- H1: As the level of customer participation in service recovery increases, the customer will have greater role clarity with regard to future value co-creation.
- H2: As the level of customer participation in service recovery increases, the customer will have greater ability with regard to future value co-creation.

H3: Customer role clarity in future value co-creation positively influences customer ability in future value co-creation.

The effect of customer participation in service recovery on customers’ perceived value in future co-creation

Perceived value in future co-creation refers to customers’ subjective evaluation of the benefits of future co-creation. For example, when customers decide to use self-service technologies instead of using interpersonal services, the potential rewards can be feelings of accomplishment and enhanced self-efficacy, and enjoyment of the self-serving process (Meuter et al. 2005). When customers try to solve service problems on their own, or are guided through a series of procedures, a superior recovery effort with customer involvement not only offsets the negative effect of service failure but also provides them with a successful service experience. Therefore, customers should find the co-creation activities more intrinsically attractive (Bateson 1985; Dabholkar 1990; Schneider and Bowen 1995). As customers devote extensive personal efforts to solving the problems and eventually achieve satisfactory recovery outcomes, the “working” process will provide feelings of accomplishment, prestige, personal growth, and/or mere pleasure from engaging in the activity (Meuter et al. 2005). Thus, we propose:

H4: As the level of customer participation in service recovery increases, the customer will have greater perceived value with regard to future co-creation.

The effect of customer participation in service recovery on customer satisfaction with service recovery

The customer participation literature posits that as the level of customer participation increases, customers are more motivated and committed to co-creation (Zeithaml and Bitner 2003) and thus perceive higher service quality. Because their satisfaction is directly related to what and how they contribute to service quality (Kelley et al. 1990), the increased perceived quality of the service outcomes will result in greater satisfaction. Similarly, when “working” in the recovery process, customers are inclined to protect and enhance self-esteem and justify their efforts by giving themselves more credit for their “hard work” (Walster et al. 1973). As the level of their participation increases, customers will evaluate their own work more positively and become more satisfied with recovery outcomes. Moreover, as they become more competent and “experienced” through participation, the utility of consumption increases as well. The

enhanced feeling of self-fulfillment through co-creating successful service recovery should result in greater satisfaction and positive customer evaluation. Thus:

H5: As the level of customer participation in service recovery increases, the customer will have greater satisfaction with service recovery.

The effect of customer participation in service recovery on customer intention toward future co-creation

Customer intention toward future co-creation is defined as a customer's willingness to participate in service production and delivery in the future. As customers participate more in service recovery, the skills and confidence they need to complete the task are improved. Therefore, task-related self-efficacy is expected to increase as well (Meuter et al. 2005). Self-efficacy has been shown to be a strong predictor of behavioral intention. When customers believe they are capable of performing a task, they will be more likely to engage in that behavior (Seltzer 1983). Similarly, as customer role clarity in future co-creation increases, customers will enhance their understanding of role requirements and be more likely to participate in future co-creation (Meuter et al. 2005). Thus:

H6: As the level of customer ability in future co-creation increases, the customer will have greater intention toward future co-creation.

H7: As the level of customer role clarity in future co-creation increases, the customer will have greater intention toward future co-creation.

As customers' perceived value in future co-creation increases, they are more motivated to co-create. Motivation as a key predictor of performing a task is well supported in the literature (Barczak et al. 1997). In addition, enhanced feelings of accomplishment influence customers' likelihood of participating in future co-creation as well.

H8: As the level of the customer's perceived value in future co-creation increases, the customer will have greater intention toward future co-creation.

Superior service recovery effectively reduces customer dissatisfaction resulting from service failure. Customers are exposed to successful service experience in the recovery process. The more satisfied customers are, the more likely they will co-create in the future. Thus:

H9: As the level of customer satisfaction with service recovery increases, the customers will have greater intention toward future co-creation.

Customer participation in service recovery is expected to impact customers' intention toward future co-creation in a number of ways. As illustrated above, customer's role clarity, ability, perceived value for future co-creation, and customer satisfaction with recovery all mediate the effect of customer participation in service recovery on intention for future co-creation. However, there may be additional mechanisms through which customer participation in service recovery may influence intention for future co-creation. For instance, folk wisdom holds that experience is the best teacher. With successful service recovery experiences, customers would perceive less risk and gain more confidence in value co-creation. When their participation in recovery increases, customers are more likely to take ownership of the activities and would simply enjoy the experience of being involved in co-creation and co-recovery. Since these mechanisms are not captured by the four mediating factors in the model, we predict a direct effect of customer participation in service recovery on customers' intention toward future co-creation. Therefore:

H10: As the level of customer participation in service recovery increases, the customer will have greater intention toward future value co-creation.

Attribution of service failure: Control variable

Attribution of service failure is defined as the locus and magnitude of blame a customer believes should be placed for the failure (i.e., Who should be blamed for the problem and to what extent?; Maxham and Netemeyer 2002). It is generally accepted that individuals tend to attribute successful outcomes to themselves and unsuccessful outcomes to external forces; this is referred to as "self-esteem maintenance," or self-serving bias. Working as "partial employees," customers have specific responsibilities. In highly participative services, outcomes emerge from the collaboration among service employees and customers. The quality of the resulting service is at least partially dependent on the quality of the collaboration (Zeithaml and Bitner 2003). It is expected that the locus of attribution of service failure in a value-co-created context may influence customers' responses to service recovery. When customers attribute recovery efforts more to the firm than to themselves, they may experience a negative impact on their role clarity, perceived value, and intention toward future co-creation. Further, with more negative attributions directed toward the firm, customers may be less satisfied with service recovery as well. Given the role *attribution* has been found to play in the participation/service failure contexts, it has been controlled for in this study.

Method

Research design

To test the proposed theory of customer participation in service recovery, we used scenario-based role-playing experiments to collect data. Scenario-based studies have been used successfully in a service context to evaluate service encounters involving both failure and recovery (e.g., Smith et al. 1999). A scenario-based study was chosen because of the biases often associated with retrospective self-reports, such as memory lapse, rationalization tendencies, and consistency factors (Smith et al. 1999). This method makes it easier to operationalize the manipulations, provides control over otherwise unmanageable variables, and facilitates the compression of time by summarizing events that might otherwise unfold over days or weeks (Bitner et al. 1990).

We used multiple methods to develop the scenarios, starting with a qualitative method and rigorously implementing the procedure to ensure the effectiveness of the manipulation (Swanson and Kelley 2001). We did brainstorming, focus group interviews, and small group surveys to develop the scenarios. Three criteria were used to evaluate and select the scenarios—criticality, frequency, and similar experiences. Moreover, the variation of recovery type (for measuring customer participation in service recovery) was considered to rule out the possibility that some types of services may have one dominant type of recovery strategy, such as joint recovery. Online course registration and Internet set-up were selected as instrumental stimuli for the study because of their relevance to our intended subjects and variations in design aesthetics without commensurate variations in other service features.

A 3 (customer participation in service recovery) \times 2 (service) between-subject design was used. Customer participation in service recovery was manipulated at three levels: firm recovery, joint recovery, and customer recovery. The two services, online course registration and Internet setup, were arranged for the experiment. Each subject was given one scenario describing one type of recovery effort in one service and asked to respond to a set of questions.

Research context

We focused on self-service technologies (SSTs) in our experiments because of the accelerated rate of SST application in the consumer buying/transaction environment. SSTs are technological interfaces that enable cus-

tomers to produce a service independent of direct involvement by the service employee(s) (Meuter et al. 2000). Besides online course registration and Internet setup, examples of SSTs include such contexts as ATMs and pay-at-the-pump.

There were several reasons for choosing SSTs as the research setting. First, compared to interpersonal interactions, less has been done to investigate customer interactions with technology interfaces. Second, SSTs have had mixed success and are associated with a high risk of service failure (Zeithaml and Bitner 2003). Third, the continuing proliferation of SSTs conveys the need for research in this technology-oriented context. ATMs and retail self-checkout have become widely available, and marketers are expanding the applications of SSTs (Meuter et al. 2000). Fourth, SST advances will continue to play an important role in service provision, with the result that SSTs will become an important factor in long-term strategic success (Meuter et al. 2000). Moreover, the importance of implementing effective service recovery efforts in the SST context is evident as customers may switch service providers, revert back to an interpersonal delivery alternative, or decide to avoid using self-services, none of which is beneficial to service providers or service industries in the long run (Meuter et al. 2000).

Sample

The subjects in our experiments were 231 undergraduate students attending an introductory marketing class at a large Midwestern university. Among them, 223 responses were valid without missing data. Extra course credits were offered as incentives for participation in our study. About 48% of the subjects were male and 52% were female. About 88.8% were 20–29 years old. About 82.4% of them had personal experiences of using the particular type of SST described in the scenario (either online course registration or Internet setup). About 74.2% of the subjects had used that SST within the previous 3 months and 12.9% had used it 4–6 months before that. Of the 223 subjects, half of them had encountered the type of self-service failure described in the scenario; among those, 77% had experienced the problem at least once up to two times. The cell sizes for firm recovery, joint recovery, and customer recovery were 78, 77, and 76, respectively. Using a student sample in this study was justified because the scenario development procedure used to select the types of services as well as service failures ensured that students were a representative sample of consumers of those services.

Dependent variables

Measures of customer ability in future co-creation were selected from those used in Meuter et al. (2005). Five items were adapted from Meuter et al. (2005) to measure customer role clarity in future co-creation. Measures of customer's perceived value in future co-creation were also adapted from Meuter et al.'s four-item intrinsic instrumentality scale. Because no prior established scale was available for measuring customer intention toward future co-creation, three items were developed for that purpose based on the scale of "repurchase intention" used by Swanson and Kelley (2001). The scale of customer satisfaction with service recovery consisted of two parts: two semantic items adapted from Cheng (1995) and two items adapted from Maxham and Netemeyer (2002). Because we attempted to capture the performance of both parties in service recovery instead of only the firm's part, which was the focus of Maxham and Netemeyer's satisfaction scale, two items were adapted accordingly to fit our research context. Attribution of service failure, the control variable, was measured by three items adapted from Maxham and Netemeyer. Subjects' previous service experiences and demographic information were collected as well to provide the subject profile.

Procedure of the experiment

Data collection took place in a classroom setting. A group of subjects entering a large classroom was greeted by an experimenter and informed of the nature of the experiment and the incentives for participation. After listening to the general instructions, each subject was randomly assigned to read one of the six experimental conditions (2 scenarios \times 3 recovery types), then answer questions from a structured instrument. The entire experiment lasted about 20 minutes.

Results

Due to statistical and practical considerations, the two subsamples in the online course registration and Internet setup scenarios, respectively, were combined into an overall sample to test the proposed theoretical model. Statistically, Box's M test was performed to test the equality of the covariance matrices of the factors in two subsamples. It was found that Box's M was not significant ($p=0.239$), suggesting there was insufficient evidence to reject the equality null hypotheses. Practically, both online course registration and Internet setup involved similar online technologies. There was no evidence to suggest that the two scenarios would be significantly different. Parsimony

in presentation could be achieved through combined analysis.

Manipulation check

The manipulation of customer participation in service recovery was checked through the following question: "Using a 10-point scale (both yours and the firm's points should add up to 10), how much did you/the firm contribute to this (described) solution?" The manipulation was demonstrated to be appropriate. The ratings of self contribution in the recovery effort were significantly different from each other across the three types of recovery, $F(2, 217)=90.002, p<0.001$, with customer recovery the highest (mean=7.58), followed by joint recovery (mean=4.69) and firm recovery (mean=3.36). Similarly, there were significant differences in the ratings of firm contribution, $F(2, 217)=89.507, p<0.001$, with firm recovery the highest (mean=6.93), joint recovery in the middle (mean=5.81), and customer recovery last (mean=2.56).

Confirmatory factor analysis

We used the EQS for Windows program to analyze our data (Bentler 1995). A two-step modeling approach was used, as recommended by Anderson and Gerbing (1988). In the first stage, a confirmatory factor analysis (CFA) was performed to assess the measurement model, including the examination of construct reliability and convergent and discriminate validity. In the second stage, path analysis was conducted to test the hypotheses.

Because customer participation in service recovery is a manipulated ordinal variable, it was not included in the CFA. Instead, the CFA was performed on the five dependent variables and the control variable, attribution of service failure. The standardized factor loadings, R^2 and the corresponding t statistics for all items, as well as the model fit indices and coefficient alphas for the factors, are presented in Table 1 in Appendix.

To assess the fit of the confirmatory measurement model, we followed the multi-step procedure recommended by Bagozzi and Yi (1988). First, the univariate and multivariate statistics of the input variables were examined to detect any potential violations of the normality assumption. As there were no values of kurtosis or skewness larger than 3, non-normality did not appear to be a serious concern. Thus, maximum likelihood is an appropriate estimation technique to fit the CFA model. Second, the model converged properly without any report of anomalies (such as condition codes or improper solutions). Third, the χ^2 test was significant ($\chi^2(194)=344.433, p<0.001$). Because at least three problems have been identified with the χ^2 test, including unknown power, inadequate measurement of

goodness of fit, and sensitivity to sample size, additional model fit indices were evaluated, as recommended by Bagozzi and Yi (1988). The model exhibited an acceptable fit (CFI=0.957, IFI=0.957, Bentler–Bonett Non-Normed Fit Index=0.948, Standardized RMR=0.048). Error variances and variances of the factors were positive and significant. Fourth, the internal structure of the measurement model and the convergent validity of the factors were examined. The standardized factor loadings of all items were found to be positive, high in magnitude, and statistically significant. Moreover, the coefficient alphas for all factors were all over 0.80. These findings combined indicated strongly that the internal structure of the CFA model was sound and that all factors possessed strong convergent validity (Anderson and Gerbing 1988). Fifth, fifteen pairwise comparisons between one- and two-factor models were made among six factors to test their discriminant validity. Because the fit of the two-factor model was found to be significantly better than the fit of the one-factor model for all pairwise comparisons, it provided evidence of discriminant validity (Bagozzi and Phillips 1982). In conclusion, on both theoretical and statistical grounds, all factors possessed convergent and discriminant validity, and the CFA model fit the data well.

Hypothesis testing

Similar to the CFA process discussed earlier, we followed the multistep procedure recommended by Bagozzi and Yi (1988) to assess the fit of the path model to the data. Factor scores were computed as a composite of their respective items, which is the most frequently used method to compute factor scores in JMR and JCR (Lastovicaka and Thamodaran 1991). Because the independent variable, *customer participation in service recovery*, was an experimental variable, we measured it using an ordinal scale [i.e., firm recovery (0), joint recover (1), and customer recovery (2)]. We then specified customer participation as a categorical variable in EQS and let the program compute polychoric and polyserial correlations for subsequent path modeling (see Bentler 1995, p. 51). The control variable, attribution of service failure, was also treated as an independent variable, with direct paths to all the dependent variables and covariance with the experimental variable, customer participation in service recovery.

Because normality was not assumed, elliptical reweighted least squares (ERLS) instead of maximum likelihood was used to estimate the path model. The ERLS encountered no special problems and converged properly. Although the χ^2 test was significant ($\chi^2(5)=15.875, p<0.01$), it is well known that the chi-square statistic is highly sensitive to sample size, so additional model fit indices were evaluated,

as recommended by Bagozzi and Yi (1988). These fit indices suggested a good fit of the model (CFI=0.977, IFI=0.978, Bentler–Bonett Normed Fit Index=0.968, Standardized RMR=0.057). All variance estimates were positive and significant. These results combined indicated that the path model fit the data well and that the path coefficients could be used to test the related research hypotheses. To do this, the sign and significance of the path coefficients in the fitted path model were examined. Table 2 in Appendix presents the path coefficients, *R*-squared and *t* value for all the hypotheses.

With regard to the relationships between the independent variable and a set of dependent variables, the results show that customer participation in service recovery has a significant and positive effect on customer role clarity ($\beta=0.263, p<0.01$), perceived value ($\beta=0.141, p<0.05$), and satisfaction with service recovery ($\beta=0.240, p<0.01$), supporting H1, H4, and H5. Although the effect of customer participation in service recovery on customer ability in future co-creation is positive, it is not statistically significant. Thus, H2 is not supported. The results also indicate that role clarity significantly and positively influences ability in future co-creation ($\beta=0.640, p<0.01$), supporting H3. Moreover, customer participation in service recovery has a positive and significant effect on intention ($\beta=0.186, p<0.01$), suggesting that H10 is supported.

Regarding the antecedents of customer intention toward future co-creation, it was found that ability, role clarity, perceived value in future co-creation, and satisfaction with service recovery all have significant and positive effects on customer intention toward future co-creation. Hence, H6, H7, H8, and H9 are all supported.

Attribution of service failure was found to have a negative and significant effect on role clarity ($\beta=-0.300, p<0.01$), perceived value ($\beta=-0.181, p<0.01$), and satisfaction ($\beta=-0.437, p<0.01$), but no significant effect on ability and intention.

In summary, when controlling for the effect of attribution of failure, nine out of ten hypotheses were supported. These findings lend support to our proposed theoretical model and shed light on how customer participation in service recovery influences customers' future co-creation behaviors. The implications of these findings are discussed in the following section.

Discussion

Contributions to the literature

In this study we have conceptualized a new construct—customer participation in service recovery and integrated

two important streams in the marketing literature: customer participation and service recovery. By establishing the theoretical and managerial relevance of customer participation in service recovery, we have established a basis for promising future academic research.

More specifically, our study seeks to determine how the enactment of recovery due to failure in co-created service contexts affects customer satisfaction and intention to continue as a co-creator. The results indicate that, when customers participate in co-created service recovery, they are more likely to report higher levels of role clarity, perceived value in future co-creation, satisfaction with the service experience, and intention to co-create in the future. As anticipated, customer attribution of firm level responsibility for failure in a co-produced service context has a negative consequence on customers' role clarity, perceived value in future co-creation, and satisfaction with service recovery.

Consistent with many of the foundational premises advanced by Vargo and Lusch (2004a), this study demonstrates that recovery efforts by customers in co-created service contexts increases customers' specialized skills and knowledge, thereby enhancing their likelihood to co-create in the future. Considering that all industries are service in nature, the findings in our study should not be limited to the "services" domain, but rather, they extend to many business contexts. The knowledge customers acquire in the recovery of co-created services enhances their understanding of how to co-create, which in turn contributes to a potential differential advantage for the service provider. One important theme in the service-dominant logic advanced by Vargo and Lusch (2004a) is that the customer is always a co-creator of value. Therefore, customer participation in creating the core offering can occur at many points of the value network. This suggests that customers can acquire the specialized knowledge and skills not only in service provision but also in the process of service recovery, and that, if organizations miss their chance to successfully transfer specialized knowledge to customers in the initial engagement (i.e., service provision), there may be opportunities in the context of service recovery to do so. It is also interesting to note that failure in a co-created service context is better resolved with co-created service recovery. This may suggest the potential boundaries of "recovery paradox," which indicates that if service providers can achieve superior service recovery, customers may achieve higher satisfaction. In the context of co-created services, factoring the customer out of the recovery equation (firm recovery) may damage the fundamental premise of the exchange context.

There are at least two possible interpretations of the less favorable effects of firm recovery in a co-created context. It is important to note once again that in a firm-only context, customers have been factored out of the service production

experience. Attributions could be that the firm has recognized the service as poorly designed, resulting in a need to disconnect the customer from the co-creation process, or that co-created recovery is too difficult, suggesting that future failure will be met with similar responses. It may be that firm recovery undermines the customer's sense of empowerment and confidence in future co-creation. If the intent of the service provider is to secure the customer as a long-term co-creator, caution should be used in firm recovery of failed co-produced services.

Moreover, timing has been demonstrated as a critical motivator for customers to prefer self-services to interpersonal services (Dabholkar and Bagozzi 2002). In this instance, joint recovery or customer recovery may have potential competitive advantages over firm recovery in terms of response speed. For co-created services (e.g., self-service technology), it might be hard for firms to identify the service failures and recover from them in a timely manner, while joint or customer recovery may provide more timely problem solving.

An intriguing finding in this study is that customer participation in service recovery is not a significant predictor of customer ability in future co-creation. However, it is found that role clarity mediates the relationship between customer participation in recovery and customer ability. These findings parallel Dellande et al.'s (2004) study on customer compliance, in that role clarity leads to ability, which in turn leads to motivation.

Future research

The focus of our study was to investigate the effect of customer participation in service recovery on its consequences (future co-creation behaviors). As such, factors motivating or preventing customer participation in service recovery have not been addressed here. As the beneficial effect of co-recovery on customer future co-creation behavior is supported in this study, future research should explore the potential antecedents that influence a customer's willingness to participate in service recovery, such as individual difference and situational variables.

Our study was limited to a single relationship exchange context. It would be enlightening to use a longitudinal study to investigate how certain types of co-created recovery can influence long-term relationships with customers. For instance, a failed co-created service that is jointly recovered by the customer and service provider may offer a platform for relationship enhancement that actually improves customer loyalty. In contrast, minor and possibly frequent service interruptions requiring continued co-created recovery may have a nagging cumulative effect that undermines trust in the service provider and thus the

intention to co-create in the future. This might be further explored in contexts in which the firm plays a more significant role in providing recovery assistance (e.g., help menus, recovery tutorials) as opposed to direct service provider assistance.

To keep the scope of our study reasonable, we selected only two scenarios, Internet setup and online course registration, focused in the SST context. It would be interesting to extend the study to other service contexts to determine whether our findings hold. Consumer reactions to service recovery in failed co-created contexts may vary based on the characteristics of the service, such as highly customized services (health care, consulting), services that can be highly urgent (airline check-in, income tax preparation), and services that are consumed/co-created in socially conspicuous rather than private settings (retail check-out with a number of customers waiting in line). Consider urgent services for a moment. In the event of extreme time-critical service, it may be that a co-created service recovery by both the firm and customer is less satisfactory and potentially results in lower intention toward future co-creation. A key to understanding the dynamics of co-recovery is to explore which service contexts/characteristics alter the relative influence of the roles of the co-recovery partners.

Bendapudi and Leone (2003) suggested that a customer who participates in service production will weigh the process dimension more heavily than the outcome dimension in determining overall satisfaction. The current study measured customer satisfaction with the recovery outcome. An interesting area of investigation would be to examine whether participation in recovery would have a different influence on process and outcome dimensions.

Manipulation of the extent to which customers and service providers participate in co-created service recovery may provide interesting outcomes. An illustration might be where a firm is viewed as primarily at fault in a failed co-created service. A social justice perspective in this context might suggest that the firm would be expected to provide a disproportionately larger portion of the recovery effort (recognizing that joint recovery is still preferable). In short, attributions (e.g., firm, context, customers) regarding the failure would serve to dictate the manner in which the co-created recovery was enacted. Though attribution was treated in our study as a control variable, future research may consider investigating consumer attributions and their effect on recovery.

The learning literature could be particularly insightful as a theoretical perspective with regard to both service co-creation and recovery. Whether self-help menus or other embedded assistance tools, particularly in the context of SSTs, should be perceived as a joint or customer recovery is unclear. The speed at which customers acquire the

necessary knowledge and skills to recover is subject to the manner in which instructional materials are presented as well as the content. Issues such as the pacing, repetition, and reinforcement of the material presented, to name but a few, are important characteristics of how customers might acquire recovery expertise.

Obviously, the extent to which customers have co-created given services in the past and/or experienced similar service failures should influence how they respond to any given service failure and its co-created resolution. Research that selectively studies customers with different experiences in co-creation may identify different role expectations and attribution perspectives toward the co-creation of service recovery.

Managerial implications

The managerial implications of this study are varied. At least within the context of the SSTs investigated in this study, once a firm has engaged a customer as a co-creator, the prudent strategy in the event of failure is to enhance customer involvement in finding a resolution (Meuter et al. 2005). Moreover, as firms look toward engaging customers in the co-creation of recovery strategies, the objectives should be to improve customer role clarity, perceived value of co-creation, and service satisfaction. These customer perceptions of co-creation are particularly valuable as service firms seek to orient and integrate customers into their roles as “partial employees.” It may be that recovery from the failure of a co-created service is a constructive exercise, meaning that upon successful recovery customers are more fully qualified for and engaged in their co-creation role. From a long-term perspective, if the quality of services depends largely on co-creation, firms will benefit from better trained customers. Also noteworthy from a managerial perspective is the extent to which the customer participating in recovery is more effective in the context of co-created services using SSTs. The opportunity for collaboration with the customer in resolving service failures opens venues for relationship building. Giving the customer both improved competency (thereby capability is potentially limited to a specific service provider, much like an asset-specific investment) and valuable interpersonal interaction that contributes to favorable consequences in relationship formation/management are both positive outcomes of the collaboration.

In summary, this study has demonstrated the value of engaging customers in the SST service recovery. Future research should explore relevant antecedents to customers’ willingness to participate in such recovery. Cost-benefit studies should also be conducted to provide useful insights as a marketer assesses the value of customer retention/satisfaction tradeoffs via co-creation strategies.

Appendix

Figure 1 Theoretical framework of customer participation in service recovery.

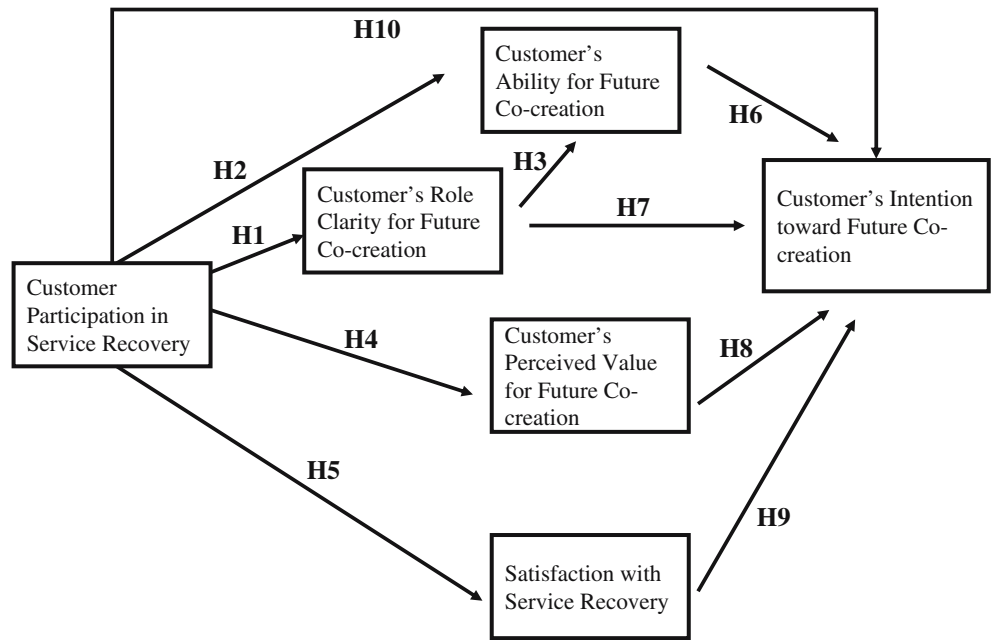


Table 1 Measurement Model

Constructs/item	Standardized loading	R squared	t value	Reliability
F1:Attribution of service failure				$\alpha=0.850$
To what extent was (the firm) responsible for the problem that you experienced?	0.787	0.619		
The problem that I encountered was all (the firm's) fault.	0.723	0.523	11.190***	
To what extent do you blame (the firm) for this problem?	0.934	0.871	13.176***	
F2:Ability in future co-creation				$\alpha=0.920$
I am fully capable of using this SST.	0.903	0.815		
I am confident in my ability to use this SST.	0.956	0.914	22.562***	
Using this SST is well within the scope of my abilities.	0.817	0.668	16.663***	
F3:Role clarity in future co-creation				$\alpha=0.826$
I feel certain about how to use this SST properly.	0.844	0.713		
I am NOT sure how to use this SST properly.	0.862	0.743	15.362***	
I know what is expected of me if I use the SST.	0.566	0.320	8.743***	
The steps in the process of using this SST are clear to me.	0.813	0.661	14.135***	
Directions are vague regarding how to use this SST.	0.461	0.212	6.882***	
F4:Perceived value in future co-creation				$\alpha=0.880$
Using this SST would provide me with personal feelings of worthwhile accomplishment.	0.830	0.689		
Using this SST would provide me with feelings of enjoyment from using the technology.	0.813	0.660	13.215***	
Using this SST would provide me with feelings of independence.	0.777	0.604	12.506***	
Using this SST would allow me to have increased confidence in my skills.	0.796	0.633	12.882***	

Table 1 (continued)

Constructs/item	Standardized loading	R squared	t value	Reliability
F5: Intention toward future co-creation				$\alpha=0.947$
Would you use this SST again if you had a choice?	0.909	0.827		
What is the likelihood that you will choose to use this SST next time you need this service?	0.939	0.882	23.513***	
How likely would you be to use this SST in the future?	0.922	0.850	22.474***	
F6: Satisfaction with service recovery				$\alpha=0.917$
How did you feel about the solution to this problem? ^a	0.834	0.695		
How did you feel about the solution to this problem? ^b	0.846	0.716	15.225***	
In my opinion, I received a satisfactory solution to my problem on this particular occasion.	0.867	0.752	15.816***	
Regarding this particular event, I am satisfied with the solution of my problem.	0.903	0.815	16.804***	
Model Fit Indices				
Chi-square ($df=194, p=0.000$)	344.433			
Bentler–Bonett Non-normed Fit Index	0.948			
Comparative Fit Index (CFI)	0.957			
Bollen (IFI) Fit Index	0.957			
Standardized RMR	0.048			

Most items anchored at strongly disagree (1) and strongly agree (7), except *** $p < 0.001$

^a Anchored at very dissatisfied (1) and very satisfied (7), and ^b anchored at terrible (1) and delighted (7).

Table 2 Results of path analysis

Path model	Path loading	Direction	t value	Supported?
Hypothesized relationship				
H1 CPISR→role clarity	0.263	+	4.100**	S
H2 CPISR→ability	0.027	+	0.490	NS
H3 Role clarity→ability	0.640	+	10.933**	S
H4 CPISR→perceived value	0.141	+	2.065*	S
H5 CPISR→satisfaction	0.240	+	3.956**	S
H6 Ability→intention	0.145	+	2.151*	S
H7 Role clarity→intention	0.303	+	4.255**	S
H8 Perceived value→intention	0.153	+	2.885**	S
H9 Satisfaction→intention	0.234	+	3.907**	S
H10 CPISR→intention	0.186	+	3.315**	S
Attribution of service failure				
Attribution→ability	0.004		0.065	
Attribution→role clarity	-0.300		-4.666**	
Attribution→perceived value	-0.181		-02.646**	
Attribution→satisfaction	-0.437		-7.214**	
Attribution→intention	-0.083		-1.357	
Model fit indices				
Chi-square ($df=5, p=0.007$)	15.875			
Bentler–Bonett Normed Fit Index	0.968			
Comparative Fit Index (CFI)	0.977			
Bollen (IFI) Fit Index	0.978			
Standardized RMR	0.057			

* $p < 0.05$; ** $p < 0.01$

Scenario description

A: Online course enrollment

The university was introducing a new online course registration system. *This was the first time you had used this new system on your own.* You were very interested in a business course, which was very popular among undergraduates, and you knew the course could be full very soon. However, *you didn't know exactly how to register with the new system and made mistakes with some of the function buttons.* The system kept displaying that you had input "incorrect information." You were at a loss as to what to do next.

A1. Firm recovery

The system indicated that a staff member would contact you in the next 2–3 days to solve the problem for you. You were contacted in a couple of days and collected the information necessary for registration. Later on, an email was sent to you, indicating that a successful registration had been done for you. *You didn't observe how the registration was actually completed.* The information regarding which courses to register depended on you, *which was not a part of solving the problem.* *You didn't make any effort to fix the problem. The staff person actually solved the problem.*

A2. Joint recovery

You called the registration office for help. *A staff person answered your call and guided you step-by-step through the enrollment procedures, telling you which function buttons to use. You were successfully enrolled, thanks to your and the employee's effort.*

A3. Customer recovery

You didn't give up. After numerous attempts, *you eventually worked it out and successfully registered online yourself.* Now you fully understand how to register courses online with this new system.

B: Internet setup

You had a big term paper due next week after the break. Since the library was closed over break, you had just signed up for a new Internet service at home so you could work at home over the break. *This was the first time you had ever set up an Internet service.* You followed the instructions step-by-step until you made a wrong selection among

several options and got an error message. The setup couldn't be completed successfully.

B1. Firm recovery

The system suggested that you contact the cable company for help. A technician came to your place to inspect the problem. *The technician made an extensive effort to identify your mistake in your setup, and successfully set up the Internet for you.* But you didn't see how he/she actually completed the setup. *You didn't make any effort to fix the problem. The technician actually solved the problem.*

B2. Joint recovery

You contacted the cable company for help. A technician answered your call. *You were guided through the whole installation procedure step-by-step, found your previous mistake, and successfully set up the Internet by cooperating with the employee.*

B3. Customer recovery

You didn't give up. After several trials, you found your mistake and *set up the Internet correctly on your own.* Now you fully understand how to set up the Internet service.

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