

Does Customer Satisfaction Lead to Repurchase Behavior? An Analysis of User Reviews on an Accommodation Booking Website

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Abstract—The purpose of this study is to investigate the relationship between satisfaction and repurchase behavior by using reviews posted to Rakuten Travel, a major Japanese accommodation booking website. Although there are studies trying to investigate this relationship, most of them lack credibility because they use a subjective variable such as repurchase intention or loyalty instead of directly measuring customer repurchase behavior. The lack of evidence on the satisfaction-repurchase behavior motivated our study. Instead of taking a questionnaire method, we regarded the action of a customer reviewing the same accommodation more than once as a sign of their repurchase behavior. With the history of more than 4.6 million reviewers, we found that repurchase behavior tends to increase as customer satisfaction increases, but the relationship reaches a plateau after a certain point. Based on the facts, it is advised that satisfied customers should be the targets in terms of increasing repeat customers. It is also advised not to decrease (or retain) the satisfaction scores of customers who are only moderately satisfied.

Keywords—customer satisfaction, repurchase behavior, repeat reviewer, customer review

I. INTRODUCTION

A large portion of a firm's profitability is believed to be derived from customers who repurchase. Reichheld and Sasser (1990) mentioned that a 5% increase in customer retention is equivalent to boosting firms' profits by 25% to 85%. Increasing the number of repeat customers is also believed to be cost-effective. The cost a firm spends to retain an existing customer is estimated to be 1/2 to 1/20 of the cost of acquiring a new customer (e.g., Peppers & Rogers, 1993; Goodman, 1999; Shea *et al.*, 2024).

Many scholars have mentioned that customer satisfaction is the key to increasing repurchase behavior, but that customer satisfaction is not a substitute of repurchase behavior. According to Reichheld (1993), 65% to 85% of customers who left the business were "satisfied" or "very satisfied" with their previous business partners. Zemke and Connellan (2000) mentioned that 60% of customers who had rated the company as "satisfied" (4 on a 5-point scale) were in danger of defection. From these findings, it is naturally inferred that the relationship between customer satisfaction and repurchase behavior is not simple or linear. In other words, it is not enough to know if the relationship is positive. Rather, we should uncover the proper functional form of this

relationship to respond to various business needs.

II. THEORETICAL BACKGROUND

A. Studies Using Subjective Measures

Often, companies are more interested in observing customer behavior, rather than intentions, since it can be directly linked to revenues and profitability (Kumar, 2013). However, most studies do not directly measure repurchase behavior because of difficulties in obtaining long-term purchase records from a company. Instead, they used subjective variables such as *repurchase intention* or *loyalty* (Seiders, 2005). The results of these studies are mainly classified into four categories.

The first category assumes linearity between customer satisfaction and repurchase intention or loyalty. Most studies implicitly take this assumption and use correlation or regression analysis as an analytic technique. However, as we have mentioned before, the relationship is not likely to be linear.

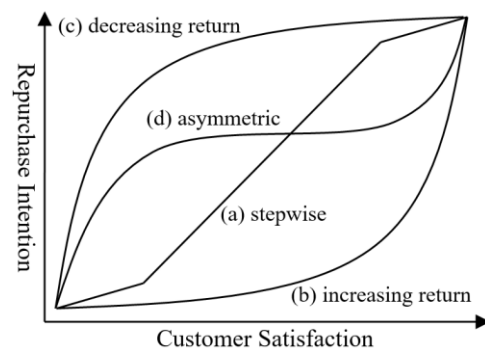


Fig. 1. Relations appeared in past studies (Source: author)

The second category assumes a stepwise relationship like curve (a) in Fig. 1. Ngobo (1999) placed (1) a linear model, (2) a quadratic model, and (3) a stepwise model between customer satisfaction and customer loyalty (five items related to repurchase intention and recommendation) and compared which model fits better. The results showed that the stepwise model best fit for bank and camera customers. A similar relationship was also reported by Finn (Finn, 2012).

The third category assumes either increasing or decreasing returns. A frequently cited example of the former is a customer satisfaction survey conducted by Xerox Corporation. In this study, the repurchase intention of customers who rated 5 for their satisfaction (very satisfied) was six times higher than that of customers who rated 4 (satisfied) (Zemke & Connellan, 2000; Jones & Sasser, 1995).

The author used "Rakuten Dataset" provided by Rakuten Group, Inc. (https://rit.rakuten.com/data_release/) via the IDR Dataset Service of National Institute of Informatics.

Citing this example, Heskett *et al.* (1994) claimed that the relationship between customer satisfaction and loyalty resembles Curve (b) in Fig. 1. Zemke and Connellan (2000) found a similar relationship and called it “hockey-stick loyalty.” Mittal and Kamakura (2001) also supported this notion. Conversely, there is another study which suggests decreasing returns. According to Agustin and Singh (2005), the relationship between customer satisfaction and loyalty intention (three items, including repurchase intention) was found to be Curve (c) in Fig. 1.

The fourth category assumes non-linear and asymmetric relationships. Anderson and Mittal (2000) argued that the typical relationship between customer satisfaction and customer retention (a composition of repurchase intention and price tolerance (Fornell, 1992; Fornell, 1996)) is similar to Curve (d) in Fig.-1. A similar relationship is also mentioned by Rust, Zahorik, & Keiningham (Rust *et al.*, 1994).

A comprehensive approach for understanding this relationship exists. Jones and Sasser (1995) claimed that the relationship between customer satisfaction and loyalty significantly changes depending on business conditions such as the degree of market monopoly, competition, deregulation, and/or technological innovation. Their idea is intriguing; however, their analytical procedure was not clear. For example, about the loyalty index, they only stated, “We decided to rely *mostly* on customers’ stated intent to repurchase products or services.”

B. Studies Using Behavioral Measures

Using subjective variables such as repurchase intention or loyalty has at least three drawbacks to making practical decisions. First, there is no unified scale to measure repurchase intention or loyalty. Therefore, we could not tell which results were more reliable. Second, there is no guarantee that a customer with a high repurchase intention will repurchase. Mittal and Kamakura (2001) and Seiders *et al.* noted that this relationship depends on whether they use subjective repurchase intentions or actual repurchase behaviors. Anderson and Mittal (2000) cautioned that repurchase behavior and intention may not be used interchangeably if the interest is in performing a sensitivity analysis (i.e., how will a unit of change in customer satisfaction affect increasing/decreasing repurchase behavior). Third, these studies may have caused a common method bias. When customer satisfaction and repurchase intention are measured simultaneously, the strength of the relationship between them can be overestimated (Kumar, 2013; Hennig-Thurau & Klee, 1997).

On the other hand, little studies investigating the relationship between customer satisfaction and actual repurchase behaviors only confirmed weak correlations. Newman and Werbel (1973) found that the power of customer satisfaction in explaining repurchase behavior was approximately 6%. LaBarbera and Mazursky (1983) also found that the correlation coefficient between customer satisfaction and repurchase behavior was low, around 0.18 to 0.22. Seiders *et al.* (2005) found no significant contribution of customer satisfaction to repurchase behavior. This weak explanatory power is partly due to the fact that these studies assume linearity in this relationship. In other words, a strong

relationship is expected when a non-linear relationship is assumed.

III. ANALYTIC PROCEDURE

The aim of the following analysis is to uncover the satisfaction-repurchase behavior relationship with assuming non-linearity. To achieve this aim, we focused on reviews posted on Rakuten Travel, a major Japanese accommodation booking site operated by Rakuten Group, Inc. (the dataset was obtained from the IDR Dataset Service of National Institute of Informatics (Rakuten Group, Inc., 2020)). Using user and accommodation IDs, we once converted the dataset into the unit of “a user by an accommodation.” Limiting the samples to reviewers who posted their first review from 2004 until the end of 2017, we extracted a total of 4,637,282 reviewers (note that if the same reviewer used more than one accommodation, they were multiply counted).

Each reviewer was then verified to see if they had posted two or more reviews on the same accommodation, and those who did were regarded as repeat reviewers. All reviews posted from 2004 to 2019 were used for this verification process (at least two years was spared for the proceeding review); however, reviews of the same accommodation posted within two days of the previous review were counted out because those reviews might be of a consecutive stay or just a modification of the posted review. This process yielded a total number of 381,304 repeat reviewers, accounting for 8.2% of all the reviewers.

The degree of customer satisfaction was substituted for the overall evaluation of an accommodation (on a 5-point scale from 1 to 5, with 5 being the highest) which a reviewer gave at their first review. The evaluation scores were 1.7% (rating 1), 3.7% (rating 2), 13.4% (rating 3), 45.9% (rating 4), and 35.3% (rating 5), with 4 being the most common.

IV. RESULTS

A. Relative Ratio of Repeat Reviewers

Fig. 2 shows the composition ratio of customer satisfaction for repeat and non-repeat reviewers. As expected, the satisfaction score of repeat reviewers was generally higher than that of non-repeat reviewers, with a gap of 3.50 percentage points for a satisfaction score of 5, and 2.95 percentage points for a satisfaction score of 4.

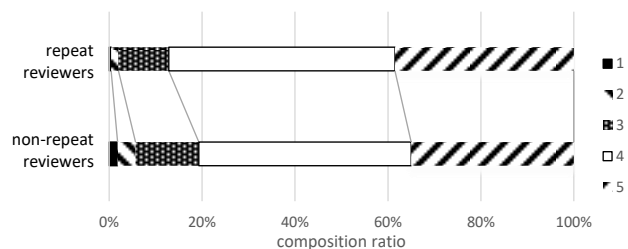


Fig. 2. Customer satisfaction composition rate.
(Source: author)

We then calculated the probability of repeat reviewers exist (hereafter, the ratio of repeat reviewers) for each customer satisfaction score. As shown in Fig. 3, the ratio tended to increase from satisfaction scores of 1 to 4 and reached a plateau at a satisfaction score of 5.

Careful attention should be paid to the fact that we did not

control for the types of services or prices in the analysis. Given that the customer satisfaction score in high-class accommodations is likely to be 5, one possible interpretation of the ratio of repeat reviewers reaching a plateau is simply that those accommodations are not for their daily use. In other words, the result in Fig. 3 does not accurately answer the question, “How many additional repeat reviewers can be expected when *customer satisfaction of the same accommodation* has changed?”

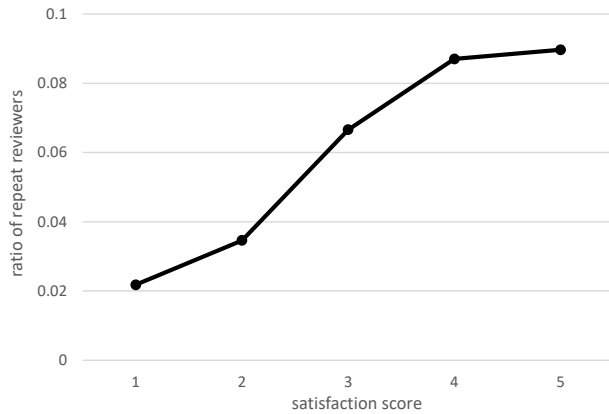


Fig. 3. Customer satisfaction and ratio of repeat reviewers. (Source: author)

Not answering the former question directly, limiting customers to the same kind of accommodations may help us understand whether the trend comes from differences in service and price. We then limited the samples to reviewers of three major business hotel chains, each of which can be assumed to provide almost the same services at almost the same price. The results obtained using the same procedure for these reviewers are summarized in Fig. 4 (the total number of reviewers was 67,134 for Chain A, 60,060 for Chain B, and 128,660 for Chain C). The fact that every chain shows almost the same trend, as shown in Fig. 3, implies that the effect of differences in service types and prices on the results is sufficiently small.

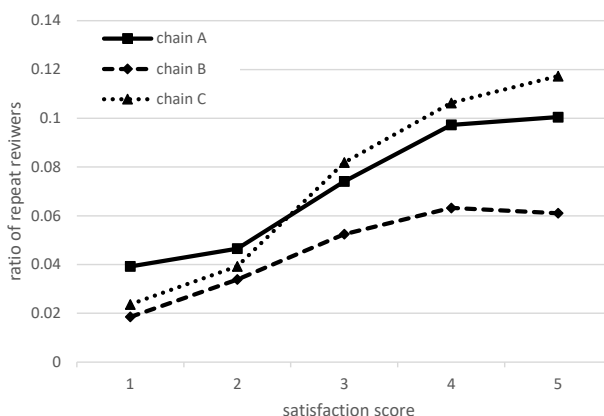


Fig. 4. Customer satisfaction and the ratio of repeat reviewers for the major hotel chains. (Source: author)

V. DISCUSSION

A. Identifying Core Customers

Based on the assumption that the effect of differences in service types and prices on the ratio of repeat reviewers is quite low, we attempted to identify customer segments that

hoteliers should prioritize for their profitability. This is a simple process. In the previous analysis, we found 579,023 non-repeating reviewers who rated their satisfaction at 3. In addition, there was a difference of 2.048 percentage points between the ratio of repeat reviewers with satisfaction scores of 4 and 3. From these figures, we can estimate that if all accommodations could increase their reviewers' satisfaction scores from 3 to 4, 11,859 (579,023 times, 2.048%) repeat reviewers would be created. Conversely, if the same reviewers' satisfaction dropped to 2, 1,322 repeat reviewers, equivalent to 3.200% (the difference in the ratio of repeat reviewers with a satisfaction score of 3 to that of 2) multiplied by 41,309 (the total number of repeat reviewers with a satisfaction score of 3), could be lost (i.e., turned into non-repeat reviewers). Based on this concept, the results of the simulations of how many expectancies/losses were expected are summarized in Table 1.

Table 1. Expecting/losing repeat reviewers (Source: author)

		customer satisfaction (after)				
		1	2	3	4	5
customer satisfaction (before)	1			985	3447	5023
	2	▲ 76		5279	8658	9094
	3	▲ 1851	▲ 1322		11859	13390
	4	▲ 12109	▲ 9735	▲ 3799		5143
	5	▲ 9977	▲ 8097	▲ 3397	▲ 388	

From Table 1, it is clear that hoteliers should focus on customers who rated 3 for their satisfaction because this target has the largest potential to create repeat reviewers. In fact, the number of expected repeat reviewers was 13,390 when their scores increased from 3 to 5. Even when they increased the score to only 4, a relatively large number of new repeat reviewers (11,859) were created.

In contrast, our analysis concludes that the practical suggestion that says, “Having customers with satisfaction (score 4) is not enough, and achieving complete satisfaction (score 5) is the key to generating superior long-term financial performance” (e.g., Zemke & Connellan, 2000; Jones & Sasser, 1995; Heskett, 1994) is not a recommendable choice because it would create only 5,143 new repeat reviewers. Moreover, because increasing the satisfaction score from 4 to 5 may cost more than increasing it from 3 to 4 (Mittal & Kamakura, 2001; Ittner & Larcker, 1998), this choice does not seem cost-efficient. Rather, our analysis leads to another suggestion for this segment (with a satisfaction score of 4): Hoteliers should try not to drop their current scores. This is because the total number of would-be-lost repeat reviewers with a satisfaction score of 4 (when dropping the score from 4 to 3, 2, and 1) is 25,642, which is larger than that for 5 (21,859 customers).

B. Differences in Service Functions

An additional analysis was performed by applying the same analysis to the relationship between each functional score (location, room, dining, bath, service, and facilities/amenities) used in Rakuten Travel and the ratio of repeat reviewers. Fig. 5 shows a general trend: the higher the scores of the functions, the higher the ratio of repeat reviewers.

However, there are exceptions in the dining and service functions: the ratio of repeat reviewers decreases in contrast

to functional scores increasing from 4 to 5. In terms of dining, this may be because customers usually leave the accommodation when they want a superior dining experience. In terms of the service function, one possible explanation is that service is not the core of accommodation services. Browning *et al.* (2013) mentioned that customer service and the interpersonal skills of service staff are relational components of accommodation services that support or facilitate the delivery of core offerings. Another explanation is that customers seek stability, rather than the best service, for repeated use. This is partly supported by the fact that, with the same dataset, the stability of functional ratings in an accommodation is positively related to overall (satisfaction) scores, which is especially true for the service function (Inuzuka, 2024).

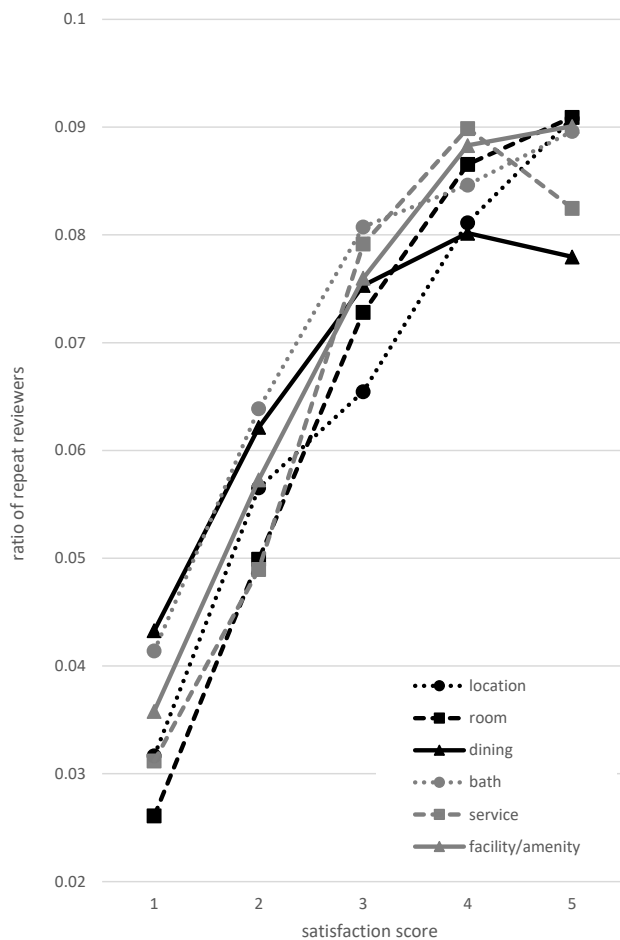


Fig. 5. Functional scores and ratios of repeat reviewers.
(Source: author)

VI. CONCLUSION

The positive relationship between customer satisfaction and profitability has been an implicit assumption and serves as a starting point for various studies and practical decision making. Although our results did not negate this assumption, we found a “ceiling effect,” instead. This is very similar to the results of Ittner and Larcker (1998), who found a ceiling effect whereby, once customer satisfaction reaches a certain threshold, further increases in customer satisfaction do not lead to additional repurchases. We believe that the main theoretical contribution of this study is to determine this ceiling effect using a large amount of data.

As a practical contribution, this study succeeds in identifying the customer segment to which hoteliers should pay attention. From the simulation of expecting/losing repeat reviewers, the target should not be moderately satisfied customers (with scores of 4 on a 5-point scale), as previous studies have claimed, but should satisfy customers with satisfaction scores of 3.

This study used a unique method for identifying repeat reviewers; however, this method has certain limitations. The major limitation is that because submitting reviews is a voluntary action by customers, the analysis overlooked the majority of *hidden repeat reviewers* who do not review but repurchase. In addition, since we focused on accommodation services in which repurchase behavior does not occur so often, it is not clear whether the facts obtained here can be applied to other types of services.

Despite these limitations, we believe that over 4.6 million reviewers provide facts that are highly reliable for practical decisions. If opportunities arise, we would like to apply this method to other types of services and discuss future differences.

CONFLICT OF INTEREST

The author declares no conflict of interest.

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