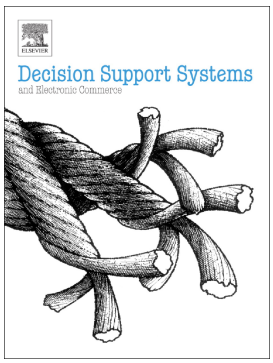

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How Do Consumers in the Sharing Economy Value Sharing?

Evidence from Online Reviews

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Abstract

With the rapid development of information technology, platform-facilitated collaborative consumption has recently become attractive to consumers. A comparative study of consumers' online review behavior and its impact on overall satisfaction and demand in the accommodation-sharing economy and the hotel industry indicates that consumers' perceptions and behavior change gradually with changes in the level of sharing—from no sharing when staying in hotel rooms to intensive sharing when sharing rooms through collaborative consumption. Online consumer reviews focus on product and service attributes, and the influential factors of customer satisfaction and demand differ when consumers are at different accommodation-sharing levels. Not all attributes described in online reviews influence overall customer satisfaction. With a higher level of sharing, consumers' valuation changes from more to less tangible attributes. Consumers at a higher sharing level care more about social interaction and economic value than consumers at a lower sharing level. Transaction costs, particularly the information search and acquisition costs, play an important role in influencing customer purchase decisions in the sharing economy. Consumers refer to direct information for tangible attributes and to previous consumers' online reviews for intangible attributes to familiarize themselves with details before making purchase decisions. Our study provides implications that help platforms and hosts better target consumer segments with different sharing levels and more effectively utilize online reviews to generate positive electronic word of mouth to enhance consumer demand and the performance of platform economics.

Keywords: sharing economy, customer satisfaction, product and service attributes, online reviews

1. INTRODUCTION

The sharing economy, also referred to as collaborative consumption, is a peer-to-peer (P2P) activity of offering, sharing, or acquiring access to products and services among peers that is facilitated by a community-based online platform (Jiang & Tian, 2018). These platforms include accommodation-sharing services, such as Airbnb, VRBO, and Couchsurfing; ride- or car-sharing services, such as Uber and Lyft; workplace-sharing services, such as Coworking; and knowledge- or talent-sharing services, such as TaskRabbit, Zaarly, LivePerson, and UpWork. With the rapid development of platform economics and the increase in the number of Internet users, the sharing economy has been emerging and developing rapidly in various industries and has recently drawn more intensive attention from researchers and practitioners (e.g., Benjaafar et al., 2019; Choi et al., 2019; Zervas et al., 2017).

This study focuses on sharing accommodations through collaborative consumption and collected data from Airbnb. The features of the sharing economy that distinguish it from the traditional commercial market lie primarily in the fact that people share products with their peers by renting or leasing instead of owning the products themselves (Pappas, 2019). However, the distinction between the sharing economy and a traditional commercial market is not strictly a zero or one issue, meaning to share (in the sharing economy) or not to share (in the commercial market). Instead, consumers' decisions may involve a gradual transition process from the commercial market to collaborative consumption, depending on the desired level of sharing (e.g., no sharing, partially sharing, or fully sharing) and the expectation of interaction.

On Airbnb, accommodations can be categorized as an entire house or apartment (i.e., place), a private room in a house or an apartment, or a shared room in a house or an apartment. The level of sharing increases for the latter categories, which offer greater interactions and an increased sense of place. Consumers having different sharing-level willingness have different motivations to

participate in the sharing economy and thus value the product or service differently through different perceptions. Some consumers mainly value the utilitarian value of products and services in a sharing economy, utilizing the lower costs and greater convenience than are found in a traditional commercial market; other consumers value the social interaction and corresponding hedonic experience in a sharing economy (Eckhardt & Bardhi, 2015).

Most previous studies (e.g., Benjaafar et al., 2019; Jiang & Tian, 2018) consider the sharing economy as a whole to have unique features compared with the commercial market and assume that consumers' perceptions and behavior in a sharing economy are consistent, regardless of their sharing level. This study looks deeper into the sharing economy by categorizing consumers who are at different sharing levels and examines and compares their online review behavior, satisfaction, and demand.

Using text-mining and text-regression approaches, this study seeks to examine consumers' perceptions and behavior based on their online textual reviews. Online textual reviews, because of their open structure, contain rich information regarding consumers' perceptions and evaluations of their stay experiences (Chen et al., 2019). The contents of online reviews serve as a way for hosts to understand guests' needs and desires. Consumers staying in different types of rooms can describe and evaluate them differently in their online reviews. Thus, we establish the first research question: How do consumers' online reviews focus differently on various product and service attributes when consumers stay in different types of rooms (i.e., a shared room, a private room, an entire place, or a hotel room)?

Various types of rooms can have different product and service attributes with diverse performance results. In addition, consumers staying in these different types of rooms may evaluate these attributes differently. These attributes affect consumers' perceptions differently. Thus, we raise the second research question: How do the influential factors of consumer satisfaction, as

reflected by their online reviews, differ when they stay in different types of rooms (i.e., a shared room, a private room, an entire place, or a hotel room)?

Because many consumers are not familiar with the unique accommodations in the sharing economy, they perceive a high risk when booking online (Liang et al., 2018). Consequently, they frequently refer to online reviews from previous consumers as trustworthy sources. These online reviews generate an electronic word-of-mouth (eWOM) effect and greatly influence consumers' booking decisions (Siering et al., 2018). Hence, our third research question is as follows: How do various product and service attributes described in online consumer reviews influence the demand of consumers who stay in different types of rooms (i.e., a shared room, a private room, an entire place, or a hotel room)?

The contributions of this study are primarily reflected in its expansion of previous studies examining consumer perceptions and behavior in the sharing economy (e.g., Pappas, 2019; Yang et al., 2018) through two areas of comparison. First, we examine and compare the influential factors of past consumers' satisfaction and future consumers' demand from the evidence of online consumer reviews. We separate the attributes consumers care about during collaborative sharing from the attributes consumers expect when they are booking online. Second, we compare the differences among those influential factors in consumers who stay in different types of rooms (i.e., a shared room, a private room, an entire place, or a hotel room). This study reveals the role of sharing willingness in influencing customer perceptions regarding their stays and future consumers' booking decisions. We also take the traditional hotel industry as a basis for comparison. This study provides implications for platforms and hosts to better serve consumers who have different sharing levels by understanding their needs and desires. This study also enhances current consumer satisfaction and future consumer demand by improving the corresponding product and service attributes.

The rest of the paper is structured as follows. Section 2 reviews the relevant literature and theoretical background. Section 3 proposes the hypotheses. Section 4 introduces the methodology and conducts the data analysis. Section 5 presents the results, and section 6 discusses the results. Section 7 discusses the theoretical and managerial implications and concludes this study.

2. LITERATURE REVIEW AND THEORETICAL BACKGROUND

2.1 Sharing Economy

Studies on the sharing economy have rapidly emerged and developed in recent years. The sharing economy utilizes platform economies, which facilitate economic and social activities through transaction platforms (Farrell & Greig, 2016). The literature on the sharing economy can be categorized into three types, depending on the subject focus: platform, hosts, and consumers. In the first category of studies, which focus on the platform, researchers examined the role of the platform in facilitating transactions and increasing demand for the two-sided market. Pricing decisions, platform profits, and social welfare enhancements are among the key issues investigated. Cachon et al. (2017) examined the pricing strategy of sharing economy platforms. They found that surge pricing can expand service providers and consumers' benefits during peak demand, thus benefiting all stakeholders in the sharing economy. Benjaafar et al. (2019) found that differences in social welfare are relatively modest when the platform is oriented toward profit or social welfare maximization.

The second category of studies examining the sharing economy is from the perspective of hosts. Researchers in this category mainly focused on the hosts' sharing behavior and its influence. Gupta et al. (2019) studied the role of cultural values in hosts' intention to rent products that can be shared with other consumers. They found that collectivism and masculine attributes positively influenced hosts' sharing behavior and that uncertainty avoidance negatively affected that behavior. Bellos et al. (2017) focused on an original equipment manufacturer's recent car-sharing program

and found that car sharing can enhance the fuel efficiency of vehicles, allowing the manufacturer to charge a higher retail price to increase profits.

The third category of studies examined the sharing economy from the perspective of consumers. Examining consumers' motivation to engage in sharing behavior instead of traditional commercial markets, Hellwig et al. (2015) found that people engage in sharing behavior for ideological reasons—people want to collaborate and share products and services with others to achieve sustainability and promote such characteristics as transparency and openness. The second reason is experience seeking—people want to explore unique products and services, and they value these experiences. The third reason is economic and is aimed at saving money. However, depending on demographics, such as gender, education, income, and travel purpose, people value accommodation sharing for different reasons, which leads them to choose different types of accommodations when sharing (Lutz & Newlands, 2018). People engaging in sharing behaviors can also have different levels of involvement, depending on their culture and ideology (Davidson et al., 2018). More materialistic consumers will seek out hedonic and transformative experiences to improve their self-image and are thus more involved in sharing behaviors (Davidson et al., 2018). The expectation of greater effort, low levels of trust, and higher risk concerns may discourage consumers from using shared services (Hawiltschek et al., 2018).

Regarding consumer perception and behavior in the sharing economy, Pappas (2019) found that the factors influencing consumers' overall experience include risks, marketing and advertising, social aspects, and price and quality issues. Consumer demographics, such as age and income, must also be factored in. Yang et al. (2018) found that, in the sharing economy, consumers' cognitive trust-identity attachment building mechanism is more effective than an affective trust-bond attachment and that the emotional distance between users and hosts also affects consumer perceptions of collaborative consumption. Our study falls into the third type of research because we focus on customer perception and booking behavior in accommodation sharing.

2.2 Theoretical Background: Social Penetration and Social Exchange Theories

The theoretical background of this study lies primarily in social penetration theory (Altman & Taylor, 1973) and social exchange theory (Emerson, 1976). Social penetration theory explains the evolution of interpersonal relationships, which become deeper, more intense, and more trusting when people gradually reveal themselves to one another over time (Altman & Taylor, 1973). Social penetration theory demonstrates the importance of information self-disclosure and the interactions between individuals in forming and strengthening a relationship (Gibbs et al., 2006).

According to the theoretical framework of P2P interactions (Moon et al., 2019), in the sharing economy, the interactions between hosts and consumers and consumers and their peers are the keys to generating eWOM intentions, encountering satisfaction, and engendering intention and behavior to use. Our study follows this framework, on which we propose our three hypotheses. All hypotheses examine when consumers have different sharing level for accommodation (i.e., staying in a shared room, a private room, an entire place, or a hotel room), what are the differences of review (i.e., eWOM) focus on products and service attributes (hypothesis 1), different influential factors of consumer satisfaction (hypothesis 2), and different influential factors of consumer demand (hypothesis 3).

In a sharing economy, people are strangers (Ert et al., 2016). Thus, information self-disclosure and interactions are helpful in alleviating information asymmetry among consumers and hosts and are necessary to enhance consumer satisfaction and consumption intention and behavior (Bhargava et al., 2012; So et al., 2018). According to social penetration theory, the interactions are present in various forms and develop over time before, during, and after their consumption experience, leading consumers and hosts to different levels of reciprocal exchange (Moon et al., 2019). The reciprocity of interactive exchanges is reflected in multiple stages. In the initial stage, the information exchange is relatively superficial; the hosts present the self-disclosure information

through texts and photos posted on the sharing economy platform (Ert et al., 2016). The self-disclosure information triggers mutual interactions and interpersonal relationship building. To start building the relationship with the hosts and obtaining more information regarding the accommodations, services, charges, and other relevant information regarding their potential stay before the consumption, consumers tend to communicate with the hosts by email, telephone, or online chat. In this way, the consumers develop tentative attitudes toward the hosts and their consumption intentions (Altman & Taylor, 1973). Then, during their stay, the interactions can be in both direct and indirect forms (Camilleri & Neuhofer, 2017). The direct forms include consumers' face-to-face communication and interactions with hosts and other guests; the indirect forms include the hosts offering and the consumers using the product and services during their stay. After the consumption, the interactions are reflected by consumers' online reviews, writing and posting to communicate with the hosts and other peer consumers regarding their consumption experience (Goes et al., 2014). Following the social penetration theory (Altman & Taylor, 1973), we find the interpersonal relationships between hosts and consumers and consumers and consumers becoming stronger and more intensive through the multistage reciprocal exchange.

People are more active in social exchange when they are less exposed to other people's information when encountering strangers in the collaborative consumption context (Moon et al., 2019). Social exchange theory describes the psychological and social behaviors that occur when two parties interact. People involved in an interaction conduct a cost-benefit analysis to determine the costs or risks and benefits. In the sharing economy context, the exchanges occur in two dimensions: economic and social. The economic exchange happens during the transaction process. The platform is designed to reduce the transaction costs to facilitate a safe and simple economic exchange process involving paying and collecting money (Akbar & Tracogna, 2018). The social exchange can occur before, during, or after the transactions; users and hosts communicate and interact with each other either online or face-to-face.

The main challenges to exchanges in both dimensions come from the uncertainties regarding costs and benefits. In online booking in the traditional hotel industry, where the products and services are generally standard, users usually have more experience and greater familiarity with these products and services; in the sharing economy context, most of the products and services in terms of the accommodations and services offered by hosts are unique. Users have less experience and familiarity with them, which significantly increases the perceived risk of booking online (Leung et al., 2019). In addition, it is more difficult to measure costs and benefits in the sharing economy. In the traditional hotel industry, the main cost is the room rate. However, in the sharing economy, there are several monetary costs, such as room use fee, cleaning fee, and service fee, among others. More importantly, a hassle cost in terms of time and effort may also be incurred because the users are less familiar with shared accommodations. In the traditional hotel industry, the main benefits come from the room and associated services. However, in the collaborative consumption market, the benefits are more intangible in terms of unique experiences, such as social interaction with hosts, neighbors, and other users; the featured internal and external environments; and the entire sharing process (Cheng, 2016).

In this manner, the social exchange process with cost-benefit analysis becomes much more complex in the sharing economy context than in the traditional commercial market context. More factors in the sharing economy, compared with the traditional hotel lodging industry, can be viewed as costs or benefits; thus, depending on the sharing level of consumers' accommodations, consumers may value various factors differently, which causes their review focus, antecedents of satisfaction, and influential factors of demand to differ.

In essence, the reasons for consumers' differing social penetration and exchange perceptions and behavior when they stay in hotel rooms or different levels of shared accommodations in the sharing economy context lie in the different mechanisms of interactions. In the sharing economy, peers become familiar and trust each other by disclosing their information

and communicating online and face-to-face. Communication and information disclosure are mutual and function as a continuous two-way process, which greatly influences consumers' perceptions, review motivation, and demand. The interpersonal relationship and reciprocity need to be developed quickly to facilitate the transactions. However, in the commercial hotel industry, the relationship between service providers and consumers is featured as instrumentality and one-way rapport (from service provider to consumers; Moon et al., 2019). That is, the service providers seek to fulfill consumers' needs, and the exchange between the service providers and consumers primarily includes economic and resource exchanges, instead of social exchange (Priporas et al., 2017). The information disclosure is usually one way, from service providers to consumers, as reflected by consumers' minimal need to share information with employees. Thus, the social penetration and exchange mechanisms when consumers consume in a sharing economy versus the traditional hotel lodging industry are different. This triggers our interest in investigating the differences in their review focus, satisfaction antecedents, and influential demand factors when consumers stay in a hotel room versus when they stay in rooms in a sharing economy context with differing sharing levels: shared room, private room, or entire place.

3. DEVELOPMENT OF HYPOTHESES

3.1 Different Focuses of Online Reviews by Consumers at Various Sharing Levels

The contents and focus of online reviews depend on consumers' perceptions and experiences with the consumption. Consumers staying in hotel rooms versus accommodations in the sharing economy can have different perceptions and experiences for various reasons. First, the core product of accommodations is rooms, which are primarily what consumers pay for (Xiang et al., 2015). Thus, physically, hotel rooms and rooms in the sharing economy (i.e., a shared room, a private room, or an entire place) have different amenities, layouts, and corresponding external environments, including access and facilities (Li & Srinivasan, 2019). In addition, the services vary,

reflected by the various service providers (professional employees and hosts) and the different types and performances of services related to housekeeping, meal offerings, and other support services (Zervas et al., 2017). Thus, the different products and services offered when consumers stay in rooms with different sharing levels or in different markets (i.e., commercial vs. collective consumption) can cause their review focus to differ.

Second, psychologically, consumers have different motivations to choose rooms at different sharing levels; thus, they value different products and services and different aspects of experiences (Hellwig et al., 2015). People's behavior conversion from the commercial market to collaborative consumption requires a psychological transition period, which influences their perceptions of the various attributes of shared products and services (Zervas et al., 2017). Even for the same or similar performance of product and service attributes, people who stay in shared accommodations versus hotels can have different feelings, emotions, and perceived evaluations (Roma et al., 2019).

Third, socially, consumers are given different opportunities to engage in communicating and interacting with service providers and other guests when they stay in different types of rooms. Social interactions can help consumers understand and become familiarized with other people, local cultures, and other relevant information during their stay (Priporas et al., 2017). However, consumers staying in different types of rooms have different motivations for interacting socially with others and value these interactions differently (Hellwig et al., 2015).

Finally, economically, the costs of staying in various types of rooms are different, as reflected by different room rates, with or without cleaning services and use or booking fees. The different costs can influence consumers' perceptions of their stay experience (Herrmann et al., 2007).

Consumers often post online reviews after their stays to describe and evaluate their experiences and express their perceptions (Gu & Ye, 2014). Those reviews reflect consumers'

perceptions and the perceived value of the performance of various product and service attributes during their stays. Therefore, based on the above discussion, we propose the following hypothesis:

H1: The product and service attributes on which consumers focus in their online reviews differ when consumers stay in shared rooms, private rooms, entire places, or hotel rooms.

3.2 Different Influential Factors of Consumer Satisfaction at Various Sharing Levels

According to the expectation-disconfirmation theory (Oliver, 1980), consumers compare the perceived quality of the consumption experience with their preconsumption expectations. If the perceived quality is at least what they expected, consumers will be satisfied; otherwise, they will be dissatisfied.

According to multi-attribute theory (Ajzen, 1991), various products and service attributes can influence consumer satisfaction but with varying amounts of influence, depending on the consumers' perceived importance and value. According to the ring model (Clemmer, 1990), core attributes have a greater influence on consumers' overall satisfaction than do auxiliary attributes. Consumers staying in different types of rooms at different sharing levels have different motivations to use these rooms and consume; thus, they have different expectations, needs, and desires related to the various attributes (Guttentag et al., 2018). They view the importance of various product and service attributes differently (Ajzen, 1991). Although some consumers view tangible attributes, such as room and amenities, as the core attributes that most influence their satisfaction, other consumers may value intangible attributes, such as social interaction (Hellwig et al., 2015). Based on the above discussions, we propose the following hypothesis:

H2: The influential factors of customer satisfaction, as reflected in their online reviews, differ when consumers stay in shared rooms, private rooms, entire places, or hotel rooms.

3.3 Different Influential Factors of Consumers' Demand at Various Sharing Levels

Consumers perceive high risks in online booking and purchasing because of the distance between the service provider and themselves (Chang et al., 2005). Online consumer reviews reflect previous consumers' experiences, which inform future consumers about the accommodation, thus reducing their perceived risks (Zhu & Zhang, 2010). The contents of online reviews include a description of the experience and an evaluation of the attributes of products and services, which reflect both the cognitive and affective sides of consumers (Chen et al., 2019). Thus, online reviews generate an eWOM effect, which influences future consumers' online booking decisions and demand (Duan et al., 2008).

The perceived high risks come from the attributes with which consumers are not familiar or that are difficult to measure or evaluate online (Van der Heijden & Verhagen, 2004). Different consumers intending to stay in different types of rooms have various levels of familiarity with various products and service attributes; therefore, the sources of their perceived risks differ (Chang & Tseng, 2013). In addition, consumers staying in different types of rooms have different perceptions of the value of various product and service attributes (Mao & Lyu, 2017). Some consumers care about certain aspects of performance, whereas others may have different needs and desires.

The different sources of perceived value and risks from consumers who stay in different types of rooms trigger their different information search behavior when reading online reviews. Because of the information and search costs, consumers tend to focus on searching for information regarding the specific attributes of products and services that enhance the perceived value or reduce the perceived risk (Liang & Huang, 1998). This information increases trust in the service providers, which is essential for consumers to develop purchase intention and behavior (Ert et al., 2016). Thus, consumers' information search behavior is different when they stay in different types of rooms, depending on the value and costs of the information that reflect certain product and service attributes. The various attributes discussed in online consumer reviews have different value

in influencing future consumer demand when consumers stay in different types of rooms (Liu & Mattila, 2017). Based on the preceding discussion, we therefore developed the following hypothesis:

H3: The influence on consumer demand of the attributes described in online reviews differs when consumers stay in shared rooms, private rooms, entire places, or hotel rooms.

4. DATA ANALYSIS

4.1 Data Collection

In this study, we collected data from two platforms: Airbnb for the sharing economy and Expedia for the traditional hotel industry. From Airbnb, we collected textual reviews from consumers for each accommodation that could be categorized as an entire place, a private room in a house or apartment, or a shared room in a house or apartment. We also collected the overall ratings for each accommodation; the number of reviews for that accommodation; the total charge for staying one night (from October 17 to October 18, 2019), including room use, cleaning, and service fees; and tenure information, which shows how long an accommodation has been listed. To control for the influence of different neighborhoods and places on customer perception and demand, we referred to previous studies (e.g., Cheng et al., 2019; Liang et al., 2017); we collected all our data from one city—Los Angeles, California, in the United States—because it is a popular travel destination and has numerous accommodation listings. We excluded new listings that had no reviews, which resulted in a total of 802 listings: 274 entire places, 257 private rooms, and 271 shared rooms.

Because there were 802 accommodations in the Airbnb context in our sample, to render the data comparable and eliminate the potential influence caused by nested data (multiple reviews of the same hotel), we collected corresponding information from the same number of hotels, namely, 802 hotels listed on Expedia. All of the hotels were also in Los Angeles, California. The reasons that we chose the same city in the Airbnb context and in the Expedia context were because previous

studies found different cities (travel destinations) have different images, cognitive and affective attributes, attractiveness (Novais et al., 2018), and consumers view different destinations have different source credibility, and they have different destination attitude and destination attachment (Veasna et al., 2013). These all influence consumer satisfaction of their travel experience (Veasna et al., 2013; Letheren et al., 2017) and travel intention and consumer demand (Masiero and Qiu, 2018; Cardoso et al., 2019; Han et al., 2019). Thus, the precaution of using the same cities in sharing economy and traditional hotel lodging industry controlled the influence of different tourism destinations on customer satisfaction and demand. Referring to the study of Xu (2018a), we generated n_i random numbers from 1 to the total number of hotels with star level *i* as the indices. Then, we collected the corresponding reviews from the hotels with those indices. We categorized these reviews into two groups depending on their sources: they were either written by business consumers or leisure consumers as classified by Expedia. Note that when discussing and comparing the results of hotel groups with those of sharing economy groups, we focus mainly on the hotel group of leisure consumers (HL). This is because according to previous studies (e.g., Guttentag & Smith, 2017; Guttentag et al., 2018), most Airbnb guests are leisure rather than business consumers. We present the results from the hotel group of business consumers (HB) for reference.

Referring to the sampling methods of hotels in the study of Xiang et al. (2015) to reflect the generality of hotels, the hotels with 1 or 1.5 stars, 2 or 2.5 stars, 3 or 3.5 stars, 4 or 4.5 stars, and 5 stars are 2.8%, 32.3%, 51.8%, 12.9%, and 0.2%, respectively, in our sample. These percentages result in hotels with different star levels of $n_1 = 23$, $n_2 = 259$, $n_3 = 415$, $n_4 = 103$, and $n_5 = 2$ in our study. For Airbnb, we collected tenure information to add to one of the control variables because of the possible influence of different durations of the accommodation listings on the total number of reviews (i.e., the proxy of demand). However, on Expedia, the tenure information is not available, so we could not identify when the hotel began its listing on Expedia.com. Therefore, to control for the influence of different durations of a hotel's listing on the total number of reviews, we truncated

the duration to have a fixed time period (i.e., a month) for all hotel data collected. We collected the reviews posted from January 1 to January 31, 2019, and counted the number of reviews, which eliminated the influence of different durations of hotel listings on the number of reviews (i.e., the proxy of demand).

4.2 Data Analysis

This study focused on both textual reviews and overall ratings to determine (1) the focus and relevance of online textual reviews, (2) the reflection of online reviews on overall customer satisfaction, and (3) the influence of online reviews on customer demand. We used a text mining approach, latent semantic analysis (LSA), to achieve the first two objectives, and we used text regression to achieve the third objective.

The challenges facing obtaining rich information from online customer reviews are the reviews' open and unstructured form and the large number of reviews, which can cause information overload (Hu & Krishen, 2019). In this study, we adopted LSA—a text mining approach, to extract key points, writers' perceptions, underlying concepts and topics, and hidden semantic meanings from human natural language. LSA has both theoretical and technical strengths. Theoretically, the steps to conduct LSA follow cognitive psychology theory, which involves the collection, induction, and representation of knowledge (Kulkarni et al., 2014). Technically, compared with qualitative approaches such as content analysis, LSA can be fully automated. LSA eliminates the subjective bias caused by predefined syntactic and morphologic relationships and manmade resources such as sentiment dictionaries and lexical reference systems (Dumais, 2004), thus making text mining analysis consistent. Additionally, LSA can detect words and phrases that have similar meanings to overcome the ambiguity issues of human language (Valle-Lisboa & Mizraji, 2007). In LSA, each factor is labelled based on high-loaded terms, and the explanation of LSA results

is similar to the explanation of the results for exploratory factor analysis through data analysis (Evangelopoulos, 2011).

LSA and Latent Dirichlet Allocation (LDA) are the two text data computing algorithms that have received much attention in text-mining research for topic extraction and modeling studies (Williams & Betak, 2018). The LDA is a Bayesian statistical method for topic extraction from a collection of documents and an information retrieval technique (Bapna et al., 2019). Previous research (e.g., Anaya, 2011; Bergamaschi & Po, 2014; Williams & Betak, 2018) comparing LSA and LDA determined that these two techniques perform similarly with regard to the accuracy of topic modeling, process efficiency, and effectiveness; these two techniques are therefore complementary.

Although LDA has many advantages, such as identifying post topics in an automated and scalable manner (Blei et al., 2003), our study used LSA for several reasons. First, the documents mined in this study are online consumer reviews of accommodations, which usually focus on commenting on the product and service attributes of their accommodation stay experiences; thus, the documents have similar writing styles and topics, which ensures that LSA is an appropriate text-mining method to use in this study (Papadimitriou et al., 2000). Previous studies have applied LSA to mine online consumer reviews of hotels (e.g., Xu, 2018a, 2018b; Xu, 2019; Xu & Li, 2016). Second, we used the text-regression approach, followed by LSA, to investigate the relationship between online reviews and consumer satisfaction and demand. Technically, we used the vector space model for documents, which is a strength of LSA because of its improvement in representing a vector of words in the vector space, compared with traditional vector space models (Anaya, 2011; Salton, 1975). Third, LSA addresses some shortcomings of alternative text-mining techniques by not relying on preconceived notions regarding the emerging themes, such as new topics in the sharing economy contacts, thus limiting any subjective bias in the analysis (Kulkarni et al., 2014). Fourth, online consumer reviews reflect the consumers' psychology of postconsumption; therefore, we can utilize LSA's strength in word sorting and category judgments to treat LSA as both a theory and a

method to investigate consumers' psychology (Landauer, 2007). Finally, LSA is both a mathematical and a statistical text-mining tool, incorporating the essence of principal components analysis, and is therefore efficient and has a satisfactory computational time (Anaya, 2011).

We coded the data using the RapidMiner Studio software and conducted LSA in three steps. The first steps were preprocessing and term reduction. First, all trivial words such as "and," "the," "an," and "is"; all tokens with fewer than two letters, such as "s" and "x"; and any words that appeared in only one review were removed from the documents because they did not have virtual meanings and instead increased the analysis dimensions. Then, term-stemming techniques were applied to identify the roots of words. In this way, all words with the same root (e.g., coordination, coordinated, coordinating, coordinate) were considered to be one token to be included in a word list to extract words with the same meaning. At the same time, the analysis dimension was further reduced. Next, an n-gram with n = 3 was applied to identify repeated phrases such as "friendly staff," "excellent location," and "spacious room."

In this way, a term-document matrix was compiled. A particular token of the term occurrence was input into the matrix cell associated with the corresponding customer review in which the token appeared. Next, the term-document matrix was transformed through the term frequency–inverse document frequency (TF-IDF), a widely used term-weighing method in human language processing (Zhang et al. 2011), to allow more weight to be put on rare terms, and discounts were applied to common terms so that idiosyncrasies instead of shared characteristics could emerge in the results (Sidorova et al., 2008).

The third step was singular value decomposition. The TF-IDF weighted term matrix was transformed into three sub-matrixes: a term-by-factor matrix, a singular value matrix, and a document-by-factor matrix. The term loadings were displayed in the term-by-factor matrix on a particular latent factor. In the singular value matrix, the singular values were the square roots of

eigenvalues, which represented the importance of a particular factor. Dimensions with very low singular values were considered noise and removed. The document-by-factor matrix showed the review loadings for a particular latent factor.

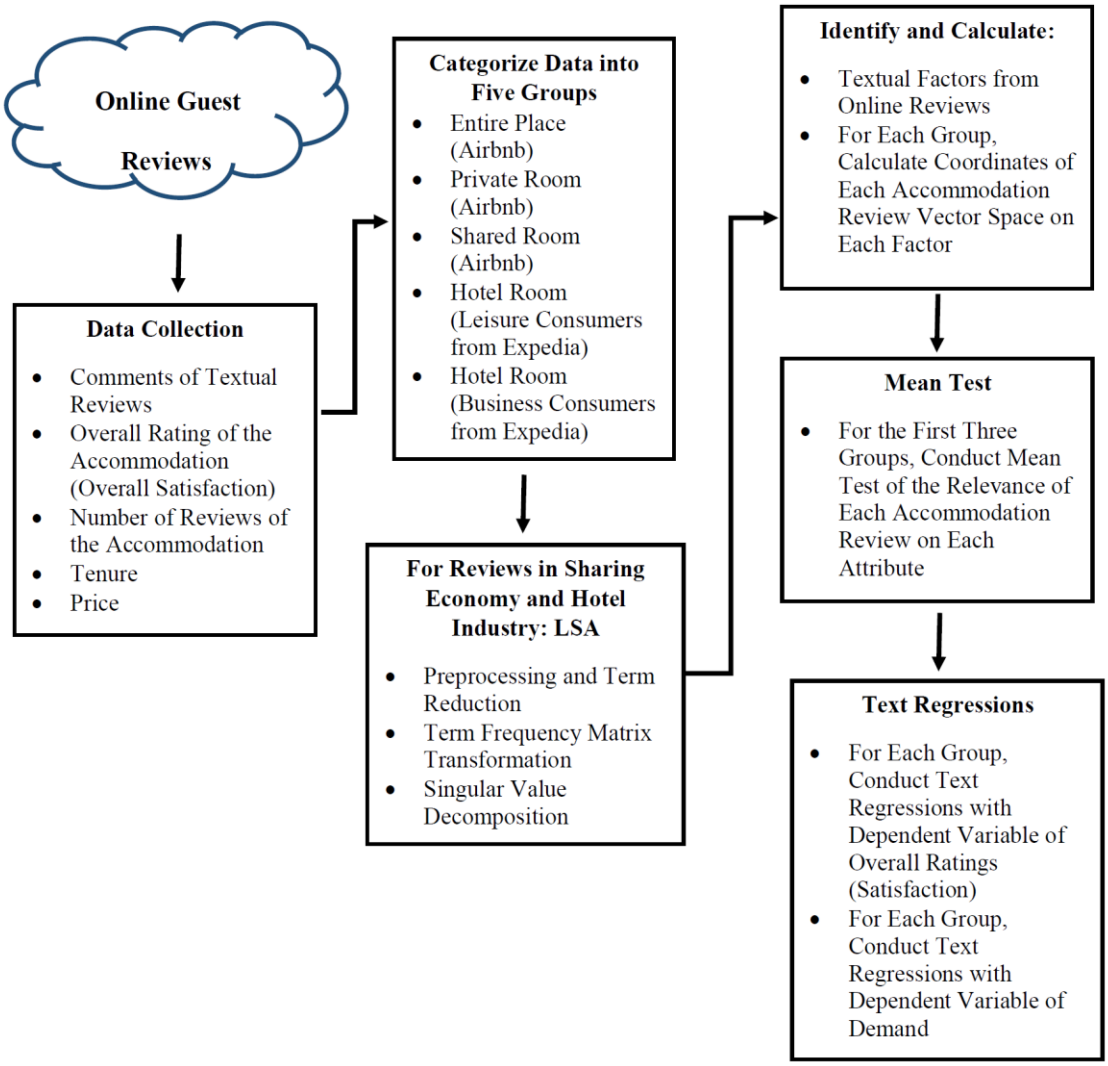
We conducted the above LSA for reviews in the sharing economy and hotel industry, respectively. Then, based on the document-by-factor matrix, referring to previous studies (e.g., Ngo-Ye & Sinha, 2014), we examined each textual review's vector space on each factor and averaged it within one accommodation to obtain the average value of the vector space of each accommodation on each factor. Then, to test hypothesis 1, we conducted a t-test, finding the mean difference of the coordinates of each accommodation review vector space for each factor between each group: entire place (EP), private room (PR), and shared room (SR). The higher coordinate values for a factor indicated that a particular accommodation had more reviews that were more relevant and had more word descriptions regarding that factor.

Then, to test hypothesis 2, for each group, we conducted a text regression for guest reviews in which the dependent variable was the guests' average overall ratings for the accommodation and the independent variables were the coordinates of each accommodation review vector space for each textual factor. Last, to test hypothesis 3, for each group, we conducted a text regression for guest reviews in which the dependent variable was the number of reviews as a proxy for customer demand, and the independent variables were the coordinates of each accommodation review vector space for each textual factor and control variables.

In this study, because of the public data availability issue, we were unable to observe the actual accommodation bookings from Airbnb. Demand proxy approaches have been widely used in previous studies (e.g., Chevalier & Mayzlin, 2006; Ghose & Ipeirotis, 2006, Subramanian & Subramanyam, 2012; Zhang et al., 2010) in which demand data could not be obtained. Thus, referring to previous studies (Ye et al., 2009, 2011), in this study, we used the number of reviews as

a proxy for customer demand. The rationale behind this is that Airbnb only allows actual guests to post online reviews within 14 days after checkout. Based on the assumption from previous studies (e.g., Ye et al., 2009, 2011), consumers have a constant probability of posting reviews. That is, we assume that a positive relationship between the number of room sales and number of online reviews exists; namely, number of online reviews = $\phi \times$ number of room sales, where $0 < \phi \leq 100\%$. Thus, a high number of reviews indicates more demand, and vice versa. Observing the skewness of the value of the number of online reviews, following previous studies (e.g., Ye et al., 2009, 2011; Zhang et al., 2010), we transformed them to their natural logarithms as the dependent variable in the text regression. Referring to previous studies (e.g., Thirumalai & Sinha, 2011; Xu et al., 2017a, 2017b), we added tenure and price as control variables. Tenure is a non-negative integer variable representing the time, measured by number of months, that a host has been active on Airbnb. It was calculated from the joining date shown on the host's profile page. Previous studies (e.g., Thirumalai & Sinha, 2011; Xu et al., 2017a, 2017b) have found a positive relationship between tenure and demand. Further, there may be a classical negative relationship between price and demand, as previous studies (e.g., Goering, 1985; Granados et al., 2008) have found. Thus, we used normalized price in this study as another control variable. Figure 1 shows the data analysis procedure.

Figure 1. *Data analysis procedure*



5. RESULTS

5.1 Textual Factors from Online Comments

For the reviews of the sharing economy and hotel industry, we extracted textual factors from guests' online reviews using LSA, as shown in Table 1. For each factor, LSA found more than 4,000 terms. For demonstration purposes, we selected the top 10 terms as high-loading terms. The LSA results showed that these top factors covered more than 95% of all the unique terms and reviews, indicating that these factors can represent all the factors of online reviews. LSA identified eight factors of the reviews of the sharing economy: communication, access, room, amenities,

external environment, host interaction, neighbor interaction, and value. Additionally, LSA identified eight factors of the reviews from Expedia: operations, facilities, room, amenities, location, staff, meal, and value.

Table 1. *Textual factors from each group of online reviews*

	Sharing Economy Context		Hotel Lodging Context	
Factors	**Interpretations (Labels)**	**High-Loading Terms**	**Interpretations (Labels)**	**High-Loading Terms**
Factor 1	Communication	commun, easi_reach, reach_definit, quick_respons, quickli_answer_question, host_respond, place_exactli_pictur, place_exactli_describ, contact, easi_commun	Operations	parking_lot, quiet, wifi_slow, valet_park, park_garag, wait, loud, nois, wait_time, smoke
Factor 2	Access	time_find, time_find_spot, access, easi_access, check_super, host_accomod, easi_find, conveni, late_check, accommod_check, entrtanc	Facilities	facil, elevator, stair, pool, pool_area, décor, lobbi, hallwai, gym, business_center
Factor 3	Room	modern, layout, room_spaciou, clean, cozy, bed, bathroom, comfort, room_nice, unit_nice	Room	spacious_room, bed, hotel_room, good_size, bathroom_smaller, bed_comfort, mattress, size_room, room_design, queen_bed, basic_room
Factor 4	Amenities	tv, washer, dryer, furnitur, closet, wifi, towel, shampoo, fridg, tolietri	Amenities	towel, tv, iron, coffeemaker, microwave, air_condition, bath_tub, sink, furnitur, lights
Factor 5	External Environment	great_place_stay, walk_distanc, safe, downtown, danger, homeless, metro, neighborhood, crowd, groceri, i_felt_safe, secur, stranger	Location	excellent_location, view, locat_hotel, arriv_hotel, distance, highwai, walk_distance, beauty_view, central_locat, great_location, town_walk, mile, street,

Factor 6	Host Interaction	friendli, respectful, host, host_kind, host_nice, host_definit, honest, connection, host_father, host_great,	Staff	friendli, fridendli_help_staff, staff_excel, staff_friendli_help, excel_servic, great_servic, service_excel, great_friendli, staff_help, ladi, staff_polit, rude, smile, personnel
Factor 7	Neighbor Interaction	roommate, down_stair, up_stair, nice_touch, annoi, occupi, noisi, walk_night, share, talk, bother	Meal	breakfast, meal, lunch, tea, coffee, food, egg, water, menu, drink, buffet_breakfast, bar_food, dinner
Factor 8	Value	monei, charg, pric, worth, offer, inexpens, expens, cheap, book, dollar	Value	monei, tax, cost, worth, price, cheap, charg, refund, expens, room_rate, great_valu, fee, credit_card, paid

In Table 1, for demonstration purposes, we rearranged the order of factors to make the factors comparable between the sharing economy and traditional lodging. The common factors between these two contexts included the room, amenities, external environment (location), host interaction (staff), and value. The room was the core product consumers purchased for accommodations (Xu et al., 2018b) and was described as such in the online consumer reviews. Compared with the hotel industry, where consumers tend to describe rooms more objectively as referring to the room size and furniture, sharing economy guests describe shared rooms more subjectively as describing feelings such as comfort and coziness. They also paid more attention to the intangible aspects of a room, such as modern style and fashion. Guests in the sharing economy describe a greater variety of amenities, such as washers and dryers. They also focused more on the external environment, such as neighborhood safety, compared with consumers in the hotel industry who focus on the location of and distance from attractions. Guests in the sharing economy talked more about their interactions with hosts and paid more attention to other guests' attitudes compared to hotel industry guests who focused on the customer service quality. Value was mentioned in both contexts, showing that consumers cared about the economic benefits and costs of accommodation.

Three unique factors found in the sharing economy context were communication, access, and neighbor interaction. Communication usually happens before online booking. Because of the unique accommodations and less familiarity, guests often communicate online or through phone calls with hosts. Communication includes consumers' descriptions of the communication process with hosts, hosts' response times and response contents, and accuracy of the descriptions and photos of the accommodations posted online. The access factor shows how guests reached an accommodation. This includes two aspects: access to an accommodation based on geographical location or transportation and hosts' level of accommodation, included helping with late check-ins. Neighbor interactions were a part of guests' social interactions with other guests in the same facility or nearby.

Three unique factors in the hotel industry are operations, facilities, and meals. A hotel has a much larger system of operations and more types of facilities than family-owned accommodations in the sharing economy, a fact that is commented on by consumers in online reviews in the hotel industry. Hotels usually offer meals, whereas guests cook for themselves in collaborative consumption; this is again mentioned in online reviews in the hotel industry.

5.2 Online Review Relevance and Text Regression

For each group in the sharing economy, we calculated the mean of the relevance of consumer textual reviews, as measured by each accommodation review vector space's coordinate for each textual factor, as shown in Table 2. We collected data on the hotel industry from a different source from that of the source for the sharing economy; thus, the data were not comparable, and Table 2 does not compare the hotel groups.

Table 2. *Relevance of each review on each attribute for each sharing economy group*

	Communication	Access	Room	Amenities	External Environment	Host Interaction	Neighborhood Interaction	Value
EP	0.0256	0.0242	0.0261	0.0247	0.0210	0.0192	0.0016	0.0101
PR	0.0231***[†]	0.0207***	0.0221***	0.0216***	0.0206	0.0217***	0.0135***	0.0186***

SR	0.0205***	0.0188**	0.0186***	0.0195**	0.0198	0.0265***	0.0202***	0.0232**

Note:

*$p < 0.01$; **$p < 0.05$; ***$p < 0.01$ (This shows compared with the above category of accommodation, the statistical significance of the mean difference of the review relevance.)

† For example, the review relevance of communication from consumers who stayed in a private room (PR) is significantly different at the $p < 0.01$ level compared with the review relevance of communication from consumers who stayed in an entire place (EP).

Next, we used text regression to examine the relationship between guests' attribute-relevant textual reviews and overall satisfaction. The dependent variable was overall satisfaction, and the independent variables were the coordinates of each accommodation review vector space for each attribute, showing guests' accommodation review relevance for that particular attribute. Table 3 presents the results and reports the standardized coefficients.

Table 3. *Results of text regressions of overall satisfaction*

	EF	**PR**	**SR**	**HL**	**HB**
Communication	0.190***	0.186***	0.183***	N/A	N/A
Access	0.188***	0.174***	0.172***	N/A	N/A
Room	0.152***	0.151***	0.147***	0.034	0.015
Amenities	0.121***	0.054	0.038	-0.127***	-0.091**
External Environment (Location)	0.179***	0.176***	0.168***	(0.144)***†	(0.101)***†
Host Interaction (Staff)	0.059	0.087**	0.112***	(0.028)#	(0.011)#
Neighborhood Interaction	0.061	0.098***	0.131***	N/A+	N/A+
Value	0.039	0.079*	0.146***	-0.155***	-0.052
Facility	N/A	N/A	N/A	-0.131***	-0.057
Operations	N/A	N/A	N/A	-0.115***	-0.102***
Meal	N/A	N/A	N/A	0.092**	0.080**

Note:

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

† The number in parentheses () shows the coefficient of the hotel location.

The number in parenthesis () shows the coefficient of the hotel staff.

[+] N/A shows that this factor is not identified in the online reviews and thus is not input in the text regression as an independent variable.

Then, we used text regression to examine the relationship between guests' attribute-relevant textual reviews and demand. The dependent variable was demand, and the independent variables were the same as those listed in Table 2 plus the control variables price and tenure. Table 4 presents the results and reports the standardized coefficients.

Table 4. *Results of text regressions of demand*

	EF	PR	SR	HL	HB
Communication	0.057	0.055	0.049	N/A	N/A
Access	0.198***	0.187***	0.162***	N/A	N/A
Room	0.166***	0.138***	0.132***	0.115***	0.154***
Amenities	0.055	0.049	0.047	0.048	0.036
External Environment (Location)	0.213***	0.209***	0.197***	(0.184)***[†]	(0.105)***[†]
Host Interaction (Staff)	0.044	0.068*	0.097**	(0.112)**[#]	(0.820)**[#]
Neighborhood Interaction	0.021	0.072*	0.101**	N/A[+]	N/A[+]
Value	0.037	0.074*	0.099**	-0.082**	0.046
Facility	N/A	N/A	N/A	-0.079**	0.054
Operations	N/A	N/A	N/A	-0.086**	-0.068*
Meal	N/A	N/A	N/A	0.035	0.010
Tenure	0.155**	0.149***	0.161***	N/A	N/A
Price	-0.164**	-0.187***	-0.156***	-0.105***	-0.081**

Note:

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

[†] The number in parenthesis () shows the coefficient of hotel location.

[#] The number in parenthesis () shows the coefficient of hotel staff.

[+] N/A shows that this factor is not identified in the online reviews and is thus not input in the text regression as an independent variable.

6. DISCUSSION

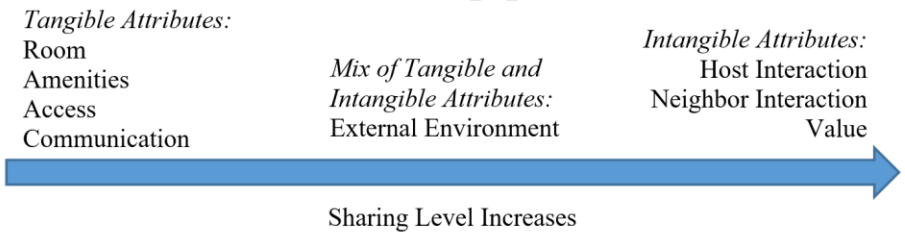
6.1 Focuses on Online Reviews of Consumers with Different Sharing Levels

The results of Table 2 show that the various attributes have different effects on consumer perception, as reflected by the online reviews' different focus when consumers share different types of accommodations. This supports hypothesis 1. According to the change trend of review relevance for consumers with different sharing levels, the text factors mined from online reviews can be categorized into three types: sharing enhancing, sharing diminishing, and sharing flat. Sharing enhancing factors show that consumer review relevance increases with the increase in sharing level, which includes three factors—host interaction, neighborhood interaction, and value—in this study. The exchanges in the sharing economy context have both social and economic aspects. A higher level of sharing provides more opportunities for guests to have more social interactions with hosts and other guests to understand and adapt to the local culture and learn from other people. Further, the price usually goes lower as the sharing level increases. Some consumers seek shared rooms mainly for economic reasons, namely, cheaper accommodation, so they mention value for money in their reviews more often with an increased sharing level.

Sharing diminishing factors show that consumer review relevance decreases with an increase in sharing level. The four sharing diminishing factors in this study were communication, access, room, and amenities. Consumers intending to book an entire place usually perceive higher risks because of the higher price of the accommodation compared to a single room, so they communicate with hosts more frequently. Consumers may perceive higher challenges in accessing an entire place compared with a shared place because they may be the only guests using the entire place at a certain time. Therefore, they may describe the access issue in more detail. An entire place can have a greater variety of rooms and amenities that are valued by guests and are thus mentioned more by guests staying there.

The external environment was the only factor identified as a sharing flat factor in this study, showing that guests have a similar focus on the external environment when they stay in various types of accommodations. The external environment attribute has both intangible and tangible properties. Tangible properties include the geographical location of the accommodation and distance from attractions, and intangible properties include security issues and the atmosphere in the area. The change trend of the review relevance on various attributes with different levels of sharing is shown in Figure 2. Figure 2 shows that guests value more intangible attributes when the sharing level increases.

Figure 2. *The change trend of the review relevance on various attributes with different levels of sharing*



6.2 The Influence of Various Attributes on Overall Satisfaction

Table 3 shows that the various attributes mined from online reviews had different influences on the overall satisfaction of guests who stayed in different types of accommodations, supporting hypothesis 2. In the sharing economy context, these attributes can be categorized into three types depending on their influence on overall satisfaction. The first type is all-sharing-level satisfaction factors—attributes that positively influence overall satisfaction at all sharing levels, including communication, access, room, and external environment. The room is the core product for consumer purchase, and efficient communication, easy access, and a safe external environment can generate positive emotions in consumers, increasing satisfaction. Although the external environment can also generate satisfaction among consumers staying in hotels, we found no

significant relationship between hotel room attribute and overall customer satisfaction. One possible reason for this is that, compared with guests' comments on Airbnb, where most of the comments were positive in describing the favorable aspects of the room, comments about rooms on Expedia varied, with positive and negative comments being mixed. This made the relationship nonsignificant.

The second type is high-sharing-level satisfaction factors—only when the sharing level is high will the attributes positively influence overall satisfaction. These factors include host interaction, neighborhood interaction, and value in this study. Social interaction is one of the main reasons for guests to choose collaborative consumption (Sutherland & Jarrahi, 2018). However, the results showed that only when guests chose a shared place or shared room did they value social interaction. Consumers who chose an entire place valued tangible attributes such as the room and amenities more than intangible attributes such as social interaction. Additionally, shared places or rooms are usually cheaper than an entire place, so guests who choose shared accommodations also have an economic motivation, which influences their overall satisfaction. In contrast, economic benefit or cost is not valued by guests who choose an entire place because they are willing to pay a premium to stay. In the hotel industry context, reviews from leisure consumers mention value negatively because of high prices and additional charges, which lead to a perception of low value for money and low satisfaction.

The third type is low-sharing-level satisfaction factors—only when the sharing level is low will the attributes positively influence overall satisfaction, which includes amenities in this study. Guests staying in an entire place care more about amenities than guests staying in a shared place, who are willing to trade various amenities for more interactions with people and lower prices. Guests who stay in an entire place such as a whole house are willing to pay a premium to enjoy luxury facilities (Heo & Hyun, 2015). However, in the hotel industry context, consumers usually describe amenities and operations negatively in online reviews, highlighting their unfavorable

aspects and weaknesses. Low performance regarding these attributes leads to customer dissatisfaction. Comparatively, facility and value attributes negatively influence leisure consumers' overall satisfaction more than they do that of business consumers. This is because leisure consumers may have more chances to explore and use these facilities with their family members or friends and because financial issues are more of a consideration for them than for business consumers. Thus leisure consumers are more sensitive toward the product and service attributes (Jones & Chen, 2011). The only excitement factor for which high performance generates positive customer satisfaction in the hotel industry is the attribute of meals, which surprises and excites consumers.

6.3 The Influence of Various Attributes on Demand

Table 4 shows the influence of various attributes on demand. The influence of attributes in online reviews on the booking behavior of consumers who share different types of accommodations differs. Based on the different influences, we categorized these attributes into three types: influential factors, sharing-level dependent factors, and noninfluential factors. Influential factors are those influencing consumer demand at all sharing levels, including attributes of the room, access, and the external environment in this study. Compared with hotel lodging, the features of accommodations in the sharing economy context are unique, meaning that guests have less familiarity with the options and perceive high risk. The condition of the room, access, and safety of the external environment are among their biggest concerns. Additionally, these attributes are difficult to describe briefly on an accommodation profile web page. Therefore, detailed descriptions and evaluations of these attributes in guests' reviews are very helpful for future consumers to learn more about the attributes and increase their trust toward the accommodation and host, which is an important antecedent to generate purchase intention in the sharing economy context (Yang et al., 2018). The external environment (location) is also an influential factor to generate consumer demand in the hotel industry because a detailed description of the location can give consumers a better sense of the attractions near the hotel than the limited information found

on a map. The same logic applies to the attributes of rooms. Detailed room descriptions in online reviews, as well as brief descriptions and photos provided by hotels, can give consumers more information.

The second category of attributes is sharing-level dependent factors. Whether the attributes influence consumer demand depends on the sharing level. Host interaction, neighborhood interaction, and value are placed in this factor category. With an increased level of sharing, consumers care more about these attributes when booking. As Table 4 shows, only when guests want to share a place or room with others do they care about past consumers' comments about their social interactions with people, which influence the guests' purchase intention and behavior. Economic value is given more attention when making a booking if consumers want to share an accommodation rather than using it exclusively. Comparatively, in the hotel industry, comments about the staff's consumer service are valued when consumers book hotels because the hotel industry is a service-intensive industry with much consumer-employee interaction. Staff and consumer service are viewed as the most important intangible core attributes (Davras & Caber, 2019). The attribute of value has a significant impact on leisure consumer demand in the hotel industry. However, the value attribute does not have a significant impact on business consumer demand in the same industry. This is because monetary-related attributes are among the main factors influencing leisure consumers' choice of hotel (Chiang & Jang, 2007). However, companies usually pay for business trips; thus value for money is not essential for business consumers when making their booking decisions (Lewis, 1985).

The third category of attributes is noninfluential factors, which do not have a significant influence on consumer demand. These attributes include communication and amenities in this study. Here, we should note that although these attributes described in online reviews do not have a significant impact on consumer demand, this does not necessarily mean that consumers do not care about these attributes when making a booking. Most consumers communicate with the hosts

online or through phone calls directly before they book accommodations in the sharing economy context to obtain more details about the accommodation. Thus, they do not need to view past consumers' reviews in detail to get "secondhand" information about the host's communication. Regarding amenities, Airbnb puts all amenities the accommodation offers in a list, so consumers have a much lower search cost when viewing these amenities. Thus, to save on transaction costs in terms of search time, consumers use direct information on host communication and amenities to make their booking decisions.

In the hotel industry, the attribute of operations negatively influences consumer demand because of the high likelihood of negative comments on operations in online reviews. The attribute of facility with low performance negatively affects leisure consumer demand but has no significant impact on business consumer demand. This is because leisure consumers care more about the trip and hotel stay experience and perception during vacations with their family members or friends (Chu & Choi, 2000). They value particular facilities' sense of style and potential for entertainment (Timothy, 2005). We find neither of the attributes of amenities and meals influence consumer demand in the hotel industry because consumers do not want to incur a relatively high search cost to find more information about the performance of these auxiliary attributes (Hoque & Lohse, 1999). Regarding the control variables, we found that a longer tenure and a lower price generate more demand, which confirms the results of previous studies (e.g., Thirumalai & Sinha, 2011; Xu et al., 2017a, 2017b).

7. IMPLICATIONS AND CONCLUSIONS

7.1 Theoretical Implications

The theoretical implications mainly lie in the extension of social penetration theory and social exchange theory. First, this study extends three facets of social penetration theory (Altman & Taylor, 1973): (1) It examines the interactions between consumers and hosts before, during, and

after the collaborative consumption experience, showing that interpersonal relationships become more intensive over time during the collaborative consumption experience; (2) it examines the various forms of interaction in the sharing economy, including online preconsumption communication, face-to-face social interactions during consumption, and online review writing and posting to generate the eWOM effect following consumption; and (3) it shows that interactive exchanges and information disclosure are reciprocal between consumers and hosts in the sharing economy context, as reflected by the textual factors of communication and host interaction mined from online reviews. However, in the traditional hotel lodging industry, interactive exchanges and information disclosure are only one way, from service provider to consumers, as reflected by the only textual factor of staffs emphasizing their services, which was mined in the reviews.

Second, this study extends social exchange theory (Emerson, 1976) in two respects. First, transactions in the sharing economy context included two aspects: economic and social exchanges. The analysis of online guest reviews showed that consumers care about both economic value and social interactions with hosts and neighbors when they share an accommodation with others. This information highlighted the social property of the exchange during the purchasing behavior of consumers in the sharing economy context rather than focusing only on the economic property. Thus, second, our study extends social exchange theory by incorporating more complex factors into cost-benefit analysis. Based on the findings from online reviews, we found that the cost includes the cost of the information search; the perceived risk of the accommodation, access, and neighborhood; and the price. The benefits include the unique experience of the stay; enjoyment of various products, such as the room and amenities; and social interactions with hosts and neighbors. The study thus revealed both the social and economic properties of the exchange between buyer (i.e., guest) and supplier (i.e., host).

Third, this study extends previous studies (e.g., Teo & Yu, 2005; Wu et al., 2014) about the role of transaction costs in affecting consumer purchasing behavior by discussing the different roles

of transaction costs from this perspective. We determined that the transaction costs, particularly the information search and acquisition cost, significantly influence the function of online reviews and their eWOM effect. To reduce the perceived risk and acquire more information when booking online in the sharing economy, consumers prefer to obtain direct information about tangible attributes, such as amenities, and to search for more details from online reviews about intangible attributes, such as the external environment and social interactions. In other words, consumers are willing to incur a higher information search cost to acquire more details about the intangible attributes because these attributes' perceived risk is even higher than that of tangible attributes that are relatively easier to describe objectively.

7.2 Managerial Implications

The sharing economy is facilitated by platforms, which are two-sided markets in which two sets of agents interact. Reducing the transaction cost offers an important way to benefit both the supplier and buyer to facilitate the transaction. To reduce the transaction cost, particularly the information search and acquisition cost, platforms can use a standardized design to list the performance of all the physical attributes, such as the size and layout of the room and a list of amenities. In addition to word descriptions, more interactive descriptions using photos and demo videos can be helpful (Ert et al., 2016). For intangible attributes, platforms can adopt text mining approaches to extract keywords from past consumer online reviews, such as frequently mentioned words or phrases, making it easier for potential consumers to search for information.

Online reviews can generate positive WOM, particularly in the sharing economy context, to increase consumer trust toward the hosts and platform, enhance familiarity, and reduce perceived risk (Netter et al., 2019). Consumers view information from their peers' online reviews as trustworthy in collaborative consumption (Yang et al., 2018). To encourage consumers to post online reviews, platforms can provide some compensation to consumers. For attributes that

significantly influence consumer demand, platforms can design structured comment forms asking consumers to comment on particular attributes. In this way, all the attributes future consumers care and would like to know about will be commented on by consumers and posted online. Thus, the positive function of online reviews can be amplified by offering more guidance for future consumers' purchase decisions.

Hosts also play an important role in generating customer satisfaction and demand in the sharing economy. Efficient communication through describing the accommodation exactly as it is, quick response through various channels such as email, social media, and phone calls can generate consumer trust and familiarity.

Sharing economy platforms and hosts should differentiate the needs and wants of different consumer segments depending on their sharing level and thus implement targeted service improvement actions. For the consumers staying in an entire place, physical attributes such as the room and amenities should be clearly described and improved because of consumers' willingness to pay a premium to use them. For consumers staying in a shared place or room, offering more opportunities for social interactions such as providing a common place like a patio to encourage people to gather and interact. In this way, the local culture, customs, and traditions learned from the interactions will be valued by those consumers.

7.3 Conclusions

This comparative study of consumer online review behavior and the influential factors of overall satisfaction and demand in the sharing economy and the hotel industry determined that consumers' comments, perceptions, and booking behavior are not differentiated as a zero or one issue in the sharing economy and the hotel industry. Instead, consumers' perceptions and behavior change gradually with changes in the level of sharing—from no sharing, by staying in hotel rooms, to intensive sharing in shared rooms in collaborative consumption. We found that the focus of the

product and service attributes in online consumer reviews differs when consumers share different types of accommodations, so we categorized these attributes into three factors: sharing enhancing, sharing diminishing, and sharing flat factors.

We found that not all attributes described in online reviews influence overall customer satisfaction but rather that the influential factors of consumer satisfaction depend on consumers' sharing level. Based on this finding, we categorized the attributes into three types: all-sharing, high-sharing, and low-sharing level satisfaction factors. With a higher level of sharing, consumers' valuation transforms from more tangible attributes, such as the room and amenities, to intangible attributes, such as hosts and neighborhood interaction. Consumers with a higher sharing level care more about the social interaction and economic value than consumers with a lower sharing level.

The attributes described in online reviews have different effects on overall customer satisfaction, compared with consumer demand, which also depends on the consumers' sharing level. Transaction costs, particularly the information search and acquisition costs, play an important role in influencing consumer purchasing decisions in the sharing economy. We concluded that, for tangible attributes, consumers tend to obtain more direct information by communicating with hosts directly or from the lists and descriptions on the accommodation web page. For intangible attributes, consumers tend to refer more to past consumers' online reviews to learn more details to increase familiarity and trust and reduce perceived risk before making their purchase decisions. The results of our study can help platforms and hosts better understand consumers' needs and desires at different sharing levels and thus better serve them by improving the corresponding products and services and facilitating information acquisition by reducing transaction costs. The findings of this study also offer guidelines for platforms and hosts to utilize online reviews to generate positive eWOM to enhance consumer demand and the performance of platform economics.

7.4 Limitations and Extensions

This study has several limitations. First, regarding the data collection issue, we collected the data from Airbnb and Expedia consumer reviews of the accommodations or hotels in Los Angeles. Although collecting data from the same city can control the influence of different tourism destinations on customer satisfaction and demand, it may also cause some problems. For example, because Airbnb is essentially competing with hotels (Zervas et al., 2017), the characteristics of online reviews on Airbnb and Expedia in the same city might be correlated. Future studies can extend this study by comparing the consumer reviews from Airbnb and Expedia in different cities or countries. Second, regarding data analytics methodologies, our study used LSA to analyze the data. Although LSA is a quick and efficient text-mining technique, it also has several significant drawbacks, such as a lack of interpretable embedded material, as reflected by the fact that the topics must be labeled by a human being and the components may be arbitrarily positive or negative. In recent studies, topic modeling and LDA have become increasingly popular (e.g., Bapna et al., 2019; Lee et al., 2016; Shi et al., 2016). One of the significant advantages of LDA is that it does not require manually labeling each document (Shi et al., 2016). It would be interesting for future studies to use LDA to analyze consumer reviews in the sharing economy and hotel lodging industries and compare the results to this study's results. Third, because of the unavailability of information regarding consumer demand in the public dataset from Airbnb and Expedia, we used the number of reviews as a proxy for customer demand. However, it is possible that the incentives for writing online reviews on Airbnb and Expedia may differ. Thus, using the number of reviews as a proxy for customer demand may introduce systematic bias into the analysis. Future studies can use real consumer demand to determine whether the data are available.

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Biographical Note

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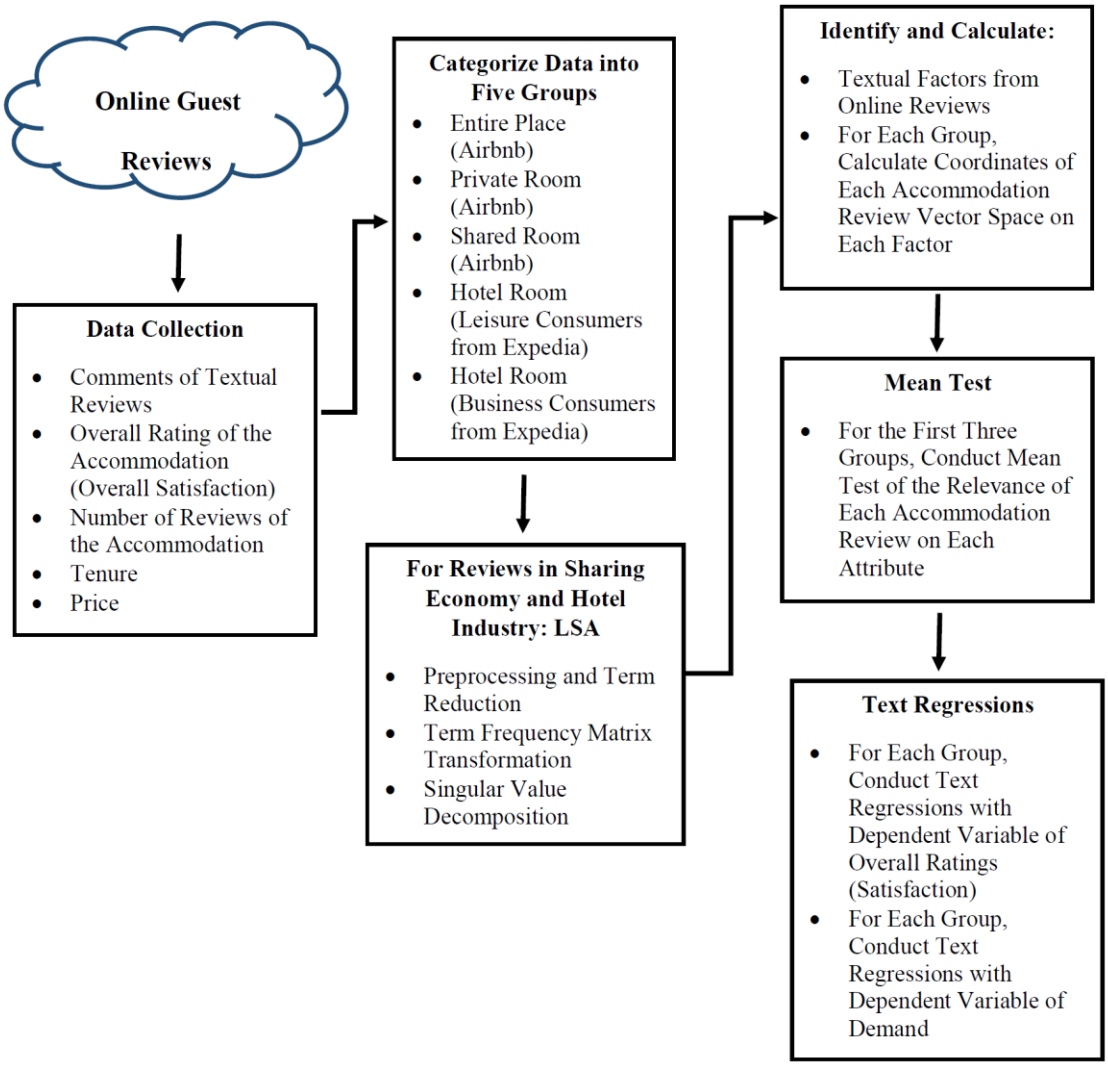
Graphical Abstract



Highlights

- Consumers' online review focuses differ with different sharing levels.
- Influential factors of consumer satisfaction differ with different sharing levels.
- The influence of reviews on demand differs with different sharing levels.
- Higher-sharing consumers care more about social interaction and economic value.
- Information search costs influence customer purchase behavior in sharing economy.