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Repeat Customers and Satisfaction: Uncovering New Intricacies Through Restaurant Reviews

Abstract

Repeat customers are crucial for business success. Prior studies mainly focused on which factors affect repeat patronage, yet how repeat customers re-evaluate the same service provider after consumption remains unexplored. We collect a dataset of 637,748 restaurant reviews from New York City and use a generalized difference-in-difference design to further explore the rating behavior of local repeat customers. The results contribute to theories of customer satisfaction, repeat patronage, and customer location in the context of user-generated content as repeat customers are found to be sensitive to quality variations, sensitivity that is even accentuated by local customers. Relevant practical implications for restaurant managers are also drawn from the results.

Keywords: Repeat customers; Local customers; Re-evaluation; Restaurant reviews

1. Introduction

Repeat purchase and/or visitation has been identified as one of the key elements for business growth and profitability in hospitality and tourism (Um, Chon, & Ro, 2006; Hu et al., 2019; Matzler et al., 2019; Sharipudin et al., 2021). On the one hand, substantial evidence shows that retaining current customers costs 4 times less than attracting potential customers in the long term (Lau & McKercher, 2004; Hu et al., 2019), and a 5% increase in customer retention generates a 25% to 125% increase in a service provider's profit (Reichheld & Sasser, 1990; Reichheld & Schefter, 2000). Particularly for customer-oriented restaurants, repeat customers produce from 50% to 70% of sales at all types of restaurants through repeatedly visiting (The National Restaurant Association, 2012). On the other hand, re-patronage can enhance a restaurant's reputation and popularity, which, in turn, affect customer loyalty and consumer recruitment (Yan, Wang, & Chau, 2015; Matzler et al., 2019). Repeat customers' satisfaction degree with the same service provider has been proven to be of utmost significance for repeat business and WOM publicity (Hui, Wan, & Ho, 2007). Therefore, uncovering the post-experience evaluating behavior of repeat customers through user-generated content is important for business practice.

With the increasing recognition of the importance of repeat customers (Hu et al., 2019; Matzler et al., 2019), numerous customer loyalty programs are implemented to attract and incentivize repeat business. Several user-generated content (UGC) websites (e.g., Yelp.com) highlight repeat consumers and their reviews. However, revisits do not guarantee continuous satisfaction with the same service provider (Olsen, 2002; Barber, Goodman, & Goh, 2011; Schofield & Fallon, 2012). First, as experience accumulates, customers' knowledge, motivations, expectations, and attribute awareness toward the products or services are likely to change (Soderlund, 2002; Beerli & Martín, 2004; Li et al., 2008; Bowden, 2009; Hu et al., 2019), which further affect their ability to perceive the quality and evaluate the deviation between expectations and performance (Morais & Lin, 2010; Ryu & Han, 2011). These changes are salient particularly in the context of restaurants wherein customers might be susceptible to dissatisfactory experience and at risk to churn (Liu-Thompkins & Tam, 2013; Kumar et al., 2018). Hence, the evaluating behavior of repeat customers differs from first-time customers.

Moreover, the familiarity with local gastronomy and restaurants also plays an important role in shaping repeat customers' re-evaluating behavior. Specifically, the geographical advantages enable residents to conveniently revisit, become knowledgeable about (Okumus, Okumus, & McKercher, 2007), develop psychological bonds (Choi & Murray, 2010) with indigenous cuisine and restaurants in their living area. The differences in the level of local experience/familiarity and knowledge (Gitelson & Kerstetter, 1995) between local and non-local repeat customers might result in differences in their attitudes toward local cuisine, local consumption values, abilities to compare a product and/or service with alternatives, and evaluating standards (Stylidis, Shani, & Belhassen, 2017; Rousta & Jamshidi, 2020). Moreover, the living status (i.e., local or non-local) also affects customers' revisit intention, motives, interests, preferences, and expectations (Um, Chon, & Ro, 2006; Huang & Hsu, 2009; Barber, Goodman, & Goh, 2011), which shapes their post-experience behaviors (Kivela & Crotts, 2006; Pezenka & Weismayer, 2020). Therefore, customer location may play a moderating role in the evaluating behaviors between repeat customers and first-time customers.

Prior studies have showed the differences between first-time customers and repeat customers in terms of sociodemographic and behavioral characteristics. However, repeat customers' evaluation tendencies toward the same service provider have been rarely investigated with their

actual consumption evaluations. Moreover, customer location has been usually used to differentiate local residents from non-local tourists and mostly focused on the attraction and destination sector. Several studies also discussed the effect of customer location on customers' purchasing behavior. Yet, the role of customer location in shaping repeat customers' re-evaluating behavior is still in its infancy. Thus, to address the research gap in the literature, this study attempts to explore repeat customers' evaluating behavior with their actual evaluations, and examine the role of customer location in their reevaluating behavior by answering the following two research questions:

RQ1. How do repeat customers evaluate the same service provider after revisit?

RQ2. Whether customer location affects repeat customers' evaluations after revisiting the same service provider?

2. Literature review

2.1. Differences between first-time and repeat customers

Repeat customers are a stable source of revenue for restaurants and an important information channel for potential customers (Reid & Reid, 1994; Petrick, 2004; Law & McKercher, 2004). Their positive post-experience evaluations are important for business success, because such evaluations can facilitate much more repeated consumption of the same product and/or service and a higher level of engagement in positive WOM activities in comparison with first-time customers (Hui, Wan, & Ho, 2007; Hanai et al., 2008). Academic researchers and marketing practitioners have acknowledged that differentiating repeat customers from first-time customers not only offers a preferable basis for market segmentation, but also helps target repeat customers to develop effective marketing strategies for enhancing their satisfaction levels in the hospitality and tourism industry (Ryu & Han, 2011). Consequently, a growing number of studies have devoted to explore the differences between first-time and repeat customers in relation to various aspects that are closely associated with their post-experience evaluation behavior.

First, the literature has highlighted the significant effect of experience on the differences in the post-experience evaluations between first-time and repeat customers (Li et al., 2008; Chua et al., 2016). Past experience has been regarded as an indicator of the level of familiarity with and knowledge about the product/service (Lau & McKercher, 2004; Sun et al., 2013), influencing customers' destination image, expectations, and perceptions (Li et al., 2008; Ryu & Han, 2011). For example, Reid and Reid (1993) postulated that repeat customers tend to set their expectations on previous experience, while first-time customers with less experience and familiarity with the product/service tend to establish theirs on information from external sources (McKercher & Wong, 2004). Ryu and Han (2011) revealed that in the context of upscale restaurants, physical environment regarding layout and table settings exert greater influence on the perceptions and perceived disconfirmation of repeat customers than first-timers. Besides, past experience serves as informative cues in customers' evaluations and judgements on the perceived quality (Li et al., 2008; Ryu & Han, 2011). Specifically, repeat customers tend to have more complete information to evaluate the perceived quality owing to their accumulated experience (Ryu & Han, 2011), while first-time customers with incomplete evaluation information tend to rely on external cues (Reid & Reid, 1993). Hence, the abilities to assess the gap between expectations and performances are distinct depending upon their past experience (Chi, 2010).

Second, the significant differences across these two customer segments have been identified with regards to their demographical characteristics, product-related needs, visiting motivations, attribute preferences, and activities towards products and/or services, which would be translated into their different perceptions and evaluations (Gitelson & Crompton, 1984; Lau & McKercher, 2004; Li et al., 2008; Morais & Lin, 2010; Ryu & Han, 2011; Matzler et al., 2019). For instance, Morais and Lin (2010) illustrated that the motivations of first-time customers to visit the destination are mostly influenced by destination image, while those of repeat customers are mainly influenced by destination attachment. Matzler et al. (2019) confirmed that price has a significant negative influence on first-time visitors' WOM behavior but no effect on that for repeat visitors. This finding is consistent with that of Alegre and Juaneda (2006), who claimed that first-time visitors are more likely to respond to external factors (e.g., price) than repeat customers. The study of Pan et al. (2022) indicated that repeat customers have a stronger preference for mixed coupons provided by restaurants than first-time customers, when the trustworthiness of online reviews is high. Rather et al. (2022) observed that repeat customers have higher emotional and behavioral destination engagement than first-time customers.

The post-experience evaluations toward the same service provider seem to vary across first-time and repeat customers due to the aforementioned differences between first-time and repeat customers, which were mainly documented in the tourism destination literature (Bitner, 1992; Chua et al., 2016). Yet, the conclusions are rather inconsistent (Chua et al., 2016). Some studies suggested that repeat tourists are likely to have a lower level of satisfaction with a destination than new tourists (Chi, 2010; McKercher & Wong, 2004), while others argued that new tourists tend to be less easily satisfied than repeat tourists (Petrick & Sirakaya, 2004; Li et al., 2008; Chua et al., 2016). These works were almost survey-based and targeted the group of travelers in the special case of attractions and tourist destinations. Whether and how repeat customers behave differently from first-time customers when evaluating the same restaurant in the context of online review platforms remain unexplored.

2.2 Post-experience evaluations and revisits

Re-patronage is an extension of customer satisfaction (Bigne, Sanchez, & Sanchez, 2001; Um, Chon, & Ro, 2006). The level of customer satisfaction shaped by expectations and attribute performance drives revisit behavior and in turn brings about customer loyalty (Hui, Wan, & Ho, 2007; Hanai et al., 2008; Meleddu et al., 2015; Lee & Chuang, 2022). In the tourism literature, revisit intention along with customer satisfaction are usually used to measure customer loyalty (Zhang et al., 2014). To assess the determinants facilitating repurchasing behavior and thus enhancing customer loyalty, a major stream of research on the issue of revisit analyzed the relationship between revisit intention and customer satisfaction with various attributes (Bowen & Chen, 2001; Hennig-Thurau, Gwinner, & Gremler, 2002; Wang & Head, 2007), such as food quality (Sulek & Hensley, 2004), service quality (Bigne, Sanchez, & Sanchez, 2001; Chow et al., 2007), cleanliness (Barber, Goodman, & Goh, 2001), atmosphere, price, and value (Yan, Wang, & Chau, 2015). As Kivela, Inbakaran, and Reece (2000) claimed, the likelihood of revisit is greater when perceived satisfaction with certain restaurant attributes is high, which is reinforced by Han, Back, and Barrett (2009). These studies investigated revisit intention rather than actual re-patronage behavior.

In regard to the post-experience evaluations of revisiting, research has shown that repeat customers will not always maintain a positive attitude toward the same service provider in their

re-patronage (Bowen & Chen, 2001). Repeat customers' evaluating behavior might change with repeated visits. For example, Hu et al. (2019) proposed that repeat customers' expectations of products and/or services are evolving with accumulated repeated visits, making the drivers of evaluations to change in the course of successive visits. They confirmed that customers emphasize different hotel attributes when making revisit decisions. Xu and Zhao (2022) further addressed how the linguistic characteristics of managerial responses influence the change of repeat customers' evaluations upon their subsequent revisiting experience. However, rare research attempted to explain repeat customers' evaluation tendencies with their actual evaluations in the context of online review platforms.

2.3. The role of customer location

Customer location (i.e., where customers live) is an individual demographic characteristic closely associated with customer purchase behavior; affecting their local knowledge, local experiences, dining preferences, dining expectations, rated satisfaction, and intentions to revisit a restaurant (Kivela & Crotts, 2006; Huang & Hsu, 2009; Chang, Kivela, & Mak, 2010; Barber, Goodman, & Goh, 2011; Vu, Li, Law, & Zhang, 2019; Pezenka & Weismayer, 2020). Related studies have investigated the role of customer location in pre-dining expectations and dining perceptions of restaurant attributes that further influence their online evaluations of restaurant performance.

First, a few studies have used customer location to differentiate online restaurant reviewers into local visitors and non-local ones and explored their differences in pre-dining expectations and post-dining evaluations, such as the familiarity and sensitiveness with local products and/or service, dining-out motives, destination images, dining preferences, and dining contexts (Ponnam & Balaji, 2014; Yang, Shin, Joun, & Koo, 2017; Pezenka & Weismayer, 2020). For instance, Gitelson and Kerstetter (1995) found that customer location (i.e., whether customers live in the target destination) influences the level of their familiarity with what the destination offers. Moreover, research has showed that for non-local tourists, local gastronomy represents an intangible cultural heritage of a destination and the most essential part in the context of travel dining, through which they can obtain an authentic and pleasant cultural experience and understand in-depth local culture or knowledge that differs from home (Kivela & Crotts, 2006; Okumus, Okumus, & McKercher, 2007; Horng, Liu, Chou, & Tsai. 2012; Stone et al., 2021). In this regard, the social function of local cuisine experience while travelling is distinctive from that of other dining contexts such as building social relations and strengthening social bonds (Fields, 2002).

Second, previous research has confirmed the role of customer location in customers' attitudes toward local cuisine and local restaurants, the perceptions of restaurant attribute quality, the abilities to compare a restaurant with alternatives, and the evaluating standards (Stylidis, Shani, & Belhassen, 2017; Rousta & Jamshidi, 2020; Pezenka & Weismayer, 2020), which affects their post-visitation evaluating behavior. For instance, Pezenka and Weismayer (2020) found that local visitors pay more attention to food quality, restaurant menu, ambience, and business than non-local travelers when evaluating a restaurant online after consumption because of different visitation motivations. Therefore, the overall assessments of perceived quality vary between these two customer segments. Moreover, the living status of a customer also drives them to have different dining preferences toward restaurant attributes and emphasize different attributes during dining experience, which might influence their online evaluations of restaurant performance (Vu, Li, Law, and Zhang 2019; Chang, Kivela, & Mak, 2010).

In sum, the above studies verified that customer location, which reflects geographic convenience, local interests, local experiences, and local knowledge, has a significant effect on the perceived differences between local residents and non-local travelers with regard to expectations, perceptions, and behaviors. However, the role of customer location in the post-experience evaluations of repeat customers (i.e., whether customer location affects the evaluating behavior of repeat customers) is undocumented. To address these two research gaps, we develop the following hypotheses with theoretical support.

3. Theory and hypothesis development

3.1. Repeat visitation and post-revisit evaluation

Repeat customers' reevaluation of the same restaurant after consumption depends on their previous experience and the current experience. Thus, repeat customers have different expectations and perceptions of the same restaurant unlike first-time customers, which makes the evaluations of repeat customers different from those of first-time customers (Parasuraman, Zeithaml, & Berry, 1985; Kivela, Inbakaran, & Reece, 2000; Ryu & Han, 2011).

First, familiarity with a restaurant can be increased by visiting it repeatedly. Research has shown that there are significant differences in terms of motivation and expectation between first-time and repeat consumption. Specifically, first-time visitation tends to seek exploration, novelty, and new cultural experience; relaxation and familiarity associated with past experience are identified as the most distinctive motivation for repeat visitation (Gitelson & Crompton, 1984). While first-timers form their expectations by external information sources, repeat customers establish their expectations on the basis of past experiences (Reid & Reid, 1994; McKercher & Wong, 2004). Accumulated visiting experiences enrich the knowledge of repeat customers about a product and/or service, strengthen the level of their awareness, and enhance their ability to comment on specific attributes, particularly on those strongly affecting their decisions (Oppermann, 1997; Soderlund, 2002; Beerli & Martín, 2004; Morais & Lin, 2010). Moreover, as the number of consumptions increases, repeat customers will form a series of higher expectations of restaurant quality (Kivela, Inbakaran, & Reece, 2000; McKercher & Wong, 2004). However, higher expectations may lead to an increased probability of experience disappointment (Campo-Martínez, Garau-Vadell, & Martínez-Ruiz, 2010). Particularly when the perceived quality falls short of expected quality (i.e., expectation disconfirmation), repeat customers are more likely to have a negative impression of consumption experience than first-timers, which makes them more inclined to be give low ratings.

Second, this higher degree of familiarity with a restaurant makes repeat customers more sensitive to restaurant quality and more easily to notice quality deficiencies (McKercher & Wong, 2004). Specifically, repeaters tend to emphasize the attributes greatly affecting their visiting decisions, dining experience, and post-experience evaluations, and easily catch variations in the perceptions of these attributes during this experience in contrast to those of the last one (Bowden, 2009; Hu et al., 2019). Repeat customers perceive and evaluate services by strongly relying on the intrinsic feeling and high expectation formed from their previous experiences, whereas first-time customers mainly base their evaluation on extrinsic information cues that have been gained (e.g., word-of-mouth communication, media advertising, the price paid) (Petrick, 2004; Campo-Martínez et al., 2010; Ryu & Han, 2011). In this respect, with their increasing number of revisits, repeat customers tend to be trickier to satisfy than new customers (McKercher & Wong, 2004).

Besides, unsatisfied rather than satisfied repeat customers are more likely to post reviews can also induce lower ratings. That is, unsatisfied repeat customers are likely to make negative reviews while satisfied repeat customers would not be highly motivated to make positive reviews. Hence, we propose the following hypothesis:

H1. Repeat consumers are pickier than first-time ones when evaluating a restaurant after consumption.

3.2. The role of customer location in post-revisit evaluation

As aforementioned, customers' familiarity with local gastronomy and restaurants in their living area affects their pre-dining expectations, dining perceptions, and post-dining evaluations. First, owing to their natural geographical advantage, local customers have more chances to experience and gain in-depth knowledge about local cuisine and local restaurants in comparison to non-local customers. Local customers have a higher level of cognition relating to local cuisine culture, which may drive them to expect more and conduct evaluating behavior differently from non-locals. By investigating the cultural effect on evaluations, Nakayama and Wan (2019) noted that review ratings differ between local and non-local customers. In addition, as the familiarity with a restaurant located in their living area increases, local repeaters have a greater capacity to compare alternatives available before making a visitation decision. They can perceive more sensitively and evaluate more objectively the restaurant attributes, depending on their own knowledge, experiences, and preferences. Besides, local customers, especially those who have repeatedly visited, form a stricter standard to assess the quality of restaurant attributes due to the relatively elaborated knowledge about local gastronomy culture and local restaurants (Yang, Shin, Joun, & Koo, 2017).

Research has shown that customers from different geographical locations have distinct motivations, attribute preferences, local consumption values, and attitudes toward the same services/products. The motivation of non-locals to visit a local restaurant also leads them to emphasize different restaurant attributes (Ponnam & Balaji, 2014) and be more easily satisfied than locals (Pezenka & Weismayer, 2020). Non-local customers, especially foreign tourists, usually dine in a local restaurant in a pleasurable travel context. They treat the consumption in a local restaurant as the most important part of their travel experience to understand local culture in depth (Kivela & Crotts, 2006). Therefore, non-local repeat customers tend to be more tolerant of perceived quality than local ones when evaluating the same restaurant. These findings concluded that customer location exerts certain effects on customers' evaluating behavior. As customers can turn into repeat customers through repeatedly visiting the same service provider, the effect of customer location on their rating behavior should not be different between first-timers and repeat customers. Thus, we propose the following hypothesis:

H2. Customer location moderates the evaluating behavior of repeat customers.

4. Data and methodology

4.1. Research context and data collection

The research context of this study is the leading restaurant review website, Yelp.com (Nakayama & Wan, 2019). Founded in 2004, Yelp.com has been ranked above other portals as "the most trusted, most influential, and most used" (Yelp, 2017). As of the end of March 2016, its communities covered over 120 cities, 32 countries, and 18 languages (Yelp, 2016). As of 2019, Yelp.com had over 140 million unique monthly visitors and receive nearly 200 million business and restaurant reviews worldwide (Yelp, 2019a; 2019b). Its high number of users provides the greatest amount of diner-generated content from major cities worldwide (Yang, Hlee, Lee, & Koo, 2017). As Figure 1 shows, Yelp.com has a unique display of a repeat customer's previous review about the same restaurant, which is posted beneath his/her updated review. An "updated review" denotes a repeat consumption with a new rating rather than an edit of a previous review. This design helps peers and restaurant managers identify whether the reviewer has already visited the restaurant. A restaurant reviewer's disclosed location is displayed above his/her reviews, which can be observed by peers. Thus, we collected data from Yelp.com regarding restaurant reviews and restaurant reviewer information.

This study aims to investigate the variations in post-experience evaluations of repeat customers and the effect of customer location on repeat customers' evaluations. Thus, we attempted to distinguish as many repeat-customer reviews of restaurants as possible on Yelp.com. First, considering the massive number of restaurant reviews on Yelp.com, we targeted New York City, and develop a Python-based crawler to collect automatically the reviews of each restaurant up to December 2019 (COVID-19 hit the restaurant industry hard and largely changed the dining habits and frequency of customers, which also affects their posting behavior of customers). Second, we identified each user's ID and each restaurant's ID. Third, we arranged a user's reviews of the same restaurant in chronological order according to the user's ID. Finally, we drop observations with missing data and present the summary statistics in Table 2.

4.2. Variables

The dependent variable in this study is the rating score (one to five) of a review, a direct measurement of customer evaluation of a product or service. The independent variable of interest, which tests H1, is *Repeat*, measured through a dummy variable to denote whether a review is posted after re-consumption (1: Yes; 0: No). As Figure 1 shows, a repeat visit is marked as "Update review." To test H2, a moderator is introduced. *Local* indicates whether a reviewer lives in New York City (see Figure 1), a dummy variable that equals 1 if the reviewer' disclosed location is in New York City (local customer) and 0 otherwise (non-local customer). We also control for the commonly used variables that are potentially associated with the rating of a review (Liu et al., 2019; Zhang, Zhang, & Yang, 2016), for example, the length of a review, the number of photos uploaded, the posting date of a review, and users' length of membership on Yelp.com. Table 1 presents the description of the main variables used in this study.

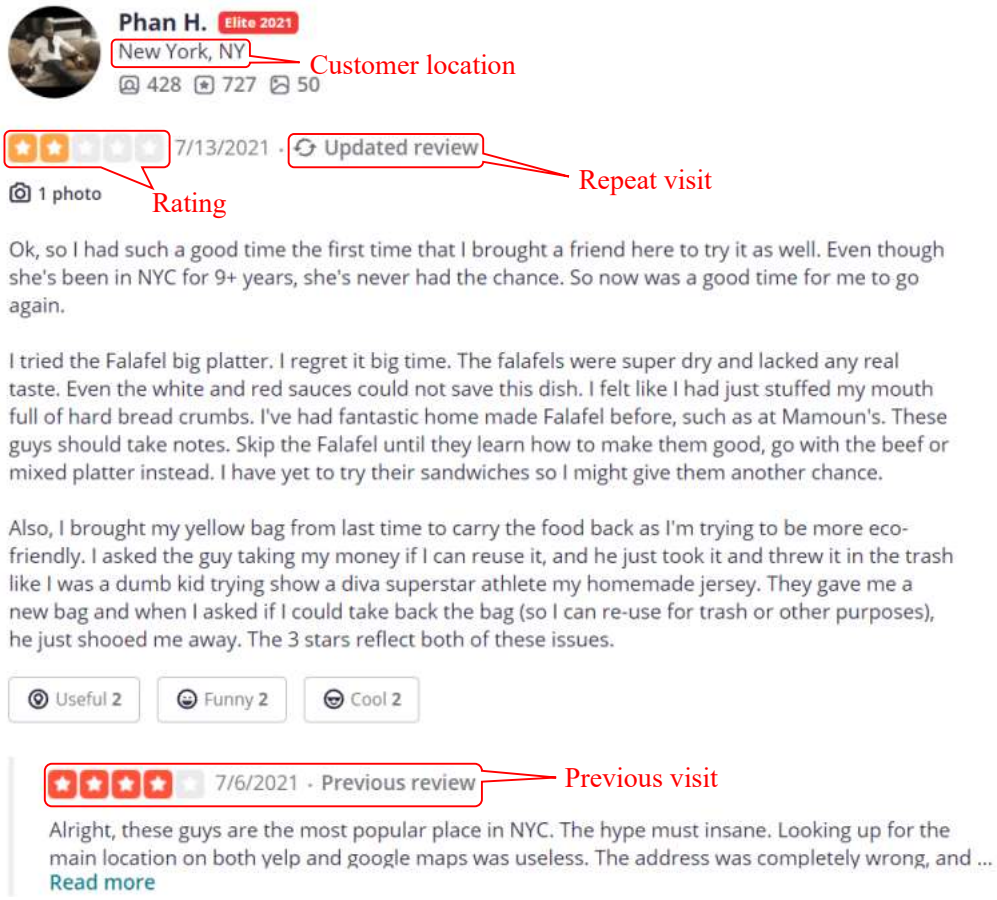

Figure 1. Example of a repeat visit on Yelp

Table 1. Description of variables.

Variable	Description
Dependent variable	
Rating	Rating score of a review (ranges from one to five).
Independent variable	
Repeat	A dummy variable to denote whether a review is posted after re-consumption at the same restaurant (1: Yes; 0: No).
Moderator	
Local	A dummy variable to indicate whether a customer's location is in New York City (1: Yes; 0: No).
Control variables	
Review Length (Length)	The length of a review.
Photo Number (Photo)	The number of photos uploaded in a review.
Membership	The membership length of a customer with Yelp, measured by the time interval (months) between the registration date of a customer and the posting date of his/her review.
Weekend	A dummy variable to denote whether a review is posted on weekends (1: Yes; 0: No).

4.3. Econometric models

To test the research hypotheses proposed in Section 3, we build the following econometric models. In Models 1-2, i represents reviewer (customer), j stands for restaurant, k denotes the review sequence of reviewer i with restaurant j; μ_i is the reviewer fixed effect; ν_j is the restaurant fixed effect; ω_m is the month fixed effect; and $\xi_{ij|k}$ is the idiosyncratic error term.

$$Rating_{ij|k} = \beta_0 + \beta_1 Repeat_{ij|k} + \beta_2 Controls_{ij|k} + \mu_i + \nu_j + \omega_m + \xi_{ij|k} \quad (1)$$

$$Rating_{ij|k} = \beta_0 + \beta_1 Repeat_{ij|k} + \beta_2 Local_{ij|k} + \beta_3 Repeat_{ij|k} \cdot Local_{ij|k} + \beta_4 Controls_{ij|k} + \mu_i + \nu_j + \omega_m + \xi_{ij|k} \quad (2)$$

First, we run regressions on the basis of Model 1 to test H1: whether evaluations from repeat customers are picker than that from new customers. β_1 captures this effect and is expected to be negative and significant if H1 is supported. Second, we add *Local* and its interaction with *Repeat* in Model 1 to examine whether local repeat customers are even pickier when rating the same service after re-consumption. β_3 measures the moderating effect of customer location and should be negative and significant if H2 is supported. Model 2 can also be regarded as a difference-in-difference design, which compares local repeat customers with non-local repeat customers with a benchmark of the differences between local and non-local new customers. Besides the commonly used control variables introduced in Table 1, we further include the user ID fixed effect to account for unobserved individual specific heterogeneity with regard to consumption preference, the restaurant ID fixed effect to account for the restaurant specific characteristics (e.g., restaurant class, scale, etc.), and the month fixed effect to control for time-varying factors in the empirical analysis.

5. Results

5.1. Descriptive statistics

Table 2 presents the summary statistics of the main variables used in the empirical analysis. The average rating of the whole sample is 3.9. Among all the observations, five-star and four-star ratings are dominant, accounting for 37.89% and 33.55%, respectively, followed by three-star ratings (15.06%). Approximately 7.8% are posted by repeat customers and about 72% are generated by local customers. These results indicate that repeat customers and local customers are common on the review platform. The text length for each review ranges from 1 to 1,169 with an average of 110, whereas the average number of photos uploaded in each review is 0.67, indicating that a certain proportion of customers tend to post reviews without attaching photos. In addition, approximately 32% (68%) are posted during weekends (weekdays).

Table 2. Descriptive statistics.

Variables	Obs.	Mean	S.D.	Min.	Max.
Rating	637,748	3.8965	1.1696	1	5
Repeat	637,748	-	-	0	1
Local	637,748	-	-	0	1
Length	637,748	110.1122	97.3963	1	1169
Photo	637,748	0.6676	1.6832	0	26
Membership	637,748	40.3965	31.2471	0	174
Weekend	637,748	-	-	0	1

5.2. Estimation results

Table 3 reports the estimation results of Model 1. As column 1 shows (with user fixed effect), the coefficient (-0.0865***) of *Repeat* is negative and significant at the 0.01 level, suggesting that the evaluations from repeat customers are 0.0865 lower than those from new customers. As the average rating of the whole sample in Table 2 is 3.9, the magnitude of -0.0865 indicates a 2.2% (0.0865/3.9) drop among the evaluations from repeat customers. That is, customers who have ever visited a restaurant tend to be pickier when evaluating a restaurant after re-consumption. Therefore, H1 is supported. To test the robustness of the above result, we further conduct regressions with restaurant fixed effect and month fixed effect in column 2 and column 3. As columns 2-3 show, the coefficients of *Repeat* remain negative and significant at the 0.01 level, supporting H1 again. For the same restaurant, repeat customers approach the experience with higher expectations and tend to be more sensitive regarding the service and food provided in comparison with first-time customers. Hence, repeat customers become pickier when evaluating after re-consumption.

Table 3. Estimation results of Model 1.

	(1)	(2)	(3)
Variables	*Rating*	*Rating*	*Rating*
Repeat	-0.0865***	-0.0736***	-0.0737***
	(0.0083)	(0.0080)	(0.0080)
Length	-0.0020***	-0.0022***	-0.0022***
	(0.0000)	(0.0000)	(0.0000)
Photo	0.0833***	0.0692***	0.0692***
	(0.0010)	(0.0010)	(0.0010)
Membership	0.0004***	-0.0018***	-0.0018***
	(0.0001)	(0.0001)	(0.0001)
Weekend	-0.0026	-0.0041	-0.0046
	(0.0035)	(0.0033)	(0.0033)
Constant	4.0491***	4.1677***	4.1671***
	(0.0044)	(0.0046)	(0.0046)
User FE	YES	YES	YES
Restaurant FE	NO	YES	YES
Month FE	NO	NO	YES
Observations	637,748	637,616	637,616
Prob>F	0.0000	0.0000	0.0000
R-squared	0.3880	0.4443	0.4444

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Model 2 is used to examine the moderating effect of customer location on the evaluating behavior of repeat customers. Table 4 reports the estimation results. The coefficient (-0.0513***) of the interaction term *Repeat*Local* is negative and significant at the 0.01 level, indicating that the ratings posted by local repeat customers are 0.0513 lower than non-local repeat customers with a benchmark of the differences between local and non-local new customers (a difference-in-difference design). As columns 2-3 show, the results of regressions with restaurant fixed effect and month fixed effect are robust. Thus, H2 is supported. That is, knowledge and familiarity of local cuisines and local restaurants make repeat customers even pickier when evaluating the same restaurant after re-consumption.

Table 4. Estimation results of Model 2.

Variables	(1) *Rating*	(2) *Rating*	(3) *Rating*
Repeat	-0.0478***	-0.0368**	-0.0368**
	(0.0152)	(0.0147)	(0.0147)
Local	0.0416	0.0282	0.0281
	(0.1247)	(0.1191)	(0.1190)
*Repeat*Local*	-0.0513***	-0.0490***	-0.0490***
	(0.0181)	(0.0175)	(0.0175)
Length	-0.0020***	-0.0022***	-0.0022***
	(0.0000)	(0.0000)	(0.0000)
Photo	0.0833***	0.0692***	0.0692***
	(0.0010)	(0.0010)	(0.0010)
Membership	0.0004***	-0.0018***	-0.0018***
	(0.0001)	(0.0001)	(0.0001)
Weekend	-0.0027	-0.0041	-0.0046
	(0.0035)	(0.0033)	(0.0033)
Constant	4.0191***	4.1473***	4.1468***
	(0.0901)	(0.0861)	(0.0860)
User FE	YES	YES	YES
Restaurant FE	NO	YES	YES
Month FE	NO	NO	YES
Observations	637,748	637,616	637,616
Prob>F	0.0000	0.0000	0.0000
R-squared	0.3880	0.4443	0.4444

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5.3. Robustness analysis

To check the robustness of the empirical results in Section 5.2 (the whole samples that contain reviews posted by one-off customers and repeat customers), we focus on the group of repeat customers (who have at least two instances of consumption at the same restaurant) in this section. Compared with the one-off consumption customers, the group of repeat customers can be different in expectations, perceptions, and evaluations. Hence, we conduct the same regressions as in Table 3 (Model 1) and Table 4 (Model 2) using only repeat customers to examine the evaluating differences between their first consumption and subsequent consumption(s). Tables 5-6 report these empirical results.

Table 5. Robustness check of H1 (Model 1).

Variables	(1) Rating	(2) Rating	(3) Rating
Repeat	-0.1581***	-0.1326***	-0.1323***
	(0.0099)	(0.0098)	(0.0098)
Length	-0.0020***	-0.0022***	-0.0022***
	(0.0001)	(0.0001)	(0.0001)
Photo	0.0524***	0.0412***	0.0413***
	(0.0034)	(0.0033)	(0.0033)
Membership	-0.0031***	-0.0051***	-0.0051***
	(0.0004)	(0.0005)	(0.0005)
Weekend	-0.0009	-0.0100	-0.0104
	(0.0126)	(0.0124)	(0.0124)
Constant	4.2535***	4.3521***	4.3520***
	(0.0195)	(0.0208)	(0.0208)
User FE	YES	YES	YES
Restaurant FE	NO	YES	YES
Month FE	NO	NO	YES
Observations	49,775	49,775	49,775
Prob>F	0.0000	0.0000	0.0000
R-squared	0.6638	0.7094	0.7095

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6. Robustness check of H2 (Model 2).

Variables	(1) Rating	(2) Rating	(3) Rating
Repeat	-0.1267***	-0.1016***	-0.1018***
	(0.0161)	(0.0158)	(0.0158)
Local	-2.2016**	-1.5235	-1.5079
	(1.1007)	(1.3121)	(1.3092)
Repeat*Local	-0.0425**	-0.0419**	-0.0414**
	(0.0185)	(0.0180)	(0.0180)
Length	-0.0020***	-0.0022***	-0.0022***
	(0.0001)	(0.0001)	(0.0001)
Photo	0.0525***	0.0413***	0.0414***
	(0.0034)	(0.0033)	(0.0033)
Membership	-0.0031***	-0.0051***	-0.0051***
	(0.0004)	(0.0005)	(0.0005)
Weekend	-0.0010	-0.0102	-0.0106
	(0.0126)	(0.0124)	(0.0124)
Constant	5.8809***	5.4782***	5.4666***
	(0.8139)	(0.9701)	(0.9679)
User FE	YES	YES	YES
Restaurant FE	NO	YES	YES
Month FE	NO	NO	YES
Observations	49,775	49,775	49,775
Prob>F	0.000	0.000	0.000
R-squared	0.6639	0.7095	0.7096

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 presents the robustness of the results of Model 1. The results of the independent variable of interest are highly consistent with those reported in Table 3. The significant negative coefficient of *Repeat* indicates that repeat customers are pickier with their subsequent re-consumptions compared with their first consumptions. Therefore, the finding that evaluations from re-consumptions are pickier than those from first consumptions is robust among the group of repeat customers. As Table 6 shows, the sign and significance of the coefficient of *Repeat*Local* are essentially the same as those presented in Table 4, suggesting that local repeat customers are even pickier when re-evaluating the same restaurant after consumption. The results remain robust with restaurant fixed effect and month fixed effect. Therefore, after dropping the one-off consumptions, the results on H1 and H2 still hold.

5.4. Further analysis

Research has shown that users' posting behaviors vary across different groups, such as anonymity and gender (Iacobucci & Ostrom, 1993; Li et al., 2021; Liu et al., 2019). Therefore, we further divide the samples into reviews posted by users with profile image versus without profile image as well as reviews posted by female versus male, and then replicate the results in Table 3 using these sub-samples. To achieve the grouping task, we first utilize deep learning and image recognition techniques to detect whether a user has a profile image or not. If yes, we then identify whether there is a human face in the profile image; finally, we then identify the gender.

First, we divide the samples into two groups by whether a user has a profile image or not and replicate the results in Table 3. As reported in Table 7, we observe that the coefficients of *Repeat* are all significantly negative and consistent with those in Table 3, suggesting that our results that repeat customers tend to be pickier are robust across different groups of users. Second, we divide the samples into two groups by gender (female and male) and replicate the results in Table 3. As reported in Table 8, we find that only the female group is statistically significant. These results are in line with prior studies that female customers have higher expectations and are more sensitive to service quality than males (Heung & Lam, 2003; Hess et al., 2003; Iacobucci & Ostrom, 1993; Kincl & Štrach, 2018; Yelkur & Chakrabarty, 2006).

Table 7. Estimation results of Model 1 (grouped by profile image).

	With profile photo			Without profile photo		
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	*Rating*	*Rating*	*Rating*	*Rating*	*Rating*	*Rating*
Repeat	-0.1194***	-0.1079***	-0.1079***	-0.0785***	-0.0666***	-0.0666***
	(0.0209)	(0.0203)	(0.0203)	(0.0091)	(0.0088)	(0.0088)
Length	-0.0043***	-0.0043***	-0.0043***	-0.0017***	-0.0019***	-0.0019***
	(0.0001)	(0.0001)	(0.0001)	(0.0000)	(0.0000)	(0.0000)
Photo	0.1085***	0.0879***	0.0879***	0.0801***	0.0667***	0.0667***
	(0.0057)	(0.0057)	(0.0057)	(0.0010)	(0.0010)	(0.0010)
Membership	-0.0000	-0.0028***	-0.0028***	0.0005***	-0.0017***	-0.0016***
	(0.0003)	(0.0003)	(0.0003)	(0.0001)	(0.0001)	(0.0001)
Weekend	0.0013	-0.0045	-0.0054	-0.0029	-0.0040	-0.0045
	(0.0106)	(0.0104)	(0.0104)	(0.0037)	(0.0035)	(0.0035)
Constant	4.0817***	4.1892***	4.1885***	4.0520***	4.1723***	4.1718***
	(0.0130)	(0.0133)	(0.0133)	(0.0047)	(0.0049)	(0.0049)
User FE	YES	YES	YES	YES	YES	YES
Restaurant FE	NO	YES	YES	NO	YES	YES
Month FE	NO	NO	YES	NO	NO	YES
Observations	102,620	102,211	102,211	535,087	534,935	534,935
Prob>F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R-squared	0.4963	0.5607	0.5608	0.3563	0.4171	0.4172

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8. Estimation results of Model 1 (grouped by gender).

	Female			Male		
	(1)	(2)	(3)	(1)	(2)	(3)
Variables	*Rating*	*Rating*	*Rating*	*Rating*	*Rating*	*Rating*
Repeat	-0.0819***	-0.0768***	-0.0766***	0.0085	0.0029	0.0029
	(0.0156)	(0.0152)	(0.0152)	(0.0193)	(0.0187)	(0.0187)
Length	-0.0017***	-0.0019***	-0.0019***	-0.0012***	-0.0015***	-0.0015***
	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0001)	(0.0001)
Photo	0.0763***	0.0622***	0.0623***	0.0716***	0.0602***	0.0603***
	(0.0015)	(0.0015)	(0.0015)	(0.0025)	(0.0025)	(0.0025)
Membership	0.0008***	-0.0013***	-0.0013***	0.0006***	-0.0014***	-0.0014***
	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Weekend	0.0020	0.0008	0.0003	-0.0049	-0.0058	-0.0063
	(0.0059)	(0.0057)	(0.0057)	(0.0082)	(0.0080)	(0.0080)
Constant	4.0733***	4.1977***	4.1974***	4.0210***	4.1436***	4.1431***
	(0.0080)	(0.0083)	(0.0083)	(0.0107)	(0.0112)	(0.0112)
User FE	YES	YES	YES	YES	YES	YES
Restaurant FE	NO	YES	YES	NO	YES	YES
Month FE	NO	NO	YES	NO	NO	YES
Observations	188,272	187,943	187,943	99,887	99,527	99,527
Prob>F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R-squared	0.3242	0.3977	0.3978	0.3561	0.4417	0.4419

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Besides the ratings, review texts provide additional information for us to infer why repeat customers are pickier. We thus run regressions wherein the proportion of emotional words

(negative, neutral, and positive) in each review is used as the dependent variable (other variables are the same as those in Model 1). As Table 9 presents, there are more negative or neutral words but fewer positive words in the re-evaluation reviews, indicating that repeat customers are more likely to complain about their re-consumption experience than first-timers. This finding is consistent with our hypothesis and the results in Table 3 that repeat customers are pickier when re-evaluating the same service provider.

Table 9. Textual analysis.

	(1)	(2)	(3)
Variables	*Negative*	*Neutral*	*Positive*
Repeat	0.0065***	0.0100***	-0.0165***
	(0.0003)	(0.0006)	(0.0007)
Length	0.0000***	0.0002***	-0.0003***
	(0.0000)	(0.0000)	(0.0000)
Photo	-0.0012***	-0.0021***	0.0033***
	(0.0000)	(0.0001)	(0.0001)
Membership	0.0001***	0.0001***	-0.0002***
	(0.0000)	(0.0000)	(0.0000)
Weekend	0.0000	0.0003	-0.0003
	(0.0001)	(0.0003)	(0.0003)
Constant	0.0278***	0.7360***	0.2362***
	(0.0002)	(0.0004)	(0.0004)
User FE	YES	YES	YES
Restaurant FE	YES	YES	YES
Month FE	YES	YES	YES
Observations	637,616	637,616	637,616
Prob>F	0.0000	0.0000	0.0000
R-squared	0.3615	0.4376	0.4504

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

7. Conclusion and implications

7.1. Theoretical contributions

Repeat customers represent more than a stable and profitable revenue for business. The previous literature mainly focused on the factors that can influence repeat patronage and satisfaction. These studies were mainly survey-based and suffer from a lack of customers' actual consumption evaluations. Therefore, whether repeat customers are satisfied with the same service provider after re-consumption remains unclear. By virtue of a unique dataset of Yelp, this study is among the first to examine whether the evaluations from repeat customers are pickier than that from new customers, and the moderating effect of customer location on the evaluations of repeat customers. The results contribute to theories of customer satisfaction, repeat patronage, and customer location in the context of UGC in the following aspects.

First, this study sheds lights for future research on repeat consumption by exploring the satisfaction of repeat customers after re-experience with the same service provider. Although previous studies have examined the effect of customer satisfaction on repeat patronage intention (Kozak & Rimmington, 2000) and the differences between first-time and repeat customers in terms of expectations, interpretations, and perceptions, this study further reveals that repeat customers

tend to be pickier than first-time ones when re-evaluating the same service provider. On the one hand, as experiences accumulate, the richness of knowledge about a specific restaurant drives repeat customers to expect more, and thus affects their post-revisit satisfaction. On the other hand, repeat customers may change the way to consider, the focal point to concern, and the process of their assessment to perceived quality (Soderlund, 2002; Bowden, 2009). Specifically, repeat customers tend to care about the attributes that strongly affect their behaviors and become more sensitive to and notice more acutely the (dis)similarity in the quality of these attributes by depending on previous encounters. Our empirical evidence from the restaurant sector are in line with prior studies (e.g., Anwar & Sohail, 2004; Kivela et al., 2000; McKercher & Wong, 2004; Campo-Martínez et al., 2010) that the perceptions and expectations of repeat customers differ from that of first-timers. Our results also complement the literature about the effect of previous consumption experience on the satisfaction of repeat customers, which can be reflected in their post-repurchase evaluations.

Second, this study provides new evidence on the effect of customer location on the evaluations of repeat customers after re-experience. Previous studies related to customer location were not linked with repeat customers. The familiarity of local cuisines and local restaurants fosters higher expectations of future dining experience, and stricter standards of re-evaluations, making local repeat customers even pickier when re-evaluating the same service. Moreover, owing to the differences between local customers and non-local customers in terms of dining motivation, interest, and context (Ponnam & Balaji, 2014), local repeat customers tend to be more easily dissatisfied than non-locals who usually lack the experience and knowledge of local restaurants. Therefore, as the results of this study indicate, local repeat customers are even pickier when evaluating a restaurant after re-consumption. These results enrich the research stream on the role of customer location in the perceived satisfaction of re-consumption.

7.2. Managerial implications

Our results yield direct practical implications for restaurant managers to develop appropriate strategies for encouraging repeat patronage, detecting potential areas of improvement in the service, and enticing positive evaluations from repeat customers.

First, identification of repeat customers. In this intensively competitive market, a drop of customer ratings will greatly affect the online reputation and performance of a restaurant. For example, even a 0.1 decrease will significantly lower the rank of a restaurant on a platform, thus damaging its online visibility (e.g., exposure and recommendation) to potential consumers. Therefore, restaurant managers must raise their awareness of the greater possibility of disappointment from repeat customers and pay more attention to this group. Accordingly, waiters are encouraged to communicate with every consumer to confirm whether he/she is a new or repeat customer.

Second, setting up an identification system. In current business, many (or even a vast majority) restaurants do not have an online or offline system to track or identify whether a customer is new or repeat customer. Thus, we strongly encourage restaurant managers to build such systems to identify whether a customer is a repeat customer and pay special attention to the group of repeat customers (e.g., train employees to communicate with every consumer to confirm whether he/she is a new or repeat customer), because we observe that repeat customers are more inclined to give lower ratings which will exert negative influence on the future reputation and performance of a restaurant.

Third, dealing with locals. As we found that repeat locals are even more persnickety than repeat non-locals, restaurants should take advantage of dealing with local people who have a greater knowledge of and are more familiar with local cuisines. In this regard, restaurant's managers should know—before these customers leave the restaurant—about the culinary experience they just had. Although this should be handled cautiously, as repeat locals and restaurant managers tend to know each other, it seems to be feasible for managers to ask about said experience, even if it is by way of an innuendo. Besides, customers always feel special if managers come out to say goodbye.

Fourth, explicit comparisons. Whether repeat customers are locals or not, it could be a possibility to elicit responses out of explicit comparisons between the experience they just had and the previous one. For example, when bringing the check, it could be accompanied by a piece of paper with a small two-question survey by asking (1) about whether the current experience was better, same or worse than the previous one and (2) the items that made a difference. Obviously, this should not be done to the same customer every time they go to the restaurant, as it could bring about weariness; thus, the restaurant should track the customers that are being surveyed and the date they provided the answers.

Fifth, identifying the leading role. The results show that repeat female customers tend to provide lower ratings. Consequently, not only is it important to observe whether there are women in the group but also if they take a leading role. While the former seems to be more doable than the latter, servers' perceptions could help. Consequently, additional attention should be paid to these groups, not only during the service but also in the post-consumption stage by looking at the reviews they post.

Sixth, looking at the qualitative tone. Apart from the quantitative differences in the ratings, our study also shows that the qualitative reviews, i.e., the texts written, have different tones as repeat customers tend to write fewer positive words. It entails further preparation on the part of the restaurant's staff in charge of responding reviews. Replying to any review, whether positive or negative, is critical, but the literature suggests that taking care of the negative reviews is even more important. Therefore, focusing on the online behavior of repeat customers after an experience in the restaurant must be a priority for managers and the staff responsible for this task.

Seventh, using platforms' information. Restaurant managers can take full advantage of those platforms that identify repeat visits (such as Yelp) to timely monitor repeat customers and interact with them.

7.3. Limitations and future research

This study has limitations that deserve future research. First, our analysis is restricted to restaurant reviews in New York City on Yelp.com. There are certain differences (e.g., display rules, rating systems, incentive mechanisms, identity disclosure rules, etc.) on tourism and hospitality related booking platforms, which may affect the rating behavior of customers. Moreover, the geographical and cultural elements may also play important roles in the evaluating behavior of repeat customers (Pezenka & Weismayer, 2020). This research uses a common geo-location-based method to differentiate locals from non-locals through identifying whether a customer lives in the target destination (Li et al., 2020; Liu & Hu, 2021). However, some customers who live in New York City might perceive themselves as non-locals when they visit a restaurant that is far away from their residential area. Hence, future research can collect data from other review sites and use alternative geo-location-based methods to test our hypotheses and enhance the generalizability of

our findings. Second, the satisfaction with different dimensions such as food quality, service quality, cleanliness, ambience, and waiting time, can be included to investigate the effect of these attributes on the re-evaluating behavior of repeat customers. Third, some variables referring to customer characteristics that may affect the evaluations of repeat customers are not included in this study. For example, the characteristics of repeat customers, such as the frequency of visits, and the time interval between successive visits could also influence their re-evaluating behaviors. Future research could be conducted to examine the effect of these variables on re-evaluations. Fourth, although restaurant ID fixed effect and month fixed effect are employed in our empirical analysis to control the heterogeneity across different restaurants and the time-varying factors; the daily or hourly variation in service quality is difficult to control, which could be achieved by experimental design in future studies.

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