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RELATIONSHIP AMONG PROBLEMATIC CUSTOMER BEHAVIORS, SERVICE RECOVERIES, AND POST-RECOVERY SATISFACTION: RECOVERY EXPECTANCY DISCONFIRMATION AND PERCEIVED FAIRNESS PERSPECTIVES

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Abstract

The previous studies of service failure were particularly focused on employees and companies. Few studies on the negative impacts of problematic customer behaviors (PCBs) in terms of customer recovery expectancy disconfirmation (RED) and perceived fairness (PF) have been conducted. This paper aims to verify whether consumers' RED, PF, and post-recovery satisfaction are affected by the PCB types and service recovery approaches (RAs). Having adopted the virtual situational experiment and the questionnaire survey, the experimental design of this paper used the 4×2 between-subject factorial design for

two factors: The eight types of experimental situation questionnaires were designed using the four PCB types, “verbal/nonverbal” and “deliberate/unintentional”, and two RAs (substantial or psychological compensation). Afterward, questionnaire surveys were conducted by convenience sampling method, and 640 valid questionnaires were collected. The results revealed that when deliberate PCBs (verbal or nonverbal) occur, the consequences are usually more serious than the unintentional ones, and the substantial recovery measures can effectively satisfy the customer’s recovery expectancy and PF (distribution fairness, interaction fairness). When unintentional PCBs occur, the psychological recovery measures generally satisfy the customer's recovery expectancy and PF (distribution fairness, interaction fairness). In addition, customers' RED and PF can significantly affect post-recovery satisfaction. The impact effects were presented sequentially as follows: interaction fairness, distribution fairness, customers’ RED, and procedural fairness. This study may compensate for the lack of academic research and could serve as a reference for service operation planning and management.

Keywords: problematic customer behaviors, service recovery, recovery expectancy disconfirmation, perceived fairness, post-recovery satisfaction

Introduction

Inherently, services are intangible, indivisible, diverse, and perishable (Fisk et al., 1993). They are almost impossible to be zero-defect. According to the attribution theory (Weiner, 1980), the responsibility attribution of service failures affects the customer evaluation of the company’s follow-up services. Previous studies regarding service failure and recovery were mostly customer-oriented (Hoffman et al., 1995; Mueller et al., 2003), and many service failures were often attributed to employees, ultimately affecting customer satisfaction or the effect of service recovery (Hess et al., 2003).

Several scholars proposed many studies regarding the impact of service failures that are not attributed to corporate or employee responsibility on other customers (Gursoy et al., 2017; McQuilken et al., 2017; Baker & Kim, 2018; Kim & Baker, 2020). Bitner et al. (1994) argued that problematic customer behaviors (PCBs) accounted for 22% of all failure incidents. Grove and Fisk (1997) indicated that 30.95% of dissatisfaction events were caused by "other customers". Yin and Poon (2016) reported that visitors who took a group package tour were negatively affected by the appearance, speech, and behavior of other members. These behaviors may lead to customers’ dissatisfaction with other customers which could affect their emotions. However, they should not be attributed as mistakes of companies or employees. These customers are referred to as “problematic customers” (Bitner et al., 1994), “jay customers” (Lovelock, 1994), or “customers from hell” (Anderson & Zemke, 1990); the current paper refers to them as "problematic customers." Although a PCB may not be caused by employees or companies, if it occurs, the company is still liable to make amends and provide customer recovery.

Failure to provide service recovery may result in other customers criticizing and casting negative evaluations on the company (Baker & Kim, 2018). Therefore, when service failures occur or when customers are dissatisfied with the service, regardless of responsibility attribution, they can be called service failures (Palmer et al., 2000). The company should proactively take responsibility and immediately perform recovery strategies to avoid corporate losses (Bitner et al., 1994).

Customer satisfaction not only reflects the customer's evaluation of the product or service but also affects consumer behavior (Han et al., 2009). Therefore, satisfaction is an important antecedent in predicting consumer behavior. Some research on service failure and recovery focused on post-recovery satisfaction. To correctly identify and effectively control the service recovery delivery process, it is necessary to analyze the antecedents of post-recovery satisfaction (Yim et al., 2003; Nikbin et al., 2015; Tektas, 2017; Mohd-Any et al., 2019; Kenesei & Bali, 2020; Ali et al., 2023). Regarding the antecedents affecting customer satisfaction, scholars often quoted the expectancy disconfirmation theory and described satisfaction as the comparison between pre-consumer expectations and post-consumer cognitive performance (Oliver, 1980). Similarly, post-recovery satisfaction results from the comparison between expectations before recovery and post-recovery performance (Boshoff, 1999). Previous studies showed that post-recovery satisfaction may affect customers' overall satisfaction; companies can reduce loss of service failure if they can compensate customers promptly (Huang, 2008). Thus, recovery expectancy disconfirmation (RED) should be an important antecedent of post-recovery satisfaction.

Previous studies often adopted the fairness or justice theory to explore consumer perceptions of service recovery (Morrisson & Huppertz, 2010; Nikbin et al., 2015; Jung & Seock, 2017; Migacz et al., 2018). Some scholars believe that when service failure occurs, customers will generate unfair perceptions. Therefore, perceived fairness (PF) should be included in the customer behavior model. Otherwise, the research structure may be incomplete (Jung & Seock, 2017; Migacz et al., 2018). Some scholars advocated that PF and RED are important factors, and their combination can provide a more complete explanation for post-recovery satisfaction (Smith et al., 1999).

Studies that explored the impact of PCBs on the recovery perception of other consumers, including RED and PF and their impact on post-recovery satisfaction are currently limited. This study aims to explore the impact of different combination scenarios of PCB types and recovery approaches (RAs) on RED and PF and to reveal how they affect post-recovery satisfaction. This paper can fill the gaps for related academic research, and the results can be used as a reference to classify PCBs and develop corresponding recovery strategies and processes in the hospitality industry.

Theoretical Basis and Hypotheses

Relationship between PCB Types, RAs, and Recovery Perception

Although other studies gave "problematic customers" different names and definitions, all are almost similar in meaning. Lovelock (1994) defined jay customer behavior as "deliberate or unintentional disruption of services, casting negative impact on organizations or other customers." Harris and Reynolds (2003) defined dysfunctional customer behavior as "customers interrupting service using deliberate or unintentional, explicit or hidden behavior." Previous studies classified PCBs into different types; Lovelock (1994) classified PCBs as deliberate or unintentional, and Martin (1996) used the critical incident technique to summarize 32 types of customer behaviors from both verbal and non-verbal perspectives. Although these studies classified PCBs differently, Lovelock (1994) and Martin (1996) agreed that they are verbal/non-verbal or deliberate/unintentional misconduct. This paper defines PCBs as deliberate or unintentional, verbal or non-verbal misconduct that negatively affects company operations or other customers. They are classified into four types: (1) deliberate and verbal, (2) deliberate and non-verbal, (3) unintentional and verbal, and (4) unintentional and non-verbal.

Service recovery requires service providers to adopt a specific action when dealing with service failures, including resolving problems, reversing the negative attitudes of unsatisfied customers, and retaining customers (Maxham III, 2001). A good recovery can alleviate the negative effects of service failures, maintain trust and commitment between customers and businesses, improve customer satisfaction, and maintain customer loyalty (Smith & Bolton, 1998; McCollough et al., 2000; Kim & Baker, 2020). Regarding RAs, Hoffman et al. (1995) categorized them into eight types; among them, free food, discounts, and coupons result in high customer satisfaction, but inactions or without apology get minimal satisfaction. Smith et al. (1999) classified RAs into substantial compensation, which consists of discounts, discount coupons, refunds, and no charge, and psychological compensation, which comprises of elaboration and explanation of the causes for service failures and admitting failures to customers in a polite, empathetic, respectful, caring attitude and making apologies.

Mueller et al. (2003) classified service recovery into six categories; in which, free replacements, discounts, and coupons are the most effective. Apologies are usually used in conjunction with other service recoveries. This paper argues that companies can compensate for the economic losses of customers (e.g. soup splashing on a customer's clothes caused by a collision of another customer with an object, employee, etc.) by substantial compensation (e.g. free laundry or paying for the expense of laundry). Psychological compensation (e.g. apologizing and listening) can make up for the losses of customer social resources (e.g. loss of tranquility caused by the shouting of a customer). In this study, the RAs are divided into substantial and psychological compensation.

The recovery perception in this study is composed of RED and PF. With social psychology and organizational behaviors as its basis, the Expectancy Disconfirmation Theory has been widely used to assess customer satisfaction and repurchase intentions (Oliver, 1980). Expectation disconfirmation refers to the comparison between expectation and perceived performance. When a service failure occurs, the customer has the prior expectation that the enterprise will respond appropriately to the failure (Singh, 1990); this is called service recovery expectation. After comparing it to actual recovery performance, it generates REDs (Kelley & Davis, 1994; Smith et al., 1999). This study defines RED as the comparison between recovery performance and recovery expectations made by a customer after encountering PCB and receiving service recovery, resulting in subjective perceptions.

Oliver and Swan (1989) first measured customer satisfaction with perceived fairness (referred to as PF) and expectancy disconfirmation. Goodwin and Ross (1992) explained the impact of service recovery on customer satisfaction with fairness theory and divided PF into distributive fairness, procedural fairness, and interactional fairness. Smith et al. (1999) argued that distributive fairness means that customers are concerned about what kind of compensation they will receive after they complain. Procedural fairness means that the policies, methods, and procedures in the recovery process are fair and equitable. Interactional fairness means that the service personnel shall be sincere and cordial when they compensate customers during the service process. The research scenarios and the definition of PF in this study are similar to those of Smith et al. (1999).

Customer expectations are affected by the types of service failure (Smith et al., 1999); that is, the customer will judge the type of service failure, evaluate the losses affected, and expect the service provider to compensate for the loss. As a result of failures, customers expect to recover the service level that was originally anticipated. For process failures, the service provider is expected to apologize or adopt psychological recovery. Service providers can even elicit the Service Recovery Paradox by positive RED created by service recoveries that go beyond customers' initial expectations (Magnini et al., 2007). Similarly, the degree of negative impact caused by PCB may vary from one failure type to another; the recovery results may vary from different RAs by service providers. In line with these, the following hypotheses are proposed:

H1: There is a significant difference in RED for different PCB types.

H2: There is a significant difference in RED for different RAs.

Lapidus and Pinkerton (1995) used fairness theory to explore the relationship between the equity of service recovery and outcomes (or compensation). They found that the PF of customers with high compensation was greater than those with low compensation. Smith et al. (1999) claimed that PF varies from different service failure types and that

PF increases when service recovery correctly compensates for the losses caused by service failures. They verified that service failure types significantly affected customer recovery performance perception and that RAs also significantly affected customer fairness perception. Similarly, when customers encounter PCBs, companies can compensate for the loss of customer economic resources by substantial recovery and compensate for the loss of customer social resources by psychological recovery. Jung and Seock (2017) indicated that consumer perception of distribution and interactional justice varies from different RAs. Therefore, this study proposes the following hypotheses.

H3: There is a significant difference in PF for different PCB types.

H4: There is a significant difference in PF for different RAs.

The Interaction of PCB Types and RAs on Recovery Perception

Bagozzi (1975) claimed that service failures and recovery are an exchange between utilitarianism and symbolism. Utilitarianism refers to the exchange of economic resources (such as money, goods, time, etc.), while symbolism is the exchange of psychological or social resources (such as respect, compassion, apology, etc.). Oliver and Swan (1989) reported that expectancy disconfirmation comes from the comparison between individual expectations and actual performances received, while PF comes from the comparison between the compensation received by the customer and that received by reference groups (others who have been involved in similar failures). The customers will measure whether the failure is treated fairly based on the losses and compensation resource type and quantity in the exchange process, which will generate either satisfaction or dissatisfaction.

With resource exchange theory as a basis, Smith et al. (1999) believed that different types of resources correspond to different psychological accounts of customers, and the choice of RAs should be based on the principle of recovering specific psychological accounts. Therefore, the effect of RA is related to its corresponding service failure type. When a result failure occurs in a restaurant, the distributive fairness perception of the customer made by substantial compensation is significantly higher than a process failure; when a procedural failure occurs in a hotel, apologizing as a recovery produces a higher level of interactional fairness perception (Smith et al., 1999). Choi and Choi (2014) revealed that under severe service failures, the distributive fairness perception of service recovery has a significant impact on customer affection; that is, when a customer encounters a severe service failure, the manager may need to provide immediate substantial compensation in addition to an apology to recover the customer's affection instead of just providing an apology and a quick response. Liao et al. (2022) also confirm that, for different types of service failure, the effect of satisfaction level would differ for a different recovery strategy. Based on the above points, this study proposes the following:

H5: There is a significant interaction effect on RED between PCB types and RAs.

H6: There is a significant interaction effect on PF between PCB types and RAs.

Recovery Perception and Post-recovery Satisfaction

Customer satisfaction is not only affected by service quality but also by service recovery (Nikbin et al., 2015; Jung & Seock, 2017; Migacz et al., 2018). If a company performs the appropriate service recoveries immediately when a service failure occurs, it can reduce or even eliminate the negative impact of service failure, which may further lead to positive word of mouth (Smith & Bolton, 1998; Maxham III, 2001) and repurchase intention (Maxham III, 2001; Harris et al., 2006). Spreng et al. (1995) argued that customer satisfaction is a service performance assessment and can be divided into first-time and second-time. First-time satisfaction refers to the satisfaction generated by the service initially received by the customers; while the second time satisfaction refers to customer satisfaction after service recovery, also known as "post-recovery satisfaction". In this study, it refers to the degree of customer satisfaction with the service recovery of a company after responding to an event involving PCBs. Spreng et al. (1995) indicated that compared to other service attributes, post-recovery satisfaction had a more significant impact on overall satisfaction, word of mouth, and willingness to repurchase. Therefore, post-recovery satisfaction is an important indicator for assessing service recovery performance.

McCollough et al. (2000) argued that post-recovery satisfaction is primarily due to RED. Chih et al. (2012) indicated that recovery disconfirmations influence switching intentions via satisfaction. Previous studies believed that PF is an important antecedent factor for assessing post-recovery satisfaction when service failures occur (Maxham III & Netemeyer, 2003; McColl-Kennedy & Sparks, 2003; Liao et al., 2022; Ali et al., 2023). Oliver and Swan (1989) claimed that expectancy disconfirmation and PF are important antecedents that affect satisfaction, and a combination of both can provide a more complete explanation of satisfaction. Smith et al. (1999) integrated PF with expectancy disconfirmation to assess customer satisfaction after recovery in service failure/recovery incidents. Yim et al. (2003) indicated that understanding the antecedents that affect post-recovery satisfaction, and effectively controlling the factors that affect the service recovery delivery process will multiply the effects of post-recovery satisfaction. Some studies reported that there was a significant relationship between PF (distribution, procedure, and interactional fairness) and post-recovery satisfaction (Nikbin et al., 2015; Tektas, 2017; Migacz et al., 2018; Mohd-Any et al., 2019). Jung and Seock (2017) demonstrated the important relationship between PF, post-recovery satisfaction, and word-of-mouth. Ampong et al. (2021) revealed that procedural and interactional justice is important to customer satisfaction with service recovery irre-

spective of setting. Based on these, the following hypotheses are proposed:

H7: Positive RED positively affects post-recovery satisfaction.

H8: Distributive fairness positively affects post-recovery satisfaction.

H9: Procedural fairness positively affects post-recovery satisfaction.

H10: Interactional fairness positively affects post-recovery satisfaction.

Research Methodology

Experimental Scenario and Research Design

This study used Western restaurants as the virtual scene primarily because most consumers have consumption experience in restaurants, and a restaurant is a place where service failures mostly happen (Hoffman et al., 1995). Further, Western restaurants usually have stricter service quality standards and training requirements than Chinese restaurants. Therefore, this study chose full-service western-style restaurants with fixed business premises, seating, and service staff for ordering and delivering food, as the research target. Consequently, customers who have consumed in such restaurants within one year were recruited as survey participants.

Previous studies of service failures and recovery often used the critical incident technique (Bitner et al., 1994; Hoffman et al., 1995) or the role–playing method with virtual scenarios (Blodgett et al., 1997; Smith et al., 1999). The current study used the latter to clarify the causal relationship among the research variables. This method enables subjects to become involved in virtual situations and can enhance the sense of authenticity through one's own service failure experience, allowing one to answer questions truthfully and lowering recall bias (Smith et al., 1999). It can also make the scenarios of service failure and recovery easy to control to accurately explore the relationship between the independent and dependent variables, helping improve internal validity.

This study explored the responses of the subjects towards recovery perceptions (RED and PF) and post-recovery satisfaction under different PCBs and RAs. The experiment utilized a 4×2 between-subject factorial design for two factors to validate the research hypotheses. The two factors were the PCB types and the RAs. The former consisted of four levels including: (1) verbal and deliberate, (2) verbal and unintentional, (3) non-verbal and deliberate, and (4) non-verbal and unintentional (Lovelock, 1994; Martin, 1996); while the latter was divided into two levels namely: (1) substantial recovery and (2) psychological recovery (Smith et al., 1999). Therefore, the experimental scenarios were divided into eight combinations, and the respondents were randomly assigned to one of the eight scenarios and were asked to answer a questionnaire survey.

Instrument Development

The RED scale and questions utilized by Oliver and Swan (1989) and

Smith et al. (1999) were adapted into 3 questions according to the experimental contexts such as: “service recoveries of the restaurant are better than customer expectations.” The measurement of PF referred to Goodwin and Ross (1992), Maxham III and Netemeyer (2003), Oliver and Swan (1989), and Smith et al. (1999). The PF has consisted of distributive fairness (such as "the compensation given by the restaurant is fair"), procedural fairness (such as "the recovery of the restaurant shows a responsible attitude"), and interactional fairness (such as "the restaurant shows due respect and politeness for the sufferings I have been encountered"). There are 11 items in total. The post-recovery satisfaction referred to Smith et al. (1999), McCollough et al. (2000), and Webster and Sundaram (1998), including three questions. For example, "I am satisfied with the recoveries provided by the restaurant." The above items adopted Likert 7-point scale (1 = strongly disagree ~ 7 = strongly agree).

Questionnaire Design and Sampling Survey

The first part of the questionnaire described the experimental scenario in detail. The respondents were asked to imagine themselves as the protagonist of the scenario to facilitate the filling of the questionnaire. The eight experimental scenarios were formed by a combination of four PCB types and two RAs, which were confirmed by three experts in the restaurant field who offered corrections and suggestions before survey administration. As an example, scenario one was a contextual combination of deliberate and verbal PCB and substantive compensation; it is described below:

“You and a group of good friends meet during the weekend in a high-end western restaurant with soft lights and a nice atmosphere. After entering the restaurant, the waiter kindly takes you to your seats, politely pours water, and introduces the menu. Finally, you order the chef's recommended set menu. While you and your friends are eating the delicious food and chatting, you inadvertently glance at a customer at the next table. After a while, the customer passes by and is angry at you, then shouts 'What are you looking at? What for?' Suddenly, you feel helpless and angry with the customer's rude behavior and feel that the dining mood was ruined. Meanwhile, the waiter finds out what happened and immediately asks the manager for help. After calming the customer, the waiter and the manager apologize for the trouble you suffered and offer free refreshments as compensation."

After reading the scenario, respondents were required to answer the questionnaire, which was further divided into three parts: the first part includes the demographic data; the second consists of the items for the RED, the PF, and the post-recovery satisfaction; and the third measures whether the subjects were able to distinguish the difference between the verbal/non-verbal and deliberate/ unintentional scenarios of the PCBs to test whether the combinations of the experimental scenario were appropriate. As an example, one of the questions in scenario one was: "Do you believe that the problematic customer behavior is a ver-

bal or non-verbal (unintentional or deliberate) abuse behavior?" (Rate 1 for non-verbal/unintentional and 7 for verbal/deliberate). The other seven scenarios were described and answered similarly. To ensure the accuracy of the questionnaire items, three experts who have strong bilingual capacities and who have been engaged in other studies involving the restaurant field were asked to back-translate and confirm the consistency of the translation of the questionnaire items. In so doing, typographical errors and problems with semantic expression were avoided and the questionnaire validity was ensured.

This study utilized the first scenario for pre-testing and used convenience sampling to obtain participants. A total of 60 respondents who had been to similar restaurants joined the pre-testing. After removing the invalid questionnaires, 52 effective questionnaires were collected. The reliability analysis showed that Cronbach's α of all dimensions was above 0.7. Therefore, the scale reliability was good and there were no items to be deleted. Based on the third part of the questionnaire, this study divided the PCB questions into two levels: (1) verbal PCB (mean=5.29) and (2) non-verbal PCB (mean=3.15). An independent t-test was conducted and the results showed that there were significant differences between verbal and non-verbal PCB (t=15.59, p <0.001). Another independent t-test was conducted and the results also showed that there were significant differences between deliberate and unintentional PCB (t=12.99, p <0.001). Hence, the types of PCBs were successfully classified and manipulated. This study distributed formal questionnaires to customers who had been to Western restaurants through convenience sampling. This study intended to distribute 80 effective questionnaires for each scenario. A total of 702 questionnaires were distributed, and 640 were considered valid.

Data Analysis and Discussion

Demographics

The proportion of female respondents (52.8%) was slightly higher than that of males (47.2%). The majority of respondents were aged between 21 and 30 years old (42.2%), followed by those aged between 31 and 40 years old (25.0%); and most had a college or a university degree (53.8%). Further, the respondents were mainly students (36.9%), and those working in the service industry (20.9%) and manufacturing industry (19.7%). A good number had an average monthly income of 20,000 NTD and below (48.3%), 20,001 to 40,000 NTD (33.1%), and 40,001 to 60,000 NTD (16.9%). Regarding their consumption frequency, most dined in such restaurants once or less than once a month (35.8%) and twice per month (33.8%).

Reliability and Validity Analysis

This study used Cronbach's α to evaluate the scale's reliability and determine each dimension's internal consistency. In terms of the overall sample, the Cronbach's α value of each dimension was greater than 0.7. Moreover, samples for eight scenarios obtained Cronbach's α values higher than 0.7 for all dimen-

sions. These indicate that the questionnaire scales have good reliability (Nunnally, 1978). The questionnaire items and virtual scenarios were also revised after being reviewed by experts to ensure that it has a solid theoretical basis good content and expert validity.

The Impact of PCB Types and RAs on RED (H1, H2, H5)

A two-way analysis of variance (ANOVA) was performed to test the interaction effects between PCB types and RAs on RED. Table 1 shows that the interaction effect was significant (F=5.68, p <0.01), which indicates that H5 is supported. Furthermore, it was found that the effects of RAs and PCB types on RED should be examined under different PCB types and RAs.

Table 1. Two-way ANOVA of PCB types and RAs on RED

Source of variance	SSE	DF	MSE	F value
PCBs	19.24	3	6.41	4.94**
RAs	47.31	1	47.31	36.40***
PCBs* RAs	22.15	3	7.38	5.68**
1. SSE=Sum of square error; DF=Degree of freedom; MSE=Mean square error; 2. * p<0.05; ** p <0.01; *** p <0.001				

The effects of the PCB types on RED under different RAs (H1)

Table 2 shows that there was no significant difference in RED for the four PCB types under substantive recovery; however, there was a significant difference in RED for the four PCB types (F=8.22, p <0.001) under psychological recovery. After multiple comparisons, it was found that the positive RED of deliberate PCB (verbal or non-verbal) was significantly lesser than unintentional PCB (verbal or non-verbal). Therefore, H1 is partially supported.

Table 2. ANOVA of PCB types on RED under different RAs

RAs	RED				F value	Multiple comparisons
	A	B	C	D		
Substantive recovery	4.68	4.91	5.03	4.72	1.78	---
Psychological recovery	3.96	4.67	3.95	4.29	8.22***	A<B, A<D, C<B, C<D
1. A: verbal/deliberate; B: verbal/unintentional; C: non-verbal/deliberate; D: non-verbal/unintentional 2. * p <0.05; ** p <0.01; *** p <0.001						

The effects of RAs on RED under different PCB types (H2)

Table 3 shows that in the case of verbal/deliberate (F=13.50, p <0.001) and non-verbal/deliberate PCBs (F=34.68, p <0.001), the positive RED of respondents receiving substantive recovery was greater than psychological recovery. In the verbal/unintentional and non-verbal/unintentional PCBs, the results showed that there was no significant difference in positive RED between the substantive recovery and psychological recovery. These suggest that H2 is partially supported.

Table 3. ANOVA of RAs on RED under different PCB types

PCB types	RED		F value	Multiple comparisons
	Substantive recovery	Psychological recovery		
Verbal/deliberate	4.68	3.96	13.50***	Substantive > Psychological
Verbal/unintentional	4.91	4.67	2.52	---
Non-verbal/deliberate	5.03	3.96	34.68***	Substantive > Psychological
Non-verbal/Unintentional	4.72	4.57	0.62	---
* p <0.05; ** p <0.01; *** p <0.001				

The Impact of PCB Types and RAs on PF (H3, H4, H6)

The Impact of PCB Types and RAs on Distributive Fairness (H3-1, H4-1, H6-1)

The two-factor ANOVA was used to test the interaction effects between PCB types and RAs on distributive fairness. Table 4 shows that the interaction effect was significant (F=4.99, p <0.01), indicating that H6-1 is supported. Hence, the impact of RAs and PCB types on distributive fairness should be separately examined under different PCB types and RAs.

Table 4. Two-way ANOVA of PCB types and RAs on distributive fairness

Source of variance	SSE	DF	MSE	F value
PCBs	17.25	3	5.75	5.81**
RAs	25.20	1	25.20	25.48***
PCBs*RAs	14.81	3	4.94	4.99**
* p <0.05; ** p <0.01; *** p <0.001				

The effects of PCB types on distributive fairness under different RAs (H3-1)

Table 5 shows that the impact of PCB types on distributive fairness was not significant under substantive recovery. Also, the results indicated that PCB types had a very significant impact on distributive fairness (F=8.69, p <0.001) under psychological recovery. After multiple comparisons, it was found that the distributive fairness perception of the respondents with non-verbal/deliberate PCBs was significantly lower than that of the verbal/unintentional and non-verbal/unintentional PCBs. Therefore, H3-1 is partially supported.

Table 5. ANOVA of PCB types on distributive fairness under different RAs

RAs	Distributive fairness				F value	Multiple comparisons
	A	B	C	D		
Substantive recovery	4.73	5.02	4.99	4.93	1.47	---
Psychological recovery	4.44	4.81	4.07	4.75	8.69***	C<B; C<D

1. PCB types: A = Verbal/deliberate, B = Verbal/unintentional, C = Non-verbal/deliberate, D=Non-verbal/Unintentional;
2. * p <0.05; ** p <0.01; *** p <0.001

The effects of RAs on distributive fairness under different PCB types (H4-1)

Table 6 shows that the impacts of RAs on distributive fairness were not significant under different scenarios of verbal/deliberate, verbal/unintentional, and non-verbal/unintentional PCBs. However, the distributive fairness of those who received substantive recoveries was significantly higher than that of those who received psychological recoveries (F=33.07, p<0.001) under the non-verbal/deliberate PCBs. Therefore, H4-1 is partially supported.

The Impact of PCB Types and RAs on Procedural Fairness (H3-2, H4-2, H6-2)

Two-factor ANOVA was used to test the interaction effect of PCB types and RAs on procedural fairness. Table 7 shows that the interaction effect was not significant, indicating that H6-2 is not supported. However, the main effects of PCB types (F=4.01, p <0.01) and RAs (F=34.34, p <0.001) on procedural fairness were significant, so one-way ANOVA was conducted. Table 7 also shows that the procedural fairness perception of respondents who suffered from deliberate PCBs (verbal or non-verbal) was significantly lower than those who suffered from unintentional PCBs (verbal or non-verbal). The procedural fairness of respondents who received substantive recovery was significantly higher than those who received psychological recovery, indicating that H3-2 and H4-2 are supported.

Table 6. ANOVA of RAs on distributive fairness under different PCBs

PCB types	Distributive fairness		F value	Multiple comparisons
	Substantive recovery	Psychological recovery		
Verbal/deliberate	4.73	4.44	2.88	---
Verbal/unintentional	5.02	4.82	2.13	---
Non-verbal/deliberate	4.99	4.07	33.07***	Substantive > Psychological
Non-verbal/Unintentional	4.93	4.75	1.27	---
* p <0.05; ** p <0.01; *** p <0.001				

Table 7. ANOVA of PCB types and RAs on procedural fairness

Source of variance	SSE	DF	MSE	F value	Types	Procedural fairness	Multiple comparisons
PCBs	13.16	3	4.39	4.01**	A	4.83	A<B; A<D; C<B; C<D
					B	5.10	
					C	4.82	
					D	5.12	
RAs	37.54	1	37.54	34.34***	Substantive	5.21	Substantive> Psychological
					Psychological	4.73	
PCBs*RAs	5.61	3	1.87	1.71	---		
1. A=Verbal/deliberate, B=Verbal/unintentional, C=Non-verbal/deliberate, D=Non-verbal/Unintentional; 2. * p <0.05; ** p <0.01; *** p <0.001							

The Impact of PCB Types and RAs on Interactional Fairness (H3-3, H4-3, H6-3)

Two-factor ANOVA was used to test whether PCB types and RAs have interactive effects on interactional fairness. As shown in Table 8, the interaction was significant (F=2.87, p <0.05), suggesting that H6-3 is supported. Therefore, the impact of RAs and PCB types on interactional fairness should be separately verified under different PCB types and RAs.

The effects of PCB types on interactional fairness under different RAs (H3-3)

Table 9 shows that the impact of PCB types on interactional fairness was not significant under substantial recovery. In contrast, the impact of PCB types

Table 8. Two-way ANOVA of PCB types and RAs on interactional fairness

Source of variance	SSE	DF	MSE	F value
PCBs	26.72	3	8.91	7.84**
RAs	52.61	1	52.61	46.33***
PCBs*RAs	9.77	3	3.26	2.87*
* p <0.05; ** p <0.01; *** p <0.001				

Table 9. ANOVA of PCB types on interactional fairness under different RAs

RAs	Interactional fairness				F value	Multiple comparisons
	A	B	C	D		
Substantive recovery	5.33	5.49	5.35	5.54	0.97	---
Psychological recovery	4.69	5.20	4.41	5.13	8.52***	A<B; A<D; C<B; C<D
1. A=Verbal/deliberate, B=Verbal/unintentional, C=Non-verbal/deliberate, D=Non-verbal/Unintentional 2. * p <0.05; ** p <0.01; *** p <0.001						

on interactional fairness was significant (F=8.52, p <0.001) under psychological recovery. After multiple comparisons, it was found that the interactional fairness perception of the respondents who suffered from deliberate PCBs (verbal or non-verbal) was significantly lower than that of those who suffered from unintentional PCBs (verbal or non-verbal). This means that H3-3 is partially supported.

The effects of RAs on Interactional fairness under Different PCBs (H4-3)

Table 10 shows that the impact of RAs on interactional fairness was not significant under verbal/unintentional PCBs. In terms of the other three types of PCBs, the respondents who received substantive recovery had significantly higher interactional fairness than those who received psychological recovery, and the difference under non-verbal/deliberate situations was the most evident (F=40.21, p<0.001), followed by verbal/deliberate (F=10.51, p <0.01), and non-verbal/unintentional (F=6.21, p <0.05). These suggest that H4-3 is partially supported.

Relationship between Recovery Perception and Post-Recovery Satisfaction (H7-H10)

This study used RED, distributive fairness, procedural fairness, and interactional fairness as the independent variables, and post-recovery satisfaction as a dependent variable to conduct multiple regression analysis. The collinearity diagnosis results showed that the tolerance coefficients of all independent variables were greater than 0.2. Hence, there was no serious collinearity between the independent variables, indicating that it is suitable for multiple regression analysis. Table 11 shows that all standardized regression coefficients were significant. All had positive effects on post-recovery satisfaction, in which the effect of

Table 10. ANOVA of RAs on interactional fairness under different PCB types

PCB types	Interactional fairness		F value	Multiple comparisons
	Substantive recovery	Psychological recovery		
Verbal/deliberate	5.33	4.69	10.51**	Substantive > Psychological
Verbal/unintentional	5.49	5.20	3.51	---
Non-verbal/deliberate	5.35	4.41	40.21***	Substantive > Psychological
Non-verbal/Unintentional	5.55	5.13	6.21*	Substantive > Psychological
* p <0.05; ** p <0.01; *** p <0.001				

Table 11. Regression analysis of RED and PF on post-recovery satisfaction

Variables	Post-recovery satisfaction		
	Standardized β	t value	F value
RED	0.20	5.65***	392.76***
Distributive fairness	0.27	7.43***	
Procedural fairness	0.14	2.92**	
Interactional fairness	0.40	10.02***	
* p <0.05; ** p <0.01; *** p <0.001			

interactional fairness (t=10.02, p <0.001) was the largest, followed by distributive fairness (t=7.43, p <0.001), RED (t=5.65, p <0.001) and procedural fairness (t=2.92, p <0.01).

Conclusions and Suggestions

Conclusions

The impact of PCB types and RAs on RED

This study revealed that there was a significant interaction effect on RED between PCB types and RAs. Under substantive recoveries, the REDs of the four PCB types were similar. Under psychological recoveries, the respondents who suffered from deliberate PCBs (verbal and non-verbal) had significantly lower positive RED than those who suffered from unintentional PCBs (verbal and non-verbal). When the respondents encountered the disturbance from deliberate PCBs, the positive RED obtained from the substantive recovery was larger than that from the psychological recovery. When the respondents encountered the disturbance from unintentional PCBs, there was no significant difference in terms of the positive RED between sub-

stantive recovery and psychological recovery.

In summary, deliberate PCBs may be more serious than unintentional PCBs. When practitioners adopt substantive recovery measures, it could effectively meet customer recovery expectations. When unintentional PCBs occur, the practitioners could just adopt psychological recovery to satisfy the customer's expectancy. The results are in line with the theory of resource exchange and are consistent with the findings of Choi and Choi (2014) and Smith et al. (1999). Consequently, Lovelock (1994) argued that regardless of whether the PCBs are deliberate or unintentional, they will directly or indirectly affect consumer satisfaction. Therefore, the practitioners should take corresponding and effective recoveries to meet customer expectations when PCBs occur.

The impact of PCB types and RAs on PF

This study found that there were interaction effects on distributive fairness and interactional fairness between PCB types and RAs. The respondents initially believed that deliberate PCBs are much more serious than unintentional PCBs. When deliberate PCBs occur, and the practitioners only adopt psychological recoveries, they will not be able to satisfy the distributive and interactional fairness perception of customers. The results of this study suggest that the adoption of substantive recoveries is more effective in satisfying the distributive and interactional fairness perception of the customers. Moreover, when unintentional PCBs occur, practitioners can adopt psychological recoveries rather than substantive recoveries to satisfy the distributive and interactional fairness perception of customers. Studies have shown that recoveries exceeding customer expectations are effective (Migacz et al., 2018). However, PF (distributive, procedural, and interactional fairness) and post-recovery satisfaction from customers can be affected by the severity of service failures. Customers given excessive compensation do not necessarily have a higher level of satisfaction than those provided with just an appropriate compensation (Gelbrich & Roschk, 2011; Gelbrich et al., 2015). Chen et al. (2018) reported that consumers respond more positively toward expected recovery than high recovery. Kenesei and Bali (2020) also reported the form of overcompensation does not have a significant effect on either satisfaction or perception of fairness. Hence, excessive substantive compensation sometimes may not only fail to achieve customer satisfaction but may increase operation costs, especially the PCBs that cannot be attributed to employees or businesses.

The interaction effect between PCB types and RAs on procedural fairness was not significant in this study; however, the main effects were significant. The procedural fairness of respondents who suffered from deliberate PCBs (verbal and non-verbal) was significantly lower than those who suffered from unintentional PCBs (verbal and non-verbal). This result is in line with the conclusions made by Smith et al. (1999). In addition, the procedural fairness of those who received substantive recoveries was found to be significantly higher than those who

received psychological recoveries, which is consistent with the conclusions of Lapidus and Pinkerton (1995), Smith et al. (1999), and Jung and Seock (2017).

Relationship between service recovery and post-recovery satisfaction

This study proved that recovery perception (including RED and PF) significantly affected post-recovery satisfaction. Compared with RED, PF had a higher impact on post-recovery satisfaction. The results are identical to that of Smith et al.'s (1999) study on physical stores. Therefore, if the restaurants can provide recoveries that meet customer expectations and fairness perceptions (distributive, procedural, and interactional fairness) when the PCB occurs, they still can maintain customer satisfaction.

In addition, the results showed that the RED and all PF (distributive, procedural, and interactional fairness) had a significant positive impact on post-recovery satisfaction. The results are similar to those of Nikbin et al. (2015) and Migacz et al. (2018). Among them, interactional fairness had the greatest impact, followed by distributive fairness, RED, and procedural fairness. As Silber et al. (2009) stated, interactional fairness is more important than monetary compensation. Therefore, when PCB occurs, the key to affecting customer post-recovery satisfaction lies in whether or not the restaurants can provide a smooth communication channel for the customers, allowing the management to immediately respond and resolve the problem. Through this, customers would feel that they are being taken care of and that the management is polite, has integrity, and shows empathy. On the contrary, if the restaurant is unable to detect customer dissatisfaction, ignores the customers' feelings, and lets them generate an unfair interaction perception, it will exert a very negative impact on the restaurant.

Management Implications

Classify the PCBs

The PCBs are not usually attributed to companies, but they have to bear the responsibility of service failures. Companies should regard them as a part of service procedures and should classify them to deliver the corresponding service recovery strategies and procedures. This study suggests that restaurants should first conduct data collection and case analysis on PCBs; after, they should classify PCBs, establish a database, and develop the processing guidelines, standard operation process (SOP), and statement of work (SOW) for each identified PCB. Finally, they should include PCBs, their classification, proper handling, and problem-solving in the enterprise's educational training course. They may also refer to the suggestions of other studies including Bitner et al. (1994), Lovelock (2001), and Fullerton and Punj (2003).

PCBs that are non-verbal or unintentional are usually not easily detected. The managers should periodically hold case or experience-sharing conferences to enhance the observation and sensitivity of front-line employees. This could empower them and would allow them to

adequately provide the appropriate service recoveries. Therefore, when PCBs occur, the most appropriate treatment can be made immediately. In strengthening the professional training of front-line employees, this study suggests that the above-mentioned work instructions or role-playing methods can be used to teach them how to properly handle PCBs and immediately provide appropriate service recoveries.

Develop appropriate recovery strategies and procedures

This study demonstrated that substantive recoveries generally satisfy customer expectations and fairness perceptions more than psychological recoveries such as verbal apologies; however, the recoveries provided should still be based on the type of PCB because substantive recovery costs more. Excessive or inadequate compensation is not always beneficial for the restaurant. Restaurant practitioners should train front-line employees to face problems with positive attitudes and provide the appropriate recovery actions according to the PCB type. In this way, they can enhance customer satisfaction with the least resource cost and create a win-win outcome for them and the consumers. Conversely, if the occurrence of a PCB is ignored, it may make the situation worse. In addition, restaurant managers need to train employees to identify signs of PCB and assume appropriate actions to reduce the negative consequences on other customers (Hwang, Wang, & Guchait, 2022).

This study suggests that restaurant practitioners should establish a set of SOPs for service recovery strategies including (1) employees should apologize no matter the PCB type; (2) listening carefully to customer complaints or opinions; (3) confirming customer issues, and identifying the type and severity of the PCB; (4) authorize the frontline staff to provide appropriate recovery measures, and ask the supervisor to handle the problem if necessary; (5) confirm the effectiveness of the recovery measures done; (6) finally, record the complete case to the service recovery system database of the company. The database can serve as a reference on how to properly handle similar events in the future. The paradigm of this set of SOPs is as follows: when a customer is too loud (verbal and unintentional), affecting the tranquility of other customers around, the front-line employees should immediately but gently remind him/her to lower his/her voice, and politely apologize and clarify the status of the affected customers (psychological recovery). In another case, when a customer is in a bad mood, and he/she deliberately provokes other customers with derogatory words, the front-line staff should immediately but politely ask the irate customer to stop, and immediately inform and ask the manager to help out. In addition to politely apologizing and clarifying the status of affected customers, discount coupons, free drinks, or free snacks (substantive recovery) can be given to lessen or prevent their dissatisfaction.

Research Limitations and Future Research Directions

The study utilized a 4×2 between-subject, two-factor (PCB types and RAs)

experimental design. Although this is a suitable design, other important factors may not be considered. For example, the responsibility attributions of PCBs (controllability attributions and stability attributions) may be important factors that influence customer evaluation (Huang, 2008). Therefore, it is recommended that future researchers adopt the theory of attribution to enhance the completeness of the research framework. The sample size of the experimental scenarios in this study can also be increased to enhance the representativeness of research results. Furthermore, this study chose the Western restaurant as the main virtual research scenario, the research scope was only limited to a single industry. It may not be inferred and applied to other service industries.

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