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Self-Service Technology Recovery: The Effect of Recovery Initiation and Locus of Responsibility

Abstract

Failures of self-service technologies (SSTs) are commonplace, yet empirical investigations into effective SST recovery methods are still few and far between. This research investigates two important elements of SST recovery using three experimental studies, namely recovery initiation and locus of responsibility. Studies 1 and 2 reveal that employee-initiated recovery (vs. customer-initiated recovery) leads to higher repurchase intentions when the SST failure is due to a technological error, but customer-initiated recovery leads to better results when the failure is due to a customer error. Further investigation into the underlying mechanism indicates that recovery disconfirmation mediates the process. Study 3 shows that when employees are not around the service area, SST-initiated recovery enhances purchase intentions after the technological failures of SSTs. This research provides important managerial and theoretical implications for service and technology management.

Keywords: Self-service technology; SST recovery; Recovery initiation; Locus of responsibility; Recovery disconfirmation

Introduction

Self-service technologies (SSTs) refer to technological interfaces that enable customers to perform services without the involvement of frontline service employees (Meuter et al. 2000). Nowadays, service firms widely adopt SSTs (e.g., self-checkout kiosks, self-ordering kiosks, ATMs, etc.) to achieve better efficiency, cost-savings, diversification of delivery channels, and customer segment preferences (Berry et al. 2010). Approximately 81,000 self-checkout kiosk units were shipped worldwide in 2018 (Retail Banking Research 2019). According to World Bank (2020) data, there were approximately 4 ATM units per 10 adults worldwide in 2018 in the banking sector. The prevalence of SSTs, however, increases the risks of SST failures. Morrisons, a British supermarket chain, reports that around two-thirds of its customers complain about anxiety related to warnings (i.e., "unexpected item in bagging area") from self-checkout kiosks (Smithers 2015). SST failures can lead to negative consequences, including dissatisfaction, lower repurchase intention, and negative word of mouth (Holloway, Wang, and Parish 2005; Meuter et al. 2000), though satisfactory service recovery can overturn these effects (Bacile et al. 2018; Maxham and Netemeyer 2002b). Thus, it is imperative for service firms to undertake effective strategic recovery methods to deal with SST failures.

Previous research examining SST recovery has focused mainly on customer-initiated recovery, including customer complaints, customer recovery, and failure-handling methods (e.g., Collier, Breazeale, and White 2017; Mattila, Cho, and Ro 2011; Zhu et al. 2013). Another commonly used recovery approach after failure is organization-initiated recovery, whereby the firm detects service failures and initiates the recovery before customers lodge complaints (Smith, Bolton, and Wagner 1999). Such a recovery method can enhance post-recovery customer judgments (Patterson, Cowley, and Prasongsukarn 2006; Smith, Bolton, and Wagner 1999) and is also applicable to many SST contexts. Organization-initiated

recovery in SST settings can take two forms such that either an employee (i.e., employee-initiated recovery) or the SST system itself (i.e., SST-initiated recovery) can initiate the recovery. Therefore, important questions from both a managerial and theoretical perspective ask whether, when, and why employee-initiated recovery and SST-initiated recovery result in higher repurchase intention than customer-initiated recovery after SST failures?

Our study investigates these questions by examining consumer responses to those forms of recovery initiation (i.e., employee-initiated recovery, consumer-initiated recovery, and SST-initiated recovery). The service recovery literature suggests that the locus of responsibility (i.e., the party responsible for the failure event) can strongly shape consumer responses to failure and recovery in both traditional service encounters (e.g., Bitner 1990; Swanson and Kelley 2001) and technology-facilitated encounters (e.g., Collier, Breazeale, and White 2017). Thus, we postulate that the effectiveness of the recovery initiation might be contingent on the locus of responsibility. We predict that employee-initiated recovery will enhance repurchase intention when SST failures are due to the defects of the SST systems themselves (technological failures), whereas when the SST failures are due to incorrect customer inputs (customer errors), customer-initiated recovery will increase repurchase intention. We also hypothesize that when employees are not available during technological failures, the SST-initiated recovery will yield a similar effect as employee-initiated recovery. Drawing on expectancy–disconfirmation theory (Oliver 1980, 1981), we suggest that recovery disconfirmation mediates the interactive effect, such that employee-initiated recovery exceeds the consumer expectation of the service recovery after technological failures but falls below the expectation after customer errors.

This paper makes four main theoretical contributions to the service recovery and SST literature. First, we extend the rich body of the service recovery literature by showing the interactive effect of recovery initiation and locus of responsibility and by shedding light on

the effect of SST-initiated recovery. Second, we demonstrate the importance of using recovery service scripts for an effective recovery strategy. Third, we also contribute to the SST literature by highlighting the crucial application of employee-initiated recovery in SST settings. Finally, we contribute to expectancy–disconfirmation theory (Oliver 1980, 1981) by demonstrating its implementation in the field of SST recovery. We also help to broaden the understanding of the role of frontline employees versus technology in improving the effectiveness of a firm's investment in interactive services, the importance of which prior research has already emphasized (Bolton and Saxena-Iyer 2009). Managers can take advantage of these insights to (re)design recovery service scripts, self-service systems, and training programs for their frontline employees to effectively deal with SST failures.

Theoretical Background

Self-Service Technology Recovery

Insights about strategies on how to recover from SST failures can be gleaned from the vast body of the traditional service recovery literature (Forbes 2008). However, technology plays a greater role than employees in SST settings during service encounters. As such, the most frequent dissatisfying incidents are technology-related failures, such as SST malfunctions (Meuter et al. 2000), while such failures are rare in traditional settings (Kelley, Hoffman, and Davis 1993). In addition, from the consumer perspective, time-saving is a major advantage of SSTs over alternatives, which needs to be taken into consideration when dealing with SST failures (Dabholkar and Spaid 2012; Meuter et al. 2000). Nevertheless, research into SST recovery remains limited, as summarized in Table 1 below.

"Insert Table 1 about here"

Overall, the SST recovery aspect initiated by customers including customer complaints (Robertson and Shaw 2009; Robertson, McQuilken, and Kandampully 2012), customer recovery (Zhu et al. 2013), and failure-handling methods (e.g., Collier, Breazeale, and White

2017) is well-documented, while SST recovery initiated by service firms remains neglected in the SST recovery literature. Furthermore, when dealing with SST failure, researchers have paid little attention to the role of SST in the recovery process. An exception is Mattila, Cho, and Ro (2011), who show that after customers complain about a service issue, matching the failure mode with the recovery mode (i.e., SST recovery and SST failure, human recovery and face-to-face failure) can restore fairness perceptions. As a result, the SST recovery literature leaves important gaps that we can endeavor to fill with this research.

While previous SST recovery studies agree on the essential role of locus of responsibility, the understandings of the roles of employees and customers when dealing with customer-induced failures are somewhat contradictory. Studies by Zhu et al. (2013) and Robertson and Shaw (2009) suggest that when customers induce failure, they are less likely to switch to employee assistance and voice their complaints. The underlying logic is that customers feel confident that they can fix problems created by themselves, in line with traditional recovery literature (Choi and Mattila 2008; Folkes 1984). However, Dabholkar and Spaid (2012) suggest that SST customers prioritize prompt problem resolutions over their concerns about who is responsible for the failure. Additionally, many SST failures cannot be fixed by the customers themselves and require employee assistance for security reasons. Therefore, when confronting SST failures induced by themselves, customers might still prefer employee assistance over self-recovery. This reasoning seems to be supported by Collier, Breazeale, and White (2017) who show that customers consistently report higher satisfaction ratings for employee assistance when they (vs. SSTs) are responsible for the problems.

Recovery Initiation

In traditional service settings, firms can act as the initiators of the recovery process (i.e., organization-initiated recovery) rather than waiting for customers to complain (Smith,

Bolton, and Wagner 1999). Previous studies suggest that customers prefer organization-initiated recovery over customer-initiated recovery (Kelley, Hoffman, and Davis 1993; Smith, Bolton, and Wagner 1999). Thus, it is reasonable to expect a similar effect in SST settings. As previously discussed, however, the effectiveness of recovery methods might vary from traditional service settings to SST settings. One of the factors driving customers to use SSTs is the ability to avoid interacting with human personnel (Meuter et al. 2000). Therefore, human recovery in SST failures can be less effective (Mattila, Cho, and Ro 2011). In this regard, on the one hand, organization-initiated recovery might be less effective in SST settings; while on the other, organization-initiated recovery can benefit the SST recovery process particularly through prompt resolutions, which are essential in SST settings (Dabholkar and Spaid 2012). The effectiveness of organization-initiated recovery (vs. customer-initiated recovery) in SST settings remains indeterminate in the extant literature.

Research into recovery initiation regards organization-initiated recovery, or so-called employee-initiated recovery, as when employees initiate the recovery (e.g., Patterson, Cowley, and Prasongsukarn 2006; Smith, Bolton, and Wagner 1999). In contrast with traditional service recovery, SSTs can also aid the recovery process by becoming the recovery initiators themselves. Thus, to deepen the understanding of the effect of organization-initiated recovery in SST settings, further empirical studies that examine the effectiveness of SST-initiated recovery in SST settings, aside from employee-initiated recovery, are necessary.

It is also worth noting that while Kelley, Hoffman, and Davis's (1993) critical incident study reveals that letting customers act as recovery initiators receives a poor average recovery rating and achieves a low customer retention rate, thus suggesting a positive effect of employee initiation on repurchase intention, little causal evidence supports this effect. Smith, Bolton, and Wagner (1999) and Patterson, Cowley, and Prasongsukarn (2006) only find a

positive effect of employee-initiated recovery on justice perceptions and a positive association between justice perceptions and satisfaction; yet neither study performs mediation analyses. Xu et al. (2014) find that employee initiation increases service recovery satisfaction and purchase intention but only when customers and firms later collaborate in the recovery. Voorhees, Brady, and Horowitz (2006) even show that repurchase intention remains similar between employee-initiated and customer-initiated recovery conditions. The literature, therefore, remains inconclusive about the effect of recovery initiation on repurchase intention.

Drawing from the SST recovery and recovery initiation literature streams, our research aims to fill the identified gaps and reconcile the previous inconsistent findings on recovery initiation. We directly examine the effect of recovery initiation, including employee-initiated recovery, customer-initiated recovery, and SST-initiated recovery, on repurchase intention in the context of SSTs and explore how and why this effect is contingent on an important moderator, namely the locus of responsibility.

Employee-Initiated versus Customer-Initiated Recovery

Employee-initiated recovery is a recovery method whereby employees detect service failures and initiate the recovery without customers lodging complaints, while customer-initiated recovery is a method whereby firms let customers act as a service recovery initiator by calling employees for assistance (Kelley, Hoffman, and Davis 1993; Smith, Bolton, and Wagner 1999). According to equity theory, customers are more likely to judge service encounters favorably when the input-to-outcome ratio decreases (Adams 1963; Oliver and Swan 1989). Acts of complaining normally require psychological costs e.g., feelings of embarrassment and personal distress when anticipating unpleasant and unwelcome confrontations with employees (Bearden and Teel 1980; Stephens and Gwinner 1998) and physical acts of complaining e.g., asking for help, waving hands (Bolfing 1989; Day 1984).

Employee-initiated recovery can mitigate customers' inputs by eliminating the costs associated with complaining. Moreover, employee-initiated recovery can enhance customer outputs by saving time that might be wasted on waiting for customers to ask for help. This benefit can also be amplified during SST transactions in which customers prioritize efficient service and prompt service recovery (Dabholkar and Spaid 2012; Meuter et al. 2000). In addition, initiating recovery without waiting for customers to ask for help requires extra effort from employees, which can positively influence customer judgments regardless of the outcomes (Mohr and Bitner 1995; Morales 2005). In general, current theories propose that employee-initiated recovery should result in higher repurchase intention than customer-initiated recovery in SST settings.

As discussed previously, the empirical research has failed to find support for the causal effect of recovery initiation on repurchase intention. Building on the service literature that suggests an important role of locus of responsibility in customer evaluations of service failure and recovery (Bacile et al. 2018; Bitner 1990; Sugathan, Ranjan, and Mulky 2017), we predict that locus of responsibility—who is responsible for the failure? (Grewal, Roggeveen, and Tsiros 2008)—will regulate the effect of recovery initiation when dealing with SST failures. In particular, the effectiveness of employee-initiated (vs. customer-initiated) recovery will vary depending on whether SST failures are due to the failure of the SST systems themselves (technological failures) or incorrect customer inputs (customer errors). These are the two primary sources of SST failures (Forbes 2008; Meuter et al. 2000). For technological failures, customers should hold the service firms accountable because they are in charge of designing and implementing SSTs. When firms are responsible for service failures, their recovery efforts are highly desirable in restoring justice perceptions and customer evaluations (Folkes 1984). Meanwhile, current theories suggest a positive effect of employee-initiated recovery especially in SST settings. Thus, we expect employee-initiated

recovery to lead to higher repurchase intention than customer-initiated recovery after technological failures. However, when customers are responsible for failures, they feel less dissatisfied and require fewer recovery efforts from firms (Choi and Mattila 2008). They also feel the need to participate in the recovery process to ease their sense of guilt (Heidenreich et al. 2015). Thus, customers might prefer to recover using their own efforts when they induce SST failures (Zhu et al. 2013). Nevertheless, for many SST failures, it is not possible for customers to deal with the problem by themselves. Therefore, when customers induce failure, customer-initiated recovery might be the optimal solution for them because it can satisfy their participating needs while ensuring the failure is immediately dealt with by employees, which is imperative for SST recovery (Dabholkar and Spaid 2012). Additionally, if employees initiate and recover without any customer input, customers might infer that the employees are insensitive to their participating needs. This inference may drive them to depreciate and even criticize the extra efforts employees expend to initiate recovery. In short, when customers are responsible for SST failures, customer-initiated recovery can be more effective in restoring repurchase intention than employee-initiated recovery (see Fig. 1). Therefore:

H1. Employee-initiated recovery (vs. customer-initiated recovery) leads to a higher repurchase intention when the SST failure is due to a technological error (vs. a customer error).

"Insert Fig. 1 about here"

The Mediating Role of Recovery Disconfirmation

Expectancy–disconfirmation theory suggests that satisfaction level derives from the expectation before using products/services and the perceived performance after using them (Oliver 1980, 1981; Oliver and DeSarbo 1988). In general, recovery performance can exceed expectations (i.e., positive recovery disconfirmation), meet expectations (i.e., recovery confirmation), or fall below expectations (i.e., negative recovery disconfirmation). It is well-

documented that the higher (lower) the positive disconfirmation, the better (worse) the customer evaluation is of the service recovery (McCollough, Berry, and Yadav 2000; Smith and Bolton 2002).

When confronting SST failure, consumers first form expectations about the service recovery (McCollough, Berry, and Yadav 2000; Oliver 1981). Critical incident studies show that when SST failures occur, a large number of SST users experience no recovery (Forbes 2008; Meuter et al. 2000); and even if recovery takes place, customers usually initiate the process (Robertson and Shaw 2009). Therefore, employee initiation is a low-probability event whereas customer initiation is a high-probability event that customers expect to occur after SST failure. Importantly, customers reach a mental stage of positive (negative) disconfirmation after a low-probability *desirable* (*undesirable)* event occurs and/or a high-probability *undesirable (desirable)* event does not occur (Oliver 1981). When SSTs induce failure, employee initiation is a desirable event for customers since it allows customers to reduce the waiting time and psychological costs of complaining, and shows employees' efforts and empathy. Furthermore, Kelley, Hoffman, and Davis (1993) show that customers might even see customer initiation as an undesirable event. Thus, employee initiation leads to positive recovery disconfirmation because the low-probability desirable event occurs while the high-probability undesirable event does not.

The source of positive recovery disconfirmation (i.e., an occurrence of a low-probability *desirable* event) might become the source of negative recovery disconfirmation (i.e., an occurrence of a low-probability *undesirable* event) when customers are responsible for SST problems. Simply put, employee initiation turns into an undesirable event in this instance. To stay alert to SST issues, employees need to monitor customers closely during SST transactions. When people are responsible for negative events, they often feel embarrassed, guilty, or criticized by those who infer a low ability or lack of effort on their

part (Lewis 1971; Weiner 1985), and these negative self-esteem emotions can intensify when they feel that someone has been closely watching them (Leary 2007). Furthermore, in such cases, when employees approach customers without their permission, it might lead the customers to infer that the employees think they are committing some kind of violation (e.g., shoplifting). Consequently, when customers cause SST failures, employee initiation becomes a low-probability undesirable event and generates negative recovery disconfirmation. Thus:

H2. Recovery disconfirmation mediates the interactive effect of recovery initiation and locus of responsibility on repurchase intention.

Study 1: The Effect of Recovery Initiation and Locus of Responsibility

This study aimed to provide preliminary evidence for the interactive effect of recovery initiation and locus of responsibility on repurchase intention (H1). We used a 2 (recovery initiation: customer-initiated vs. employee-initiated) × 2 (locus of responsibility: technological failure vs. customer error) between-subjects design. In this study, we tested our hypothesis in the retail context. We based our manipulation on a scenario of a common self-checkout error i.e., an SST stops working in the middle of a transaction and the phrase "unexpected item in the bagging area" pops up on the screen (Smithers 2015). Importantly, because the warning is ambiguous regarding whether this is a customer error or a technological failure, we utilize this situation to have a reasonably realistic manipulation of locus of responsibility.

Stimuli, Measurements, and Participants

We randomly assigned participants to one of four conditions. First, we instructed them to imagine that they were shopping at a grocery store. During the checkout process via a self-checkout kiosk, a failure occurred, and the process stopped. In the technological failure [customer error] condition, participants read that they understood that *the failure was due to the self-service system* [*they were responsible for the failure*]. Next, they read that an

employee approached them and solved the problem either without asking for help (i.e., employee-initiated recovery) or after asking for help (i.e., customer-initiated recovery). Appendix A provides a sample scenario.

Participants and Measurements

One hundred and twenty-five students from a European university were recruited for this study via online and offline channels. To ensure a high level of participant attentiveness, after participants read the assigned scenario, we asked them to answer questions about locus of responsibility and recovery initiation: "Who was responsible for the problem?" (You/The self-service system) and "Did the employee solve the problem without you asking for help?" (Yes/No). Only those participants who were able to recall the scenario correctly could proceed to the next sections. Eighty-six qualified participants (59.3% female) who had recently used self-service kiosks and gave the correct answer to the scanning question could complete the survey. Participants ranged from18 to 49 years of age, seventy percent of whom were between the ages of 18 and 25 years, while 33 percent held a bachelor's degree.

We measured repurchase intention using a 5-point scale with two items adapted from Roggeveen, Tsiros, and Grewal (2012): "I will buy products again with this company in the future" and "I will use this company next time I shop for groceries" (1 = strongly disagree, 5 = strongly agree; $\alpha = .82$). As previous studies suggest that technology anxiety and gender can heavily influence customers' evaluation and intention to use SSTs (McColl-Kennedy, Daus, and Sparks 2003; Meuter et al. 2003; Weijters et al. 2007), we included technology anxiety and gender as covariates. We used two items from Jia et al. (2012) to measure technology anxiety (i.e., "I have avoided technology because it is unfamiliar to me" and "I hesitate to use technology for fear of making mistakes I cannot correct"; 1 = strongly disagree, 5 = strongly agree; $\alpha = .75$) and asked participants to indicate their gender.

Analysis and Results

We used a two-way analysis of covariance (ANCOVA) to test the interactive effect of recovery initiation (employee initiation vs. customer initiation) and locus of responsibility on repurchase intention with technology anxiety and gender as covariates. Locus of responsibility ($F(1, 80) = 8.41$, $p < .01$) and gender ($F(1, 80) = 4.29$, $p = .04$) had significant main effects on repurchase intention. The ANCOVA revealed a significant interaction between recovery initiation and locus of responsibility ($F(1, 80) = 6.58$, $p = .012$). Follow-up contrasts revealed that when the failure was due to a technological error, employee initiation led to significantly higher repurchase intention ($M_{\text{employee-initiated}} = 4.11$ vs. $M_{\text{customer-initiated}} = 3.68$; $F(1, 80) = 4.22$, $p = .04$). When a customer was responsible for the failure, there was no significant difference between employee initiation and customer initiation ($M_{\text{employee-initiated}} = 3.35$ vs. $M_{\text{customer-initiated}} = 3.61$; $F(1, 80) = 2.41$, $p = 0.12$). Thus, H1 is partially supported. Fig. 2 below plots the interactive effect of recovery initiation and locus of responsibility on repurchase intention.

"Insert Fig. 2 about here"

Discussion

This study shows that when customers *understand* that the failure is caused by the system, employee-initiated recovery increases repurchase intention. When customers understand that they are responsible, the effect is non-significant (although the trend is as we predicted). This non-significant effect could be due to the small sample size of Study 1. Study 2 addresses this issue by using a larger sample size. Furthermore, it is not feasible in many circumstances for customers to determine who is responsible for an SST failure. Such circumstances provide a chance for firms to assign locus of responsibility to either SSTs or customers by using various communication methods (e.g., service scripts or on-screen

warnings). Study 2 explores the possibility in which a firm uses employee service scripts to communicate locus of responsibility to customers.

Study 2: Effect of Recovery Initiation and Locus of Responsibility via Employee Service Script

The objective of this study is two-fold. First, it aimed to replicate Study 1 with a more realistic manipulation of locus of responsibility. In many instances, without the extra information about failures provided by service firms, customers are unlikely to pinpoint the source of the failure (Folkes 1984). In SST settings, the nature of the service co-creation between customers and SSTs can even amplify the ambiguity of locus of responsibility (Heidenreich et al. 2015; Zhu et al. 2013). Therefore, firms can frame locus of responsibility by utilizing a verbal service script that employees can use to communicate whether the customer (vs. the SST) has induced the failure. The importance of a service script in maintaining service quality is well-documented in the service literature (Bitner, Booms, and Mohr 1994; Chase and Stewart 1994; Frei 2006; Solomon et al. 1985). Second, we also aimed to examine the mediating role of recovery disconfirmation (H2) in this study.

Design and Stimuli

We randomly assigned participants to one of four conditions in a 2 (recovery initiation: customer-initiated vs. employee-initiated) × 2 (locus of responsibility: technological failure vs. customer error) between-subjects design. The manipulations were similar to Study 1 but with one important modification. To manipulate locus of responsibility, participants read that employees had approached them and explained that the problem occurred due to either a technological failure or a customer error. Participants had to spend at least 20 seconds on the manipulation task. Appendix B provides a sample scenario.

Participants and Measurements

We recruited US participants from Amazon Mechanical Turk (MTurk). Only those who had used self-checkout kiosks (Answered "yes" for the scanning question at the beginning: "Have you ever used self-service checkout kiosks in supermarkets or grocery shops?") were qualified to participate in the study. To further ensure the data quality, participants had to achieve an equal or higher than 95% HIT (Human Intelligence Task) approval ratio (Peer, Vosgerau, and Acquisti 2014). In total, 200 qualified participants took part in the study. We also asked participants to answer the Instructional Manipulation Check (IMC: Goodman, Cryder, and Cheema 2013; Oppenheimer, Meyvis, and Davidenko 2009), to assure an acceptable level of the participants' attentiveness (Baskin et al. 2014; Lee, Winterich, and Ross 2014). The IMC required participants to fill in a blank to a specific question with a specific word. After we excluded those who failed the IMC, 180 participants (M_{age} = 36, 41% female, and 3 participants preferred not to answer their gender) were left in the final analysis. Forty-three percent of the sample reported a household annual income of between $30,000 - $59,999 and 42 percent held a bachelor's degree.

We measured repurchase intention with two items from Study 1 using a 7-point scale (1 = strongly disagree, 7 = strongly agree, α = .73), and recovery disconfirmation with an item adapted from Smith, Bolton, and Wagner (1999): "Regarding this particular event, the store employee's overall response to my problem was…" (1 = much worse than expected, 4 = as expected, 7 = much better than expected). Given the influence of justice perceptions on customers' judgments of recovery initiation shown in the extant literature (e.g., Smith, Bolton, and Wagner 1999), to rule out a perceived justice as a possible explanation, participants also completed the well-established measurement of justice perceptions (adapted from Bacile et al. 2018; Voorhees and Brady 2005) including three items of interactional justice (e.g., "When fixing the problem with my checkout, the store employee showed a real

interest in trying to be fair.", α = .85), three items of procedural justice (e.g., "Overall, the procedures followed by the service firm were fair during the encounter.", α = .83), and three items of distributive justice (e.g., "Given the inconvenience caused by the problem, the outcome received was fair.", α = .83). For manipulation checks, participants answered questions about locus of responsibility and recovery initiation: "According to the store employee, who was responsible for the problem?" (You/The self-checkout system) and "Regarding this particular event, who called the employee to fix the problem?" (You/The self-checkout system/No one, the employee came alone). We measured how realistic the scenarios were with two items ("To what extent do you think this particular scenario above sounds realistic?", "To what extent do you think this particular scenario could happen in real life?", from 1 = not at all to 7 = completely, α = .69). We again controlled for technology anxiety with two items (α = .95) and gender, similar to Study 1.

Analysis and Results

Manipulation Checks and Realism Assessment

The chi-square test (with Yates continuity correction) showed that significantly more people reported being responsible for the problem in the customer error condition (χ^2 = 34.903, df = 1, p < .001) and significantly more people indicated that employees initiated recovery in the employee-initiated recovery condition (χ^2 = 26.337, df = 2, p < .001). Independent-sample t-tests on realism also revealed that both recovery initiation conditions ($M_{\text{employee-initiated}}$ = 6.19 vs. $M_{\text{customer-initiated}}$ = 6.20, $t(178)$ = .044, p > .9) and both locus of responsibility conditions ($M_{\text{customer\_error}}$ = 6.17 vs. $M_{\text{technological\_failure}}$ = 6.23, $t(178)$ = −.514 , p > .6) were equally realistic.

Interaction of Recovery Initiation and Locus of Responsibility

We used a two-way ANCOVA to test the interactive effect of recovery initiation and locus of responsibility on repurchase intention with technology anxiety and gender as

covariates. Technology anxiety had a significant main effect on repurchase intention ($F(1, 171) = 4.76$, $p = .03$). The two-way ANCOVA revealed a significant interaction between recovery initiation and locus of responsibility on repurchase intention ($F(1, 171) = 9.91$, $p = .002$). Follow-up simple contrasts revealed that in the technological failure condition, employee initiation ($M_{\text{employee-initiated}} = 6.14$) resulted in higher repurchase intention than customer initiation ($M_{\text{customer-initiated}} = 5.73$, $F(1, 171) = 4.88$, $p = .029$), while in the customer error condition, customer initiation increased repurchase intention ($M_{\text{customer-initiated}} = 6.03$ vs. $M_{\text{employee-initiated}} = 5.62$, $F(2, 171) = 5.06$, $p = .026$). Therefore, H1 is supported. Fig. 3 below plots the interactive effect.

"Insert Fig. 3 about here"

The two-way ANCOVA on fairness perceptions revealed a non-significant interactive effect of recovery initiation and locus of responsibility on interactional justice ($p = .44$), procedural justice ($p = .17$), and distributive justice ($p = .14$).

The Mediating Role of Recovery Disconfirmation

To test whether recovery disconfirmation mediates the interactive effect of recovery initiation and locus of responsibility on repurchase intention, we used PROCESS model 8 (Hayes 2017) with 5,000 bootstrapped samples and 95% confidence intervals (CIs). In this model, the recovery initiation was an independent variable (0 = customer-initiated, 1 = employee-initiated), locus of responsibility was a moderator, recovery disconfirmation was a mediator, repurchase intention was an outcome variable, and technology and gender as covariates. The analysis revealed that the conditional indirect effect of recovery initiation and locus of responsibility on repurchase intention through recovery disconfirmation was statistically significant (Index of Moderated Mediation = .14, 95% CI = [.0268, .2820]), as the CI did not include zero. In particular, the interactive effect of recovery initiation and locus of responsibility on recovery disconfirmation was significant ($b = .87$, $p = .017$). In the

technological failure condition, employee-initiated recovery (vs. customer-initiated recovery) increased recovery disconfirmation ($M_{\text{employee-initiated}} = 5.92$, $M_{\text{customer-initiated}} = 5.36$; $b = .55$, $p = .03$), but recovery disconfirmation remained similar across these two types of recovery initiation in the customer error condition ($M_{\text{employee-initiated}} = 5.45$, $M_{\text{customer-initiated}} = 5.77$; $b = -.32$, $p = .21$). The indirect effect of recovery initiation on repurchase intention through recovery disconfirmation was significant in the technological failure condition ($b = .09$, 95% CI = [.0127, .1904]), but the effect was non-significant in the customer error condition ($b = -.05$, 95% CI = [–.1411, .0396]). Therefore, H2 is partially supported.

Discussion

In Study 2, we replicate Study 1 with a different manipulation of locus of responsibility using a service script, such that an employee informs that the failure is due to a technological failure (vs. a customer error). The findings show that employee initiation works better when the error is attributed to the system and customer initiation has better results when the error is attributed to the customer. Study 2 also reveals the mediating role of recovery disconfirmation, such that employee-initiated recovery (vs. customer-initiated recovery) enhances repurchase intention by exceeding customer recovery expectations after the technological failure. Furthermore, the non-significant effects regarding justice perceptions enable us to rule out an alternative explanation of justice perceptions.

Study 3: The Effect of Self-Service Technology Initiation when Employees are not around

Studies 1 and 2 demonstrate the effectiveness of employee-initiated recovery when dealing with technological failures of SSTs. However, in some settings where employees are not available (e.g., standalone airline check-in kiosk), firms cannot employ this method. In these cases, the extant literature recommends motivating customers to voice their complaints or to attempt the recovery by themselves (Robertson and Shaw 2009; Zhu et al. 2013). The

literature overlooks the possibility that SSTs can participate in the recovery process. For instance, SST systems can detect errors immediately and notify employees through an automatic email/SNS notification (Nakamura 2012). We refer to *SST-initiated recovery* as a recovery method whereby an SST automatically notifies an employee of its failure and calls for help without any consumer input.

We predict that when technological failures occur, and employees are not present, SST initiation will trigger the same mechanism as employee initiation and will lead to higher repurchase intention compared to customer initiation. SST-initiated recovery can be as efficient as employee-initiated recovery in decreasing customers' input-to-outcome ratio (i.e., reducing psychological and physical costs, and increasing recovery speed) and thus exceeding customer expectations. Furthermore, a reason why the extra efforts and empathic understanding of employee-initiated recovery can convert to better outcomes for firms (Mohr and Bitner 1995) might be because frontline employees act as main carriers of firm's image during service recovery (Maxham and Netemeyer 2003). When employees are not around, SSTs become the only representative of firms. Thus, we reason that SST will take the employee's role and SST-initiated recovery (vs. customer-initiated recovery) can improve a firm's image by exhibiting a valuable fail-safe function of the SST i.e., quickly initiating recovery without customer input. Moreover, when employees are not around and SST failures occur, SST-initiated recovery can ease customers of any anxious or irritated emotions by instantly reassuring them that the firm has already anticipated the problems and has automatic recovery systems in place. Therefore, we expect that SST-initiated recovery will increase repurchase intention when technological failures occur. In contrast, we predict that when customers induce failures in SSTs and employees are not around, they still prefer the option to call employees for assistance to absolve them of any guilt while getting the problems resolved quickly. Thus:

H3. SST-initiated recovery (vs. customer-initiated recovery) increases repurchase intention when the SST failure is due to a technological error (vs. a customer error).

Objectives, Design, and Stimuli

The objective of Study 3 is two-fold. First, we sought to test the role of SST-initiated recovery when employees are not nearby the self-service area during SST failures (H3). Second, we aimed to enhance the generalizability of Study 1 and Study 2 with a different manipulation of locus of responsibility using an SST warning. To be consistent with existing managerial practice, we also included a control condition for locus of responsibility in which no information was presented to customers regarding the source of the error.

We randomly assigned participants to one of six conditions in a 2 (recovery initiation: customer-initiated vs. SST-initiated) × 3 (locus of responsibility: technological failure vs. customer error vs. control) between-subjects design. Participants were instructed to imagine that they were checking-in for a trip via a self-service kiosk at an airport and noticed that there were no representatives around. During the process, the kiosk stopped working. Next, they saw a pop-up warning on the SST screen. The first sentence of the message contained the manipulation of locus of responsibility (technological failure, customer error, or no explanation). The second sentence showed that "The system has notified a representative and assistance is coming" ["Please press the green button on the left to call a representative for assistance"] in the SST-initiated recovery [customer-initiated recovery] condition. Participants had to spend at least 15 seconds on the manipulation task. Appendix C provides sample scenarios.

Participants and Measurements

We recruited 320 MTurk participants (with an equal or higher than 95% HIT approval ratio). For quality checks, participants answered the IMC from Study 2 and a scanning question ("How often have you used the self-service check-in kiosk in airports during the last

year?", 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always). After we excluded those who failed the IMC (49 participants) and had not used SSTs during the last year (25 participants), 246 participants (Mage = 34.4, 35% female) were left in the final analysis. Forty-eight percent of the sample reported a household annual income of between $30,000 - $59,999 and 45 percent held a bachelor's degree.

We measured repurchase intention with two items adapted from Study 2 to the airline context (α = .81). For manipulation checks, participants answered two questions about locus of responsibility and recovery initiation: "According to the system, who was responsible for the problem?" (You/The self-service system/It wasn't displayed) and "Regarding this particular event, who called the employee to fix the problem?" (You/The self-service system). We also measured realism (α = .84), technology anxiety (α = .93) and gender from Study 2. Again, to rule out a possible explanation of justice perceptions, we also measured interactional justice (α = .86), procedural justice (α = .88), and distributive justice (α = .88) with the adapted items from Study 2.

Analysis and results

Manipulation check and Realism Assessment

The manipulations were successful. The chi-square test (with Yates continuity correction) showed that significantly more people indicated that the SST initiated recovery in the SST-initiated recovery condition ($\chi^2 = 51.540$, $df = 1$, $p < .001$). The chi-square test on locus of responsibility revealed the statistically significant association between locus of responsibility conditions and the manipulation check for locus of responsibility ($\chi^2 = 103.573$, $df = 4$, $p < .001$). Post hoc analysis revealed that significantly more participants reported that they were responsible for the problem in the customer error condition ($\chi^2 = 74.643$, $df = 1$, $p < .001$), and that the system was responsible in the technological failure condition ($\chi^2 = 26.336$, $df = 1$, $p < .001$).

One-way ANOVA on realism also revealed that both recovery initiation conditions ($M_{\text{SST-initiated}}$ = 5.98 vs. $M_{\text{customer-initiated}}$ = 5.99, $F(1, 244) = .004$, $p > .9$) and both locus of responsibility conditions ($M_{\text{customer\_error}}$ = 5.88 vs. $M_{\text{technological\_failure}}$ = 6.11 vs. M_{control} = 5.97, $F(2, 243) = .952$, $p > .3$) were equally realistic.

Interaction of Recovery Initiation and Locus of Responsibility

We used a two-way ANCOVA to test the interactive effect of recovery initiation and locus of responsibility on repurchase intention controlling for technology anxiety and gender. The ANCOVA revealed a significant interaction between recovery initiation and locus of responsibility on repurchase intention ($F(2, 238) = 2.59$, $p = .077$). Follow-up simple contrasts revealed that in the technological failure condition, SST initiation ($M_{\text{SST-initiated}}$ = 5.59) resulted in higher repurchase intention than customer initiation ($M_{\text{customer-initiated}}$ = 5.07, $F(1, 238) = 3.39$, $p = .067$). In contrast, repurchase intention was invariant in the customer error condition ($M_{\text{customer-initiated}}$ = 5.39 vs. $M_{\text{SST-initiated}}$ = 5.31, $F(1, 238) = .072$, $p > .7$) and in the control condition ($M_{\text{customer-initiated}}$ = 5.50 vs. $M_{\text{SST-initiated}}$ = 5.15, $F(1, 238) = 1.71$, $p = .193$). Therefore, H3 is partially supported. Fig. 4 below plots the interactive effect.

"Insert Fig. 4 about here"

Discussion

Study 3 shows that an SST can replace the initiation role of employees when they are not around. SST-initiated recovery (vs. customer-initiated recovery) increases repurchase intention when the failure is due to the system itself but not when the failure is due to a customer error or when there is no information about the locus of responsibility. We also found no evidence supporting the mediating roles of justice perceptions, similar to Study 2.

General Discussion

Although SSTs and service recovery attract substantial research attention, the SST recovery literature is far from sufficient to offer practical and cost-effective measures for

dealing with SST failures. This research examines how different recovery initiation methods should be adopted to restore repurchase intention. We tested our hypotheses with different framing methods of locus of responsibility (customer understands on their own, service scripts, on-screen warnings) and in different contexts (airport kiosks and grocery shop self-checkout kiosks). Studies 1 and 2 demonstrate that in the case of technological failures, employee-initiated recovery leads to higher repurchase intention than customer-initiated recovery. When the responsibility of SST failures falls upon the customers, customer-initiated recovery is more effective in improving repurchase intention than employee-initiated recovery. We also identified the underlying mechanism; after technological failures occur, employee-initiated recovery leads to positive recovery disconfirmation, which in turn increases repurchase intention. Moreover, Study 3 shows that when employees are not present, an SST-initiated recovery can also lead to higher repurchase intention in the case of technological failures. However, we are unable to detect a significant effect of customer-initiated recovery in the case of customer errors when employees are not around (although the trend was as we predicted). This could be because customers feel less embarrassed and criticized when they did not infer that employees were monitoring them, unlike when employees are around.

Theoretical Contributions and Future Research

The contributions of this research to marketing theory are fourfold. First, despite the rich body of service recovery literature, our research reveals the interactive effect of recovery initiation and locus of responsibility for the first time. Although previous research notes the positive impact of employee-initiated recovery on customer evaluations (Kelley, Hoffman, and Davis 1993; Smith, Bolton, and Wagner 1999), our research broadens the literature by showing that this method is effective when customers are not responsible for the problem but harmful when customers induce the failure. By examining the moderating role of locus of

responsibility, our research helps reconcile inconsistent findings regarding the relationship between recovery initiation and repurchase intention. Furthermore, our research contributes to the service recovery literature by introducing SST-initiated recovery in SST contexts and showing that when employees are not available, SST-initiated recovery can yield a similar effect to employee-initiated recovery. Our research, thus, challenges the current belief that in those cases, firms should motivate customers to voice their complaints or to self-recover from SST failures (Robertson and Shaw 2009; Zhu et al. 2013) and shows that an SST should rather initiate the recovery process and communicate its technological failure clearly to customers. Table 2 below further connects our findings with previous relevant research and presents how future research can enrich our understanding of the role of recovery initiation in achieving an effective recovery strategy.

"Insert Table 2 about here"

Second, we show the relevance of service scripts in the service (SST) recovery research. While the service quality literature has long suggested the crucial importance of service scripts, its mention was brief in the service recovery literature. Notably, a recent study by You et al. (2020) shows the role of linguistic framing in achieving an effective symbolic recovery strategy. Our research demonstrates that firms should use certain service scripts to frame locus of responsibility, depending on recovery initiation methods, in order to have an effective recovery strategy. Future research can further examine the roles of service scripts, especially for framing locus of responsibility, in the service recovery process.

Third, we extend the SST literature by highlighting the important role of employees in SST recovery. Some studies de-emphasize the importance of employees and emphasize the roles of customers in the SST recovery process (Robertson and Shaw 2009; Zhu et al. 2013). Our research, however, empirically demonstrates that employees' involvement in SST

recovery is desirable in certain conditions. Therefore, our research helps advance the discussion of human roles during technological-driven service transactions.

Fourth, our research also extends the applications of expectancy–disconfirmation theory to the field of SST recovery by illustrating that recovery disconfirmation serves as the mechanism underlying the interactive effect of recovery initiation and locus of responsibility on repurchase intention after SST failures. While previous research demonstrates the link between recovery disconfirmation and customer evaluations (e.g., McCollough, Berry, and Yadav 2000), our research establishes the mediating role of recovery disconfirmation on the effect of recovery initiation and locus of responsibility on repurchase intention.

Managerial Implications

Our research offers practical guidance for SST-driven service firms about how to initiate the recovery and communicate with customers when SST failures occur. The findings reveal that all three recovery initiation methods (employee, customer, or SST initiation) can be beneficial depending on how firms communicate the locus of responsibility and the presence of employees around SSTs. First, for firms that can allocate employees around the vicinity of the SST (e.g., supermarket), we suggest that they design a training program to educate their employees about recovery initiation and to provide recovery service scripts that employees can use when approaching customers after SST failures. The best way to achieve better service recovery outcomes is that employees initiate the recovery and importantly when they do so, they verbally assert that the failure is due to the self-service system. In many cases, an employee might supervise several SSTs, whereby they are aided with automatic SST notifications (BBC 2015). However, it is important to note that firms should use a selective visual notification system (e.g., alerts that only show up on employees' screens) instead of a commonplace audible notification system (e.g., saying "Unexpected item in the bagging area"), which might negatively affect customers' feelings. This setup

helps reduce the workload of employees while maintaining the benefits of employee-initiated recovery. Second, for firms that cannot allocate employees around the vicinity of an SST (e.g., ATMs), they should focus on upgrading their detection and warning systems with two essential features. First, automatically notifying employees about the problems instead of asking customers to contact them, which is a common practice; and second, displaying a clear notice to customers that the failures are due to system errors and that the system has notified an employee for assistance. To summarize, the most preferable option should be always to blame SSTs for the failures combined with employee-initiated recovery or SST-initiated recovery when employees are not around. Only when customers initiate the recovery *might* firms consider blaming customers but with caution and the use of a good service script. This method led to better outcomes than employee-initiated recovery only in Study 2.

Given their considerable benefits to both firms and customers, SSTs are predominant in many service industries, leading to an increase in the idealization of human-less frontline service in many service firms. However, we propose that service firms reconsider this approach by reallocating front-line human resources rather than trying to eliminate them in favor of SSTs since our research indicates that technology and human service employees should cooperate to recover SST failures effectively.

Limitations

Despite offering insights into the role of recovery initiation and locus of responsibility after SST failures, our research has certain limitations that also provide opportunities for future research (see also Table 2). Although SSTs in airline and retailing settings are prevalent and representative of SSTs in general, customers might still react differently in other SST settings, such as purely online SSTs. Thus, testing our theory with other SST applications will only further enrich the understanding of SST recovery. Furthermore, we employed only experimental designs, which gave us advantages in internal validity and

ethical considerations over cross-sectional studies (Bitner 1990). Nevertheless, external validity is still limited such that the effects would be different in real-life situations in which many other factors might interfere with our proposed effects. Finally, the effectiveness of recovery initiation might also depend on other factors that are beyond the scope of our research. For example, our research shows that recovery disconfirmation is an underlying mechanism of the effect of employee-initiated recovery. According to expectancy–disconfirmation theory (Oliver 1981), an increase in occurrences of employee-initiated recovery might raise customer expectations, gradually reducing recovery disconfirmation. Therefore, the effectiveness of employee-initiated recovery might slowly decrease over time.

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Tables

Table 1: Summary of SST recovery studies.

Authors	Methodology	Recovery initiators	Main IVs	Moderator	Main DVs	Key findings
Forbes (2008)	Critical incident technique	N/A	N/A	N/A	N/A	Types of SST failures that occurred and recovery employed are vastly different from traditional retail or e-retail settings. A large portion of customers (47.6%) said that there was no recovery after SST failure occurred.
Robertson and Shaw (2009)	Survey	Customer	Likelihood of voice success Causal locus SST self-efficacy	N/A	Ease of voice SST powerlessness Need to vent Likelihood of voice	Likelihood of voice success, causal locus, and SST self-efficacy are associated with the likelihood of voice through SST powerlessness, ease of voice, and need to vent.
Mattila, Cho, and Ro (2011)	Experiment	Customer	Recovery mode	Failure mode	Fairness perceptions	Matching failure mode with recovery mode (i.e., SST recovery and SST failure, human recovery, and face-to-face failure) increases fairness perceptions.
Dabholkar and Spaid (2012)	Experiment	N/A	Error resolution Employee assistance Anxiety Source of Error	N/A	Satisfaction with SST encounter Negative attribution to SST, employee, and store	Error resolution (vs. no resolution) increases satisfaction and reduces negative attributions to SSTs, employees, and stores. Employee assistance (vs. no assistance) increases negative attribution to SSTs and decreases negative attribution to employees.
Robertson, McQuilken, and Kandampully (2012)	Conceptual	N/A	Service guarantees	Attribution of blame SST failure severity	Consumer-voiced complaints Fairness perceptions	Key propositions: Service guarantee (e.g., promising to fix and to provide compensation when cannot fix) is positively associated with fairness perceptions and consumer-voiced complaints. Attribution of blame and SST failure severity play moderating roles.
Zhu et al. (2013)	Experiment*	Customer	Internal attribution Perceived SST control SST interactivity	Competitive information	Switch to employee assistance Customer-recovery expectation Customer-recovery effort Customer-recovery strategy	Internal attribution, perceived SST control, and SST interactivity are positively associated with customer-recovery expectations, which in turn result in a lower tendency to switch to employee assistance, more customer-recovery efforts, and more customer-recovery strategies. Competitive information moderates the effect of customer-recovery expectations on customer-recovery strategies.
Collier, Breazeale, and White (2017)	Experiment	Customer	Employee completes whole transaction	Presence of other customers	Satisfaction with SST encounter	Employee fully taking over transactions (vs. merely correcting the problem) after SST failures leads to higher satisfaction in the isolated transaction (vs. in the presence of other customers). The satisfaction ratings of all conditions are consistently higher in the case of customer fault (vs. SST fault).

Note: IV = independent variable; DV = dependent variable; N/A = not available.

* Zhu et al. (2013) only manipulate competitive information (the moderator) and SST types.

Table 2: Area of potential impact and research questions regarding recovery initiation and locus of responsibility

Research team(s)	Key Findings	Potential research questions regarding recovery initiation and locus of responsibility framing
Bacile et al. (2018)	Online incivility negatively affects first-party victims' and third-party observers' justice perceptions of firms.	How do third-party observers perceive and evaluate recovery initiations, especially employee initiation and SST initiation? Do their justice perceptions vary depending on locus of responsibility framed by employees?
Basso and Pizzutti (2016); Maxham and Netemeyer (2002a)	Double deviations (e.g., two consecutive failures, failed service recoveries) can be highly costly for firms without appropriate interventions.	How does the unsatisfactory recovery of employees (i.e., they cannot fix the SST problem) after employee-initiated recovery (vs. customer-initiated recovery) influence consumer evaluations? Do repeated SST failures mitigate the mediating role of recovery disconfirmation?
Bitner (1990); Grewal, Roggeveen, and Tsiros (2008); Smith and Bolton (1998)	Consumers' causal attributions (e.g., stability, controllability) shape consumer evaluations and intentions.	Do failure severity and controllability also moderate the (interactive) effects of recovery initiation (and locus of responsibility) in SST settings? Will SST-initiated recovery increase consumer perceptions that the SST failures are stable over time and that firms should have high control over those failures, which in turn, leads to negative outcomes (i.e., a lower tendency to re-use the SST)?
Collier, Breazeale, and White (2017)	Employee fully taking over transactions after SST failures leads to higher satisfaction in the isolated transaction (vs. in the presence of other customers).	What is the optimal recovery strategy that combines employees' correction actions (recovery initiation, fully taking over transactions) and service scripts to address SST failures? Which are the associated psychological costs for customers when using those recovery strategies? Which are other cost-effective recovery strategies that employees can employ?
Fan, Wu, and Mattila (2016)	The anthropomorphism of SST voice influences customer evaluation of SST failures.	Do humanized SST voices and humanized message contents (e.g. "I am responsible for the failure") influence consumer perceptions of SST-initiated recovery and its responsibility for SST failures?
Harris et al. (2006); Holloway, Wang, and Parish (2005)	Online settings can influence consumer evaluation of service failures and the effectiveness of recovery strategies.	Can the interactive effect of recovery initiation and locus of responsibility still hold (or even enhance) in online settings? Will online service scripts still be effective to frame locus of responsibility? Are the effects on repurchase intention and other outcomes (e.g., online word-of-mouth) stronger (or weaker) for online channels?
Mattila and Patterson (2004); Patterson, Cowley, and Prasongsukarn (2006)	Culture shapes consumer evaluations of service failures and recovery strategies.	Do cultural factors (e.g., collectivism, uncertainty avoidance, power distance) influence the interactive effect of locus of responsibility and recovery initiation? For example, might Eastern customers feel more shameful and embarrassed when an employee says that they induced the failures? How do those feelings change customers' justice perceptions and impression management behaviors?
Mattila, Cho, and Ro (2011)	Matching failure mode with recovery mode after the failures can increase customers' fairness perceptions.	Which is the best combination of recovery initiation (SST-initiated, human-initiated), recovery process (SST-recovery, human-recovery) and failure types (SST failure, human failure) to enhance customers' fairness perceptions and intentions?
You et al. (2020)	Saying "Thank you" (i.e. showing appreciation) is often a more effective symbolic recovery strategy than saying "sorry" (i.e., apology).	Can the mismatch between locus of responsibility framing and appreciation (vs. apology) messages (e.g., "sorry, the problem is due to your incorrect input" vs. "thank you for waiting, the problem is due to a system error") hinder recovery effectiveness? Will employee-initiated recovery and SST-initiated recovery be more effective when accompanied with appreciation or an apology?
Zhu et al. (2013)	Some important factors drive consumers to self-recover SST failures.	Among various SST recovery strategies (e.g., consumer recovery, employee recovery initiated by employees, employee recovery initiated by customers), which is the most effective strategy? And why?

Figures

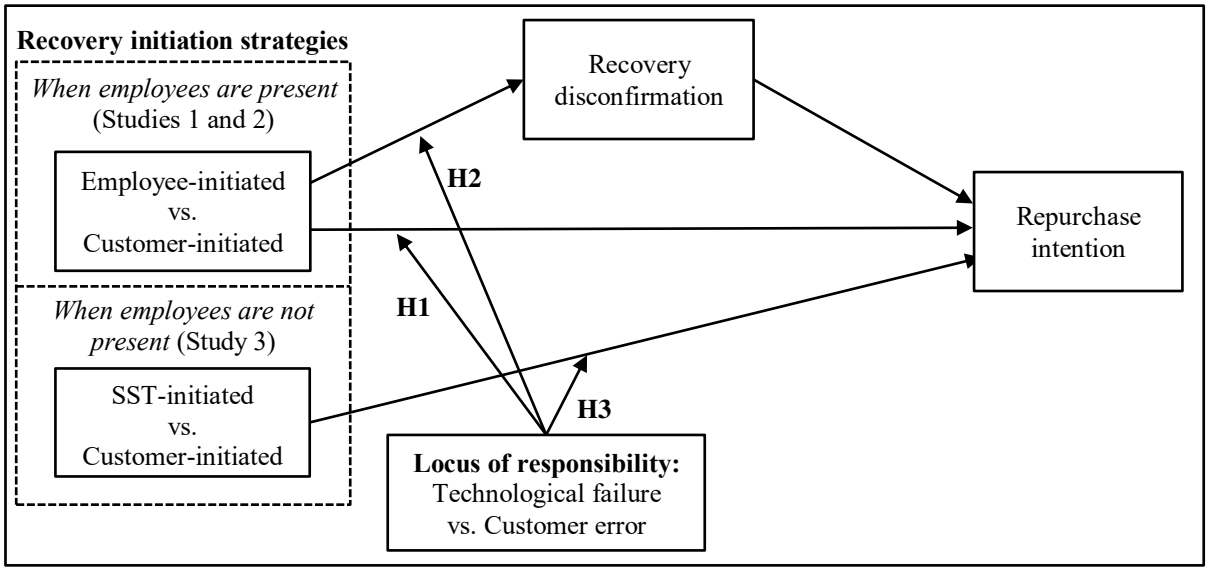

Fig. 1. Research model.

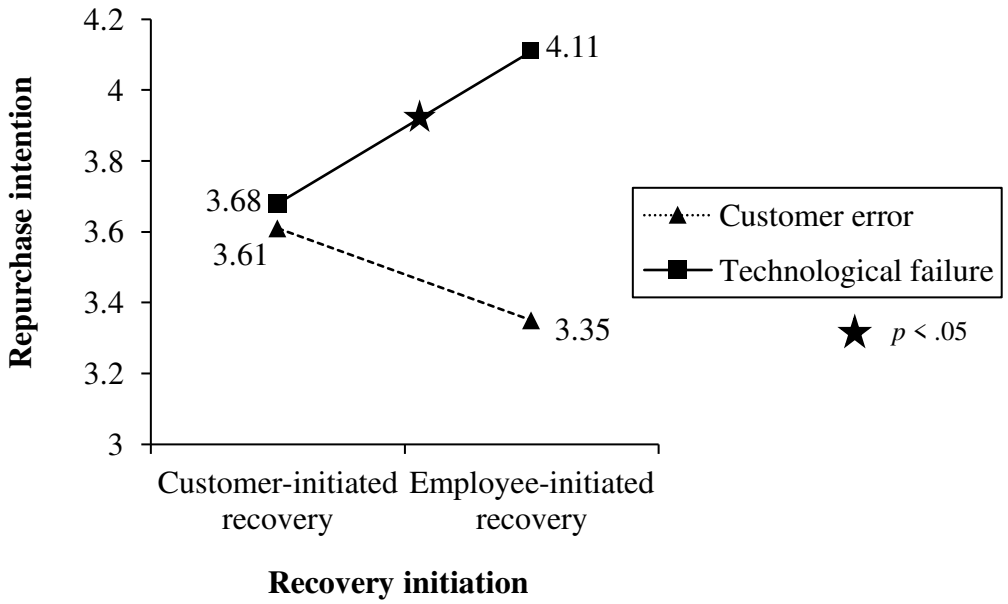

Fig. 2. Interactive effect of recovery initiation and locus of responsibility on repurchase intention (Study 1).

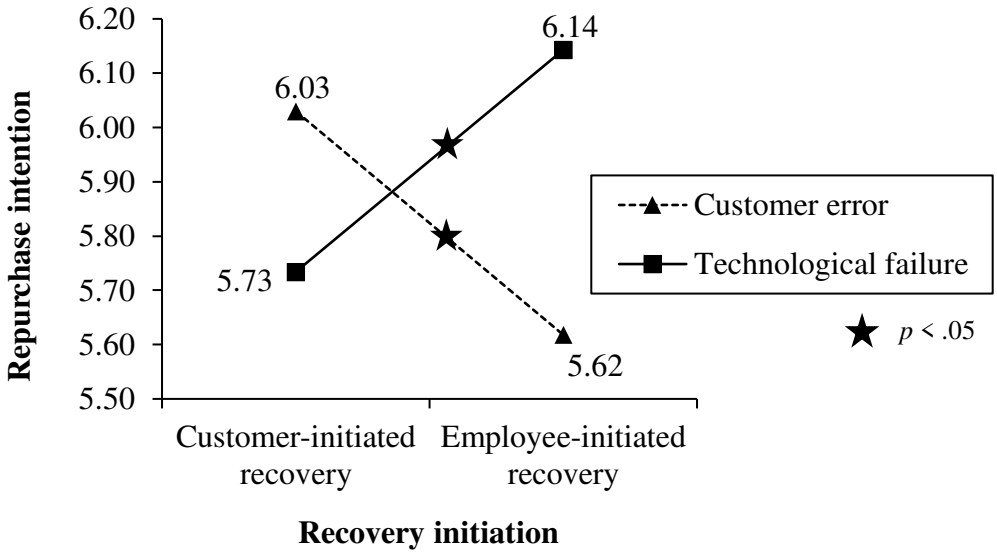

Fig. 3. Interactive effect of recovery initiation and locus of responsibility on repurchase intention (Study 2).

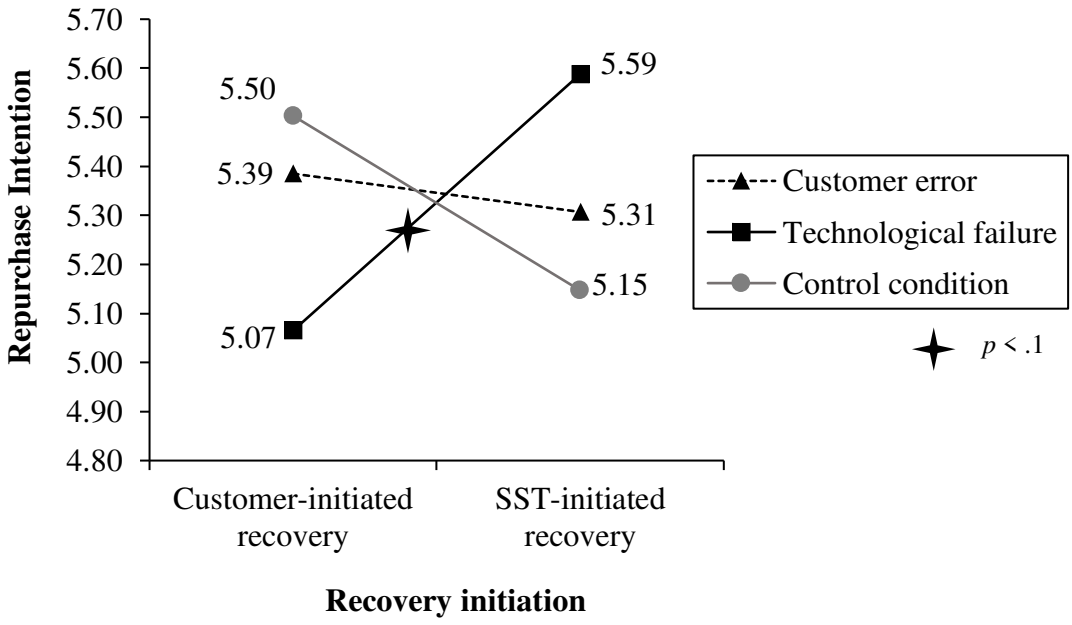

Fig. 4. Interactive effect of recovery initiation and locus of responsibility on repurchase intention (Study 3).

Appendix A. A Sample of the Scenarios for Study 1

Technological Failure and Employee-Initiated Recovery Scenario:

Imagine that you are shopping for groceries in a nearby store. At the end of your shopping trip, you use a self-service checkout to scan and pay for your items. After scanning an item and putting it in the carrier bag, the phrase "unexpected item in the bagging area" pops up on the screen and the self-checkout process stops. You understand that this is *a problem of the self-checkout system because you have scanned the item correctly*.

Without you asking for help, the store employee acknowledges that you have a problem, immediately approaches you and solves the problem.

Appendix B. A Sample of the Scenarios for Study 2

Customer Error and Customer-Initiated recovery Scenario:

Imagine that you are shopping for groceries in a grocery store. At the end of your shopping trip, you use a self-service checkout kiosk to scan and pay for your items. The self-service checkout kiosk stops working in the middle of the transaction.

After you ask for help, a store employee acknowledges that you have a problem, immediately approaches you and says that "*It seems that you scanned something incorrectly but don't worry, I am here to help*." He solves the problem quickly and you finish your self-service checkout successfully.

Appendix C. Sample of the Scenarios for Study 3

Technological Failure and SST-Initiated Recovery Scenario:

Imagine that you are at the airport for a trip. You go to your airline's self-service kiosks to check-in. You notice that there are no representatives of this airline nearby at that moment. You start to check-in and in the middle of the process, the kiosk stops working and you see a pop-up warning on the screen as following:

After being notified by the kiosk system, a representative of this airline approaches you swiftly and quickly fixes the problem. You finish your self-service check-in successfully.

Customer Error and Customer-Initiated Recovery Scenario:

Imagine that you are at the airport for a trip. You go to your airline's self-service kiosks to check-in. You notice that there are no representatives of this airline nearby at that moment. You start to check-in and in the middle of the process, the kiosk stops working and you see a pop-up warning on the screen as following:

When you press the button to initiate the process, a representative of this airline approaches you swiftly and quickly fixes the problem. You finish your self-service check-in successfully.