

A COMPARATIVE STUDY OF THE INFLUENCE OF
FAILURE CLASSES, FAILURE SEVERITY, AND THE
EFFECTIVENESS OF RECOVERY EFFORT ON
RECOVERY SATISFACTION AND CONSEQUENT
CUSTOMER LOYALTY IN THE CASUAL DINING
RESTAURANT SEGMENT IN THE U.S.:
AN APPLICATION OF JUSTICE THEORY

By

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CHAPTER I

INTRODUCTION

This chapter first introduces the background for this study with characteristics of the restaurant industry; second, it presents the statement of the problem; third, it illustrates the purpose and objectives of the study; fourth, it describes the definition of terms; and last, it addresses the significance of the study.

Background

According to the National Restaurant Association (NRA, 2007), the overall economic impact of the restaurant industry was expected to exceed \$1.3 trillion nationally in 2007. Restaurant-industry sales were forecast to advance 5%, an amount equal to 4% of the U.S. gross domestic product. Additionally, this report also indicated that as personal income increases, customers eat away from home more frequently and spend a greater proportion of their food dollar on meals away from home. The average household expenditure for food away from home in 2005 was \$2,634, or \$1,054 per person.

Based on this latest information, the outlook for the restaurant industry remains positive. However, increasing sales may depend on how satisfied customers are and upon a restaurant's ability to retain customers despite service failure occurrences. Studies have indicated that customer satisfaction and customer loyalty were important for building

long-term relationships and, in turn, improving the financial performance of a company (Bitner, Booms, & Tetreault, 1990; Edvardsson, Johnson, Gustafsson, & Strandvik, 2000; Hart, Heskett, & Sasser, 1990; Jang & Mattila, 2005; Jones & Sasser, 1995; Mattila, 2006; Michel, 2001; Oliver, 1997; Spreng, Harrell, & Mackoy, 1995).

Characteristics of the Restaurant Industry

The restaurant industry, like other service industries, is a victim of its unique characteristics that make operations complex. These commonly understood unique characteristics include the extremely perishable nature of the inventory, the simultaneous production and consumption of the services, the intangibility of the offerings, the perceptible variation in the service provided, and the differences between the perceptions of the customers about the same services that make the delivery of service a challenging process (Boshoff, 1997; Collie, Sparks, & Bradley, 2000; Goodwin & Ross, 1992; Hess, Ganesan, & Klein, 2003; Palmer, Beggs, & Keown-McMullan, 2000).

Service problems or service failures often lead to customer dissatisfaction, which in turn may lead to switching brand behavior and the spreading of negative word-of-mouth. Consequently, this may lead to a loss of reputation and eventually the erosion of market share. On the other hand, successful service recovery may have a positive effect on customer satisfaction and enhance customer loyalty, which may lead to higher profitability (Boshoff, 1997; Colgate & Norris, 2001; Collie et al., 2000; Goodwin & Ross, 1992; Hess et al., 2003; Mack, Mueller, Crotts, & Broderick, 2000; Mueller, Palmer, Mack, & McMullan, 2003). Therefore, clearly understanding the relationship between service recovery satisfaction and customer loyalty after effective service recovery efforts

in terms of failure classes and failure severity are critical for the success of a business. Thus, this study examined the effectiveness of service recovery efforts and their consequences on customer satisfaction and the consequent customer loyalty in the restaurant industry in terms of failure classes and failure severity.

Statement of the Problem

Many companies do not consider responding to a service failure as a potential opportunity for restoring customer satisfaction and consequently enhancing customer loyalty. By responding positively to a service failure, the successful service recovery efforts could present an opportunity to build lasting relationship between the company and its customers. However, the relationships among service failure, failure severity, service recovery, and the subsequent effect on customer satisfaction and customer loyalty are under-explored, especially in the restaurant industry. Confounding the issue further is the fact that successful or effective service recovery efforts are also evaluated by considering other factors such as the class of service failure that occurs (system-based or people-based), the severity of service failure as perceived by the customer, and the effort of service recovery used (simple apology, compensation, speed of fixing problem, etc.).

Thus, in order to gain a full understanding of all the critical issues related to this topic, one should also include the class and severity of service failures that occur along with different recovery efforts made by the company. This study examined what efforts of service recovery under different classes and severity of service failures have an effect on customer satisfaction and consequent customer loyalty in the casual dining restaurants.

Purpose and Objectives of the Study

The purpose of this research was to study the comparative effectiveness of recovery effort on recovery satisfaction and consequent customer loyalty between system failures and personnel failures in casual dining restaurants in the U.S. The recovery effort (treatment group) was described by the dimensions of Justice Theory—i.e., distributive justice, interactional justice, and procedural justice, and a control group of no recovery effort. The specific objectives of this research were as follows:

- (1) To assess the recovery satisfaction with and without a recovery effort for system failures and personnel failures separately in casual dining restaurants in the U.S. This will be described by hypotheses 1a and 1b in the next section.
- (2) To assess the effectiveness of recovery efforts among distributive justice (DJ), interactional justice (IJ), and procedural justice (PJ) for system failures and personnel failures separately in casual dining restaurants in the U.S. This will be described by hypotheses 2a and 2b in the next section.
- (3) To evaluate the confounding effect of the severity of failure on recovery satisfaction for system failures and personnel failures separately in casual dining restaurants in the U.S. This will be described by hypotheses 3a and 3b in the next section.
- (4) To evaluate the confounding effect of the severity of failure on the effectiveness of recovery effort among distributive justice (DJ), interactional justice (IJ), and procedural justice (PJ) for system failures and personnel failures separately in

casual dining restaurants in the U.S. This will be described by hypothesis 4a and hypothesis 4b in the next section.

- (5) To compare the effectiveness of recovery efforts among distributive justice (DJ), interactional justice (IJ), and procedural justice (PJ) between system failures and personnel failures in casual dining restaurants in the U.S. This will be described by hypothesis 5 in the next section.
- (6) To compare the effectiveness of recovery efforts among distributive justice (DJ), interactional justice (IJ), and procedural justice (PJ) on recovery satisfaction between system failures and personnel failures in casual dining restaurants in the U.S. This will be described by hypothesis 6 in the next section.
- (7) To examine the relationship between recovery satisfaction and consequent customer loyalty in terms of failure classes and failure severity in casual dining restaurants in the U.S. This will be described by hypotheses 7a and 7b.

This study applied three dimensions of Justice Theory to evaluate the service recovery efforts. These three dimensions were distributive justice (the perceived fairness of the outcome, such as compensation with free meal on the current visit or free meal for the next visit), interactional justice (the perceived fairness of the manner in which the customer is treated, such as an apology with or without explanation), and procedural justice (the perceived fairness of the process used to rectify service failure, such as the speed of fixing the problems with immediate or delay fixing the problem), as treatment groups and no recovery effort as a control group. The following conceptual model illustrated the basic conceptual underpinnings of this study.

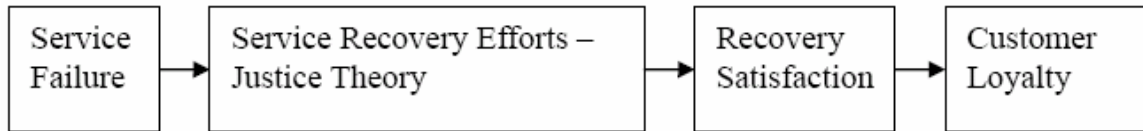


Figure 1 Basic conceptual model of the study

Experience showed that whenever there was a service failure, invariably, the company in question made an effort to ameliorate the situation by conducting some sort of a recovery effort to placate the customer. Such recovery efforts may range from a simple apology to an elaborate charade of formal letters of apology in combination with a hefty compensation. All such recovery efforts may be based on the degree to which the customer perceived the service failure to be a serious hindrance to his/her overall service experience with the company. Consequently, based on the recovery effort of the company, the customer may walk away with a different level of satisfaction that, in turn, may affect his/her long-term relationship, such as the customer's loyalty towards the company in the long-run.

Definition of Terms

Service Failure. Berry and Parasuraman (1991, p. 46).referred service failure as “a flawed outcome that reflects a breakdown in reliability” This study described the service failure by using scenario situations given to study participants and separated by system failures and personnel failures.

Service Recovery. Service recovery was defined as “the actions of a service provider to

mitigate or repair the damage to a customer that results from the provider's failure to deliver a service as is designed" (Johnston & Hewa, 1997, p. 467). This study applied Justice Theory to evaluate service recovery efforts after a service failure and included distributive justice, interactional justice, and procedural justice.

Customer Satisfaction. Satisfaction referred to the "the comparison of what one expected with what one actually received" (Hunt, 1991, p. 109). Oliver (1997, p. 13) also defined it as "the consumer's fulfillment response. It was a judgment that the product or service feature, or the product or service itself, provided a pleasurable level of consumption related fulfillment." This study evaluated customer satisfaction after the administration of service recovery and named it "recovery satisfaction."

Customer Loyalty. Customer loyalty was defined as a "customer's willingness to make an investment or personal sacrifices in order to strengthen the relationship between seller and purchaser" (Reichheld, 2003, p. 49). Zeithaml, Berry and Parasuraman (1996) referred to repurchase, recommendation, and positive word-of-mouth as a measurement of customer loyalty. This study referred to behavioral loyalty and attitudinal loyalty.

Significance of the Study

A thorough review of current literature identified information gaps in the service failure and recovery research that this study intends to fill. For example, there is currently no research conducted on which class of service failure (system or personnel) had more effects on customer satisfaction and consequent customer loyalty after service recovery

effort. The question of whether personnel failures were inherently seen as being more important or more serious than systems failure has never been researched.

Theoretical contribution of this study was in the area of the class of service failures. This study expands on previous works by considering the failure from two perspectives — system failures and personnel failures. None of the previous studies took these perspectives and tried to compare the differences in the effectiveness of recovery effort for each class of failure. This study also considered loyalty as an important issue to evaluate for each class of failure. In other words, none of the studies identified the *right* recovery method based on the class of service failure. None of the studies also explored the effects of the perceived severity of service failure on the recovery effort and on customer loyalty. Lastly, the following had also not been explored previously: with respect to the service recovery efforts, which one of them would be more effective for enhancing customer satisfaction and its consequent customer loyalty. The recovery effort included: compensation effort (distributive justice)—i.e. *free meal for the current visit* or *free meal for the next visit*; explanation effort (interactional justice)—i.e. *an apology only* or *an apology combined with an explanation*; speed effort (procedural justice)—i.e. *immediately fixing the problem* or *delay fixing the problem*.

Following this study, restaurant managers may be able to identify appropriate recovery efforts to rectify different classes of service failures. Managers in the casual dining restaurant may use the findings to develop practical strategies for dealing with service failure problems not only for the system failures, but also for the personnel failures that ultimately serve as trust-building events with their customers and eventually construct the long-term, loyal customer relationships.

CHAPTER II

REVIEW OF LITERATURE

After reviewing the related literature, this chapter first describes the importance of customer satisfaction and customer loyalty with the costs of a new customer. Second, it links service failure with class of service failure, severity of service failure, and outcomes of service failure. Third, it discusses the advantages of successful service recovery, effective service recovery, and inconsistency findings of recovery methods. Fourth, the chapter contains scenario episodes with a summary study of experimental scenarios. Fifth, is justice theory with distributive justice, interactional justice, and procedural justice; sixth is the research framework; and last are the research hypotheses.

Customer Satisfaction and Customer Loyalty

Customer loyalty is important for building long-term relationships between a company and its customers. The relationship between loyalty and financial performance has been broadly examined both in industries and in academia (Bitner et al., 1990; Edvardsson et al., 2000; Hart et al., 1990; Jang & Mattila, 2005; Jones & Sasser, 1995; Mattila, 2006; Michel, 2001; Oliver, 1997; Spreng et al., 1995). In the hospitality and tourism industry, Taco Bell has estimated that a loyal customer was worth \$11,000 to them over a lifetime for the company (Swift, Ross, & Omachonu, 1998). Canadian Airlines also reported that the value of one of their satisfied customers was \$915,000 over

10 years (Jenkins, 1992); and Hampton Inn claimed that they had \$11 million extra annual revenue after applying service quality programs to increase customer satisfaction (Ettorre, 1994).

Cost of New Customer

Many studies have intensively reported that the cost of attracting a new customer is many times higher than the cost of retaining existing customers (Anderson & Fornell, 1994; Hill & Alexander, 2000; Kotler, Bowen, & Makens, 2003; O'Brien & Jones, 1995; Spreng et al., 1995). The Technical Assistance Research Programs (1986) reported that the cost would be five times more to attract a new customer than to keep an existing customer. Reichheld and Sasser (1990) reported that the financial performance of a company can be improved by approximately 100% by retaining just 5% more of the company's customers. Thus, retaining an existing customer and keeping customers loyal should be an optimal goal of a company.

Customer loyalty has been identified not only as a consequence of customer satisfaction (Bolton & Drew, 1991; Fornell, 1992; Oliver, 1980; Yi, 1991), but also a consequence of the effectiveness of service recovery (de Ruyter & Wetzels, 2000; T. C. Johnston & Hewa, 1997; Levesque & McDougall, 2000; Stephen S. Tax & Brown, 1998; Webster & Sundaram, 1998). After the effectiveness of service recovery, satisfied customers were more likely to purchase *more* products or services and to recommend and spread positive word-of-mouth to others than those who had experienced no problems with the products or services (Valarie A. Zeithaml et al., 1996; Zemke, 1991). In contrast, Levesque and McDougal (2000) indicated that dissatisfied customer reduced loyalty and

eroded the firm's reputation (Spreng et al., 1995), and the major reason for the dissatisfaction was failing to handle the service failure effectively (Hart et al., 1990).

Fortunately, studies have identified the service failures and service recovery efforts, and they also have evaluated the effectiveness of service recovery to rectify failures and enhance customer satisfaction (Bitner et al., 1990; Hoffman, Kelley, & Rotalsky, 1995; Kelley, Hoffman, & Davis, 1993; Miller, Craighead, & Karwan, 2000; Spreng et al., 1995; Stephen S. Tax, Brown, & Chandrashekar, 1998).

Service Failure

Service failure was referred to as "a flawed outcome that reflects a breakdown in reliability" (Berry & Parasuraman, 1991, p. 46). Service failure occurred when service performance fails to meet the customer's expectations (Kelley & Davis, 1994; Kelley et al., 1993; Michel, 2001) in both the process and the outcome of the service delivery (Bitner et al., 1990; Hoffman et al., 1995; Keaveney, 1995; Mohr & Bitner, 1995; Smith & Bolton, 2002; Smith, Bolton, & Wagner, 1999).

The process of the service delivery was related to *how* customers received the service, and the outcome of the service delivery was related to *what* customers actually received from the service (Gronroos, 1988; Parasuraman, Zeithaml, & Berry, 1985). Different class of service failure and the severity of service failure both may have certain levels of impact on the perceived service failure.

Class of Service Failure

Service failures have been categorized by customers' perspectives using critical

incident techniques. They can be categorized into three groups: employee response to service delivery system failures; employee response to customer needs and requests; and unprompted or unsolicited employee actions (Bitner, Booms, & Mohr, 1994; Bitner et al., 1990; Hoffman et al., 1995; Kelley et al., 1993). Bitner et al., (1994) categorized the same three service failures from the employees' perspectives but added a new variable called problematic customers that included four categories: drunkenness, verbal and physical abuse, breaking company policies or laws, and uncooperative customer.

Severity of Service Failure

Customer satisfaction evaluation may differ by the severity of service failure. Earlier studies had indicated that higher severity of service failure results in lower level of customer satisfaction (Gilly & Gelb, 1982; Hoffman et al., 1995; Kelley & Davis, 1994; Levesque & McDougall, 2000; Richins, 1987). The outcomes of service failure, however, may depend on both the class of service failure and severity of service failure.

Outcomes of Service Failure

Previous studies identified three possible types of behavior after experiencing service failure: exit (customer would not repurchase or revisit), voice (customer complains to others), and loyalty (customer accepts the failure) (Day & Landon, 1977; Hirschman, 1970; Singh, 1988; Singh & Wilkes, 1996). In reality, most of the customers do not speak up, but do defect to competitors or spread negative word-of-mouth communication (Bailey, 1994; Leonard L. Berry & Parasuraman, 1992; Hoffman & Kelley, 2000; Keaveney, 1995; Miller et al., 2000; Scarborough, Zimmerer, & Thomas,

1996; Technical Assistance Research Programs, 1986; Zemke, 1991).

Scarborough, Zimmerer, and Thomas (1996) indicated that 96% of dissatisfied customers did voice their complaints to families, friends, and colleagues; 91% would not repurchase or revisit; dissatisfied customers would be likely to spread negative word of mouth to 11 people or even to 20 people (Richins, 1983, 1987; Singh & Wilkes, 1996; Zemke, 1999). Whereas satisfied customer would be likely to spread positive word of mouth to six people only (Hart et al., 1990).

Hart et al., (1990) identified that the major reason of the customer dissatisfaction was the service provider's poor efforts to solve the problem. Other studies also identified that more than 50% of customers were dissatisfied with the problem solution (Best & Andreasen, 1976; V. A. Zeithaml, Berry, & Parasuraman, 1990). Therefore, identification of the service recovery methods for the effectiveness of problem solutions would be extremely imperative for the customer's satisfaction and customer loyalty.

Service Recovery

Service recovery was referred to as "the actions of a service provider to mitigate or repair the damage to a customer that results from the provider's failure to deliver a service as is designed" (Johnston & Hewa, 1997, p. 467). Zemke and Bell (1990, p. 43) described it as a "thought-out, planned process for returning aggrieved customers to a state of satisfaction with the firm after a service or product has failed to live up to expectations." Miller et al., (2000, p. 38) stated that it "involves those actions designed to resolve problems, alter negative attitudes of dissatisfied customers and to ultimately retain these customers."

Advantages of Successful Service Recovery

Lewis and McCann (2004) concluded that the significant advantages of successful service recovery were enhanced customers' satisfaction, enhanced customers' perceptions of the service quality, positive word-of-mouth communication, building the customer relationships, enhanced loyalty, and positive impact on profits (Bitner et al., 1990; Hart et al., 1990; Michel, 2001; Spreng et al., 1995). Therefore, what constitutes successful or effective service recovery efforts and how to manage the different types and magnitudes of service failure remains imprecisely understood.

Effectiveness of Service Recovery

Effectiveness of service recovery methods had been identified using either an open-ended survey, critical incident techniques, or scenario episodes, such as an apology, explanation, assistance, fixing the problem, following up, showing empathy, paying a compensation, managerial interaction/involvement, or speedy response (Bitner et al., 1994; Bitner et al., 1990; Boshoff, 1997; Hart et al., 1990; Hoffman et al., 1995; Kelley et al., 1993; Barbara R. Lewis & Spyropoulos, 2001; Miller et al., 2000; Robbins & Miller, 2004; Stephen S. Tax & Brown, 1998; Yang, 2005). Even though the effectiveness of service recovery may depend on the various situations, types of the service failure, magnitudes of service failure, types of service industry, and how employees deal with the problem, an apology was considered to be the minimum action recommended (Bitner et al., 1990).

Inconsistency of Findings of Recovery Methods

Many studies stated that an apology was not effective enough (Goodwin & Ross, 1992; Hoffman et al., 1995; Webster & Sundaram, 1998). Parasuraman, Berry, and Zeithaml (1991) stated that problem or service failure should be fixed quickly for effective recovery, but Levesque and McDougall (2000) indicated that assistance is the most effective single recovery method to rectify the problem. Kelley et al., (1993) and Hoffman (1995) found that management interventions were important, and compensation received higher satisfaction than assistance. Darida, Levesque, and McDougall (1996) reported that both assistance and compensation were significant improvements related to the customer loyalty.

Johnston (1995) conducted interviews with customers and found that compensation or follow up was not the requirement to reach the successful service recovery, whereas Boshoff (1997) and Conlon and Murray (1996) reported that higher compensation had more significant improvement on service recovery. Thus, studies have no consistency with the effectiveness of service recovery to mitigate the service failure.

Scenario Episodes

Studies identified the effective service recovery by scenario episodes with service failure situations and service recovery options to evaluate the customer satisfaction or customer loyalty (Goodwin & Ross, 1992; Hess et al., 2003; Kelley et al., 1993; Mattila, 1999; Mattila, 2001; McCollough, 2000; McDougall & Levesque, 1999; Michel, 2001; Ok, Back, & Shanklin, 2006; Smith et al., 1999) as presented in Table 1.

Summary Study of Experimental Scenario

Table 1 summarizes major studies using the experiment scenarios in detail with author(s), subjects, research setting, independent variables, and key findings.

Table 1 *Summary Study of Experimental Scenario*

Author(s)		
Subjects		
Research Setting	Independent Variables	Key Findings
Goodwin & Ross (1992)	2 x 2 x 2 x 4 design	1. Apology and voice appeared to enhance fairness and satisfaction perceptions in the “favorable outcome” condition, when consumers were offered a discount or gift after service failure.
285 undergraduate students	2 (voice - high/an opportunity to present feelings and opinions to a patient listener, low/denial of opportunity to present an explanation)	2. When no tangible offering was made, apology and voice had lesser effect and was associated with lower perceptions of fairness and satisfaction.
Restaurant, Auto Repair, Vacation Air Travel & Dental Service	x 2 (outcome - favorable, unfavorable)	3. Service managers are often required to allocate resources among consumers, ranging from order or service in a restaurant to boarding an overbooked airplane. Considerations of procedural fairness may influence the consumer’s satisfaction with the allocation process.
	x 2 (apology - present, absent)	
	x 4 (type of service - restaurant, auto repair, vacation air travel, dental service)	

Table 1 (*Continued*)

Author(s)		
Subjects	Independent Variables	Key Findings
Research Setting		
Hess, Ganesan, & Klein (2003)	2 x 2 x 2 x 3 design	1. Customers with higher expectations of relationship continuity had lower service recovery expectations after a service failure and also attributed that failure to a less stable cause.
346 undergraduate business students	2 (severity of failure - severe, minor)	
Restaurant	x 2 (quality of past service experience - average, above average)	2. Both the lower recovery expectations and the lower stability attributions were associated with greater satisfaction with the service performance after the recovery.
	x 2 (number of past encounters - one, many past encounters)	
	x 3 (quality of recovery performance - excellent, average, poor)	3. Attributions of controllability did have a strong positive effect on customers' service recovery expectations and, in turn, satisfaction with the service performance after recovery.
Mattila (1999)	2 x 2 x 2 design	1. A recovery strategy can be effective only when the service provider exhibits high reliability in the service delivery.
246 alumni	2 (criticality of consumption - high, low)	
Restaurant	x 2 (magnitude of failure - serious, minor)	2. Service recovery paradox may not be empirically supported.
	x 2 (first perceiver of failure - employee, customer)	3. Magnitude of failure correlated negatively with post-recovery satisfaction.

Table 1 (*Continued*)

Author(s)		
Subjects		
Research Setting	Independent Variables	Key Findings
Mattila (2001)	3 x 2 x 2 design	1. Procedural justice failed to influence service recovery satisfaction ratings for restaurants.
441 undergraduate students	3 (service type - restaurant, hair stylist, dry-cleaning)	2. Giving the customer an opportunity to choose the preferred compensation method could avoid potential problems of over-rewarding.
Restaurant, Hair Stylist, & Dry Cleaning	x 2 (compensation - an apology combined with a 20% discount, no apology with no compensation)	3. Service organizations need to train their front-line employees to correctly assess the customer's situation.
Mattila (2001)	3 x 2 design	1. Building and maintaining close relationships with customers are critical in case of a failed service recovery.
142 undergraduate students	3 (relationship types - encounter, pseudo-relationship, intimate relationship)	2. Customers in the true-relationship condition were more willing to forgive the service provider for poor handling of the problem.
Restaurant	x 2 (service recovery conditions - negative outcome, positive outcome)	3. Personalization of the service delivery and making the customer feel special may shelter the company from the negative consequences of failed or nonexistent recovery effort.

Table 1 (*Continued*)

Author(s)		
Subjects	Independent Variables	Key Findings
Research Setting		
Mattila (2004)	2 x 2 design	1. High affective commitment might magnify the immediate negative impact of service failures on post-recovery attitudes.
Undergraduate students (number of sample is not available)	2 (affective commitment - low, high)	
	x 2 (service failure recovery - poor/failed recovery, excellent service recovery)	2. Participants with high levels of emotional bonding with the service provider showed substantial attitude degradation, irrespective of the service recovery outcome.
Restaurant		3. Low affective commitment resulted in minimal attitude change when the service recovery involved an apology combined with a tangible compensation.

Table 1 (*Continued*)

Author(s)		
Subjects	Independent Variables	Key Findings
Research Setting		
McCollough (2000)	2 x 2 design	1. Overbooking is a dangerous strategy because even superior recovery might not overcome the negative consequences of low harm failures.
128 undergraduate business students	2 (failure attribution - stable, unstable)	
	x 2 (recovery attribution - stable, unstable)	2. The relationship between post-recovery satisfaction and service quality is mediated by failure and recovery attributions.
Hotel		3. The lowest satisfaction is in the case of unstable recovery.
McCollough, Berry, & Yadav (2000)	2 x 3 x 3 x 3 design	1. No support was found for a recovery paradox.
	2 (recovery expectation - high, low)	2. For airline service provider, IJ and DJ are both important predictors of post-recovery satisfaction.
615 airline travelers	x 3 (service performance - service failure with high or low recovery, no service failure);	3. Higher recovery performance, higher post-recovery satisfaction.
Airline travel	x 3 (distributive justice - high, moderate, low)	
	x 3 (interactional justice - high, moderate, low)	

Table 1 (*Continued*)

Author(s)		
Subjects	Independent Variables	Key Findings
Research Setting		
McDougall & Levesque (1998) ^a	2 x 4 x 2 design	1. When core service failures occurred, service recovery strategies did not lead to positive future intentions towards the service provider.
592 hotel guests	2 (hotel, restaurant)	2. Higher expectation levels were linked to more negative intentions towards the service provider.
Hotel and Restaurant	x 4 (Recovery - apology only, compensate, assist, compensate and assist)	3. The concept that customers who had experienced a service problem could be “bonded” to the firm with a service recovery strategy was not supported.
McDougall & Levesque (1999) ^a	2 x 4 x 2	1. Participants who had planned a special occasion at a restaurant viewed the pre-process, post-schedule wait as more serious than those who had planned a casual meal.
592 hotel guests	2 (hotel, restaurant)	2. Assistance plus compensation was most effective in every situation.
Hotel and Restaurant	x 4 (Recovery - apology only, compensate, assist, compensate and assist)	3. Industry-standard recovery practices did not approach restoring the customer’s intentions toward the provider.
	x 2 (expectation - low, high)	

Table 1 (*continued*)

Author(s)		
Subjects		
Research Setting	Independent Variables	Key Findings
O'Neill & Mattila (2004) ^b	2 x 2 design	1. Hotel guests are more satisfied with the upgraded guestroom when they perceive recovery as being stable rather than unstable.
613 hotel guests	2 (failure attribution - stable, unstable)	
Hotel	x 2 (recovery attribution - stable, unstable)	2. Guests have higher satisfaction when they believe that service failure is unstable and recovery is stable.
Smith & Bolton (1998) ^c	2 x 2 x 3 x 2 x 2 x 2 design	1. Customers do not forget, but they are willing to forgive and patronage again.
344 students & 520 business travelers	2 (type of failure - outcome, process)	2. Outcome service failure seems to have larger impact on satisfaction/dissatisfaction than process.
Restaurant & Hotel	x 2 (magnitude of failure - high, low)	
	x 3 (compensation - high, medium, none)	3. Customers are less satisfied with recovery efforts in the hotel setting, despite they are the members of a loyalty club.
	x 2 (response speed - immediate, delayed)	
	x 2 (apology - present, absent)	4. In the hotel setting, guests' cumulative satisfaction and repatronage intentions are not influenced by stability.
	x 2 (recovery initiation - prompted by the service employee, prompted by the customer)	

Table 1 (*Continued*)

Author(s)		
Subjects	Independent Variables	Key Findings
Research Setting		
Smith & Bolton (2002) ^c	2 x 2 x 3 x 2 x 2 x 2 design	1. No effect of emotion in the restaurant setting due to not controlling for heterogeneity in effect of different focal restaurant "band."
355 undergraduate students & 549 business travelers	2 (type of failure - outcome, process)	2. A significant and substantial effect of emotion in the hotel setting.
	x 2 (magnitude of failure - high, low)	3. In the hotel setting, emotion functions as a pure moderator of the cognitive antecedents of satisfaction.
	x 3 (compensation - high, medium, low)	
Restaurant & Hotel	x 2 (response speed - immediate, delayed)	
	x 2 (apology - present, absent)	
	x 2 (recovery initiation - prompted by the service employee, prompted by the customer)	
Webster & Sundaram (1998)	4 x 2 x 3 design	1. Both types of service failure recovery efforts and criticality of service consumption have a significant effect on customers' satisfaction.
480 undergraduate business students	4 (type of recovery efforts - an apology, a 25% discount, a 50% discount, an offer to re-perform the service)	2. The failure recovery efforts have a greater impact on loyalty than they have on satisfaction.
Restaurant & other services	x 2 (level of criticality - high, low)	3. A recovery effort strategy must be based on the specifics of the situation.
	x 3 (type of services - restaurant dining, repair services, dry cleaning services)	

Table 1 (*Continued*)

Author(s)	Subjects	Independent Variables	Key Findings
Research Setting			
Smith, Bolton & Wagner (1999) ^c	355 undergraduate students & 549 business travelers	<p>2 x 2 x 3 x 2 x 2 x 2 design</p> <p>2 (type of failure - outcome, process)</p> <p>x 2 (magnitude of failure - high, low)</p> <p>x 3 (compensation in restaurant- 50% certificate discount, 20% certificate discount, no certificate for a discount) or (compensation in hotel - 100% certificate discount, 50% certificate discount, no certificate for a discount)</p> <p>x 2 (response speed - immediate, delayed)</p> <p>x 2 (apology - present, absent)</p> <p>x 2 (recovery initiation - prompted by the service employee, prompted by the customer)</p>	<p>1. In both restaurant and hotel, an apology or recovery initiation has no effect on the failure magnitude.</p> <p>2. In both restaurant and hotel, customers were less satisfied after a process failure than after an outcome failure.</p> <p>3. Customers more satisfied with higher compensation with quick action when they experience outcome failures.</p>

^a Both articles are using the same sample but with different issues and findings.

^b The article used scenario developed by McCollough (2000).

^c Articles are using the same sample but with different issues and findings.

The above summary table identified different effective service recovery methods in the hospitality and tourism industry. The most popular theory for evaluating the effectiveness of service recovery was the Justice Theory, which included three dimensions: distributive justice, interactional justice, and procedural justice (Blodgett, Hill, & Tax, 1997; Clemmer & Schneider, 1996; Goodwin & Ross, 1992; Ok, Back, & Shanklin, 2005; Smith et al., 1999; Stephen S. Tax & Brown, 1998; Stephen S. Tax & Brown, 2000; Thibaut & Walker, 1975; Wirtz & Mattila, 2004).

Justice Theory

Justice Theory, also known as Fairness Theory or Equity Theory (Blodgett, Granbois, & Walters, 1993; Goodwin & Ross, 1992), is considered to be consistent with social exchange theory (Walster, Berscheid, & Walster, 1973). A service recovery can be viewed as an exchange when the customer experiences a loss and the service provider tries to make up that loss by a recovery effort (Smith et al., 1999). Austin (1979, p. 24) clarifies that “justice pertains not merely to outcome distributions, but also to how the distribution is arrived at and the manner by which it is implemented.” Justice Theory originated from social psychology (Alicke et al., 1992; Blodgett et al., 1997) and has been used to demonstrate either psychological outcomes, such as satisfaction, loyalty, and trust, or behavioral outcomes, such as repurchase intention (Blodgett et al., 1997). Three dimensions of justice were distributive justice, interactional justice, and procedural justice, and each of them is addressed with more studies in the following paragraphs.

Distributive Justice

Distributive justice refers to the perceived fairness of the outcome in terms of compensation or replacement (Oliver, 1997) such as free drink, dessert, or even free meal, for the late service in the restaurant setting. Goodwin and Ross (1990) identified that customers prefer to receive a tangible outcome; Sparks and Callan (1996) found that compensation was more or less favorable with other factors, such as explanation; Boshoff (1997) and Smith et al.(1999) identified that distributive justice was the strongest predictor of recovery satisfaction. Johnston (1995), however, did not find the evidence to support distributive justice as a favored justice.

Interactional Justice

Interactional justice refers to the perceived fairness of the manner in which the customer was treated in terms of apology, concern, empathy, honesty, explanation, dignity, courtesy, or respect (Clemmer, 1993; Stephen S. Tax et al., 1998; V. A. Zeithaml et al., 1990). Tax, Brown, and Chandrashekar (1998) found that interactional justice was the most significant predictor of trust and overall satisfaction. Hocutt and Charkraborty (1997) identified that the highest customer satisfaction came from service personnel that presented higher levels of empathy and responsiveness, and Blodgett et al. (1997) identified that the interactional justice was the key dimension of customer repurchase.

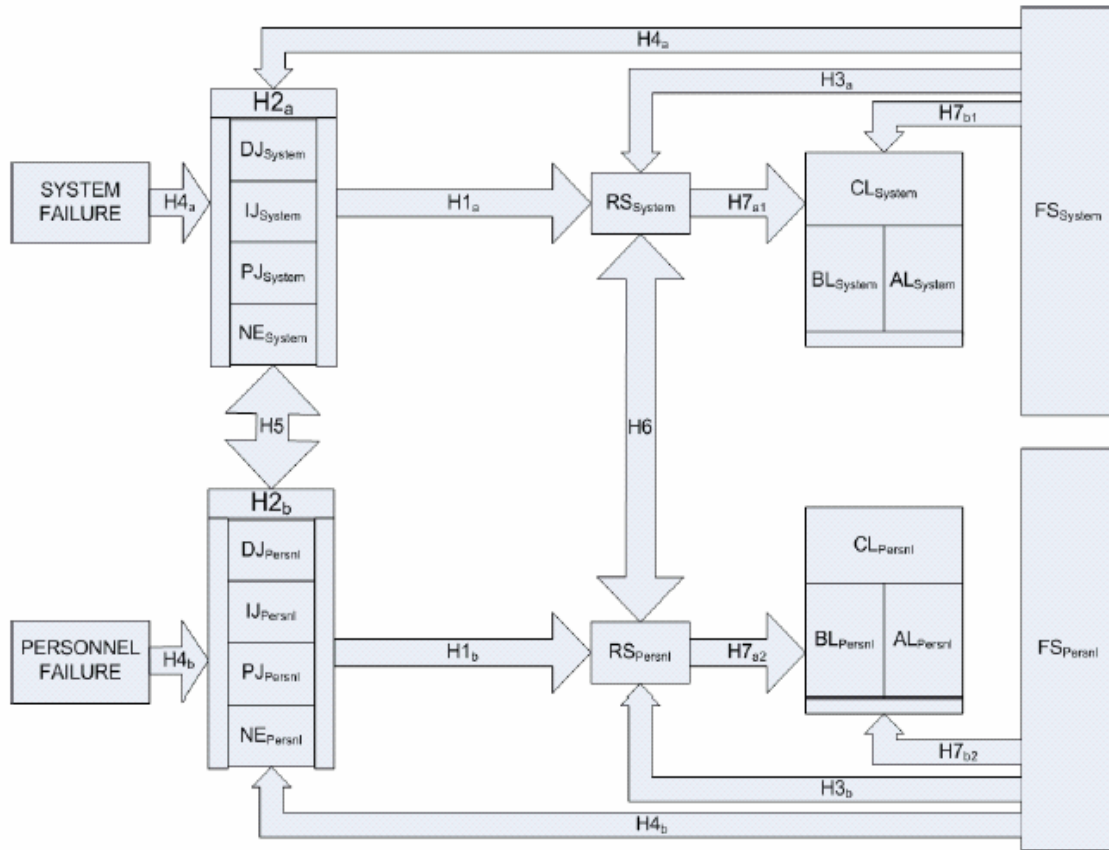
Procedural Justice

Procedural justice refers to the perceived fairness of the process used to rectify service failure in terms of speed of response or fixing the problem, flexibility of the procedures, or company policies (Blodgett et al., 1997; Stephen S. Tax & Brown, 1998). The speed of response or fixing the problem for the service failure was identified as the most critical procedural justice (Blodgett et al., 1997; Clemmer & Schneider, 1996; Hart et al., 1990; Kelley et al., 1993; Palmer et al., 2000; Stephen S. Tax & Brown, 1998). Speed of response or fixing the problem also was ranked in the top three for developing customer loyalty (Clark & Wood, 1998). Mattila (2001), however, found that the speed of response was not an issue in a restaurant setting. The study applied distributive justice as compensation—i.e., free meal for the current visit or for the next visit, interactional justice as an apology only, or combined with explanation, and procedural justice as speed of fixing problem—i.e., immediate fixing problem or delay fixing the problem.

Research Framework

The research framework suggested that the class of failure (system failures or personnel failures) can be examined through two levels (high and low) of each of the three dimensions of Justice Theory (distributive, interactional, and procedural) with eight different situations of scenario as the service recovery efforts to assess the recovery satisfaction and the consequent customer loyalty as showed in Figure 2. In other words, this study intended to evaluate when different class and severity of service failure occurred, what effectiveness of recovery effort may need to be applied, such as free meal for the current visit or the next visit, apology with or without explanation, immediate or

delay of fixing problem in order to achieve customers' satisfaction, and their loyalty in the restaurant setting.



Note. DJ – Distributive Justice, IJ – Interactional Justice, PJ – Procedural Justice, NE – No Effort, RS – Recovery Satisfaction, CL – Customer Loyalty, BL – Behavioral Loyalty, AL – Attitudinal Loyalty, FS – Failure Severity, Persnl – Personnel.

Figure 2 Research framework of service failure, service recovery, recovery satisfaction, and consequent customer loyalty

Research Hypotheses

- H1a. There is no difference in recovery satisfaction with or without a recovery effort for system failures in casual dining restaurants in the U.S.
- H1b. There is no difference in recovery satisfaction with or without a recovery effort for personnel failures in casual dining restaurants in the U.S.
- H2a. There is no difference in the effectiveness of recovery effort among procedural justice (PJ), distributive justice (DJ), and interactional justice (IJ) for system failures in casual dining restaurants in the U.S.
- H2b. There is no difference in the effectiveness of recovery effort among procedural justice (PJ), distributive justice (DJ), and interactional justice (IJ) for personnel failures in casual dining restaurants in the U.S.
- H3a. There is no confounding effect of the severity of failure on recovery satisfaction for system failures in casual dining restaurants in the U.S.
- H3b. There is no confounding effect of the severity of failure on recovery satisfaction for personnel failures in casual dining restaurants in the U.S.
- H4a. There is no confounding effect of the severity of failure on the effectiveness of recovery effort among procedural justice (PJ), distributive justice (DJ), and interactional justice (IJ) for system failures in casual dining restaurants in the U.S.
- H4b. There is no confounding effect of the severity of failure on the effectiveness of recovery effort among procedural justice (PJ), distributive justice (DJ), and interactional justice (IJ) for personnel failures in casual dining restaurants in the U.S.
- H5. There is no difference in the effectiveness of recovery effort between system failures and personnel failures in terms of procedural justice (PJ), distributive justice (DJ),

and interactional justice (IJ) in casual dining restaurants in the U.S.

H6. There is no difference in the recovery satisfaction between system failures and personnel failures after the administration of recovery effort in casual dining restaurants in the U.S.

H7a. There is no relationship between the recovery satisfaction and customer loyalty in terms of failure classes in casual dining restaurants in the U.S.

H7b. There is no relationship between the recovery satisfaction and customer loyalty in terms of failure classes and failure severity in casual dining restaurants in the U.S.

CHAPTER III

RESEARCH METHODOLOGY

Based on the discussion of best methodological practices for measuring customer satisfaction after experiencing service failure and service recovery efforts, Schall (2003) pointed out the issues of proper sequence and face validity of question items, choice of measurement scales, and appropriate sample size for drawing reliable conclusions (Oh, Kim, & Shin, 2004).

Thus, this chapter describes research methodology with research design and the process to accomplish the study purpose and objectives. The first section describes the research design with reasons for experimental design and advantages of the scenario approach; the second section explains the scenario development with eight situations of service recovery scenarios and eight written scenarios; the third section presents the research setting and sampling with reasons for restaurant setting, population and sampling, and sample size and power; the fourth section illustrates the instrument development with survey questionnaire, measurement of variables, pilot test, and reliability and validity; the fifth section demonstrates the data collection with the steps of the questionnaire administration; and the final section addresses the data analysis.

Research Design

Most of the service failure or service recovery studies employed a critical incident technique, recall-based survey, or experimental approaches. This study employed a balanced 2 x 2 x 2 quasi-experimental repeated-measures design (Cook & Campbell, 1979) in which several independent variables were measured by the same participants in all conditions. Reasons for experimental design and advantages of scenario approach were described followed by the research procedure as presented in Figure 3.

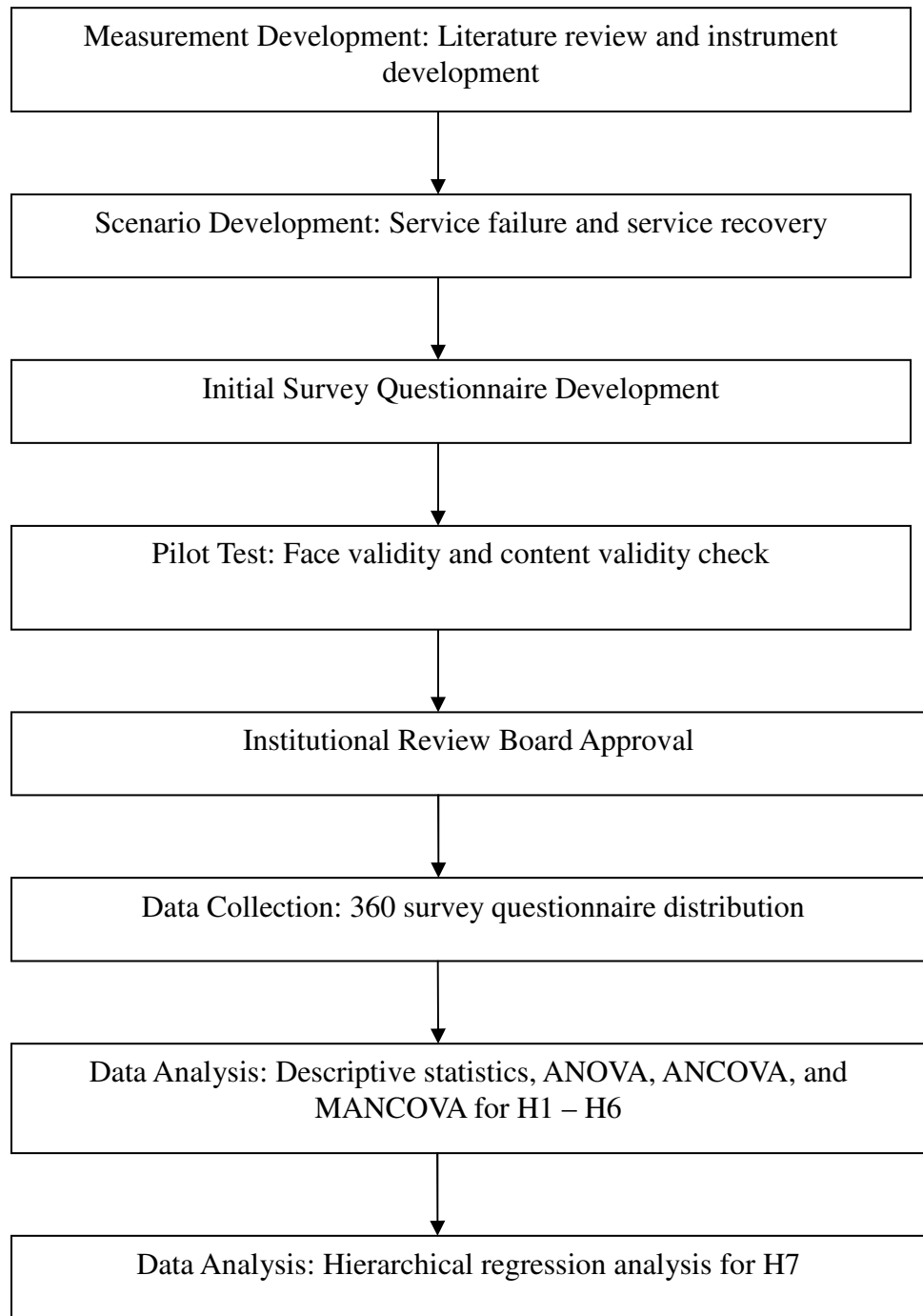


Figure 3 Research procedure

Reasons for Experimental Design

An experimental approach was used to control the independent variables and to rule out extraneous variables (Cook & Campbell, 1979). Nevertheless, while service recovery efforts were triggered by service failures, the issues such as ethical concerns, related expense, time issues, and managerial willingness were the challenges when using experiment design approaches (Smith & Bolton, 1998; Smith et al., 1999).

Given that the field or laboratory experimental study had its limitations, experimental scenario approaches had been broadly employed in service recovery studies to evaluate the effectiveness of service recovery efforts on customer satisfaction, customer relationship, future behavioral intention or customer loyalty (Blodgett et al., 1997; Boshoff, 1997; Goodwin & Ross, 1992; Mattila, 2004; McDougall & Levesque, 1999; Ok et al., 2006; Smith & Bolton, 2002; Swanson & Kelley, 2001).

Advantages of Scenario Approach

Advantages of using scenarios were (1) prevention of the related expenses and problems purposely imposed because of service failures on customers (Wirtz & Mattila, 2004); (2) prevention of the memory-bias, which, in general, happens in self-report survey methods (McCoullagh et al., 2000; Smith & Bolton, 1998); (3) ruling out the possible irrelevant variables for the cause and effect relationship (Mitchell, 1985); and (4) to enhance internal validity by controlling manipulation (Churchill, 1995; Cook & Campbell, 1979).

Because of these advantages of the scenario approach, researchers have been extensively using the scenarios for experimental study. This study developed eight

different scenarios in order to accomplish the research purpose and objectives, as in the following paragraphs.

Scenario Development

A scenario was defined as “an imagined or projected sequence of events, especially any of several detailed plans or possibilities” (Scenario, 2006) and was used extensively in justice study and service research (Goodwin & Ross, 1992; Hocutt & Charkraborty, 1997). Eight situations of service recovery scenarios followed by system failures and personnel failures were developed in this study to identify effectiveness of service recovery efforts on customer satisfaction and the consequent customer loyalty in terms of failure classes.

Eight Situations of Service Recovery Scenarios

A balanced 2 (procedural justice with level of high and low) x 2 (distributive justice with level of high and low) x 2 (interactional justice with level of high and low) quasi-experimental repeated-measures design was employed. The manipulated variables with eight scenarios of service recovery efforts were explained in Table 2 and Table 3 as follows.

Table 2 *Service Recovery Scenarios With A High Level of Procedural Justice (Immediate Fixing the Problem)*

	Low Distributive Justice (Free Meal for the Next Visit)	High Distributive Justice (Free Meal on the Current Visit)
Low Interactional Justice (Apology Only)	V*	VII
High Interactional Justice (Apology and Explanation)	VI	VIII

*The roman numerals indicated eight scenarios of service recovery efforts.

Table 3 *Service Recovery Scenarios With A Low Level of Procedural Justice (Delay Fixing the Problem)*

	Low Distributive Justice (Free Meal for the Next Visit)	High Distributive Justice (Free Meal on the Current Visit)
Low Interactional Justice (Apology Only)	I*	III
High Interactional Justice (Apology and Explanation)	II	IV

*The roman numerals indicated eight scenarios of service recovery efforts.

Eight Written Scenarios

Eight written scenarios were developed describing the two classes of service failure and the subsequent eight different recovery efforts in a certain casual dining restaurant. To develop realistic service failure and service recovery scenarios, an extensive literature review was conducted and 80 undergraduate students in the hospitality management class

were asked to recall their dining experiences during the previous six months. Written scenarios of service failure included system failures and personnel failures; whereas service recovery effort included high and low level of justices—i.e., distributive justice (compensation), interactional justice (apology or/and explanation), and procedural justice (speed of fixing problem), as presented in Table 4 and Table 5.

Table 4 *Written Scenarios of Service Failure*

A: System failures

You filled out a survey online for a chain casual dining restaurant; you were offered a discount stating, “Please take this coupon to any of our restaurants to receive one FREE entrée when you buy another one of same value.” With the coupon in hand, your friends and you visited this restaurant and expected to get the discount offer. After enjoying the meal, you showed the coupon to waiter. However, the waiter knew nothing about the discount offer and went to ask his manager about it. The manager arrived and appeared really confused about this discount coupon.

B: Personnel Failures

Your family and you went out for a relaxing dinner on a Friday night to a local and popular casual dining restaurant. The restaurant was very busy and the hostess told you that she could not predict how long the wait would be but put your name on a waiting list anyway. You were however seated only after 15 minutes of waiting in the lobby and were told that the waiter would come in a few minutes. To your surprise, it took another 15 minutes for a waitperson to come to your table and take your beverage and food order. In addition, it took another hour for your waiter to refill your beverages and serve your food.

It seemed that the tables next to yours were seated after you but were served before you. Finally, when you got a chance you complain about the slow service to the waiter.

Table 5 Written Scenarios of Service Recovery

Situation A – Service Recovery after System failures

Situation A-I: Low PJ - Low DJ - Low IJ

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. After 10 minutes, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. After another 20 minutes, the manager returned to offer you the free meal discount on your next visit but not on the current one without any explanation.

Situation A-II: Low PJ - Low DJ - High IJ

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. After 10 minutes, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. After 20 minutes, the manager returned and explained that he was not informed of this discount and wasn't able to contact anybody at the number provided on the coupon to get further information. However, the manager offered a free meal discount for your next visit but not on the current one.

Situation A-III: Low PJ - High DJ - Low IJ

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. After 10 minutes, the manager arrived

and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. After 20 minutes, the manager returned and offered the free meal discount for the current visit without any explanation.

Situation A-IV: Low PJ - High DJ - High IJ

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. After 10 minutes, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. After 20 minutes, the manager returned and explained that he was not informed of this discount and wasn't able to contact anybody at the number provided on the coupon. However, the manager offered you the free meal discount for the current visit.

Situation A-V: High PJ - Low DJ - Low IJ

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. Immediately, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. The manager returned in a few minutes and offered a free meal discount for your next visit but not on the current one without any explanation.

Situation A-VI: High PJ - Low DJ - High IJ

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. Immediately, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. The manager returned in a few minutes and explained that he was not informed of this discount and wasn't able to contact anybody at the number

provided on the coupon. However, the manager offered you a free meal discount for your next visit but not on the current one.

Situation A-VII: High PJ - High DJ - Low IJ

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. Immediately, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. The manager returned in a few minutes and offered you a free meal discount for the current visit without any explanation.

Situation A-VIII: High PJ - High DJ - High IJ

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. Immediately, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. The manager returned in a minute and explained that he wasn't informed of this discount and wasn't able to contact anybody at the number provided on the coupon. However, the manager offered you a free meal discount for your current visit.

Situation B – Service Recovery after Personnel Failures

Situation B-I: Low PJ - Low DJ - Low IJ

After you complained to the waiter, he was apologetic and promised to check the status of the order. After another hour, the food was delivered at your table with the promise from the manager to compliment the entire meal for the next visit but not on the current one.

Situation B-II: Low PJ - Low DJ - High IJ

After you complained to the waiter, he was apologetic and explained that the items ordered would need more time to cook. He regretted that he had forgotten to mention that to you. The waiter promised to check the status of the order. After another hour, the food was delivered at your table with the promise from the manager to compliment the entire meal for the next visit but not on the current one.

Situation B-III: Low PJ - High DJ - Low IJ

After you complained to the waiter, he was apologetic and promised to check the status of the order. After another hour, the food was delivered at your table with the promise from the manager to compliment the entire meal.

Situation B-IV: Low PJ - High DJ - High IJ

After you complained to the waiter, he was apologetic and explained that the items ordered would need more time to cook. He regretted that he had forgotten to mention that to you. The waiter promised to check the status of the order. After another hour, the food was delivered at your table with the promise from the manager to compliment the entire meal.

Situation B-V: High PJ - Low DJ - Low IJ

After you complained to the waiter, he was apologetic and promised to check the status of the order immediately. In a few minutes the food was delivered at your table with the promise from the manager to compliment the entire meal for the next visit but not on the current one.

Situation B-VI: High PJ - Low DJ - High IJ

After you complained to the waiter, he was apologetic and explained that the items ordered would need more time to cook. He regretted that he had forgotten to mention that to you. The waiter promised to check the status of the order immediately. In a few minutes the food was delivered at your table with the promise from the manager to compliment the entire meal for the next visit but not on the current one.

Situation B-VII: High PJ - High DJ - Low IJ

After you complained to the waiter, he was apologetic and promised to check the status of the order immediately. In a few minutes the food was delivered at your table with the promise from the manager to compliment the entire meal.

Situation B-VIII: High PJ - High DJ - High IJ

After you complained to the waiter, he was apologetic and explained that the items ordered would need more time to cook. He regretted that he had forgotten to mention that to you. The waiter promised to check the status of the order immediately. In a few minutes the food was delivered at your table with the promise from the manager to compliment the entire meal.

Research Setting and Sampling

This section illustrated why restaurant setting was selected and, in particular, the casual dining restaurant; what was the population and sampling; and how sample size was calculated; and what power was for the study.

Reasons for Restaurant Setting

Reasons for choosing the restaurant setting were as follows:

1. Previous studies indicated that service failures were common in the restaurant industry by critical incident technique approach (Bitner et al., 1994; Hoffman et al., 1995; Kelley et al., 1993);
2. A majority of the U.S. population dined out and used restaurant service (Mattila, 2001); for example, based on the report from National Restaurant Association, Americans spend roughly 47.9% of their food budget in restaurants (NRA, 2007);
3. Restaurant service was a high food cost and a high human interaction industry (Kim, Dilly, Ford, & Gould, 1998; Svensson, 2006); and
4. The total restaurant-industry sales were forecast to advance 5.1% in 2006 (NRA, 2006).

However, the sales of the casual dining restaurant segment had dropped an estimated 2%, and guest counts fell 4.5% compared with 2005 (NRN, 2006), which drew the attention to study and test the study hypotheses.

Population and Sampling

The target population of the study was comprised of customers in the casual dining restaurants. Data was collected from the sample of undergraduate and graduate students enrolled in the School of Hotel and Restaurant Administration at a Midwestern land-grant university.

Plenty of studies showed that the data was collected from the sample of undergraduate students as presented in Table 1. Some studies had pointed out the reason for choosing students as a sampling was that students are also the real consumers in the restaurant segment (Mattila, 2004; Smith & Bolton, 1998). Moreover, a report from the National Restaurant Association related to the behaviors and attitudes of younger adults showed that those ages 18 to 24 were the most likely to consider restaurants essential to their lifestyle (NRA, 2007). Therefore, the sample of students may have some implications on the generalization of results.

Sample Size and Power

To achieve the desired power for the specific α and hypothesized effect size, sample size for each of groups was needed for the study (Cohen, 1992). Cohen (1990) suggested that the maximum risk committing a Type I error, α , is 0.05. With the conventional $\alpha = 0.05$, power $(1-\beta) = .80$ for the probability of rejecting a false null hypothesis was suggested (Cohen, 1988). A medium effect size was proposed because “medium effect size presents an effect likely to be visible to the naked eye of a careful observer” (Cohen, 1992, p. 156). Therefore, this study applied the medium effect size index as follows:

$$f = \sigma_m / \sigma = .25$$

Where σ_m = the standard deviation of the group population means

σ = the standard deviation

This study employed repeated-measures analysis of variance (ANOVA) with 8-group (cell) subjects. Thus, the total sample size with 30 per cell should be at least 240 participants based on the calculation of medium effect size with $\alpha = 0.05$ and power = 0.80 (Cohen, 1988, 1992).

Instrument Development

The section of instrument development described the design of the survey questionnaire; illustrated the measurement of justice dimensions, recovery satisfaction and customer loyalty; and last, presented the results of the pilot test.

Survey Questionnaire

A self-administrated survey questionnaire was designed and included two different parts: part A described a systems failure, and part B described a personnel failures, as presented in Appendix B. Each part had three identical sections. The first section described the service failure scenario. Participants were asked to read the service failure scenario and imagine the service problem just happened to them. Participants were further asked to rate the degree of reality of service failure scenario, level of severity of service failure, and the effectiveness of service recovery without doing anything in their

perception; the second section described two opposite levels of service recovery efforts after a service failure, and the participants were asked a series of questions about the perceived fairness of the recovery effort and to rate their degree of agreement of service recovery effort followed by a rating of the degree of reality of service recovery scenario. The third section was related to recovery satisfaction and the consequent customer loyalty based on the customers' perceived service failure and their recovery experiences, and participants were asked to respond the last section, which related to socio-economic and demographic information after completing two different parts—part A and part B.

Measurement of Variables

This study measured the reality of service failure and service recovery efforts, severity of service failure, the effectiveness of service recovery efforts, recovery satisfaction, and the consequent customer loyalty. Nunnally (1978) suggested employing multi-item scales for measuring the cognitive constructs. Therefore, almost all the measurement of constructs was measured by multi-item scales. These multi-item scales were validated in previous studies and were adapted for better fit in this study as presented in Table 6.

Table 6 *Measurement of Constructs*

Dimensions	Measures	Sources
Distributive Justice	• Taking everything into consideration, the manager's offer was very generous.	Blodgett, Hill & Tax (1997)
	• Given the circumstances, I feel that the manager offered adequate compensation.	Blodgett, Granbois, & Walters (1993)
Interactive Justice	• Given the description, I feel that I was treated with courtesy and respect.	Blodgett, Hill & Tax (1997)
	• Given the description, I feel that my needs were treated with dignity.	Tax (1993)
Procedural Justice	• Given the description, I feel that my complaint was handled in a very timely manner.	Blodgett, Hill & Tax (1997)
	• Given the description, I feel that the service problem was fixed very quickly.	Tax (1993)
Recovery Satisfaction	• I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario.	Maxham & Netemeyer (2002)
	• I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario.	Oliver & Swan (1989)
	• I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario.	Blodgett, Granbois & Walters (1993)
Customer Loyalty	Behavioral Loyalty	Blodgett, Hill, & Tax (1997)
	• After experiencing this event, I am more likely to dine at this restaurant again.	
	• After experiencing this event, I am more likely to spend more at this restaurant.	Zeithmal, Berry, & Parasuraman (1996)
	Attitudinal Loyalty	Craighead, Karwan, & Miller (2004)
	• Based on the description, I will say positive things about this restaurant to others.	
	• Based on the description, I will tend to be more loyal to this restaurant in the future.	Cranage (2004)

Measurement of Justice Dimensions

Measurements of justice dimensions were modified from Blodgett et al. (1997), Blodgett et al., (1993), and Tax (1993). Distributive justice was measured as the perceived fairness of the outcome in terms of compensation—i.e., free meal for the current visit or free meal for the next visit; interactional justice was measured as the perceived fairness of the manner in which the customer was treated in terms of an apology only or combined with explanation; procedural justice was measured as the perceived fairness of the process and used to rectify service failure in terms of speed of response—i.e., immediately fixing the problem or delay fixing the problem in this study.

Measurement of Recovery Satisfaction and Customer Loyalty

Measurement of recovery satisfaction was measured by the satisfaction after the perceived service recovery experiences, which were modified from Maxham and Netemeyer (2002), Oliver & Swan (1989), and Blodgett, Granbois, & Walters (1993). Customer loyalty was measured by participants' future behavioral loyalty and attitudinal loyalty that were modified from Blodgett et al. (1997), Zeithaml et al., (1996), Craighead, Karwan & Miller (2004), and Cranage (2004) to fit the current study.

All of the independent variables and the dependent variable were measured using a 5-point Likert Scale from 1 (strongly disagree) to 5 (strongly agree). To assess the realism of the service failure scenario and service recovery scenarios, participants were asked the following questions also using a 5-point Likert Scale: "I think the event described in the above service failure or service recovery scenario is from very unrealistic (1) to very realistic (5)" and "I think this kind of service problem or service recovery could happen

to someone in real life from very unrealistic (1) to very realistic (5)” (Goodwin & Ross, 1992; Sundaram, Jurowski, & Webster, 1997). To assess the severity of service failure scenario, participants were asked the following question using a 5-point Likert Scale: “I think the severity of the service problem above is from extremely minor (1) to extremely major (5),” as presented in Appendix B.

Pilot Test

The pilot test for the survey questionnaire was conducted to identify any vagueness of wording, questions, measurements, and scenario descriptions by graduate students and faculty members in the hospitality and tourism departments to enhance the face validity and content validity.

Data Collection

This section described how data was collected from participants with five steps. Participants were undergraduate and graduate students who enrolled in management, marketing, service quality, and human development courses in the School of Hotel and Restaurant Administration at a midwestern land-grant university. A total of 360 copies of questionnaires with cover letters as presented in Appendix A were distributed to the participants in classrooms by the researcher in spring 2007. Steps of questionnaire distribution were as follows:

Steps of Questionnaire Administration

- Step 1. Students were asked for help with this study and were told that:
 - Their participation is totally voluntary and anonymous. They did not have to fill out their names or any other identification numbers on the survey they fill out. However, they did have to put their names on a consent form if they agreed to participate in this study before answering the questions. This consent form also was used to assign credit for participation in the survey or the bonus alternate project as explained below.
 - They had received extra credit in class for participation in the survey; however, if they decided not to participate in the survey, the instructor had another assignment of equal credit that they could complete during the time while the other students were completing the survey. On consent form for survey or for bonus project, the participants filled out their names to help the researcher avoid duplication of participation and to help instructors assign appropriate credit.
 - They did not have to participate if they had already filled out the questionnaire in another class.
- Step 2. Packets of survey instruments that have already been randomized and distributed to all the students that agree to participate in the study. For those who disagree to study, but preferred receiving in-class bonus assignment were not given the questionnaire. Consent form was attached on the top of each survey and the bonus assignment project with a piece of paper for students to write down their name and hand it back to the instructor.

- Step 3. After researcher's explanation of the study purpose, students were asked to read instruction on the first page before answering the questions.
- Step 4. Questionnaire package for each of students included two descriptions of service failures (System and Personnel). In addition, two recovery scenarios were also described for each of the system and personnel failures. The sequences of sections in the questionnaire that the participants viewed were as follows:
 - (1) System problem description
 - (2) Scenario reality of system problem
 - (3) Level of severity for system problem
 - (4) Effectiveness of service recovery with on recovery effort for system problem
 - (5) System problem recovery satisfaction with no recovery effort
 - (6) Scenario one of recovery effort for system problem
 - (7) System problem recovery satisfaction and customer loyalty with scenario one recovery effort
 - (8) Scenario two of recovery effort for system problem
 - (9) System problem recovery satisfaction and customer loyalty with scenario two recovery effort
 - (10) Personnel problem description
 - (11) Scenario reality of personnel problem
 - (12) Level of severity for personnel problem
 - (13) Effectiveness of service recovery with on recovery effort for personnel problem

- (14) Personnel problem recovery satisfaction with no recovery effort
- (15) Scenario one of recovery effort for personnel problem
- (16) Personnel problem recovery satisfaction and customer loyalty with
scenario one recovery effort
- (17) Scenario two of recovery effort for personnel problem
- (18) Personnel problem recovery satisfaction and customer loyalty with
scenario two recovery effort
- (19) Demographic profile questions
- Step 5. After participants completed all the questions, participants were asked to return the questionnaire with consent form separately on the desk in front of classroom for researcher. The rest of participants who preferred to do the bonus assignment were also asked to hand it back to researcher after completing the project.

Data Analysis

The purpose of this study was to study the comparative influence of failure classes, failure severity, and the effectiveness of recovery effort on recovery satisfaction and consequent customer loyalty in casual dining restaurants. In order to achieve the purpose and objectives of the study, hypothesis one, two, five, and six are tested by repeated-measures analysis of variance (ANOVA) to evaluate the significantly different effects among variables. Hypothesis three and four are tested by repeated-measures analysis of covariance to identify the confounding effect of failure severity. Hypothesis seven is tested by hierarchical regression analysis with dummy coding to identify the

relationship among variables and presented as Figure 4.

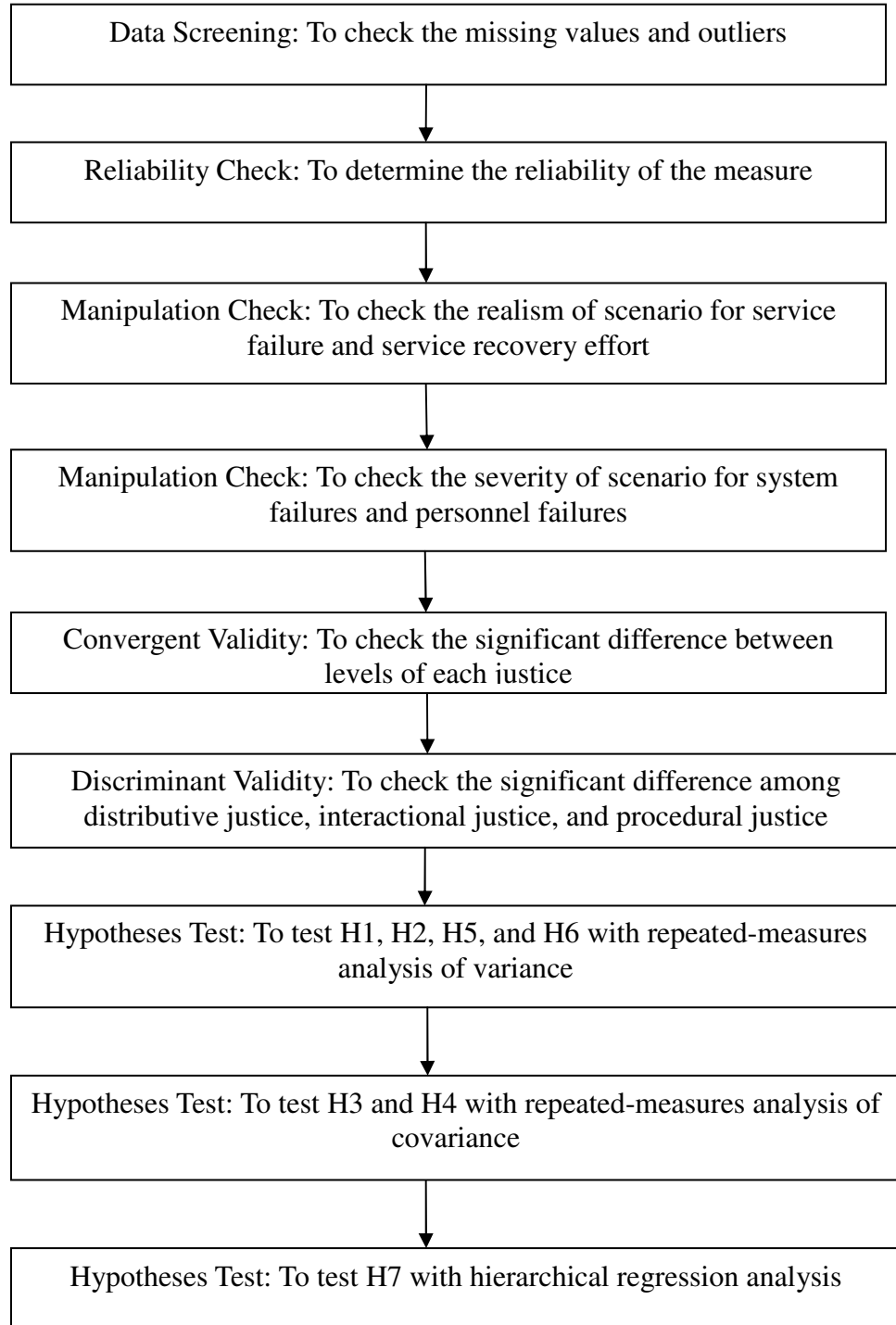


Figure 4 Data analysis procedure

CHAPTER IV

FINDINGS

This chapter first presented the results of the sample characteristics; second, it described the measurement reliability; third, it portrayed manipulation checks with realism of scenarios, severity of scenario, manipulation checks; and last, it tests the research hypotheses.

Sample Characteristics

A total of 360 questionnaires were distributed and 352 useable responses were collected with a 98 percent response rate. The 2 x 2 x 2 experimental design for distributive justice, interactional justice, and procedural justice, each had high and low levels and resulted with a total of 88 responses in each cell.

Of the 352 respondents, 64.2% were female and 35.8% were male; 84.4 % were Caucasian, 9.7% were Asian, and 5.9% were Native American, Hispanic, German, and African; 90.6% were in the ages of 18-24, 7.8% were in the ages of 25-34, and 1.6% were in the ages of 35-65; 85.2% had attended some college or university, 6.8% were college graduates, 4.5% were graduates, and 3.4% had done high school or less than high school work; 49.7% reported household income before taxes less than \$19,999, 20.5% reported between \$40,000 and \$79,000, 15.6% reported more than \$100,000, 6.3% reported between \$20,000 and \$39,000, 6% reported between \$80,000 and \$99,999, and 2% was

missing and marked “I don’t know.” The summary results were presented in Table 7.

Table 7 *Demography Profiles of Participant*

Variable	Frequency (N=352)	Valid Percentage
Gender		
Female	226	64.2
Male	126	35.8
Age		
18-24	319	90.6
25-34	27	7.8
Over than 35	6	1.6
Education		
Less than high school degree	1	0.3
High school degree	11	3.1
Some college/university	300	85.2
College graduate	24	6.8
Graduate degree	16	4.5
Income		
Less than \$19,999	175	49.7
\$20,000 - \$39,999	22	6.3
\$40,000 - \$59,999	34	9.7
\$60,000 - \$79,999	38	10.8
\$80,000 - \$99,999	21	6.0
Over than \$100,000	55	15.6
Others	7	2.0
Ethnic		
African-American	2	0.6
Asian	34	9.7
Caucasian/White	297	84.4
Hispanic	3	0.9
Others	16	4.5

Reliability of Measurement

Reliability check was conducted by Cronbach's alpha for multiple items. Multiple item scales were developed to measure the study construct. These items were supported and validated in previous studies and were further modified to better fit the current study.

All of the items were measured using 5-point Likert scales; most of them were anchored from "strongly disagree" to "strongly agree", e.g. the questions of effectiveness of recovery effort, recovery satisfaction, and customer loyalty. However, other scales were anchored either from "very unrealistic" to "very realistic", e.g. realism of service failure and service recovery; or from "extremely minor" to "extremely major", e.g. perception of failure severity.

The Cronbach's alpha for the scales were higher than the suggested cut-off of 0.70 (Nunnally, 1978) and indicated a highly reliable internal consistency. Cronbach's alpha for scenario reality of system failures was 0.83 and personnel failures was 0.89; scenario reality of recovery effort for system failures was 0.94 and 0.93 for personnel failures. Cronbach's alpha for the effectiveness of recovery effort, i.e. distributional justice, interactional justice, and procedural justice were 0.97, 0.98, and 0.89 respectively; and for customer loyalty, i.e. behavioral loyalty and attitudinal loyalty were 0.92 and 0.96 respectively. The summary results are presented in Table 8.

Table 8 *Reliability of Measurement*

Measurement Construct	Alpha
Scenario Reality of Failure	
- System Failures	0.83
- Personnel Failures	0.89
Scenario Reality of Recovery Effort	
- System Failures Recovery	0.94
- Personnel Failures Recovery	0.93
Effectiveness of Recovery Effort	
- Distributive Justice	0.97
- Interactional Justice	0.98
- Procedural Justice	0.89
Customer Loyalty	
- Behavioral Loyalty	0.92
- Attitudinal Loyalty	0.96

Manipulation Checks

Manipulation checks were conducted first, to ensure the realism of scenario in terms of service failure and service recovery effort; second, to ensure the perception of severity in terms of service failure scenario; third, to ensure the level (high and low) of each experimental situation were different for convergent validity in terms of the effectiveness of recovery effort; and last, to ensure that none of the manipulated variables confounded with other variables to violate discriminant validity (Blodgett et al., 1997; Cook & Campbell, 1979; Ok et al., 2006; Perdue & Summers, 1986; Sundaram et al., 1997).

Realism of Scenario

To assess the realism of scenarios, respondents were asked two questions: “I think the event described in the above service failure or service recovery scenario is...”and “I think this kind of service problem or service recovery could happen to someone in real

life.” Both the questions were rated using a scale ranging from 1 (very unrealistic) to 5 (very realistic) (Goodwin & Ross, 1992; Sundaram et al., 1997). The results of scenario reality were higher than 4 on the 5-point scale for service failure and service recovery effort in terms of system failures and personnel failures as presented in Table 9.

Table 9 *Reality of Scenario*

Realism of Scenario	Mean*	Standard Deviation
Scenario Realism of Service Failure		
-System Failures	4.41	0.94
-Personnel Failures	4.85	0.69
Scenario Realism of Service Recovery Effort		
-System Failures Recovery	4.41	0.99
-Personnel Failures Recovery	4.68	0.91

N = 352

* Mean scale: 1 = Very Unrealistic; 5 = Very Realistic

Severity of Scenario

To assess the severity of scenarios, respondents were asked one question: “I think the severity of the service problem described...” from 1 (extremely minor) to 5 (extremely major). The mean of the perception of severity for system failures was 3.71 and for personnel failures was 4.78 on the 5-point scale as presented in Table 10.

Table 10 *Severity of Scenario*

Severity of Scenario	Mean*	Standard Deviation
System Failures	3.71	0.55
Personnel Failures	4.78	0.43

N = 352

* Mean scale: 1 = Very Unrealistic; 5 = Very Realistic

Convergent Validity

Convergent validity would be confirmed if it indicated that respondents did perceive significant differences between the levels (high and low) of justice (distributional justice, interactional justice, and procedural justice) (Blodgett et al., 1997; Ok et al., 2006; Perdue & Summers, 1986). A 2 x 2 x 2 balanced repeated- measures design was used to assess convergent validity of the effectiveness of recovery effort for system failures and personnel failures. The results of each failure classes were presented separately below.

System Failures

The results of within-subjects effect of the effectiveness of recovery effort for system failures indicated that the level of distributive justice was significantly different among high effort, low effort and no effort, $F_{2, 702} = 4530.37$, $p < 0.001$; the level of interactional justice was significantly different among high effort, low effort, and no effort, $F_{2,702} = 3784.14$, $p < 0.001$; and the level of procedural justice was significantly different among high effort, low effort, and no effort, $F_{2,702} = 3731.10$, $p < 0.001$. The summary results were presented in Table 11.

Pairwise comparisons for the main effect of distributive justice, interactional justice, and procedural justice were corrected using a Bonferroni adjustment and indicated that the significant main effects also showed significant differences between high effort and low effort, between low effort and no effort, and between high effort and no effort as presented in Table 12, Table 13, and Table 14.

Table 11 *Convergent Validity of Recovery Effort for System Failures*

Recovery Effort	Level of Recovery Effort	Mean*	df	F	Sig. ^a
Distributive Justice	High	4.68	2, 702	4530.37	0.000
	Low	1.91			
	No	1.30			
Interactional Justice	High	4.48	2, 702	3784.14	0.000
	Low	1.91			
	No	1.30			
Procedural Justice	High	4.56	2, 702	3731.10	0.000
	Low	1.49			
	No	1.30			

* The mean is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Table 12 *Convergent Validity of Recovery Effort for System Failures - Pairwise*

Comparisons of Distributive Justice

Level of Recovery Effort (I)	Level of Recovery Effort (J)	Mean Difference (I-J)	Std. Error	Sig. ^a
High	Low	2.776*	.038	.000
	No	3.384*	.037	.000
Low	High	-2.776*	.038	.000
	No	.608*	.039	.000
No	High	-3.384*	.037	.000
	Low	-.608*	.039	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Table 13 *Convergent Validity of Recovery Effort for System Failures - Pairwise Comparisons of Interactional Justice*

Level of Recovery Effort (I)	Level of Recovery Effort(J)	Mean Difference (I-J)	Std. Error	Sig. ^a
High	Low	2.571*	.041	.000
	No	3.179*	.037	.000
Low	High	-2.571*	.041	.000
	No	.608*	.038	.000
No	High	-3.179*	.037	.000
	Low	-.608*	.038	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Table 14 *Convergent Validity of Recovery Effort for System Failures - Pairwise Comparisons of Procedural Justice*

Level of Recovery Effort (I)	Level of Recovery Effort(J)	Mean Difference (I-J)	Std. Error	Sig. ^a
High	Low	3.068*	.045	.000
	No	3.261*	.037	.000
Low	High	-3.068*	.045	.000
	No	.193*	.044	.000
No	High	-3.261*	.037	.000
	Low	-.193*	.044	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Personnel Failures

The results of within-subjects effect of recovery effort for personnel failures indicated that the level of distributive justice was significantly different between high effort and low effort, $F_{2, 702} = 6253.76$, $p < 0.001$; the level of interactional justice was significantly different between high effort and low effort, $F_{2, 702} = 4526.12$, $p < 0.001$; and the level of procedural justice was significantly different between high effort and low

effort, $F_{2, 702} = 5707.14$, $p < 0.001$ as presented in Table 15.

Pairwise comparisons for the main effect of distributive justice, interactional justice, and procedural justice were corrected using a Bonferroni adjustment. Distributive justice and interactional justice both indicated that the significant main effect also showed significant differences between high effort and low effort, between low effort and no effort, and between high effort and no effort. The summary results were presented in Table 16, Table 17. However, procedural justice indicated that the significant main effect only showed significant differences between high effort and low effort as well as between high and no effort, instead of between low effort and no effort. The summary results were presented in Table 18.

Table 15 *Convergent Validity of Recovery Effort for Personnel Failures*

Recovery Effort	Level of Recovery Effort	Mean*	df	F	Sig. ^a
Distributive Justice	High	4.68	2, 702	6253.76	0.000
	Low	1.91			
	No	1.30			
Interactional Justice	High	4.48	2, 702	4526.12	0.000
	Low	1.91			
	No	1.30			
Procedural Justice	High	4.56	2, 702	5707.14	0.000
	Low	1.49			
	No	1.30			

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

^a Adjustment for multiple comparisons: Bonferroni.

Table 16 *Convergent Validity of Recovery Effort for Personnel Failures - Pairwise Comparisons of Distributive Justice*

Level of Recovery Effort (I)	Level of Recovery Effort(J)	Mean Difference (I-J)	Std. Error	Sig. ^a
High	Low	3.179*	.037	.000
	No	3.625*	.032	.000
Low	High	-3.179*	.037	.000
	No	.446*	.037	.000
No	High	-3.625*	.032	.000
	Low	-.446*	.037	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Table 17 *Convergent Validity of Recovery Effort for Personnel Failures - Pairwise Comparisons of Interactional Justice*

Level of Recovery Effort (I)	Level of Recovery Effort(J)	Mean Difference (I-J)	Std. Error	Sig. ^a
High	Low	2.881*	.043	.000
	No	3.369*	.036	.000
Low	High	-2.881*	.043	.000
	No	.489*	.036	.000
No	High	-3.369*	.036	.000
	Low	-.489*	.036	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Table 18 *Convergent Validity of Recovery Effort for Personnel Failures - Pairwise Comparisons of Procedural Justice*

Level of Recovery Effort (I)	Level of Recovery Effort(J)	Mean Difference (I-J)	Std. Error	Sig. ^a
High	Low	3.304*	.037	.000
	No	3.321*	.038	.000
Low	High	-3.304*	.037	.000
	No	.017	.031	1.000
No	High	-3.321*	.038	.000
	Low	-.017	.031	1.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

In summary, these results indicated that participants did perceive significant differences between the level of recovery effort in terms of both System Failures and personnel failures, consequently, establishing the convergent validity of the manipulation. With respect to each level of recovery effort with pairwise comparisons, it became obvious that participants did perceived significant differences between high effort and low effort, high effort and no effort, and low effort and no effort in terms of system failures. However, in terms of personnel failures, participants only perceived significant differences between high effort and low effort, high effort and no effort, but did not perceive significant differences between low effort and no effort.

Discriminant Validity

Discriminant validity would be confirmed if none of the manipulated variables were confounded by another (Blodgett et al., 1997; McCollough et al., 2000; Ok et al., 2006; Perdue & Summers, 1986). Repeated-measures with ANOVA was conducted and partial

eta square (η^2) was examined to assess the strength of association. Although eta square is slightly biased, eta square can be applied when the study has equal numbers of participants in each group as in the current study (Howell, 2002).

System Failures

The results of within-subjects effect of recovery effort for system failures indicated that the effectiveness of recovery effort was significantly different between distributive justice, interactional justice, and procedural justice, $F_{2, 702} = 71.33$, $p < 0.001$, $\eta^2 = 0.17$.

The results also indicated significant difference between distributive justice and interactional justice, $F_{1, 351} = 26.75$, $p < 0.001$, $\eta^2 = 0.07$; between interactional justice and procedural justice, $F_{1, 351} = 53.30$, $p < 0.001$, $\eta^2 = 0.13$; and between procedural justice and distributive justice, $F_{1, 351} = 115.08$, $p < 0.001$, $\eta^2 = 0.25$ for system failures as presented in Table 19.

Pairwise comparisons for the main effect of distributive justice, interactional justice, and procedural justice were corrected using a Bonferroni adjustment and indicated that there was a significant main effect between distributive justice and interactional justice, between interactional justice and procedural justice, and procedural justice and distributive justice for system failures for system failures. The summary results were presented in Table 20.

Table 19 *Discriminant Validity of Recovery Effort for System Failures*

Recovery Effort	df	F	Sig.	η^2
Distributive Justice vs. Interactional Justice	1,351	26.75	0.000	0.07
Interactional Justice vs. Procedural Justice	1,351	53.30	0.000	0.13
Procedural Justice vs. Distributive Justice	1,351	115.08	0.000	0.25

* Significant at the .05 level.

Table 20 *Discriminant Validity of Recovery Effort for System Failures - Pairwise*

Comparisons among Recovery Effort

(I) Effort	(J) Effort	Mean Difference (I-J)	Std. Error	Sig. ^a
Distributive Justice	Interactional Justice	.068*	.013	.000
	Procedural Justice	.179*	.017	.000
Interactional Justice	Distributive Justice	-.068*	.013	.000
	Procedural Justice	.111*	.015	.000
Procedural Justice	Distributive Justice	-.179*	.017	.000
	Interactional Justice	-.111*	.015	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Personnel Failures

The results of within-subjects effect of recovery effort for personnel failures indicated that the effectiveness of recovery effort was significantly different between distributive justice, interactional justice, and procedural justice, $F_{2, 702} = 164.20$, $p < 0.001$, $\eta^2 = 0.32$. The results also indicated significant differences between distributive justice and interactional justice, $F_{1, 351} = 30.99$, $p < 0.001$, $\eta^2 = 0.08$; between interactional justice and procedural justice, $F_{1, 351} = 140.39$, $p < 0.001$, $\eta^2 = 0.29$; and between procedural justice and distributive justice, $F_{1, 351} = 297.78$, $p < 0.001$, $\eta^2 = 0.46$ for personnel failures as showed in Table 21.

Pairwise comparisons for the main effect of distributive justice, interactional justice,

and procedural justice were corrected using a Bonferroni adjustment and indicated that there was a significant main effect between distributive justice and interactional justice, between interactional justice and procedural justice, and between procedural justice and distributive justice for personnel failures as presented in Table 22.

Table 21 *Discriminant Validity of Recovery Effort for Personnel Failures*

Recovery Effort	df	F	Sig.	η^2
Distributive Justice vs. Interactional Justice	1,351	30.99	0.000	0.08
Interactional Justice vs. Procedural Justice	1,351	140.39	0.000	0.29
Procedural Justice vs. Distributive Justice	1,351	297.78	0.000	0.55

* Significant at the .05 level.

Table 22 *Discriminant Validity of Recovery Effort for Personnel Failures - Pairwise*

Comparisons among Recovery Effort

(I) Effort	(J) Effort	Mean Difference (I-J)	Std. Error	Sig. ^a
Distributive Justice	Interactional Justice	.071*	.013	.000
	Procedural Justice	.244*	.014	.000
Interactional Justice	Distributive Justice	-.071*	.013	.000
	Procedural Justice	.173*	.015	.000
Procedural Justice	Distributive Justice	-.244*	.014	.000
	Interactional Justice	-.173*	.015	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

In summary, these results indicated that participants did perceive significant differences between recovery efforts in terms of both system failures and personnel failures, thus, establishing the discriminant validity of the manipulation. With respect to each recovery effort with pairwise comparisons, the participants did perceived significantly different effects between distributive justice and interactional justice,

between interactional justice and procedural justice, and between procedural justice and distributive justice in terms of both system failures and personnel failures. These results indicated that the manipulations worked as intended.

Tests of Research Hypotheses

A 2 x 2 x 2 balanced factorial repeated- measures design was used to assess the influence of failure classes, i.e. system failures and personnel failures, the perceived severity of service failure and the effectiveness of recovery effort, i.e. distributive, interactional, and procedural justice on recovery satisfaction, and customer loyalty, i.e. behavioral loyalty and attitudinal loyalty.

Hypothesis one through hypothesis six were first tested with the assumption of sphericity by Mauchly's test before further examinations (Mauchly, 1940). Assumption of sphericity refers to the assumption of equality of variances of the differences between treatment levels. Mauchly's test of sphericity is a test to verify whether the dependent variable variance-covariance matrices are equal or homogeneous for a within-subjects design and also to test whether the correlations between the levels of the within-subjects variable are comparable (Meyers, Gamst, & Guarino, 2006). Therefore, if Mauchly's test statistic is significant we conclude that there are significant differences between the variances of difference and the condition of sphericity is not met.

If the assumption of sphericity is violated, degree of freedom should be corrected by either Greenhouse-Geisser (1959) or Huynh-Feldt (1976). Huynh and Feldt (1976) showed that the Greenhouse-Geisser estimated correction was too conservative; however, Maxwell and Delaney (1990) reported that Huynh-Feldt overestimated sphericity. This

current study employed conservative Greenhouse-Geisser corrected F-value if the results showed significant differences between variables or levels.

Recovery Satisfaction With and Without a Recovery Effort

In order to identify the differences of recovery satisfaction after a recovery effort, the first hypothesis was tested to assess the recovery satisfaction with a recovery effort and without a recovery effort in terms of system failures and personnel failures.

H1a. There is no difference in recovery satisfaction with and without a recovery effort for system failures in casual dining restaurants in the U.S.

H1b. There is no difference in recovery satisfaction with and without a recovery effort for personnel failures in casual dining restaurants in the U.S.

System Failures

To test H1a, the results of Mauchly's sphericity test for the effect of recovery effort on recovery satisfaction for system failures was used and resulted in a significant, $\chi^2(2) = 174.76$, $p < 0.001$. The results showed that the assumption had been violated. Therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\epsilon = 0.87$) for the effect of recovery effort on recovery satisfaction as presented in Table 23. Additionally, the results of the ANOVA with conservative Greenhouse-Geisser corrected F-value indicated that recovery satisfaction was significant effected by recovery effort in terms of system failures, $F_{1.74, 1830.35} = 14691.77$, $p < 0.001$ as presented in Table 24.

The further result of the tests of within-subjects contrasts comparison showed a

significant main effect of recovery satisfaction between high effort and no effort, $F_{1, 1055} = 37156.59$, $p < 0.001$, $r = 0.98$; and between low effort and no effort, $F_{1, 1055} = 962.79$, $p < 0.001$, $r = 0.69$, in terms of system failures as presented in Table 25.

Table 23 *Mauchly's Test of Sphericity of Recovery Satisfaction for System Failures*

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.*	Epsilon		
					Greenhouse -Geisser	Huynh-Feldt	Lower-bound
Recovery Satisfaction	.847	174.755	2	.000	.867	.869	.500

* The mean difference is significant at the 0.05 level.

Table 24 *Tests of Within-Subjects Effects of Recovery Satisfaction for System Failures*

		Type III Sum of Squares	df	Mean Square	F	Sig.*
Recovery Satisfaction	Sphericity Assumed	7128.758	2	3564.379	14691.767	.000
	Greenhouse-Geisser	7128.758	1.735	4108.965	14691.767	.000
	Huynh-Feldt	7128.758	1.738	4102.802	14691.767	.000
	Lower-bound	7128.758	1.000	7128.758	14691.767	.000
Error	Sphericity Assumed	511.908	2110	.243		
	Greenhouse-Geisser	511.908	1830.349	.280		
	Huynh-Feldt	511.908	1833.098	.279		
	Lower-bound	511.908	1055.000	.485		

* The mean difference is significant at the 0.05 level.

Table 25 *Tests of Within-Subjects Simple Contrast of Recovery Satisfaction With and Without Recovery Effort for System Failures*

	Recovery Satisfaction	Type III Sum of Squares	df	Mean Square	F	Sig.*	Effect Size
Recovery Satisfaction	High vs. No	12602.182	1	12602.182	37156.585	.000	0.98
	Low vs. No	436.592	1	436.592	962.785	.000	0.69
Error	High vs. No	357.818	1055	.339			
	Low vs. No	478.408	1055	.453			

* The mean difference is significant at the 0.05 level.

Personnel Failures

In terms of personnel failures, Mauchly's test was also significant and violated the assumption, thus, the degrees of freedom was also corrected using Greenhouse-Geisser estimates of sphericity ($\epsilon = 0.85$) for the effect of recovery effort on recovery satisfaction as presented in Table 26.

The results of the ANOVA with conservative Greenhouse-Geisser corrected F-value indicated that recovery effort had a significantly effect on recovery satisfaction, $F_{1.69, 1785.72} = 19947.43$, $p < 0.001$ as presented in Table 27. Further results of the tests of within-subjects contrasts comparison showed a significant main effect of recovery satisfaction between high effort and no effort, $F_{1, 1055} = 40834.66$, $p < 0.001$, $r = 0.99$; and between low effort and no effort, $F_{1, 1055} = 449.06$, $p < 0.001$, $r = 0.55$. The summary results were presented in Table 28.

Table 26 *Mauchly's Test of Sphericity of Recovery Satisfaction for Personnel Failures*

	Mauchly's W	Approx. Chi-Square	df	Sig.*	Epsilon		
					Greenhouse -Geisser	Huynh-Feldt	Lower-bound
Recovery Satisfaction	.818	211.218	2	.000	.846	.848	.500

* The mean difference is significant at the 0.05 level.

Table 27 *Tests of Within-Subjects Effects of Recovery Satisfaction for Personnel Failures*

		Type III Sum of Squares	df	Mean Square	F	Sig.*
Recovery Satisfaction	Sphericity Assumed	7912.831	2	3956.416	19947.430	.000
	Greenhouse-Geisser	7912.831	1.693	4674.876	19947.430	.000
	Huynh-Feldt	7912.831	1.695	4668.179	19947.430	.000
	Lower-bound	7912.831	1.000	7912.831	19947.430	.000
Error	Sphericity Assumed	418.502	2110	.198		
	Greenhouse-Geisser	418.502	1785.724	.234		
	Huynh-Feldt	418.502	1788.286	.234		
	Lower-bound	418.502	1055.000	.397		

* The mean difference is significant at the 0.05 level.

Table 28 *Tests of Within Subject Simple Contrast of Recovery Satisfaction for Personnel Failures*

	Recovery Satisfaction	Type III Sum of Squares	df	Mean Square	F	Sig.*	Effect Size
Recovery Satisfaction	High vs. No	13069.342	1	13069.342	40834.660	.000	0.99
	Low vs. No	136.742	1	136.742	449.058	.000	0.55
Error	High vs. No	337.658	1055	.320			
	Low vs. No	321.258	1055	.305			

* The mean difference is significant at the 0.05 level.

For both system failures and personnel failures, recovery satisfaction did show significant differences between high effort of recovery satisfaction and no effort of recovery satisfaction. Moreover, recovery satisfaction also did show differences between low effort of recovery satisfaction and no effort of satisfaction. Consequently, there was a significant difference between with a recovery effort and without a recovery effort.

Therefore, H1a: “There is no difference in recovery satisfaction with and without a recovery effort for system failures in casual dining restaurants in the U.S.” was rejected; H1b: “There is no difference in recovery satisfaction with and without a recovery effort for personnel failures in casual dining restaurants in the U.S.” was also rejected.

Effectiveness of Recovery Effort

In order to assess the difference in the effectiveness of recovery effort among distributive justice, interactional justice, and procedural justice after system failures, the second hypothesis was tested to identify the differences not only among the effectiveness of recovery effort, but also the levels of each recovery effort in terms of failure classes.

H2a. There is no difference in the effectiveness of recovery effort among distributive justice (DJ), interactional justice (IJ), and procedural justice (PJ) for system failures in casual dining restaurants in the U.S.

System Failures

To test the assumption of sphericity, equality of variances of the differences between treatment levels, Mauchly’s test was applied and indicated that the assumption of

sphericity had been violated for the main effects of the recovery effort (distributive justice, interactional justice, and procedural justice), $\chi^2 (2) = 174.76$, $p < 0.001$; the level of recovery effort (high effort, low effort, and no effort), $\chi^2 (2) = 22.85$, $p < 0.001$; and the interaction effect between the recovery effort and the level of recovery effort, $\chi^2 (9) = 469.46$, $p < 0.001$. Therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\epsilon = 0.93$ for the main effect of recovery effort, 0.94 for the main effect of the level of recovery effort, and $\epsilon = 0.65$ for the interaction effect of recovery effort and the level of recovery effort) as presented in Table 29.

Table 29 *Mauchly's Test of Sphericity of Recovery Effort for System Failures*

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Recovery Effort	.929	25.605	2	.000	.934	.939	.500
Level of Recovery Effort	.937	22.848	2	.000	.941	.945	.500
Effort * Level	.261	469.460	9	.000	.653	.659	.250

All the main effects showed significance at $p < 0.001$ for recovery effort in terms of system failures as presented in Table 30. The results of pairwise comparisons for the main effect of recovery effort and the level of recovery effort for system failures were corrected using Bonferroni adjustment. The main effect of the recovery effort showed a significant difference ($p < 0.001$) among the recovery efforts, and the main effect of the level of recovery effort also showed significant difference ($p < 0.001$) among the levels of the recovery efforts. Both recovery effort and the levels of the recovery effort highlight

the importance of controlling the error rate by using a Bonferroni correction as presented in Table 31 and Table 32.

Table 30 *Tests of Within-Subjects Effects of the Recovery Effort for System Failures*

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Recovery Effort	Sphericity Assumed	17.233	2	8.616	71.734	.000
	Greenhouse-Geisser	17.233	1.868	9.224	71.734	.000
	Huynh-Feldt	17.233	1.878	9.177	71.734	.000
	Lower-bound	17.233	1.000	17.233	71.734	.000
Error (Recovery Effort)	Sphericity Assumed	84.323	702	.120		
	Greenhouse-Geisser	84.323	655.741	.129		
	Huynh-Feldt	84.323	659.117	.128		
	Lower-bound	84.323	351.000	.240		
Level of Recovery Effort	Sphericity Assumed	6621.598	2	3310.799	6578.670	.000
	Greenhouse-Geisser	6621.598	1.881	3520.027	6578.670	.000
	Huynh-Feldt	6621.598	1.891	3501.792	6578.670	.000
	Lower-bound	6621.598	1.000	6621.598	6578.670	.000
Error (Level of Recovery Effort)	Sphericity Assumed	353.290	702	.503		
	Greenhouse-Geisser	353.290	660.274	.535		
	Huynh-Feldt	353.290	663.712	.532		
	Lower-bound	353.290	351.000	1.007		
Recovery Effort * Level of Recovery Effort	Sphericity Assumed	30.595	4	7.649	46.318	.000
	Greenhouse-Geisser	30.595	2.613	11.710	46.318	.000
	Huynh-Feldt	30.595	2.634	11.615	46.318	.000
	Lower-bound	30.595	1.000	30.595	46.318	.000
Error (Effort*Level)	Sphericity Assumed	231.850	1404	.165		
	Greenhouse-Geisser	231.850	917.080	.253		
	Huynh-Feldt	231.850	924.575	.251		
	Lower-bound	231.850	351.000	.661		

a "Recovery Effort" includes distributive justice, interactional justice, and procedural justice.

b "Level of Recovery Effort" indicates high effort, low effort, and no effort.

c "Effort x Level" indicates the interaction effect between recovery effort and the level of recovery effort.

Table 31 *Pairwise Comparisons of the Recovery Effort for System Failures*

(I) Recover Effort	(J) Recovery Effort	Mean Difference (I-J)	Std. Error	Sig. ^a
Distributive Justice	Interactional Justice	.068*	.013	.000
	Procedural Justice	.179*	.017	.000
Interactional Justice	Distributive Justice	-.068*	.013	.000
	Procedural Justice	.111*	.015	.000
Procedural Justice	Distributive Justice	-.179*	.017	.000
	Interactional Justice	-.111*	.015	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Table 32 *Pairwise Comparisons of the Level of Recovery Effort for System Failures*

(I) Level of Recovery Effort	(J) Level of Recovery Effort	Mean Difference (I-J)	Std. Error	Sig. ^a
High	Low	2.805*	.027	.000
	No	3.275*	.033	.000
Low	High	-2.805*	.027	.000
	No	.470*	.033	.000
No	High	-3.275*	.033	.000
	Low	-.470*	.033	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

The significant main effect of the recovery effort was assessed, $F_{1.87, 655.74} = 71.73$, $p < 0.001$. The tests of within-subjects simple contrasts revealed that the difference between distributive justice and procedural justice performed larger effect, $F_{1, 351} = 115.08$, $p < 0.001$, $r = 0.50$ than the difference between interactional justice and procedural justice, $F_{1, 351} = 53.30$, $p < 0.001$, $r = 0.36$. There was also a significant main effect of the level of recovery effort, $F_{1.88, 660.27} = 6578.67$, $p < 0.001$. The tests of within-subjects simple contrasts revealed that the high effort, $F_{1, 351} = 9977.41$, $p < 0.001$, $r = 0.98$ and the low effort, $F_{1, 351} = 205.96$, $p < 0.001$, $r = 0.61$ were significantly higher

than no effort as presented in Table 33.

In order to study the extra difference between distributive justice and interactional justice, tests of within-subjects repeated contrasts was performed. The tests showed a significant difference between distributive justice and interactional justice had a lower effect, $F_{1, 351} = 26.75$, $p < 0.001$, $r = 0.27$ than the difference between interactional justice and procedural justice, $F_{1, 351} = 53.30$, $p < 0.001$, $r = 0.36$. There was also a significant main effect of the level of recovery effort, $F_{2, 702} = 6578.67$, $p < 0.001$. Tests of within-subjects repeated contrasts revealed that the difference between high effort and no effort had a higher effect, $F_{1, 351} = 9977.41$, $p < 0.001$, $r = 0.98$ than the difference between low effort and no effort, $F_{1, 351} = 205.96$, $p < 0.001$, $r = 0.61$. The summary results were presented in Table 34.

Table 33 *Tests of Within-Subjects Simple Contrasts of Recovery Effort for System Failures*

Source	Recovery Effort ^a	Level of Recovery Effort ^b	Type III Sum of Squares	df	Mean Square	F	Sig.	Effect Size
Recovery Effort	DJ vs. PJ		11.276	1	11.276	115.080	.000	0.50
	IJ vs. PJ		4.321	1	4.321	53.298	.000	0.36
Error	DJ vs. PJ		34.391	351	.098			
	IJ vs. PJ		28.457	351	.081			
Level of Recovery Effort		High vs. No	3774.547	1	3774.547	9977.405	.000	0.98
		Low vs. No	77.657	1	77.657	205.960	.000	0.61
Error		High vs. No	132.787	351	.378			
		Low vs. No	132.343	351	.377			
Effort * Level ^c	DJ vs. PJ	High vs. No	5.253	1	5.253	16.800	.000	0.21
		Low vs. No	60.557	1	60.557	95.127	.000	0.46
	IJ vs. PJ	High vs. No	2.389	1	2.389	6.730	.010	0.14
		Low vs. No	60.557	1	60.557	91.839	.000	0.46
Error (Effort*Level)	DJ vs. PJ	High vs. No	109.477	351	.313			
		Low vs. No	223.443	351	.637			
	IJ vs. PJ	High vs. No	124.611	351	.355			
		Low vs. No	231.443	351	.659			

a "Recovery Effort" indicates distributive justice (DJ), interactional justice (IJ), and procedural justice (PJ).

b "Level of Recovery Effort" indicates high effort (High), low effort (Low), and no effort (No).

c "Effort*Level" indicates the interaction effect between recovery effort and the level of recovery effort

Table 34 *Tests of Within-Subjects Repeated Contrasts of Recovery Effort for System*

Failures

	Recovery Effort ^a	Level of Recovery Effort ^b	Type III Sum of Squares	df	Mean Square	F	Sig.	Effect Size
Recovery Effort	DJ vs. IJ		1.636	1	1.636	26.75	.000	0.27
	IJ vs. PJ		4.321	1	4.321	53.30	.000	0.36
Error(Effort)	DJ vs. IJ		21.475	351	.061			
	IJ vs. PJ		28.457	351	.081			
Level of Recovery Effort		High vs. No	3774.547	1	3774.547	9977.40	.000	0.98
		Low vs. No	77.657	1	77.657	205.960	.000	0.61
Error(Level)		High vs. No	132.787	351	.378			
		Low vs. No	132.343	351	.377			
Effort * Level ^c	DJ vs. IJ	High vs. No	14.727	1	14.727	50.055	.000	0.35
		Low vs. No	.000	1	.000	.000	1.000	
	IJ vs. PJ	High vs. No	2.389	1	2.389	6.730	.010	
		Low vs. No	60.557	1	60.557	91.839	.000	0.46
Error (Effort*Level)	DJ vs. IJ	High vs. No	103.273	351	.294			
		Low vs. No	156.000	351	.444			
	IJ vs. PJ	High vs. No	124.611	351	.355			
		Low vs. No	231.443	351	.659			

a "Recovery Effort" indicates distributive justice (DJ), interactional justice (IJ), and procedural justice (PJ).

b "Level of Recovery Effort" indicates high effort (High), low effort (Low), and no effort (No).

c "Effort*Level" indicates the interaction effect between recovery effort and the level of recovery effort

There was also a significant interaction effect between the recovery effort and the level of recovery effort, $F_{2,61, 917.08} = 46.32$, $p < 0.001$ as presented in Table 30. The significant interaction indicated that the recovery effort had different effects on respondents' perception depending on which level of recovery effort was used as presented in Table 35 and Figure 5.

To break down this interaction, tests of within-subjects contrasts were performed comparing all the recovery effort to their baseline (procedural justice), and also comparing all the levels of recovery effort to their baseline (no effort) as presented in Tables from 35 to 39 and Figures from 6 to 10. Additional interaction comparisons between distributive justice and interactional justice were also performed and were

presented in Table 40 and Figure 11.

Table 35 *Mean of Interaction of the Recovery Effort and the Level of Recovery Effort for System Failures*

Recovery Effort	Level of Recovery Effort	Mean*	Std. Error
Distributive Justice	High	4.685	.025
	Low	1.909	.030
	No	1.301	.025
Interactional Justice	High	4.480	.028
	Low	1.909	.030
	No	1.301	.025
Procedural Justice	High	4.563	.026
	Low	1.494	.035
	No	1.301	.025

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

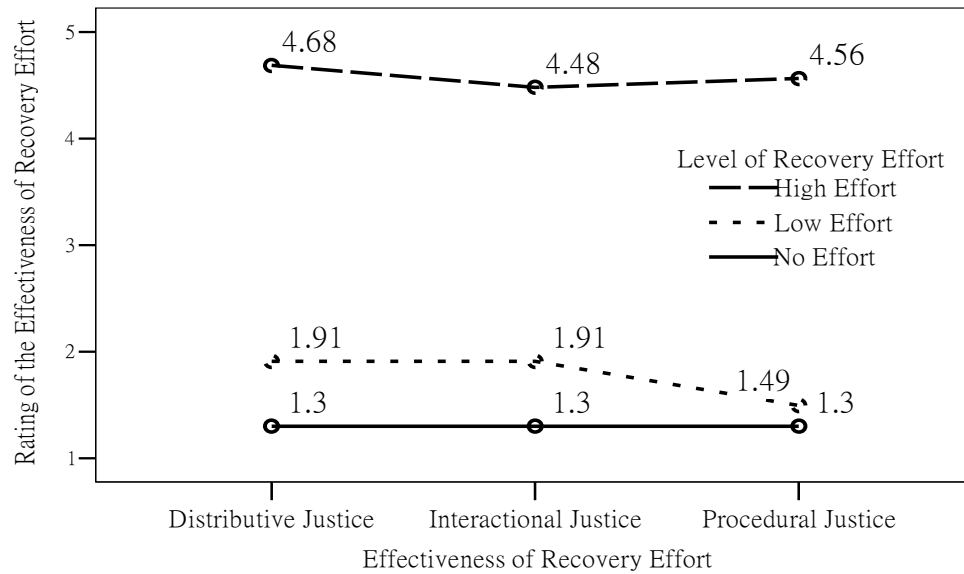


Figure 5 Interaction effects of the effectiveness of recovery effort and the level of recovery effort for system failures

The results revealed significant interaction when comparing high effort to no effort for interactional justice compared to procedural justice, $F_{1, 351} = 6.73$, $p < 0.05$, $r = 0.14$. Similar significant interaction was noted when distributional justice was compared to procedural justice, $F_{1, 351} = 16.80$, $p < 0.001$, $r = 0.21$ as presented in Table 33. The last added significant interaction when comparing high effort to no effort was noted between distributive justice and interactional justice, $F_{1, 351} = 50.06$, $p < 0.001$, $r = 0.35$ as presented in Table 34. By looking at the interaction graph of the first interaction showed that high effort compared to no effect had significantly larger difference for interactional justice than for procedural justice as presented in Table 36 and Figure 6.

Table 36 *Mean of Interaction of Interactional Justice versus Procedural Justice, High Effort versus No Effort for System Failures*

Recovery Effort	Level of Recovery Effort	Mean*	Std. Error
Interactional Justice	High	4.563	.026
	No	1.301	.025
Procedural Justice	High	4.480	.028
	No	1.301	.025

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

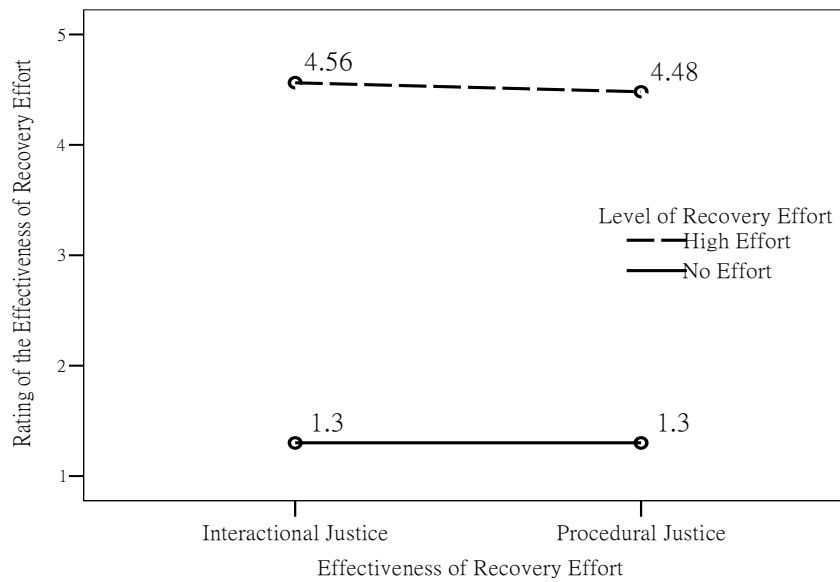


Figure 6 Interaction effects of interactional justice vs. procedural justice, high effort vs. no effort for system failures

The second test of interaction showed that high effort compared to no effort scores had significantly larger difference for distributive justice than for procedural justice as presented in Table 37 and Figure 7.

Table 37 *Mean of Interaction of Distributive Justice versus Procedural Justice, High Effort versus No Effort for System Failures*

Recovery Effort	Level of Recovery Effort	Mean*	Std. Error
Distributive Justice	High	4.685	.025
	No	1.301	.025
Procedural Justice	High	4.563	.026
	No	1.301	.025

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

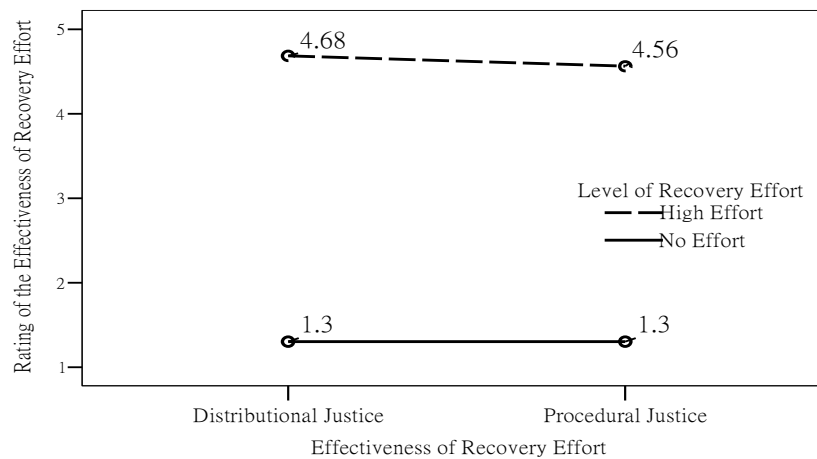


Figure 7 Interaction effects of distributive justice vs. procedural, high effort vs. no effort for system failures

In order to study the additional interaction between distributive justice and interactional justice when comparing high effort to no effort, the last added interaction study was performed and showed that high effort compared to no effort had significantly larger difference for distributive justice than for interactional justice as presented in Table 38 and Figure 8.

Table 38 *Mean of Interaction of Distributive Justice versus Interactional Justice, High Effort versus No Effort for System Failures*

Recovery Effort	Level of Recovery Effort	Mean*	Std. Error
Distributive Justice	High	4.685	.025
	No	1.301	.025
Interactional Justice	High	4.480	.028
	No	1.301	.025

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

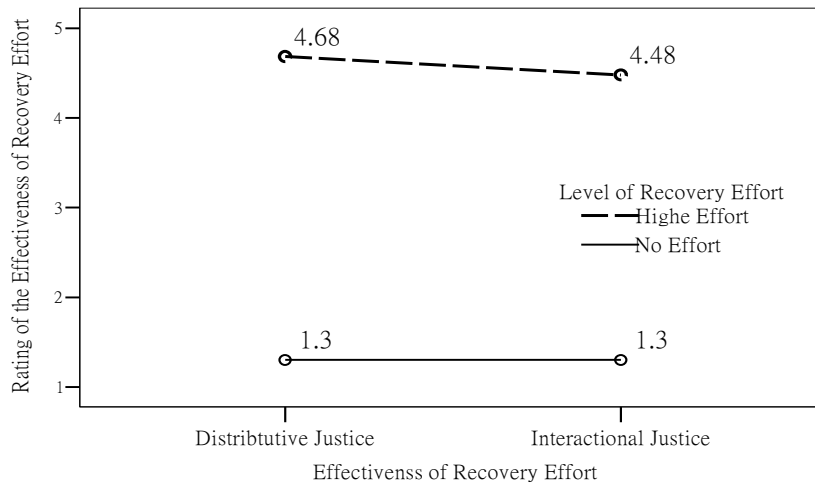


Figure 8 Interaction effects of distributive justice vs. interactional justice, high effort vs. no effort for system failures

The results also revealed significant interaction when comparing low effort to no effort for interactional justice compared to procedural justice ($F_{1, 351} = 91.84$, $p < 0.001$, $r = 0.46$). Similarly, for distributive justice compared to procedural justice ($F_{1, 351} = 95.13$, $p < 0.001$, $r = 0.46$) also showed significant interaction as presented in Table 33. However, the last interaction was not significant differences when comparing low effort to no effort for distributive justice compared to interactional justice ($p > 0.05$).

By looking at the interaction graph of the first interaction effect, the results showed that low effort compared to no effort had significantly larger difference for interactional justice than for procedural justice as presented in Table 39 and Figure 9.

Table 39 Mean of Interaction of Interactional Justice versus Procedural Justice, Low Effort versus No Effort for System Failures

Recovery Effort	Level of Recovery Effort	Mean	Std. Error
Interactional Justice	Low	1.909	.030
	No	1.301	.025
Procedural Justice	Low	1.494	.035
	No	1.301	.025

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

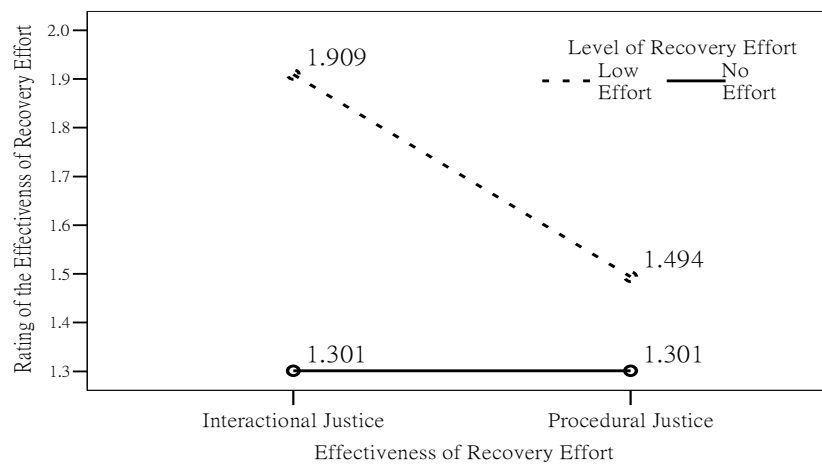


Figure 9 Interaction effects of interactional justice vs. procedural justice, low effort vs. no effort for system failures

The second interaction effect showed that low effort compared to no effort had significantly larger difference for distributive justice than for procedural justice as presented in Table 40 and Figure 10. However, the last interaction effect was not significant and showed that low effort scores were almost the same for distributive justice as for interactional justice as presented in Table 41 and Figure 11.

Table 40 *Mean of Interaction of Distributive Justice versus Procedural Justice, Low Effort versus No Effort for System Failures*

Recovery Effort	Level of Recovery Effort	Mean	Std. Error
Distributive Justice	Low	1.909	.030
	No	1.301	.025
Procedural Justice	Low	1.494	.035
	No	1.301	.025

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

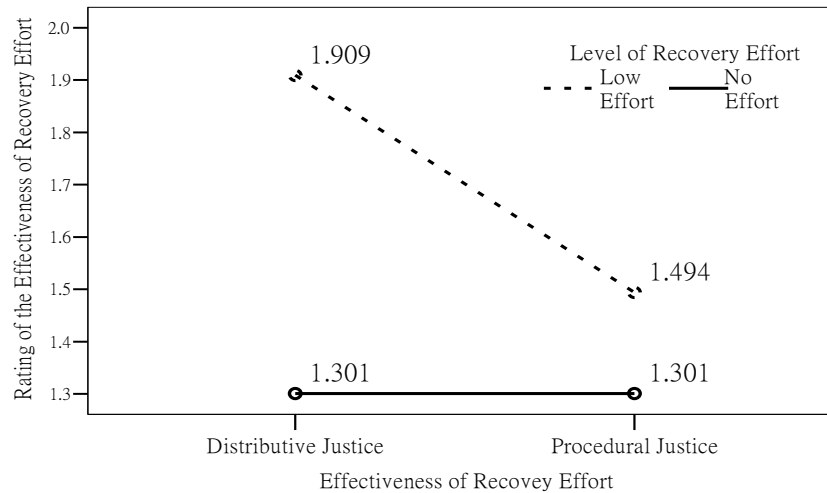


Figure 10 Interaction effects of distributive justice vs. procedural justice, low effort vs. no effort for system failures

Table 41 *Mean of Interaction of Distributive Justice versus Interactional Justice, Low Effort versus No Effort for System Failures*

Recovery Effort	Level of Recovery Effort	Mean	Std. Error
Distributive Justice	Low	1.909	.030
	No	1.301	.025
Interactional Justice	Low	1.909	.030
	No	1.301	.025

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

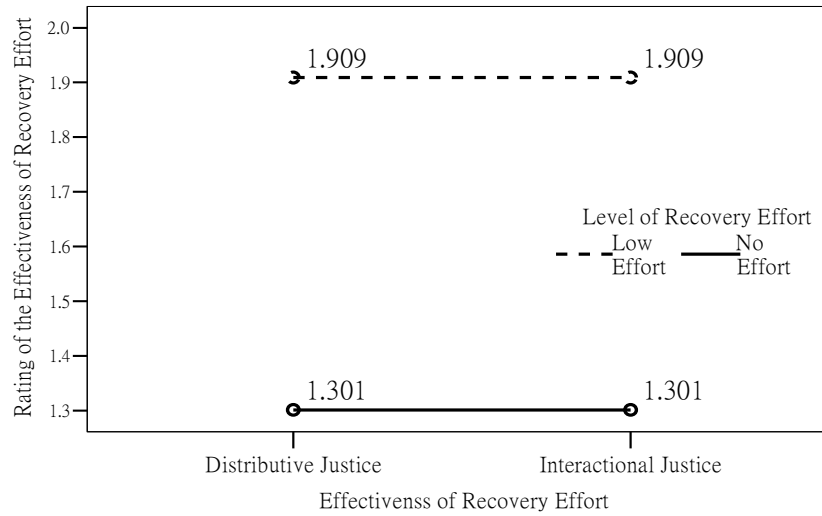


Figure 11 Interaction effects of distributive justice vs. interactional justice, low effort vs. no effort for system failures

In terms of system failures, all the main effects and interaction effects were significant among the effectiveness recovery effort and the level of recovery effort. The results of the main effects among the effectiveness of recovery effort when comparing to procedural justice, showed that distributive justice had a larger effect than interactional justice. When comparing to interactional justice, procedural justice had a larger effect

than distributive justice. The results of main effects among the level of recovery effort showed that when comparing no effort with high effort, high effort had a larger effect than low effort.

The interaction effects were all significant when comparing high effort to no effort for distributive justice compared to procedural justice; interactional justice compared to procedural justice; and distributive justice compared to interactional justice. The results of the interaction effects showed that when comparing high effort to no effort, interactional justice had a larger effect than procedural justice; distributive justice had a larger effect than procedural justice and distributive justice had a larger effect than interactional justice.

The interaction effects were also significant when comparing low effort to no effort for distributive justice compared to procedural justice. Similarly, interactional justice compared to procedural justice also showed significance. However, distributive justice compared to interactional justice had not a significant interaction effect. Additionally, the results showed that when comparing low effort to no effort, the interactional justice had a larger effect than procedural justice, and distributive justice had a larger effect than procedural justice. However, the interaction effects of distributive justice had almost the same effect as interactional justice when comparing low effort to no effort for system failures.

Overall, there was a significant difference in the effectiveness of recovery effort among distributive justice, interactional justice and procedural justice. Therefore, H2a “There is no difference in the effectiveness of recovery effort among distributional justice, procedural justice, and interactional justice for system failures in casual dining

restaurants in the U.S.” was rejected.

H2b. There is no difference in the effectiveness of recovery effort among distributive justice (DJ), interactional justice (IJ) and procedural justice (PJ) for personnel failures in casual dining restaurants in the U.S.

Personnel Failures

The assumption of sphericity using Mauchly's test was investigated to test the hypothesis that the variances of the differences between conditions are equal. The result showed that the main effects of the recovery effort (distributive justice, interactional justice, and procedural justice) had been violated, $\chi^2 (2) = 8.97, p < 0.01$. The interaction effects of recovery effort and the level of recovery effort, $\chi^2 (9) = 338.10, p < 0.001$ had also violated the assumption. However, the main effect of the level of recovery effort was not significant and met the assumption of sphericity, $\chi^2 (2) = 5.10, p > 0.05$. Therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\epsilon = 0.98$ for the main effect of the recovery effort and $\epsilon = 0.72$ for the interaction effects of recovery effort and the level of recovery effort) as presented in Table 42.

Table 42 *Mauchly's Test of Sphericity of Recovery Effort for Personnel Failures*

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.*	Greenhouse-Geisser	Epsilon	
						Huynh-Feldt	Lower-bound
Recovery Effort	.975	8.966	2	.011	.975	.981	.500
Level of Recovery Effort	.986	5.100	2	.078	.986	.991	.500
Effort *Level	.380	338.098	9	.000	.715	.721	.250

*Significance at $p < 0.001$

All the main effects showed significance at $p < 0.001$ for the effectiveness of recovery effort in terms of personnel failures as presented in Table 43. The results of pairwise comparisons for the main effect of the recovery effort and the level of recovery effort for personnel failures were corrected using Bonferroni adjustment. The significant main effect of the recovery effort and the level of recovery effort for personnel failures showed a significant difference at $p < 0.001$ between distributional justice and procedural justice, as well as interactional justice and procedural justice highlighting the importance of controlling the error rate by using a Bonferroni correction. The results were presented in Table 44 and Table 45.

Table 43 *Tests of Within-Subjects Effects of Recovery Effort for Personnel Failures*

Source		Type III Sum of Squares	df	Mean Square	F	Sig.*
Recovery Effort	Sphericity Assumed	33.358	2	16.679	164.197	.000
	Greenhouse-Geisser	33.358	1.951	17.101	164.197	.000
	Huynh-Feldt	33.358	1.961	17.007	164.197	.000
	Lower-bound	33.358	1.000	33.358	164.197	.000
Error(Effort)	Sphericity Assumed	71.309	702	.102		
	Greenhouse-Geisser	71.309	684.683	.104		
	Huynh-Feldt	71.309	688.460	.104		
	Lower-bound	71.309	351.000	.203		
Level of Recovery Effort	Sphericity Assumed	7626.263	2	3813.132	8478.007	.000
	Greenhouse-Geisser	7626.263	1.971	3868.287	8478.007	.000
	Huynh-Feldt	7626.263	1.983	3846.719	8478.007	.000
	Lower-bound	7626.263	1.000	7626.263	8478.007	.000
Error (Level)	Sphericity Assumed	315.737	702	.450		
	Greenhouse-Geisser	315.737	691.991	.456		
	Huynh-Feldt	315.737	695.871	.454		
	Lower-bound	315.737	351.000	.900		
Effort * Level	Sphericity Assumed	33.328	4	8.332	65.717	.000
	Greenhouse-Geisser	33.328	2.860	11.655	65.717	.000
	Huynh-Feldt	33.328	2.886	11.550	65.717	.000
	Lower-bound	33.328	1.000	33.328	65.717	.000
Error (Effort*Level)	Sphericity Assumed	178.006	1404	.127		
	Greenhouse-Geisser	178.006	1003.711	.177		
	Huynh-Feldt	178.006	1012.822	.176		
	Lower-bound	178.006	351.000	.507		

*Significance at $p < 0.001$

Table 44 *Pairwise Comparisons of the Recovery Effort for Personnel Failures*

(I) Recover Effort	(J) Recovery Effort	Mean Difference		
		(I-J)	Std. Error	Sig. ^a
Distributive Justice	Interactional Justice	.071*	.013	.000
	Procedural Justice	.244*	.014	.000
Interactional Justice	Distributive Justice	-.071*	.013	.000
	Procedural Justice	.173*	.015	.000
Procedural Justice	Distributive Justice	-.244*	.014	.000
	Interactional Justice	-.173*	.015	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Table 45 *Pairwise Comparisons of the Level of Recovery Effort for Personnel Failures*

(I) Level of Recovery Effort	(J) Level of Recovery Effort	Mean Difference		
		(I-J)	Std. Error	Sig. ^a
High	Low	3.121*	.028	.000
	No	3.438*	.031	.000
Low	High	-3.121*	.028	.000
	No	.317*	.029	.000
No	High	-3.438*	.031	.000
	Low	-.317*	.029	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

There was a significant main effect of the effectiveness of recovery effort, $F_{1.95, 684.68} = 164.20$, $p < 0.001$ as presented in Table 43. Tests of within-subjects simple contrasts revealed that the difference between distributive justice and procedural justice had a larger effect, $F_{1, 351} = 297.78$, $p < 0.001$, $r = 0.68$ than the difference between interactional justice and procedural justice, $F_{1, 351} = 140.39$, $p < 0.001$, $r = 0.53$. There was also a significant main effect of the level of recovery effort, $F_{2, 702} = 8478.01$, $p < 0.001$ as presented in Table 43. Tests of within-subjects simple contrasts revealed that the high

effort, $F_{1, 351} = 12473.19$, $p < 0.001$, $r = 0.99$ and the low effort, $F_{1, 351} = 120.57$, $p < 0.001$, $r = 0.51$ were both significantly higher than no effort as presented in Table 46.

In order to study the difference between distributive justice and interactional justice, tests of within-subjects repeated contrasts was performed and showed that the significant differences existed between distributive justice and interactional justice, $F_{1, 351} = 30.99$, $p < 0.001$, $r = 0.28$ when compared to the difference between interactional justice and procedural justice, $F_{1, 351} = 140.39$, $p < 0.001$, $r = 0.53$. There was also a significant main effect of the level of recovery effort, $F_{2, 702} = 8478.01$, $p < 0.001$. Tests of within-subjects repeated contrasts showed that significant differences existed between high effort and no effort, for larger effect, $F_{1, 351} = 12473.19$, $p < 0.001$, $r = 0.99$ than the differences between low effort and no effort, $F_{1, 351} = 120.57$, $p < 0.001$, $r = 0.51$. The results were presented in Table 47.

Table 46 *Tests of Within-Subjects Simple Contrast for Personnel Failures*

Source	Recovery Effort ^a	Level of Recovery Effort ^b	Type III Sum of Squares	df	Mean Square	F	Sig.*	Effect Size
Recovery Effort	DJ vs. PJ		21.011	1	21.011	297.782	.000	0.68
	IJ vs. PJ		10.571	1	10.571	140.392	.000	0.53
Error(Effort)	DJ vs. PJ		24.766	351	.071			
	IJ vs. PJ		26.429	351	.075			
Level of Recovery Effort		High vs. No	4161.667	1	4161.667	12473.189	.000	0.99
		Low vs. No	35.425	1	35.425	120.565	.000	0.51
Error(Level)		High vs. No	117.111	351	.334			
		Low vs. No	103.131	351	.294			
Effort * Level ^c	DJ vs. PJ	High vs. No	32.526	1	32.526	101.503	.000	0.47
		Low vs. No	64.776	1	64.776	159.862	.000	0.56
	IJ vs. PJ	High vs. No	.821	1	.821	2.056	.153	
		Low vs. No	78.284	1	78.284	196.668	.000	0.60
Error (Effort*Level)	DJ vs. PJ	High vs. No	112.474	351	.320			
		Low vs. No	142.224	351	.405			
	IJ vs. PJ	High vs. No	140.179	351	.399			
		Low vs. No	139.716	351	.398			

*Significance at $p < 0.001$

a "Recovery Effort" indicates distributive justice (DJ), interactional justice (IJ), and procedural justice (PJ).

b "Level of Recovery Effort" indicates high effort (High), low effort (Low), and no effort (No).

c "Effort*Level" indicates the interaction effect between recovery effort and the level of recovery effort

Table 47 *Tests of Within-Subjects Repeated Contrast for Personnel Failures*

Source	Recovery Effort ^a	Level of Recovery Effort ^b	Type III Sum of Squares	df	Mean Square	F	Sig.*	Effect Size
Recovery Effort	DJ vs. IJ		1.776	1	1.776	30.986	.000	0.28
	IJ vs. PJ		10.571	1	10.571	140.392	.000	0.53
Error(Effort)	DJ vs. IJ		20.113	351	.057			
	IJ vs. PJ		26.429	351	.075			
Level of Recovery Effort		High vs. No	4161.667	1	4161.667	12473.189	.000	0.99
		Low vs. No	35.425	1	35.425	120.565	.000	0.51
Error(Level)		High vs. No	117.111	351	.334			
		Low vs. No	103.131	351	.294			
Effort * Level ^c	DJ vs. IJ	High vs. No	23.011	1	23.011	85.031	.000	0.44
		Low vs. No	.639	1	.639	1.896	.169	
	IJ vs. PJ	High vs. No	.821	1	.821	2.056	.153	
		Low vs. No	78.284	1	78.284	196.668	.000	0.60
Error (Effort*Level)	DJ vs. IJ	High vs. No	94.989	351	.271			
		Low vs. No	118.361	351	.337			
	IJ vs. PJ	High vs. No	140.179	351	.399			
		Low vs. No	139.716	351	.398			

*Significance at $p < 0.001$

a "Recovery Effort" indicates distributive justice (DJ), interactional justice (IJ), and procedural justice (PJ).

b "Level of Recovery Effort" indicates high effort (High), low effort (Low), and no effort (No).

c "Effort*Level" indicates the interaction effect between recovery effort and the level of recovery effort

With respect to the interaction effects, there was also a significant interaction effect between the recovery effort and the level of recovery effort, $F_{2,86, 1003.71} = 65.72, p < 0.001$ as presented in Table 43. This indicated that the recovery effort had different effects on participants' perception depending on which level of recovery effort was used as presented in Table 48 and in Figure 12.

To break down this interaction, tests of within-subjects contrasts were performed comparing all the recovery efforts with their baseline (procedural justice); and also comparing all the level of recovery efforts with their baseline (no effort) as presented in Tables from 49 to 53 and Figures from 13 to 17. An additional interaction comparison between distributive justice and interactional justice was also performed and were presented in Table 54 and Figure 18.

Table 48 *Mean of Interaction Between Recovery Effort and Level of Recovery Effort for Personnel Failures*

Recovery Effort	Level of Recovery Effort	Mean*	Std. Error
Distributive Justice	High	4.810	.021
	Low	1.631	.029
	No	1.185	.023
Interactional Justice	High	4.554	.027
	Low	1.673	.028
	No	1.185	.023
Procedural Justice	High	4.506	.028
	Low	1.202	.022
	No	1.185	.023

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

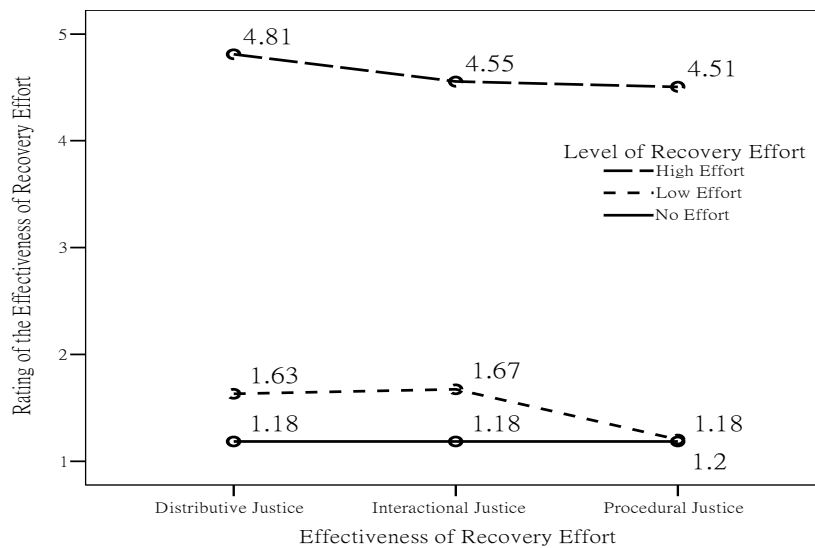


Figure 12 Interaction effects of recovery effort and level of recovery effort for personnel failures

The first interaction results revealed significant interaction when comparing high effort to no effort for distributive justice compared to procedural justice, $F_{1, 351} = 101.50$, $p < 0.001$, $r = 0.47$. By looking at the interaction graph, the effect showed that high effort compared to no effort had significantly larger differences for distributive justice than for procedural justice as showed in Table 49 and Figure 13.

Table 49 *Mean of Interaction of Distributive Justice versus Procedural Justice and High Effort versus No Effort for Personnel Failures*

Recovery Effort	Level of Recovery Effort	Mean	Std. Error
Distributive Justice	High	4.810	.021
	No	1.185	.023
Procedural Justice	High	4.506	.028
	No	1.185	.023

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

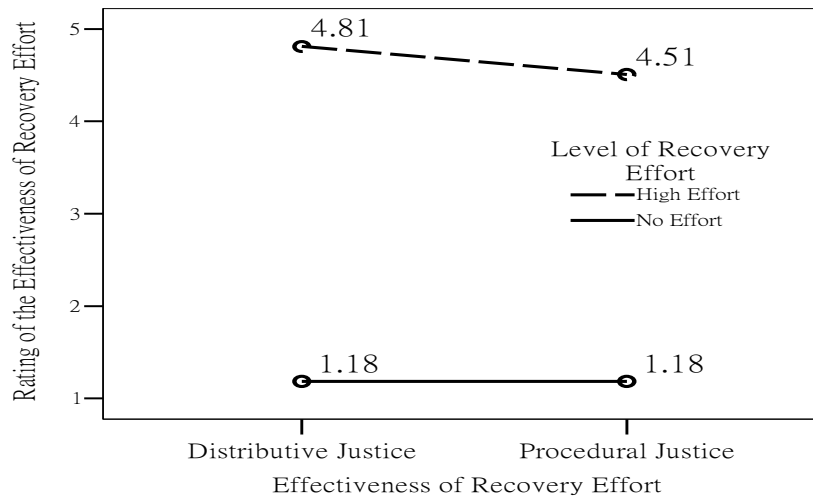


Figure 13 Interaction effects of distributive justice versus procedural justice and high effort versus no effort for personnel failures

The second interaction, when comparing high effort to no effort for interactional justice compared to procedural justice, however, was not a significant, $F_{1, 351} = 2.06$, $p > 0.05$, $r = 0.01$. By looking at the interaction graph, it can be seen that the same effect existed between interaction justice and procedural justice as showed in Table 50 and Figure 14.

Table 50 *Mean of Interaction of Interactional Justice versus Procedural Justice and High Effort versus No Effort for Personnel Failures*

Recovery Effort	Level of Recovery Effort	Mean	Std. Error
Interactional Justice	High	4.554	.027
	No	1.185	.023
Procedural Justice	High	4.506	.028
	No	1.185	.023

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

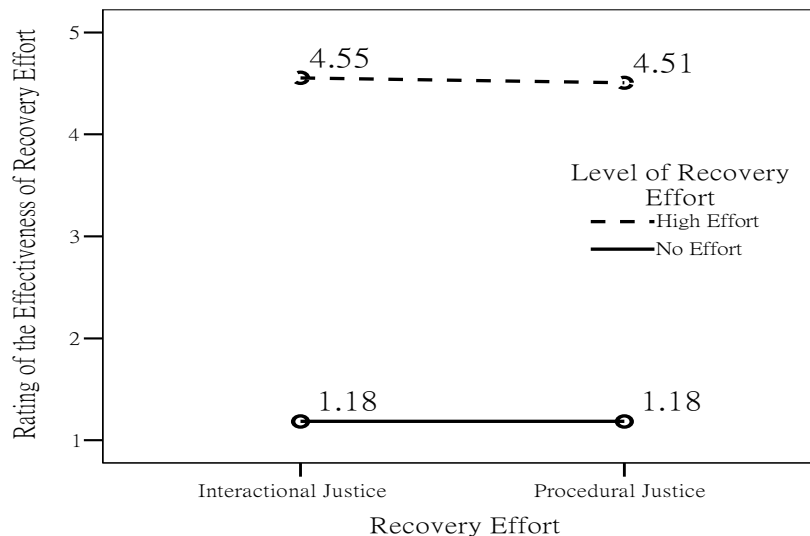


Figure 14 Interaction effects of interactional justice versus procedural justice and high effort versus no effort for personnel failures

In order to study the additional interaction effect between distributive justice and interactional justice when comparing high effort to no effort, the last interaction effect was studied and showed that high effort compared to no effort had not a significantly difference between distributive justice and interactional justice as showed in Table 51 and Figure 15.

Table 51 *Mean of Interaction of Distributive Justice versus Interactional Justice and High Effort versus No Effort for Personnel Failures*

Recovery Effort	Level of Recovery Effort	Mean	Std. Error
Distributive Justice	High	4.810	.021
	No	1.185	.023
Interactional Justice	High	4.554	.027
	No	1.185	.023

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

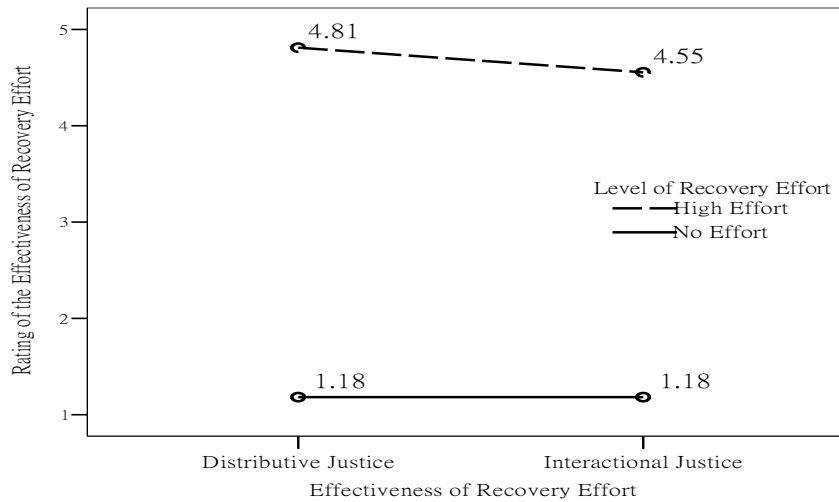


Figure 15 Interaction effects of distributive justice versus interactional justice and high effort versus no effort for personnel failures

The first interaction results also revealed significant interaction effect when comparing low effort to no effort for distributive justice and procedural justice, $F_{1, 351} = 159.86$, $p < 0.001$, $r = 0.21$. By looking at the interaction graph, the effect showed that low effort compared to no effort had significantly larger differences for distributive justice than for procedural justice as showed in Table 52 and Figure 16.

Table 52 *Mean of Interaction of Distributive Justice versus Procedural Justice and Low Effort versus No Effort for Personnel Failures*

Recovery Effort	Level of Recovery Effort	Mean	Std. Error
Distributive Justice	Low	1.631	.029
	No	1.185	.023
Procedural Justice	Low	1.202	.022
	No	1.185	.023

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

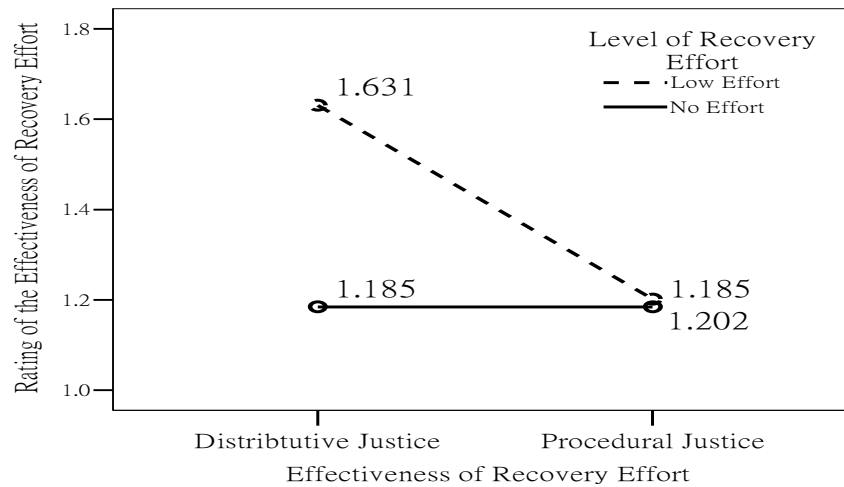


Figure 16 Interaction effects of distributive justice versus procedural justice and low effort versus no effort for personnel failures

The second interaction results revealed significant interaction when comparing low effort to no effort for interactional justice and procedural justice, $F_{1, 351} = 196.67$, $p < 0.001$, $r = 0.60$. By looking at the interaction graph, the effect showed that low effort compared to no effort had significantly larger differences for interactional justice than for procedural justice as showed in Table 53 and Figure 17.

Table 53 *Mean of Interaction of Interactional Justice versus Procedural Justice and Low Effort versus No Effort for Personnel Failures*

Recovery Effort	Level of Recovery Effort	Mean	Std. Error
Interactional Justice	Low	1.673	.028
	No	1.185	.023
Procedural Justice	Low	1.202	.022
	No	1.185	.023

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

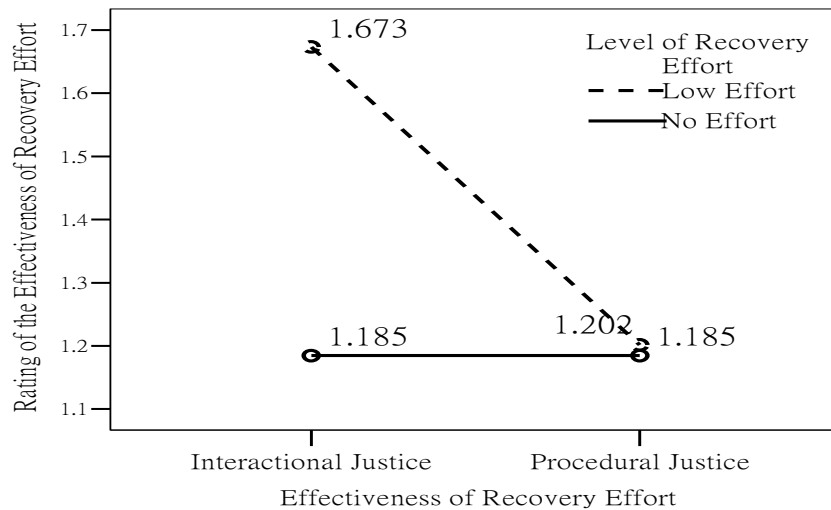


Figure 17 Interaction effects of interactional justice versus procedural justice and low effort versus no effort for personnel failures

In order to study the additional interaction effects between distributive justice and interactional justice when comparing low effort to no effort, the last interaction effect was performed and showed that low effort compared to no effort had not a significantly difference between distributive justice and interactional justice as showed in Table 54 and Figure 18.

Table 54 *Mean of Distributive Justice versus Interactional Justice and Low Effort versus No Effort for Personnel Failures*

Recovery Effort	Level of Recovery Effort	Mean	Std. Error
Distributive Justice	Low	1.631	.029
	No	1.185	.023
Interactional Justice	Low	1.673	.028
	No	1.185	.023

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

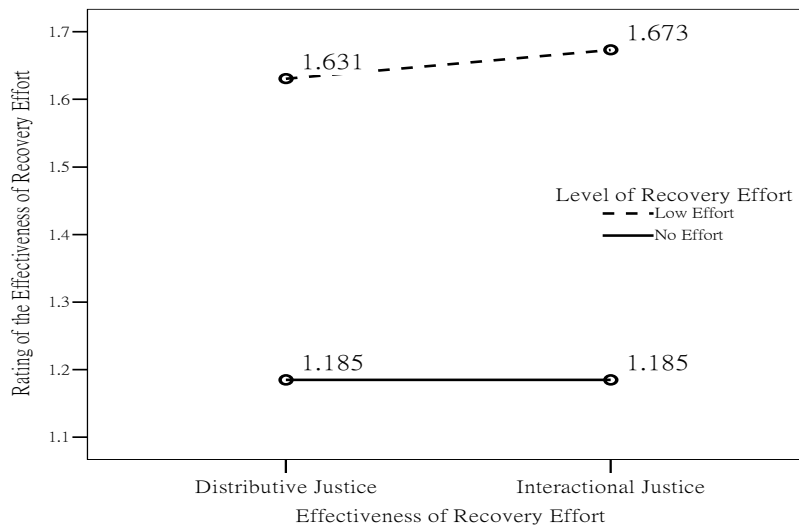


Figure 18 Interaction effects of distributive justice versus interactional justice and low effort versus no effort for personnel failures

In terms of personnel failures, all the main effects and some interaction effects were significant difference among the effectiveness recovery effort and the level of recovery effort. The results of main effects among the effectiveness of recovery effort showed that when comparing procedural justice, distributive justice had a larger effect than interactional justice; and when comparing interactional justice, procedural justice had a larger effect than distributive justice. The results of main effects among the level of recovery effort showed that when comparing no effort, high effort had a larger effect than low effort.

The interaction effects were significant when comparing high effort to no effort for distributive justice compared to procedural justice only. The interaction effects when comparing high effort to no effort showed that interactional justice neither had a significant difference with procedural justice; nor had a significant difference with distributive justice. Lastly, the interaction effects were also significant when comparing low effort to no effort for distributive justice compared to procedural justice. Similarly, for interactional justice compared to procedural justice. However, there was not an interaction effect for distributive justice compared to interactional justice. Furthermore, the results showed that when comparing low effort to no effort, the interactional justice had a larger effect than procedural justice, and distributive justice had a larger effect than procedural justice.

Overall, there was a significant difference in the effectiveness of recovery effort among distributive justice, interactional justice and procedural justice. Therefore, H2b “There is no difference in the effectiveness of recovery effort among distributional justice, procedural justice, and interactional justice for personnel failures in casual dining

restaurants in the U.S.” was rejected.

Failure Severity on Recovery Satisfaction

In order to assess whether the failure severity has confounding effect on recovery satisfaction, the third hypothesis was tested to identify the confounding effect of perceived severity of the service failure in terms of system failures and personnel failures.

H3a. There is no confounding effect of the severity of failure on recovery satisfaction for system failures in casual dining restaurants in the U.S.

H3b. There is no confounding effect of the severity of failure on recovery satisfaction for personnel failures in casual dining restaurants in the U.S.

System Failures

To evaluate the confounding effect of the failure severity on recovery satisfaction for system failures, repeated-measures with analysis of covariance (ANCOVA) was employed. The first test was the assumption of sphericity, equality of variances of the differences between treatment levels, Mauchly's test was applied and indicated that the assumption of sphericity had been violated, $\chi^2 (2) = 174.37, p < 0.001$. Therefore, degree of freedom was corrected using Greenhouse-Geisser estimates of sphericity, $\epsilon = 0.87$ for the effect of level of recovery satisfaction for system failures as presented in Table 55.

Table 55 *Mauchly's Test of Sphericity of Failure Severity Confounding Effect on Recovery Satisfaction for System Failures*

Within Subjects Effect	Mauchly's W	Approx. Chi- Square	df	Sig.*	Epsilon		
					Greenhouse- Geisser	Huynh- Feldt	Lower- bound
Level of Recovery Effort	.847	174.366	2	.000	.868	.870	.500

* Significance at $p < 0.05$

a "Level of Recovery Satisfaction" indicates recovery satisfaction with high or low level of recovery efforts and recovery satisfaction without a recovery effort (or called no effort).

The results of the ANOVA with conservative Greenhouse-Geisser corrected F-value indicated that the covariate, severity of system failures was not a significantly effect on recovery satisfaction, $F_{1.74, 1828.90} = 0.45$, $p > 0.05$ as showed in Table 56. Therefore, no further analysis needed to be reported.

Table 56 *Tests of Within-Subjects Effects of Failure Severity Confounding Effect on Recovery Satisfaction for System Failures*

Source		Type III Sum of Squares	df	Mean Square	F	Sig.*
Level ^a	Sphericity Assumed	159.335	2	79.667	328.204	.000
	Greenhouse-Geisser	159.335	1.735	91.825	328.204	.000
	Huynh-Feldt	159.335	1.739	91.600	328.204	.000
	Lower-bound	159.335	1.000	159.335	328.204	.000
Level * System Severity ^b	Sphericity Assumed	.217	2	.109	.447	.639
	Greenhouse-Geisser	.217	1.735	.125	.447	.611
	Huynh-Feldt	.217	1.739	.125	.447	.612
	Lower-bound	.217	1.000	.217	.447	.504
Error(Level)	Sphericity Assumed	511.691	2108	.243		
	Greenhouse-Geisser	511.691	1828.899	.280		
	Huynh-Feldt	511.691	1833.387	.279		
	Lower-bound	511.691	1054.000	.485		

* Significance at $p < 0.05$

a “Level of Recovery Satisfaction” indicates recovery satisfaction with high or low level of recovery efforts and recovery satisfaction without a recovery effort (or called no effort).

b “Level*System Severity” indicates the covariate effect of system severity on the level of recovery satisfaction.

The results showed that the covariate, severity of failure, was not a significant effect on recovery satisfaction for system failures. Therefore, H3a: “There is no confounding effect of the severity of failure on recovery satisfaction for system failures in casual dining restaurants in the U.S.” was failed to reject.

Personnel Failures

To evaluate the confounding effect of the failure severity on recovery satisfaction for personnel failures, repeated-measures with analysis of covariance (ANCOVA) was employed. The first test was the assumption of sphericity, equality of variances of the

differences between treatment levels, Mauchly's test was applied and indicated that the assumption of sphericity had been violated, $\chi^2 (2) = 141.81$, $p < 0.001$. Therefore, degree of freedom was corrected using Greenhouse-Geisser estimates of sphericity, $\epsilon = 0.89$ for the effect of level of recovery satisfaction for personnel failures as presented in Table 57

Table 57 *Mauchly's Test of Sphericity of Failure Severity Confounding Effect on Recovery Satisfaction for Personnel Failures*

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.*	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Level of Recovery Satisfaction ^a	.874	141.807	2	.000	.888	.890	.500

* Significance at $p < 0.05$

a "Level of Recovery Satisfaction" indicates recovery satisfaction with high or low level of recovery efforts and recovery satisfaction without a recovery effort (or called no effort).

The results of the ANOVA with conservative Greenhouse-Geisser corrected F-value indicated that the covariate, severity of personnel failures had a significantly effect on recovery satisfaction, $F_{1.78, 1872.12} = 8.35$, $p < 0.001$ as showed in Table 58.

Table 58 *Tests of Within-Subjects Effects of Failure Severity Confounding Effect on Recovery Satisfaction for Personnel Failures*

Source		Type III Sum of Squares	df	Mean Square	F	Sig.*
Level ^a	Sphericity Assumed	38.946	2	19.473	94.215	.000
	Greenhouse-Geisser	38.946	1.776	21.926	94.215	.000
	Huynh-Feldt	38.946	1.781	21.871	94.215	.000
	Lower-bound	38.946	1.000	38.946	94.215	.000
Level * Personnel Severity ^b	Sphericity Assumed	3.451	2	1.726	8.349	.000
	Greenhouse-Geisser	3.451	1.776	1.943	8.349	.000
	Huynh-Feldt	3.451	1.781	1.938	8.349	.000
	Lower-bound	3.451	1.000	3.451	8.349	.004
Error(Level)	Sphericity Assumed	435.692	2108	.207		
	Greenhouse-Geisser	435.692	1872.121	.233		
	Huynh-Feldt	435.692	1876.836	.232		
	Lower-bound	435.692	1054.000	.413		

* Significance at $p < 0.05$

a “Level of Recovery Satisfaction” indicates recovery satisfaction with high or low level of recovery efforts and recovery satisfaction without a recovery effort (or called no effort).

b “Level*Personnel Severity” indicates the covariate effect of Personnel severity on the level of recovery satisfaction.

The further result of the tests of within-subjects contrasts comparisons showed the covariate, severity of service failure, had a significant effect on recovery satisfaction when compared high effort of recovery satisfaction to no effort of recovery satisfaction, $F_{1, 1054} = 11.21$, $p < 0.05$, $r = 0.10$. However, the covariate, severity of service failure, was not a significant effect on recovery satisfaction when compared low effort of recovery satisfaction to no effort of recovery satisfaction, $F_{1, 1054} = 0.088$, $p > 0.05$, $r = 0.01$ personnel failures as showed in Table 59.

Table 59 *Tests of Within Subject Simple Contrast of Failure Severity Confounding Effect on Recovery Satisfaction for Personnel Failures*

Source	Level	Type III Sum of Squares	df	Mean Square	F	Sig.*
Level	Level 1 vs. Level 3	69.018	1	69.018	203.156	.000
	Level 2 vs. Level 3	2.478	1	2.478	7.282	.007
Level * Personnel Severity ^b	Level 1 vs. Level 3	3.808	1	3.808	11.210	.001
	Level 2 vs. Level 3	.300	1	.300	.881	.348
Error(Level)	Level 1 vs. Level 3	358.077	1054	.340		
	Level 2 vs. Level 3	358.655	1054	.340		

* Significance at $p < 0.05$

a "Level" indicates Level of Recovery Satisfaction.

"Level 1" indicates recovery satisfaction with high recovery effort;

"Level 2" indicates recovery satisfaction with low recovery effort; and

"Level 3" indicates recovery satisfaction without a recovery effort (or called no effort)

b "Level*Personnel Severity" indicates the covariate effect of personnel severity on the level of the recovery satisfaction.

The results showed that the covariate, severity of failure, had a significant effect on recovery satisfaction with a recovery effort for personnel failures when compared high effort of recovery satisfaction to no effort of recovery satisfaction. Therefore, H3b: "There is no confounding effect of the severity of failure on recovery satisfaction for personnel failures in casual dining restaurants in the U.S." was rejected.

In summary, the results showed that the covariate, severity of service failure had no confounding effect on recovery satisfaction for system failures. However, the covariate, severity of service failure had a confounding effect on recovery satisfaction when compared high effort of recovery satisfaction to no effort of recovery satisfaction.

Failure Severity on Recovery Effort

Except for evaluating the confounding effect of failure severity on recovery satisfaction, the fourth hypothesis was also tested to evaluate whether the failure severity had confounding effect on the effectiveness of recovery effort and the level of recovery effort for system failures and personnel failures.

H4a. There is no confounding effect of the severity of failure on the effectiveness of recovery effort among procedural justice (PJ), distributive justice (DJ) and interactional justice (IJ) for system failures in casual dining restaurants in the U.S.

System Failures

To evaluate the confounding effect of the failure severity on the effectiveness of recovery effort for system failures, repeated-measures with analysis of covariance (ANCOVA) was employed. The first test was the assumption of sphericity, equality of variances of the differences between treatment levels, Mauchly's test was applied and indicated that the assumption of sphericity had been violated for recovery effort, $\chi^2 (2) = 24.91$, $p < 0.001$, for the level of recovery effort, $\chi^2 (2) = 0.44$, $p < 0.001$, and for the interaction between recovery effort and the level of recovery effort $\chi^2 (9) = 463.47$, $p < 0.001$. Therefore, degree of freedom was corrected using Greenhouse-Geisser estimates of sphericity, $\varepsilon = 0.94$ for recovery effort, $\varepsilon = 0.95$ for the level of recovery effort, and $\varepsilon = 0.66$ for the interaction between recovery effort and the level of recovery effort in terms of system failures as showed in Table 60.

Table 60 *Mauchly's Test of Sphericity of Confounding Effect of Failure Severity on the Effectiveness of Recovery Effort for System Failures*

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig. *	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Effort ^a	.931	24.909	2	.000	.936	.943	.500
Level ^b	.943	20.436	2	.000	.946	.954	.500
Effort * Level ^c	.264	463.474	9	.000	.656	.663	.250

* Significance at $p < 0.05$.

a "Effort" indicates recovery effort, i.e. distributive justice, interactional justice, and procedural justice.

b "Level" indicates the level of recovery effort, i.e. high effort, low effort, and no effort.

c "Effort*Level" indicates interaction of recovery effort and the level of recovery effort.

The results of the ANOVA with conservative Greenhouse-Geisser corrected F-value indicated that the covariate, severity of system failures was not a significant effect on the recovery effort, $F_{1.87, 654.89} = 8.35$, $p > 0.05$; however, the covariate, severity of system failures was a significant effect on the level of recovery effort, $F_{1.89, 662.33} = 6.15$, $p < 0.05$ and the significant interaction effect between recovery effort and the level of recovery effort $F_{2.62, 918.08} = 3.03$, $p < 0.05$ as showed in Table 61.

Table 61 *Tests of Within-Subjects Effects Confounding Effect of Failure Severity on the Effectiveness of Recovery Effort for System Failures*

Source		Type III Sum of Squares	df	Mean Square	F	Sig.*
Effort ^a	Sphericity Assumed	1.738	2	.869	7.262	.001
	Greenhouse-Geisser	1.738	1.871	.929	7.262	.001
	Huynh-Feldt	1.738	1.886	.922	7.262	.001
	Lower-bound	1.738	1.000	1.738	7.262	.007
Effort * System Severity ^b	Sphericity Assumed	.533	2	.266	2.225	.109
	Greenhouse-Geisser	.533	1.871	.285	2.225	.112
	Huynh-Feldt	.533	1.886	.282	2.225	.112
	Lower-bound	.533	1.000	.533	2.225	.137
Error(Effort)	Sphericity Assumed	83.790	700	.120		
	Greenhouse-Geisser	83.790	654.889	.128		
	Huynh-Feldt	83.790	660.160	.127		
	Lower-bound	83.790	350.000	.239		
Level ^c	Sphericity Assumed	113.999	2	57.000	114.921	.000
	Greenhouse-Geisser	113.999	1.892	60.241	114.921	.000
	Huynh-Feldt	113.999	1.908	59.755	114.921	.000
	Lower-bound	113.999	1.000	113.999	114.921	.000
Level * System Severity ^d	Sphericity Assumed	6.098	2	3.049	6.147	.002
	Greenhouse-Geisser	6.098	1.892	3.222	6.147	.003
	Huynh-Feldt	6.098	1.908	3.196	6.147	.003
	Lower-bound	6.098	1.000	6.098	6.147	.014
Error(Level)	Sphericity Assumed	347.192	700	.496		
	Greenhouse-Geisser	347.192	662.331	.524		
	Huynh-Feldt	347.192	667.726	.520		
	Lower-bound	347.192	350.000	.992		
Effort * Level ^e	Sphericity Assumed	4.634	4	1.159	7.056	.000
	Greenhouse-Geisser	4.634	2.623	1.767	7.056	.000
	Huynh-Feldt	4.634	2.652	1.747	7.056	.000
	Lower-bound	4.634	1.000	4.634	7.056	.008
Effort * Level * System Severity ^f	Sphericity Assumed	1.987	4	.497	3.026	.017
	Greenhouse-Geisser	1.987	2.623	.758	3.026	.035
	Huynh-Feldt	1.987	2.652	.749	3.026	.035
	Lower-bound	1.987	1.000	1.987	3.026	.083
Error(Effort*Level)	Sphericity Assumed	229.862	1400	.164		
	Greenhouse-Geisser	229.862	918.081	.250		

Huynh-Feldt	229.862	928.284	.248
Lower-bound	229.862	350.000	.657

* Significance at $p < 0.05$.

a "Effort" indicates recovery effort, i.e. distributive justice, interactional justice, and procedural justice.

b "Effort* System Severity" indicates confounding effect on recovery effort.

c "Level" indicates the level of recovery effort, i.e. high effort, low effort, and no effort.

d "Level*System Severity" indicates confounding effect on the level of recovery effort.

e "Effort*Level" indicates interaction effect between recovery effort and the level of recovery effort.

f "Effort*Level*System Severity" indicates confounding effect on the interaction effect between recovery effort and the level of recovery effort.

The further result of the tests of within-subjects simple contrasts comparisons showed the covariate, severity of system failures had a significant confounding effect on the recovery effort when compared high effort with no effort, $F_{1, 350} = 7.46$, $p < 0.05$, $r = 0.14$. The covariate, severity of system failures also had a significant confounding effect on the level of recovery effort when compared low effort with no effort, $F_{1, 350} = 8.96$, $p < 0.05$, $r = 0.16$. The covariate, severity of system failures also had a significant confounding effect on the interaction effect between distributive justice and procedural justice when compared low effort to no effort, $F_{1, 350} = 6.54$, $p < 0.05$, $r = 0.14$ as showed in Table 62.

Tests of within-subjects repeated contrasts for distributive justice and interactional justice comparison showed the covariate, severity of system failures was no a significant confounding effect on the effectiveness of recovery effort. Therefore, no further interpretation is needed as showed in Table 63.

Table 62 *Tests of Within-Subject Simple Contrasts Confounding Effect of Failure Severity on the Effectiveness of Recovery Effort for System Failures*

Source	Effort	Level	Type III Sum of Squares	df	Mean Square	F	Sig.*
Effort ^a	DJ vs. PJ		1.158	1	1.158	11.908	.001
	IJ vs. PJ		.317	1	.317	3.911	.049
Effort *	DJ vs. PJ		.354	1	.354	3.637	.057
System Severity ^b	IJ vs. PJ		.070	1	.070	.860	.354
Error(Effort)	DJ vs. PJ		34.037	350	.097		
	IJ vs. PJ		28.387	350	.081		
Level ^c		High Effort vs. No Effort	52.959	1	52.959	142.565	.000
		Low Effort vs. No Effort	.269	1	.269	.729	.394
Level *		High Effort vs. No Effort	2.771	1	2.771	7.459	.007
System Severity ^d		Low Effort vs. No Effort	3.304	1	3.304	8.961	.003
Error(level)		High Effort vs. No Effort	130.016	350	.371		
		Low Effort vs. No Effort	129.040	350	.369		
Effort * Level ^e	DJ vs. PJ	High Effort vs. No Effort	.009	1	.009	.029	.866
		Low Effort vs. No Effort	9.820	1	9.820	15.670	.000
	IJ vs. PJ	High Effort vs. No Effort	.922	1	.922	2.600	.108
		Low Effort vs. No Effort	7.021	1	7.021	10.726	.001
Effort * Level *	DJ vs. PJ	High Effort vs. No Effort	.058	1	.058	.185	.667
System Severity ^f		Low Effort vs. No Effort	4.100	1	4.100	6.542	.011
	IJ vs. PJ	High Effort vs. No Effort	.553	1	.553	1.559	.213
		Low Effort vs. No Effort	2.358	1	2.358	3.603	.059
Error(Effort*Level)	DJ vs. PJ	High Effort vs. No Effort	109.689	350	.313		
		Low Effort vs. No Effort	219.343	350	.627		
	IJ vs. PJ	High Effort vs. No Effort	124.058	350	.354		
		Low Effort vs. No Effort	229.085	350	.655		

* Significance at $p < 0.05$.

a "Effort" indicates recovery effort, i.e. distributive justice, interactional justice, and procedural justice.

b "Effort* System Severity" indicates confounding effect on recovery effort.

c "Level" indicates the level of recovery effort, i.e. high effort, low effort, and no effort.

d "Level*System Severity" indicates confounding effect on the level of recovery effort.

e "Effort*Level" indicates interaction effect between recovery effort and the level of recovery effort.

f "Effort*Level*System Severity" indicates confounding effect on the interaction effect between recovery effort and the level of recovery effort.

Table 63 *Tests of Within-Subject Repeated Contrasts Confounding Effect of Failure Severity on the Effectiveness of Recovery Effort for System Failures*

Source	Effort	Level	Type III Sum of Squares	df	Mean Square	F	Sig.*
Effort ^a	DJ vs. IJ		.263	1	.263	4.310	.039
	IJ vs. PJ		.317	1	.317	3.911	.049
Effort *	DJ vs. IJ		.109	1	.109	1.791	.182
System Severity ^b	IJ vs. PJ		.070	1	.070	.860	.354
Error(Effort)	DJ vs. IJ		21.365	350	.061		
	IJ vs. PJ		28.387	350	.081		
Level ^c		High Effort vs. No Effort	52.959	1	52.959	142.565	.000
		Low Effort vs. No Effort	.269	1	.269	.729	.394
Level *		High Effort vs. No Effort	2.771	1	2.771	7.459	.007
System Severity ^d		Low Effort vs. No Effort	3.304	1	3.304	8.961	.003
Error(Level)		High Effort vs. No Effort	130.016	350	.371		
		Low Effort vs. No Effort	129.040	350	.369		
Effort * Level ^e	DJ vs. IJ	High Effort vs. No Effort	1.112	1	1.112	3.779	.053
		Low Effort vs. No Effort	.234	1	.234	.527	.469
	IJ vs. PJ	High Effort vs. No Effort	.922	1	.922	2.600	.108
		Low Effort vs. No Effort	7.021	1	7.021	10.726	.001
Effort * Level *	DJ vs. IJ	High Effort vs. No Effort	.253	1	.253	.858	.355
System Severity ^f		Low Effort vs. No Effort	.239	1	.239	.538	.464
	IJ vs. PJ	High Effort vs. No Effort	.553	1	.553	1.559	.213
		Low Effort vs. No Effort	2.358	1	2.358	3.603	.059
Error(Effort*Level)	DJ vs. IJ	High Effort vs. No Effort	103.020	350	.294		
		Low Effort vs. No Effort	155.761	350	.445		
	IJ vs. PJ	High Effort vs. No Effort	124.058	350	.354		
		Low Effort vs. No Effort	229.085	350	.655		

* Significance at $p < 0.05$.

a "Effort" indicates recovery effort, i.e. distributive justice, interactional justice, and procedural justice.

b "Effort* System Severity" indicates confounding effect on recovery effort.

c "Level" indicates the level of recovery effort, i.e. high effort, low effort, and no effort.

d "Level*System Severity" indicates confounding effect on the level of recovery effort.

e "Effort*Level" indicates interaction effect between recovery effort and the level of recovery effort.

f "Effort*Level*System Severity" indicates confounding effect on the interaction effect between recovery effort and the level of recovery effort.

Overall, the covariate, severity of system failures had significant confounding effects on the level of recovery effort and had a significant confounding effect on the interaction effect between the recovery effort and the level of recovery effort. Therefore, H4a "There

is no confounding effect of the severity of failure on the effectiveness of recovery effort among procedural justice (PJ), distributive justice (DJ) and interactional justice (IJ) for system failures in casual dining restaurants in the U.S.” has been rejected.

H4b. There is no confounding effect of the severity of failure on the effectiveness of recovery effort among procedural justice (PJ), distributive justice (DJ) and interactional justice (IJ) for personnel failures in casual dining restaurants in the U.S.

Personnel Failures

To evaluate the confounding effect of the failure severity on the effectiveness of recovery effort for personnel failures, repeated-measures with analysis of covariance (ANCOVA) was employed. The first test was the assumption of sphericity, equality of variances of the differences between treatment levels, Mauchly’s test was applied and indicated that the assumption of sphericity of recovery effort had been violated, $\chi^2 (2) = 8.85$, $p < 0.05$; the assumption of sphericity of the level of recovery effort has met, $\chi^2 (2) = 4.57$, $p > 0.05$; and the assumption of sphericity of the interaction between the recovery effort and the level of recovery effort had been violated, $\chi^2 (2) = 336.17$, $p < 0.001$.

Therefore, degree of freedom of recovery effort was corrected using Greenhouse-Geisser estimates of sphericity, $\epsilon = 0.98$ for the effectiveness of recovery effort; $\epsilon = 0.72$ for the interaction between recovery effort and the level of recovery effort for personnel failures as showed in Table 64.

Table 64 *Mauchly's Test of Sphericity of Confounding Effect of Failure Severity on the Effectiveness of Recovery Effort for Personnel Failures*

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.*	Epsilon(a)		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Effort ^a	.975	8.848	2	.012	.976	.984	.500
Level ^b	.987	4.565	2	.102	.987	.996	.500
Effort *Level ^c	.381	336.171	9	.000	.715	.723	.250

* Significance at $p < 0.05$.

a "Effort" indicates recovery effort, i.e. distributive justice, interactional justice, and procedural justice.

b "Level" indicates the level of recovery effort, i.e. high effort, low effort, and no effort.

c "Effort*Level" indicates interaction of recovery effort and the level of recovery effort.

The results of the ANOVA with conservative Greenhouse-Geisser corrected F-value indicated that the covariate, severity of personnel failures was not a significant effect on the recovery effort, $F_{1.95, 682.91} = 1.90$, $p > 0.05$; the covariate, severity of personnel failures was also not a significant effect on the interaction between recovery effort and the level of recovery effort, $F_{2.86, 1000.54} = 2.08$, $p > 0.05$. However, the covariate, severity of personnel failures had a significant effect on the level of recovery effort, $F_{2, 700} = 1.3.99$, $p < 0.05$ as showed in Table 65.

Table 65 *Tests of Within-Subjects Effects Confounding Effect of Failure Severity on the Effectiveness of Recovery Effort for Personnel Failures*

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Effort ^a	Sphericity Assumed	1.278	2	.639	6.309	.002
	Greenhouse-Geisser	1.278	1.951	.655	6.309	.002
	Huynh-Feldt	1.278	1.968	.650	6.309	.002
	Lower-bound	1.278	1.000	1.278	6.309	.012
Effort * Personnel Severity ^b	Sphericity Assumed	.385	2	.192	1.898	.151
	Greenhouse-Geisser	.385	1.951	.197	1.898	.152
	Huynh-Feldt	.385	1.968	.195	1.898	.151
	Lower-bound	.385	1.000	.385	1.898	.169
Error(Effort)	Sphericity Assumed	70.924	700	.101		
	Greenhouse-Geisser	70.924	682.905	.104		
	Huynh-Feldt	70.924	688.646	.103		
	Lower-bound	70.924	350.000	.203		
Level ^c	Sphericity Assumed	19.242	2	9.621	22.183	.000
	Greenhouse-Geisser	19.242	1.974	9.746	22.183	.000
	Huynh-Feldt	19.242	1.991	9.664	22.183	.000
	Lower-bound	19.242	1.000	19.242	22.183	.000
Level * Personnel Severity ^d	Sphericity Assumed	12.136	2	6.068	13.990	.000
	Greenhouse-Geisser	12.136	1.974	6.147	13.990	.000
	Huynh-Feldt	12.136	1.991	6.095	13.990	.000
	Lower-bound	12.136	1.000	12.136	13.990	.000
Error(Level)	Sphericity Assumed	303.601	700	.434		
	Greenhouse-Geisser	303.601	691.020	.439		
	Huynh-Feldt	303.601	696.900	.436		
	Lower-bound	303.601	350.000	.867		
Effort * Level ^e	Sphericity Assumed	1.645	4	.411	3.253	.011
	Greenhouse-Geisser	1.645	2.859	.575	3.253	.023
	Huynh-Feldt	1.645	2.893	.569	3.253	.023
	Lower-bound	1.645	1.000	1.645	3.253	.072
Effort * Level * Personnel Severity ^f	Sphericity Assumed	1.053	4	.263	2.083	.081
	Greenhouse-Geisser	1.053	2.859	.368	2.083	.104
	Huynh-Feldt	1.053	2.893	.364	2.083	.103
	Lower-bound	1.053	1.000	1.053	2.083	.150
Error(Effort*Level)	Sphericity Assumed	176.953	1400	.126		
	Greenhouse-Geisser	176.953	1000.543	.177		

Huynh-Feldt	176.953	1012.531	.175
Lower-bound	176.953	350.000	.506

* Significance at $p < 0.05$.

a “Effort” indicates recovery effort, i.e. distributive justice, interactional justice, and procedural justice.

b “Effort* Personnel Severity” indicates confounding effect on recovery effort.

c “Level” indicates the level of recovery effort, i.e. high effort, low effort, and no effort.

d “Level*Personnel Severity” indicates confounding effect on the level of recovery effort.

e “Effort*Level” indicates interaction effect between recovery effort and the level of recovery effort.

f “Effort*Level*System Severity” indicates confounding effect on the interaction effect between recovery effort and the level of recovery effort.

The further result of the tests of within-subjects simple contrasts comparisons showed the covariate, severity of personnel failures had a significant confounding effect on the recovery effort when compared high effort with no effort, $F_{1, 350} = 22.02$, $p < 0.001$, $r = 0.24$. The covariate, severity of personnel failures also had a significant confounding effect on the interaction effect between distributive justice and procedural justice, when comparing low effort with no effort, $F_{1, 350} = 6.87$, $p < 0.05$, $r = 0.14$ as showed in Table 66.

Tests of within-subjects repeated contrasts for distributive justice and interactional justice comparison showed the covariate, severity of personnel failures was no a significant confounding effect on the effectiveness of recovery effort. Therefore, no further interpretation is needed as showed in Table 67.

Table 66 *Tests of Within-Subject Simple Contrasts Confounding Effect of Failure Severity on the Effectiveness of Recovery Effort for Personnel Failures*

Source	Effort	Level	Type III Sum of Squares	df	Mean Square	F	Sig.
Effort ^a	DJ vs. PJ		.839	1	.839	11.980	.001
	IJ vs. PJ		.312	1	.312	4.137	.043
Effort *	DJ vs. PJ		.256	1	.256	3.657	.057
Personnel Severity ^b	IJ vs. PJ		.071	1	.071	.947	.331
Error(Effort)	DJ vs. PJ		24.510	350	.070		
	IJ vs. PJ		26.358	350	.075		
Level ^c		High Effort vs. No Effort	10.082	1	10.082	32.027	.000
		Low Effort vs. No Effort	.023	1	.023	.079	.779
Level *		High Effort vs. No Effort	6.931	1	6.931	22.018	.000
Personnel Severity ^d		Low Effort vs. No Effort	.147	1	.147	.501	.479
Error(level)		High Effort vs. No Effort	110.180	350	.315		
		Low Effort vs. No Effort	102.984	350	.294		
Effort * Level ^e	DJ vs. PJ	High Effort vs. No Effort	.142	1	.142	.442	.506
		Low Effort vs. No Effort	5.621	1	5.621	14.104	.000
	IJ vs. PJ	High Effort vs. No Effort	.060	1	.060	.150	.699
		Low Effort vs. No Effort	2.044	1	2.044	5.134	.024
Effort * Level *	DJ vs. PJ	High Effort vs. No Effort	.019	1	.019	.058	.810
Personnel Severity ^f		Low Effort vs. No Effort	2.737	1	2.737	6.867	.009
	IJ vs. PJ	High Effort vs. No Effort	.027	1	.027	.067	.795
		Low Effort vs. No Effort	.406	1	.406	1.020	.313
Error(Effort*Level)	DJ vs. PJ	High Effort vs. No Effort	112.456	350	.321		
		Low Effort vs. No Effort	139.488	350	.399		
	IJ vs. PJ	High Effort vs. No Effort	140.152	350	.400		
		Low Effort vs. No Effort	139.310	350	.398		

* Significance at $p < 0.05$.

a "Effort" indicates recovery effort, i.e. distributive justice (DJ), interactional justice (IJ), and procedural justice (PJ).

b "Effort* Personnel Severity" indicates confounding effect on recovery effort.

c "Level" indicates the level of recovery effort, i.e. high effort, low effort, and no effort.

d "Level*Personnel Severity" indicates confounding effect on the level of recovery effort.

e "Effort*Level" indicates interaction effect between recovery effort and the level of recovery effort.

f "Effort*Level*Personnel Severity" indicates confounding effect on the interaction effect between recovery effort and the level of recovery effort.

Table 67 *Tests of Within-Subject Repeated Contrasts Confounding Effect of Failure Severity on the Effectiveness of Recovery Effort for Personnel Failures*

Source	Effort	Level	Type III Sum of Squares	df	Mean Square	F	Sig.
Effort ^a	DJ vs. IJ		.128	1	.128	2.234	.136
	IJ vs. PJ		.312	1	.312	4.137	.043
Effort *	DJ vs. IJ		.057	1	.057	.997	.319
Personnel Severity ^b	IJ vs. PJ		.071	1	.071	.947	.331
Error(Effort)	DJ vs. IJ		20.056	350	.057		
	IJ vs. PJ		26.358	350	.075		
Level ^c		High Effort vs. No Effort	10.082	1	10.082	32.027	.000
		Low Effort vs. No Effort	.023	1	.023	.079	.779
Level *		High Effort vs. No Effort	6.931	1	6.931	22.018	.000
Personnel Severity ^d		Low Effort vs. No Effort	.147	1	.147	.501	.479
Error(level)		High Effort vs. No Effort	110.180	350	.315		
		Low Effort vs. No Effort	102.984	350	.294		
Effort * Level ^e	DJ vs. IJ	High Effort vs. No Effort	.017	1	.017	.064	.800
		Low Effort vs. No Effort	.886	1	.886	2.643	.105
	IJ vs. PJ	High Effort vs. No Effort	.060	1	.060	.150	.699
		Low Effort vs. No Effort	2.044	1	2.044	5.134	.024
Effort * Level *	DJ vs. IJ	High Effort vs. No Effort	.090	1	.090	.333	.565
Personnel Severity ^f		Low Effort vs. No Effort	1.035	1	1.035	3.087	.080
	IJ vs. PJ	High Effort vs. No Effort	.027	1	.027	.067	.795
		Low Effort vs. No Effort	.406	1	.406	1.020	.313
Error(Effort*Level)	DJ vs. IJ	High Effort vs. No Effort	94.898	350	.271		
		Low Effort vs. No Effort	117.326	350	.335		
	IJ vs. PJ	High Effort vs. No Effort	140.152	350	.400		
		Low Effort vs. No Effort	139.310	350	.398		

* Significance at $p < 0.05$.

a "Effort" indicates recovery effort, i.e. distributive justice (DJ), interactional justice (IJ), and procedural justice (PJ).

b "Effort* Personnel Severity" indicates confounding effect on recovery effort.

c "Level" indicates the level of recovery effort, i.e. high effort, low effort, and no effort.

d "Level*Personnel Severity" indicates confounding effect on the level of recovery effort.

e "Effort*Level" indicates interaction effect between recovery effort and the level of recovery effort.

f "Effort*Level*Personnel Severity" indicates confounding effect on the interaction effect between recovery effort and the level of recovery effort.

Overall, the covariate, severity of personnel failures had significant confounding effects on the level of recovery effort and had a significant confounding effect on the interaction effect between the recovery effort and the level of recovery effort. Therefore, H4b “There is no confounding effect of the severity of failure on the effectiveness of recovery effort among procedural justice (PJ), distributive justice (DJ) and interactional justice (IJ) for personnel failures in casual dining restaurants in the U.S.” has been rejected.

Difference of the Effectiveness of Recovery Effort Between Failure Classes

This study has tested the effectiveness of recovery effort in terms of failure classes for system failures and personnel failures separately. In order to further discover the differences between these two failure classes, the hypothesis five was examined.

H5. There is no difference in the effectiveness of recovery effort between system failures and personnel failures in terms of procedural justice (PJ), distributive justice (DJ) and interactional justice (IJ) in casual dining restaurants in the U.S.

Mauchly’s test for the comparison of failure classes, system failures and personnel failures, indicated that the assumption of sphericity has been violated for the main effects of the recovery effort (distributive justice, interactional justice, and procedural justice), $\chi^2(2) = 17.87$, $p < 0.001$; the level of recovery effort (high effort, low effort, and no effort), $\chi^2(2) = 12.28$, $p < 0.01$; the interaction effects of the class and the recovery effort, $\chi^2(2) = 12.62$, $p < 0.01$; the interaction of the class and the level of recovery effort, $\chi^2(2) =$

14.93, $p < 0.01$; the interaction of the recovery effort and the level of recovery effort, $\chi^2(9) = 467.32$, $p < 0.001$; and the interaction of the class, the recovery effort and the level of recovery effort, $\chi^2(9) = 313.491$, $p < 0.001$.

Therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\epsilon = 0.95$ for the main effect of the recovery effort, $\epsilon = 0.97$ for the main effect of the level of recovery effort, 0.97 for the interaction effect of the class and the recovery effort, $\epsilon = 0.96$ for the interaction effect of the class and the level of the recovery effort, $\epsilon = 0.65$ for the interaction effect of the recovery effort and the level of the recovery effort, and $\epsilon = 0.73$ for the interaction effect of the class, recovery effort and the level of recovery effort) as showed in Table 68.

Table 68 *Mauchly's Test of Sphericity of Recovery Effort for Failure Classes*

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser	Epsilon	
						Huynh-Feldt	Lower-bound
Class ^a	1.000	.000	0	.	1.000	1.000	1.000
Effort ^b	.950	17.869	2	.000	.953	.958	.500
Level ^c	.966	12.280	2	.002	.967	.972	.500
Class * Effort ^d	.965	12.617	2	.002	.966	.971	.500
Class * Level ^e	.958	14.932	2	.001	.960	.965	.500
Effort * Level ^f	.263	467.317	9	.000	.648	.654	.250
Class * Effort * Level ^g	.408	313.491	9	.000	.729	.736	.250

a "Class" indicates "Failure classes" – system failures and personnel failures.

b "Effort" indicates "Recovery Effort"- distributive justice, interactional justice, and procedural justice.

c "Level" indicates "Level of Recovery Effort" – high effort, low effort, and no effort.

d "Class * Effort" indicates interaction between "Failure Classes" and "Recovery Effort."

e "Class * Level" indicates interaction between "Failure Classes" and "Level of Recovery Effort."

f "Effort * Level" indicates interaction between "Recovery Effort" and "Level of Recovery Effort"

g "Class * Effort * Level" indicates interaction among "Failure Classes," "Recovery Effort," and "Level of Recovery Effort"

The results of pairwise comparisons for the main effect of failure classes, recovery effort and level of recovery effort were corrected using Bonferroni adjustment. The significant main effect of failure classes, recovery effort and level of recovery effort all showed significant differences ($p < 0.001$) highlighting the importance of controlling the error rate by using a Bonferroni correction as showed in Table 69, Table 70, and Table 71.

Table 69 *Pairwise Comparisons of Failure Classes*

(I) Failure Classes	(J) Failure Classes	Mean Difference (I-J)	Std. Error	Sig. ^a
System Failures	Personnel Failures	.113*	.016	.000
Personnel Failures	System Failures	-.113*	.016	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Table 70 *Pairwise Comparisons of Recovery Effort*

(I) Recovery Effort	(J) Recovery Effort	Mean Difference (I-J)	Std. Error	Sig. ^a
Distributive Justice	Interactional Justice	.070*	.010	.000
	Procedural Justice	.212*	.012	.000
Interactional Justice	Distributive Justice	-.070*	.010	.000
	Procedural Justice	.142*	.011	.000
Procedural Justice	Distributive Justice	-.212*	.012	.000
	Interactional Justice	-.142*	.011	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Table 71 *Pairwise Comparisons of Level of Recovery Effort*

(I) Level of Recovery Effort	(J) level of Recovery Effort	Mean Difference (I-J)	Std. Error	Sig. ^a
High Effort	Low Effort	2.963*	.022	.000
	No Effort	3.357*	.025	.000
Low Effort	High Effort	-2.963*	.022	.000
	No Effort	.393*	.024	.000
No Effort	High Effort	-3.357*	.025	.000
	Low Effort	-.393*	.024	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Main Effect

All the main effects for the comparison of failure classes showed the significant results at $p < 0.05$ as showed in Table 72. The first significant main effect was the class, $F_{1, 351} = 51.39$, $p < 0.001$, $r = 0.36$. The second main effect was the recovery effort, $F_{1, 91, 668.72} = 204.39$, $p < 0.001$. Contrasts of the recovery effort revealed that significant differences existed between distributive justice and procedural justice and had a larger effect, $F_{1, 351} = 334.657$, $p < 0.001$, $r = 0.70$ than the difference between interactional justice and procedural justice, $F_{1, 351} = 171.82$, $p < 0.001$, $r = 0.57$. The last main effect was the level of recovery effort, $F_{1, 93, 678.60} = 12015.27$, $p < 0.001$. Contrasts of the level of recovery effort revealed that significant differences existed between high effort and no effort and had a larger effect, $F_{1, 351} = 17350.43$, $p < 0.001$, $r = 0.98$ than the difference between low effort and no effort, $F_{1, 351} = 275.09$, $p < 0.001$, $r = 0.66$ as showed in Table 73.

In order to study the difference of main effect between distributive justice and interactional justice, tests of within-subjects repeated contrasts was performed and reported. Significant difference between distributive justice and interactional justice, had

showed lower effect, $F_{1, 351} = 53.65$, $p < 0.001$, $r = 0.36$ than the difference between interactional justice and procedural justice, $F_{1, 351} = 171.82$, $p < 0.001$, $r = 0.57$. There was also a significant main effect of the level of recovery effort, $F_{1.93, 678.60} = 12025.27$. Tests of within-subjects repeated contrasts revealed that the difference between high effort and no effort and had a larger effect, $F_{1, 351} = 17350.43$, $p < 0.001$, $r = 0.98$ than the difference between low effort and no effort, $F_{1, 351} = 275.09$, $p < 0.001$, $r = 0.66$ as showed in Table 74.

Table 72 *Tests of Within-Subjects Effects of Recovery Effort, Level of Recovery Effort for Failure Classes Comparisons*

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Class ^a	Sphericity Assumed	20.115	1	20.115	51.391	.000
	Greenhouse-Geisser	20.115	1	20.115	51.391	.000
	Huynh-Feldt	20.115	1	20.115	51.391	.000
	Lower-bound	20.115	1	20.115	51.391	.000
Error (Class)	Sphericity Assumed	137.385	351	.391		
	Greenhouse-Geisser	137.385	351	.391		
	Huynh-Feldt	137.385	351	.391		
	Lower-bound	137.385	351	.391		
Effort ^b	Sphericity Assumed	49.151	2	24.575	204.394	.000
	Greenhouse-Geisser	49.151	1.905	25.798	204.394	.000
	Huynh-Feldt	49.151	1.915	25.662	204.394	.000
	Lower-bound	49.151	1.000	49.151	204.394	.000
Error (Effort)	Sphericity Assumed	84.405	702	.120		
	Greenhouse-Geisser	84.405	668.716	.126		
	Huynh-Feldt	84.405	672.270	.126		
	Lower-bound	84.405	351.000	.240		
Level ^c	Sphericity Assumed	14221.440	2	7110.720	12015.268	.000
	Greenhouse-Geisser	14221.440	1.933	7355.878	12015.268	.000
	Huynh-Feldt	14221.440	1.944	7316.080	12015.268	.000
	Lower-bound	14221.440	1	14221.440	12015.268	.000
Error (Level)	Sphericity Assumed	415.449	702	.592		
	Greenhouse-Geisser	415.449	678.604	.612		
	Huynh-Feldt	415.449	682.295	.609		
	Lower-bound	415.449	351	1.184		
Class * Effort ^d	Sphericity Assumed	1.440	2	.720	7.098	.001
	Greenhouse-Geisser	1.440	1.932	.746	7.098	.001
	Huynh-Feldt	1.440	1.942	.742	7.098	.001
	Lower-bound	1.440	1	1.440	7.098	.008
Error (Class*Effort)	Sphericity Assumed	71.226	702	.101		
	Greenhouse-Geisser	71.226	677.995	.105		
	Huynh-Feldt	71.226	681.678	.104		
	Lower-bound	71.226	351.000	.203		
Class * Level ^e	Sphericity Assumed	26.421	2	13.211	36.572	.000

Error (Class*Level)	Greenhouse-Geisser	26.421	1.920	13.762	36.572	.000
	Huynh-Feldt	26.421	1.930	13.689	36.572	.000
	Lower-bound	26.421	1.000	26.421	36.572	.000
	Sphericity Assumed	253.579	702	.361		
	Greenhouse-Geisser	253.579	673.856	.376		
	Huynh-Feldt	253.579	677.482	.374		
	Lower-bound	253.579	351.000	.722		
	Sphericity Assumed	61.960	4	15.490	87.876	.000
	Greenhouse-Geisser	61.960	2.593	23.893	87.876	.000
	Huynh-Feldt	61.960	2.614	23.701	87.876	.000
Error (Effort*Level)	Lower-bound	61.960	1	61.960	87.876	.000
	Sphericity Assumed	247.484	1404	.176		
	Greenhouse-Geisser	247.484	910.219	.272		
	Huynh-Feldt	247.484	917.591	.270		
	Lower-bound	247.484	351.000	.705		
Class * Effort * Level ^g	Sphericity Assumed	1.962	4	.491	4.242	.002
	Greenhouse-Geisser	1.962	2.917	.673	4.242	.006
	Huynh-Feldt	1.962	2.944	.666	4.242	.006
	Lower-bound	1.962	1	1.962	4.242	.040
	Sphericity Assumed	162.371	1404	.116		
	Greenhouse-Geisser	162.371	1023.980	.159		
	Huynh-Feldt	162.371	1033.487	.157		
	Lower-bound	162.371	351	.463		

a "Class" indicates "Failure Classes" – system failures and personnel failures.

b "Effort" indicates "Recovery Effort"- distributive justice, interactional justice, and procedural justice.

c "Level" indicates "Level of Recovery Effort" – high effort, low effort, and no effort.

d "Class * Effort" indicates interaction between "Failure Classes" and "Recovery Effort."

e "Class * Level" indicates interaction between "Failure Classes" and "Level of Recovery Effort."

f "Effort * Level" indicates interaction between "Recovery Effort" and "Level of Recovery Effort"

g "Class * Effort * Level" indicates interaction among "Failure Classes," "Recovery Effort," and "Level of Recovery Effort"

Table 73 *Tests of Within-Subjects Simple Contrasts of Recovery Effort, Level of Recovery Effort for Failure Classes Comparisons*

Source	Class	Effort	Level	Type III Sum of Squares	df	Mean Square	F	Sig.	Effect Size
Class ^a	System vs. Personnel			4.470	1	4.470	51.39	.000	0.36
Error (Class)	System vs. Personnel			30.530	351	.087			
Effort ^b		DJ vs. PJ		15.768	1	15.768	334.66	.000	0.70
		IJ vs. PJ		7.102	1	7.102	171.82	.000	0.57
Error (Effort)		DJ vs. PJ		16.538	351	.047			
		IJ vs. PJ		14.509	351	.041			
Level ^c			High vs. No	3965.745	1	3965.745	17350.43	.000	0.98
			Low vs. No	54.495	1	54.495	275.09	.000	0.66
Error (Level)			High vs. No	80.227	351	.229			
			Low vs. No	69.533	351	.198			
Class * Effort ^d	System vs. Personnel	DJ vs. PJ		1.503	1	1.503	10.11	.002	0.17
		IJ vs. PJ		1.375	1	1.375	9.33	.002	0.16
Error (Class*Effort)	System vs. Personnel	DJ vs. PJ		52.164	351	.149			
		IJ vs. PJ		51.736	351	.147			
Class * Level ^e	System vs. Personnel		High vs. No	9.447	1	9.447	18.54	.000	0.22
			Low vs. No	8.182	1	8.182	14.89	.000	0.20
Error (Class*Level)	System vs. Personnel		High vs. No	178.886	351	.510			
			Low vs. No	192.818	351	.549			
Effort * Level ^f		DJ vs. PJ	High vs. No	15.980	1	15.980	90.44	.000	0.45
			Low vs. No	62.648	1	62.648	209.22	.000	0.61
		IJ vs. PJ	High vs. No	.102	1	.102	.46	.500	0.04
			Low vs. No	69.136	1	69.136	214.06	.000	0.62
Error (Effort*Level)		DJ vs. PJ	High vs. No	62.020	351	.177			
			Low vs. No	105.102	351	.299			
		IJ vs. PJ	High vs. No	78.898	351	.225			
			Low vs. No	113.364	351	.323			
Class * Effort * Level ^g	System vs. Personnel	DJ vs. PJ	High vs. No	11.636	1	11.636	20.80	.000	0.24
			Low vs. No	.071	1	.071	.08	.777	0.02
		IJ vs. PJ	High vs. No	6.011	1	6.011	9.86	.002	0.17
			Low vs. No	1.136	1	1.136	1.38	.241	0.06
Error (Class*Effort *Level)	System vs. Personnel	DJ vs. PJ	High vs. No	196.364	351	.559			
			Low vs. No	310.929	351	.886			
		IJ vs. PJ	High vs. No	213.989	351	.610			
			Low vs. No	288.864	351	.823			

a "Class" indicates "Failure Classes" – system failures and personnel failures.

b "Effort" indicates "Recovery Effort"- distributive justice, interactional justice, and procedural justice.

c "Level" indicates "Level of Recovery Effort" – high effort, low effort, and no effort.

d "Class * Effort" indicates interaction between "Failure Classes" and "Recovery Effort."

e "Class * Level" indicates interaction between "Failure Classes" and "Level of Recovery Effort."

f "Effort * Level" indicates interaction between "Recovery Effort" and "Level of Recovery Effort"

g "Class * Effort * Level" indicates interaction among "Failure Classes," "Recovery Effort," and "Level of Recovery Effort"

Table 74 *Tests of Within-Subjects Repeated Contrasts of Recovery Effort, Level of Recovery Effort for Failure Classes Comparisons*

Source	Class	Effort	Level	Type III Sum of Squares	df	Mean Square	F	Sig.	Effect Size
Class	System vs. Personnel			4.470	1	4.470	51.391	.000	0.36
Error (Class)	System vs. Personnel			30.530	351	.087			
Effort		DJ vs. IJ		1.705	1	1.705	53.653	.000	0.36
		IJ vs. PJ		7.102	1	7.102	171.819	.000	0.57
Error (Effort)		DJ vs. IJ		11.156	351	.032			
		IJ vs. PJ		14.509	351	.041			
Level			High vs. No	3965.745	1	3965.745	17350.432	.000	0.98
			Low vs. No	54.495	1	54.495	275.090	.000	0.66
Error (Level)			High vs. No	80.227	351	.229			
			Low vs. No	69.533	351	.198			
Class * Effort	System vs. Personnel	DJ vs. IJ		.003	1	.003	.026	.872	0.01
		IJ vs. PJ		1.375	1	1.375	9.329	.002	0.16
Error (Class*Effort)	System vs. Personnel	DJ vs. IJ		38.553	351	.110			
		IJ vs. PJ		51.736	351	.147			
Class * Level	System vs. Personnel		High vs. No	9.447	1	9.447	18.537	.000	0.22
			Low vs. No	8.182	1	8.182	14.895	.000	0.20
Error (Class*Level)	System vs. Personnel		High vs. No	178.886	351	.510			
			Low vs. No	192.818	351	.549			
Effort * Level		DJ vs. IJ	High vs. No	18.639	1	18.639	110.213	.000	0.49
			Low vs. No	.160	1	.160	.709	.400	0.04
		IJ vs. PJ	High vs. No	.102	1	.102	.455	.500	0.04
			Low vs. No	69.136	1	69.136	214.062	.000	0.62
Error (Effort*Level)		DJ vs. IJ	High vs. No	59.361	351	.169			
			Low vs. No	79.090	351	.225			
		IJ vs. PJ	High vs. No	78.898	351	.225			
			Low vs. No	113.364	351	.323			
Class * Effort * Level	System vs. Personnel	DJ vs. IJ	High vs. No	.920	1	.920	2.031	.155	0.08
			Low vs. No	.639	1	.639	.966	.326	0.05
		IJ vs. PJ	High vs. No	6.011	1	6.011	9.860	.002	0.17
			Low vs. No	1.136	1	1.136	1.381	.241	0.06
Error (Class*Effort*Level)	System vs. Personnel	DJ vs. IJ	High vs. No	159.080	351	.453			
			Low vs. No	232.361	351	.662			
		IJ vs. PJ	High vs. No	213.989	351	.610			
			Low vs. No	288.864	351	.823			

a "Class" indicates "Failure Classes" – system failures and personnel failures.

b "Effort" indicates "Recovery Effort" - distributive justice, interactional justice, and procedural justice.

c "Level" indicates "Level of Recovery Effort" – high effort, low effort, and no effort.

d "Class * Effort" indicates interaction between "Failure Classes" and "Recovery Effort."

e "Class * Level" indicates interaction between "Failure Classes" and "Level of Recovery Effort."

f "Effort * Level" indicates interaction between "Recovery Effort" and "Level of Recovery Effort"

g "Class * Effort * Level" indicates interaction among "Failure Classes," "Recovery Effort," and "Level of Recovery Effort"

Interaction Effect

All the interaction effects for the comparison of the effectiveness of recovery effort between failure classes were also reported a significant at $p < 0.05$ as showed in Table 72. The first significant interaction effect was between failure classes and the recovery effort, $F_{1.93, 678.00} = 7.10$, $p < 0.01$. Contrasts revealed significant interactions when comparing system failures to personnel failures, both for distributive justice to procedural justice, $F_{1, 351} = 10.11$, $p < 0.01$, $r = 0.17$, and interactional justice to procedural justice, $F_{1, 351} = 9.33$, $p < 0.01$, $r = 0.16$ as showed in Table 73.

By looking at the interaction graph, these effects indicated that distributive justice (compared to procedural justice) lowered scores significantly more difference in personnel failures than it did for system failures. Additionally, the interaction effects showed that interactional justice (compared to procedural justice) lowered scores significantly more difference in personnel failures than it did for system failures as showed in Table 75 and Figure 19.

In order to study the different interaction effects between distributive justice and interactional justice, the tests of within-subjects repeated contrasts was performed and reported when comparing system failures to personnel failures, however, no significant difference between distributive justice and interactional justice were found, $F_{1, 351} = 0.03$, $p > 0.05$, $r = 0.01$ as showed in Table 74.

Table 75 Mean of Interaction Between Failure Classes and Recovery Effort

Failure Classes	Recovery Effort	Mean	Std. Error
System	Distributive Justice	2.632	.015
	Interactional Justice	2.563	.017
	Procedural Justice	2.453	.016
Personnel	Distributive Justice	2.542	.013
	Interactional Justice	2.471	.014
	Procedural Justice	2.297	.013

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

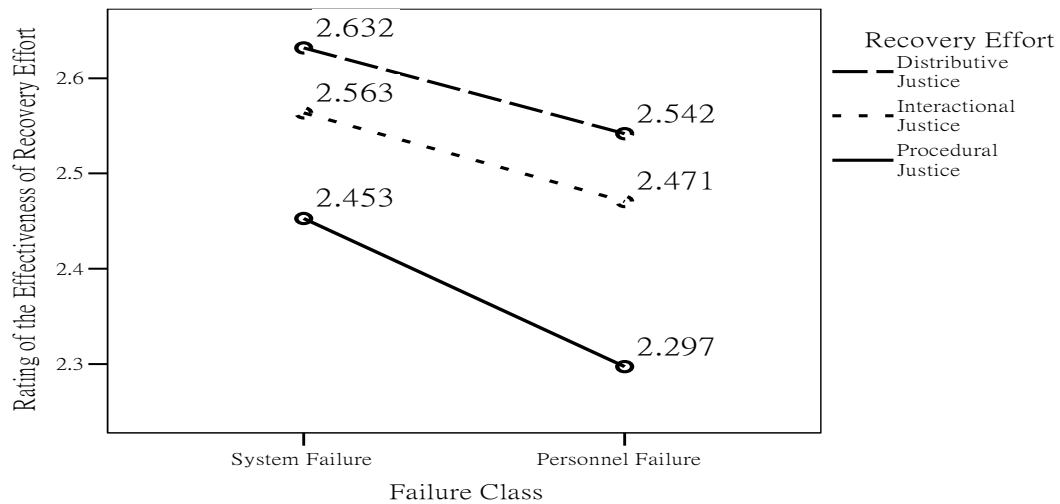


Figure 19 Interaction effects of failure classes and recovery effort

The second significant interaction effect was between the class and the level of recovery effort, $F_{1,92, 673.86} = 36.57$, $p < 0.001$ as showed in Table 72. Contrasts revealed significant interactions when comparing system failures to personnel failures, both for high effort compared to no effort, $F_{1, 351} = 18.54$, $p < 0.001$, $r = 0.22$, and low effort compared to no effort, $F_{1, 351} = 14.90$, $p < 0.001$, $r = 0.20$ as showed in Table 73.

By looking at the interaction graph, these effects showed that high effort (compared to no effort) perceived scores significantly more difference in personnel failures than it did for system failures, but for the low effort (compared to no effort) perceived scores significantly more difference in system failures than it did for personnel failures as showed in Table 76 and Figure 20.

Table 76 *Mean of Interaction Between Failure Classes and Level of Recovery Effort*

Failure Classes	Level of Recovery Effort	Mean	Std. Error
System	High Effort	4.576	.020
	Low Effort	1.771	.022
	No Effort	1.301	.025
Personnel	High Effort	4.623	.018
	Low Effort	1.502	.018
	No Effort	1.185	.023

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

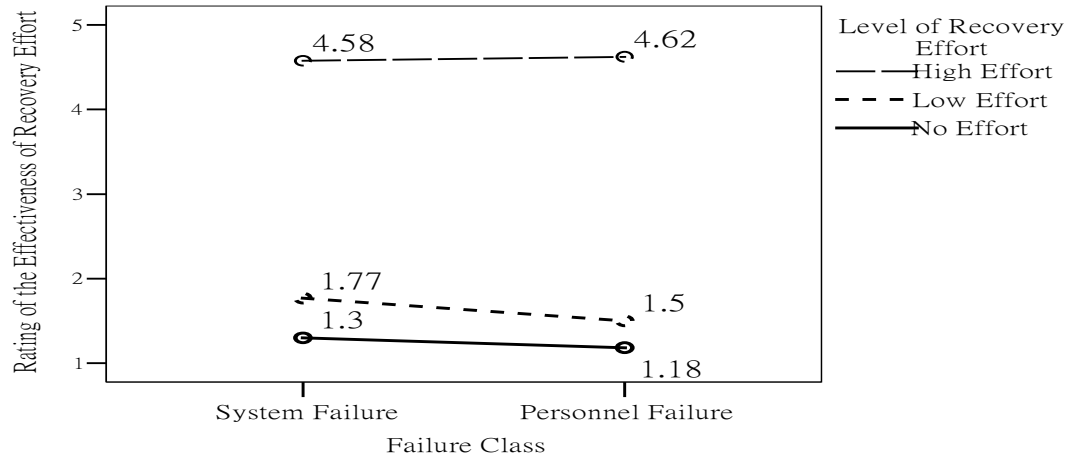


Figure 20 Interaction effects of failure classes and level of recovery effort

The last significant interactions were among the class, recovery effort, and level of recovery effort, $F_{2,92, 1023.98} = 4.24$, $p < 0.01$. Contrasts revealed significant interactions with respect to the failure classes comparisons, when comparing high effort to low effort, both for distributive justice compared to procedural justice, $F_{1, 351} = 20.80$, $p < 0.001$, $r = 0.24$ and interactional justice compared to procedural justice, $F_{1, 351} = 9.86$, $p < 0.01$, $r = 0.17$.

However, contrasts revealed non-significant interactions with respect to the failure classes comparisons, when comparing low effort to no effort, both for distributive justice compared to procedural justice, $F_{1, 351} = 0.08$, $p > 0.05$, $r = 0.02$ and interactional justice compared to procedural justice, $F_{1, 351} = 1.38$, $p > 0.05$, $r = 0.06$ as showed in Table 73.

By looking at the interaction graph, with respect to the failure comparisons, the interactions showed that when comparing high effort to no effort, perceived scores significant more difference in distributive justice than it did for procedural justice for both system failures and personnel failures.

Additionally, perceived scores also significant more difference in interactional justice than it did for procedural justice for personnel failures whereas perceived scores significant more difference in procedural justice than it did for interactional justice for system failures. However, when comparing low effort to no effort, neither distributive justice compared to procedure justice was significant; nor interactional justice was significant as showed in Table 77, Figure 21 and Figure 22.

In order to study the interaction effects between distributive justice and interactional justice, the tests of within-subjects repeated contrasts was performed and showed with respect to failure classes comparison, when comparing distributive justice to interactional

justice, neither high effort compared to no effort was significant, $F_{1, 351} = 2.03$, $p > 0.05$, $r = 0.08$; nor low effort compared to no effort was significant, $F_{1, 351} = 0.97$, $p > 0.05$, $r = 0.05$ as showed in Table 74.

Table 77 Mean of Interaction among Failure Classes, Recovery Effort, and Level of Recovery Effort

Failure Classes	Recovery Effort	Level of Recovery Effort	Mean	Std. Error
System	Distributive Justice	High Effort	4.685	.025
		Low Effort	1.909	.030
		No Effort	1.301	.025
	Interactional Justice	High Effort	4.480	.028
		Low Effort	1.909	.030
		No Effort	1.301	.025
	Procedural Justice	High Effort	4.563	.026
		Low Effort	1.494	.035
		No Effort	1.301	.025
Personnel	Distributive Justice	High Effort	4.810	.021
		Low Effort	1.631	.029
		No Effort	1.185	.023
	Interactional Justice	High Effort	4.554	.027
		Low Effort	1.673	.028
		No Effort	1.185	.023
	Procedural Justice	High Effort	4.506	.028
		Low Effort	1.202	.022
		No Effort	1.185	.023

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

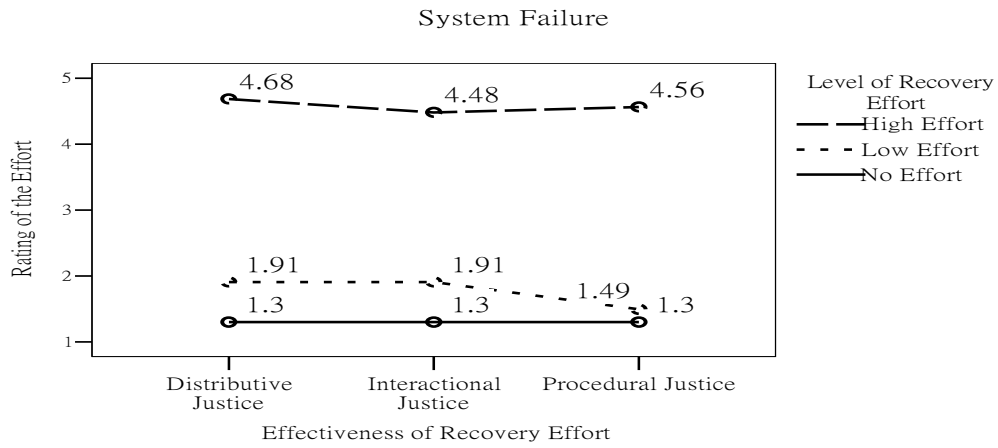


Figure 21 Interaction effects of recovery effort and level of recovery effort for system failures

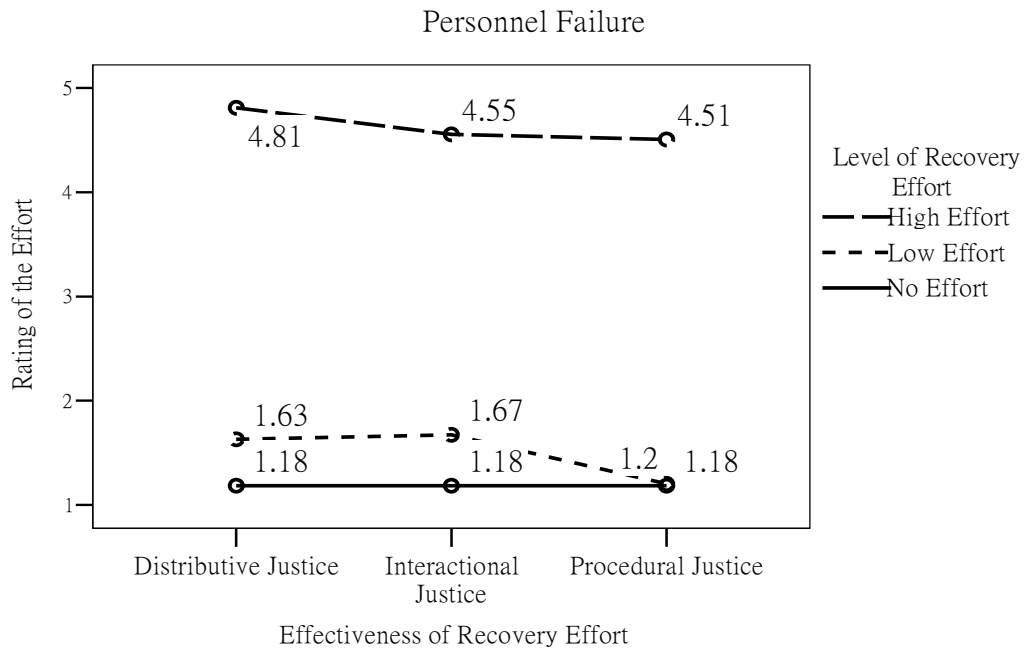


Figure 22 Interaction effects of recovery effort and level of recovery effort for personnel failures

In summary, all the main effects and some interaction effects were significant difference among failure classes, the effectiveness of recovery effort, and the level of recovery effort. The results of main effects of failure classes were significant different between system failures and personnel failures. The results of main effects among the effectiveness of recovery effort indicated when comparing to procedural justice, distributive justice had a larger effect than interactional justice; when comparing to interactional justice, procedural justice had a larger effect than distributive justice. Besides, the results of main effects among the level of recovery effort indicated when comparing to no effort, high effort had a larger effect than low effort.

Moreover, the first interaction effects were significant when comparing failure classes and the effectiveness of recovery effort. The results indicated when comparing to procedural justice, both distributive justice and interactional justice had a larger effect on the class of personnel failures than they did on the class of system failures; however, when compared distributive justice to interactional justice, there had no significant difference between system failures and personnel failures.

The second interaction effects were significant when comparing failure classes and the level of recovery effort. The results indicated that when comparing to no effort, high effort had a larger effect on personnel failures than it did on system failures, whereas when comparing to no effort, low effort had a larger effect on system failures.

The last interaction effects were significant with respect to the failure classes, the effectiveness of recovery effort, and the level of recovery effort. When comparing to no effort, high effort had a larger effects on distributive justice than procedural justice for both system failures and personnel failures; high effort also had a larger effects on

interactional justice than procedural justice but only for personnel failures; and high effort had higher effects on procedural justice for system failures. Additionally, when comparing to no effort, high effort performed the same effects between distributive justice and interactional justice for failure classes.

Overall, there was a significant difference in the effectiveness of recovery effort between system failures and personnel failures. Therefore, H5 “There is no difference in the effectiveness of recovery effort between system failures and personnel failures in terms of procedural justice (PJ), distributive justice (DJ) and interactional justice (IJ) in casual dining restaurants in the U.S.” was rejected.

Difference of Recovery Satisfaction Between Failure Classes

The results of hypothesis one indicated that the significant difference between with and without recovery satisfaction after a recovery effort. This study also discovered what differences among the recovery satisfaction after different recovery effort as well as different level of recovery effort between failure classes by the test of hypothesis seven.

H6. There is no difference in the recovery satisfaction between system failures and personnel failures after the administration of recovery effort in casual dining restaurants in the U.S.

Mauchly’s test for the comparison of failure classes, system failures and personnel failures in terms of recovery satisfaction, was a significant and indicated that the assumption of sphericity has been violated for the main effects of the recovery effort

(distributive justice, interactional justice, and procedural justice), $\chi^2(2) = 18.65$, $p < 0.001$, the level of recovery effort (high effort, low effort, and no effort), $\chi^2(2) = 25.46$, $p < 0.001$; and the interaction effects of the class and the recovery effort, $\chi^2(2) = 8.39$, $p = 0.015$, the interaction of the recovery effort and the level of recovery effort, $\chi^2(9) = 410.99$, $p < 0.001$ and the interaction of the class, the recovery effort and the level of recovery effort, $\chi^2(9) = 276.88$, $p < 0.001$. However, the interaction of the class and the level of recovery effort was not significant, $\chi^2(2) = 3.02$, $p = 0.22$ and the assumption of sphericity has been met.

Therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\epsilon = 0.95$ for the main effect of the recovery effort, $\epsilon = 0.93$ for the main effect of the level of recovery effort, 0.98 for the interaction effect of the class and the recovery effort, $\epsilon = 0.67$ for the interaction effect of the recovery effort and the level of the recovery effort, and $\epsilon = 0.76$ for the interaction effect of the class, recovery effort and the level of recovery effort) as showed in Table 78.

Table 78 *Mauchly's Test of Sphericity of Recovery Effort on Recovery Satisfaction for Failure Classes*

Within Subjects Effect	Mauchly's W	Approx. Chi- Square	df	Sig	Epsilon		
					Greenhouse -Geisser	Huynh-Feldt	Lower-bound
Class ^a	1.000	.000	0	.	1.000	1.000	1.000
Effort ^b	.948	18.652	2	.000	.951	.956	.500
Level ^c	.930	25.455	2	.000	.934	.939	.500
Class * Effort ^d	.976	8.391	2	.015	.977	.982	.500
Class * Level ^e	.991	3.020	2	.221	.991	.997	.500
Effort * Level ^f	.308	410.991	9	.000	.669	.675	.250
Class * Effort * Level ^g	.453	276.879	9	.000	.756	.763	.250

a "Class" indicates "Failure Classes" – system failures and personnel failures.

b "Effort" indicates "Recovery Effort" - distributive justice, interactional justice, and procedural justice.

c "Level" indicates "Level of Recovery Effort" – high effort, low effort, and no effort.

d "Class * Effort" indicates interaction between "Failure Classes" and "Recovery Effort."

e "Class * Level" indicates interaction between "Failure Classes" and "Level of Recovery Effort."

f "Effort * Level" indicates interaction between "Recovery Effort" and "Level of Recovery Effort"

g "Class * Effort * Level" indicates interaction among "Failure Classes," "Recovery Effort," and "Level of Recovery Effort"

The results of pairwise comparisons for the main effect of failure classes, recovery effort and level of recovery effort corrected using Bonferroni adjustment. The significant main effect of failure classes, recovery effort and level of recovery effort all showed significant difference ($p < 0.001$) and highlights the importance of controlling the error rate by using a Bonferroni correction as showed in Table 79, Table 80, and Table 81.

Table 79 *Pairwise Comparisons of Failure Classes on Recovery Satisfaction*

(I) Failure Classes	(J) Failure Classes	Mean Difference (I-J)	Std. Error	Sig.
System	Personnel	.082*	.015	.000
Personnel	System	-.082*	.015	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Table 80 *Pairwise Comparisons of the Recovery Effort on Recovery Satisfaction*

(I) Recovery Effort	(J) Recovery Effort	Mean Difference (I-J)	Std. Error	Sig.
Distributive Justice	Interactional Justice	.052*	.011	.000
	Procedural Justice	.170*	.013	.000
Interactional Justice	Distributive Justice	-.052*	.011	.000
	Procedural Justice	.118*	.011	.000
Procedural Justice	Distributive Justice	-.170*	.013	.000
	Interactional Justice	-.118*	.011	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Table 81 *Pairwise Comparisons of the Level of Recovery Effort on Recovery Satisfaction*

(I) Level of Recovery Effort	(J) Level of Recovery Effort	Mean Difference (I-J)	Std. Error	Sig.
High Effort	Low Effort	2.985*	.023	.000
	No Effort	3.474*	.019	.000
Low Effort	High Effort	-2.985*	.023	.000
	No Effort	.490*	.018	.000
No Effort	High Effort	-3.474*	.019	.000
	Low Effort	-.490*	.018	.000

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Bonferroni.

Main Effect

All the main effects for the comparison of the effectiveness of recovery effort on recovery satisfaction between failure classes were showed a significant at $p < 0.001$ as showed in Table 82. The first significant main effect was the failure classes, $F_{1, 351} = 31.80$, $p < 0.001$, $r = 0.29$. The second main effect was the effectiveness of recovery effort, $F_{1.90, 667.37} = 117.72$, $p < 0.001$; contrasts of the recovery effort revealed that the significant difference between distributive justice and procedural justice was a larger effect, $F_{1, 351} = 182.85$, $p < 0.001$, $r = 0.59$ than the difference between interactional justice and procedural justice, $F_{1, 351} = 118.70$, $p < 0.001$, $r = 0.50$. The last main effect was the level of recovery effort, $F_{1.87, 655.99} = 17276.12$, $p < 0.001$; contrasts of the level of recovery effort revealed that the significant difference between high effort and no effort was a larger effect, $F_{1, 351} = 32311.94$, $p < 0.001$, $r = 0.99$ than the difference between low effort and no effort, $F_{1, 351} = 707.62$, $p < 0.001$, $r = 0.82$ as showed in Table 83.

In order to study the difference of main effect between distributive justice and interactional justice, the tests of within-subjects repeated contrasts was performed and showed that the significant difference between distributive justice and interactional justice, performed lower effect, $F_{1, 351} = 24.34$, $p < 0.001$, $r = 0.25$ than the difference between interactional justice and procedural justice, $F_{1, 351} = 118.70$, $p < 0.001$, $r = 0.50$ as showed in Table 84.

Table 82 *Tests of Within-Subjects Effects of Recovery Effort, Level of Recovery Effort on Recovery Satisfaction for Failure Classes Comparisons*

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Class ^a	Sphericity Assumed	10.669	1	10.669	31.797	.000
	Greenhouse-Geisser	10.669	1.000	10.669	31.797	.000
	Huynh-Feldt	10.669	1.000	10.669	31.797	.000
	Lower-bound	10.669	1.000	10.669	31.797	.000
Error(Class)	Sphericity Assumed	117.775	351	.336		
	Greenhouse-Geisser	117.775	351.000	.336		
	Huynh-Feldt	117.775	351.000	.336		
	Lower-bound	117.775	351.000	.336		
Effort ^b	Sphericity Assumed	32.036	2	16.018	117.722	.000
	Greenhouse-Geisser	32.036	1.901	16.849	117.722	.000
	Huynh-Feldt	32.036	1.911	16.761	117.722	.000
	Lower-bound	32.036	1.000	32.036	117.722	.000
Error(Effort)	Sphericity Assumed	95.519	702	.136		
	Greenhouse-Geisser	95.519	667.366	.143		
	Huynh-Feldt	95.519	670.901	.142		
	Lower-bound	95.519	351.000	.272		
Level ^c	Sphericity Assumed	14939.365	2	7469.682	17276.121	.000
	Greenhouse-Geisser	14939.365	1.869	7993.650	17276.121	.000
	Huynh-Feldt	14939.365	1.879	7952.677	17276.121	.000
	Lower-bound	14939.365	1.000	14939.365	17276.121	.000
Error(Level)	Sphericity Assumed	303.524	702	.432		
	Greenhouse-Geisser	303.524	655.985	.463		
	Huynh-Feldt	303.524	659.365	.460		
	Lower-bound	303.524	351.000	.865		
Class * Effort ^d	Sphericity Assumed	1.214	2	.607	6.059	.002
	Greenhouse-Geisser	1.214	1.954	.622	6.059	.003
	Huynh-Feldt	1.214	1.965	.618	6.059	.003
	Lower-bound	1.214	1.000	1.214	6.059	.014
Error(Class*Effort)	Sphericity Assumed	70.341	702	.100		
	Greenhouse-Geisser	70.341	685.755	.103		
	Huynh-Feldt	70.341	689.547	.102		
	Lower-bound	70.341	351.000	.200		
Class * Level ^e	Sphericity Assumed	37.297	2	18.648	65.154	.000
	Greenhouse-Geisser	37.297	1.983	18.809	65.154	.000
	Huynh-Feldt	37.297	1.994	18.703	65.154	.000
	Lower-bound	37.297	1.000	37.297	65.154	.000

Error(Class*Level)	Sphericity Assumed	200.926	702	.286		
	Greenhouse-Geisser	200.926	696.021	.289		
	Huynh-Feldt	200.926	699.958	.287		
	Lower-bound	200.926	351.000	.572		
Effort * Level ^f	Sphericity Assumed	44.610	4	11.153	62.259	.000
	Greenhouse-Geisser	44.610	2.677	16.664	62.259	.000
	Huynh-Feldt	44.610	2.700	16.525	62.259	.000
	Lower-bound	44.610	1.000	44.610	62.259	.000
Error(Effort*Level)	Sphericity Assumed	251.501	1404	.179		
	Greenhouse-Geisser	251.501	939.656	.268		
	Huynh-Feldt	251.501	947.560	.265		
	Lower-bound	251.501	351.000	.717		
Class * Effort * Level ^g	Sphericity Assumed	1.732	4	.433	3.683	.005
	Greenhouse-Geisser	1.732	3.022	.573	3.683	.012
	Huynh-Feldt	1.732	3.051	.568	3.683	.011
	Lower-bound	1.732	1.000	1.732	3.683	.056
Error(Class*Effort*Level)	Sphericity Assumed	165.046	1404	.118		
	Greenhouse-Geisser	165.046	1060.761	.156		
	Huynh-Feldt	165.046	1071.005	.154		
	Lower-bound	165.046	351.000	.470		

a “Class” indicates “Failure Classes” – system failures and personnel failures.

b “Effort” indicates “Recovery Effort”- distributive justice, interactional justice, and procedural justice.

c “Level” indicates “Level of Recovery Effort” – high effort, low effort, and no effort.

d “Class * Effort” indicates interaction between “Failure Classes” and “Recovery Effort.”

e “Class * Level” indicates interaction between “Failure Classes” and “Level of Recovery Effort.”

f “Effort * Level” indicates interaction between “Recovery Effort” and “Level of Recovery Effort”

g “Class * Effort * Level” indicates interaction among “Failure Classes,” “Recovery Effort,” and “Level of Recovery Effort”

Table 83 *Tests of Within-Subjects Simple Contrasts of Recovery Effort, Level of Recovery Effort on Recovery Satisfaction for Failure Classes Comparisons*

Source	Class	Effort	Level	Type III Sum Of Squares	df	Mean Square	F	Sig.	Effect Size
Class ^a	System vs. Personnel			2.371	1	2.371	31.797	.000	0.29
Error (Class)	System vs. Personnel			26.172	351	.075			
Effort ^b		DJ vs. PJ		10.171	1	10.171	182.845	.000	0.59
		IJ vs. PJ		4.893	1	4.893	118.697	.000	0.50
Error (Effort)		DJ vs. PJ		19.524	351	.056			
		IJ vs. PJ		14.468	351	.041			
Level ^c			High vs. No	4249.230	1	4249.230	32311.944	.000	0.99
			Low vs. No	84.372	1	84.372	707.620	.000	0.82
Error(Level)			High vs. No	46.159	351	.132			
			Low vs. No	41.851	351	.119			
Class * Effort ^d	System vs. Personnel	DJ vs. PJ		1.253	1	1.253	8.216	.004	0.15
		IJ vs. PJ		1.175	1	1.175	8.953	.003	0.16
Error (Class*Effort)	System vs. Personnel	DJ vs. PJ		53.525	351	.152			
		IJ vs. PJ		46.048	351	.131			
Class * Level ^e	System vs. Personnel		High vs. No	.789	1	.789	2.144	.144	0.08
			Low vs. No	31.520	1	31.520	75.645	.000	0.42
Error (Class*Level)	System vs. Personnel		High vs. No	129.211	351	.368			
			Low vs. No	146.258	351	.417			
Effort * Level ^f		DJ vs. PJ	High vs. No	11.819	1	11.819	62.921	.000	0.39
			Low vs. No	39.557	1	39.557	126.287	.000	0.51
		IJ vs. PJ	High vs. No	.160	1	.160	.692	.406	0.04
			Low vs. No	49.500	1	49.500	157.950	.000	0.56
Error (Effort*Level)		DJ vs. PJ	High vs. No	65.931	351	.188			
			Low vs. No	109.943	351	.313			
		IJ vs. PJ	High vs. No	81.090	351	.231			
			Low vs. No	110.000	351	.313			
Class * Effort * Level ^g	System vs. Personnel	DJ vs. PJ	High vs. No	9.230	1	9.230	14.609	.000	0.20
			Low vs. No	.000	1	.000	.000	1.000	0.00
		IJ vs. PJ	High vs. No	4.776	1	4.776	7.898	.005	0.15
			Low vs. No	1.136	1	1.136	1.529	.217	0.07
Error (Class*Effort *Level)	System vs. Personnel	DJ vs. PJ	High vs. No	221.770	351	.632			
			Low vs. No	294.000	351	.838			
		IJ vs. PJ	High vs. No	212.224	351	.605			
			Low vs. No	260.864	351	.743			

a "Class" indicates "Failure Classes" – system failures and personnel failures.

b "Effort" indicates "Recovery Effort"- distributive justice (DJ), interactional justice (IJ), and procedural justice (PJ).

c "Level" indicates "Level of Recovery Effort" – high effort, low effort, and no effort.

d "Class * Effort" indicates interaction between "Failure Classes" and "Recovery Effort."

e "Class * Level" indicates interaction between "Failure Classes" and "Level of Recovery Effort."

f "Effort * Level" indicates interaction between "Recovery Effort" and "Level of Recovery Effort"

g "Class * Effort * Level" indicates interaction among "Failure Classes," "Recovery Effort," and "Level of Recovery Effort"

Table 84 *Tests of Within-Subjects Repeated Contrasts of Recovery Effort, Level of Recovery Effort on Recovery Satisfaction for Failure Classes Comparisons*

Source	Class	Effort	Level	Type III Sum of Squares	df	Mean Square	F	Sig.	Effect Size
Class ^a	System vs. Personnel			2.371	1	2.371	31.797	.000	0.29
Error (Class)	System vs. Personnel			26.172	351	.075			
Effort ^b		DJ vs. IJ		.955	1	.955	24.344	.000	0.25
		IJ vs. PJ		4.893	1	4.893	118.697	.000	0.50
Error (Effort)		DJ vs. IJ		13.767	351	.039			
		IJ vs. PJ		14.468	351	.041			
Level ^c			High vs. No	4249.230	1	4249.230	32311.944	.000	0.99
			Low vs. No	84.372	1	84.372	707.620	.000	0.82
Error(Level)			High vs. No	46.159	351	.132			
			Low vs. No	41.851	351	.119			
Class * Effort ^d	System vs. Personnel	DJ vs. IJ		.001	1	.001	.011	.917	0.01
		IJ vs. PJ		1.175	1	1.175	8.953	.003	0.16
Error (Class*Effort)	System vs. Personnel	DJ vs. IJ		41.110	351	.117			
		IJ vs. PJ		46.048	351	.131			
Class * Level ^e	System vs. Personnel		High vs. No	.789	1	.789	2.144	.144	0.08
			Low vs. No	31.520	1	31.520	75.645	.000	0.42
Error (Class*Level)	System vs. Personnel		High vs. No	129.211	351	.368			
			Low vs. No	146.258	351	.417			
Effort * Level ^f		DJ vs. IJ	High vs. No	14.727	1	14.727	80.427	.000	0.43
			Low vs. No	.557	1	.557	2.274	.132	0.08
		IJ vs. PJ	High vs. No	.160	1	.160	.692	.406	0.04
			Low vs. No	49.500	1	49.500	157.950	.000	0.56
Error (Effort*Level)		DJ vs. IJ	High vs. No	64.273	351	.183			
			Low vs. No	85.943	351	.245			
		IJ vs. PJ	High vs. No	81.090	351	.231			
			Low vs. No	110.000	351	.313			
Class * Effort * Level ^g	System vs. Personnel	DJ vs. IJ	High vs. No	.727	1	.727	1.363	.244	0.06
			Low vs. No	1.136	1	1.136	1.529	.217	0.07
		IJ vs. PJ	High vs. No	4.776	1	4.776	7.898	.005	0.15
			Low vs. No	1.136	1	1.136	1.529	.217	0.07
Error (Class*Effort *Level)	System vs. Personnel	DJ vs. IJ	High vs. No	187.273	351	.534			
			Low vs. No	260.864	351	.743			
		IJ vs. PJ	High vs. No	212.224	351	.605			
			Low vs. No	260.864	351	.743			

a "Class" indicates "Failure Classes" – system failures and personnel failures.

b "Effort" indicates "Recovery Effort"- distributive justice (DJ), interactional justice (IJ), and procedural justice (PJ).

c "Level" indicates "Level of Recovery Effort" – high effort, low effort, and no effort.

d "Class * Effort" indicates interaction between "Failure Classes" and "Recovery Effort."

e "Class * Level" indicates interaction between "Failure Classes" and "Level of Recovery Effort."

f "Effort * Level" indicates interaction between "Recovery Effort" and "Level of Recovery Effort"

g "Class * Effort * Level" indicates interaction among "Failure Classes," "Recovery Effort," and "Level of Recovery Effort"

Interaction Effect

All the interaction effects for the comparison of the effectiveness of recovery effort on recovery satisfaction between system failures and personnel failures were showed a significant at $p < 0.05$ as showed in Table 82.

The first significant interaction effect was between the class and the recovery effort, $F_{1,95,685.76} = 6.06$, $p < 0.05$. Contrasts revealed significant interactions when comparing system failures to personnel failures, both for distributive justice to procedural justice, $F_{1,351} = 8.22$, $p < 0.01$, $r = 0.15$, and interactional justice to procedural justice, $F_{1,351} = 8.95$, $p < 0.01$, $r = 0.16$ as showed in Table 83.

By looking at the interaction graph, these effects indicated that distributive justice (compared to procedural justice) lowered scores significant more difference in personnel failures than it did for system failures. Additionally, the interaction effects showed that interactional justice (compared to procedural justice) lowered scores also significantly more in personnel failures than it did for system failures as showed in Table 85 and Figure 23.

In order to study the different interaction effects between distributive justice and interactional justice, the tests of within-subjects repeated contrasts was performed and showed when comparing system failures to personnel failures, however, no significant difference between distributive justice and interactional justice were found, $F_{1,351} = 0.01$, $p > 0.05$, $r = 0.01$ as showed in Table 84.

Table 85 *Mean of Interaction Between Failure Classes and Recovery Effort on Recovery Satisfaction*

Failure Classes	Recovery Effort	Mean	Std. Error
System	Distributive Justice	2.502	.015
	Interactional Justice	2.451	.014
	Procedural Justice	2.362	.015
Personnel	Distributive Justice	2.440	.013
	Interactional Justice	2.387	.013
	Procedural Justice	2.241	.012

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

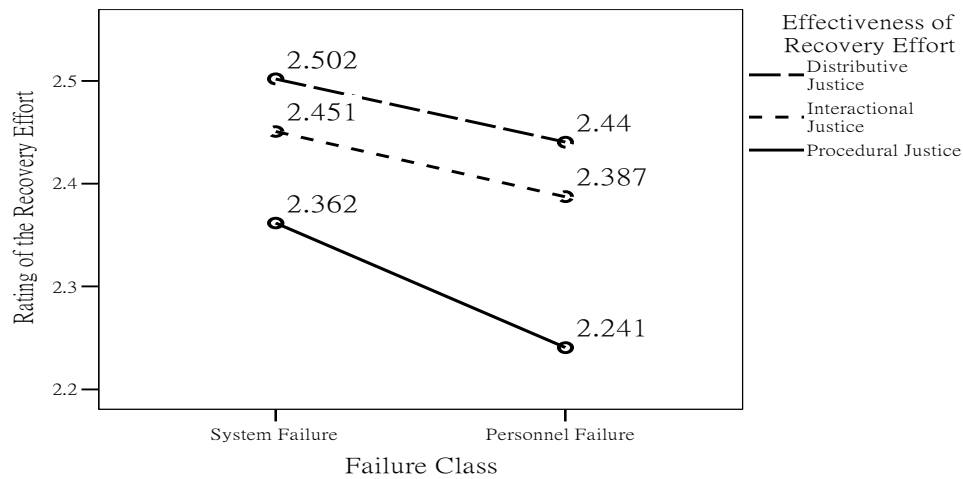


Figure 23 Interaction effects of failure classes and recovery effort on recovery satisfaction

The second significant interaction effect was between the failure classes and the level of recovery effort, $F_{2, 702} = 65.15$, $p < 0.001$. Contrasts revealed significant interaction when comparing system failures to personnel failures, for low effort compared to no effort, $F_{1, 351} = 2.14$, $r = 0.08$ was significant at $p < 0.001$, but for high effort compared to no effort, $F_{1, 351} = 2.14$, $r = 0.08$ was not a significant at $p > 0.05$.

By looking at the interaction graph, these effects showed that low effort (compared to no effort) perceived scores significantly more difference in system failures than it did for personnel failures; however, for high effort (compared to no effort) perceived no significant difference between failure classes as showed in Table 86 and Figure 24.

Table 86 *Mean of Interaction Between Failure Classes and Level of Recovery Effort on Recovery Satisfaction*

Failure Classes	Level of Recovery Effort	Mean	Std. Error
System	High Effort	4.526	.020
	Low Effort	1.714	.022
	No Effort	1.075	.013
Personnel	High Effort	4.575	.019
	Low Effort	1.417	.018
	No Effort	1.077	.017

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

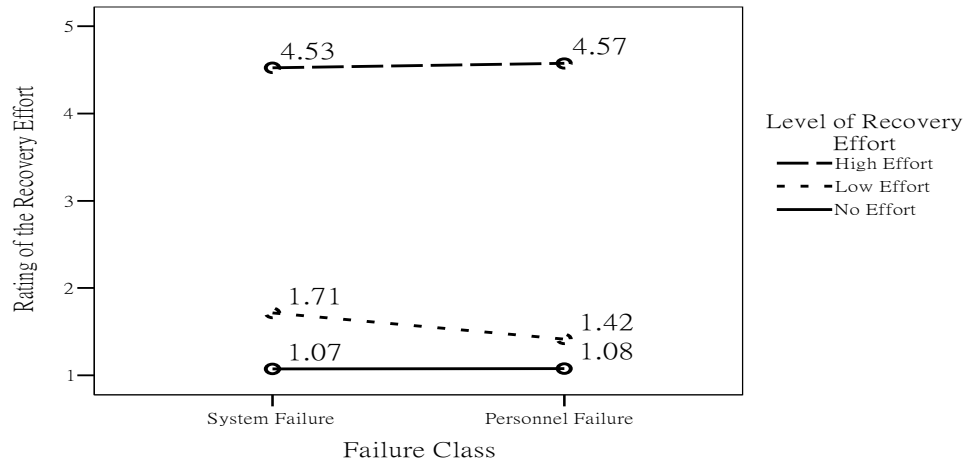


Figure 24 Interaction effects of failure classes and level of recovery effort on recovery satisfaction

The last significant interactions were among the class, recovery effort, and level of recovery effort, $F_{3,02, 1060.76} = 3.68$, $p < 0.01$. Contrasts revealed significant interactions with respect to the failure classes comparisons, when comparing high effort to low effort, both for distributive justice compared to procedural justice $F_{1, 351} = 14.61$, $p < 0.001$, $r = 0.20$ and interactional justice compared to procedural justice. $F_{1, 351} = 7.90$, $p < 0.01$, $r = 0.15$. However, contrasts revealed non-significant interactions with respect to the failure classes comparisons, when comparing low effort to no effort, both for distributive justice compared to procedural justice $F_{1, 351} = 0.00$, $p > 0.05$, $r = 0.00$ and interactional justice compared to procedural justice. $F_{1, 351} = 1.53$, $p > 0.05$, $r = 0.07$ as showed in Table 83.

By looking at the interaction graph, with respect to the failure classes comparisons, the interactions showed that when comparing high effort to no effort, perceived scores significantly more difference in distributive justice than it did for procedural justice for both system failures and personnel failures. Moreover, when comparing high effort to no effort, perceived scores significant more difference in procedural justice than it did for interactional justice for system failures whereas perceived scores significant more difference in interactional justice than it did for procedural justice. However, when comparing low effort to no effort, neither distributive justice compared to procedure justice was significant; nor interactional justice was significant as showed in Table 87, Figure 25 and Figure 26.

In order to study the interactions between distributive justice and interactional justice, the tests of within-subjects repeated contrasts was performed and showed with respect to failure classes comparisons, when comparing distributive justice to interactional justice, neither high effort compared to no effort was significant, $F_{1, 351} =$

1.36, $p > 0.05$, $r = 0.06$; nor low effort compared to no effort was significant, $F_{1, 351} = 1.53$, $p > 0.05$, $r = 0.07$ as showed in Table 84.

Table 87 *Mean of Interaction among Failure Classes, Recovery Effort, and Level of Recovery Effort on Recovery Satisfaction*

Failure Classes	Recovery Effort	Level of Recovery Effort	Mean	Std. Error
System	Distributive Justice	High Effort	4.616	.026
		Low Effort	1.818	.031
		No Effort	1.071	.014
	Interactional Justice	High Effort	4.440	.028
		Low Effort	1.835	.030
		No Effort	1.077	.014
	Procedural Justice	High Effort	4.520	.027
		Low Effort	1.489	.036
		No Effort	1.077	.014
Personnel	Distributive Justice	High Effort	4.739	.023
		Low Effort	1.506	.028
		No Effort	1.077	.017
	Interactional Justice	High Effort	4.511	.028
		Low Effort	1.574	.028
		No Effort	1.077	.017
	Procedural Justice	High Effort	4.474	.028
		Low Effort	1.170	.020
		No Effort	1.077	.017

* Mean scale: 1 = Strongly Disagree; 5 = Strongly Agree

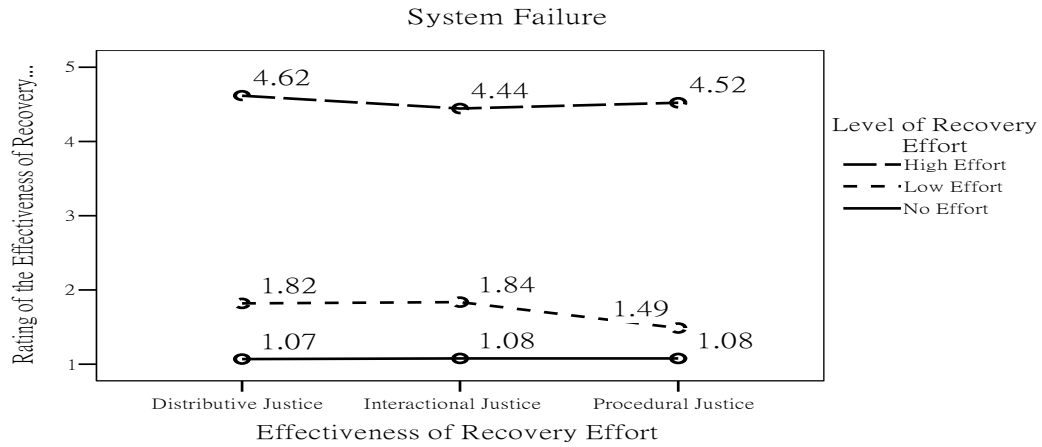


Figure 25 Interaction effects of recovery effort and level of recovery effort on recovery satisfaction for system failures

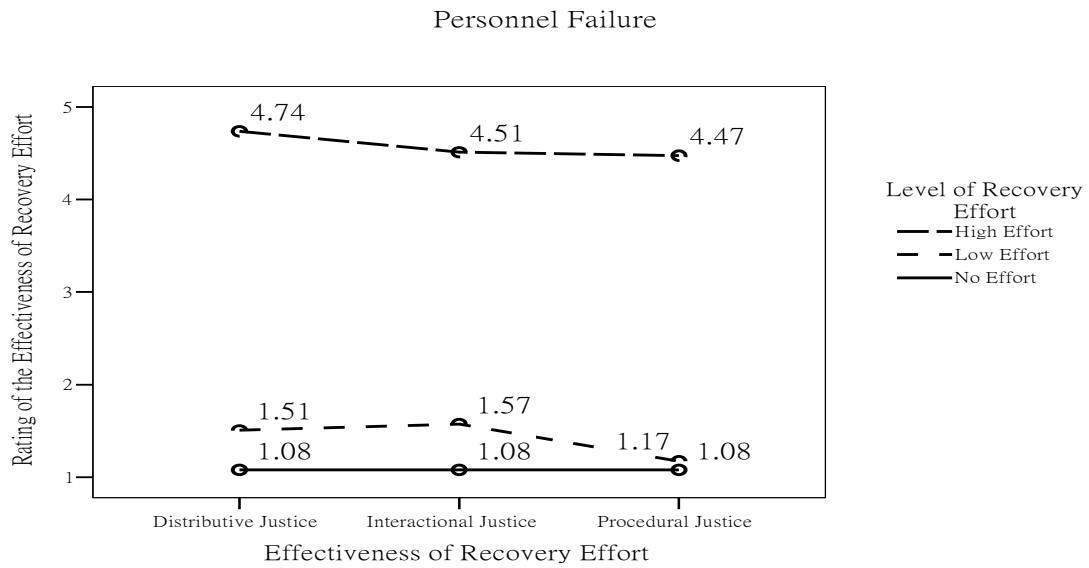


Figure 26 Interaction effects of recovery effort and level of recovery effort on recovery satisfaction for personnel failures

In summary, all the main effects and some interaction effects were significant difference among failure classes, the effectiveness of recovery effort, and the level of recovery effort. The results of main effects of failure classes were significant different between system failures and personnel failures. The results of main effects among the effectiveness of recovery effort indicated when comparing to procedural justice, distributive justice had a larger effect than interactional justice; when comparing to interactional justice, procedural justice had a larger effect than distributive justice. Besides, the results of main effects among the level of recovery effort indicated when comparing to no effort, high effort had a larger effect than low effort.

Moreover, the first interaction effects were significant when comparing failure classes and the effectiveness of recovery effort. The results indicated when comparing to procedural justice, both distributive justice and interactional justice had a larger effect on the class of personnel failures than they did on the class of system failures; however, when compared distributive justice to interactional justice, there had no significant difference between and personnel failures. The second interaction effects were significant when comparing failure classes and the level of recovery effort. The results indicated when comparing to no effort, high effort performed the same effect on failure classes whereas when comparing to no effort, low effort had a larger effect on the class of system failures.

The last interaction effects were significant with respect to the failure classes comparison, the effectiveness of recovery effort, and the level of recovery effort. When comparing to no effort, high effort had a larger effects on distributive justice than procedural justice for both system failures and personnel failures; high effort also had a

larger effects on interactional justice than procedural justice but only for personnel failures; and high effort had higher effects on procedural justice for system failures. However, when comparing to no effort, high effort performed the same effects between distributive justice and interactional justice for failure classes.

Overall, there was a significant difference in the recovery satisfaction after the effectiveness of recovery effort between system failures and personnel failures. Therefore, H6 “There is no difference in the recovery satisfaction between system failures and personnel failures after the administration of recovery effort in casual dining restaurants in the U.S.” was rejected.

Relationship Between Recovery Satisfaction and Customer Loyalty

Following the evaluation of the recovery satisfaction after recovery efforts, the seventh hypothesis was tested to examine the relationship between recovery satisfaction and customer loyalty in terms of failure classes and failure severity as follows: H7a. There is no relationship between the recovery satisfaction and customer loyalty in terms of failure classes in casual dining restaurants in the U.S.; and H7b. There is no relationship between the recovery satisfaction and customer loyalty in terms of failure classes and failure severity in casual dining restaurants in the U.S.

Hierarchical regression analysis was employed to test hypothesis seven. Results were first used to describe the relationship between recovery satisfaction and customer loyalty in terms of failure classes. The results also described the relationship between recovery satisfaction and customer loyalty including failure severity. To gain more insight into customer loyalty, customer loyalty was further evaluated using behavioral loyalty and

attitudinal loyalty. Finally, results were compared in terms of failure classes. The assumptions of normally distributed errors, independent errors, linearity and multicollinearity were examined before regression model interpretation.

System Failures for Customer Loyalty in Recovery Satisfaction – Assumptions

Examination

Normally distributed errors

The assumption of normally distributed errors was examined by the histogram of regression standardized residuals and normal P-P plot of regression standardized residual. Both of them were inspected visually and ascertain approximately normality as showed in Figure 27 and in Figure 28.

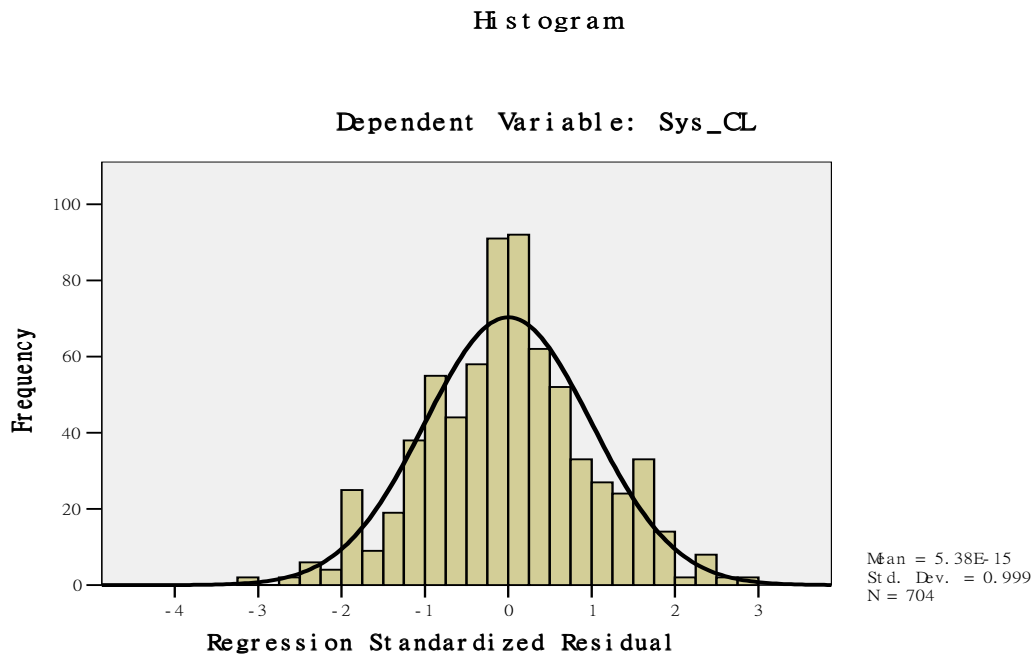


Figure 27 Histogram of standardized residual for customer loyalty in terms of system failures

Normal P-P Plot of Regression Standardized Residual

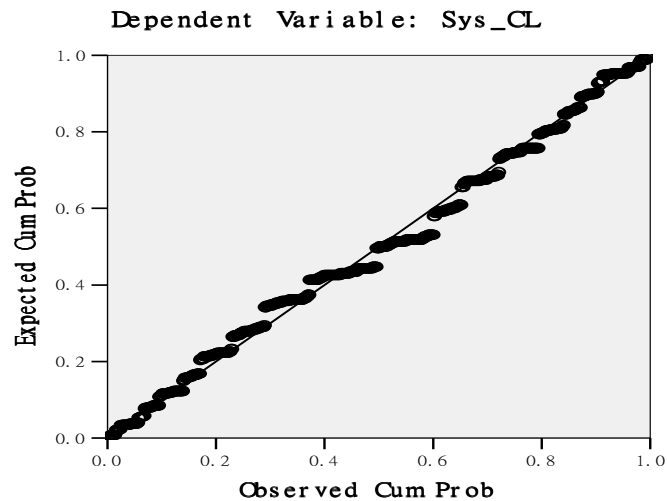


Figure 28 Normal P-P plot of expected cumulative probability against the observed cumulative probability for customer loyalty in recovery satisfaction in terms of system failures

Independent errors

This assumption can be tested with Durbin-Watson test. It tests whether adjacent residual are correlated. A value greater than 2 indicates a negative correlation between adjacent residuals, whereas a value below 2 indicates a positive correlation. However, the size of Durbin-Watson statistic depends upon the number of predictors in the model, and the number of observations. In general, values less than 1 or greater than 3 are definitely cause for concern (Durbin & Watson, 1951). The Durbin-Watson test for independence errors of recovery satisfaction and system severity was 1.075 and has met the assumption as showed in Table 88.

Table 88 *Independent Errors of the Customer Loyalty in Recovery Satisfaction for System Failures*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.886 ^a	.785	.785	.610	
2	.886 ^b	.785	.785	.611	1.075

Dependent Variable: Customer Loyalty for System failures

a Predictors: (Constant), Recovery Satisfaction

b Predictors: (Constant), Recovery Satisfaction, and System Severity

Linearity

For the assumption of linearity, Hair, Anderson, Tatham and Black (1998) suggested that researchers may depend on the visual inspection of the relationships to determine whether linear relationships are present. The scatterplot of standardized residual against the standardized predicted value of dependent variable would show a horizontal band of residuals. Results showed that the independent of system severity has violated the assumption of linearity; however, the independent of recovery satisfaction has met the linearity assumption with R-square linear 0.785 also showed in Table 88.

Multicollinearity

Multicollinearity was examined by both tolerance and variances inflation factor (VIF). If the largest VIF is greater than 10 then there is cause for concern (Bowerman & O'Connell, 1990; Myers, 1990); and if the average VIF is substantially greater than 1 then the regression may be biased (Bowerman & O'Connell, 1990). Additionally, tolerance below 0.2 indicates a potential problem (Menard, 1995). Results of VIF and tolerance confirmed that collinearity was not a problem and predictors were fit to predict the

customer loyalty for system failures as showed in Table 89.

Table 89 *Multicollinearity Test Between Predictors and Customer Loyalty in Recovery Satisfaction for System Failures*

Model	Collinearity Statistics	
	Tolerance	VIF
1 (Constant)		
Recovery Satisfaction	1.000	1.000
2 (Constant)		
Recovery Satisfaction	1.000	1.000
System Severity	1.000	1.000

Dependent Variable: Customer Loyalty for System Failures

System Failures for Customer Loyalty after Recovery Satisfaction – Change Statistics and Model Summary

After testing the assumption, results of hypotheses were showed by the regression models as showed in Table 92. With respect to the change statistics, Model one presents the significant relationship between recovery satisfaction and customer loyalty for system failures, $F_{1, 702} = 2567.12$, $p < 0.05$; and Model two presents non-significant change relationship between recovery satisfaction and customer loyalty with system severity added $F_{1, 701} = 0.20$, $p > 0.05$

The amount of R-square change is associated with a predictor of the dependent variable. If the R-square change in a question is large, it means that the predictor variable is a good predictor of the dependent variable. The change statistics showed that R-square change had not a significant F change on Model two as follows: Model 1: Recovery satisfaction alone accounts for 78.5% of the variance of customer loyalty; and Model 2:

System severity accounts for 0 % of the variance in customer loyalty after controlling for recovery satisfaction. Recovery satisfaction and system severity account for 78.5% of the variance of customer loyalty as showed in Table 90.

Table 90 *Change Statistics of the Customer Loyalty in Recovery Satisfaction for System Failures*

Model	R Square	Change Statistics				
		R Square Change	F Change	df1	df2	Sig. F Change*
1	.785	.785	2567.115	1	702	.000 ^a
2	.785	.000	0.203	1	701	.653 ^b

Dependent Variable: Customer Loyalty for System Failures

* Significance at $p < 0.05$

a Predictors: (Constant), Recovery Satisfaction

b Predictors: (Constant), Recovery Satisfaction, and System Severity

Result of analysis of variance (ANOVA) for Model one was significant at $p < 0.001$ with $F_{1, 702} = 2567.115$; and Model two was significant at $p < 0.001$ with $F_{2, 701} = 1282.200$. The correlation coefficient (R) of Model one was 0.89; and Model two was 0.89 that both of the models had a large effect size (Cohen, 1988). The adjusted R-square of Model one indicated that around 79% of total variance for customer loyalty was accounted for recovery satisfaction; the adjusted R-square of Model two indicated that 79% of total variance for customer loyalty was accounted for recovery satisfaction and system severity. The significant t value indicated that predictor(s) contributed unique significance to regression model for predicting the impact on customer loyalty. Only system severity had not a significant t value in the model. The identified regression equations were as showed in Table as showed in Table 91.

Table 91 *Multiple Regression for Customer Loyalty in Recovery Satisfaction and Failure Severity for System Failures (N=352)*

H7 There is no relationship between the recovery satisfaction and customer loyalty in terms of the failure classes and failure severity in casual dining restaurants in the U.S.

Dependent variable: Customer Loyalty for System Failures

Independent variable: Recovery Satisfaction (X_1), System Severity (X_2)

Model 1: $Y = -0.555 + 1.135X_1$

Model 2: $Y = -0.482 + 1.135X_1 - 0.02X_2$

Model 1: $R = 0.886$, $R^2 = 0.785$, Adjusted $R^2 = 0.785$, $F_{1, 702} = 2567.115$, $p < 0.001$

Model 2: $R = 0.886$, $R^2 = 0.785$, Adjusted $R^2 = 0.785$, $F_{2, 701} = 1282.200$, $p < 0.001$

		Unstandardized Coefficients		Standardized Coefficients	
Model		B	Std. Error	Beta	<i>t</i>
1	(Constant)	-.555	.074		-7.542
	Recovery Satisfaction	1.135	.022	.886	50.667**
2	(Constant)	-.482	.179		-2.686
	Recovery Satisfaction	1.135	.022	.886	50.640**
	System Severity	-.020	.044	-.008	-.450

Dependent Variable: Customer loyalty for System Failures

** Significance at $p < 0.001$

Personnel Failures for Customer Loyalty in Recovery Satisfaction – Assumptions

Examination

Normally distributed errors

The assumption of normally distributed errors was examined by the histogram of regression standardized residuals and normal P-P plot of regression standardized residual. Both of them were inspected visually and approximately normality as showed in Figure 29 and in Figure 30.

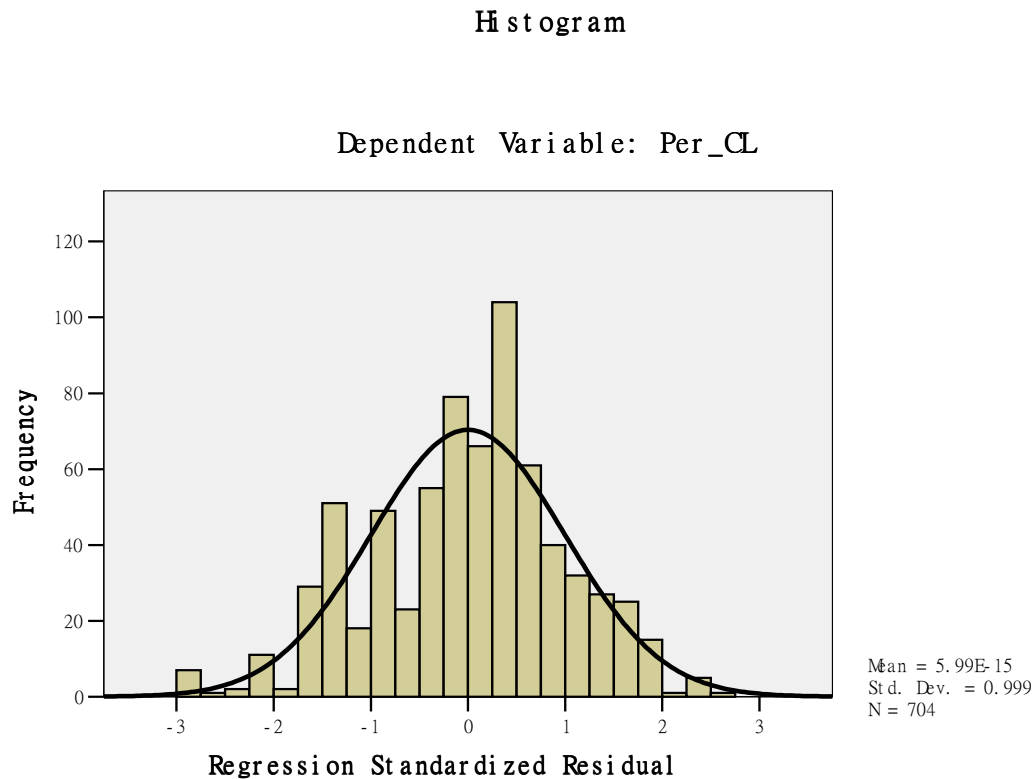


Figure 29 Histogram of standardized residual for customer loyalty in recovery satisfaction in terms of personnel failures

Normal P-P Plot of Regression Standardized Residual

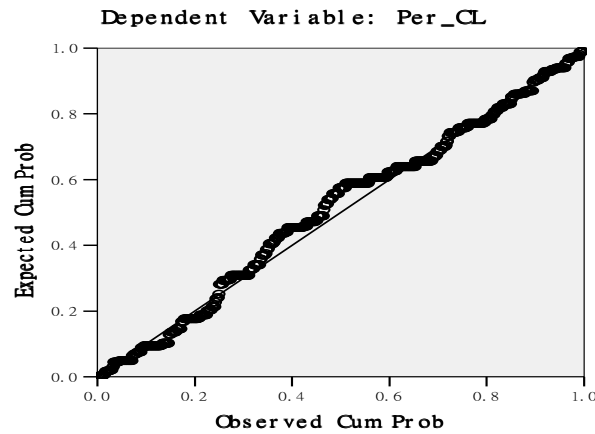


Figure 30 Normal P-P plot of expected cumulative probability against the observed cumulative probability for customer loyalty in terms of personnel failures

Independent errors

This assumption can be examined with Durbin-Watson test. If the results less than 1 or greater than 3, it would be definitely cause for concern (Durbin & Watson, 1951). The Durbin-Watson test for independence errors for recovery satisfaction and personnel severity was 0.631 and has not met the assumption as showed in Table 92.

Table 92 *Independent Errors of the Customer Loyalty in Recovery Satisfaction for Personnel Failures*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.770 ^a	.594	.593	.835	
2	.771 ^b	.594	.593	.836	0.631

Dependent Variable: Customer Loyalty for Personnel Failures

a Predictors: (Constant), Recovery Satisfaction

b Predictors: (Constant), Recovery Satisfaction, Personnel Severity

Linearity

For the assumption of linearity, Hair, Anderson, Tatham and Black (1998) suggested that researchers may depend on the visual inspection of the relationships to determine whether linear relationships are present. The scatterplot of standardized residual against the standardized predicted value of dependent variable would show a horizontal band of residuals. Results showed that the independent of personnel severity has violated the assumption of linearity; however, the independent of recovery satisfaction has met the linearity assumption with R-square linear 0.594 also showed in Table 94.

Multicollinearity

Multicollinearity was examined by both tolerance and variances inflation factor (VIF). If the largest VIF is greater than 10 then there is cause for concern (Bowerman & O'Connell, 1990; Myers, 1990); and if the average VIF is substantially greater than 1 then the regression may be biased (Bowerman & O'Connell, 1990). Additionally, tolerance below 0.2 indicates a potential problem (Menard, 1995). Results of VIF and tolerance confirmed that collinearity was not a problem and predictors were fit to predict the customer loyalty for personnel failures as showed in Table 93.

Table 93 *Multicollinearity Test Between Predictors and Customer Loyalty in Recovery Satisfaction for Personnel Failures*

Model	Collinearity Statistics	
	Tolerance	VIF
1 (Constant)		
Recovery Satisfaction	1.000	1.000
2 (Constant)		
Recovery Satisfaction	.999	1.000
Personnel Severity	.999	1.000

Dependent Variable: Customer Loyalty for Personnel Failures

Personnel Failures for Customer Loyalty in Recovery Satisfaction – Change Statistics and Model Summary

After testing the assumption, results of hypotheses were showed by the regression models as showed in Table 94. With respect to the change statistics, Model one presents the significant relationship between recovery satisfaction and customer loyalty for personnel failures, $F_{1, 702} = 1025.34$, $p < 0.05$; and Model two presents non-significant change relationship between recovery satisfaction and customer loyalty with personnel severity added $F_{1, 701} = 0.152$, $p > 0.05$.

The amount of R-square change is associated with a predictor of the dependent variable. If the R-square change in question is large, it means that the predictor variable is a good predictor of the dependent variable. The change statistics showed that R-square change had significant F change on Model one, but not on Model two as follows: Model 1: Recovery satisfaction alone accounts for 59.4% of the variance of customer loyalty. Model 2: Personnel severity accounts for 0 % of the variance in customer loyalty after controlling for recovery satisfaction. Recovery satisfaction and personnel severity

account for 59.4% of the variance of customer loyalty for personnel failure as showed in Table 94.

Table 94 *Change Statistics of the Customer Loyalty in Recovery Satisfaction for Personnel Failures*

Model	R Square	Change Statistics				Sig. F Change*
		R Square Change	F Change	df1	df2	
1	.594	.594	1025.340	1	702	.000 ^a
2	.594	.000	.152	1	701	.697 ^b

Dependent Variable: Customer Loyalty for Personnel Failures

* Significance at $p < 0.05$

a Predictors: (Constant), Recovery Satisfaction

b Predictors: (Constant), Recovery Satisfaction, Personnel Severity

Result of analysis of variance (ANOVA) for Model one was significant at $p < 0.001$ with $F_{1, 702} = 1025.34$; and Model two was significant at $p < 0.001$ with $F_{2, 701} = 512.13$. The correlation coefficient (R) of Model one was 0.77, and Model two was 0.77 that both of the models had a large effect size (Cohen, 1988). The adjusted R-square of Model one indicated that around 59% of total variance for customer loyalty was accounted for recovery satisfaction; and the adjusted R-square of Model two indicated that 59% of total variance for customer loyalty was accounted for recovery satisfaction and personnel severity.

The significant t value indicated that predictor(s) contributed unique significance to regression model for predicting the impact on customer loyalty. Only personnel severity had not a significant t value in the model. The identified regression equations were as showed in Table 95.

Table 95 *Multiple Regression for Customer Loyalty in Recovery Satisfaction and Failure Severity for Personnel Failures (N=352)*

H7 There is no relationship between the recovery satisfaction and customer loyalty in terms of the failure classes and failure severity in casual dining restaurants in the U.S.
 Dependent variable: Customer Loyalty for Personnel Failures
 Independent variable: Recovery Satisfaction (X_1), Personnel Severity (X_2)
 Model 1: $Y = -0.143 + 0.963X_1$
 Model 2: $Y = -0.008 + 0.963X_1 - 0.028X_2$
 Model 1: $R = 0.77$, $R^2 = 0.59$, Adjusted $R^2 = 0.59$, $F_{1, 702} = 1025.34$, $p < 0.001$
 Model 2: $R = 0.77$, $R^2 = 0.59$, Adjusted $R^2 = 0.59$, $F_{2, 701} = 512.13$, $p < 0.001$

		Unstandardized		Standardized	
		Coefficients		Coefficients	
Model		B	Std. Error	Beta	<i>t</i>
1	(Constant)	-.143	.095		-1.504
	Recovery Satisfaction	.963	.030	.770	32.021**
2	(Constant)	-.008	.360		-.023
	Recovery Satisfaction	.963	.030	.771	32.001**
	Personnel Severity	-.028	.073	-.009	-.390

Dependent Variable: Customer Loyalty for Personnel Failures

** Significance at $p < 0.001$

System Failures for Behavior Loyalty in Recovery Satisfaction – Assumptions

Examination

Normally distributed errors

Normality distribution of errors was examined by the histogram of regression standardized residual and normal P-P plot of cumulative probability. Both of them were visualized and presented roughly normality distribution as showed in Figure 31 and in Figure 32.

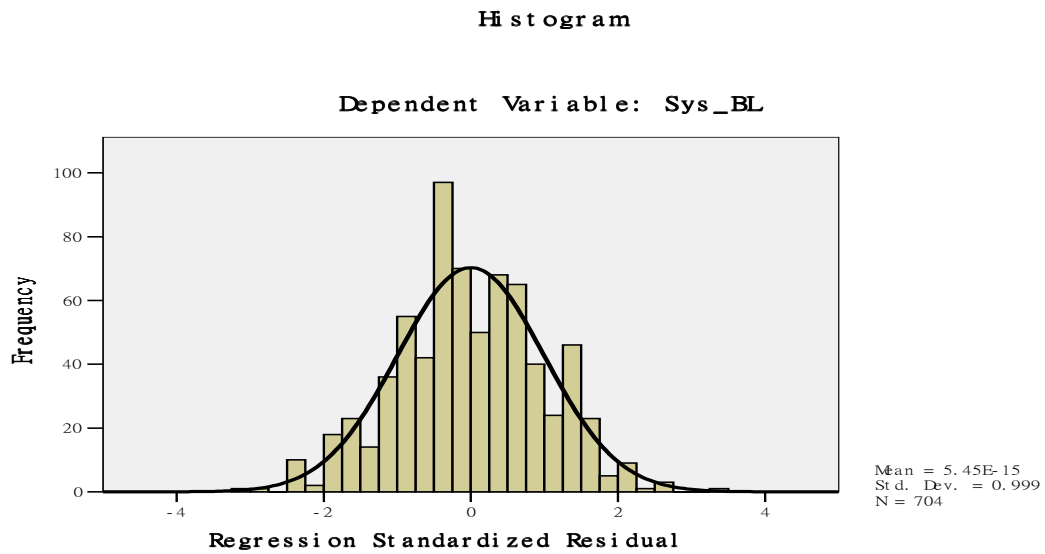


Figure 31 Histogram of standardized residual for behavioral loyalty in recovery satisfaction in terms of system failures

Normal P-P Plot of Regression Standardized Residual

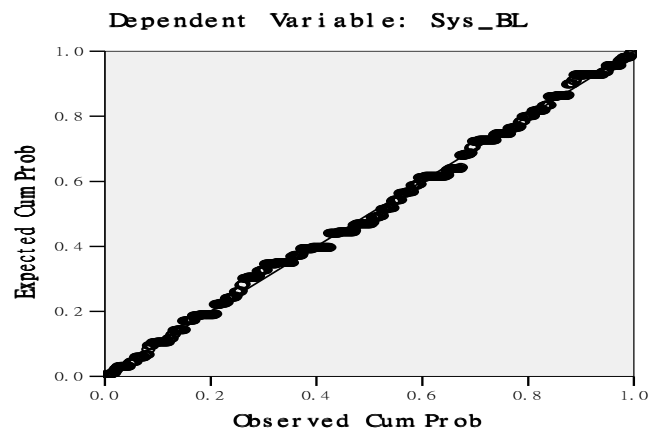


Figure 32 Normal P-P plot of expected cumulative probability against the observed cumulative probability for behavioral loyalty in recovery satisfaction in terms of system failures

Independent errors

This assumption can be examined with Durbin-Watson test. If the results less than 1 or greater than 3, it would be definitely cause for concern (Durbin & Watson, 1951). The Durbin-Watson test for independence errors of recovery satisfaction and system severity was 1.036 and has met the assumption as showed in Table 96.

Table 96 *Independent Errors of the Behavioral Loyalty in Recovery Satisfaction for System Failures*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.885 ^a	.784	.784	.623	
2	.885 ^b	.784	.783	.623	1.036

Dependent Variable: Behavioral Loyalty for System Failures
a Predictors: (Constant), Recovery Satisfaction
b Predictors: (Constant), Recovery Satisfaction, and System Severity

Linearity

For the assumption of linearity, Hair, Anderson, Tatham and Black (1998) suggested that researchers may depend on the visual inspection of the relationships to determine whether linear relationships are present. The scatterplot of standardized residual against the standardized predicted value of dependent variable would show a horizontal band of residuals. Results showed that the independent of system severity has violated the assumption of linearity; however, the independent of recovery satisfaction has met the linearity assumption with R-square linear 0.784 also showed in Table 96.

Multicollinearity

Multicollinearity was examined by both tolerance and variances inflation factor (VIF). If the largest VIF is greater than 10 then there is cause for concern (Bowerman & O'Connell, 1990; Myers, 1990); and if the average VIF is substantially greater than 1 then the regression may be biased (Bowerman & O'Connell, 1990). Additionally, tolerance below 0.2 indicates a potential problem (Menard, 1995). Results of VIF and tolerance confirmed that collinearity was not a problem and predictors were fit to predict the behavioral loyalty for system failures as showed in Table 97.

Table 97 Multicollinearity Test Between Predictors and Behavioral Loyalty in Recovery Satisfaction for System Failures

Model	Collinearity Statistics	
	Tolerance	VIF
1 (Constant)		
Recovery Satisfaction	1.000	1.000
2 (Constant)		
Recovery Satisfaction	1.000	1.000
Personnel Severity	1.000	1.000

Dependent Variable: Behavioral Loyalty for System Failures

System Failures for Behavioral Loyalty – Change Statistics and Model Summary

After testing the assumption, results of hypotheses were showed by the regression models as showed in Table 98. With respect to the change statistics, Model one presents the significant relationship between recovery satisfaction and behavioral loyalty for system failures, $F_{1, 702} = 2547.65$, $p < 0.05$; and Model two presents non-significant change relationship between recovery satisfaction and behavioral loyalty with system severity added $F_{1, 701} = 0.02$, $p > 0.05$.

The amount of R-square change is associated with a predictor of the dependent variable. If the R-square change in question is large, it means that the predictor variable is a good predictor of the dependent variable. The change statistics showed that R-square change had not a significant F change on Model two as follows: Model 1: Recovery satisfaction alone accounts for 78.4% of the variance of behavioral loyalty; and Model 2: System severity accounts for 0 % of the variance in behavioral loyalty after controlling for recovery satisfaction. Recovery satisfaction and system severity account for 78.4% of the variance of behavioral loyalty as showed in Table 98.

Table 98 *Change Statistics of the Behavioral Loyalty for System Failures*

Model	R Square	Change Statistics				Sig. F Change*
		R Square Change	F Change	df1	df2	
1	.784	.784	2547.65	1	702	.000 ^a
2	.784	.000	.021	1	701	.886 ^b

Dependent Variable: Behavioral Loyalty for System Failures

* Significance at $p < 0.05$

a Predictors: (Constant), Recovery Satisfaction

b Predictors: (Constant), Recovery Satisfaction, Personnel Severity

Result of analysis of variance (ANOVA) for Model one was significant at $p < 0.001$ with $F_{1, 702} = 2547.65$; and Model two was significant at $p < 0.001$ with $F_{2, 701} = 1272.06$. The correlation coefficient (R) of Model one was 0.89, Model two was 0.89; and Model three was 0.92 that both of the models had a large effect size (Cohen, 1988). The adjusted R-square of Model one indicated that around 78% of total variance for behavioral loyalty was accounted for recovery satisfaction; and the adjusted R-square of Model two

indicated that 78% of total variance for behavioral loyalty was accounted for recovery satisfaction and system severity as showed in Table 99.

Table 99 *Multiple Regression for Behavioral Loyalty in Recovery Satisfaction and Failure Severity for System Failures (N=352)*

H7 There is no relationship between the recovery satisfaction and customer loyalty – behavioral loyalty in terms of the failure classes and failure severity in casual dining restaurants in the U.S.

Dependent variable: Behavioral Loyalty for System Failures

Independent variable: Recovery Satisfaction (X_1), System Severity (X_2),

Model 1: $Y = -0.528 + 1.154X_1$

Model 2: $Y = -0.504 + 1.154X_1 - 0.006X_2$

Model 1: $R = 0.89$, $R^2 = 0.78$, Adjusted $R^2 = 0.78$, $F_{1, 702} = 2547.65$, $p < 0.001$

Model 2: $R = 0.89$, $R^2 = 0.78$, Adjusted $R^2 = 0.78$, $F_{2, 701} = 1272.06$, $p < 0.001$

		Unstandardized Coefficients		Standardized Coefficients	
Model		B	Std. Error	Beta	t
1	(Constant)	-.528	.075		-7.021
	Recovery Satisfaction	1.154	.023	.885	50.474**
2	(Constant)	-.504	.183		-2.751
	Recovery Satisfaction	1.154	.023	.885	50.439**
	System Severity	-.006	.045	-.003	-.144

Dependent Variable: Behavioral Loyalty for System Failures

** Significance at $p < 0.001$

Personnel Failures for Behavioral Loyalty – Assumptions Examination

Normally distributed errors

Normality distribution of errors was examined by the histogram of regression standardized residual and normal P-P plot of cumulative probability. Both of them were visualized and presented roughly normality distribution as showed in Figure 33 and in Figure 34.

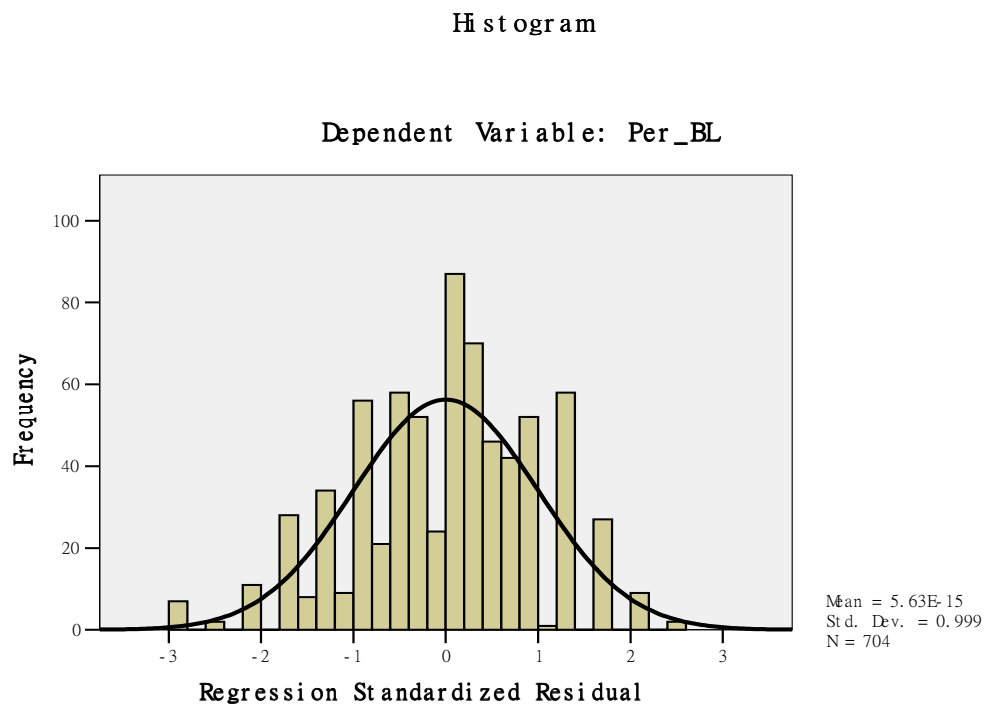


Figure 33 Histogram of standardized residual for behavioral loyalty in terms of personnel failures

Normal P-P Plot of Regression Standardized Residual

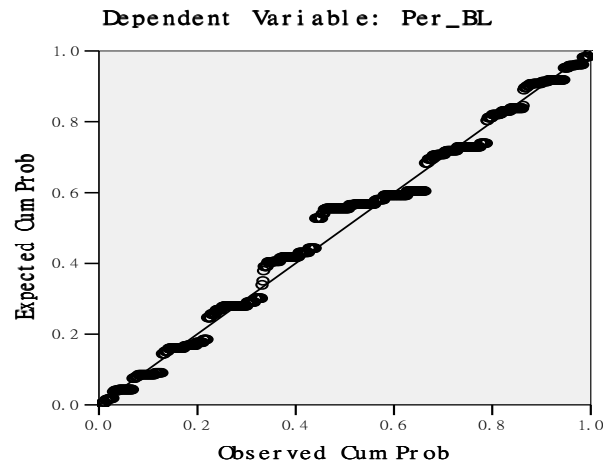


Figure 34 Normal P-P plot of expected cumulative probability against the observed cumulative probability for behavioral loyalty in terms of personnel failures

Independent errors

This assumption can be examined with Durbin-Watson test. If the results less than 1 or greater than 3, it would be definitely cause for concern (Durbin & Watson, 1951). The Durbin-Watson test for independence errors of recovery satisfaction, personnel severity and recovery effort was 0.745 and has not met the assumption as showed in 100.

Table 100 *Independent Errors of the Behavioral Loyalty for Personnel Failures*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.765 ^a	.584	.584	.860	
2	.765 ^b	.585	.584	.860	0.745

Dependent Variable: Behavioral Loyalty for Personnel Failures

a Predictors: (Constant), Recovery Satisfaction

b Predictors: (Constant), Recovery Satisfaction, and Personnel Severity

Linearity

For the assumption of linearity, Hair, Anderson, Tatham and Black (1998) suggested that researchers may depend on the visual inspection of the relationships to determine whether linear relationships are present. The scatterplot of standardized residual against the standardized predicted value of dependent variable would show a horizontal band of residuals. Results showed that the independent of personnel severity has violated the assumption of linearity; however, the independent of recovery satisfaction has met the linearity assumption with R-square linear 0.584 also showed in Table 100.

Multicollinearity

Multicollinearity was examined by both tolerance and variances inflation factor (VIF). If the largest VIF is greater than 10 then there is cause for concern (Bowerman & O'Connell, 1990; Myers, 1990); and if the average VIF is substantially greater than 1 then the regression may be biased (Bowerman & O'Connell, 1990). Additionally, tolerance below 0.2 indicates a potential problem (Menard, 1995). Results of VIF and tolerance confirmed that collinearity was not a problem and predictors were fit to predict the behavioral loyalty for personnel failures as showed in Table 101.

Table 101 *Multicollinearity Test Between Predictors and Behavioral Loyalty for Personnel Failures*

Model	Collinearity Statistics	
	Tolerance	VIF
1 (Constant)		
Recovery Satisfaction	1.000	1.000
2 (Constant)		
Recovery Satisfaction	.999	1.001
Personnel Severity	.999	1.001

Dependent Variable: Behavioral Loyalty for Personnel Failures

Personnel Failures for Behavioral Loyalty – Change Statistics and Model Summary

After testing the assumption, results of hypotheses were showed by the regression models as showed in Table 102. With respect to the change statistics, Model one presents the significant relationship between recovery satisfaction and behavioral loyalty for personnel failures, $F_{1, 702} = 987.468$, $p < 0.05$; and Model two presents non-significant change relationship between recovery satisfaction and behavioral loyalty with personnel severity added $F_{1, 701} = 0.634$, $p > 0.05$.

The amount of R-square change is associated with a predictor of the dependent variable. If the R-square change in question is large, it means that the predictor variable is a good predictor of the dependent variable. The change statistics showed that R-square change had not a significant F change on Model two as follows: Model 1: Recovery satisfaction alone accounts for 58.4% of the variance of behavioral loyalty; and Model 2: Personnel severity accounts for 0 % of the variance in behavioral loyalty after controlling for recovery satisfaction. Recovery satisfaction and personnel severity account for 58.4% of the variance of behavioral loyalty as showed in Table 102.

Table 102 *Change Statistics of the Behavioral Loyalty for Personnel Failures*

Model	R Square	Change Statistics				
		R Square Change	F Change	df1	df2	Sig. F Change*
1	.584	.584	987.468	1	702	.000 ^a
2	.585	.000	.634	1	701	.426 ^b

Dependent Variable: Behavioral Loyalty for Personnel Failures

* Significance at $p < 0.05$

a Predictors: (Constant), Recovery Satisfaction

b Predictors: (Constant), Recovery Satisfaction, Personnel Severity

Result of analysis of variance (ANOVA) for Model one was significant at $p < 0.001$ with $F_{1, 702} = 987.37$; and Model two was significant at $p < 0.001$ with $F_{2, 701} = 493.79$. The correlation coefficient (R) of Model one was 0.77; and Model two was 0.77 that both of the models had a large effect size (Cohen, 1988). The adjusted R-square of Model one indicated that around 58% of total variance for behavioral loyalty was accounted for recovery satisfaction; and the adjusted R-square of Model two indicated that 58% of total variance for behavioral loyalty was accounted for recovery satisfaction and personnel severity. The significant t value indicated that predictor(s) contributed unique significance to regression model for predicting the impact on behavioral loyalty. Only personnel severity did not have a significant t value in the model. The identified regression equations were as showed in Table 103.

Table 103 *Multiple Regression for Behavioral Loyalty in Recovery Satisfaction and Failure Severity for Personnel Failures (N=352)*

H7 There is no relationship between the recovery satisfaction and customer loyalty – behavioral loyalty in terms of the failure classes and failure severity in casual dining restaurants in the U.S.

Dependent variable: Behavioral Loyalty for Personnel Failures

Independent variable: Recovery Satisfaction (X_1), Personnel Severity (X_2)

Model 1: $Y = -0.077 + 0.972X_1$

Model 2: $Y = 0.207 + 0.973X_1 - 0.06X_2$

Model 1: $R = 0.77$, $R^2 = 0.58$, Adjusted $R^2 = 0.58$, $F_{1, 702} = 987.47$, $p < 0.001$

Model 2: $R = 0.77$, $R^2 = 0.59$, Adjusted $R^2 = 0.58$, $F_{2, 701} = 493.79$, $p < 0.001$

		Unstandardized Coefficients		Standardized Coefficients	
Model		B	Std. Error	Beta	<i>t</i>
1	(Constant)	-.077	.098		-.786
	Recovery Satisfaction	.972	.031	.765	31.424**
2	(Constant)	.207	.370		.559
	Recovery Satisfaction	.973	.031	.765	31.426**
	Personnel Severity	-.060	.075	-.019	-.796

Dependent Variable: Behavioral Loyalty for Personnel Failures

** Significance at $p < 0.001$

System Failures for Attitudinal Loyalty – Assumptions Examination

Normally distributed errors

Normality distribution of errors was examined by the histogram of regression standardized residual and normal P-P plot of cumulative probability. Both of them were visualized and presented approximately normality distribution as showed in Figure 35 and in Figure 36.

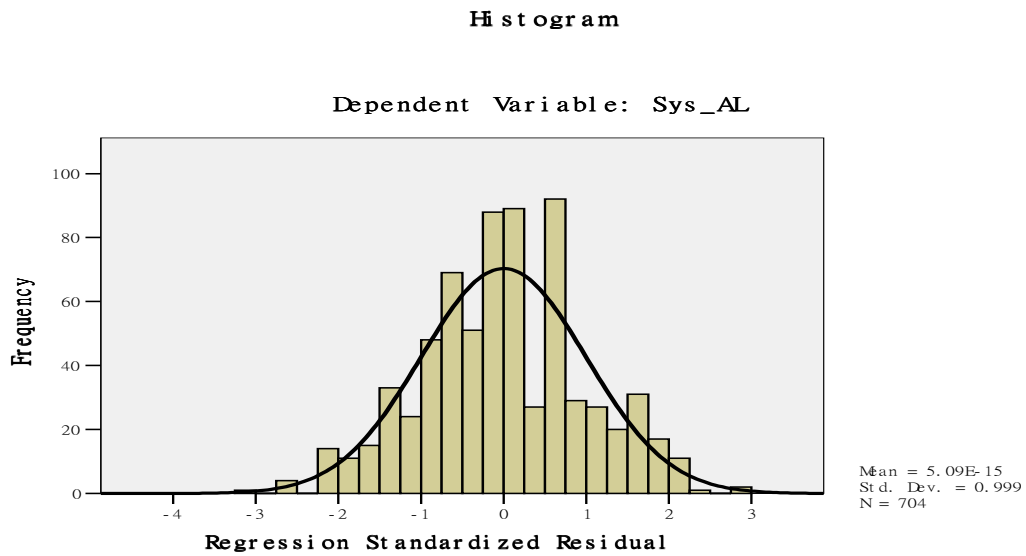


Figure 35 Histogram of standardized residual for attitudinal loyalty in terms of system failures

Normal P-P Plot of Regression Standardized Residual

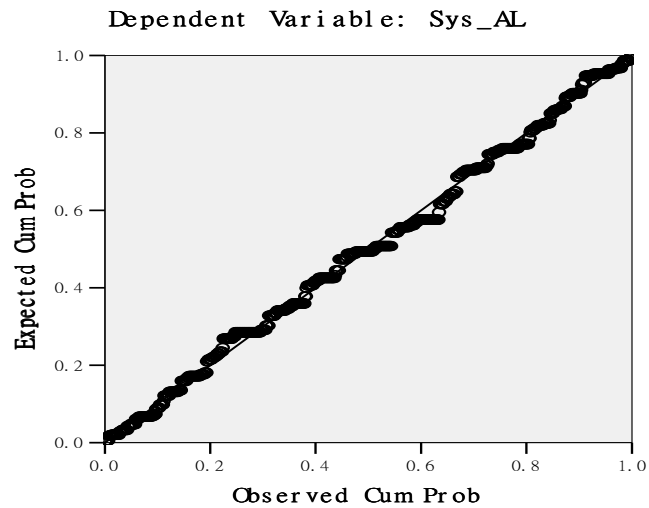


Figure 36 Normal P-P plot of expected cumulative probability against the observed cumulative probability for attitudinal loyalty in terms of system failures

Independent errors

This assumption can be examined with Durbin-Watson test. If the results less than 1 or greater than 3, it would be definitely cause for concern (Durbin & Watson, 1951). The Durbin-Watson test for independence errors of recovery satisfaction and system severity was 1.181 and the assumption has met as showed in Table 104.

Table 104 *Independent Errors of the Attitudinal Loyalty for System Failures*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.862 ^a	.744	.743	.674	
2	.862 ^b	.744	.743	.674	1.181

Dependent Variable: Attitudinal Loyalty for System Failures

a Predictors: (Constant), Recovery Satisfaction

b Predictors: (Constant), Recovery Satisfaction, and System Severity

Linearity

For the assumption of linearity, Hair, Anderson, Tatham and Black (1998) suggested that researchers may depend on the visual inspection of the relationships to determine whether linear relationships are present. The scatterplot of standardized residual against the standardized predicted value of dependent variable would show a horizontal band of residuals. Results showed that the independent of system severity has violated the assumption of linearity; however, the independent of recovery satisfaction has met the linearity assumption with R-square linear 0.744 also showed in Table 104.

Multicollinearity

Multicollinearity was examined by both tolerance and variances inflation factor (VIF). If the largest VIF is greater than 10 then there is cause for concern (Bowerman & O'Connell, 1990; Myers, 1990); and if the average VIF is substantially greater than 1 then the regression may be biased (Bowerman & O'Connell, 1990). Additionally, tolerance below 0.2 indicates a potential problem (Menard, 1995). Results of VIF and tolerance confirmed that collinearity was not a problem and predictors were fit to predict the customer loyalty for system failures as showed in Table 105.

Table 105 *Multicollinearity Test Between Predictors and Attitudinal Loyalty for System Failures*

Model	Collinearity Statistics	
	Tolerance	VIF
1 (Constant)		
Recovery Satisfaction	1.000	1.000
2 (Constant)		
Recovery Satisfaction	1.000	1.000
System Severity	1.000	1.000

Dependent Variable: Attitudinal Loyalty for System Failures

System Failures for Attitudinal Loyalty – Change Statistics and Model Summary

After testing the assumption, results of hypotheses were showed by the regression models as showed in Table 108. With respect to the change statistics, Model one presents the significant relationship between recovery satisfaction and attitudinal loyalty for system failures, $F_{1, 702} = 2035.91$, $p < 0.05$; and Model two presents non-significant change relationship between recovery satisfaction and attitudinal loyalty with system severity added $F_{1, 701} = 0.47$, $p > 0.05$.

The amount of R-square change is associated with a predictor of the dependent variable. If the R-square change in question is large, it means that the predictor variable is a good predictor of the dependent variable. The change statistics showed that R-square change had not a significant F change on Model two as follows: Model 1: Recovery satisfaction alone accounts for 74.4% of the variance of attitudinal loyalty; and Model 2: System severity accounts for 0 % of the variance in attitudinal loyalty after controlling for recovery satisfaction. Recovery satisfaction and system severity account for 74.4% of the variance of attitudinal loyalty as showed in Table 106.

Table 106 *Change Statistics of the Attitudinal Loyalty for System Failures*

Model	R Square	Change Statistics				Sig. F Change*
		R Square Change	F Change	df1	df2	
1	.744	.744	2035.91**	1	702	.000 ^a
2	.744	.000	.466	1	701	.495 ^b

Dependent Variable: Attitudinal Loyalty for System Failures

** Significance at $p < 0.001$

a Predictors: (Constant), Recovery Satisfaction

b Predictors: (Constant), Recovery Satisfaction, System Severity

Result of analysis of variance (ANOVA) for Model one was significant at $p < 0.001$ with $F_{1, 702} = 2035.91$; and Model two was significant at $p < 0.001$ with $F_{2, 701} = 1017.41$. The correlation coefficient (R) of Model one was 0.86; and Model two was 0.86 that both of the models had a large effect size (Cohen, 1988). The adjusted R-square of Model one indicated that around 74% of total variance for attitudinal loyalty was accounted for recovery satisfaction; and the adjusted R-square of Model two indicated that 74% of total variance for attitudinal loyalty was accounted for recovery satisfaction and system

severity. The significant t value indicated that predictor(s) contributed unique significance to regression model for predicting the impact on attitudinal loyalty. Only system severity did not have a significant t value in the model. The identified regression equations were as showed in Table 107.

Table 107 *Multiple Regression for Attitudinal Loyalty in Recovery Satisfaction and Failure Severity for System Failures (N=352)*

H7 There is no relationship between the recovery satisfaction and customer loyalty – attitudinal loyalty in terms of the failure classes and failure severity in casual dining restaurants in the U.S.

Dependent variable: Attitudinal Loyalty for System Failures

Independent variable: Service Satisfaction (X_1), System Severity (X_2)

Model 1: $Y = -0.583 + 1.116X_1$

Model 2: $Y = -0.460 + 1.116X_1 - 0.033X_2$

Model 1: $R = 0.86$, $R^2 = 0.74$, Adjusted $R^2 = 0.74$, $F_{1, 702} = 2035.91$, $p < 0.001$

Model 2: $R = 0.86$, $R^2 = 0.74$, Adjusted $R^2 = 0.74$, $F_{2, 701} = 1017.41$, $p < 0.001$

Model		Unstandardized Coefficients		Standardized Coefficients	<i>t</i>
		B	Std. Error	Beta	
1	(Constant)	-.583	.081		-7.172
	Recovery Satisfaction	1.116	.025	.862	45.121*
2	(Constant)	-.46	.198		-2.323
	Recovery Satisfaction	1.116	.025	.862	45.107**
	System Severity	-.033	.049	-.013	-.682

Dependent Variable: Attitudinal Loyalty for System Failures

* Significance at $p < 0.05$;

** Significance at $p < 0.001$

Personnel Failures for Attitudinal Loyalty – Assumptions Examination

Normally distributed errors

Normality distribution of errors was examined by the histogram of regression standardized residual and normal P-P plot of cumulative probability. Both of them were visualized and presented roughly normality distribution in Figure 37 and in Figure 38.

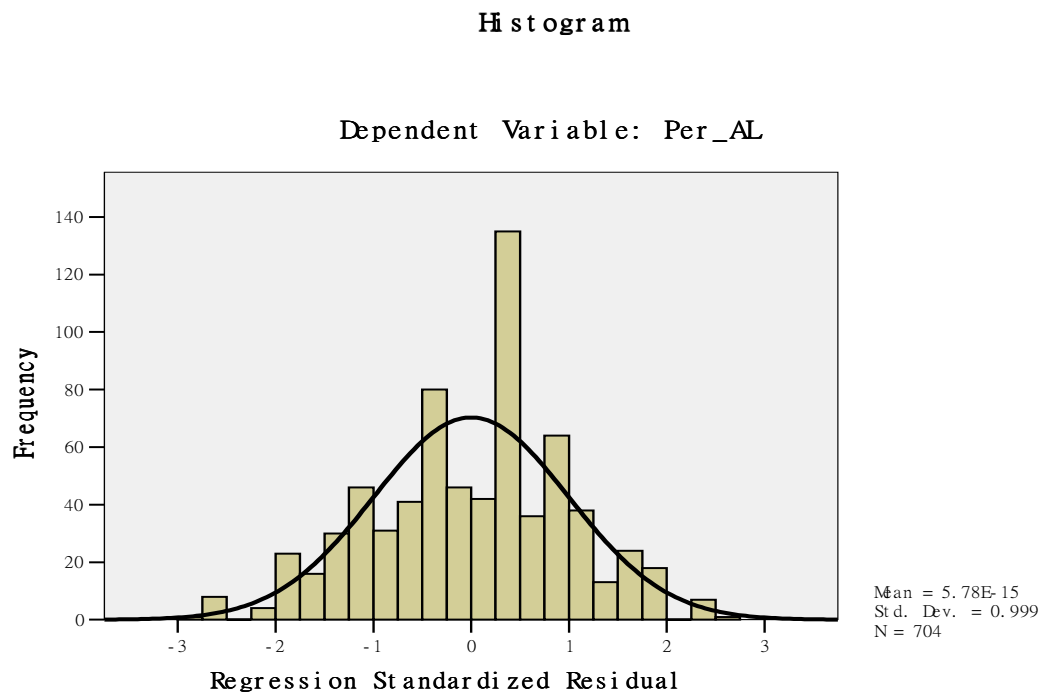


Figure 37 Histogram of standardized residual for attitudinal loyalty in terms of personnel failures

Normal P-P Plot of Regression Standardized Residual

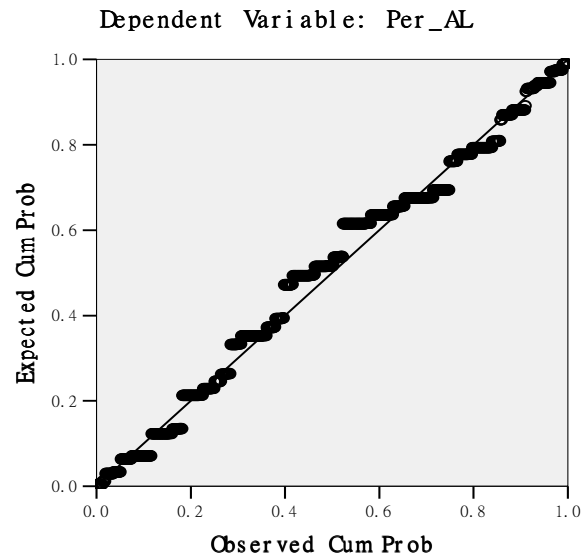


Figure 38 Normal P-P plot of expected cumulative probability against the observed cumulative probability for attitudinal loyalty in terms of personnel failures

Independent errors

This assumption can be examined with Durbin-Watson test. If the results less than 1 or greater than 3, it would be definitely cause for concern (Durbin & Watson, 1951). The Durbin-Watson test for independence errors of recovery satisfaction, personnel severity and recovery effort was 0.673 and has not met the assumption as showed in Table 108.

Table 108 *Independent Errors of the Attitudinal Loyalty for Personnel Failures*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.753 ^a	.567	.566	.874	
2	.753 ^b	.567	.566	.874	0.673

Dependent Variable: Attitudinal Loyalty for Personnel Failures

a Predictors: (Constant), Recovery Satisfaction

b Predictors: (Constant), Recovery Satisfaction, and Personnel Severity

Linearity

For the assumption of linearity, Hair, Anderson, Tatham and Black (1998) suggested that researcher may depend on the visual inspection of the relationships to determine whether linear relationships are present. The scatterplot of standardized residual against the standardized predicted value of dependent variable would show a horizontal band of residuals. Results showed that the independent of personnel severity has violated the assumption of linearity; however, the independent of recovery satisfaction has met the linearity assumption with R-square linear 0.567 also showed in Table 108.

Multicollinearity

Multicollinearity was examined by both tolerance and variances inflation factor (VIF). If the largest VIF is greater than 10 then there is cause for concern (Bowerman & O'Connell, 1990; Myers, 1990); and if the average VIF is substantially greater than 1 then the regression may be biased (Bowerman & O'Connell, 1990). Additionally, tolerance below 0.2 indicates a potential problem (Menard, 1995). Results of VIF and tolerance confirmed that collinearity was not a problem and predictors were fit to predict the attitudinal loyalty for personnel failures as showed in Table 109.

Table 109 *Multicollinearity Test Between Predictors and Attitudinal Loyalty for Personnel Failures*

Model	Collinearity Statistics	
	Tolerance	VIF
1 (Constant)		
Recovery Satisfaction	1.000	1.001
2 (Constant)		
Recovery Satisfaction	.999	1.001
Personnel Severity	.999	1.001

Dependent Variable: Attitudinal Loyalty for Personnel Loyalty

Personnel Failures for Attitudinal Loyalty – Change Statistics and Model Summary

After testing the assumption, results of hypotheses were showed by the regression models as showed in Table 112. With respect to the change statistics, Model one presents the significant relationship between recovery satisfaction and attitudinal loyalty for personnel failures, $F_{1, 702} = 918.516$, $p < 0.05$; and Model two presents non-significant change relationship between recovery satisfaction and attitudinal loyalty with personnel severity added $F_{1, 701} = 0.001$, $p > 0.05$.

The amount of R-square change is associated with a predictor of the dependent variable. If the R-square change in question is large, it means that the predictor variable is a good predictor of the dependent variable. The change statistics showed that R-square change had not a significant F change on Model two as follows: Model 1: Recovery satisfaction alone accounts for 56.7% of the variance of attitudinal loyalty; and Model 2: Personnel severity accounts for 0 % of the variance in attitudinal loyalty after controlling for recovery satisfaction. Recovery satisfaction and personnel severity account for 56.7% of the variance of attitudinal loyalty as showed in Table 110.

Table 110 *Change Statistics of the Attitudinal Loyalty for Personnel Failures*

Model	R Square	Change Statistics				
		R Square Change	F Change	df1	df2	Sig. F Change*
1	.567	.567	918.516	1	702	.000 ^a
2	.567	.000	.001	1	701	.970 ^b

Dependent Variable: Attitudinal Loyalty for Personnel Failures

* Significance at $p < 0.05$

a Predictors: (Constant), Recovery Satisfaction

b Predictors: (Constant), Recovery Satisfaction, Personnel Severity

Result of analysis of variance (ANOVA) for Model one was significant at $p < 0.001$ with $F_{1, 702} = 918.52$; and Model two was significant at $p < 0.001$ with $F_{2, 701} = 458.61$. The correlation coefficient (R) of Model one was 0.75; and Model two was 0.75 that both of the models had a large effect size (Cohen, 1988). The adjusted R-square of Model one indicated that around 57% of total variance for attitudinal loyalty was accounted for recovery satisfaction; and the adjusted R-square of Model two indicated that 57% of total variance for attitudinal loyalty was accounted for recovery satisfaction and personnel severity. The significant t value indicated that predictor(s) contributed unique significance to regression model for predicting the impact on attitudinal loyalty. Only personnel severity did not have a significant t value in the model. The identified regression equations were as showed in Table 111.

Table 111 *Multiple Regression for Attitudinal Loyalty in Recovery Satisfaction and Failure Severity for Personnel Failures (N=352)*

H7 There is no relationship between the recovery satisfaction and customer loyalty –

attitudinal loyalty in terms of the failure classes and failure severity in casual dining restaurants in the U.S.

Dependent variable: Attitudinal Loyalty for Personnel Failures

Independent variable: Recovery Satisfaction (X_1), Personnel Severity (X_2)

Model 1: $Y = -0.21 + 0.953X_1$

Model 2: $Y = -0.224 + 0.953X_1 + 0.003X_2$

Model 1: $R = 0.75$, $R^2 = 0.57$, Adjusted $R^2 = 0.57$, $F_{1, 702} = 918.52$, $p < 0.001$

Model 2: $R = 0.75$, $R^2 = 0.57$, Adjusted $R^2 = 0.57$, $F_{2, 701} = 458.61$, $p < 0.001$

		Unstandardized Coefficients		Standardized Coefficients	
Model		B	Std. Error	Beta	<i>t</i>
1	(Constant)	-.210	.100		-2.10
	Recovery Satisfaction	.953	.031	.753	30.307**
2	(Constant)	-.224	.376		-.594
	Recovery Satisfaction	.953	.031	.753	30.275**
	Personnel Severity	.003	.076	.001	.038

Dependent Variable: Attitudinal Loyalty for Personnel Failures

** Significance at $p < 0.001$

Relationship Between Recovery Satisfaction and Customer Loyalty in Terms of Failure Classes

Results showed that the relationship between recovery satisfaction and customer loyalty in terms of failure classes were significant. Customer loyalty increases by 1.135 units when system recovery satisfaction increases by one unit. Customer loyalty increases by 0.963 units when personnel recovery satisfaction increases by one unit as showed in Table 112. When comparing system failures and personnel failures, personnel recovery satisfaction had a higher slope than system recovery satisfaction as showed in Figure 39.

Table 112 *Relationship Between Recovery Satisfaction and Customer Loyalty in Terms of Failure Classes*

Dependent Variable	Failure Classes	Model	df	F-value
Customer Loyalty	System Failures	$Y = -0.56 + 1.14X_1$	1, 702	2567.12**
	Personnel Failures	$Y = -0.14 + 0.96X_1$	1, 702	1025.34**
Behavioral Loyalty	System Failures	$Y = -0.53 + 1.15X_1$	1, 702	2547.65**
	Personnel Failures	$Y = -0.08 + 0.97X_1$	1, 702	987.47**
Attitudinal Loyalty	System Failures	$Y = -0.58 + 1.12X_1$	1, 702	2035.91**
	Personnel Failures	$Y = -0.21 + 0.95X_1$	1, 702	918.52**

** Significance at $p < 0.001$

Y: Dependent Variable – Loyalty

X₁: Recovery Satisfaction

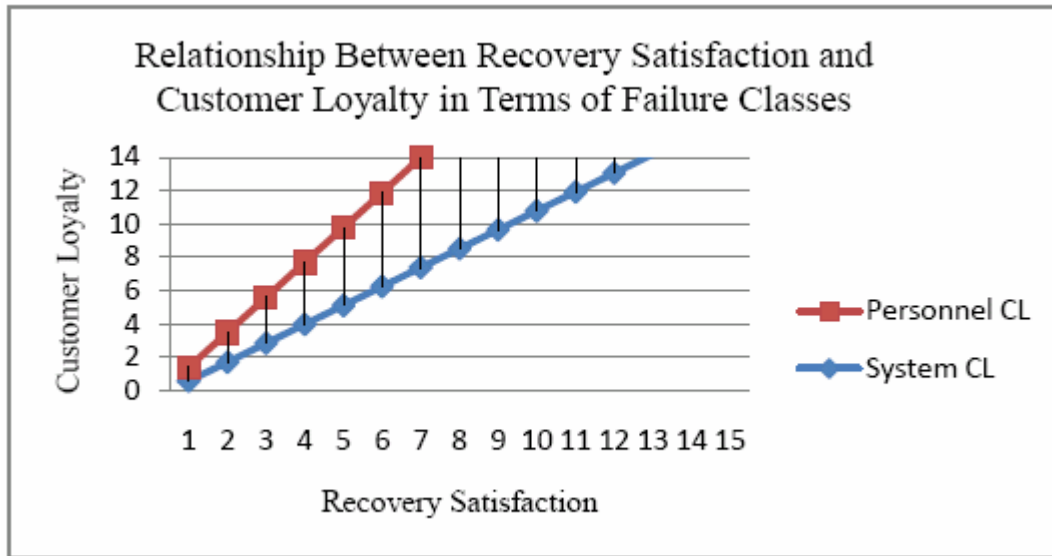


Figure 39 Relationship between recovery satisfactiona and customer loyalty in terms of failure classes

In order to gain more insight into customer loyalty, customer loyalty was evaluated separately by considering behavioral loyalty and attitudinal loyalty. Both of behavioral loyalty and attitudinal loyalty increase at a higher rate as recovery satisfaction increases in terms of system failures and personnel failures after a recovery effort. When comparing system failures and personnel failures, personnel recovery satisfaction had a higher slope than system recovery satisfaction as showed in Figure 40 and in Figure 41.

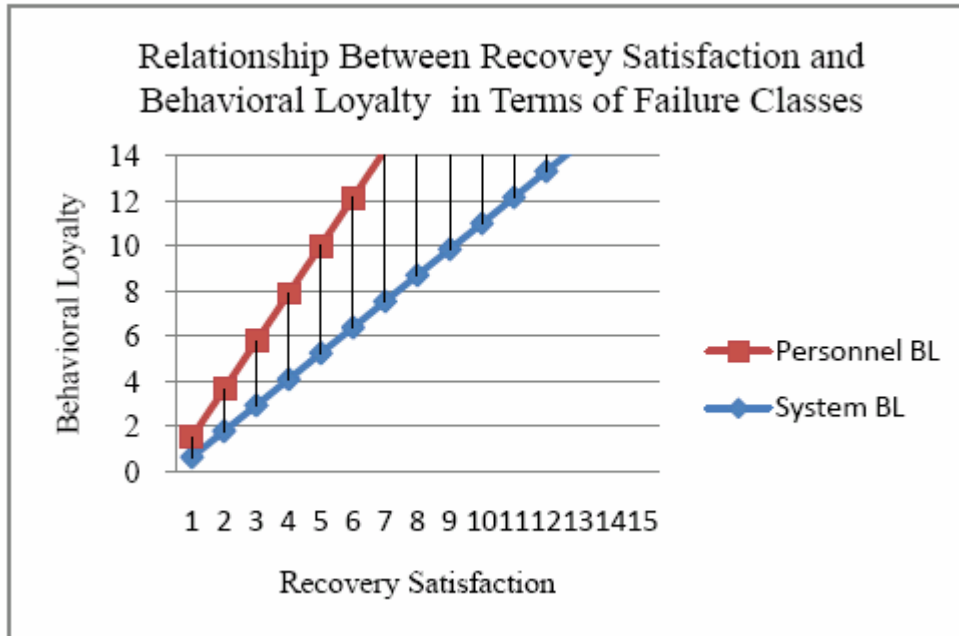


Figure 40 Relationship between recovery satisfactiona and behavioral loyalty in terms of failure classes

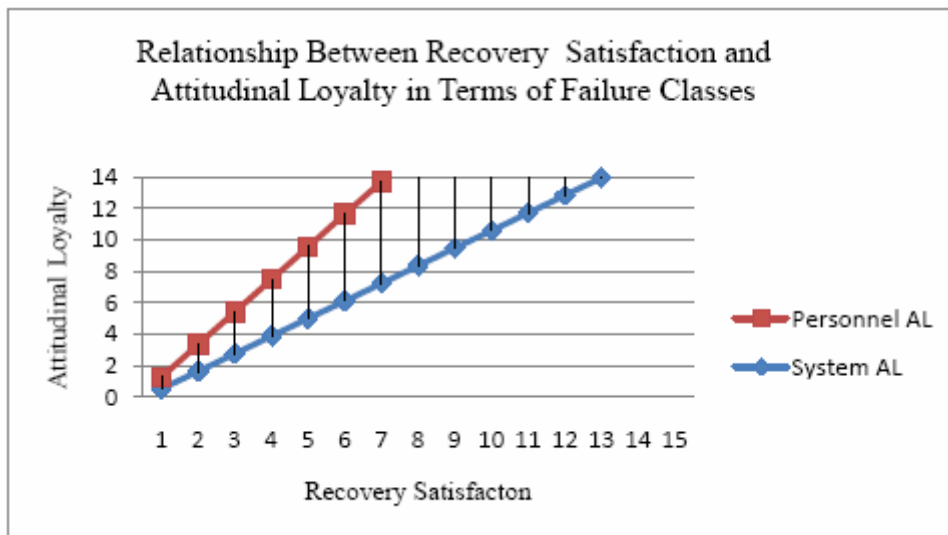


Figure 41 Relationship between recovery satisfactiona and attitudinal loyalty in terms of failure classes

In summary, all of the customer loyalty, behavioral loyalty, and attitudinal loyalty showed an increase at a higher rate as recovery satisfaction increased in terms of failure classes after a recovery effort. When comparing system failures and personnel failures, personnel recovery satisfaction had a higher slope than system recovery satisfaction with respect to customer loyalty, behavioral loyalty and attitudinal loyalty.

Therefore, hypothesis 7a “There is no relationship between the recovery satisfaction and customer loyalty in terms of failure classes in casual dining restaurants in the U.S.” was rejected.

Relationship Between Recovery Satisfaction and Customer Loyalty in Terms of Failure Classes and Failure Severity

Relationship between recovery satisfaction and customer loyalty was examined in terms of failure classes and failure severity. In order to gain more insight into customer loyalty, customer loyalty was also evaluated separately by using behavioral loyalty and attitudinal loyalty.

Results showed that recovery satisfaction with failure severity had a significant relationship on customer loyalty as showed in Table 113. However, the severity of the failure did not have any confounding effect on customer loyalty, behavioral loyalty, and attitudinal loyalty for both of system failures and personnel failures. Therefore, hypothesis 7b “There is no relationship between the recovery satisfaction and customer loyalty in terms of failure classes and failure severity in casual dining restaurants in the U.S.” was failed to reject.

Table 113 *Relationship Between Recovery Satisfaction and Customer Loyalty in Terms of Failure Classes and Failure Severity*

Dependent Variable	Failure Classes	Model	df	F-value
Customer Loyalty	System Failures	$Y = -0.48 + 1.14X_1 - 0.02X_2$	2, 701	1282.20**
	Personnel Failures	$Y = -0.01 + 0.96X_1 - 0.03X_2$	2, 701	512.13**
Behavioral Loyalty	System Failures	$Y = -0.50 + 1.15X_1 - 0.01X_2$	2, 701	1272.06**
	Personnel Failures	$Y = 0.21 + 0.97X_1 - 0.06X_2$	2, 701	493.79**
Attitudinal Loyalty	System Failures	$Y = -0.46 + 1.12X_1 - 0.03X_2$	2, 701	1017.41**
	Personnel Failures	$Y = -0.22 + 0.95X_1 + 0.003X_2$	2, 701	458.61**

** Significance at $p < 0.001$

Y: Dependent Variable – Loyalty

X1: Recovery Satisfaction; X2: Failure Severity

Summary of Findings

A total of 360 questionnaires were distributed and 352 useable responses were collected with 98 percent response rate. In terms of a 2 x 2 x 2 experimental design with eight scenarios, each cell had same amount of size with 88. Reliability checks and manipulation checks were plausible.

Results of null hypotheses test were summarized as showed in Table 114 and described as below.

Table 114 *Summary Results of Hypotheses Test*

	Null Hypothesis	Result of Test
H1a	There is no difference in recovery satisfaction with and without a recovery effort for system failures in casual dining restaurants in the U.S.	Rejected
H1b	There is no difference in recovery satisfaction with and without a recovery effort for personnel failures in casual dining restaurants in the U.S.	Rejected
H2a	There is no difference in the effectiveness of recovery effort among distributional justice, procedural justice, and interactional justice for system failures in casual dining restaurants in the U.S.	Rejected
H2b	There is no difference in the effectiveness of recovery effort among distributional justice, procedural justice, and interactional justice for personnel failures in casual dining restaurants in the U.S.	Rejected
H3a	There is no confounding effect of the severity of failure on recovery satisfaction for system failures in casual dining restaurants in the U.S.	Failed to reject.
H3b	There is no confounding effect of the severity of failure on recovery satisfaction for personnel failures in casual dining restaurants in the U.S.	Rejected
H4a	There is no confounding effect of the severity of failure on recovery effort for system failures in casual dining restaurants in the U.S.	Rejected
H4b	There is no confounding effect of the severity of failure on recovery effort for personnel failures in casual dining restaurants in the U.S.	Rejected
H5	There is no difference in the effectiveness of recovery effort between system failures and personnel failures in terms of procedural justice (PJ), distributive justice (DJ) and interactional justice (IJ) in casual dining restaurants in the U.S.	Rejected
H6	There is no difference in the recovery satisfaction between system failures and personnel failures after the administration of recovery effort in casual dining restaurants in the U.S.	Rejected
H7a	There is no relationship between the recovery satisfaction and customer loyalty in terms of failure classes in casual dining restaurants in the U.S.	Rejected
H7b	There is no relationship between the recovery satisfaction and customer loyalty in terms of failure classes and failure severity in casual dining restaurants in the U.S.	Failed to reject

Both system failures and personnel failures, recovery satisfaction did have differences between recovery satisfaction after recovery effort and no recovery satisfaction after recovery effort. Moreover, recovery satisfaction also did have differences between low recovery satisfaction after recovery effort and no recovery satisfaction after recovery effort. As a result, there was a significant difference in recovery satisfaction with and without a recovery effort. Therefore, H1a: There is no difference in recovery satisfaction with and without a recovery effort for system failures in casual dining restaurants in the U.S.; as well as H1b: There is no difference in recovery satisfaction with and without a recovery effort for personnel failures in casual dining restaurants in the U.S. were rejected.

Both system failures and personnel failures, all the main effects and interaction effects were significantly different among the effectiveness recovery effort (distributive justice, interactional justice) and the level of recovery effort (high effort, low effort, and no effort). Therefore, H2a: There is no difference in the effectiveness of recovery effort among distributive justice, procedural justice, and interactional justice for system failures in casual dining restaurants in the U.S.; as well as H2b: There is no difference in the effectiveness of recovery effort among distributive justice, procedural justice, and interactional justice for personnel failures in casual dining restaurants in the U.S. were rejected.

Severity of system failures was not significantly related to the recovery satisfaction. In contrast, severity of personnel failures had a significant effect on recovery satisfaction. Therefore, H3a: There is no confounding effect of the severity of failure on recovery satisfaction for system failures in casual dining restaurants in the U.S. was failed to reject;

but H3b: There is no confounding effect of the severity of failure on recovery satisfaction for personnel failures in casual dining restaurants in the U.S. was rejected.

With respect to system failures, the results revealed that making ‘no effort’ significantly decreased distributive justice as well as interactional justice when compared to making a ‘high effort’ and a ‘low effort’. Therefore, H4a: There is no confounding effect of the severity of failure on recovery effort for system failures in casual dining restaurants in the U.S. was rejected. Additionally, with respect to personnel failures, results indicated that severity of personnel failures had a significant effect on recovery effort when comparing high effort to no effort as well as interaction effect between distributive justice and procedural justice when comparing low effort to no effort. Therefore, H4b: There is no confounding effect of the severity of failure on recovery effort for personnel failures in casual dining restaurants in the U.S. was failed to be rejected.

In general, there was a significant difference in the effectiveness of recovery effort between system failures and personnel failures. Therefore, H5: There is no difference in the effectiveness of recovery effort between system failures and personnel failures in terms of procedural justice (PJ), distributive justice (DJ) and interactional justice (IJ) in casual dining restaurants in the U.S. was rejected.

Overall, there was a significant difference in the recovery satisfaction after the effectiveness of recovery effort between system failures and personnel failures. Therefore, H6: There is no difference in the recovery satisfaction between system failures and personnel failures after the administration of recovery effort in casual dining restaurants in the U.S. was rejected.

Customer loyalty, behavioral loyalty, and attitudinal loyalty were showed increasing at a higher rate as recovery satisfaction increased in terms of failure classes after a recovery effort. Therefore, H7a: There is no relationship between the recovery satisfaction and customer loyalty in terms of failure classes in casual dining restaurants in the U.S. was rejected.

Lastly, failure severity did not have an effect on the relationship between recovery satisfaction and customer loyalty, behavioral loyalty, and attitudinal loyalty in terms of both system failures and personnel failures. Therefore, H7b: There is no relationship between the recovery satisfaction and customer loyalty in terms of failure classes and failure severity in casual dining restaurants in the U.S. was failed to reject.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

This chapter first reviews the purpose of the study and specific objectives. Second, it presents the structure of the study. Third, it draws conclusions and makes ideas for recommendations based on each of hypotheses. Last, it identifies the limitations and suggests future research.

Purpose and Objectives of the Study

The purpose of this research is to study the comparative effectiveness of recovery effort on recovery satisfaction and consequent customer loyalty between system failures and personnel failures in casual dining restaurants in the U.S. The specific seven objectives of this research are as follows: (1) To assess the recovery satisfaction with and without a recovery effort for system failures and personnel failures separately in casual dining restaurants in the U.S. (2) To assess the effectiveness of recovery effort among distributive justice (DJ), interactional justice (IJ) and procedural justice (PJ) for system failures and personnel failures separately, in casual dining restaurants in the U.S. (3) To evaluate the confounding effect of the severity of failure on recovery satisfaction for system failures and personnel failures separately, in casual dining restaurants in the U.S. (4) To evaluate the confounding effect of the severity of failure on the effectiveness of recovery effort among distributive justice (DJ), interactional justice (IJ) and procedural

justice (PJ) for system failures and personnel failures separately, in casual dining restaurants in the U.S. (5) To compare the effectiveness of recovery effort among distributive justice (DJ), interactional justice (IJ) and procedural justice (PJ) between system failures and personnel failures in casual dining restaurants in the U.S. (6) To compare the effectiveness of recovery effort among distributive justice (DJ), interactional justice (IJ) and procedural justice (PJ) on recovery satisfaction between system failures and personnel failures in casual dining restaurants in the U.S. (7) To examine the relationship between recovery satisfaction and consequent customer loyalty in terms of failure classes and failure severity in casual dining restaurants in the U.S.

Hypothesis are developed and based on the above study objectives. Summary and conclusions of these hypotheses are presented in tables and are followed by the recommendations as showed below.

Basic Structure of the Study

Before presenting the conclusions and recommendations, the structure of the study is described as showed in Figure 42. This study is a comparative study of the influence of failure classes (system failures and personnel failures), failure severity, and the effectiveness of recovery effort (distributive justice, interactional justice, and procedural justice) on recovery satisfaction and customer loyalty. Each of the effectiveness of recovery effort is examined by high level of recovery, low level of recovery effort and no recovery effort. System failures and personnel failures are tested with no recovery effort – control group, and with some recovery effort – treatment group. Each recovery effort and the level of recovery effort are described in scenario situations as below.

1 Distributive Justice (DJ): Compensation

DJ_H – Free meal for the current visit

DJ_L – Free meal for the next visit

2 Interactional Justice (IJ): An apology only or an apology combined with an explanation

IJ_H – An apology combined with explanation

IJ_L – An apology only

3 Procedural Justice (PJ): Speed of fixing problem

PJ_H – Immediately fixing the problem

PJ_L – Delay fixing the problem

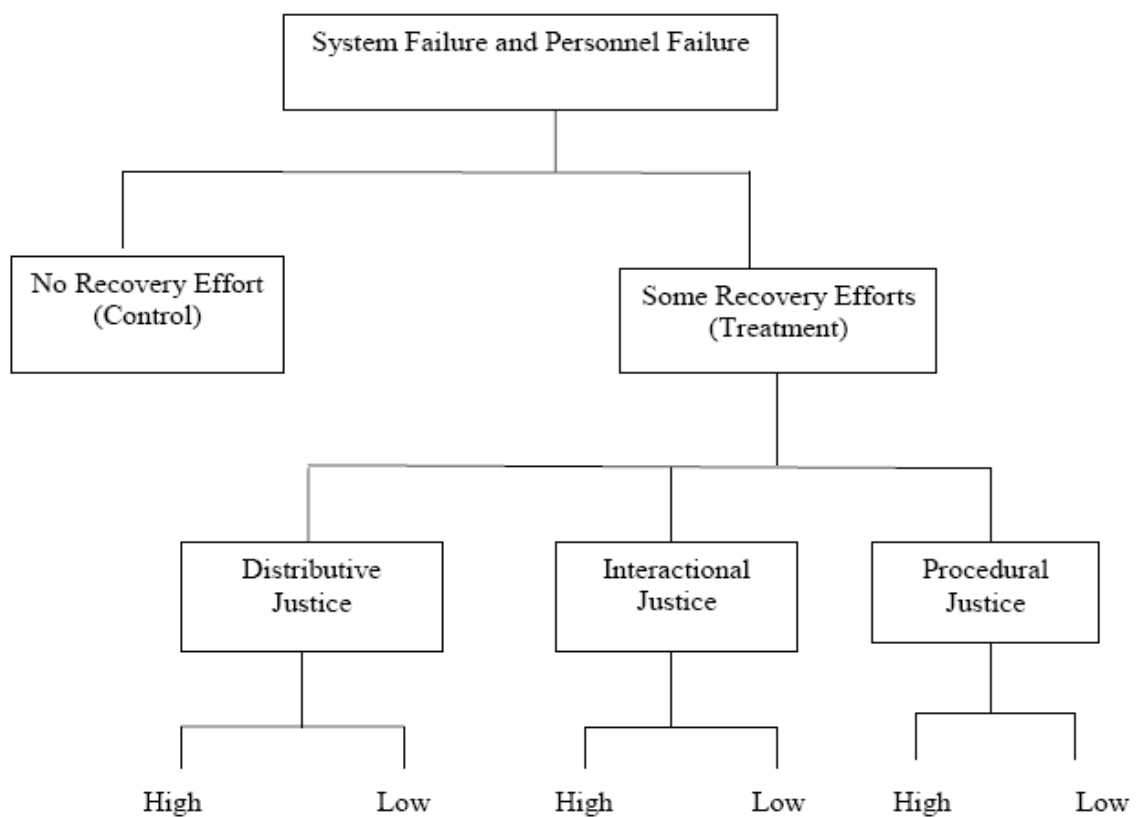


Figure 42 Basic structure of the study

Hypothesis One

The first hypothesis is separated to two hypotheses as follows: H1a. There is no difference in recovery satisfaction with and without a recovery effort for system failures in casual dining restaurants in the U.S. and H1b. There is no difference in recovery satisfaction with and without a recovery effort for personnel failures in casual dining restaurants in the U.S.

Results and Conclusions of With and Without a Recovery Effort for Failure Classes

The result of hypothesis 1a and 1b were rejected as showed in Table 115. Obviously, without a recovery effort, the recovery satisfaction would be different than it would be with recovery effort, for both system failures and personnel failures.

Webster and Sundaram (1998) indicated that service recovery effort do have a significant effect on recovery satisfaction which is supported in the current study. However, various types of recovery efforts and severity of service failure may need to be considered for the evaluation of recovery satisfaction.

Table 115 *Results and Conclusions of Recovery Satisfaction With and Without A Recovery Effort for Service Failures*

Hypothesis 1a and 1b	System Failures	Personnel Failures	Remarks
Result	H ₀ Rejected	H ₀ Rejected	Both system
Conclusion	1 Recovery Satisfaction _{with} high effort > Recovery Satisfaction _{without effort} .	1. Recovery Satisfaction _{with} with high effort > Recovery Satisfaction _{without effort} .	failures and personnel failures showed similar results.
	2 Recovery Satisfaction _{with} low effort > Recovery Satisfaction _{without effort} .	2. Recovery Satisfaction _{with} with low effort > Recovery Satisfaction _{without effort} .	

Recommendations of With and Without A Recovery Effort for Failure Classes

The current study suggests that the restaurant managers may want to make some effort to rectify service problems instead of doing nothing in order to improve recovery satisfaction for both system failures and personnel failures.

Hypothesis Two

After identifying the difference between with and without a recovery effort on recovery satisfaction, the effectiveness of recovery efforts are separately tested in terms of system failures and personnel failures as follows: H2a. There is no difference in the effectiveness of recovery effort among distributional justice, procedural justice, and interactional justice for system failures in casual dining restaurants in the U.S. and H2b. There is no difference in the effectiveness of recovery effort among distributional justice, procedural justice, and interactional justice for personnel failures in casual dining restaurants in the U.S.

Results and Conclusions of the Effectiveness of Recovery Effort for Failure Classes
System Failures

The result of hypothesis 2a was rejected as showed in Table 116. With respect to the main effect, this study concludes that speed of fixing problem is more favorable than compensation; and compensation is more favorable than an apology only or an apology combined with an explanation for system failures.

With respect to the interaction effects, this study concludes that first, free meal for the current visit with an apology combined with an explanation is more favorable than free meal for the current visit with immediately fixing the problem; second, immediately fixing the problem with a free meal on the current visit is more favorable than immediately fixing the problem along with an apology combined with an explanation; third, an apology combined with explanation along with free meal for the current visit is more favorable than an apology combined with immediately fixing the problem. Additionally, delay in fixing the problem along with free meal for the next visit is slightly more favorable than delay in fixing the problem along with an apology only for system failures.

For system failures, customers seem to be more favorable on speed of fixing problem than other efforts. This finding is not supported by Mattila (2001). However, the finding of higher compensation is more favorable than other recovery efforts. This finding is supported by previous studies (Boshoff, 1997; Conlon & Murray, 1996)

Table 116 *Results and Conclusions of the Effectiveness of Recovery Effort for System Failures*

Hypothesis 2a	System Failures	Remarks
Result	H ₀ Rejected	
Conclusion of Main Effect	1 When controlling for PJ, DJ > IJ	Main effect includes recovery effort and the level of recovery effort.
	2 When controlling for IJ, PJ > DJ	
	3 When controlling for DJ, PJ > IJ	
	4 When controlling for No Effort, H > L	
Conclusion of Interaction Effect	1 When controlling for DJ _H , IJ _H > PJ _H	Interaction effect is compared to control group - no effort.
	2 When controlling for PJ _H , DJ _H > IJ _H	
	3 When controlling for IJ _H , DJ _H > PJ _H	
	4 When controlling for PJ _L , DJ _L ≥ IJ _L	

DJ: Distributive Justice – Compensation; DJ_H – Free meal for the current visit; DJ_L – Free meal for the next visit

IJ: Interactional Justice – An apology or combined with explanation; IJ_H – An apology combined with explanation; IJ_L – An apology only

PJ: Procedural Justice – Speed of fixing problem; PJ_H – Immediately fixing the problem; PJ_L – Delay fixing the problem

H: High level of recovery effort

L: Low level of recovery effort

Personnel Failures

The result of hypothesis 2b was rejected as showed in Table 117. With respect to the main effects, this study concludes that speed of fixing problem is more favorable than compensation; and compensation is more favorable than an apology only or an apology combined with an explanation for personnel failures. This result is similar to the results for system failures.

With respect to the interaction effects, this study concludes that free meal for the current visit along with immediately fixing the problem is more favorable than free meal for the current visit along with an apology combined with an explanation. This result is different than system failures. Additionally, this study also concludes that delay in fixing

the problem along with free meal for the next visit is more favorable than delay in fixing the problem along with an apology only for personnel failures. This result is similar to the result for system failures.

For personnel failures, customers seem to be only favorable on speed of fixing problem than other efforts as system failures; in particular, immediately fixing the problem is more favorable than an apology combined with an explanation. This finding is the same as Zeithmal, Berry and Parasuraman (1996) that problems should be fixed quickly. Additionally, delay in fixing the problem along with an apology only is more favorable than delay in fixing the problem along with free meal for the next visit for personnel failures.

Table 117 *Results and Conclusions of the Effectiveness of Recovery Effort for Personnel Failures*

Hypothesis 2b	Personnel Failures	Remarks
Result	H ₀ Rejected	
Conclusion: Main Effect	1 When controlling for PJ, DJ > IJ 2 When controlling for IJ, PJ > DJ 3 When controlling for DJ, PJ > IJ 4 When controlling for No Effort, H > L	Main effect includes recovery effort and the level of recovery effort.
Conclusion: Interaction Effect	1 When controlling for DJ _H , PJ _H > IJ _H 2 When controlling for PJ _H , DJ _H > IJ _H 3 When controlling for IJ _H , DJ _H > PJ _H 4 When controlling for PJ _L , IJ _L > DJ _L	Interaction effect is compared to control group - no effort.
DJ: Distributive Justice – Compensation; DJ _H – Free meal for the current visit; DJ _L – Free meal for the next visit		
IJ: Interactional Justice – An apology or combined with explanation; IJ _H – An apology combined with explanation; IJ _L – An apology only		
PJ: Procedural Justice – Speed of fixing problem; PJ _H – Immediately fixing the problem; PJ _L – Delay fixing the problem		
H: High level of recovery effort		
L: Low level of recovery effort		

Recommendations of the Effectiveness of Recovery Effort for Failure Classes

With respect to main effect, the restaurant managers may want to offer the speed of fixing problem both for system failures and personnel failures. With respect to interaction effects, the restaurant managers may want to offer recourse in the following order: offering a free meal for the current study, then an apology combined with an explanation, and last immediately fixing the problem for system failures; and offering a free meal for the current study, then immediately fixing the problem, and last an apology combined with an explanation for personnel failures

Additionally, when the restaurant managers have to offer low level of recovery effort, offering a free meal for the next visit would be slightly better than offering an apology only for system failures; and offering an apology only would be better than offering a free meal for the personnel failures.

Hypothesis Three

After the effectiveness of recovery effort for system failures and personnel failures was performed separately, hypothesis three was tested to identify the confounding effect of the failure severity on recovery satisfaction as follows: H3a. There is no confounding effect of the severity of failure on recovery satisfaction for system failures in casual dining restaurants in the U.S. and H3b. There is no confounding effect of the severity of failure on recovery satisfaction for personnel failures in casual dining restaurants in the U.S.

Results and Conclusions of Confounding Effect of Failure Severity on Recovery Satisfaction for Failure Classes

The result of hypothesis 3a was failed to reject, but hypothesis 3b was rejected as showed in Table 118. This study concludes that no matter what severity of service failure, recovery satisfaction for system failures will remain the same. However, failure severity does have an effect on recovery satisfaction when comparing ‘high effort’ of recovery satisfaction to ‘no effort’ of recovery satisfaction. This finding of the severity of personnel failures is supported by Webster (1998) and Mattila (1999). They found that failure severity has a significant effect on recovery satisfaction.

Table 118 *Results and Conclusions of Confounding Effect of the Severity of Failure on Recovery Satisfaction*

Hypothesis 3a and 3b	System Failures	Personnel Failures	Remarks
Result	H ₀ Accepted	H ₀ Rejected	
Conclusion	No confounding effect on recovery satisfaction.	Confounding effect only on the high effort of recovery satisfaction	When compared to control group – no effort of recovery satisfaction.

Recommendations of Confounding Effect of Failure Severity on Recovery Satisfaction for Failure Classes

This study suggests that the restaurant managers may need to be concerned with the effect of failure severity on recovery satisfaction only for personnel failures, and not for system failures.

Hypothesis Four

After evaluating the confounding effect of failure severity on recovery satisfaction for failure classes, this study also evaluated the confounding effect of failure severity on the effectiveness of recovery effort for failure classes as follows: H4a. There is no confounding effect of the severity of failure on the effectiveness of recovery effort among procedural justice (PJ), distributive justice (DJ) and interactional justice (IJ) for system failures in casual dining restaurants in the U.S. and H4b. There is no confounding effect of the severity of failure on the effectiveness of recovery effort among procedural justice (PJ), distributive justice (DJ) and interactional justice (IJ) for personnel failures in casual dining restaurants in the U.S.

Results and Conclusions of Confounding Effect of Failure Severity on the Effectiveness of Recovery Effort for Failure Classes

The result of confounding effect of failure severity was rejected for both system failures and personnel failures as showed in Table 119. This study concludes the main effect that the severity of failure has slightly more effect on the ‘low effort’ than the ‘high effort’ when comparing to ‘no effort’ for system failures. However, the severity of failure only has an effect when comparing the ‘high effort’ to ‘no effort’ for personnel failures.

On the other hand, this study concludes the interaction effects that the severity of failure has an effect when offering a free meal for the next visit, and when there is a delay in fixing the problem for system failures. Additionally, there is no interaction effect for personnel failures.

These findings are supported by previous studies such as Hoffman, Kelly and

Rotalsky (1995) indicated the linear correlation between failure severity and the effect of recovery effort. Additionally, Hart, Heskett and Sasser (1990) indicated that the effectiveness of recovery effort was determined by the severity of service failure. However, none of previous studies identify the severity of service failure in terms of system failures and personnel failures.

Table 119 *Results and Conclusions of Confounding Effect on the Effectiveness of Recovery Effort for Failure Classes*

Hypothesis 4a and 4b	System Failures	Personnel Failures	Remarks
Result	H ₀ Rejected	H ₀ Rejected	
Conclusion: Main Effect	Confounding effect was found on both the high and low level of recovery effort.	Confounding effect was found on the high level of recovery effort.	When compared to control
Conclusion: Interaction Effect	Confounding effect was found on recovery effort when offering DJ _L and PJ _L	No confounding effect was found	group – no recovery effort
DJ _L : Free meal for the next visit. PJ _L : Delay fixing the problem.			

Recommendations of Confounding Effect of Failure Severity on the Effectiveness of Recovery Effort for Failure Classes

This study suggests that the restaurant managers may need to be concerned with the service severity as an issue for system failures no matter what level of recovery effort, particularly, when offering a free meal for the next visit, and when there is a delay in fixing the problem for system failures. On the other hand, the restaurant managers may just need to be concerned with the service severity when offering high level of recovery effort for personnel failures.

Hypothesis Five

After the effectiveness of recovery effort was evaluated after system failures and personnel failures separately, hypothesis five combines these two service failures and compares the difference of the effectiveness of recovery effort as follows: There is no difference in the effectiveness of recovery effort between system failures and personnel failures in terms of procedural justice (PJ), distributive justice (DJ) and interactional justice (IJ) in casual dining restaurants in the U.S.

Results and Conclusions of the Effectiveness of Recovery Effort for Failure Classes Comparison

The result of hypothesis five was rejected as showed in Table 120. With respect to the main effect, this study concludes that failure classes were a significant difference. This study also concludes that speed of fixing problem is more favorable than compensation; and compensation is more favorable than an apology only or an apology combined with an explanation; high level of recovery effort is more favorable than low level of recovery effort.

With respect to the first interaction effects between failure classes and recovery effort, this study concludes that speed of fixing problem along with compensation are more favorable than speed of fixing problem along with an apology only or an apology combined with an explanation for personnel failures. The second interaction effects between failure classes and the level of recovery effort, this study concludes that high level of recovery effort is more favorable than low level of recovery effort for personnel failures. The last interaction effects among failure classes, recovery effort, and the level

of recovery effort, this study concludes that immediately fixing the problem along with free meal for the current visit is more favorable than immediately fixing the problem along with an apology combined with an explanation for personnel failures.

Johnston (1995) reported that compensation was not the requirement for the service recovery effort, but Boshoff (1997) and Colon and Murray (1996) reported that higher compensation had more significant impact on service recovery. However, Webster and Sundaram (1998) reported that the effectiveness of recovery effort depends on the specifics of situation and supports this current study that when immediately fixing the problem was offered, free meal for the current visit are the most significant effective of service recovery for personnel failures instead of system failures.

Table 120 *Results and Conclusions of the Effectiveness of Recovery Effort for Failure Classes Comparison*

Hypothesis 5	Effectiveness of Recovery Effort
Result	H ₀ Rejected
Conclusion: Main Effect	
Recovery Effort	1 When controlling for PJ, DJ > IJ 2 When controlling for DJ, PJ > IJ 3 When controlling for IJ, PJ > DJ
Level of Recovery Effort	When controlling for NE, H > L
Conclusion: Interaction Effect	
Failure Classes * Recovery Effort	When controlling for PJ, DJ ≥ IJ for personnel failures
Failure Classes * Level of Recovery Effort	When controlling for NE, H > L for personnel failures
Failure Classes * Recovery Effort * Level of Recovery Effort	When controlling for PJ _H , DJ _H > IJ _H for personnel failures
DJ: Distributive Justice – Compensation; DJ _H – Free meal for the current visit; DJ _L – Free meal for the next visit	
IJ: Interactional Justice – An apology or an apology combined with an explanation; IJ _H – An apology combined with an explanation; IJ _L – An apology only	
PJ: Procedural Justice – Speed of fixing problem; PJ _H – Immediately fixing the problem; PJ _L – Delay in fixing the problem	
NE: No recovery effort	
H: High level of recovery effort	
L: Low level of recovery effort	

Recommendations of the Effectiveness of Recovery Effort for Failure Classes

Comparison

The findings suggest that failure classes are different and need different recovery efforts to enhance the effectiveness of recovery effort. Therefore, the restaurant manager may want to offer the speed of fixing problem, then compensation, and last an apology or an apology combined with an explanation for the effectiveness of recovery effort.

Meanwhile, the restaurant managers may want to offer high level of recovery effort, such as immediately fixing the problem, a free meal for the current visit, or an apology

combined with an explanation, instead of low level of recovery effort, such as delay in fixing the problem, a free meal for the next visit, or an apology only.

The further findings from interaction effects between failure classes and recovery effort suggest that the restaurant managers may want to offer compensation along with the speed of fixing problem for personnel failures rather than system failures. The second interaction effects between failure classes and the level of recovery effort suggests that the manager may want to offer high level of recovery effort for personnel failures rather than system failures.

The last interaction effects among failure classes, recovery effort, and the level of recovery effort suggest that the restaurant managers may want to offer immediately fixing the problem along with a free meal for the current visit for personnel failures rather than for system failures.

Hypothesis Six

After the comparisons of the effectiveness of recovery effort between failure classes were evaluated, this study also evaluated the comparisons of the effectiveness of recovery effort on recovery effort between failure classes as follows: H6. There is no difference in the recovery satisfaction between system failures and personnel failures after the administration of recovery effort in casual dining restaurants in the U.S.

Results and Conclusions of the Recovery Effort on Recovery Satisfaction for Failure Classes Comparison

The result of hypothesis five was rejected as showed in Table 121. Overall, the results of recovery satisfaction are similar to the results for the effectiveness of recovery effort, except for the interaction effects between failure classes and the level of recovery effort on recovery satisfaction. This study may conclude this interaction effects that system failures has more effect than personnel failures when comparing low level of recovery effort on recovery satisfaction to no effort of recovery satisfaction.

Previous studies reported that distributive justice has larger impact on recovery satisfaction than procedural justice. (Boshoff, 1997; Smith & Bolton, 1998; Smith et al., 1999), but Hocutt and Charkraborty (1997) reported that the highest satisfaction came from interactional justice. However, the finding of this study found that procedural justice had most effect on recovery satisfaction from the main effect, and found that distributive justice had most effect on recovery satisfaction from the interaction effects. As Webster (1998) indicated that the effectiveness of recovery effort would be dependent upon what situations are to affect the recovery satisfaction by the variety of recovery effort. In addition, the major finding of this study was that different failure classes would need different recovery efforts to enhance the recovery satisfaction.

Table 121 *Results and Conclusions of the Recovery Effort on Recovery Satisfaction for Failure Classes Comparison*

Hypothesis 6	Recovery Effort on Recovery Satisfaction
Result	H ₀ Rejected
Conclusion: Main Effect	
Recovery Effort on Recovery Satisfaction	1 When controlling for PJ, DJ > IJ 2 When controlling for DJ, PJ > IJ 3 When controlling for IJ, PJ > DJ
Level of Recovery Effort on Recovery Satisfaction	When controlling for NE, H > L
Conclusion: Interaction Effect	
Failure Classes * Recovery Effort on Recovery Satisfaction	When controlling for PJ, DJ > IJ for personnel failures
Failure Classes * Level of Recovery Effort on Recovery Satisfaction	When comparing L to NE, system failures has more recovery satisfaction than personnel failures
Failure Classes * Recovery Effort on Recovery Satisfaction * Level of Recovery Effort on Recovery Satisfaction	When controlling for PJ _H , DJ _H > IJ _H for personnel failures
DJ: Distributive Justice on Recovery Satisfaction– Compensation; DJ _H – Free meal for the current visit; DJ _L – Free meal for the next visit IJ: Interactional Justice on Recovery Satisfaction– An apology or an apology combined with an explanation; IJ _H – An apology combined with an explanation; IJ _L – An apology only PJ: Procedural Justice on Recovery Satisfaction– Speed of fixing problem; PJ _H – Immediately fixing the problem; PJ _L – Delay in fixing the problem NE: No recovery effort on recovery satisfaction H: High level of recovery effort on recovery satisfaction L: Low level of recovery effort on recovery satisfaction	

Recommendations of the Recovery Effort on Recovery Satisfaction for Failure Classes Comparison

The findings suggest that failure classes are different and need different recovery efforts to enhance recovery satisfaction. Therefore, the restaurant manager may want to offer immediately fixing the problem for recovery satisfaction. Meanwhile, the restaurant managers may want to offer immediately fixing the problem, a free meal for the current visit, or an apology combined with an explanation rather than to offer the delay in fixing the problem, a free meal for the next visit, or an apology only for recovery satisfaction.

The further findings from interaction effects between failure classes and recovery effort on recovery satisfaction suggest that the restaurant managers may want to offer compensation and speed of fixing problem for personnel recovery satisfaction. The second interaction effects between failure classes and the level of recovery effort suggests that if offering low level of recovery effort is necessary, the manager may want to offer it for system failures rather than for personnel failures.

The last interaction effects among failure classes, recovery effort on recovery satisfaction and the level of recovery effort on recovery satisfaction suggests that the restaurant managers may want to offer immediately fixing the problem along with a free meal for the current visit for personnel recovery satisfaction rather than for system recovery satisfaction.

Hypothesis Seven

Following the evaluation of the effectiveness of recovery effort after service failure incidences and the recovery satisfaction after recovery efforts, the last hypothesis was tested to examine the relationship between recovery satisfaction and the consequent customer loyalty in terms of failure classes and failure severity as follows: H7a. There is no relationship between the recovery satisfaction and customer loyalty in terms of failure classes in casual dining restaurants in the U.S.; and H7b. There is no relationship between the recovery satisfaction and customer loyalty in terms of failure classes and failure severity in casual dining restaurants in the U.S.

Results and Conclusions of Relationship Between Recovery Satisfaction and Customer Loyalty for Failure Classes Comparison

The result of hypothesis 7a was rejected. In order to gain more insight into customer loyalty, customer loyalty was further evaluated separately using behavioral loyalty and attitudinal loyalty. All of them showed that all types of loyalties increased at a higher rate as recovery satisfaction increased for both failure classes after a recovery effort is performed.

When comparing the failure classes, personnel recovery satisfaction had a positive higher slope than system recovery satisfaction with respect to customer loyalty, behavioral loyalty and attitudinal loyalty. In other words, recovery satisfaction has an effect on repatronage, positive recommendations, and on loyalty. Therefore, the results suggest that the restaurant managers may need to increase the recovery satisfaction to

increase customer loyalty.

Previous studies reported that customer's behavioral and attitudinal evaluations are influenced by multiple factors (Brown, Cowles, & Tuten, 1996; Oliver, 1997). Ok, Back and Shanklin (2005) reported that recovery satisfaction should not be a single predictor of behavioral and attitudinal outcomes, but with other related elements for more accurate evaluation. Therefore, hypothesis 7a indicated that the positive relationship between recovery satisfaction and all types of loyalty will require other considerations such as failure severity, and the recovery effort are needed to be evaluated as done in the current study.

Recommendations of the Relationship Between Recovery Satisfaction and Customer Loyalty for Failure Classes Comparison

Apparently, recovery satisfaction has a positive impact on customer loyalty in terms of failure classes. Personnel failures have higher impact on customer loyalty than system failures. Therefore, the restaurant managers may need to make more efforts on personnel failures than system failures for increasing customer loyalty.

Results and Conclusions of Relationship Between Recovery Satisfaction and Customer Loyalty with Failure Severity for Failure Classes Comparison

The result of hypothesis 7b was rejected. Failure severity did not have a confounding effect on the relationship between recovery satisfaction and customer loyalty, behavioral loyalty as well as attitudinal loyalty for both system failures and personnel failures. We may therefore conclude that the severity of service failure has no effect on

customer repatronage, positive recommendations, and loyalty for both system failures and personnel failures.

Most of the previous studies reported that the relationship between failure severity and customer satisfaction (Mattila, 1999; Smith et al., 1999; Webster & Sundaram, 1998), or the relationship between failure severity and the effectiveness of recovery effort (Hart et al., 1990; Hoffman et al., 1995; Smith & Bolton, 1998), but not the confounding effect on the relationship between recovery satisfaction and customer loyalty for failure classes. It is hence difficult to compare the results of this current study with previous results.

Recommendations of Relationship Between Recovery Satisfaction and Customer Loyalty with Failure Severity for Failure Classes Comparison

Since the severity of service did not have an effect on the relationship between recovery satisfaction and customer loyalty, this study concludes that failure severity is not an issue for the relationship between recovery satisfaction and customer loyalty for both system failures and personnel failures.

Practical Contributions and Implications

This study may have serious implications for casual dining restaurant managers. The most important outcome of the research is a summary of the class of recommended recovery effort based on realistic failures (system failures and personnel failures) that occur every day in casual dining restaurants across the country. It is expected that the restaurant managers can use these recommended methods as a guideline for fixing failure problems that may occur in their restaurants as showed in Table 122, Table 123 for the effectiveness of recovery efforts, and Table 124 for the recovery efforts on recovery satisfaction.

Table 122 *Practical Implications of the Effectiveness of Recovery Effort in Terms of Main Effects*

Situations	Practical Implications
Main Effects of Failure Classes	
When ‘Speed of Fixing Problem’ is not used as a recovery effort	‘Compensation’ is more favorable than ‘An Apology or An Apology combined with An Explanation.’
When ‘Compensation’ is not used as a recovery effort	‘Speed of Fixing Problem’ is more favorable than ‘An Apology or An Apology combined with An Explanation.’
When ‘An Apology or An Apology combined with An Explanation’ is not used as a recovery effort	‘Speed of Fixing Problem’ is more favorable than ‘Compensation.’
When ‘Speed of Fixing Problem’ is used as a recovery effort	‘Immediately Fixing the Problem’ is more favorable than ‘Delay Fixing the Problem.’
When ‘Compensation’ is used as a recovery effort	‘Free Meal for the Current Visit’ is more favorable than ‘Free Meal for the Next Visit.’
When ‘An Apology or An Apology Combined With An Explanation’ is used as a recovery effort	‘An Apology Combined With An Explanation’ is more favorable than ‘An Apology Only.’

Table 123 *Practical Implications of the Effectiveness of Recovery Effort in Terms of Interaction Effects*

Situations	Practical Implications
Interaction Effects of System Failures	
When 'Free Meal for the Current Visit' is not used as a recovery effort	'An Apology Combined With An Explanation' is more favorable than 'Immediately Fixing the Problem.'
When 'Immediately Fixing the Problem' is not used as a recovery effort	'Free Meal for the Current Visit' is more favorable than 'An Apology Combined With An Explanation.'
When 'An Apology Combined With An Explanation' is not used as a recovery effort	'Free Meal for the Current Visit' is more favorable than 'Immediately Fixing the Problem.'
If 'Delay Fixing the Problem, Free Meal for the Current Visit, or An Apology only' is necessary, when 'Delay Fixing the Problem' is not used as a recovery effort	'Free Meal for the Next Visit' is more favorable than 'An Apology.'
Interaction Effects of Personnel Failures	
When 'Free Meal for the Current Visit' is not used as a recovery effort	'Immediately Fixing the Problem' is more favorable than 'An Apology Combined With An Explanation.'
When 'Immediately Fixing the Problem' is not used as a recovery effort	'Free Meal for the Current Visit' is more favorable than 'An Apology Combined With An Explanation.'
When 'An Apology Combined With An Explanation' is not used as a recovery effort	'Free Meal for the Current Visit' is more favorable than 'Immediately Fixing the Problem.'
If offering 'Delay Fixing the Problem, Free Meal for the Current Visit, or An Apology only' is necessary, when 'Delay Fixing the Problem' is not used as a recovery effort	'An Apology' is more favorable than 'Free Meal for the Next Visit.'
Interaction Effects of Failure Classes Comparison	
When 'Speed of Fixing Problem' is not used as a recovery effort	'Compensation' is more favorable than 'An Apology or An Apology combined with An Explanation' for personnel failures.
When 'Speed of Fixing Problem' is used as a recovery effort	'Immediately Fixing the Problem' is more favorable than 'Delay Fixing the Problem' for personnel failures.
When 'Compensation' is used as a recovery effort	'Free Meal for the Current Visit' is more favorable than 'Free Meal for the Next Visit' for personnel failures.
When 'An Apology or An Apology Combined With An Explanation' is used as a recovery effort	'An Apology Combined With An Explanation' is more favorable than 'An Apology Only' for personnel failures.
When 'Immediately Fixing the Problem' is not used as a recovery effort	'Free Meal for the Current Visit' is more favorable than 'An Apology Combined With An Explanation' for personnel failures.

Table 124 *Practical Implications of the Recovery Effort on Recovery Satisfaction for Failure Classes*

Situations	Practical Implications
Main Effects of Failure Classes	
When ‘Speed of Fixing Problem’ is not used as a recovery effort	‘Compensation’ is more favorable than ‘An Apology or An Apology combined with An Explanation.’
When ‘Compensation’ is not used as a recovery effort	‘Speed of Fixing Problem’ is more favorable than ‘An Apology or An Apology combined with An Explanation.’
When ‘An Apology or An Apology combined with An Explanation’ is not used as a recovery effort	‘Speed of Fixing Problem’ is more favorable than ‘Compensation.’
When ‘Speed of Fixing Problem’ is used as a recovery effort	‘Immediately Fixing the Problem’ is more favorable than ‘Delay Fixing the Problem.’
When ‘Compensation’ is used as a recovery effort	‘Free Meal for the Current Visit’ is more favorable than ‘Free Meal for the Next Visit.’
When ‘An Apology or An Apology Combined With An Explanation’ is used as a recovery effort	‘An Apology Combined With An Explanation’ is more favorable than ‘An Apology Only.’
Interaction Effects of Failure Classes Comparison	
When ‘Speed of Fixing Problem’ is not used as a recovery effort	‘Compensation’ is more favorable than ‘An Apology or An Apology combined with An Explanation’ for personnel failures.
If offering ‘Delay Fixing the Problem, Free Meal for the Current Visit, or An Apology only’ is necessary	System failures have higher recovery satisfaction than personnel failures.
When ‘Immediately Fixing the Problem’ is not used as a recovery effort	‘Free Meal for the Current Visit’ is more favorable than ‘An Apology Combined With An Explanation’ for personnel failures.

With respect to the relationship between recovery satisfaction and customer loyalty, the restaurant managers may earn more customer loyalty, behavioral loyalty, and attitudinal loyalty by increasing personnel recovery satisfaction than system recovery satisfaction.

With respect to the confounding effect of failure severity, the restaurant managers may need to be concerned with severity for personnel failures for recovery satisfaction. Additionally, the restaurant managers may need to be concerned with failure severity in terms of high level of recovery effort, such as immediately fixing the problem, offering a free meal for the current visit, and offering an apology combined with an explanation for both system failures and personnel failures. However, in terms of low level of recovery effort, such as delay in fixing the problem, or offering a free meal for the next visit, or offering just an apology, the restaurant managers may need to be more concerned with severity for system failures than personnel failures.

Limitations and Future Study

The main limitations of this study involve the experimental written scenario, sampling, and some variables considerations. The first limitation of the study is the disadvantage of using written scenario. The respondents may not be able to fully imagine the scenarios and respond to what they would do in the real situations. (Wirtz & Mattila, 2004). This potential lack of emotional involvement of respondents would be a limitation of the study (Hess Jr, Ganesan, & Klein, 2003; Mattila, 1999; Smith & Bolton, 2002). Future research may want to apply a field study for evaluating real situation through observations.

Another suggestion would be to study the “log book” that service provider use to record service failures and service recovery histories. Researchers may want to apply content analysis to summarize and analyze the history data from the past experiences to infer the best service recovery solutions.

The second limitation of the study is the sampling of students. Even though students are real consumers of restaurant (Mattila & Patterson, 2004; Smith & Bolton, 1998), randomization of the sampling for this study could not be achieved because of choosing of a population of students. The profile of students may not necessarily be similar to that of the profile of the typical casual dining restaurant customer. This may not allow us to make global conclusions for the casual dining restaurant industry. Future studies may want to expand and randomize the sample with different groups of people to increase the generalizability. Additionally, future studies may also want to have international research and to compare the differences between groups for global perspectives of the issues.

The third limitation of the study is the target population of casual dining restaurants.

The implications may not be able to generalize for other restaurant segments. Future studies may want to employ the same approach and apply it to quick service restaurants, family dining restaurants or fine dining restaurants.

The fourth limitation of the study is the lack of considering the expectation of respondents and their affiliation with the restaurants included in the study. The expectation of service and affiliation with the service providers may have an impact on their opinion about the severity of service failure and the service recovery effort (Hess Jr et al., 2003; Mattila, 2006). Future studies may want to also consider these variables for more accurately measuring the effect of such factors.

The last limitation of the study is the results of failure severity were found not to be significant on the relationship between recovery satisfaction and customer loyalty for both system failures and personnel failures. However, further analysis of failure severity was not conducted by splitting into further categories, such as high level of severity and low level of severity. Such analysis may have a result in failure severity being a critical factor.

REFERENCES

- Alicke, M. D., Braun, J. C., Glor, J. E., Klotz, M. L., Magee, J., Sederhoim, H., et al. (1992). Complaining behavior in social interaction. *Personality and Social Psychology Bulletin*, 18(3), 286-295.
- Anderson, E. W., & Fornell, C. (1994). A customer satisfaction research prospectus. In R. Rust & R. Oliver (Eds.), *Service Quality: New Directions in Theory and Practice* (pp. 241-268). Thousand Oaks, CA: Sage.
- Austin, W. G. (1979). Justice, freedom and self-interest in intergroup relations. In W. G. Austin & S. Worchel (Eds.), *The Social Psychology of Intergroup Relations* (pp. 20-37). Belmont, CA: Brooks.
- Bailey, D. (1994). Recovery from customer service shortfalls. *Managing Service Quality*, 4(6), 25-28.
- Berry, L. L., & Parasuraman, A. (1991). *Marketing Services*. New York, NY: The Free Press.
- Berry, L. L., & Parasuraman, A. (1992). Prescriptions for a service quality revolution in America. *Organizational Dynamics*, 20(4), 4-15.
- Best, A., & Andreasen, A. R. (1976). Consumer response to unsatisfactory purchases: A study of perceiving defects, voicing complaints, and obtaining redress. *Law and Society*, 11, 701-742.
- Bitner, M. J., Booms, B. H., & Mohr, L. A. (1994). Critical service encounters: The employee's viewpoint. *Journal of Marketing*, 58(4), 95-105.
- Bitner, M. J., Booms, B. H., & Tetreault, M. S. (1990). The service encounter: Diagnosing favorable and unfavorable incidents. *Journal of Marketing*, 54(1), 71-84.
- Blodgett, J. G., Granbois, D. H., & Walters, R. G. (1993). The effects of perceived justice on complainants' negative word-of-mouth behavior and repatronage intentions. *Journal of Retailing*, 69(4), 399-428.
- Blodgett, J. G., Hill, J. D., & Tax, S. S. (1997). The effects of distributive, procedural, and interactional justice on postcomplaint behavior. *Journal of Retailing*, 73(2), 185-210.

- Bolton, R. N., & Drew, J. H. (1991). A multi-stage model of customers' assessment of service quality and value. *Journal of Consumer Research*, 17(4), 375-384.
- Boshoff, C. (1997). An experimental study of service recovery options. *International Journal of Service Industry Management*, 8(2), 110-130.
- Bowerman, B. L., & O'Connell, R. T. (1990). *Linear statistical models: An applied approach* (2nd ed.). Belmont, CA: Duxbury.
- Brown, S. W., Cowles, D. L., & Tuten, T. L. (1996). Service recovery: its value and limitations as a retail strategy. *International Journal of Service Industry Management*, 7(5), 32-46.
- Churchill, G. A. (1995). *Marketing research: Methodological foundations* (6th ed.). Fort Worth, TX: Dryden Press.
- Clark, M. A., & Wood, R. C. (1998). Consumer loyalty in the restaurant industry - a preliminary exploration of the issues. *International Journal of Contemporary Hospitality Management*, 10(4), 139-144.
- Clemmer, E. C. (1993). An investigation into the relationships of justice and customer satisfaction with services. In R. Cropanzano (Ed.), *Justice in the Workplace: Approaching Fairness in Human Resources Management*. Hillsdale, NJ: Erlbaum.
- Clemmer, E. C., & Schneider, B. (1996). Fair service. In S. W. Brown, D. A. Bower & T. Swartz (Eds.), *Advances in Service Marketing and Management* (Vol. 5, pp. 109-126). Greenwich, CT: JAI Press.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Cohen, J. (1990). Things I have learned (so far). *American Psychologist*, 45(12), 1304-1312.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159.
- Colgate, M., & Norris, M. (2001). Developing a comprehensive picture of service failure. *International Journal of Service Industry Management*, 12(3), 215-233.
- Collie, T. A., Sparks, B., & Bradley, G. (2000). Investing in interactional justice: A study of the fair process effect within a hospitality failure context. *Journal of Hospitality & Tourism Research*, 24(4), 448-472.
- Conlon, D. E., & Murray, N. M. (1996). Customer perceptions of corporate responses to product complaints: The role of explanations. *Academy of Management Journal*, 39(4), 1040-1056.
- Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation: Design and analysis*

issues for field settings. Chicago: Rand McNally.

- Craighead, W. C., Karwan, R. K., & Miller, L. J. (2004). The effects of severity of failure and customer loyalty on service recovery strategies. *Production and Operations Management*, 13(4), 307-321.
- Cranage, D. (2004). Plan to do it right: and plan for recovery. *International Journal of Contemporary Hospitality Management*, 16(4), 210-219.
- Darida, T., Levesque, T., & McDougall, G. (1996). *Service problems and recovery strategies: An exploratory investigation in the hospitality sector*. Paper presented at the Proceedings of the Administrative Sciences Association Conference, Montreal: Administrative Sciences Association.
- Day, R. L., & Landon, L. E. (1977). Toward a theory of consumer complaining behavior. In A. G. Woodside, J. N. Sheth & P. D. Bennett (Eds.), *Consumer and industrial buying behavior* (pp. 425-437). New York: North-Holland.
- de Ruyter, K., & Wetzels, M. (2000). Customer equity considerations in service recovery: a cross-industry perspective. *International Journal of Service Industry Management*, 11(1), 91-108.
- Durbin, J., & Watson, G. S. (1951). Testing for serial correlation in least squares regression, II. . *Biometrika*, 30, 159-178.
- Edvardsson, B., Johnson, M. D., Gustafsson, A., & Strandvik, T. (2000). The effects of satisfaction and loyalty on profits and growth: products versus services. *Total Quality Management*, 11(7), 918-927.
- Ettorre, B. (1994). Phenomenal promises that mean business. *Management Review*, 83(3), 18-23.
- Fornell, C. (1992). A national customer satisfaction barometer: The Swedish experience. *Journal of Marketing*, 56(1), 6-21.
- Gilly, M. C., & Gelb, B. D. (1982). Post-purchase consumer processes and the complaining consumer. *Journal of Consumer Research*, 9(3), 323-328.
- Goodwin, C., & Ross, I. (1990). Consumer evaluations of responses to complaints: What's fair and why. *Journal of Consumer Marketing*, 7(2), 39-47.
- Goodwin, C., & Ross, I. (1992). Consumer responses to service failures: Influence of procedural and interactional fairness perceptions. *Journal of Business Research*, 25(2), 149-163.
- Greenhouse, S. W., & Geisser, S. (1959). On methods in the analysis of profile data. *Psychometrika*, 24, 95-112.

- Gronroos, C. (1988). Service quality: The six criteria of good perceived service. *Review of Business*, 9(3), 10-13.
- Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate Data Analysis*. Upper Saddle River, New Jersey: Prentice-Hall.
- Hart, C. W. L., Heskett, J. L., & Sasser, W. E., Jr. (1990). The profitable art of service recovery. *Harvard Business Review*, 68(4), 148-156.
- Hess Jr, R. L., Ganesan, S., & Klein, N. M. (2003). Service Failure and Recovery: The Impact of Relationship Factors on Customer Satisfaction. *Journal of the Academy of Marketing Science*, 31(2), 127-145.
- Hess, R. L. J., Ganesan, S., & Klein, N. M. (2003). Service failure and recovery: The impact of relationship factors on customer satisfaction. *Academy of Marketing Science*, 31(2), 127-145.
- Hill, N., & Alexander, J. (2000). *Handbook of Customer Satisfaction and Loyalty Measurement* (2nd ed.). Aldershot, Hampshire, England; Brookfield, Vt.: Gower.
- Hirschman, A. O. (1970). *Exit, voice, and loyalty: Responses to decline in firms, organizations, and states*. Cambridge, MA: Harvard University Press.
- Hocutt, M. A., & Charkraborty, G. (1997). The impact of perceived justice on customer satisfaction and intention to complain in a service recovery. *Advances in Consumer Research*, 24(1), 457-463.
- Hoffman, K. D., & Kelley, S. W. (2000). Perceived justice needs and recovery evaluation: a contingency approach. *European Journal of Marketing*, 34(3/4), 418-432.
- Hoffman, K. D., Kelley, S. W., & Rotalsky, H. M. (1995). Tracking service failures and employee recovery efforts. *Journal of Services Marketing*, 9(2/3), 49-61.
- Howell, D. C. (2002). *Statistical methods for psychology* (5th ed.). Belmont, CA: Duxbury.
- Hunt, H. K. (1991). Consumer satisfaction, dissatisfaction, and complaining behavior. *Journal of Social Issues*, 47(1), 107-117.
- Huynh, H., & Feldt, L. S. (1976). Estimation of the Box correction for degrees of freedom from sample data in randomized block and split-plot designs. *Journal of Educational Statistics*, 1(1), 69-82.
- Jang, D., & Mattila, A. S. (2005). An examination of restaurant loyalty programs: what kinds of rewards do customers prefer? *International Journal of Contemporary Hospitality Management*, 17(4/5), 402-408.
- Jenkins, K. (1992). Service quality in the skies: improving the quality of service offered

- to customers can improve the bottom line. *Business Quarterly*, 57(2), 13-18.
- Johnston, R. (1995). Service failure and recovery: Impact, attributes and process. *Advances in Services Marketing and Management*, 4, 211-228.
- Johnston, T. C., & Hewa, M. A. (1997). Fixing Service Failures. *Industrial Marketing Management*, 26(5), 467-473.
- Jones, T. O., & Sasser, W. E. J. (1995). Why satisfied customers defect. *Harvard Business Review*, 73, 88-99.
- Keaveney, S. M. (1995). Customer switching behavior in service industries: An exploratory study. *Journal of Marketing*, 59(2), 71-82.
- Kelley, S. W., & Davis, M. A. (1994). Antecedents to customer expectations for service recovery. *Academy of Marketing Science*, 22(1), 52-61.
- Kelley, S. W., Hoffman, K. D., & Davis, M. A. (1993). A typology of retail failures and recoveries. *Journal of Retailing*, 69(4), 429-452.
- Kim, T., Dilly, G., Ford, L., & Gould, R. (1998). Controlling costs in a university take-out lunch line: A case study. *Journal of College & University Foodservice*, 3(4), 29.
- Kotler, P., Bowen, J., & Makens, J. (2003). *Marketing for hospitality and tourism* (3rd ed.). Upper Saddle River, New York: Prentice Hall.
- Levesque, T. J., & McDougall, G. H. G. (2000). Service problems and recovery strategies: An Experiment. *Canadian Journal of Administrative Sciences*, 17(1), 20-37.
- Lewis, B. R., & McCann, P. (2004). Service failure and recovery: evidence from the hotel industry. *International Journal of Contemporary Hospitality Management*, 16(1), 6-17.
- Lewis, B. R., & Spyropoulos, S. (2001). Service failures and recovery in retail banking: the customers' perspective. *International Journal of Bank Marketing*, 19(1), 37-47.
- Mack, R., Mueller, R., Crotts, J., & Broderick, A. (2000). Perceptions, corrections and defections: implications for service recovery in the restaurant industry. *Managing Service Quality*, 10(6), 339-346.
- Mattila, A. S. (1999). An examination of factors affecting service recovery in a restaurant setting. *Journal of Hospitality & Tourism Research*, 23(3), 284-298.
- Mattila, A. S. (2001). The effectiveness of service recovery in a multi-industry setting. *Journal of Services Marketing*, 15(6/7), 583-596.
- Mattila, A. S. (2004). The impact of service failures on customer loyalty The moderating

- role of affective commitment. *International Journal of Service Industry Management*, 15(2), 134-149.
- Mattila, A. S. (2006). How Affective Commitment Boosts Guest Loyalty (and Promotes Frequent-guest Programs). *Cornell Hotel & Restaurant Administration Quarterly*, 47(2), 174-181.
- Mattila, A. S., & Patterson, P. G. (2004). Service Recovery and Fairness Perceptions in Collectivist and Individualist Contexts. *Journal of Service Research*, 6(4), 336-346.
- Mauchly, J. W. (1940). Significance test for sphericity of n-variate normal populations. *Mathematical Statistics*, 11, 37-53.
- Maxham, I. J. G., & Netemeyer, R. G. (2002). A longitudinal study of complaining customers' evaluations of multiple service failures and recovery efforts. *Journal of Marketing*, 66(4), 57-71.
- Maxwell, S. E., & Delaney, H. D. (1990). *Designing experiments and analyzing data*. Belmont, CA: Wadsworth.
- McCollough, M. A. (2000). The effect of perceived justice and attributions regarding service failure and recovery on postrecovery customer satisfaction and service quality attitudes. *Journal of Hospitality & Tourism Research*, 24, 423-448.
- McCollough, M. A., Berry, L. L., & Yadav, M. S. (2000). An empirical investigation of customer satisfaction after service failure and recovery. *Journal of Service Research*, 3(2), 121-137.
- McDougall, G. H. G., & Levesque, T. J. (1999). Waiting for service: the effectiveness of recovery strategies. *International Journal of Contemporary Hospitality Management*, 11(1), 6-15.
- Menard, S. (1995). *Applied logistic regression analysis*. Thousand Oaks, CA: Sage.
- Meyers, L. S., Gamst, G., & Guarino, A. J. (2006). *Applied multivariate research: Design and interpretation*. Thousand Oaks, Calif.: Sage Publications.
- Michel, S. (2001). Analyzing Service Failures And Recoveries: A Process Approach. *International Journal of Service Industry Management*, 12(1), 20-33.
- Miller, J. L., Craighead, C. W., & Karwan, K. R. (2000). Service recovery: A framework and empirical investigation. *Journal of Operations Management*, 18(4), 387-400.
- Mitchell, T. R. (1985). An evaluation of the validity of correlational research conducted in organizations. *Academy of Management Review*, 10(2), 192-205.
- Mohr, L. A., & Bitner, M. J. (1995). The role of employee effort in satisfaction with

- service transactions. *Journal of Business Research*, 32(3), 239-252.
- Mueller, R. D., Palmer, A., Mack, R., & McMullan, R. (2003). Service in the restaurant industry: an American and Irish comparison of service failures and recovery strategies. *International Journal of Hospitality Management*, 22(4), 395-418.
- Myers, R. (1990). *Classical and modern regression with applications* (2nd ed.). Boston, MA: Duxbury.
- NRA. (2007). 2007 National Restaurant Association Restaurant Industry Fact Sheet. Retrieved September, 2007, from <http://www.restaurant.org/research/ind.glance.cfm>
- Nunnally, J. C. (1978). *Psychometric theory*. New York, NY: McGraw-Hill.
- O'Brien, L., & Jones, C. (1995). Do Rewards Really Create Loyalty? *Harvard Business Review*, 73(3), 75-82.
- Oh, H., Kim, B. Y., & Shin, J. H. (2004). Hospitality and tourism marketing: Recent developments in research and future directions. *International Journal of Hospitality Management*, 23(5), 425-447.
- Ok, C., Back, K.-J., & Shanklin, C. W. (2006). Service recovery paradox: Implications from an experimental study in a restaurant setting. *Journal of Hospitality & Leisure Marketing*, 14(3), 17-33.
- Ok, C., Back, K., & Shanklin, C. W. (2005). Modeling roles of service recovery strategy: A relationship-focused view. *Journal of Hospitality & Tourism Research*, 29(4), 484-507.
- Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4), 460-469.
- Oliver, R. L. (1997). *Satisfaction: A behavioral perspective on the consumer*. New York, NY: McGraw-Hill.
- Oliver, R. L., & Swan, J. E. (1989). Consumer perceptions of interpersonal equity and satisfaction in transactions: A field survey approach. *Journal of Marketing*, 53(2), 21-35.
- Palmer, A., Beggs, R., & Keown-McMullan, C. (2000). Equity and repurchase intention following service failure. *Journal of Services Marketing*, 14(6/7), 513-528.
- Parasuraman, A., Berry, L. L., & Zeithaml, V. A. (1991). Understanding Customer Expectations of Service. *Sloan Management Review*, 32(3), 39-48.
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *Journal of Marketing*, 49(4),

41-50.

- Perdue, B. C., & Summers, J. O. (1986). Checking the success of manipulations in marketing experiments. *Journal of Marketing Research*, 23(4), 317-326.
- Reichheld, F. F. (2003). The one number you need to grow. (Cover story). *Harvard Business Review*, 81(12), 46-54.
- Reichheld, F. F., & Sasser, J. W. E. (1990). Zero defections: Quality comes to services. *Harvard Business Review*, 68(5), 105-111.
- Richins, M. L. (1983). Negative word-of-mouth by dissatisfied consumers: A pilot study. *Journal of Marketing*, 47(1), 68-78.
- Richins, M. L. (1987). A multivariate analysis of responses to dissatisfaction. *Academy of Marketing Science*, 15(3), 24-31.
- Robbins, T. L., & Miller, J. L. (2004). Considering Customer Loyalty in Developing Service Recovery Strategies. *Journal of Business Strategies*, 21(2), 95109.
- Scarborough, N., Zimmerer, N., & Thomas, W. (1996). *Effective Small Business Management* (5th ed.). New Jersey: Prentice Hall.
- Scenario. (2006). Dictionary.com Unabridged (v 1.0.1). Retrieved November 28, 2006, from Dictionary.com website: <http://dictionary.reference.com/browse/scenario>
- Schall, M. (2003). Best practices in the assessment of hotel-guest attitudes. *Cornell Hotel & Restaurant Administration Quarterly*, 44(2), 6.
- Singh, J. (1988). Consumer complaint intentions and behavior: Definitional and taxonomical issues. *Journal of Marketing*, 52(1), 93-107.
- Singh, J., & Wilkes, R. E. (1996). When consumers complain: A path analysis of the key antecedents of consumer complaint response estimates. *Journal of the Academy of Marketing Science*, 24(4), 350-365.
- Smith, A. K., & Bolton, R. N. (1998). An experimental investigation of customer reactions to service failure and recovery encounters: Paradox of peril? *Journal of Marketing Research*, 1(1), 65-81.
- Smith, A. K., & Bolton, R. N. (2002). The effect of customers' emotional responses to service failures on their recovery effort evaluations and satisfaction judgments. *Academy of Marketing Science*, 30(1), 5-23.
- Smith, A. K., Bolton, R. N., & Wagner, J. (1999). A model of customer satisfaction with service encounters involving failure and recovery. *Journal of Marketing Research*, 36(3), 356-372.


- Sparks, B. A., & Callan, V. J. (1996). Service breakdowns and service evaluations: The role of customer attributions. *Journal of Hospitality & Leisure Research*, 4, 3-24.
- Spreng, R. A., Harrell, G. D., & Mackoy, R. D. (1995). Service recovery: Impact on satisfaction and intentions. *The Journal of Services Marketing*, 9(1), 15-23.
- Sundaram, D. S., Jurowski, C., & Webster, C. (1997). Service failure recovery efforts in restaurant dining: The role of criticality of service consumption. *Hospitality Research Journal*, 20(3), 137-149.
- Svensson, G. (2006). New aspects of research into service encounters and service quality. *International Journal of Service Industry Management*, 17(3/4), 245-257.
- Swanson, S. R., & Kelley, S. W. (2001). Service recovery attributions and word-of-mouth intentions. *European Journal of Marketing*, 35(1/2), 194-211.
- Swift, J. A., Ross, J. E., & Omachonu, V. K. (1998). *Principles of Total Quality*. Boca Raton, FL: St Lucie Press.
- Tax, S. S. (1993). *The role of perceived justice in compliant resolutions: Implications for services and relationship marketing*. Unpublished Ph.D., Arizona State University, Arizona.
- Tax, S. S., & Brown, S. W. (1998). Recovering and learning from service failure. *MIT Sloan Management Review*, 40(1), 75-88.
- Tax, S. S., & Brown, S. W. (2000). Service recovery: Research insights and practices. In T. Swartz & D. Iacobucci (Eds.), *Handbook of Services Marketing and Management* (pp. 172-286). Thousand Oaks, CA: Sage.
- Tax, S. S., Brown, S. W., & Chandrashekar, M. (1998). Customer evaluations of service complaint experiences: Implications for relationship marketing. *Journal of Marketing*, 62(2), 60-76.
- Technical Assistance Research Programs. (1986). *Consumer complaint handling in America: An update study*. Washington, DC: U.S. Office of Consumer Affairs.
- Thibaut, J., & Walker, L. (1975). *Procedural Justice: A psychological analysis*. Hillsdale, NJ: Erlbaum.
- Walster, E., Berscheid, E., & Walster, W. (1973). New directions in equity research. *Journal of Personality and Social Psychology*, 25(2), 151-176.
- Webster, C., & Sundaram, D. S. (1998). Service Consumption Criticality in Failure Recovery. *Journal of Business Research*, 41(2), 153-159.
- Wirtz, J., & Mattila, A. S. (2004). Consumer responses to compensation, speed of recovery and apology after a service failure. *International Journal of Service*

Industry Management, 15(2), 150-166.

- Yang, T. C. (2005). The development of an effective recovery programme after service failures: A case study of restaurants in Glasgow. *Tourism & Hospitality: Planning & Development*, 2(1), 39-54.
- Yi, Y. (1991). A critical review of consumer satisfaction. In V. Zeithaml (Ed.), *Review of Marketing*. American Marketing Academy, Chicago, IL.
- Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1990). *Delivering quality service: Balancing customer perceptions and expectations*. New York, NY: The Free Press.
- Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of Marketing*, 60(2), 31-46.
- Zemke, R. (1991, May/Jun). Service recovery: A key to customer retention. *Franchising World*, 23, 32-34.
- Zemke, R. (1999). Service recovery: Turning oops into opportunity. In R. Zemke & J. Woods (Eds.), *Best Practices in Customer Service* (pp. 278-288). New York: AMACOM, AMA Publication.
- Zemke, R., & Bell, C. (1990, Jun). Service recovery: Doing it right the second time. *Training*, 27, 42-48.

APPENDICES

Appendix A: Consent Form


Institutional Review Board
Approved 3/2/07
Expires 3/1/08
Initials dy
HC-07-9

Informed Consent Form

Thank you for agreeing to participate in this research project. This form outlines the purpose of the study and provides a description of your involvement and rights as a participants.

- Purpose of the Study:** The purpose of this research is to study the comparative effectiveness of recovery effort on recovery satisfaction and consequent customer loyalty between system failure and personnel failure in casual dining restaurants in the U.S.
- Procedures:** For the purpose of this research, you will be asked to fill out the enclosed questionnaire which will take you about 20 minutes to complete. Your participation is totally voluntary and anonymous. However, if you decide not to participate in this study, you will be given an alternate in-class assignment by your instructor. You will not have to fill out your name or any other identification numbers on the survey, however, you will have to print and sign your name at the bottom of this sheet for the purpose of awarding appropriate credit for participation in this survey. You will be awarded the same credit if you decide to do the in-class assignment instead. When you are done, please hand the survey back to the researcher.
- Risks of Participation:** There are no know risks associated with this project which are greater than those ordinarily encountered in daily life.
- Benefits:** Following this study, restaurant managers may be able to identify appropriate recovery efforts to rectify different classes of service failures. Managers in the casual dining restaurant may use the findings to develop practical strategies for dealing with service failure that ultimately serve as trust building events with customers.
- Confidentiality and Participant Rights:**
The researcher guarantees the following conditions will be met:
(1) Your name or any identifying information will not be used at any point in the process of information collection or in the report.
(2) This research will be fully anonymous and totally voluntary. You may choose either to participate in this survey or to do the alternate project. There will be no penalty associated with non-participation or non-response to any questions in this survey or alternate in-class assignment.
(3) All data from this study will be destroyed within one year of the completion of this project.

Signatures
I have read and fully understood the consent form.

Print Full Name

Last Name	First Name
Signature	Date

I verify that I have personally explained this document before requesting that the participant sign it.

Signature	Date
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If you have any questions, please do not hesitate to contact:

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Appendix B: Questionnaire

Questionnaire Packet One – VIII and I

DINING EXPERIENCES EVALUATION

Instruction: In this survey, you are given service failure and recovery scenarios for evaluation. Please read the following scenarios thoroughly and place yourself in the shoes of the persons experiencing the situations described. **IMAGINE** that these service problems and any recovery efforts happened to you in the **CASUAL DINING RESTAURANT** and evaluate each scenario accordingly.

PART A: SYSTEM FAILURES

Section A-I: Service Failure Experience and Evaluation

You filled out a survey online for a chain casual dining restaurant; you were offered a discount stating, “Please take this coupon to any of our restaurants to receive one FREE entrée when you buy another one of same value.” With the coupon in hand, your friends and you visited this restaurant and expected to get the discount offer. After enjoying the meal, you showed the coupon to waiter. However, the waiter knew nothing about the discount offer and went to ask his manager about it. The manager arrived and appeared really confused about this discount coupon.

Instructions: The following statements are about the above scenario. Please circle the degree to which you think about the scenario described is realistic, the degree of severity of the service problem and the effectiveness of recovery effort.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
A1. I think the event described in the above service failure scenario is	1	2	3	4	5
A2. I think this kind of service problem could happen to someone in real life	1	2	3	4	5

Level of Severity	Extremely Minor		Neither		Extremely Major
A3. I think the severity of the service problem above is	1	2	3	4	5

Effectiveness of Recovery Effort	Strongly Disagree		Neither		Strongly Agree
A4. Given the scenario, the most effective strategy for the restaurant would be not to apologize, explain the problem, or offer any recovery option	1	2	3	4	5
A5. Given the scenario, I would be very satisfied if this restaurant did absolutely nothing (Did not acknowledge the problem, apologize, or offer any recovery option)	1	2	3	4	5

1st Recovery Effort for System Failures - VIII: High DJ - High IJ - High PJ

Section A-II: Service Recovery Experience

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. Immediately, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. The manager returned in a few minutes and explained that he was not informed of this discount and wasn't able to contact anybody at the number provided on the coupon. However, the manager offered you a free meal discount for your current visit.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
A6. I think the event described in the above service recovery scenario is	1	2	3	4	5
A7. I think this kind of service recovery could happen to someone in real life	1	2	3	4	5

Please circle the degree of agreement based on the recovery effort provided by this restaurant in the above scenario.

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree
A8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5
A9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5
A10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5
A11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5
A12. Given the description, I feel that my complaint was handled in a very timely manner	1	2	3	4	5
A13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5

1st Recovery Satisfaction of System Failures - VIII: High DJ - High IJ - High PJ

Section A-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
A14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for CURRENT visit)	1	2	3	4	5
A15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (Apology with an EXPLANATION of the reason for the error)	1	2	3	4	5
A16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (IMMEDIATED attention by restaurant employees)	1	2	3	4	5
A17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant	1	2	3	4	5
A18. After experiencing this event, I am more likely to dine again at this restaurant	1	2	3	4	5
A19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
A20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
A21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

2nd Recovery Effort for System Failures - I: Low DJ - Low IJ - Low PJ

Section A-II: Service Recovery Experience

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. After 10 minutes, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. After another 20 minutes, the manager returned to offer you the free meal discount on your next visit but not on the current one without any explanation.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
A6. I think the event described in the above service recovery scenario is	1	2	3	4	5
A7. I think this kind of service recovery could happen to someone in real life	1	2	3	4	5

Please circle the degree of agreement based on the recovery effort provided by this restaurant in the above scenario.

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree
A8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5
A9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5
A10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5
A11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5
A12. Given the description, I feel that my complaint was handled in a very timely manner	1	2	3	4	5
A13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5

2nd Recovery Satisfaction of System Failures - I: Low DJ - Low IJ - Low PJ

Section A-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
A14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for NEXT visit)	1	2	3	4	5
A15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (ONLY apology with NO EXPLANATION of the reason for the error)	1	2	3	4	5
A16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (DELAYED attention by restaurant employees)	1	2	3	4	5
A17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant	1	2	3	4	5
A18. After experiencing this event, I am more likely to dine again at this restaurant	1	2	3	4	5
A19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
A20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
A21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

Personnel Failures - VIII: High DJ - High IJ - High PJ

PART B: PERSONNEL FAILURES

Section B-I: Service Failure Experience and Evaluation

Your family and you went out for a relaxing dinner on a Friday night to a local and popular casual dining restaurant. The restaurant was very busy and the hostess told you that she could not predict how long the wait would be but puts your name on a waiting list anyway. You were however seated only after 15 minutes of waiting in the lobby and were told that the waiter would come in a few minutes. To your surprise, it took another 15 more minutes for a waitperson to come to your table and take your beverage and food order. In addition, it took another hour for your waiter to refill your beverages and serve your food. It seemed that the tables next to yours were seated after you but were served before you. Finally, when you got a chance you complained about the slow service to the waiter.

Instructions: The following statements are about the above scenario. Please circle the degree to which you think about the scenario described is realistic, the degree of severity of the service problem and the effectiveness of recovery effort.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
B1. I think the event described in the above scenario is	1	2	3	4	5
B2. I think this type of service problem could happen to someone in real life	1	2	3	4	5

Level of Severity	Extremely Minor		Neither		Extremely Major
B3. I think the severity of the service problem above is	1	2	3	4	5

Effectiveness of Recovery Effort	Strongly Disagree		Neither		Strongly Agree
B4. Given the scenario, the most effective strategy for the restaurant would be not to apologize, explain the problem, or offer any recovery option	1	2	3	4	5
B5. Given the scenario, I would be very satisfied if this restaurant did absolutely nothing (Did not acknowledge the problem, apologize, or offer any recovery option)	1	2	3	4	5

1st Recovery Effort for Personnel Failures - VIII: High DJ - High IJ - High PJ

Section B-II: Service Recovery Experience

After you complain to the waiter, he was apologetic and explained that the items ordered would need more time to cook. He regretted that he had forgotten to mention that to you. The waiter promised to check the status of the order immediately. In a few minutes the food was delivered at your table with the promise from the manager to compliment the entire meal.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
B6. I think the event described in the above scenario is	1	2	3	4	5
B7. I think this type of service problem could happen to someone in real life	1	2	3	4	5

Please circle the degree of agreement based on the recovery effort provided by this restaurant in the above scenario.

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree
B8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5
B9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5
B10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5
B11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5
B12. Given the description, I feel that my complaint was handled in a very timely manner	1	2	3	4	5
B13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5

1st Recovery Satisfaction of Personnel Failures - VIII: High DJ - High IJ - High PJ

Section B-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
B14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for CURRENT visit)	1	2	3	4	5
B15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (Apology with an EXPLANATION of the reason for the delay)	1	2	3	4	5
B16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (IMMEDIATE attention by the waitperson)	1	2	3	4	5
B17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant.	1	2	3	4	5
B18. After experiencing this event, I am more likely to dine again at this restaurant.	1	2	3	4	5
B19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
B20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
B21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

2nd Recovery Effort for Personnel Failures - I: Low DJ - Low IJ- Low PJ

Section B-II: Service Recovery Experience

After you complain to the waiter, he was apologetic and promised to check the status of the order. After another hour, the food was delivered at your table with the promise from the manager to compliment the entire meal for the next visit but not on the current one.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
B6. I think the event described in the above scenario is	1	2	3	4	5
B7. I think this type of service problem could happen to someone in real life	1	2	3	4	5

Please circle the degree of agreement based on the recovery effort provided by this restaurant in the above scenario.

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree
B8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5
B9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5
B10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5
B11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5
B12. Given the description, I feel that my complaint was handled in a very timely manner.	1	2	3	4	5
B13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5

2nd Recovery Satisfaction of Personnel Failures - I: Low DJ - Low IJ - Low PJ

Section B-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
B14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for NEXT visit)	1	2	3	4	5
B15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (ONLY apology with NO EXPLANATION of the reason for the delay).	1	2	3	4	5
B16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (DELAYED attention by the waitperson)	1	2	3	4	5
B17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant	1	2	3	4	5
B18. After experiencing this event, I am more likely to dine again at this restaurant	1	2	3	4	5
B19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
B20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
B21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

Section IV: Demographic Profile

1. What is your gender? ☐ Female ☐ Male

2. What is your age?

3. What is your highest level of education?

- ☐ Less than high school degree
- ☐ High school degree
- ☐ Some college/university
- ☐ College graduate
- ☐ Graduate degree

4. What is your total annual household income group before taxes?

- ☐ Less than \$19,999
- ☐ \$20,000 - \$39,999
- ☐ \$40,000 - \$59,999
- ☐ \$60,000 - \$79,999
- ☐ \$80,000 - \$99,999
- ☐ Over than \$100,000

5. What is your ethnic background?

- ☐ African-American
- ☐ Asian
- ☐ Caucasian/White
- ☐ Hispanic
- ☐ Other, please specify

**Please make sure that you have answered all the questions.
Thank you very much for your participation in this study.**

Questionnaire Packet Two – VII and II

DINING EXPERIENCES EVALUATION

Instruction: In this survey, you are given service failure and recovery scenarios for evaluation. Please read the following scenarios thoroughly and place yourself in the shoes of the persons experiencing the situations described. **IMAGINE** that these service problems and any recovery efforts happened to you in the **CASUAL DINING RESTAURANT** and evaluate each scenario accordingly.

PART A: SYSTEM FAILURES

Section A-I: Service Failure Experience and Evaluation

You filled out a survey online for a chain casual dining restaurant; you were offered a discount stating, “Please take this coupon to any of our restaurants to receive one FREE entrée when you buy another one of same value.” With the coupon in hand, your friends and you visited this restaurant and expected to get the discount offer. After enjoying the meal, you showed the coupon to waiter. However, the waiter knew nothing about the discount offer and went to ask his manager about it. The manager arrived and appeared really confused about this discount coupon.

Instructions: The following statements are about the above scenario. Please circle the degree to which you think about the scenario described is realistic, the degree of severity of the service problem and the effectiveness of recovery effort.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
A1. I think the event described in the above service failure scenario is	1	2	3	4	5
A2. I think this kind of service problem could happen to someone in real life	1	2	3	4	5

Level of Severity	Extremely Minor		Neither		Extremely Major
A3. I think the severity of the service problem above is	1	2	3	4	5

Effectiveness of Recovery Effort	Strongly Disagree		Neither		Strongly Agree
A4. Given the scenario, the most effective strategy for the restaurant would be not to apologize, explain the problem, or offer any recovery option	1	2	3	4	5
A5. Given the scenario, I would be very satisfied if this restaurant did absolutely nothing (Did not acknowledge the problem, apologize, or offer any recovery option)	1	2	3	4	5

1st Recovery Effort for System Failures - VII: High DJ - Low IJ - High PJ

Section A-II: Service Recovery Experience

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. Immediately, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. The manager returned in a few minutes and offered you a free meal discount for the current visit without any explanation.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
A6. I think the event described in the above service recovery scenario is	1	2	3	4	5
A7. I think this kind of service recovery could happen to someone in real life	1	2	3	4	5

Please circle the degree of agreement based on the recovery effort provided by this restaurant in the above scenario.

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree
A8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5
A9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5
A10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5
A11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5
A12. Given the description, I feel that my complaint was handled in a very timely manner	1	2	3	4	5
A13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5

1st Recovery Satisfaction of System Failures - VII: High DJ - Low IJ - High PJ

Section A-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
A14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for CURRENT visit)	1	2	3	4	5
A15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (ONLY Apology with NO EXPLANATION of the reason for the error)	1	2	3	4	5
A16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (IMMEDIATE attention by restaurant employees)	1	2	3	4	5
A17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant	1	2	3	4	5
A18. After experiencing this event, I am more likely to dine again at this restaurant	1	2	3	4	5
A19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
A20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
A21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

2nd Recovery Effort for System Failures - II: Low DJ - High IJ - Low PJ

Section A-II: Service Recovery Experience

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. After 10 minutes, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. After 20 minutes, the manager returned and explained that he was not informed of this discount and wasn't able to contact anybody at the number provided on the coupon to get further information. However, the manager offered a free meal discount for your next visit but not on the current one.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
A6. I think the event described in the above service recovery scenario is	1	2	3	4	5
A7. I think this kind of service recovery could happen to someone in real life	1	2	3	4	5

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree
A8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5
A9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5
A10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5
A11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5
A12. Given the description, I feel that my complaint was handled in a very timely manner	1	2	3	4	5
A13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5

2nd Recovery Satisfaction of System Failures - II: Low DJ - High IJ - Low PJ

Section A-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
A14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for NEXT visit)	1	2	3	4	5
A15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (Apology with an EXPLANATION of the reason for the error)	1	2	3	4	5
A16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (DELAYED attention by restaurant employees)	1	2	3	4	5
A17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant	1	2	3	4	5
A18. After experiencing this event, I am more likely to dine again at this restaurant	1	2	3	4	5
A19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
A20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
A21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

Personnel Failures - VII: - High DJ - Low IJ - High PJ

PART B: PERSONNEL FAILURES

Section B-I: Service Failure Experience and Evaluation

Your family and you went out for a relaxing dinner on a Friday night to a local and popular casual dining restaurant. The restaurant was very busy and the hostess told you that she could not predict how long the wait would be but puts your name on a waiting list anyway. You were however seated only after 15 minutes of waiting in the lobby and were told that the waiter would come in a few minutes. To your surprise, it took another 15 more minutes for a waitperson to come to your table and take your beverage and food order. In addition, it took another hour for your waiter to refill your beverages and serve your food. It seemed that the tables next to yours were seated after you but were served before you. Finally, when you got a chance you complained about the slow service to the waiter.

Instructions: The following statements are about the above scenario. Please circle the degree to which you think about the scenario described is realistic, the degree of severity of the service problem and the effectiveness of recovery effort.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
B1. I think the event described in the above scenario is	1	2	3	4	5
B2. I think this type of service problem could happen to someone in real life	1	2	3	4	5

Level of Severity	Extremely Minor		Neither		Extremely Major
B3. I think the severity of the service problem above is	1	2	3	4	5

Effectiveness of Recovery Effort	Strongly Disagree		Neither		Strongly Agree
B4. Given the scenario, the most effective strategy for the restaurant would be not to apologize, explain the problem, or offer any recovery option	1	2	3	4	5
B5. Given the scenario, I would be very satisfied if this restaurant did absolutely nothing (Did not acknowledge the problem, apologize, or offer any recovery option)	1	2	3	4	5

1st Recovery Effort for Personnel Failures - VII: High DJ - Low IJ - High PJ

Section B-II: Service Recovery Experience

After you complain to the waiter, he was apologetic and promised to check the status of the order immediately. In a few minutes the food was delivered at your table with the promise from the manager to compliment the entire meal.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic	Neither			Very Realistic
B6. I think the event described in the above scenario is	1	2	3	4	5
B7. I think this type of service problem could happen to someone in real life	1	2	3	4	5

Effectiveness of Recovery Efforts	Strongly Disagree	Neither			Strongly Agree
B8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5
B9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5
B10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5
B11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5
B12. Given the description, I feel that my complaint was handled in a very timely manner	1	2	3	4	5
B13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5

1st Recovery Satisfaction of Personnel Failures - VII: High DJ - Low IJ - High PJ

Section B-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree	Neither			Strongly Agree
B14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for CURRENT visit)	1	2	3	4	5
B15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (ONLY apology with NO EXPLANATION of the reason for the delay)	1	2	3	4	5
B16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (IMMEDIATE)	1	2	3	4	5

attention by the waitperson)					
B17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant.	1	2	3	4	5
B18. After experiencing this event, I am more likely to dine again at this restaurant.	1	2	3	4	5
B19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
B20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
B21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

2nd Recovery Effort for Personnel Failures - II: Low DJ - High IJ - Low PJ

Section B-II: Service Recovery Experience

After you complain to the waiter, he was apologetic and explained that the items ordered would need more time to cook. He regretted that he had forgotten to mention that to you. The waiter promised to check the status of the order. After another hour, the food was delivered at your table with the promise from the manager to compliment the entire meal for the next visit but not on the current one.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
B6. I think the event described in the above scenario is	1	2	3	4	5
B7. I think this type of service problem could happen to someone in real life	1	2	3	4	5

Please circle the degree of agreement based on the recovery effort provided by this restaurant in the above scenario.

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree
B8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5
B9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5
B10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5
B11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5
B12. Given the description, I feel that my complaint was handled in a very timely manner.	1	2	3	4	5
B13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5

2nd Recovery Satisfaction of Personnel Failures - II: Low DJ - High IJ - Low PJ

Section B-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
B14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for NEXT visit)	1	2	3	4	5
B15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (Apology with an EXPLANATION of the reason for the delay).	1	2	3	4	5
B16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (DELAYED attention by the waitperson)	1	2	3	4	5
B17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant	1	2	3	4	5
B18. After experiencing this event, I am more likely to dine again at this restaurant	1	2	3	4	5
B19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
B20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
B21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

Section IV: Demographic Profile

1. What is your gender? ☐ Female ☐ Male
2. What is your age?
3. What is your highest level of education?
 ☐ Less than high school degree
 ☐ High school degree
 ☐ Some college/university
 ☐ College graduate
 ☐ Graduate degree
4. What is your total annual household income group before taxes?
 ☐ Less than \$19,999
 ☐ \$20,000 - \$39,999
 ☐ \$40,000 - \$59,999
 ☐ \$60,000 - \$79,999
 ☐ \$80,000 - \$99,999
 ☐ Over than \$100,000
5. What is your ethnic background?
 ☐ African-American
 ☐ Asian
 ☐ Caucasian/White
 ☐ Hispanic
 ☐ Other, please specify

**Please make sure that you have answered all the questions.
Thank you very much for your participation in this study.**

Questionnaire Packet Three – VI and III

DINING EXPERIENCES EVALUATION

Instruction: In this survey, you are given service failure and recovery scenarios for evaluation. Please read the following scenarios thoroughly and place yourself in the shoes of the persons experiencing the situations described. **IMAGINE** that these service problems and any recovery efforts happened to you in the **CASUAL DINING RESTAURANT** and evaluate each scenario accordingly.

PART A: SYSTEM FAILURES

Section A-I: Service Failure Experience and Evaluation

You filled out a survey online for a chain casual dining restaurant; you were offered a discount stating, “Please take this coupon to any of our restaurants to receive one FREE entrée when you buy another one of same value.” With the coupon in hand, your friends and you visited this restaurant and expected to get the discount offer. After enjoying the meal, you showed the coupon to waiter. However, the waiter knew nothing about the discount offer and went to ask his manager about it. The manager arrived and appeared really confused about this discount coupon.

Instructions: The following statements are about the above scenario. Please circle the degree to which you think about the scenario described is realistic, the degree of severity of the service problem and the effectiveness of recovery effort.

Scenario Reality	Very Unrealistic	Neither			Very Realistic
A1. I think the event described in the above service failure scenario is	1	2	3	4	5
A2. I think this kind of service problem could happen to someone in real life	1	2	3	4	5

Level of Severity	Extremely Minor	Neither			Extremely Major
A3. I think the severity of the service problem above is	1	2	3	4	5

Effectiveness of Recovery Effort	Strongly Disagree	Neither			Strongly Agree
A4. Given the scenario, the most effective strategy for the restaurant would be not to apologize, explain the problem, or offer any recovery option	1	2	3	4	5
A5. Given the scenario, I would be very satisfied if this restaurant did absolutely nothing (Did not acknowledge the problem, apologize, or offer any recovery option)	1	2	3	4	5

1st Recovery Effort for System Failures - VI: Low DJ - High IJ - High PJ

Section A-II: Service Recovery Experience

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. Immediately, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. The manager returned in a few minutes and explained that he was not informed of this discount and wasn't able to contact anybody at the number provided on the coupon. However, the manager offered you a free meal discount for your next visit but not on the current one.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
A6. I think the event described in the above service recovery scenario is	1	2	3	4	5
A7. I think this kind of service recovery could happen to someone in real life	1	2	3	4	5

Please circle the degree of agreement based on the recovery effort provided by this restaurant in the above scenario.

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree
A8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5
A9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5
A10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5
A11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5
A12. Given the description, I feel that my complaint was handled in a very timely manner	1	2	3	4	5
A13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5

1st Recovery Satisfaction of System Failures - VI: Low DJ - High IJ - High PJ

Section A-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
A14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for NEXT visit)	1	2	3	4	5
A15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (Apology with an EXPLANATION of the reason for the error)	1	2	3	4	5
A16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (IMMEDIATE attention by restaurant employees)	1	2	3	4	5
A17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant	1	2	3	4	5
A18. After experiencing this event, I am more likely to dine again at this restaurant	1	2	3	4	5
A19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
A20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
A21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

2nd Recovery Effort for System Failures - III: High DJ - Low IJ - Low PJ

Section A-II: Service Recovery Experience

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. After 10 minutes, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. After 20 minutes, the manager returned and offered the free meal discount for the current visit without any explanation.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
A6. I think the event described in the above service recovery scenario is	1	2	3	4	5
A7. I think this kind of service recovery could happen to someone in real life	1	2	3	4	5

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree
A8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5
A9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5
A10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5
A11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5
A12. Given the description, I feel that my complaint was handled in a very timely manner	1	2	3	4	5
A13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5

2nd Recovery Satisfaction of System Failures - III: High DJ - Low IJ - Low PJ

Section A-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
A14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for CURRENT visit)	1	2	3	4	5
A15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (ONLY apology with NO EXPLANATION of the reason for the error)	1	2	3	4	5
A16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (DELAYED attention by restaurant employees)	1	2	3	4	5
A17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant	1	2	3	4	5
A18. After experiencing this event, I am more likely to dine again at this restaurant	1	2	3	4	5
A19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
A20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
A21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

Personnel Failures - VI: Low DJ - High IJ - High PJ

PART B: PERSONNEL FAILURES

Section B-I: Service Failure Experience and Evaluation

Your family and you went out for a relaxing dinner on a Friday night to a local and popular casual dining restaurant. The restaurant was very busy and the hostess told you that she could not predict how long the wait would be but puts your name on a waiting list anyway. You were however seated only after 15 minutes of waiting in the lobby and were told that the waiter would come in a few minutes. To your surprise, it took another 15 more minutes for a waitperson to come to your table and take your beverage and food order. In addition, it took another hour for your waiter to refill your beverages and serve your food. It seemed that the tables next to yours were seated after you but were served before you. Finally, when you got a chance you complained about the slow service to the waiter.

Instructions: The following statements are about the above scenario. Please circle the degree to which you think about the scenario described is realistic, the degree of severity of the service problem and the effectiveness of recovery effort.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
B1. I think the event described in the above scenario is	1	2	3	4	5
B2. I think this type of service problem could happen to someone in real life	1	2	3	4	5

Level of Severity	Extremely Minor		Neither		Extremely Major
B3. I think the severity of the service problem above is	1	2	3	4	5

Effectiveness of Recovery Effort	Strongly Disagree		Neither		Strongly Agree
B4. Given the scenario, the most effective strategy for the restaurant would be not to apologize, explain the problem, or offer any recovery option	1	2	3	4	5
B5. Given the scenario, I would be very satisfied if this restaurant did absolutely nothing (Did not acknowledge the problem, apologize, or offer any recovery option)	1	2	3	4	5

1st Recovery Effort for Personnel Failures - VI: Low DJ - High IJ - High PJ

Section B-II: Service Recovery Experience

After you complain to the waiter, he was apologetic and explained that the items ordered would need more time to cook. He regretted that he had forgotten to mention that to you. The waiter promised to check the status of the order immediately. In a few minutes the food was delivered at your table with the promise from the manager to compliment the entire meal for the next visit but not on the current one.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
B6. I think the event described in the above scenario is	1	2	3	4	5
B7. I think this type of service problem could happen to someone in real life	1	2	3	4	5

Please circle the degree of agreement based on the recovery effort provided by this restaurant in the above scenario.

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree
B8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5
B9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5
B10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5
B11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5
B12. Given the description, I feel that my complaint was handled in a very timely manner	1	2	3	4	5
B13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5

1st Recovery Satisfaction of Personnel Failures - VI: Low DJ - High IJ - High PJ

Section B-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
B14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for NEXT visit)	1	2	3	4	5
B15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (Apology with an EXPLANATION of the reason for the delay)	1	2	3	4	5
B16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (IMMEDIATE attention by the waitperson)	1	2	3	4	5
B17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant.	1	2	3	4	5
B18. After experiencing this event, I am more likely to dine again at this restaurant.	1	2	3	4	5
B19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
B20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
B21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

2nd Recovery Effort for Personnel Failures - III: High DJ - Low IJ - Low PJ

Section B-II: Service Recovery Experience

After you complain to the waiter, he was apologetic and promised to check the status of the order. After another hour, the food was delivered at your table with the promise from the manager to compliment the entire meal.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
B6. I think the event described in the above scenario is	1	2	3	4	5
B7. I think this type of service problem could happen to someone in real life	1	2	3	4	5

Please circle the degree of agreement based on the recovery effort provided by this restaurant in the above scenario.

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree
B8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5
B9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5
B10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5
B11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5
B12. Given the description, I feel that my complaint was handled in a very timely manner.	1	2	3	4	5
B13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5

2nd Recovery Satisfaction of Personnel Failures - III: High DJ - Low IJ - Low PJ

Section B-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
B14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for CURRENT visit)	1	2	3	4	5
B15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (ONLY apology with NO EXPLANATION of the reason for the delay).	1	2	3	4	5
B16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (DELAYED attention by the waitperson)	1	2	3	4	5
B17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant	1	2	3	4	5
B18. After experiencing this event, I am more likely to dine again at this restaurant	1	2	3	4	5
B19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
B20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
B21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

Section IV: Demographic Profile

1. What is your gender? ☐ Female ☐ Male
2. What is your age?
3. What is your highest level of education?
 ☐ Less than high school degree
 ☐ High school degree
 ☐ Some college/university
 ☐ College graduate
 ☐ Graduate degree
4. What is your total annual household income group before taxes?
 ☐ Less than \$19,999
 ☐ \$20,000 - \$39,999
 ☐ \$40,000 - \$59,999
 ☐ \$60,000 - \$79,999
 ☐ \$80,000 - \$99,999
 ☐ Over than \$100,000
5. What is your ethnic background?
 ☐ African-American
 ☐ Asian
 ☐ Caucasian/White
 ☐ Hispanic
 ☐ Other, please specify

**Please make sure that you have answered all the questions.
Thank you very much for your participation in this study.**

Questionnaire Packet Four – V and IV

DINING EXPERIENCES EVALUATION

Instruction: In this survey, you are given service failure and recovery scenarios for evaluation. Please read the following scenarios thoroughly and place yourself in the shoes of the persons experiencing the situations described. **IMAGINE** that these service problems and any recovery efforts happened to you in the **CASUAL DINING RESTAURANT** and evaluate each scenario accordingly.

PART A: SYSTEM FAILURES

Section A-I: Service Failure Experience and Evaluation

You filled out a survey online for a chain casual dining restaurant; you were offered a discount stating, “Please take this coupon to any of our restaurants to receive one FREE entrée when you buy another one of same value.” With the coupon in hand, your friends and you visited this restaurant and expected to get the discount offer. After enjoying the meal, you showed the coupon to waiter. However, the waiter knew nothing about the discount offer and went to ask his manager about it. The manager arrived and appeared really confused about this discount coupon.

Instructions: The following statements are about the above scenario. Please circle the degree to which you think about the scenario described is realistic, the degree of severity of the service problem and the effectiveness of recovery effort.

Scenario Reality	Very Unrealistic		Neither	Very Realistic	
A1. I think the event described in the above service failure scenario is	1	2	3	4	5
A2. I think this kind of service problem could happen to someone in real life	1	2	3	4	5

Level of Severity	Extremely Minor		Neither	Extremely Major	
A3. I think the severity of the service problem above is	1	2	3	4	5

Effectiveness of Recovery Effort	Strongly Disagree		Neither	Strongly Agree	
A4. Given the scenario, the most effective strategy for the restaurant would be not to apologize, explain the problem, or offer any recovery option	1	2	3	4	5
A5. Given the scenario, I would be very satisfied if this restaurant did absolutely nothing (Did not acknowledge the problem, apologize, or offer any recovery option)	1	2	3	4	5

1st Recovery Effort for System Failures - V: Low DJ - Low IJ - High PJ

Section A-II: Service Recovery Experience

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. Immediately, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. The manager returned in a few minutes and offered a free meal discount for your next visit but not on the current one without any explanation.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic	
A6. I think the event described in the above service recovery scenario is	1	2	3	4	5	
A7. I think this kind of service recovery could happen to someone in real life	1	2	3	4	5	

Please circle the degree of agreement based on the recovery effort provided by this restaurant in the above scenario.

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree	
A8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5	
A9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5	
A10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5	
A11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5	
A12. Given the description, I feel that my complaint was handled in a very timely manner	1	2	3	4	5	
A13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5	

1st Recovery Satisfaction of System Failures - V: Low DJ - Low IJ - High PJ

Section A-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
A14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for NEXT visit)	1	2	3	4	5
A15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (ONLY Apology with NO EXPLANATION of the reason for the error)	1	2	3	4	5
A16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (IMMEDIATE attention by restaurant employees)	1	2	3	4	5
A17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant	1	2	3	4	5
A18. After experiencing this event, I am more likely to dine again at this restaurant	1	2	3	4	5
A19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
A20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
A21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

2nd Recovery Effort for System Failures - IV: High DJ - High IJ - Low PJ

Section A-II: Service Recovery Experience

After you showed the coupon to the waiter, the waiter apologized for not knowing about the discount and went to ask the manager. After 10 minutes, the manager arrived and looked confused. The manager proposed to call the number on the coupon to get more details about the discount. After 20 Minutes, the manager returned and explained that he was not informed of this discount and wasn't able to contact anybody at the number provided on the coupon. However, the manager offered you the free meal discount for the current visit.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
A6. I think the event described in the above service recovery scenario is	1	2	3	4	5
A7. I think this kind of service recovery could happen to someone in real life	1	2	3	4	5

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree
A8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5
A9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5
A10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5
A11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5
A12. Given the description, I feel that my complaint was handled in a very timely manner	1	2	3	4	5
A13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5

2nd Recovery Satisfaction of System Failures - IV: High DJ - High IJ - Low PJ

Section A-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
A14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for CURRENT visit)	1	2	3	4	5
A15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (Apology with an EXPLANATION of the reason for the error)	1	2	3	4	5

A16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (DELAYED attention by restaurant employees)	1	2	3	4	5
A17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant	1	2	3	4	5
A18. After experiencing this event, I am more likely to dine again at this restaurant	1	2	3	4	5
A19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
A20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
A21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

Personnel Failures - V: Low DJ - Low IJ - High PJ

PART B: PERSONNEL FAILURES

Section B-I: Service Failure Experience and Evaluation

Your family and you went out for a relaxing dinner on a Friday night to a local and popular casual dining restaurant. The restaurant was very busy and the hostess told you that she could not predict how long the wait would be but puts your name on a waiting list anyway. You were however seated only after 15 minutes of waiting in the lobby and were told that the waiter would come in a few minutes. To your surprise, it took another 15 more minutes for a waitperson to come to your table and take your beverage and food order. In addition, it took another hour for your waiter to refill your beverages and serve your food. It seemed that the tables next to yours were seated after you but were served before you. Finally, when you got a chance you complained about the slow service to the waiter.

Instructions: The following statements are about the above scenario. Please circle the degree to which you think about the scenario described is realistic, the degree of severity of the service problem and the effectiveness of recovery effort.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
B1. I think the event described in the above scenario is	1	2	3	4	5
B2. I think this type of service problem could happen to someone in real life	1	2	3	4	5

Level of Severity	Extremely Minor		Neither		Extremely Major
B3. I think the severity of the service problem above is	1	2	3	4	5

Effectiveness of Recovery Effort	Strongly Disagree		Neither		Strongly Agree
B4. Given the scenario, the most effective strategy for the restaurant would be not to apologize, explain the problem, or offer any recovery option	1	2	3	4	5
B5. Given the scenario, I would be very satisfied if this restaurant did absolutely nothing (Did not acknowledge the problem, apologize, or offer any recovery option)	1	2	3	4	5

1st Recovery Effort for Personnel Failures - V: Low DJ - Low IJ - High PJ

Section B-II: Service Recovery Experience

After you complain to the waiter, he was apologetic and promised to check the status of the order immediately. In a few minutes the food was delivered at your table with the promise from the manager to compliment the entire meal for the next visit but not on the current one.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic	
B6. I think the event described in the above scenario is	1	2	3	4	5	
B7. I think this type of service problem could happen to someone in real life	1	2	3	4	5	

Please circle the degree of agreement based on the recovery effort provided by this restaurant in the above scenario.

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree	
B8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5	
B9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5	
B10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5	
B11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5	
B12. Given the description, I feel that my complaint was handled in a very timely manner	1	2	3	4	5	
B13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5	

1st Recovery Satisfaction of Personnel Failures - V: Low DJ - Low IJ - High PJ

Section B-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
B14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for NEXT visit)	1	2	3	4	5
B15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (ONLY Apology with NO EXPLANATION of the reason for the delay)	1	2	3	4	5
B16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (IMMEDIATE attention by the waitperson)	1	2	3	4	5
B17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant.	1	2	3	4	5
B18. After experiencing this event, I am more likely to dine again at this restaurant.	1	2	3	4	5
B19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
B20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
B21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

2nd Recovery Effort for Personnel Failures - IV: High DJ - High IJ - Low PJ

Section B-II: Service Recovery Experience

After you complain to the waiter, he was apologetic and promised to check the status of the order. After another hour, the food was delivered at your table with the promise from the manager to compliment the entire meal.

Instructions: The following statements are about the above recovery effort. Please circle the degree to which you think the recovery effort described is realistic.

Scenario Reality	Very Unrealistic		Neither		Very Realistic
B6. I think the event described in the above scenario is	1	2	3	4	5
B7. I think this type of service problem could happen to someone in real life	1	2	3	4	5

Please circle the degree of agreement based on the recovery effort provided by this restaurant in the above scenario.

Effectiveness of Recovery Efforts	Strongly Disagree		Neither		Strongly Agree
B8. Taking everything into consideration, the manager's offer was very generous	1	2	3	4	5
B9. Given the circumstances, I feel that the manager offered adequate compensation	1	2	3	4	5
B10. Given the description, I feel that I was treated with courtesy and respect	1	2	3	4	5
B11. Given the description, I feel that my needs were treated with dignity	1	2	3	4	5
B12. Given the description, I feel that my complaint was handled in a very timely manner.	1	2	3	4	5
B13. Given the description, I feel that the service problem was fixed very quickly	1	2	3	4	5

2nd Recovery Satisfaction of Personnel Failures - IV: High DJ - High IJ - Low PJ

Section B-III: Recovery Satisfaction and Customer Loyalty

Instructions: The following statements are related to your satisfaction and your future behavior and intention. Please circle the level of agreement with each statement.

Recovery Satisfaction / Customer Loyalty	Strongly Disagree		Neither		Strongly Agree
B14. I am extremely satisfied with this restaurant when I consider only the compensation described in the scenario (Free meal for CURRENT visit)	1	2	3	4	5
B15. I am extremely satisfied with this restaurant when I consider only the way the restaurant interacted with me as described in the scenario (Apology with an EXPLANATION of the reason for the delay).	1	2	3	4	5
B16. I am extremely satisfied with this restaurant when I consider only the speed with which the problem was fixed as described in the scenario (DELAYED attention by the waitperson)	1	2	3	4	5
B17. Considering the overall description of recovery efforts for all the service problems, I am extremely satisfied with this restaurant		2	3	4	5
B18. After experiencing this event, I am more likely to dine again at this restaurant	1	2	3	4	5
B19. After experiencing this event, I am more likely to spend more at this restaurant	1	2	3	4	5
B20. Based on the description, I will say positive things about this restaurant to others	1	2	3	4	5
B21. Based on the description, I will tend to be more loyal to this restaurant in the future	1	2	3	4	5

Section IV: Demographic Profile

1. What is your gender? ☐ Female ☐ Male
2. What is your age?
3. What is your highest level of education?
 ☐ Less than high school degree
 ☐ High school degree
 ☐ Some college/university
 ☐ College graduate
 ☐ Graduate degree
4. What is your total annual household income group before taxes?
 ☐ Less than \$19,999
 ☐ \$20,000 - \$39,999
 ☐ \$40,000 - \$59,999
 ☐ \$60,000 - \$79,999
 ☐ \$80,000 - \$99,999
 ☐ Over than \$100,000
5. What is your ethnic background?
 ☐ African-American
 ☐ Asian
 ☐ Caucasian/White
 ☐ Hispanic
 ☐ Other, please specify

**Please make sure that you have answered all the questions.
Thank you very much for your participation in this study.**

VITA

YUNG-HUI CHU

Candidate for the Degree of

Doctor of Philosophy

Dissertation: A COMPARATIVE STUDY OF THE INFLUENCE OF FAILURE CLASSES, FAILURE SEVERITY, AND THE EFFECTIVENESS OF RECOVERY EFFORT ON RECOVERY SATISFACTION AND CONSEQUENT CUSTOMER LOYALTY IN THE CASUAL DINING RESTAURANT SEGMENT IN THE U.S.: AN APPLICATION OF JUSTICE THEORY

Major Field: Hotel and Restaurant Administration

Biographical:

Personal Data: Born in Taiwan

Education: Received Bachelor of Science degree in International Trade at Tung-Hai University, Taichung, Taiwan in June, 1991; Received Master of Science degree in Hotel and Food Service Management at Florida International University, Miami, Florida in December, 1994; Completed the requirements for the Doctor of Philosophy in Hotel and Restaurant Administration at Oklahoma State University, Stillwater, Oklahoma in December, 2007.

Experience: Full Time Instructor, Registrar, Deputy for Department Head, and Internship Coordinator of Shih Chien University, Taiwan; Part Time Instructor of National Kaohsiung University and Aletheia University, Taiwan; Executive Secretary of Grand Hi-Lai Hotel and Caesar Park Hotel, Taiwan; Consultant of Bed and Breakfast Association, Taiwan; Judge of National Cocktail Campaign, Taiwan; and Judge of Taiwan Dessert Exhibition for National Science and Technology Museum, Taiwan.

Professional Memberships: Golden Key International Honour Society; International Council of Hotel, Restaurant, and Institutional Education; and Taiwan Hospitality Association.

Name: YUNG-HUI CHU

Date of Degree: December, 2007

Institution: Oklahoma State University

Location: Stillwater, Oklahoma

Title of Study: A COMPARATIVE STUDY OF THE INFLUENCE OF FAILURE CLASSES, FAILURE SEVERITY, AND THE EFFECTIVENESS OF RECOVERY EFFORT ON RECOVERY SATISFACTION AND CONSEQUENT CUSTOMER LOYALTY IN THE CASUAL DINING RESTAURANT SEGMENT IN THE U.S.: AN APPLICATION OF JUSTICE THEORY

Pages in Study: 272

Candidate for the Degree of Doctor of Philosophy

Major Field: Hotel and Restaurant Administration

Scope and Method of Study: The purpose of the study is to study the comparative effectiveness of recovery effort on recovery satisfaction and customer loyalty in terms of system failures and personnel failures in casual dining restaurants in the U.S.

Quasi-experimental repeated-measures design is employed. The target population is the customers in the casual dining restaurants. Data is collected from the sample of undergraduate and graduate students enrolled in the School of Hotel and Restaurant Administration at a Midwestern land-grant university. Analysis of variance, analysis of covariance, and hierarchical regression analysis are employed to analyze data.

Findings and Conclusions: This study may have imperative implications for casual dining restaurant managers. The most important outcome of the research is a summary of the class of recommended recovery effort based on realistic failures (system failures and personnel failures) that occur every day in casual dining restaurants across the country. It is expected that the restaurant managers can use these recommended methods as a guideline for fixing failure problems that may occur in their restaurants. Overall, speed of fixing problem and free meal for the current visit is more favorable than the other justices in terms of the recovery effort and recovery satisfaction; however, it depends on the failure classes and the situation of controlling for justice. Additionally, personnel recovery satisfaction has more impact on customer loyalty, behavioral loyalty, and attitudinal loyalty than system recovery satisfaction. Lastly, confounding effect of failure severity has effects on personnel recovery satisfaction, but not on system recovery satisfaction. Confounding effect of failure severity also has various effects on system recovery efforts and personnel recovery efforts. However, confounding effect was not found to be significant in terms of the relationship between recovery satisfaction and customer loyalty.

ADVISER'S APPROVAL: Radesh R. Palakurthi, Ph.D.