Is/Are Customer Satisfaction and Trust Mediating Factors of Loyalty for OTA---from China’s Case?

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Abstract. The author studies the influencing factors of OTA customer loyalty by taking Qunar and Ctrip as an example. Based on the relevant theories, the author constructs a SEM model that affects OTA customer loyalty, including information ease of use, products and services, risk, switching costs as independent variables, satisfaction and trust as intermediate variables, and loyalty as dependent variables. Through questionnaire survey, data collection and analysis show that product and service, switching cost have a significant positive impact on customer satisfaction, trust and loyalty. Among them, the switching cost has the biggest effect on customer loyalty and trust. Products and services have the greatest impact on customer satisfaction. Satisfaction and trust have a significant positive impact on loyalty. As intermediary variables, pre-variables can indirectly affect OTA customer loyalty through satisfaction and trust.

1. Introduction
The 2017 market transaction scale of online tourism was ¥40 billion. This amount was a 34.0% increase from previous year, with Qunar and Ctrip listed as the top two OTA. People’s Daily travel platform shows that the complaint number accounts for 69.57%, with more than half from OTA. Of these, Qunar and Ctrip are also listed as the top two OTA.
Therefore, the authors chose Qunar and Ctrip as the target sample of China OTA. The authors based their study on literature review surrounding e-business customer loyalty. First, they constructed a SEM model of satisfaction, trust, and loyalty. Next; they designed a questionnaire to collect primary data to confirm whether OTA customer satisfaction and trust play mediating roles for loyalty via SPSS. This action was taken to provide a decision reference for OTA customer retention and management improvement.

The diverse number of loyalty definitions can be classified into attitude loyalty, behaviour loyalty, and attitude-behaviour loyalty [21]. Attitude loyalty focuses on emotional, conscious, and behavioural perspectives. Behaviour loyalty focuses on behaviour performance related to a brand product and service. Attitude-behaviour loyalty integrates customer attitude loyalty and behaviour loyalty [8][27][37]. The authors prefer the attitude-behaviour loyalty definition due to emotional preference and repeat product and brand purchasing influenced by quality, price, service, culture, etc.
The constructs of the technology acceptance model (TAM) have been widely utilized in loyalty research, including easy-to-use construct and usefulness construct [5]; Kim, Jin, & Swinney, 2009; Kourfaris& William, 2004; Li et al., 2015; [20]. Service quality and satisfaction significantly positively correlated with loyalty [12][33]. Website service quality can positively influence customer e-satisfaction and e-loyalty. [10]. It has been revealed that service quality is the most important factor influencing
online loyalty \cite{23}. Offline logistics quality, product quality, information quality and Internet interaction quality, logistics quality, product quality, and quality after-sale service significantly influence e-satisfaction and e-loyalty (Cha, 2006; \cite{8} \cite{27} \cite{28} \cite{36}). Switching cost has a mediating effect when satisfied and perceived values are above average \cite{33} \cite{34}. Risk perception may influence a tourist’s desire to download an app (Li et al., 2015). Website and Internet security, privacy, perceived security, financial security, and security control also significantly influence satisfaction-trust, and e-loyalty \cite{4} \cite{5} \cite{16} \cite{18} \cite{25} \cite{27} \cite{28}. Service quality, usefulness, easy-to-use, switching cost, and security influence researchers. Other influential variables include service failure remedy, operational easy-to-use, personalized service, privacy protection, online interaction quality, website reputation, relationship value internet technology, customer perceived value, customer service, substitute competitiveness, website content, brand image, product price, shopping procedures, group-purchasing, website design, diversity of product and service, marketing experience, special privileged interest, trust interest, and social interest.

Most scholars believe that loyalty is significantly correlated with satisfaction and trust. Loyalty sequence can be cognitive, affective, and conative \cite{11}. Service quality exerts influence on e-loyalty via e-satisfaction. E-satisfaction and e-trust influence e-loyalty via Word of Mouth \cite{14}. Perceived usefulness positively influences e-trust by enhancing e-loyalty. E-satisfaction influences e-trust \cite{16}. Consumer-level factors, convenience motivation, purchase size, company business-level trust, and perceived value accentuate the impact of e-satisfaction and e-loyalty \cite{1}. A system of loyalty indicators has been devised for a quantitative study \cite{37}. It has been confirmed that online satisfaction significantly influences online trust. Both exert a significant positive influence on online loyalty \cite{12}. Mediated effect has been confirmed to influence satisfaction related to customer loyalty \cite{6}. Trust is a fundamental factor for loyalty \cite{9}; satisfaction and switching cost are main influencing factors for loyalty \cite{18}.

The relationships between e-satisfaction, e-trust, and e-loyalty have been studied. E-satisfaction and e-trust exert significant influence on e-loyalty. Website design, security and privacy, and e-trust have a significant positive influence on e-satisfaction \cite{16}. E-trust exerts significant direct influence on e-loyalty, easy-to-use, and responsiveness. Customization indirectly influences e-loyalty via e-satisfaction. Quality significantly exerts e-loyalty via e-trust \cite{26}. Perceived usefulness positively influences e-trust and enhances e-loyalty. E-satisfaction partly influences e-trust \cite{16}. Consumer-level factors, convenience motivation, purchase size, company business-level trust, and perceived value accentuate the impact of e-satisfaction and e-loyalty \cite{1}. Perceived company reputation and willingness to customize products and services can significantly affect initial trust \cite{18}. E-trust exerts significant influence on e-loyalty and service quality \cite{26}. Website design influences e-loyalty via satisfaction and e-trust \cite{7}. Easy-to-use, responsiveness, and customization indirectly influence e-loyalty via e-satisfaction \cite{26}. E-satisfaction exerts positive influence on e-loyalty via e-trust \cite{17}.

Perceived usefulness, perceived security, reputation perception, and customization mediate initial trust \cite{5}. Perceived Website usefulness, easy-to-use, and security control are significant antecedents of initial trust \cite{18}. Customer e-satisfaction positively influences customer e-loyalty directly. Technology acceptance factors positively influence customer e-satisfaction and e-loyalty directly. Specific hold-up costs positively influence customer e-loyalty directly. However, they cannot positively influence customer e-satisfaction directly \cite{22}.

The existing literature on relationships between trust, satisfaction, and loyalty of OTA is relatively rare. There is no current research on whether the existing literature is applicable to OTA in China. The mediating effect of OTA satisfaction on OTA trust and loyalty has not been found. In the existing research on structural equations, the standard of chi-square test does not accord with the ideal standard. Many suitable model indexes do not report the characteristics of the analysis of samples. This makes it impossible to carry out a hypothesis test and confidence interval or a comparison of the level of significance. The bootstrapping method can solve these problems \cite{2}.

In this article, all items related to the similar construct are included in an easy-to-use construct. The authors incorporate the easy-to-use construct, service quality construct, risk construct, switching cost construct, e-satisfaction construct, e-trust construct, and e-loyalty construct into a structural equation
model to verify the intermediary effect of satisfaction and trust on loyalty of OTA in China. This effectively improves customer loyalty and long-term customer retention for OTA.

2. Hypotheses

Based on the literature review, it has been hypothesized that:

H1: Easy-to-use significantly exerts positive effects on OTA trust.
H2: Switching cost significantly exerts positive effects on OTA trust.
H3: Perceived risk significantly exerts negative effects on OTA trust.
H4: Service quality significantly exerts positive effects on OTA trust.
H5: Easy-to-use significantly exerts positive effects on OTA trust.
H6: Switching cost significantly exerts positive effects on OTA trust.
H7: Perceived risk significantly exerts negative effects on OTA trust.
H8: Service quality significantly exerts positive effects on OTA trust.
H9: Easy-to-use significantly exerts positive effects on OTA loyalty.
H10: Switching cost significantly exerts positive effects on OTA loyalty.
H11: Perceived risk significantly exerts positive effects on OTA loyalty.
H12: Service quality significantly exerts positive effects on OTA trust.
H13: Satisfaction significantly exerts positive effects on OTA trust.
H14: Trust significantly exerts positive effects on OTA loyalty.
H15: Satisfaction significantly exerts positive effects on OTA loyalty.

3. Research Model and Methodology

Based on the hypotheses, a research model has been constructed (Figure 1). After data collection, reliability and validity analysis are conducted. The SEM model has been constructed and processed using the Bollen-Stine bootstrapping method to meet the data normal distribution requirement.

4. Questionnaire Development and Data Collection

The research model includes seven constructs based on questions from literature (Table 1). Part 1 of the questionnaire consists of 38 questions for seven constructs: (1) easy-to-use; (2) service quality; (3) perceived risk; (4) switching cost; (5) satisfaction; (6) trust; and (7) loyalty for OTA. Constructs 1, 2, 3, 4, and 5 stand respectively for strongly disagree, disagree, neutral, agree, and strongly agree. Part 2 of the questionnaire focuses on customer’s socio-demographic information.

Table 1. Items literature source.

| construct | items | Literature source |
|-----------|-------|-------------------|
| Ease to use (etu) | Qunar/ Ctrip net interface is friendly, the navigation is clear, the use is very convenient | [18] [10] [31] |
| | Qunar/ Ctrip’s web page operations (such as open, close, switch) are fast | [5] [19] |
| | I can easily and quickly find the information I want to query on Qunar / Ctrip. | |
| | The procedure for booking a tourist product on Qunar / Ctrip is very simple | |
| | Qunar/ Ctrip website system runs stably, the breakdown is few, the condition that the maintenance is updated rarely appears | |
| | The range of tourism products provided is rich for Qunar/ Ctrip | |
| | The reservation information provided is comprehensive for Qunar/ Ctrip | |
Timely updating of information provided by Qunar/ Ctrip
Qunar/ Ctrip meets the demand of personalized reservation
Qunar/ Ctrip provides a variety of payment methods
Qunar/ Ctrip can offer products of the same quality as competitors at lower prices
Qunar/ Ctrip can offer products of higher quality as competitors at same prices
The customer service hotline of net is unblocked for Qunar/ Ctrip
Confirm order speed is fast for Qunar/ Ctrip
Staff have good attitude and ability to solve problems for Qunar/ Ctrip
Qunar/ Ctrip can push products that I might be interested in by SMS, email, WeChat Public number, etc.
It’s convenient and effective to make my trip convenient and efficient by using the Qunar / Ctrip
I’m worried about the disclosure of personal information during the use of Qunar / Ctrip App
I fear that the use of Qunar/ Ctrip will endanger my payment account security
I am concerned that travel products or services, such as airline tickets, hotel prices, travel routes, facilities near scenic spots, are not in line with the actual situation, and that there is false information
The buying experience on Qunar/ Ctrip website is pleasant
The products and services Qunar/ Ctrip provided are fully in line with my expectations
My interaction with the Qunar/Ctrip information search process was satisfactory
My past dealings with Qunar/ Ctrip have been in line with my expectations
The information on Qunar / Ctrip is real
Qunar / Ctrip doesn't do anything to mislead customers
Qunar / Ctrip is completely trustworthy
Qunar / Ctrip can deliver on its assurance of quality of products and services
I am very familiar with the process of using Qunar / Ctrip
No longer using the Qunar/ Ctrip net will cost me account points and other benefits. I need to spend some time and effort to assess whether a site that provides a similar service is suitable for me. It takes me a while to compare the advantages and disadvantages of a new contact similar site with Qunar / Ctrip. When I make a reservation, I think first Qunar/Ctrip. I will continue to use Qunar/Ctrip in the future. I will recommend Qunar/Ctrip to my friends.

Loyalty (ly)
I am willing to make suggestions to Qunar/Ctrip.
I will tell others the right information about Qunar/Ctrip. After buying, I am very willingly to give online review to advise others buying this product.

The online questionnaire was answered by Ctrip and Qunar customers. It required participants to complete all questions prior to submission. Data was collected April 9-15, 2018 (for 222 Qunar customers) and June 15-July 1 (for 161 Ctrip customers). The data was processed for descriptive and reliability analyses.

5. Data Processing

| Table 2. Descriptive statistics=383). |
|-------------------------------------|
| sex       | frequency | %    | education | frequency | %    |
| male      | 119       | 31.1 | Senior secondary and below | 21       | 5.5  |
| female    | 264       | 68.9 | junior college          | 56       | 14.6 |
| age under18 | 12       | 3.1  | bachelor             | 295      | 77.0 |
| 18~25     | 306       | 79.9 | Master and above       | 11       | 2.9  |
| 26~35     | 33        | 8.1  | Monthly income Under ¥2000 | 203      | 53.0 |
| 36~45     | 31        | 6.0  | 2001-4000             | 85       | 22.2 |
| 46~55     | 10        | 2.6  | 4001-6000             | 55       | 14.4 |
| Above 55  | 1         | 0.3  | 6001-8000             | 17       | 4.4  |
| occupation |           |      |                       |          |      |
| student   | 249       | 65.0 | Above 8000            | 23       | 6.0  |
| employee  | 74        | 19.3 | Annual times ordering OTA products | 0–1 | 185 | 48.3 |
| Individual and freelancer | 37 | 9.7 | 2–3 | 139 | 36.3 |
| Party and government organs and institutions | 13 | 3.4 | 4–6 | 38 | 9.9 |
| House wife | 3         | 0.8  |                       |          |      |
| other     | 7         | 1.8  | Above 7               | 21       | 5.5  |

Of 383 samples collected, 31.1% were male and 68.9% were female. Participants under the age of 25 equal to 83.0%. Those holding bachelor’s degrees or above was 79.9%. In terms of occupation,
students accounted for 65% followed by enterprise employees. Customers of OTA with annual number of times ordering OTA products less than two accounted for 48.3%, two to three times accounted for 36.3%. Participants with a monthly income below 6,000 accounted for 94% (Table 2). Reliability measures the consistency of results. In this study, the reliability of each variable was analyzed by SPSS 22.0; the internal consistency of the scale was tested by Cronbach’s Alpha values (Table 3). The reliability of the questionnaire is 0.971, which indicates that the reliability of the questionnaire is satisfactory.

Table 3. Questionnaire item reliability (N=383).

| Construct               | Items                                                                 | Corrected Item-Total Correlation | Cronbach’s Alpha if Item Deleted | Construct reliability |
|-------------------------|-----------------------------------------------------------------------|----------------------------------|---------------------------------|-----------------------|
| Easy to use (ETU)       | Qunar/ Ctrip net interface is friendly, the navigation is clear, the use is very convenient | .732                             | .928                            |                       |
|                        | Qunar/ Ctrip’s web page operations (such as open, close, switch) are fast | .786                             | .925                            |                       |
|                        | I can easily and quickly find the information I want to query on Qunar / Ctrip. | .768                             | .926                            |                       |
|                        | The procedure for booking a tourist product on Qunar / Ctrip is very simple | .695                             | .930                            | 0.934                 |
|                        | Qunar/ Ctrip website system runs stably, the breakdown is few, the condition that the maintenance is updated rarely appears | .697                             | .929                            |                       |
|                        | The range of tourism products provided is rich for Qunar/ Ctrip          | .749                             | .927                            |                       |
|                        | The reservation information provided is comprehensive for Qunar/ Ctrip   | .713                             | .929                            |                       |
|                        | Timely updating of information provided by Qunar/ Ctrip                 | .771                             | .926                            |                       |
|                        | Qunar/ Ctrip meets the demand of personalized reservation               | .754                             | .927                            |                       |
|                        | Qunar/ Ctrip provides a variety of payment methods                      | .719                             | .928                            |                       |
| Service quality (SQ)    | Qunar/ Ctrip can offer products of the same quality as competitors at lower prices | .703                             | .909                            |                       |
|                        | Qunar/ Ctrip can offer products of higher quality as competitors at same prices | .733                             | .906                            |                       |
|                        | The customer service hotline of net is unblocked for Qunar/ Ctrip      | .793                             | .899                            | 0.917                 |
|                        | Confirm order speed is fast for Qunar/ Ctrip                           | .748                             | .904                            |                       |
|                        | Staff have good attitude and ability to solve problems for Qunar/ Ctrip | .787                             | .900                            |                       |
|                        | Qunar/ Ctrip can push products that I might be interested in by SMS, email, WeChat Public number, etc. | .738                             | .905                            |                       |
|                        | It’s convenient and effective to make my                               | .714                             | .908                            |                       |
| Risk (r)                                                                 | 0.902 |
|------------------------------------------------------------------------|-------|
| I'm worried about the disclosure of personal information during the use of Qunar / Ctrip App | 0.834 |
| I fear that the use of Qunar/ Ctrip will endanger my payment account security | 0.796 |
| I am concerned that travel products or services, such as airline tickets, hotel prices, travel routes, facilities near scenic spots, are not in line with the actual situation, and that there is false information | 0.786 |
| Satisfaction (sat)                                                      | 0.897 |
| The buying experience on Qunar/ Ctrip website is pleasant              | 0.763 |
| The products and services Qunar/ Ctrip provided are fully in line with my expectations | 0.771 |
| My interaction with the Qunar/Ctrip information search process was satisfactory | 0.789 |
| My past dealings with Qunar/ Ctrip have been in line with my expectations | 0.719 |
| Trust (trst)                                                           | 0.898 |
| The information on Qunar / Ctrip is real                                | 0.801 |
| Qunar / Ctrip doesn't do anything to mislead customers                  | 0.788 |
| Qunar / Ctrip is completely trustworthy                                 | 0.785 |
| Qunar / Ctrip can deliver on its assurance of quality of products and services | 0.719 |
| Switching cost (SC)                                                     | 0.830 |
| I am very familiar with the process of using Qunar / Ctrip              | 0.639 |
| No longer using the Qunar/ Ctrip net will cost me account points and other benefits | 0.610 |
| I need to spend some time and effort to assess whether a site that provides a similar service is suitable for me | 0.724 |
| It takes me a while to compare the advantages and disadvantages of a new contact similar site with Qunar / Ctrip | 0.666 |
| Loyalty (ly)                                                           | 0.924 |
| When I make a reservation, I think first Qunar/Ctrip                   | 0.744 |
| I will continue to use Qunar/Ctrip in the future                       | 0.805 |
| I will recommend Qunar/Ctrip to my friends                              | 0.839 |
| I am willing to make suggestions to Qunar/Ctrip                        | 0.799 |
| I will tell others the right information about Qunar/Ctrip              | 0.823 |
After buying, I am very willingly to give online review to advise others buying this product.

It can be seen from Table 3 that the values of Cronbach’s α if item deleted are less than the value of overall questionnaire reliability (0.971), and values of construct reliability by SPSS are much above 0.7, which verifies good internal consistency, stable design of the questionnaire and reasonable selected variables and constructs.

By using simple arithmetic average, the authors calculated the value of each construct. They considered the satisfaction value as a dependent variable. Easy-to-use, perceived risk, switching cost, and quality of service were viewed as independent variables. These were used to calculate the Mahalanobis distance and Cook distance. According to the significant level of the five factors (99.99%), 10 abnormal cases were excluded. A normal distribution of data was realized.

**Table 4.** Reliability and validity (N=373).

| constructs       | Observed variables | Parameter significance | Individual item reliability | Composite reliability | convergence validity |
|------------------|--------------------|------------------------|-----------------------------|-----------------------|----------------------|
|                 |                    | estimate              | S.E. | C.R. | P   | std  | SMC  | CR  | AVE |
| Tangible        | SQ1                | 1                      |      |      |     | 0.725 | 0.526 | 0.931 | 0.576 |
| Easy to use     | etu1               |                        |      |      |     |       |      |      |      |
| (ETU)           | etu2               | 0.984                  | 0.066| 14.892 | *** | 0.773 | 0.598 |      |      |
|                 | etu3               | 0.996                  | 0.066| 14.993 | *** | 0.778 | 0.605 |      |      |
|                 | etu4               | 0.945                  | 0.069| 13.662 | *** | 0.712 | 0.507 |      |      |
|                 | etu5               | 0.958                  | 0.071| 13.5  | *** | 0.704 | 0.496 |      |      |
|                 | etu1               | 1.038                  | 0.068| 15.213 | *** | 0.789 | 0.623 |      |      |
|                 | etu2               | 0.999                  | 0.07  | 14.307 | *** | 0.744 | 0.554 |      |      |
|                 | etu3               | 1.02                   | 0.065| 15.692 | *** | 0.813 | 0.661 |      |      |
|                 | etu4               | 1.007                  | 0.067| 15.002 | *** | 0.779 | 0.607 |      |      |
|                 | etu5               | 1.027                  | 0.07 | 14.693 | *** | 0.763 | 0.582 |      |      |
| Service quality | SQ1                | 1                      |      |      |     | 0.733 | 0.537 | 0.913 | 0.601 |
| (SQ)            | SQ3                | 1.066                  | 0.067| 15.878 | *** | 0.812 | 0.659 |      |      |
|                 | SQ5                | 0.993                  | 0.063| 15.819 | *** | 0.809 | 0.654 |      |      |
|                 | SQ4                | 0.971                  | 0.064| 15.12 | *** | 0.776 | 0.602 |      |      |
|                 | SQ6                | 1.023                  | 0.07 | 14.61 | *** | 0.752 | 0.566 |      |      |
|                 | SQ2                | 0.972                  | 0.064| 15.119 | *** | 0.776 | 0.602 |      |      |
|                 | SQ7                | 0.973                  | 0.065| 14.893 | *** | 0.765 | 0.585 |      |      |
| Switching cost  | SC2                | 1                      |      |      |     | 0.849 | 0.720801 | 0.85037 | 0.739721 |
| (SC)            | SC1                | 1.02                   | 0.058| 17.68 | *** | 0.871 | 0.758641 |      |      |
| Risk (r)        | r3                 | 1                      |      |      |     | 0.842 | 0.709  | 0.896 | 0.742 |
|                 | r2                 | 1.015                  | 0.053| 19.183 | *** | 0.838 | 0.702  |      |      |
|                 | r1                 | 1.057                  | 0.051| 20.649 | *** | 0.902 | 0.814  |      |      |
| trust           | trust1             | 1                      |      |      |     | 0.783 | 0.613  | 0.897 | 0.685 |
|                 | trust2             | 1.106                  | 0.063| 17.541 | *** | 0.832 | 0.692  |      |      |
|                 | trust3             | 1.19                   | 0.068| 17.62 | *** | 0.835 | 0.697  |      |      |
|                 | trust4             | 1.127                  | 0.062| 18.242 | *** | 0.858 | 0.736  |      |      |
| satisfaction    | sat4               | 1                      |      |      |     | 0.787 | 0.619  | 0.889 | 0.666 |
| (sat)           | sat3               | 1.11                   | 0.061| 18.155 | *** | 0.838 | 0.702  |      |      |
|                 | sat2               | 1.014                  | 0.057| 17.739 | *** | 0.823 | 0.677  |      |      |
|                 | sat1               | 1.02                   | 0.058| 17.562 | *** | 0.817 | 0.667  |      |      |
| Loyalty (ly)    | ly1                | 1                      |      |      |     | 0.796 | 0.634  | 0.925 | 0.673 |
|                 | ly2                | 1.006                  | 0.054| 18.664 | *** | 0.843 | 0.711  |      |      |
|                 | ly3                | 1.107                  | 0.055| 19.982 | *** | 0.885 | 0.783  |      |      |
Table 5. Discriminant validity (N=373).

|        | AVE | Risk | SC  | SQ  | ETU | stf | trst | loy |
|--------|-----|------|-----|-----|-----|-----|------|-----|
| Risk   | 0.742 | 0.861 |
| SC (switching cost) | 0.740 | 0.496 | **0.860** |
| SQ (service quality) | 0.601 | 0.374 | 0.716 | **0.775** |
| ETU (easy to use) | 0.576 | 0.449 | 0.712 | 0.904 | **0.759** |
| Sat(satisfaction) | 0.666 | 0.376 | 0.723 | 0.927 | 0.889 | **0.816** |
| trust  | 0.685 | 0.261 | 0.648 | 0.820 | 0.738 | 0.857 | **0.828** |
| Ly(loyalty) | 0.673 | 0.327 | 0.653 | 0.789 | 0.711 | 0.804 | 0.800 | **0.820** |

Diagonal bold words are the square root value of AVE, and the lower triangle is the Pearson correlation coefficient between constructs.

6. Discussion

The factor loading of switching cost was less than 0.7. Therefore, the authors deleted switching cost three and calculated the research model according to the bootstrapping method [2]. Each index met the requirements and explained that the structural equation was reasonable (Tables 4, 5, and 6). The results of the calculation are shown in Figure 2 and Table 7.

Research hypotheses have been partially validated (see Table 8). OTA satisfaction significantly affects OTA trust. OTA trust significantly affects OTA loyalty, which is consistent with the findings of most online travel business studies [8][9][12][30]. OTA satisfaction did not significantly affect OTA loyalty. Although it did not directly mediate OTA loyalty, it indirectly influenced OTA loyalty via the intermediary effect of OTA trust. This is inconsistent with most studies (Chen et al., 2015; [5][8][12][16][26][28][30] Zhan, 2012). This phenomenon may be caused by the characteristics of the current OTA market in China. Another cause may be the sample, which would require additional study. In this study, the service quality exerted the largest impact on OTA satisfaction and loyalty. This is consistent with the conclusion of most researchers on online commerce [7][22]. This study finds that switching costs had a minor significant impact on OTA satisfaction. It indirectly affected OTA loyalty through the intermediary role of OTA satisfaction and OTA trust. This is not completely consistent with the characteristics of existing online commerce [28]. This study finds that risk has a significant impact on OTA trust. Yet it has no direct effect on OTA satisfaction and loyalty. Through the intermediary role of OTA trust, it has an indirect and significant effect on OTA loyalty. Switching cost has an indirect effect on OTA loyalty through an OTA trust factor. This differs from existing research conclusions [8][28].

Table 6. Model fit of research model (N=373).

|                      | smaller is better | 952.732 |
|----------------------|-------------------|---------|
| Bollen-Stine $\chi^2$| bigger is better | 573     |
| DF (Degree of Freedom) | 1<$\chi^2$/DF<3 | 1.663   |
| Normed Chi-sqr ($\chi^2$/DF) | >0.9 | 0.917   |
| GFI                  | >0.9             | 0.900   |
| AGFI                 | <0.08            | 0.042   |
| RMSEFA               | <0.08            | 0.042   |
| SRMR                 |                  |         |
TLI (NNFI) >0.9 0.961  
CFI >0.9 0.965  
IFI >0.9 0.965  
Hoelter's N (CN) >200 224.788

| dependent | independent | Unstd. | S.E. | C.R. | P     | Std. Regression weight |
|-----------|-------------|--------|------|------|-------|------------------------|
| satisfaction | ETU | 0.257   | 0.094| 2.748| 0.006 | 0.259 |
|           | SC    | 0.091   | 0.048| 1.869| **0.062** | 0.099 |
|           | Risk  | -0.02   | 0.029| -0.712| 0.477 | -0.026 |
|           | SQ    | 0.604   | 0.098| 6.195| *** | **0.632** |
|           | ETU   | -0.214  | 0.121| -1.77| **0.077** | -0.211 |
|           | SC    | 0.092   | 0.062| 1.476| 0.14  | 0.098 |
| trust     | Risk  | -0.061  | 0.036| -1.688| **0.091** | -0.077 |
|           | SQ    | 0.276   | 0.158| 1.745| **0.081** | 0.282 |
|           | stf   | 0.758   | 0.167| 4.535| *** | **0.741** |
|           | trst  | 0.443   | 0.107| 4.131| *** | **0.376** |
|           | stf   | 0.313   | 0.208| 1.504| 0.133 | 0.259 |
| loyalty   | ETU   | -0.163  | 0.139| -1.172| 0.241 | -0.136 |
|           | SC    | 0.114   | 0.07 | 1.619| 0.106 | 0.103 |
|           | Risk  | 0.037   | 0.041| 0.895| 0.371 | 0.039 |
|           | SQ    | 0.318   | 0.177| 1.799| **0.072** | **0.276** |

*: 0.1 **: 0.05: ***: 0.01

**Table 7.** Regression weight for independents on dependents (N=373).

**Figure 1.** Research SEM model with coefficients.
Table 8. Hypotheses testing results.

| Hypotheses | Result |
|------------|--------|
| H1: Ease of use significantly exerts positive effects on OTA trust | support* |
| H2: Switching cost significantly exerts positive effects on OTA trust | reject |
| H3: Perceived risk significantly exerts negative effects on OTA trust | support* |
| H4: Service quality significantly exerts positive effects on OTA trust | support* |
| H5: Ease of use significantly exerts positive effects on OTA trust | support*** |
| H6: Switching cost significantly exerts positive effects on OTA trust | support* |
| H7: Perceived risk significantly exerts negative effects on OTA trust | reject |
| H8: Service quality significantly exerts positive effects on OTA trust | support*** |
| H9: Ease of use significantly exerts positive effects on OTA loyalty | reject |
| H10: Switching cost significantly exerts positive effects on OTA loyalty | reject |
| H11: Perceived risk significantly exerts positive effects on OTA loyalty | reject |
| H12: Service quality significantly exerts positive effects on OTA trust | support* |
| H13: Satisfaction significantly exerts positive effects on OTA trust | support*** |
| H14: Trust significantly exerts positive effects on OTA loyalty | support*** |
| H15: Satisfaction significantly exerts positive effects on OTA loyalty. | reject |

*: 0.1 **: 0.05: ***: 0.01

7. Conclusion
The authors developed a questionnaire and processed data to investigate factors influencing OTA satisfaction, trust, loyalty, and their interactional relationship. The research findings show that:

- The easy-to-use factor service quality (level 0.001) and switching cost (level 0.1) have significant direct effects on OTA service satisfaction factor. Service quality factor exerts the most powerful influence (0.632), the easy-to-use factor exerts the second (0.259), and the switching cost factor exerts the minimum but positive influence (0.99).
- The factors of easy-to-use, quality of service, and risk factors had significant direct influence on trust of OTAs (level 0.1). The influence of quality of service (0.282), risk factors (-0.077), and easy-to-use factors (-0.211) were significantly negative. The negative impact of easy-to-use is greater in absolute value.
- The service quality factor had a significant direct influence (0.276) on OTA loyalty (level 0.1). The other independent constructs do not have a significant influence on OTA loyalty. 
- OTA trust factor has a significant direct impact (level 0.376) on OTA loyalty (levels 0.001). The satisfaction factor has no significant impact on loyalty.

Considering both direct and indirect effects, the effects of easy-to-use factors on OTA loyalty factors are as follows:

\[-0.211\times0.376+0.259\times0.741\times0.376=-0.020\]

The comprehensive effect of switching cost factors on OTA loyalty is:

\[0.099\times0.736\times0.376=0.027\]

The combined effect of risk on OTA loyalty is:

\[-0.077\times0.376=-0.029\]

The comprehensive effect of service quality factor on OTA loyalty factor is:

\[0.276+0.282\times0.376+0.632\times0.736\times0.376=0.847\]

The influence of OTA satisfaction factor on loyalty factor via mediating effect of OTA trust is:

\[0.736\times0.376 = 0.277\]

The influence of OTA service quality on service satisfaction, trust factor, and loyalty are the largest among the four independent constructs. The satisfaction factor and trust factor have a significant mediating effect on the effect of service quality on loyalty. The comprehensive influence of OTA service quality factor on OTA loyalty is 0.847, which is the largest in value.

OTA risk factor has no direct influence on the satisfaction factor. OTA risk factor has a significant
negative impact on the loyalty factor. Although its influence is very small, it affects loyalty through the intermediary of trust factor.

The switching cost factor has no significant direct effect on the OTA trust factor. It affects the trust factor and loyalty factor by mediating the OTA satisfaction factor.

The easy-to-use factor had a significant negative effect on the trust factor (-0.211), a significant positive impact on the satisfaction factor (0.259), and no direct significant effect on the loyalty factor. Overall, the significant effect was -0.020, which indicates that it was a competitive factor.

Among the factors, service quality is the most important factor. Therefore, ensuring service quality is the main initiative in the management of an OTA enterprise.

The influence of OTA satisfaction on loyalty is not significant. The comprehensive influence of the OTA trust factor on loyalty is greater than that of OTA satisfaction. This shows that the sample groups pay more attention to trust regarding OTA enterprises. This is consistent with the current situation of OTA management in China.

Easy-to-use factors and switching costs have little impact on OTA loyalty. Therefore, they should be competitive factors. OTA enterprises should maintain an industry level with their competitors.

Of all the factors affecting trust, easy-to-use (-0.21), risk perception (-0.08), and quality of service (0.28) had significant and direct impacts. Easy-to-use (0.259), switching cost (0.099), and quality of service (0.632) had an indirect impact on trust through satisfactory intermediation. The combined effects of easy-to-use, switching cost, risk factor, and quality of service on OTA trust are -0.020/0.027/-0.029/0.847, respectively.

The research proposed and tested a framework for OTA satisfaction, trust, and loyalty. It confirmed that OTA trust plays a pivotal mediating effect on OTA loyalty. OTA satisfaction exerts an indirect mediating effect on OTA loyalty, easy-to-use, service quality, and switching cost. Risk exerts both directly and indirectly significantly influences OTA loyalty. Service quality is the most powerful factor affecting OTA loyalty. The research conclusion enriched the current e-commerce study in tourism, especially for OTA research.

Based on the conclusion of the research, there are some suggestions on how to improve the customer loyalty of online travel Websites.

a. **High-quality Tourism Products and Product Supervision:** This will ensure that consumers’ travel is consistent with the description of the ordered products. Other suggestions include service consciousness, improved service levels, and attention to after-sales services in tourism.

b. **Strengthened Website Security and Protection of Client Information**

Improved Website authenticity leads to trust. The comprehensive influence of service quality on trust is the most important factor. It is necessary to maintain the construction level of a user-friendly, low-risk site.

c. **Interactive Communication:**

To keep consumers, a network evaluation and interactive community must be built. This should integrate preferential/VIP treatment and other activities to encourage purchases. User habits can be analyzed to understand user paths and product design. These improvements will create a unique cultural connotation, brand, and standard.

8. **Limitations and Research Prospects**

This study only considers Ctrip and Qunar. The research conclusion can be extrapolated to other online tourism Websites. However, additional research is required for verification. The questionnaire is based on previous research and combined with the characteristics of the online tourism industry. Yet there may be other factors to consider.

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