Research of Service Failure Attribution Based on Brand Loyalty
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Abstract. We introduce brand loyalty to the general service failure model. Focusing on the response of the loyal customers of a brand in the event of service failure, we establish the structure equation model of service failure attribution based on customers’ brand loyalty. The results of empirical study show that compared with the customers with non-significant brand loyalty, the customers with significant brand loyalty are more likely to find the ‘excuses’ for service failure: the failure is happened in the external of enterprises, is accidental and uncontrollable. And their satisfaction and re-patronage intention is still higher than the customers with non-significant brand loyalty after service failure occurred. Based on this, the service recovery suggestion based on customer brand loyalty classification is proposed.

Introduction
With the development of social economy, the service economy has gradually occupied the leading position, the competition between the service enterprises also began to develop into the era of brand competition. Establishing and maintaining customer brand loyalty has attracted more and more attention in academic and industry research. The customers with significant brand loyalty are important source of enterprise survival and development. However, this is not only because of the profit created by them, but also their special attitude of self-maintenance and self-defense effect[1].The body with these attitude may make a conscious to maintain the original attitude in the situation in the changing the external environment. This means that, once the customer develops loyalty to a certain brand, they may try to maintain this attitude, even if conflicts happens such as service failure. Therefore, the purpose of this paper is to explore" How do the different brands loyal customers in service failure make attribution? What consequence will make on their satisfaction and re-patronage intention after service failure occurred?"

A Review of the Relevant Theories
Loyal Customers—a Strong Subject’s Response to External Stimuli
American social psychologist L. Festingel proposed "the theory of cognitive dissonance" during the study of individual cognitive coordination. The theory shows that the response from a subject with strong attitude can points into two categories:(1)when the external stimulation and body original attitudes/beliefs are consistent, The subject will express acceptance and absorption to external stimuli;(2)when the external stimulation and body original attitudes/beliefs are inconsistent, The subject will avoid those external stimulation. External stimulation, which is not consistent with the original attitude of the subject, may lead to the imbalance of the main body, and make threat to the original preference of the subject. These threats will promote students to try to reduce the feeling of harmonious in their hearts, and avoid meeting external stimuli which will increase their internal disharmony.

Attitude has the function of self-defense. It decides the potential motivation to solve the main psychological conflict. Hyde’s attitude balance theory and Osgood’s consistency theory pointed out
that this feature will enable the individual to refuse the anxiety from external events, and make efforts to regulate the internal conflict caused by external events. All these they do are to reduce anxiety, and protect themselves. A subject with a strong attitude of external stimulation will resist the change in the attitudes consciously, and strive to consolidate their existing specific attitudes, in order to indicate and strengthen correct of their attitude and position.

**Service Failure and Failure Attribution**

Fisk and Brown (1993) believe when an enterprise fails to meet the customers’ evaluation criteria, it will be regarded as a service failure [2]. However, the customers’ evaluation criteria for the service is based on the customer perception, and they always make a comparison between the expected performance and the actual performance of the product. According to the famous scholar Weiner’s (1979, 1985) study of attribution, the analysis of the cause of the occurrence of the event can be divided into three dimensions: (1) **place**: the event is caused by its own or external factors; (2) **stability**: the frequency of the occurrence of the event; (3) **controllability**: whether the occurrence of the event can control and prevention [3, 4]. This research will continue to use these three dimensions of attribution principle to analyze the difference between different brand loyalty customers.

**Research Model and Research Hypothesis**

After reviewing literature [5-8], we put forward a series of hypotheses:

Hypothesis 1a: The customer who think the service failure occurs in the external, have lower evaluation of the service failure severity.

Hypothesis 1b: The customer who think the service failure occurs accidently, have lower evaluation of the service failure severity.

Hypothesis 1c: The customer who think the service failure occurs controllably, have lower evaluation of the service failure severity.

Hypothesis 2: The customer’s evaluation of service failure severity are negatively related to customer satisfaction.

Hypothesis 3: customer satisfaction is positively related to customer’s re-patronage intention.

On the basis of the general model of service failure attribution, the model of service failure attribution based on customer brand loyalty is constructed (Figure 1).

![Figure 1. Service failure attribution model based on customer brand loyalty.](image)

According to the three dimensions of attribution theory, the following three hypotheses are put forward:

Hypothesis 4a: Compared with non-significant brand loyal customers, significant brand loyal customers tend to think that the service failure occurs in the external.

Hypothesis 4b: Compared with non-significant brand loyal customers, significant brand loyal customers tend to think that the occurrence of service failure is accidental.

Hypothesis 4c: Compared with non-significant brand loyal customers, significant brand loyal customers tend to think that the occurrence of service failure is uncontrollable, it is difficult to avoid.

The severity of service failure has a direct effect on customer satisfaction and recovery expectation [9]. Li (2015) confirmed that the severity of service failure has a moderating effect on the
matching effect between the remedy strategy and the customer's coping tendency[10]. Therefore, the following hypothesis is put forward:

Hypothesis 5: Compared with non-significant brand loyal customers, significant brand loyal customers tend to have lower evaluation to the same service failure event.

Customers with significant brand loyalty, who have long-term contact and dependence on the brand, has formed a high quality relationship[11]. Based on this, H6 and H7 are proposed:

Hypothesis 6: Compared with non-significant brand loyal customers, significant brand loyal customers still have higher degree of satisfaction after the service failure occurs.

Hypothesis 7: Compared with non-significant brand loyal customers, significant brand loyal customers still have higher degree of re-patronage intention after the service failure occurs.

Variable Test and Data Collection

This research questionnaire is divided into 3 different versions according to customer brand loyalty degree, and each version is divided into 5 parts. On the basis of the research of Lewis, two questions were designed to measure the overall evaluation of service[12]. “Customer satisfaction” is used to reflect the comprehensive evaluation of service[13]. Based on the research of Zeithaml, and combined with the background of this study, we designed 3 questions to measure customers’ re-patronage intention. The scale consists of 17 items, with 5 Likert scale, quantifier is divided into five levels: from "strongly disagree" to "strongly agree".

This research is composed of two parts of the field survey and online survey. Field research is carried out in Tianjin shopping malls, large supermarkets, convenience stores. In the part of field survey, 200 questionnaires were distributed, and 185 questionnaires were collected, 15 of them had been deleted because of the incomplete data, 48 of them had been deleted because of loyalty control failure; In the part of Online survey, 149 were collected, 61 of them had been deleted because of loyalty control failure, finally get a total of 210 valid questionnaires.

Data Analysis and Hypothesis Testing

We used Cronbach's α to measure reliability, all of them are higher than acceptable level of 0.7. The next is the validity test, which is divided into convergent validity test and discriminant validity test. In this study, the standardized factor loadings of all items are higher than 0.707, which are between 0.835 and 0.927; the AVE values of the latent variables ranged from 0.816 to 0.775, higher than the standard(0.5), and the combined reliability ranged from 0.913 to 0.707, which was higher than the minimum requirement(0.707). So the scale has good convergent validity. For discriminant validity test, the correlation coefficient between each latent variable is less than the diagonal AVE square root, so the scale has good discriminant validity.

Model Test

After analysed by AMOS17.0 software, the main test results are as table 1. Compared with the test statistics discriminant standard, some indexes are not acceptable, which states model did not reach the standard adapter, should reject the null hypothesis. According to the statistical model results, three paths are increased in the initial model(controllability<stability, attribution<stability and e8<=>e9). Using the software to calculate the analysis again, the results are shown in Figure 2, and the main test results are shown in Table 5. From the analysis results, the fitting index of the model is well fitted. Therefore, the modified model is passed the test. Then, we add two hypotheses:

Hypothesis 8: The customers who think the service failure occurs accidentally tend to think that the service failure is uncontrollable.

Hypothesis 9: The customers who think the service failure occurs accidentally tend to think that the service failure occurs in the external of enterprises.
Table 1. Evaluation criteria and values of the overall fit of the model.

| Model fit statistics | Criteria | Initial model | Modified model | General |
|----------------------|----------|---------------|----------------|---------|
| Absolute fit index  | $\chi^2/df$ | $<3,<2$ | optimization | 3.558 | 1.788 | 2.556 |
|                      | GFI      | $[0,1]$, $>0.9$ | optimization | 0.854 | 0.924 | 0.892 |
|                      | RMSEA    | $<0.1,<0.08$ | optimization | 0.111 | 0.061 | 0.086 |
| Relative fit index   | NFI      | $>0.9$ | 0.867 | 0.957 | 0.937 |
|                      | IFI      | $>0.9$ | 0.901 | 0.980 | 0.961 |
|                      | CFI      | $>0.9$ | 0.899 | 0.980 | 0.960 |
| Information index    | AIC      | The smaller the better | 317.513 | 195.396 | 248.950 |
|                      | BCC      | The smaller the better | 323.080 | 200.963 | 254.362 |
|                      | ECVI     | The smaller the better | 1.519 | 0.935 | 1.191 |

Figure 2. Modified model analysis.

The general model of service failure attribution and service failure attribution model based on customer brand loyalty (modified model) are analyzed by AMOS17.0 software, and the fitting results of the two models are shown in Table 1. Compared with the general model, the model of service failure attribution based on customer brand loyalty (modified model) has been improved, which proves that the model based on brand loyalty has a better fitting degree than the general model. So the service failure attribution model based on brand loyalty is valuable. The regression coefficients between latent variables and variables, latent variables and latent variables in the model passed the significant test at 0.01 level. All the signs of the standard path are the same as the positive and negative effects of the hypothesis. So all the hypotheses in this study are confirmed.

Conclusion and Suggestion

Through data analysis, the following conclusions are drawn:(1) Compared with non-significant brand loyal customers, significant brand loyal customers tend to think that the service failure occurs in the external of enterprises, is accidental and uncontrollable; (2) Customers with different degrees of brand loyalty have significantly different severity evaluation to the same service failure event. Significant brand loyal customers have higher tolerance, so their evaluation is lower. (3) Compared with non-significant brand loyal customers, significant brand loyal customers still have higher customer service satisfaction and re-patronage intention.

According to the conclusion, the following suggestions are put forward:(1) Because significant brand loyal customers have a strong attitude and defense effect, their attitude to a brand that they have love for a long time is difficult to change. So based on the fact, the enterprise may explains the reason for the service failure in these three dimensions: place, stability and controllability, and make use of customer's emotional dependence to obtain customer's sympathy and understanding. (2) Respecting for customers’ psychological sense of service, taking remedial measures according to customer's different brand loyalty. (3) Grasping of the information of customer satisfaction accurately, and improving customer re-patronage intention effectively.
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