An Empirical Study of The Role of Failure Severity in Service Recovery Evaluation in The Context of Online Retailing Industry: Focus on The Moderating Effect of Failure Severity

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Abstract

The purpose of this study is to empirically investigate the relationship among failure severity, perceived justice, recovery satisfaction and word-of-mouth intention. In addition, this research also examines the moderating effect of failure severity in the relationship between perceived justice and recovery satisfaction based on online shoppers. Data were collected through a survey of online shoppers among undergraduate students who experienced services failure and thus, a service recovery effort in the past year. The results indicate that failure severity had a negative effect on perceived justice and recovery satisfaction. Perceived justice had a positive effect on recovery satisfaction. Perceived justice and recovery satisfaction had significant effects on word-of-mouth intention. Also, the results provide support for the moderating effect of service failure severity in the relationship between distributive justice and recovery satisfaction, as well as the relationship between procedural justice and recovery satisfaction. These research findings have important implications and provide some interesting avenues for future studies.

Keywords: failure severity, perceived justice; recovery satisfaction; word-of-mouth intention

1. Introduction

As business competition between companies is intensifying in a stagnant economy, it is important for companies to maintain stable profits and remain positive relationships with customers. However, service failures tend to be inevitable because of the inseparable, intangible, variable and perishable nature of services. Service failures not only cause losses to companies but also deteriorate the relationship between firms and customers, so service recovery strategy is an important issue for firms.

The main purpose of service recovery efforts is to appease unsatisfied customers through effective recovery strategies and reduce the damages caused by service failures. Different from offline shopping, online shoppers lack face-to-face interaction with customer service personnel and can only know the products through the website. A series of uncertain factors such as logistics, website design, and electronic payment give rise to the high probability of failures occurring.

Previous studies have used justice theory as the primary theoretical framework of service recovery research. Del Rio-Lanza et al. (2009) put forward that it is better to study perceived justice by dimensions rather than overall justice when explaining recovery satisfaction (Del et al., 2009). Thus, to develop a successful service recovery strategy, researchers studied the main dimensions of justice, including distributive, procedural and

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interactional justice. These dimensions of justice are not only about monetary rewards (distributive justice), policies and procedures (procedural justice), but also about service recovery effort (interactional justice). They can help to foster long-term customer relationships. Therefore, this study analyses each dimension of perceived justice to know which dimension has a more significant influence on recovery satisfaction and word-of-mouth intention. Previous studies found that successful service recovery is of great importance for consumer satisfaction (Holloway and Beatty, 2003) and positive word-of-mouth intention (Swanson and Hsu, 2009). On the contrary, poor recovery efforts have been proved to reinforce customer dissatisfaction, distrust and negative word-of-mouth. And generally, if customers are satisfied with products or services, they are willing to re-purchase and generate positive word-of-mouth intention (Wen and Christina, 2013). This rule also applies to service recovery. Stated slightly differently, the greater the satisfaction from service recovery, the more likely customers are willing to participate in positive word-of-mouth. Therefore, this study assumes that recovery satisfaction has a great impact on word-of-mouth intention.

Failure severity means the intensity of service failure perceived by customers. The more severe the service failure, the heavier the perceived loss of customers. Therefore, failure severity has an important influence on the customer's assessment of the service provider after service failure (Susskind and Viccari, 2015). In previous studies, failure severity has been studied as an independent variable (Swanson and Hsu, 2011), mediating variable (Hess and Ronald, 2008) and moderating variable (Jha and Balaji, 2015). This study empirically analyses the role of failure severity as an independent variable affecting perceived justice and recovery satisfaction, and its role as a moderating variable in the relationship between perceived justice and recovery satisfaction. This study targets customers who experience service failure and recovery during online shopping and analyse the relationship among failure severity, perceived justice, recovery satisfaction and word-of-mouth intention. In particular, this study attempts to verify not only the role of failure severity as an independent variable but also its role as a moderating variable in the relationship between perceived justice and recovery satisfaction, which is less involved in previous studies. It aims to extend the literature and provide important implications for managers to develop effective service recovery strategies.

2. Theoretical background and hypothesis development

This study provides a better understating of the relationship among failure severity, perceived justice, recovery satisfaction and word-of-mouth intention in the context of online retailing industry. On the basis of previous studies, this section conceptualizes the constructs of the research and puts forward hypotheses and empirical model (Figure 1). The research model suggests that service failure severity has an important influence on perceived justice and recovery satisfaction; perceived justice in service recovery (distributive, procedural, and interactional) has an important influence on post-recovery satisfaction and word-of-mouth intention; recovery satisfaction has an important influence on word-of-mouth intention, and service failure severity moderates the relationship between perceived justice and post-recovery satisfaction.
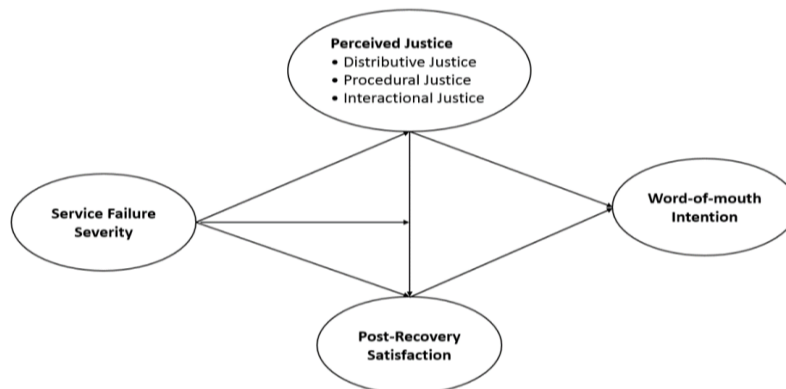

Figure 1. **The research framework**

2.1 Word-of-mouth intention

Word-of-mouth as a major marketing tool originated from (Whyte, 1954). Since then, researchers have been studying the impact of word-of-mouth. Word-of-mouth is an exchange of information between customers based on their experience. It often has a decisive impact on purchases depending on whether it is positive or negative. Therefore, firms conduct a variety of activities to create positive word-of-mouth.

Word-of-mouth is considered as one of the important consequences of service recovery efforts. For (Harrison-Walker, 2001), his definition of word-of-mouth, "an informal, face to face communication, from person to person, between the communicator and receiver, in which the recipient does not get any commercial information about a brand, product, organization, or service." In the context of service failure and recovery, word-of-mouth is important because consumers who believe they have been treated unjustly are more inclined to have negative word-of-mouth intention. On the contrary, customers who have experienced satisfactory service recovery are more inclined to spread positive word-of-mouth and make recommendations.

Especially in the study of service failure, the severity and importance of service failure are likely to result in negative word-of-mouth. Generally, word-of-mouth can be divided into positive word-of-mouth and negative word-of-mouth. Positive word-of-mouth is a strong recommendation to others for repurchase, while negative word-of-mouth means the process to tell others the dissatisfying experiences and to suggest others not to buy certain products or services. In particular, positive word-of-mouth is a crucial means of promoting the purchase of products and services. Moreover, word-of-mouth influences important purchase decisions. In other words, customers consider word-of-mouth as a source of information that is more reliable and trustworthy than any others.

2.2 Failure severity

Service failure severity refers to a customer's perceived intensity of a service problem when a service failure occurs (Weun et al., 2004). As customer dissatisfáction increases, the tolerance for service failure continues to decrease. Stated slightly differently, when service failures become more severe, customers' zone of tolerance becomes narrower, thereby increasing the likelihood of customer dissatisfaction. Social judgment theory argues that human beings form their standards based on previous experience.

Failure severity may vary based on customer evaluation of the service failure. In other words, failure severity refers to the degree of service failure perceived by customers, ranging from minor failures to severe ones. Previous studies have found that it is a challenge for service providers to implement effective service recovery when failures are perceived as serious (Mattila, 2001). Failure severity may affect perceived justice of service recovery process, such as compensation, procedures, policies and recovery efforts. However, few studies have empirically explored the link between failure severity and perceived justice.

According to a study based on Korean and American restaurant customers, Yi (2011) suggested that service failure severity has a negative impact on the three dimensions of perceived justice (distributive, procedural, and interactional) (Yi, 2011). The finding was consistent with Kim (2013)'s study based on customers who receive library information services [14]. In this regard, the following hypotheses are proposed:

H1 Failure severity has a negative effect on perceived justice.
H1-1 Failure severity has a negative effect on distributive justice.
H1-2 Failure severity has a negative effect on procedural justice.
H1-3 Failure severity has a negative effect on interactional justice.

As a situational factor, failure severity represents an important determinant of customers' attitude after failure. Service failure severity refers to the customer's perception of the severity level. The more intense service failure, the heavier the customer's perceived loss is. So, customers' expectations for service recovery may increase. Failure severity has a significant impact on the assessment of the service provider after service failure. For example, transportation risk is a usual risk in the online retailing industry, because

transportation companies may cause damage or loss of goods in transit. If this service failure is considered severe by the customer, customer's dissatisfaction increases. However, in the case of a short delay due to an unexpected situation (i.e. snow), it can be taken as less serious. Therefore, failure severity is related to the importance of failure.

Recovery satisfaction refers to customers' satisfaction with recovery efforts of service provider after a service failure. Customers may express strong dissatisfaction with the service provider when service failure is considered very important (Hess and Ronald, 2008).

Few studies have empirically explored the link between service failure severity and recovery satisfaction. According to a study based on customers who experienced mobile service failures, Jha et al. (2015) found that failure severity has a negative impact on recovery satisfaction (Jha and Balaji, 2015). The result was consistent with Balaji et al. (2013) 's study based on university students (Balaji and Sarkar, 2013). In this regard, the following hypotheses are proposed:

H2 Failure severity has a negative effect on recovery satisfaction.

2.3 Perceived justice

In the late 1990s, researchers started to analyse service recovery using justice theory in social psychology research and considered perceived justice as a critical variable affecting customers' evaluation (Mattila and Cranage, 2005). Perceived justice refers to customers' perception of justice when the service providers make recovery efforts (Ha and Jang, 2009). According to social exchange theory, humans are likely to evaluate the justice of exchanges according to outcomes, procedures and interactions between two parties and act accordingly.

Justice theory can interpret the relationship between customers and service providers, especially in the case of service failure and recovery. Distributive justice refers to customers' evaluation of the outcomes of service recovery. Customers expect service providers to offer compensation, which includes refund, repair or replacement of goods. Procedural justice refers to the justice of the policies, procedures and standards used by the service provider. Customers expect service providers to be responsible for failures, handle complaints in a speedy manner, and resolve the problem quickly. Interactional justice refers to customers' perception of how service firms and employees treat them. Customers expect the company's personnel to respect them, show concern, give an explanation about the problem, and put proper effect into resolving the problem.

Justice theory has got lots of attention as a theoretical framework of service recovery. Previous studies have suggested that perceived justice has considerable influence on recovery satisfaction. However, empirical evidence shows that there is a striking difference in the degree of impact of justice dimensions on recovery satisfaction. Some studies have shown that distributive justice has a greater impact on recovery satisfaction than the other two dimensions (Mostafa et al., 2015; Yeoh et al., 2015). Some researchers believed that procedural justice has a greater impact on recovery satisfaction than the other two dimensions (Yoon and Jung, 2016; Nikbin and Sunghyup, 2015). Some researchers believed that interactional justice has a greater impact on recovery satisfaction than the other two dimensions (Esen and Sonmezler, 2017; Nadiri, 2016). These conflicting findings suggest the need for a re-examination of the relationship between perceived justice and recovery satisfaction, although there are many existing studies. In this regard, the following hypotheses are proposed:

H3 Perceived justice has a positive effect on recovery satisfaction.
H3-1 Distributive justice has a positive effect on recovery satisfaction.
H3-2 Procedural justice has a positive effect on recovery satisfaction.
H3-3 Interactional justice has a positive effect on recovery satisfaction.
Although service failures have the potential to reduce customer loyalty, through proper recovery strategies, service providers can increase customer retention. Service provider's effective response to service failure can even help create stronger bonds. In other words, service recovery paradox may occur. However, an unfair or ineffective response can lead to customer attrition. Inappropriate response increases customer turnover rate, so

effective recovery strategies should be carefully planned and executed to foster long-term relationships with the customers who experience service failure.

Researchers pointed out that perceived justice can affect recovery satisfaction as well as word-of-mouth intention. However, few studies have empirically analysed the relationship between perceived justice and word-of-mouth intention. (Blodgett et al., 1997) studied the influence of distributive, procedural and interactional justice on customers' negative word-of-mouth intention, and concluded that three dimensions of perceived justice have negative effects on customers' negative word-of-mouth intention and the effect varies according to dimension. (Nikbin et al., 2011) found that procedural justice (e.g., a quick response from service providers) reduces customers' negative word-of-mouth intention. (Lin et al., 2011) indicated that low level of interactional justice increases customers' negative word-of-mouth intention. (Grewal et al., 2008) asserted that distributive justice (e.g., compensation) increases positive activity, such as positive word-of-mouth. (Awa et al., 2016) believed that justice dimensions have positive effects on word-of-mouth intention. The findings were consistent with Ha et al. (2009) 's conclusion. In this regard, the following hypotheses are proposed:

H4 Perceived justice has a positive effect on word-of-mouth intention.

H4-1 Distributive justice has a positive effect on word-of-mouth intention.

H4-2 Procedural justice has a positive effect on word-of-mouth intention.

H4-3 Interactional justice has a positive effect on word-of-mouth intention.

2.4 Post-recovery satisfaction

In the customer-oriented era, improving customer satisfaction is the basic way to increase the competitive advantage and an essential driver of sustainable growth. Customer satisfaction has always been the research focus of consumer behaviour. Even the world-famous companies cannot neglect the importance of providing the best service to achieve customer satisfaction. Customer satisfaction refers to customer reaction to the state of fulfilment of the customer's needs and desires. Satisfaction is a subjective assessment of the quality of one's experience, so it appears as positive or negative emotions. Customer satisfaction is a key factor for service providers because it leads to loyalty and positive word-of-mouth.

In the context of service recovery, recovery satisfaction refers to the positive state of emotion as a result of problem-solving performed by the service provider (Kim et al., 2016). According to (Kim et al, 2016), recovery satisfaction is different from customer satisfaction with the first service encounter; it is defined as secondary satisfaction performed by the service provider after a service failure and recovery.

Word-of-mouth refers to an oral form of non-commercial communication among acquaintances about brand, products or services. Word-of-mouth is particularly crucial in the context of failure (Wang and Huff, 2007). Consumers who had a negative experience with products or services may spread negative word-of-mouth to avoid similar situations in the future.

Generally, customer satisfaction can contribute to higher customer retention and positive word-of-mouth [32]. If customers are satisfied with products or services, they will continue to buy more and spread positive word-of-mouth. This principle also applies to the service recovery situation. Stated slightly differently, effective service recovery can win customer satisfaction, and thus eventually increase positive word-of-mouth. In this regard, the following hypotheses are proposed:

H5 Recovery satisfaction has a positive effect on word-of-mouth intention.

2.5 The moderating role of failure severity

In spite of sufficient service recovery processes and outcomes, severe service failure would probably lead to a decrease in customer satisfaction. A nicely managed problem does not entirely neutralize the negative impact from the negative experience. It means that the impact of perceived justice on recovery satisfaction varies according to the severity of service failure. Therefore, failure severity is expected to play a role as a moderating variable between perceived justice

and recovery satisfaction. In other words, failure severity affects perceived justice as it serves as a measure for customers' evaluation of recovery strategies (Ha and Jang, 2009). However, there are few empirical studies have examined the moderating effect of failure severity in the context of service failure and recovery. According to a study based on customers who experienced mobile service failures, Jha et al. (2015) found that failure severity only moderates the relationship between procedural justice and recovery satisfaction (Jha and Balaji, 2015). Piaralal et al. (2014)'s study also supported the moderating effect of failure severity on perceived justice /recovery satisfaction relationship in the context of the mobile telecommunications industry. In other words, when the severity of the service failure increases, the negative relationship between perceived justice and recovery satisfaction strengthen. (Weun et al., 2004) pointed out that failure severity moderates the relationship between distributive justice and satisfaction. In this regard, the following hypotheses are proposed:

H6 Failure severity moderates the relationship between perceived justice and recovery satisfaction.

H6-1 Failure severity moderates the relationship between distributive justice and recovery satisfaction.

H6-2 Failure severity moderates the relationship between procedural justice and recovery satisfaction.

H6-3 Failure severity moderates the relationship between interactional justice and recovery satisfaction.

3. Methodology

3.1 Research design and data collection

A questionnaire survey approach was employed to examine responses of online shopper. Data were collected from undergraduates who had online shopping and had encountered at least one failure in the past year. Convenience sampling method was adopted to select the sample and a pilot study was conducted to ensure the appropriateness of the questionnaire and the successful implementation of the investigation. A total of 400 questionnaires were distributed to online shoppers, and among these, 394 responses were returned. Among the

responses, 19 were incomplete and excluded from further analysis, leaving a total of 375 responses.

3.2 Questionnaire and measurement

The questionnaire falls into five parts: (1) failure severity, (2) perceived justice in service recovery (distributive, procedural, and interactional), (3) recovery satisfaction, (4) word-of-mouth intention and (5) demographic information. There are 25 questions, of which 23 are related to the constructs (failure severity, distributive justice, procedural justice, interactional justice, recovery satisfaction carrying 4 questions respectively, word-of-mouth intention carrying 3 questions), while 2 questions captured customer demographics information (gender, types of products purchased).

To make sure sufficient content validity, selected measurement items were adapted mainly from previous studies. More specifically, the scale for failure severity was adapted from previous studies but modified based on the objective of this study (Baraket et al., 2015). Failure severity is defined as the intensity of service failure perceived by customers. The scale for failure severity was formed by four items "The service failure I experienced was severe (sev1)", "The service failure I experienced made me angry (sev2)", "The service failure I experienced did not cause any serious inconvenience (sev3)", "The service failure I experienced was an important problem (sev4)".

Perceived justice was adapted from previous studies but modified based on the objective of this study (Gohary et al., 2016). Distributive justice is defined as the perceived justice of actual and tangible resources supplied by a company to compensate for a failure. The scale for distributive justice was formed by four items "The compensation received was fair (dis1)", "The compensation I received in response to the failure was fair (dis2)", "Discount on the item was offered when compensating me for the problem that occurred (dis3)", "The service was as good as I expected (dis4)". Procedural justice is defined as the perceived justice of policies and procedures used by the service provider to achieve positive results. The scale for procedural justice was formed by four items "The online retailer responded in a timely fashion to the problem (pro1)", "My problem was resolved in the right way (pro2)", "The online retailer had fair policies for dealing with my

problem (pro3)","The online retailer offered me sufficient opportunity to complain (pro4)". Interactional justice is viewed as the perceived justice that deals with interpersonal behaviour in the process of service recovery. The scale for interactional justice was formed by four items "The employees were concerned about my problem (int1)","The employees listened to me and had sympathy with me (int2)","The online retailer sincerely apologized (int3)","The online retailer has made efforts to resolve my problem (int4)".

Recovery satisfaction was adapted from previous studies but modified based on the objective of this study (Fierro et al., 2014). Recovery satisfaction is viewed as customers' overall evaluation with service recovery. The scale for recovery satisfaction was formed by four items "I was satisfied with the compensation the online retailer offered (rec1)","I think the online retailer provided me with a satisfactory resolution to the problem (rec2)","I did not regret choosing this online store in the recovery process (rec3)","I became intimate with this online store after service recovery (rec4)".

Word-of-mouth intention was adapted from previous studies but modified based on the objective of this study (Cho et al., 2017; Choi et al., 2014). Word-of-mouth is viewed as informal, interpersonal communication between a perceived non-commercial communicator and a receiver in regard to brands, products, firms or services.

The scale for word-of-mouth intention was formed by three items "I will speak favourably to as many people as possible about my experience in the service recovery (wom1)","I will actively recommend the online store to the people who ask for advice (wom2)","I will tell my peers and family to buy from this online store (wom3)".

Respondents rated these questions on a 5-point Likert scale ranging from "1" strongly disagree to "5" strongly agree.

4. Analysis results and hypothesis testing

4.1 Respondent profile

There are more females (255, 68%) than males (120, 32%). In terms of products purchased, a majority of respondents bought clothes (33.6%), followed by shoes (24.5%), cosmetic (20%), daily necessities (13.8%), food (5.8%) and others (2.3%).

4.2 Validity and reliability of measurements

Cronbach's alpha was used to analyze the reliability of the instrument. Table 1 shows analysis results. Word-of-mouth intention has the lowest Cronbach's Alpha of 0.725, followed by interactional justice 0.731, recovery satisfaction 0.795, failure severity 0.813, distributive justice 0.837 and procedural justice with the highest alpha of 0.854. All items were accepted based on Cronbach's α above 0.70, which means sufficient reliability.

Table 1. **Results of reliability and validity analysis**

Constructs	Numbers of initial items	Numbers after reliability analysis	Cronbach'α value	Numbers after exploratory factor analysis	Numbers after confirmatory factor analysis
Failure severity	4	4	0.813	3	3
Distributive justice	4	4	0.837	3	3
Procedural justice	4	4	0.854	4	3
Interactional justice	4	4	0.731	4	3
Recovery satisfaction	4	4	0.795	3	3
Word-of-mouth intention	3	3	0.725	3	3

To test validity, exploratory factor analysis was conducted with exogenous variables and endogenous variables. According to the results, one item of each failure severity, distributive justice and recovery satisfaction was deleted. Variance which could be explained with six factors was 66.8%. In addition, Kaiser-Meyer-Olkin= 0.785, Bartlett = 5209.434, d.f.= 231, p<0.01.

For the better scale purification, confirmatory factor analysis was conducted, and one item of each procedural justice, interactional justice was deleted. Table 2 shows the results of confirmatory factor analysis. Data showed that the overall fit index displays an acceptable level of fit: x^2 =240.583(p=0.00), d.f.=120, GFI=.936, AGFI=.909, CFI=.961, RMR=.035, RMSEA=.052

Table 2. **Results of confirmatory factor analysis**

Variables		Unstandardized loading	standard error	t value	Standardized loading
Failure severity	sev1	1.000	-	-	.849
	sev2	.925	.055	16.879	.811
	sev4	.792	.063	12.476	.628
Distributive justice	dis2	.789	.049	16.254	.731
	dis3	.999	.050	19.839	.854
	dis4	1.000	-	-	.901
Procedural justice	pro1	.717	.128	5.594	.641
	pro3	1.000	-	-	.728
	pro4	.715	.123	5.812	.610
Interactional justice	int1	.463	.048	9.756	.392
	int3	.999	.053	18.819	.902
	int4	1.000	-	-	.924
Recovery satisfaction	sat2	.913	.066	13.824	.777
	sat3	1.000	-	-	.798
	sat4	.758	.071	10.641	.587
Word-of-mouth intention	wom1	.943	.044	21.257	.858
	wom2	1.000	-	-	.937
	wom3	.770	.047	16.234	.711

Hair et al. (2006) pointed out that the evaluation of a research model should be on the basis of convergent validity and discriminant validity (Hair et al., 2006). According to Hair et al. (2006)'s view, convergent validity was evaluated by examining the composite reliabilities and the average variance extracted (AVE) of all the constructs. Additionally, we investigated discriminant validity by comparing the AVE with the square of correlations between constructs. As shown in Table 3, the composite

reliability value for each construct exceeded the 0.7 threshold, and most of the values of AVEs are more than the 0.5 threshold. Therefore, we can confirm that convergent validity has been established.

Discriminant validity is satisfactory if the diagonal values (AVE) are larger than the off-diagonal values (the square root of inter-construct correlation). The inter-correlations among the constructs employed are shown in Table 3. As can be noticed, the squared correlation coefficients are smaller than AVE presented in Table 3. Thus, all constructs used in the measurement model show adequate validity.

Table 3. **Results of testing discriminant validity**

Variables	Mean	SD	1	2	3	4	5	6
Failure severity（1）	3.648	.763	.591*					
Distributive justice（2）	2.890	.984	.281**	.692*				
Procedural justice（3）	3.370	.975	.237**	.229**	.490*			
Interactional justice（4）	4.132	.855	.317**	.168**	.075**	.607*		
Recovery satisfaction（5）	3.473	.894	.365**	.258**	.332**	.091**	.528*	
Word-of-mouth intention（6）	3.289	.877	.260**	.020**	.182**	.058**	.249**	.707*
Construct Reliability			.810	.870	.738	.807	.768	.877

* AVE is reported on the diagonal   ** the squared correlation coefficients

4. 3 Hypothesis testing

The results of hypothesis testing were presented in Table 4. Using AMOS 25.0, the data was analysed by structural equation modelling. The structural equation model analysis showed that the overall fit index displays an adequate level of fit: x^2 =269.617(p=0.00), df=124, GFI=.930, AGFI=.904, CFI=.953, RMR=.043, RMSEA=.056.

Table 4. **Results of hypothesis testing**

Path	Hypothesis	Beta coefficient	t value	Support
Failure severity → Distributive justice	H1-1	-.707	-7.911*	Yes
Failure severity → Procedural justice	H1-2	-.443	-4.973*	Yes
Failure severity → Interactional justice	H1-3	-.333	-5.922*	Yes
Failure severity → Recovery satisfaction	H2	-.858	-6.012*	Yes
Distributive justice → Recovery satisfaction	H3-1	.441	2.812*	Yes
Procedural justice → Recovery satisfaction	H3-2	.344	2.326**	Yes
Interactional justice → Recovery satisfaction	H3-3	.157	2.408**	Yes

Distributive justice → Word-of-mouth intention	H4-1	.399	2.109**	Yes
Procedural justice → Word-of-mouth intention	H4-2	.600	2.570**	Yes
Interactional justice → Word-of-mouth intention	H4-3	.354	3.713*	Yes
Recovery satisfaction → Word-of-mouth intention	H5	.662	5.194*	Yes
Distributive justice * failure severity → Recovery satisfaction	H6-1	$\triangle df$=1, $\triangle x^2$=10.239(p=0.001)		Yes
Procedural justice * failure severity → Recovery satisfaction	H6-2	$\triangle df$=1, $\triangle x^2$=5.354(p=0.021)		Yes
Interactional justice * failure severity → Recovery satisfaction	H6-3	$\triangle df$=1, $\triangle x^2$=0.344(p=0.563)		No

Goodness-of-fit statistics x^2=269.617(p=0.00), df=124, GFI=.930, AGFI=.904, CFI=.953, RMR=.043, RMSEA=.056

*p<0.01, **p<0.05

The regression results indicated that failure severity explained 31.7%, 30.8%, 34.3% of the total variance in distributive justice, procedural justice and interactional justice, respectively. The regression results for three justice dimensions indicated that the variables jointly explained 60.9% of the total variance in recovery satisfaction. The regression results for recovery satisfaction and three justice dimensions indicated that the variables jointly explained 49% of the total variance in word-of-mouth intention.

The results showed that failure severity negatively influenced distributive justice (H1-1: β= -.707, t= -7.911, p<0.01), procedural justice (H1-2: β= -.443, t= -4.973, p<0.01), interactional justice (H1-3: β= -.333, t= -5.922, p<0.01) and recovery satisfaction (H2: β= -.858, t= -6.012, p<0.01).

Therefore, H1-1, H1-2, H1-3, H2 were statistically supported, as hypothesized.

In addition, the results also showed that perceived justice positively influenced recovery satisfaction. More specifically, distributive justice (H3-1:β=.441, t=2.812, p<0.01), procedural justice (H3-2:β=.344, t=2.326, p<0.05), and interactional justice (H3-3:β=.157, t=2.408, p<0.05) influenced recovery satisfaction in a positive way. Therefore,

H3-1, H3-2, H3-3 were statistically supported, as hypothesized.

Moreover, the results showed that perceived justice and recovery satisfaction positively influenced word-of-mouth intention. More specifically, distributive justice (H4-1:β=.399, t=2.109, p<0.05), procedural justice (H4-2:β=.600, t=2.570, p<0.05), interactional justice (H4-3:β=.354, t=3.713, p<0.01), and recovery satisfaction (H5:β=.662, t=5.194, p<0.01) influenced word-of-mouth intention in a positive way. Therefore, H4-1, H4-2, H4-3, H5 were statistically supported, as hypothesized.

The results of the moderating effect of failure severity are presented in Table 4. It is suggested that if the constraint model's variation of the difference of the chi-square values is statistically significant to a greater degree than the chi-square criteria threshold, the hypothesis is accepted.

When analysing the effect of distributive justice on recovery satisfaction, the result showed that the constraint model was x^2=427.499 (d.f.=249), whereas the free model was x^2=417.260 (d.f.=248). The constraint model's variation of the difference of the chi-square values with one degree of freedom $\triangle x^2$ was 10.239 (p=0.001). This result

showed statistical significance. Hence, H6-1 was supported.

With regard to the effect of procedural justice on recovery satisfaction, as a result of testing the difference of the chi-square values between the free model and constraint model, the constraint model was x^2=422.614 (d.f.=249), whereas the free model was x^2=417.260 (d.f.=248). The constraint model's variation of the difference of the chi-square values with one degree of freedom $\triangle x^2$ was 5.354 (p=0.021). This result was found to be statistically significant. Therefore, H6-2 was supported.

When analysing the effect of interactional justice on recovery satisfaction, the result showed that the constraint model was x^2=417.594 (d.f.=249), whereas the free model was x^2=417.260 (d.f.=248). The chi-square difference with one degree of freedom between the free model and constrained model was not significant ($\triangle x^2$ =0.334, p=0.563), indicating that two groups have similar path coefficients over the conceptual model. In other words, the insignificant chi-square difference revealed the evidence of no moderating effect of failure severity across the two groups. H6-3 was rejected.

5. Discussion and conclusion

The research purpose of this study is to provide insights into the relationship among failure severity, perceived justice, recovery satisfaction and word-of-mouth intention based on online shoppers who are undergraduate students and experienced services failure and recovery in the past year. This study also examines the moderating effect of failure severity in the relationship between perceived justice and recovery satisfaction. The research findings can be used as a guide by online retailers to understand consumer behaviour, to build competitive advantage and to retain customers.

The results show that failure severity had a negative effect on three dimensions of perceived justice (distributive, procedural, interactional) and recovery satisfaction. Perceived justice (distributive, procedural, interactional) had a positive effect on recovery satisfaction. Three dimensions of perceived justice (distributive,

procedural, interactional) and recovery satisfaction had significant effects on word-of-mouth intention. In addition, the results provide support for the moderating effect of failure severity in the relationship between distributive justice and recovery satisfaction, as well as the relationship between procedural justice and recovery satisfaction.

The implications of this study can be divided into two major aspects: theoretical contributions and management implications. First, this study extends and contributes to the literature by empirically analysing that failure severity can have a moderating effect as well as independent effect, which few previous studies have especially examined.

The second point is that results reveal that failure severity had a negative effect on three dimensions of perceived justice (distributive, procedural, interactional). That is, failure severity is a crucial factor influencing customers' perceived justice after recovery efforts. Failure severity demonstrates the strongest effect on distributive justice. The more severe the service failure, the less likely the customer's distributive justice. This conclusion is consistent with the findings of Mostafa et al. (2015), Yeoh et al. (2015) (Mostafa et al., 2015; Yeoh et al., 2015). The loss from a service failure carries more weight than any gain received. Therefore, despite sufficient service recovery efforts, severe service failure tends to produce some perceived loss. According to the results, individuals are more likely to feel happy and pleased if they perceive a high level of distributive justice in service recovery if the level of failure severity is low. Distributive justice as a result of recovery efforts plays an important role in building a long-term relationship. Online retailers should try to make compensation to reduce customers' complaints.

Third, the results reveal that failure severity had a negative effect on recovery satisfaction while perceived justice (distributive, procedural, interactional) had a positive effect on recovery satisfaction. That is, failure severity and perceived justice are crucial factors influencing post-recovery satisfaction. Failure severity had a larger effect than perceived justice. The more serious the service failure, the less satisfied the customer is with

service provider. This conclusion is in line with the findings of (Smith et al., 1999). Since service failure severity has a negative effect on recovery satisfaction in the context of online retailing industry, online retailers should increase recovery satisfaction or achieve service recovery paradox through effective recovery strategies. Usually, customers feel a little angry when they have small problems. When the service failure becomes more severe, the likelihood of customer satisfaction decrease. It is important that online retailers actively participate in offering effective service recovery to satisfy customers after a severe service failure. If customers are not satisfied with service recovery efforts, it will be difficult to maintain customer relationship. Especially when failure (e.g. damage or loss of goods) occur, customers may feel quite frustrated and consider it as a severe service failure. It may not be enough to reduce dissatisfaction just by giving an apology or explanation about the problem. Online retailers should realize that all aspects of service recovery (distributive, procedural, interactional) are crucial and indispensable for successful service recovery. More specifically, online retailers should offer adequate compensation (e.g. refunding money, replacing the product), make efforts to resolve the problem (e.g. showing respect and compassion, appearing courteous), have good policies and procedures (e.g. help pages, online community) for handling problems.

The fourth point is that the results reveal that three dimensions of perceived justice (distributive, procedural, interactional) and recovery satisfaction had significant effects on word-of-mouth intention. That is, perceived justice and recovery satisfaction are crucial factors influencing word-of-mouth intention. Recovery satisfaction had a greater effect than perceived justice. A high level of recovery satisfaction corresponds to a high level of word-of-mouth intention. This conclusion is in line with the findings of (Mansori et al., 2014). Most of the customers are likely to spread information about products through word-of-mouth. Word-of-mouth intention is important because it can affect other customers' behaviour. Especially, online shoppers cannot try products in the physical environment. Any written description or picture on the website, no matter how detailed, is just no substitute for looking at the real object, so online shoppers rely more on word-of-mouth. Satisfied customers are more likely to spread positive word-of-mouth and even share positive information about their experiences with others after service recovery. Therefore, online retailers should develop effective recovery strategies from the perspective of customers to increase recovery satisfaction and foster long-term relationships with customers. In addition, three dimensions of perceived justice (distributive, procedural, interactional) had positive effects on word-of-mouth intention. In order to increase word-of-mouth intention, online retailers should provide appropriate justice by offering explanation, compensation and solutions to the problem.

The fifth point is that the results reveal that failure severity moderates the relationship between distributive justice and recovery satisfaction, as well as the relationship between procedural justice and recovery satisfaction. The results have some important implications for online retailers. Despite sufficient service recovery efforts, severe service failure is likely to cause dissatisfaction. Therefore, it is important for online retailers to actively participate in implementing appropriate procedures after service failure and providing adequate compensation to satisfy customers.

6. Limitations and future research

This study has some limitations that limit the generalizability of the results and suggest some interesting avenues for future research. First, this study focuses on online retailing industry and makes research based on online shoppers. Because of this study's confined research context in which service recovery was investigated, the generalization of the results to other industries can be a problem. Therefore, future research should continue to examine the results in other industries. Second, a questionnaire survey approach was employed in this study. Because of disadvantages of questionnaire survey, future research should use the experimental method to provide a more comprehensive understanding. Third, this study only considers perceived justice and recovery satisfaction as antecedents of word-of-mouth intention. Future research should consider more variables that may affect word-of-mouth intention,

for example attribution, switching cost, switching barrier, emotion, commitment.

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