



# The impact of consumer confusion on the service recovery effect of Online Travel Agency (OTA)

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## Abstract

This study carried out a scenario experiment in Guangxi, China, and used a questionnaire to obtain the research data of the subjects to explore the service recovery effect of local online travel agencies (OTAs) from the perspective of consumer psychology. The empirical results show that consumer confusion will significantly worsen negative word-of-mouth, and negative word-of-mouth will reduce their repurchase intention. In the above empirical impact relationship research, it shows that negative word-of-mouth and consumer forgiveness play a mediating effect and a moderating effect respectively. Because this study is conducive to responding to and solving the new scenario and problems in the practice of OTA services. It will help to improve the risk resistance of OTA enterprises by providing effective service recovery strategies for these enterprises.

**Keywords** OTA · Consumer repurchase intention · Consumer confusion · Negative word-of-mouth · Consumer forgiveness

## Introduction

Online Travel Agency (OTA) has become a widely accepted online travel enterprise all over the world (Pinto & Castro, 2019). OTA has expanded the traditional "Hotel-Consumer" binary interaction model to the "Hotel-OTA-consumer" ternary interaction model, forming a tourism ecosystem (Liu & Fu, 2021; Wei et al., 2021). Therefore, tradition and innovation can be integrated. In the "Hotel-OTA-Consumer" ternary interaction model, hotels are traditional commercial enterprises, while OTA represents a new thing. The relationship between them is between tradition and innovation. In the world, many hotels have joined OTAs, such as Priceline, Expedia, Ctrip, etc. hotels cooperate with OTAs by signing agency distribution contracts, and consumers make travel reservations through OTA platforms.

However, due to the particularity of tourism products, OTA service failure is inevitable. Since April 2020,

COVID-19 has been effectively controlled, and many Chinese residents choose to travel within China. However, some Chinese OTA enterprises have also become the object of complaints from tourism consumers, such as Ctrip, Qunar, Tuniu, etc. There was a service failure in Zhejiang, China. In October 2021, Mr. Li booked a hotel in Chongqing, China through Qunar, paid 788 yuan and stayed the next day. After checking in, he found that his room was very untidy and ants were crawling on the bed, so he asked for a refund. However, Qunar only paid a refund of 157.6 yuan and claimed that the remaining amount was the service fee and handling fee of qunar and the hotel. Mr. Li was dissatisfied with Qunar's refund plan and made complaints and media exposure to Qunar and the hotel.

It can be seen from Mr. Li's case that service failure has become an important factor threatening OTA and hotel image, and has made OTA's business operation model face new challenges. However, OTA is, after all, a new business model integrating the Internet and tourism, which is still in the process of continuous improvement. At present, the academic community still has insufficient understanding of this business model (Wei et al., 2021). Therefore, there is an urgent need for academic circles to continue in-depth discussion on this issue.

We will explore the problem of OTA service recovery from a psychological perspective. In the scenario experiment, we used questionnaires to collect research

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data, and used a comprehensive analysis of the relationship between variables such as consumer repurchase intention, consumer confusion and negative word-of-mouth to answer the theoretical confusion encountered in OTA practice. This study will help to explain the consumer psychology and behavior after service failure from the psychological field, and will provide a practical and valuable reference for service recovery by answering the theoretical questions urgently needed to be answered in OTA.

## Literature review and research hypothesis reasoning

### Review of relevant theories of service recovery

Service failure events will lead to customer dissatisfaction, they will turn to competitors, and enterprises will suffer economic losses and reduce their corporate image. Therefore, it is particularly important to take appropriate measures to achieve service recovery (Wei & Lin, 2020; Wei, 2021). Service recovery is a series of remedial actions taken by enterprises in order to recover negative effects and appease customers (Zhong et al., 2011). Hoffman et al. (1995) used the critical event method to evaluate the service recovery strategy, including price discount, free products, return and exchange products, sincere apology, etc. Service recovery strategies include two means: Psychological recovery and tangible recovery (Miller et al., 2000). The action mechanism of tangible recovery mainly belongs to cognitive factors, while the action mechanism of psychological recovery mainly belongs to emotional factors, and their impact on customer satisfaction is independent (Worthington, 2006). Service recovery strategies can also target the emotional level of customers. Positive emotion is the catalyst to promote customer satisfaction (Goldsmith & Amir, 2010). The behavior of front-line employees in the tourism industry has an important impact on customers' willingness to cooperate (Huang, 2021). Fang et al. (2019) believe that the service recovery measures taken by tourist attractions can significantly improve the positive response of customers; Tourist emotions plays a complete intermediary role between service recovery and positive response; Compared with utilitarian recovery, symbolic recovery has a more significant impact on tourists' emotions. However, since OTA has not appeared for a long time, the current literature on OTA service recovery is obviously insufficient and needs in-depth research.

### Consumer confusion and negative word-of-mouth

Early researchers discussed consumer confusion as a whole concept, but did not consider its classification. With the deepening of research, some scholars gradually realize

that there are significant differences in the quantity and content of complex external information, which has an impact on consumer psychology and leads to consumer confusion (Huffman & Kahn, 1998). Consumer confusion refers to the psychological state that consumers are confused and at a loss about the merchant's products during the decision-making stage and purchase (Tu & Wu, 2019). Lee and Cun (2018) recognized that information confusion and choice confusion are two dimensions of consumer confusion. At present, based on consumer cognition, a consumer confusion scale has been developed (Walsh & Mitchell, 2010). Lin and Lu (2022) believe that similarity confusion and overload confusion promote brand transformation through research.

In the Internet age, it is easier to spread the voice of consumers. Consumers often share their consumption experiences such as service failures through forums and we media, and form negative public praise through emotional transmission (Lee et al., 2008). Both positive and negative word-of-mouth will affect consumers' psychology and behavior, but negative word-of-mouth will have a greater impact (Xiao & Ren, 2021). However, in the network environment, the spread direction of word-of-mouth, the type of information and the involvement of products (services) will affect consumers' psychology and behavior (Jin, 2007). An empirical study has confirmed that in the online travel scenario, if a consumer experiences a negative service experience, their online comments will be affected by the previously published online comments. If most of the previous comments are negative, they are more likely to write online comments with the intention of negative word of mouth (Rouliez et al., 2019). Zhang and Kong (2021) confirmed through empirical research that when consumers with low personal brand connection receive the negative word-of-mouth of the brand, they will respond according to the existing information. The stronger the negative word of mouth, the stronger the low-intensity negative emotion, and reduce their impulsive purchase intention.

Some studies believe that eco labels have an impact on various forms of consumer confusion and directly enhance negative word-of-mouth willingness (Moon et al., 2016). Their negative word-of-mouth will reduce their willingness to buy, reduce the company's public image, reduce sales performance, and form a long-term threat (Alexandrov et al., 2013) Some scholars have found through empirical research that consumer confusion will enhance negative emotions and negative public praise (Tu & Wu, 2019). Based on the above literature analysis and reasoning, we propose the research hypothesis H1:

H1: Consumer confusion will increase the intention of negative word-of-mouth.

## Consumer purchase intention and consumer forgiveness

Repurchase behavior refers to the behavior that consumers repeatedly purchase the same brand after experiencing a brand (Knox & Walker, 2001). Shao (2013) believes that consumer repurchase intention in the Internet context means that consumers have a good attitude towards the goods and services provided by Internet providers, and then form a continuous willingness to purchase. Manfred & Michael (2020) analyzed from the perspective of expectation, and believed that when the consumer perceived effect after purchase is higher than the expected level before purchase, it will improve customer satisfaction, thus improving the level of consumer repurchase. Tu et al. (2021) believe that the driving effect and locking effect affect the repeated purchase intention of O2O fresh e-commerce platforms. Zhang and Kong (2021) believe that if the negative word of mouth increases, low-intensity negative emotions will also increase, which will reduce consumer' impulse purchase intention. Therefore, this study proposes the following reasoning (research hypothesis H2 and H3):

H2: Negative word-of-mouth will reduce consumer repurchase intention.

H3: Between the impact of consumer forgiveness on consumer repurchase intention, negative word-of-mouth will have a mediating effect.

Tsarenbo and Tojib (2011) defined consumer forgiveness as the transformation process of prosocial motivation for consumers to adjust their emotions, forgive the wrong behaviors of enterprises, and restructure their relationship with enterprises. In combination with the service recovery scenario, Ma et al. (2021) defined the willingness of consumers to forgive as that after a service failure, consumers do not have negative emotions and behavioral willingness such as complaints and retaliation, but forgive the service

failure of enterprises. Lee and Cun (2018) studied the dimensions of consumer forgiveness and believed that consumer forgiveness includes the following two dimensions: Information confusion and choice confusion. In the research of service recovery, some literatures have involved consumer forgiveness. Consumer forgiveness is the main measure for enterprises to achieve the effect of service recovery (Magnini et al., 2007). Huang and Chang (2020) believe that service recovery is an important way for businesses to save consumers. Consumer forgiveness is an important indicator of whether businesses can achieve customer retention. Consumer forgiveness is an important variable to form consumer continuous trust. In the previous article, we have analyzed that if consumers have a strong negative reputation for businesses, it will reduce consumer repurchase intention. If consumer have a strong willingness to forgive, it will improve consumer repurchase intention. Therefore, H4 is proposed

H4: Consumer forgiveness plays a positive moderating effect between negative word-of-mouth and consumer repurchase intention.

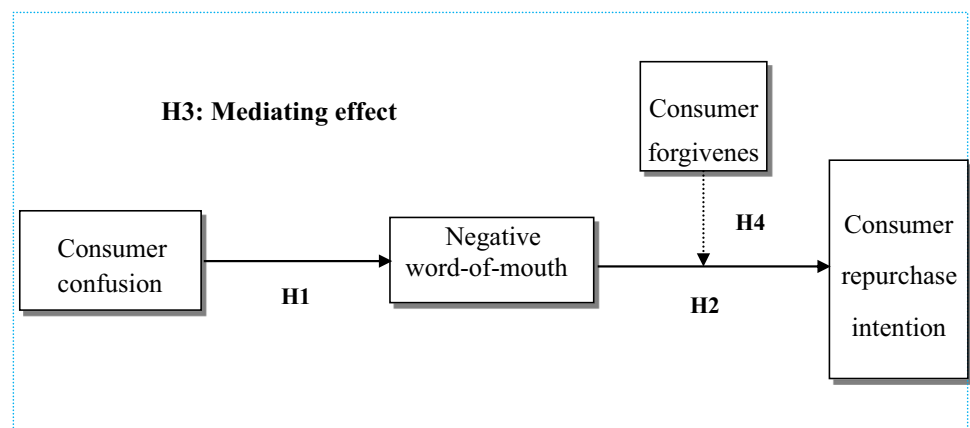
Figure 1 shows our research model with 4 variables and 4 research hypotheses.

## Design and implementation of scenario experiment

### Design of service recovery scenarios

Background of the scenario experiment of this study: Consumer booked a hotel on the OTA platform, found that the bathtub in the room was broken after check-in, and asked to change the room, which was rejected by OTA and the hotel. Later, consumer complained about the hotel and OTA, which had a certain negative impact on hotel and OTA.

Fig. 1 Research model diagram



There are four service recovery scenarios in this study, namely scenario 1 (high consumer confusion  $\times$  high consumer forgiveness), scenario 2 (high consumer confusion  $\times$  low consumer forgiveness), scenario 3 (low consumer confusion  $\times$  high consumer forgiveness), scenario 4 (low consumer confusion  $\times$  low consumer forgiveness). The four experimental scenarios are described as follows:

**Scenario 1:** OTA and the hotel made service recovery. Due to the service failure, consumer has a high level of confusion about the service recovery of OTA and hotel, do not understand their behavior, and express consumer confusion through the comment area of OTA. Due to the service recovery between OTA and the hotel, consumer has a high willingness to forgive OTA and the hotel and forgive their service failure.

**Scenario 2:** OTA united hotel made service recovery. In service recovery, consumer has a high level of confusion about OTA and hotel service recovery, do not understand their behavior, and express consumer confusion through the comment area of OTA. In addition, although OTA and the hotel have carried out joint service recovery, consumer has low willingness to forgive OTA and the hotel, and complain and dissatisfied with them.

**Scenario 3:** OTA united hotel made effective service recovery. For OTA and hotel service recovery, consumer has a low level of confusion, understand their service recovery behavior, and the comment area of OTA does not express a lot of confusion. For the service recovery work of OTA and hotel, consumer is more willing to forgive OTA and hotel and forgive their service failure.

**Scenario 4:** OTA united hotel made service recovery. For OTA and hotel service recovery, consumer has a low level of confusion, understand their service recovery behavior, and the comment area of OTA does not express a lot of confusion. Although OTA and the hotel have made service recovery, consumer is less willing to forgive OTA and the hotel, and complain and dissatisfied with them.

### Source of measurement items

In our scenario experiment, we will use a questionnaire to measure the subjects' psychological perception and

behavioral intention. The questionnaire includes four variables. The sources of measurement items of each variable are shown in Table 1.

### Implementation of scenario experiment

Our scenario experiment was conducted in Guangxi, China from December 2021 to January 2022. The subjects of the scenario experiment come from the citizens of Guilin, Liuzhou and Laibin in Guangxi, which are the main body of the subjects (samples). In addition, some subjects came from farmers in Guangxi, China. They lived in Zhongshan County and Zhaoping County under the jurisdiction of Hezhou City. The researchers, 3 postgraduates and 18 community and village committee staff were responsible for organizing the formal experiment.

During the experiment, the organizer asked each subjects to select the most similar scenario according to the four simulation scenarios set and their own experience of buying OTA services, read carefully, imagine yourself as a consumer in the situation, perceive and recognize according to the situation, finally, subjects complete the answer and fill in.

This study carried out seven scenario experiments, involving 376 subjects. After collecting the questionnaire, the organizer of the experiment eliminated the questionnaires with incomplete contents and inconsistent answers, the effective questionnaires were 343 and the effective rate was 91.22%. See Table 2 for details.

### Data analysis

#### Test of questionnaire quality

The questionnaire quality test includes reliability and validity tests. For the test of reliability and convergent validity, we refer to the test criteria and research methods of Hair and Black (2006) and Wei et al. (2021). In Table 3, Cronbach's  $\alpha$  of the four variables in this study is 0.744, 0.838, 0.783 and 0.869 respectively, which indicates that the communication degree of the questionnaire is relatively high. The standardized factor load of all items in the questionnaire is between 0.712–0.918, the CR of the four

**Table 1** Sources of measurement items of 4 variables

Variables	Sources of measurement items	Set the number of items
Consumer confusion	Walsh et al. (2007), Tu & Wu, (2019)	5
Negative word-of-mouth	Zhang and Kong (2021), Tu & Wu (2019)	5
Consumer forgiveness	Lee and Cun (2018), Wei et al., (2022a, b, c)	4
Consumer repurchase intention	Qi and Zhang (2021), Tu et al. (2021)	4

**Table 2** Sample statistics of scenario experiment

Demographic characteristics	Category	Sample size	Percentage	Demographic characteristics	Category	Sample size	Percentage
Gender	Male	167	48.69%	Education	Secondary school and below	124	36.15%
	Female	176	51.31%		College degree	108	32.34%
Region	Guilin	107	31.20%	Occupation	Bachelor	89	25.95%
	Laibin	76	22.16%		Master and doctor	22	6.41%
	Liuzhou	74	21.57%		Enterprise staff	74	21.57%
	Zhongshan	39	11.37%		Professional	63	18.37%
	Zhaoping	47	13.70%		Self-employed person	59	17.20%
Age	Under 25 years	88	25.66%	Civil service staff	17	4.96%	
	26–35 years	107	31.20%	Student	29	8.45%	
	36–59 years	116	33.82%	Farmer	86	25.07%	
	Over 60 years	32	9.33%	Other	15	4.37%	

**Table 3** Test results of reliability and convergent validity of research data

Variable name	items	Normalized load factor	T	Cronbach's α	CR	AVE
Consumer confusion	1. I am confused about service failure	0.773	5.121	0.774	0.877	0.588
	2. I am confused about the way of service recovery	0.828	4.741			
	3. I am confused about the attitude of the service staff	0.696	3.923			
	4. I am confused about the effect of service recovery	0.814	4.784			
	5. I am confused about the environment of service recovery	0.717	2.907			
Negative word-of-mouth	6. I made a negative comment	0.813	2.412	0.838	0.907	0.661
	7. Many consumers made negative comments	0.786	3.506			
	8. Many consumers are discussing negative comments	0.856	6.704			
	9. Negative comments expressed dissatisfaction with the OTA	0.788	5.578			
Consumer forgiveness	10. There are more negative comments than positive comments	0.853	2.876	0.783	0.847	0.582
	11. I understand the failure of this service	0.764	6.915			
	12. Service recovery promotes my willingness to forgive	0.809	5.987			
	13. I accepted the apology from OTA and the hotel	0.712	2.823			
Consumer repurchase intention	14. I forgave OTA and the hotel	0.759	4.956	0.869	0.926	0.758
	15. I will continue to book services at this OTA	0.792	3.667			
	16. I will recommend this OTA to the people around me	0.881	4.053			
	17. I would like to be a loyal customer	0.887	6.279			
	18. I trust the OTA more	0.918	8.673			

variables are 0.877, 0.907, 0.847 and 0.926 respectively, and the ave is between 0.582–0.758. The above research results prove that the convergence validity of the questionnaire data is good.

In this study, Table 4 shows the test results of the differential validity of the questionnaire in detail, and Table 5 shows the fitting degree of the model in detail. According to the validity test standard of statistician Wu (2010), the differential validity and constructive validity of the questionnaire passed the test.

**Table 4** Discriminant validity test of research data

Variable name	1	2	3	4
1. Consumer confusion	0.767			
2 Negative word-of-mouth	0.593	0.813		
3. Consumer forgiveness	-0.332	0.429	0.763	
4. Consumer repurchase intention	- 0.575	-0.601	0.572	0.871

Table 5 Construction validity test of research data

Fitting index of the model	$\chi^2$	df	$\chi^2 /df$	CFI	TLI	SRMR	RMSEA
Index value	275.087	91	3.022	0.941	0.938	0.040	0.061

### Research hypothesis test

#### Causality test of variables

We conducted centralized analysis on two independent variables and one adjustment variable. The analysis results of variance inflation factor (VIF) show that the VIF is between 3.423–5.677, while the VIF is lower than 10, which is in line with the standard. Therefore, the multicollinearity problem in our research model is not obvious, and we avoid this problem.

In model 2 of Table 6, our research results show that consumer confusion has a positive impact on negative word-of-mouth. The research hypothesis H1 passed the empirical test, while the causality of model 1 failed the test. In model 4, the empirical analysis results show that negative word-of-mouth has a significant negative impact on consumer repurchase intention. The research hypothesis H2 also passed the empirical test. However, the causality of model 3 failed to pass the test.

#### Moderating effect analysis

In model 5 of Table 6, the interaction coefficient between negative word-of-mouth and consumer forgiveness is greater than zero, which is 0.239. Therefore, H4 of this study has passed the empirical test, that is to say, consumer forgiveness plays a positive moderating effect. In Fig. 2, we plot the moderating effect. It intuitively reflects the moderating effect between variables.

#### Analysis of chain mediating effect

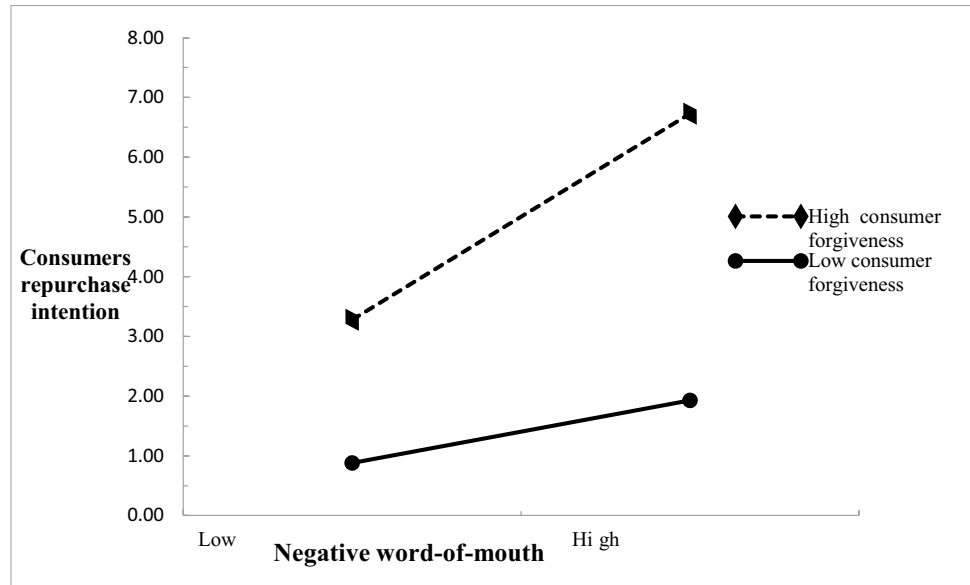
We installed Process plug-in in SPSS25.0. On this basis, we chose the Bootstrap method to analyze and test the mediation effect of this study. We first analyze and compare the level of fit between the competition model and the chain mediating to determine which model is superior. In the analysis in Table 7, each fitting index of the competition model is relatively poor, so it is not a good model. The chain mediating model is a good model because of its good fitting index. Therefore, the above data analysis confirms that the chain mediating effect exists.

Table 6 Multilevel regression statistics

Variable	Negative word-of-mouth		Consumer repurchase intention		
	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	2.713**	2.967*	3.408*	3.745**	3.264**
Control variables					
Gender	0.091	-0.129	0.078	0.104	0.082
Region	0.079	-0.047	-0.094	-0.108	-0.134
Age	0.114	0.107	0.132	0.122	0.116
Education	-0.135	-0.124	-0.029	-0.035	0.137
Occupation	0.021	0.039	0.003	-0.019	-0.014
Independent variable					
Consumer confusion		0.614*			
Negative word-of-mouth				-0.778*	
Moderating variables					
Consumer forgiveness					0.507**
Interaction item					
Negative word-of-mouth × Consumer forgiveness					0.239**
R <sup>2</sup>	0.486	0.247	0.326	0.332	0.505
$\Delta R^2$		0.081		0.059	0.103
F	2.772*	3.703**	3.076**	3.128*	5.931*

\*, \*\* and \*\*\* are statistically significant at 0.05, 0.01, and 0.001 respectively

**Fig. 2** Diagram of variable moderating effect



**Table 7** Fitting index of two models

Model	$\chi^2$	df	$\chi^2$ /df	NNFI	AGFI	CFI	TLI	SRMR	RMSEA
Chain mediating model	48.926	17	2.878	0.947	0.918	0.931	0.921	0.040	0.071
Competition model	113.069	18	6.282	0.809	0.831	0.759	0.804	0.067	0.122

**Table 8** Test results of chain mediated effect

Path and total effect	Indirect effect value	Standard error	Upper limit	Lower limit	Percentage of effect
Consumer confusion → negative word of mouth → consumer repurchase intention	-0.244	0.023	-0.083	-0.409	41.36%
Total effect	0.597	0.009	0.728	0.303	100%

In Table 8, the indirect effect of the mediation effect path in this study is equal to -0.244, and negative word-of-mouth plays a mediating effect. Therefore, the research hypothesis of mediating effect (H3) has passed the test in this paper.

### Conclusion and discussion

#### Research conclusion

First, Consumer confusion will significantly increase negative word-of-mouth intention. After analysis and discussion, we believe that if the service fails, consumers will be confused about the behavior of OTA and the hotel, and consumers will feel overwhelmed about the service failure in psychology and behavior, which will make them feel the uncertainty of the future, increase their sense of insecurity, and enhance negative emotions, such as anger,

discouragement, irritability, etc. Johnson et al. (2021), Decarlo and Hansen (2022), Tu and Wu (2019) conducted empirical research on the relationship between consumer confusion and negative word-of-mouth, but their research did not consider the failure of OTA services, and the doubts of the world about OTA service recovery remain unresolved. Therefore, our research is conducive to expanding the theoretical breadth and depth of OTA service recovery, and promoting the integration and interactive development of consumer psychology and service management.

Second, negative word-of-mouth will reduce consumer repurchase intention. In reality, if the service fails due to OTA and hotels, and the negative word-of-mouth of businesses is high, consumers will increase their mistrust of businesses for the sake of consumption expectations and consumption safety, and they are more reluctant to repurchase these businesses. In previous studies, although Zhang and Kong (2021), Thi (2021), He et al. (2022) conducted

empirical research on the relationship between the above two variables under the traditional service scenario and the online service scenario, they did not conduct empirical research on the relevant variables under the OTA service recovery scenario, which is a theoretical defect. Therefore, this study has obvious theoretical contributions, because this study answers the problem of service failure in the development of OTA and finds various factors affecting service recovery, which has not been involved in this field before.

Third, in our research,, consumer forgiveness plays a positive moderating effect ( $\beta=0.239$ ,  $P<0.01$ ). We believe that consumer forgiveness is a positive emotion, which urges consumers to buy OTA services again. Huang and Chang (2020), Cross et al. (2021), Wei et al. (2022a, b, c) studied the forgiveness theory and consumer forgiveness theory, some studies also involved relevant studies in the online shopping environment, but there was still a lack of discussion on the moderating effect of consumer forgiveness, and there was no relevant research on OTA service recovery scenarios. Therefore, this study introduces the above related variables and other theories into the research of OTA services, which is a new research scenario with good research value and will enrich the theory of consumer psychology and tourism services.

### Practical applications

First of all, OTAs and hotels should provide psychological guidance and emotional management to consumers in service recovery. After service failure, consumers suffer losses in money and time, and will feel confused about OTAs and hotels, and enhance consumers' negative word-of-mouth willingness. Therefore, in service recovery, OTA and hotels, as the implementation subjects of service recovery, should establish a scientific consumer emotion management mechanism. In order to better discuss, we give an example to illustrate that Ctrip is a famous OTA enterprise in China. In China, there are more than 20000 hotels cooperating with Ctrip. Due to the large number of hotels and consumers, service failures can occur every day in hundreds of cities in China. Therefore, in order to avoid the loss of control of consumers' emotions and the spillover effect of negative emotions after service failure, reduce consumer confusion, stabilize consumer expectations, prevent consumers' extreme behavior, and improve consumers' willingness to forgive, Ctrip can cooperate with well-known universities and well-known management consulting institutions in China. In the cooperation, psychology professors from universities and tourism management experts from consulting institutions design scientific consumer emotion management schemes, conduct psychological guidance and emotion management for consumers through psychological counselors, and disseminate them through online media to let consumers and

the public know, eliminate and reduce consumer confusion, improve consumer emotion management ability, and effectively manage service failures.

Second, In service recovery, OTAs and hotels should think about how to improve consumers' understanding and forgiveness of their previous service failure. For example, taking Ctrip as an example, after the service failure, Ctrip, as an OTA enterprise, should have a sense of crisis public relations. An active and cooperative hotel should set up a service recovery public relations team composed of psychological experts and management experts in time to announce the truth of the incident to the society through the media. The public relations team should prevent rumors from affecting consumers' cognition, explain in detail the objective and subjective factors that cause service failure to consumers, and emphasize that service failure is inevitable. Ctrip and hotels do not want service failure to exist, but service failure still occurs. They should face it together and actively solve it with businesses to satisfy consumers. On this basis, we should do a good job in compensation. Ctrip and hotels should resolve the confusion of consumers after service failure through utilitarian compensation and spiritual compensation, reduce consumers' perceived risk, reduce worries at home, and make consumers form a willingness to forgive service failure, so as to promote repeated purchases.

Third, OTAs and hotels should enhance consumers' willingness to repurchase through various methods. After service failure, OTAs and hotels are most worried about the loss of consumers. Taking Ctrip as an example, Ctrip and the hotel should timely eliminate the influencing factors that generate negative word-of-mouth, such as consumer confusion, consumer perceived risk, etc. In the Internet age, it is easy for everyone to express their opinions. After service failure, a large number of negative comments are high probability events. How to face and deal with negative comments? Ctrip and hotels should be familiar with the propagation law of online comments, guide all kinds of negative comments on the Internet, especially reply, explain and appease consumer comments as soon as possible, so as to avoid comments evolving into negative public praise and public opinion events. In addition, Ctrip and hotels should improve consumers' willingness to forgive by means of refunds, VIP consumption qualifications, apologies and cash compensation, so that consumers can re-establish trust in Ctrip and hotels, deepen their willingness to cooperate, promote consumers' willingness to repurchase.

### Deficiencies and prospects

First, the research framework should be expanded. In this study, we explored the influence of relevant variables in OTA service recovery, but our research framework is still too narrow. Our research content did not analyze the



factors causing consumer confusion in detail, it also does not include variables such as face and sympathy. Due to the shortcomings of the above research framework, It is difficult for us to understand the characteristics and influencing factors of OTA service recovery. Therefore, based on the above research deficiencies, we will expand the research framework, analyze in detail the antecedents of consumer confusion, explore the impact of face and compassion on OTA service recovery.

Second, both subjective and objective data should be considered in terms of data sources. In this study, we carried out a scenario experiment, in which the data of the subjects were obtained through a questionnaire survey, and these data were tested and analyzed. However, the answers to the questionnaire will be affected by the subjects' cultural background, educational background, mood, cognition and consumer experience. Therefore, in the future, we will also obtain objective data through the OTA platform. These data are the traces left by consumers after consumption, such as the number of consumers, purchase amount, time, number of people, etc., so as to make up for the lack of subjective data.

Third, in terms of research samples. The experimental samples are from some cities and counties in Guangxi, China, including Guilin, Laibin, Zhongshan, etc. Guangxi is a border autonomous region of China, with many regional and ethnic characteristics, such as the unique Zhuang language and folk customs. There are no samples from other provinces in China or experimental samples from other countries in this study, which is incomplete. Our research conclusions may be affected by the research samples. Our research conclusions may be applicable in Guangxi, China, but they are uncertain for other regions. Therefore, we will expand the source of experimental samples in future research, which can increase the research samples of China's first tier cities, as well as the samples of other central and eastern provinces in China. In the future research, we can cooperate with researchers from European and American countries, so as to more conveniently obtain European and American countries and research samples, and make the research conclusions more worthy of promotion.

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**Data availability** All data generated or analyzed during this study are included in this published article.

## Declarations

**Ethical approval** In the research process of this paper, there is no ethical issues, no moral disputes, after the review of the academic department of Guilin University of technology.

**Informed consent** I understand the regulations of the magazine. If my paper can be published, the data and information of my paper will be open to the public.

**Conflict of interest** On behalf of all authors, the corresponding author states that there is no conflict of interest.

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