Halo Effects in Quality-Satisfaction-Loyalty Chain

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Abstract: Quality-satisfaction-loyalty chain is one of the most important research paradigms in marketing. The empirical evidences are abundant and well-supported. However, the possible contaminations of halo effects are usually neglected. This article attempts to provide some initial evidences about the importance of these effects. Using a sample of car owners, our analytic results suggest that taking an unobserved or observed halo into consideration may change research results dramatically. Implications of these findings in theoretical development and empirical practice are discussed.

Keywords: Quality, Satisfaction, Loyalty, Halo

1. Research Background

Cardozo (1965) put customer satisfaction into the spotlight of academic research. This seminal work suggested that customer satisfaction is an important antecedent of repeat purchase and positive word-of-mouth. Basing on Cardozo (1965) and other literature, many research paradigms have been developed and tested. One of the most well-established paradigms is the quality-satisfaction-loyalty chain. This research framework suggests that the quality of product or service is an important antecedent and customer loyalty is an important consequence of customer satisfaction.

The quality-satisfaction-loyalty chain is well-established in academic research. Actually, Anderson and Fornell (1994) suggest that quality-satisfaction-loyalty chain is the most popular research paradigm in marketing. In their meta-analysis, Szymanski and Henard (2001) provide solid evidences about the causal direction of quality-satisfaction-loyalty chain. Although they do not use the terms of quality and loyalty in research framework, their results do suggest that the performance dimension of perceived quality is an important antecedent of customer satisfaction and repurchase and word-of-mouth dimensions of customer loyalty are important consequences of customer satisfaction.

However, some theoretical and empirical controversies remain unsettled. Theoretically, Bitner (1990) argue that quality is more important than satisfaction in the formation of loyalty. The reasons behind this argument are simple. Satisfaction is possibly fluctuated in response to various events in transactional process. In contrast, quality is relatively stable and consistent in cognitive state. The experiment results of Bitner (1990) support this argument and suggest that the satisfaction-quality-loyalty chain is more appropriate.

Empirically, researchers generally use some forms of self-reported measures to test the
quality-satisfaction-loyalty chain. These self-reported measures are notorious for the possible contamination of various common method biases (Podsakoff, MacKenzie, Lee, and Podsakoff, 2003). Researchers in marketing usually ignore the possible consequences of this possible contamination. The empirical works of quality-satisfaction-loyalty chain are not immune from this possible bias.

In this article, we provide some initial evidences for the resolution of previous two unsettled issues. First, we develop an alternative model to suggest that the self-reported measures of quality, satisfaction, and loyalty are contaminated by an attitudinal halo. The theoretical basis of this alternative model is the tripartite model of attitudes (Insko and Schopler, 1967; Bagozzi, Tybout, Craig and Sternthal, 1979). In this model, the constructs of quality, satisfaction, and loyalty are analogous to the cognitive, affective, and behavioral component of attitudes respectively.

In classic model of measurement, the variance of each construct is decomposed into trait variance and random error. The statistical relationships between quality, satisfaction, and loyalty are dependent on the relative level of two bivariate correlations (e.g. quality vs. loyalty and satisfaction vs. loyalty). Therefore, for an ordinary survey in which the cognitive-affective-cognitive framework (Gotlieb, Grewal, & Brown, 1994; Oliver, 1997) works well, the quality-satisfaction-loyalty chain is usually supported in statistical analyses. However, when the affective involvement is low, such as the experiment of Bitner (1990), the cognitive component is possibly dominant in the formation of loyalty and the satisfaction-quality-loyalty chain is possibly supported in statistical analyses.

In our proposed model, the variance of each construct is decomposed into trait variance, method (halo) variance, and random error. The statistical relationships between quality, satisfaction, and loyalty are more complicated. Besides the cognitive and affective involvement, respondents’ product involvement, product knowledge or expertise may also interplay in the loyalty formation process.

This article is exploratory in nature. We do not intend to construct a full model to include various factors in the formation of loyalty. Instead, we simply provide evidences to suggest that the attitudinal halo is important in the surveys of the relationships between perceived quality, customer satisfaction, and customer loyalty.

2. Research Design

We conduct a competing models analysis in this study. The base model is the well-established quality-satisfaction-loyalty chain and the alternative model is the attitudinal halo model. Figure 1 provides the frameworks of these models.

Theoretically, the halo effect is exercised at the item level, not at the construct level. Therefore, we extract the possible halo from various items of quality, satisfaction, and loyalty constructs directly. This analysis procedure is comparable to “a classic model plus a Harmon one-factor test”. Meanwhile, we use both measured and unmeasured halo in our statistical analysis (Podsakoff, MacKenzie, Lee, and Podsakoff, 2003). The measured halo is approximated by the construct of brand image for its similarity with the general attitude toward a brand.

A convenience sample of 250 car owners is acquired. 54% of our respondents are female.
Their average age is 37. 55% of them have a driving experience more than 10 years. Respondents are requested to provide the perceived brand image, perceived quality, satisfaction, and loyalty intention of their cars. The scales of these constructs are basically borrowed from existing literature, such as Oliver (1980), Dodds, Monroe and Grewal (1991) and Zeithaml, Berry and Parasuraman (1996).

Table 1 provides the results of confirmatory analysis of these scales. The 13 values of standardized loading are all significant and higher than 0.7. The 4 values of variance extracted are all higher than 0.6. The 4 values of composite reliability are all higher than 0.8. Although the value of $\chi^2$ is significant, other fitness indexes suggest that the measurement model is acceptable. Therefore, we do not make any adjustment and use the original data in further analyses.

### 1. Base Model

![Diagram: Base Model](image)

### 2. Alternative Model

![Diagram: Alternative Model](image)

### Table 1 Analysis of Measurement Model

<table>
<thead>
<tr>
<th></th>
<th>Standardized Loading*</th>
<th>Variance Extracted</th>
<th>Composite Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image</td>
<td>.831~.929</td>
<td>.750</td>
<td>.926</td>
</tr>
<tr>
<td>Quality</td>
<td>.710~.837</td>
<td>.629</td>
<td>.835</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>.819~.930</td>
<td>.790</td>
<td>.919</td>
</tr>
<tr>
<td>Loyalty</td>
<td>.766~.890</td>
<td>.663</td>
<td>.855</td>
</tr>
</tbody>
</table>

Fitness Index:

$\chi^2=155.2$, df=59, $p=.000$, $\chi^2/df=2.63$, GFI=.912, CFI=.960, RMR=.037

* Significant at .001.
3. Comparative Analyses

We conduct three structural equation analyses to compare the relative fitness of the base model and two alternative models. Figure 2 provides a summary of the results of the base model. In terms of the path coefficients and various fitness indexes, these data suggest that the base model or the quality-satisfaction-loyalty chain is supported.

![Figure 2 Summary of Base Model](image)

**Fitness Index:**
\[ \chi^2=59.0, \text{df}=25, p=.000, \chi^2/\text{df}=2.36, \text{GFI}=.949, \text{CFI}=.976, \text{RMR}=.029 \]

**Fig. 2 Summary of Base Model**

![Figure 3 Summary of Unmeasured Halo Model](image)

**Fitness Index:**
\[ \chi^2=24.4, \text{df}=16, p=.081, \chi^2/\text{df}=1.53, \text{GFI}=.979, \text{CFI}=.994, \text{RMR}=.019 \]

**Fig. 3 Summary of Unmeasured Halo Model**
Figure 3 provides a summary of the results of the unmeasured halo model. In terms of chi-square difference test, these data suggest that the unmeasured halo model is superior to the base model (Δχ²=34.6, Δdf=9, p<.005). Other fitness indexes in figure 2 and 3 suggest the same conclusion. However, in terms of the path coefficients and standardized loadings, this conclusion is not a valid one. The path coefficients and standardized loadings of quality, satisfaction, and loyalty in figure 3 are generally lower than their counterparts in figure 2. However, these deflation effects are small and not enough to disapprove the validity of the quality-satisfaction-loyalty chain. Also, the 9 standardized loadings of unmeasured halo are all positive but insignificant. The significant improvements of model fitness with 9 insignificant standardized loadings represent a theoretical paradox.

An initial inspection of various results of the unmeasured halo model, the paradox is raised as the consequences of inflated standard error of factor loadings. To provide a further investigation of this paradox, we conduct (1) an exploratory factor analysis to extract the first unrotated factor; (2) a simple regression to partial out the first unrotated factor from the 9 items; (3) another exploratory factor analysis to extract the underlined factors among the 9 halo-removed, standardized residuals. Table 2 provides a summary of the results in the third step. These data suggest that the factor structure of 9 residuals is complex and the correlations between the underlined factors are low. These data are possibly enough to disapprove the validity of the quality-satisfaction-loyalty chain.

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Correlations</th>
</tr>
</thead>
</table>
| Q1    | -.756    | -        | -        | Factor 1 vs. 2:  
|       | -        |          |          | -.017 (.792)  |
| Q2    | -.702    | -        | .349     | Factor 1 vs. 3:  
|       | -        |          |          | -.018 (.777)  |
| Q3    | -.511    | .375     | -        | Factor 2 vs. 3:  
|       | .532     | .534     | -        | .242 (.000)    |
| S1    | .708     | -        | .437     |              |
| S2    | .685     | -        | -        |              |
| S3    | -        | .907     | -        |              |
| L1    | -        | -        | -.933    |              |
| L2    | -        | -        | -        |              |
| L3    | -        | -.592    | -.455    |              |

* Loadings lower than 0.3 are omitted.

Figure 4 provides a summary of the results of the measured halo model. We use the 4-item measure of brand image to approximate the attitudinal halo. In terms of chi-square difference test, these data suggest that the measured halo model is inferior to the base model (Δχ²=86.3, Δdf=29, p<.005). Other fitness indexes in figure 2 and 4 suggest the same conclusion.
The standardized loading of the 9 items on the measured halo represents another story. The 9 standardized loadings are all positive and significant while the factor structures of quality, satisfaction, and loyalty are remained acceptable. These results suggest that the measures of quality, satisfaction, and loyalty are contaminated by an attitudinal or brand image halo, although the net results of this halo is not enough to disapprove the validity of the quality-satisfaction-loyalty chain. Since the measures of quality, satisfaction, and loyalty measures can be decomposed into a trait variance and brand image halo effect is a valid procedure, one of our conclusions is that the trait variance and brand image halo effect are generally independent.

4. Conclusions

We conduct a competing models analysis to investigate to possible impact of measured and unmeasured halo on the research results of quality-satisfaction-loyalty chain. Our findings are exploratory and inconclusive. First, the analytical results of our base model indicate that the quality-satisfaction-loyalty chain is generally acceptable in statistical tests. Second, the analytical results of our measured halo model suggest that the measures of quality, satisfaction, and loyalty are contaminated by brand image halo and the trait variance and brand image halo effect are generally independent.
Finally, the analytical results of our unmeasured halo model suggest that more empirical research of the halo effect in quality-satisfaction-loyalty chain is needed. Our results in structural equation analysis represent a paradox – the unmeasured halo model with 9 insignificant standardized loadings is superior to the base model. A further analysis to partial out the unmeasured halo provides some evidences to disapprove the validity of quality-satisfaction-loyalty chain.

Researchers are usually proud of the theoretical and methodological rigor of academic studies. The current status of the research of quality-satisfaction-loyalty chain is close to this ideal. This article represent a plea to put the possible halo effect into the quality-satisfaction-loyalty chain and hope for an improvement on the truth finding process of academic community.

Reference


