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Green Practices and Customer Evaluations of the Service Experience: The Moderating Roles of External Environmental Factors and Firm Characteristics

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Abstract

Given that services differ from goods in terms of intangibility, heterogeneity, and inseparability, customers may evaluate green services differently from how they evaluate green goods. Previous research has investigated customers' perceptions and purchase decisions regarding green products. However, limited attention has been paid to the impact of green practices on customer evaluations of the service experience as well as important contingencies that bear on this relationship. Drawing on stakeholder theory, our study examines the impact of green practices on customer evaluations and further considers the influences of environmental- and firm-level contingencies. We test our model with a multi-source dataset in the Chinese hotel industry. The findings indicate that green practices improve customer evaluations of the service experience. This positive impact is, however, weaker in external environments characterized by high internet penetration and market complexity but is stronger for hotels with innovative services and for business hotels. Our findings provide novel insights into the environmental ethics and stakeholder management literatures by revealing the role of green practices in promoting positive service evaluations as well as the contingent influences of external environments and internal firm-level characteristics.

Keywords: Green practices, customer evaluations, internet penetration, market complexity, service innovativeness, hotel industry

Introduction

Despite their rapid economic growth, emerging markets face growing challenges posed by environmental pollution and degradation, which cause serious health and social problems (Wang et al. 2018). For example, as one of the most heavily polluted countries in the world, after a decade of efforts to enhance environmental protection, in 2021 the average exposure to PM_{2.5} in major Chinese cities is still five times higher than the safety limit recommended by the World Health Organization.¹ As a result, business entities face increasing pressure from policy regulations and public monitoring to adopt green practices and reduce their negative impact on the natural environment (Yang et al. 2019).

Service firms encounter unique challenges when attempting to incorporate green practices into their service design, however, because such practices may undercut customer demand and undermine a customer's sense of indulgence (Mak and Chang 2019). For example, some hotels cancel their green programs because green practices (e.g., water conservation and reducing the use of disposable goods) lead to customer inconvenience and deprive customers of hedonic pleasure (Giebelhausen et al. 2016; Melissen et al. 2016). Given the intangible nature of services, customers tend to seek observable information (e.g., green practices) to assess the overall service experience (Vo et al. 2019). Unlike goods, services are highly heterogeneous, leading to significant variance in the consumption experience and subsequent evaluations (Nijssen et al. 2006). Different customers may generate distinct evaluations of green practices, and even the same customer may have different experiences at different times or in different circumstances (Lu and Stepchenkova 2012). Accordingly, customers' attitudes towards green practices form an

¹ http://www.cnemc.cn/jcdt/202102/t20210225_822389.shtml

integral part of the consumption experience and influence customers' evaluations of the services they consume.

Previous studies, however, have provided limited insights into this important issue. Prior work has focused primarily on the drivers of green product purchases (Lin and Chang 2012; Luchs et al. 2010) and the impact of green practices on a firm's operational (Christmann 2000), market (Katsikeas et al. 2016), and financial performance (Huang and Li 2017; Leonidou et al. 2013). According to stakeholder theory, a highly influential approach to explaining firms' socially responsible actions, customers constitute one of the most salient stakeholder groups (Buysse and Verbeke 2003; Cronin et al. 2011). Customers evaluate the service experience based on direct or indirect interactions with a firm during the consumption stage (Giebelhausen et al. 2016). Thus, customers' actual experiences with green practices should have a significant impact on their overall assessments of service consumption, a topic that however remains underdeveloped in the existing environmental ethics literature.

To address this research gap, our study draws on stakeholder theory to investigate the impact of green practices on customer evaluations of service firms in China. We choose the hotel industry as our research context because of the increasing environmental concern that characterizes this sector (Noordzy et al. 2016; Ouyang et al. 2019). We adopt a survey to collect data on green practices in hotels and measure customer evaluations using online customer ratings from Ctrip—one of the largest online service providers in China. An online transaction with an accommodation-services firm generally involves three stages: (1) customers booking via online platforms (e.g., Ctrip), (2) staying in a hotel, and (3) posting online evaluations after checkout. Hence, customers make service evaluations by providing ratings and recommendation scores after they complete the consumption experience. Accordingly, we define *customer evaluations* as

customer assessments of the consumption experience in a hotel with respect to services, facilities, cleanliness, and overall indoor and surrounding environments.

According to stakeholder theory, while green practices demonstrate a firm's social responsibility, customer reactions to green practices are influenced by external environments and firm features (Cronin et al. 2011; Wei et al. 2017; Yao et al. 2021). These contingencies may influence customer experience when patronizing hotels and their subsequent evaluating behaviors, thereby affecting the impact of green practices on customer evaluations. Accordingly, we identify two important environmental factors relevant to our research context. One is *internet penetration*, defined as the percentage of residents who have access to the internet (Yue et al. 2019). Internet penetration influences competition intensity in a region, which in turn affects customer perceptions of green practices of the focal firm. The other is *market complexity*, defined as the multiplicity and ambiguity of a given market (Aragón-Correa and Sharma 2003; Katsikeas et al. 2016). Market complexity shapes firms' competitive strategies and behaviors, based on which customers perceive and evaluate green practices.

Regarding firm features, stakeholders may judge the nature of a firm's services or products (e.g., innovativeness) to infer its capabilities, which consequently affects their reactions to green initiatives (Sadovnikova and Pujari 2017). Also, stakeholder utility functions vary for firms with different market positioning and therefore affect customer reactions to firm behaviors (Harrison et al. 2010; Papista and Krystallis 2013). Thus, we consider two firm-level characteristics: *service innovativeness*, defined as the extent of newness of a hotel's services (Stock 2011), and *hotel type*, defined as whether a hotel positions itself as a business hotel. Figure 1 depicts our conceptual model.

*** Insert Figure 1 about here ***

With strong support from the results of a combined survey and archival datasets, our study contributes to the business ethics and environmental management literatures in several ways. First, we contribute to environmental ethics and stakeholder research by revealing the impact of green practices on customer evaluations. Our study also extends the current business ethics literature by revealing that the impact of green practices goes beyond customers' purchase decisions to affect service consumption. Second, we identify the contingent role of external environmental factors (i.e., internet penetration and market complexity). As such, our study contributes to an under-researched area of stakeholder theory regarding how the efficacy of green practices depends on the external environments. Third, we explicate two firm-level characteristics (i.e., service innovativeness and hotel type) as moderators of the link between green practices and customer evaluations. In so doing, our study responds to calls for more research on firm-level contingencies that affect the outcomes of firms' environmental practices (Alt et al. 2015; Huang et al. 2021).

Conceptual Development

Green practices

Green practices are actions through which a firm seeks to protect the natural environment through pollution reduction and prevention, reduced resource consumption, energy savings, recycling, and advocating for a pro-environmental culture (Feng and Wang 2016; Shu et al. 2016). In the hotel industry, green practices include the adoption of energy-saving light bulbs, occupancy sensors, key cards needed for room power, water-saving devices in public spaces and guest rooms, refillable shampoo dispensers, towels and bed linen reuse programs, recycling bins and systems, and environmentally friendly products (Berezan et al. 2014; Berezan et al. 2013).

Two streams of research investigate the outcomes of corporate green initiatives. The green marketing literature primarily focuses on how individual customers react to green product attributes by measuring, for instance, product perceptions (Lin and Chang 2012), purchase intentions (Bodur et al. 2015), and preferences for green products (Luchs et al. 2010; Pelozo et al. 2013). These insights pertain mostly to customer purchase decisions about tangible green goods, but offer limited understanding of customer perceptions of green effort in service industries. The other stream, rooted in the domain of environmental strategy and management, examines the impact of green practices on various firm-level performance dimensions, such as environmental performance (Huang and Li 2017), operational performance (Christmann 2000), new product performance (Katsikeas et al. 2016), and financial performance (Huang and Li 2017; Xie et al. 2016). These studies, however, have paid scant attention to the effects of green practices on customer evaluations in the service sector, which directly foster financial returns.

Services possess two unique characteristics. First, services are intangible; so when customers face high uncertainty regarding service characteristics, green practices can function as important cues for customers to assess overall service quality (Vo et al. 2019). For example, some green practices in hotels directly impact customers' health, such as the provision of organic foods and the adoption of environmentally friendly decorative design and facilities (Robinot and Giannelloni 2010). Second, customers often are highly involved, as co-producers, in implementing green practices in service firms. For example, many hotels allow customers to opt in or out of water conservation management practices as well as linen and towel reuse programs (Han et al. 2018). As a result, green practices may play a critical role in shaping customer evaluations of the service experience.

Stakeholder theory

Stakeholder theory suggests that firms should broaden their strategic objectives to address the expectations and interests of a wide variety of stakeholders instead of focusing narrowly on shareholder wealth maximization (Freeman 1984; Jones et al. 2018). Stakeholders are defined as “any group or individual who can affect or is affected by the achievement of the organization’s objectives” (Freeman 1984, p. 46). A major challenge is that various groups of stakeholders often make diverse or even conflicting claims and have varying expectations of firms (Jones et al. 2007). To understand how firms manage various stakeholder interests strategically, Clarkson (1995) classifies stakeholders into primary or secondary groups based on whether they have formal contacts with a firm. Primary stakeholder groups, such as customers, employees, suppliers, shareholders, and investors, engage in formal relationships with the firm; in contrast, secondary stakeholders, such as the media, local communities, and special interest groups (SIGs), are not engaged in formal transactions with the firm (Clarkson 1995; Garcia-Castro and Francoeur 2016).

Further development suggests that managerial prioritization of stakeholders should be based on their power and interests (Mitchell et al. 1997; Neville et al. 2011). Stakeholders possessing power are perceived as salient because they can impose their will on a firm despite resistance (Jones et al. 2007; Mitchell et al. 1997). Stakeholders can exercise power through coercive, utilitarian, or normative means, and become more salient as they accumulate more types of power (Parent and Deephouse 2007). Moreover, firms prioritize stakeholders who own specific resources and affect their economic activities and business interests (Bridoux and Stoelhorst 2014; Garcia-Castro and Francoeur 2016). As such, customers are one of the most important stakeholder groups because they affect the potential of a firm to generate sales, obtain profits, and build brand equity (Bridoux and Stoelhorst 2014).

The core premise of stakeholder theory is that building strong relationships with primary stakeholders generally leads to competitive advantage and superior firm performance (Garcia-Castro and Francoeur 2016; Jones et al. 2018). In this regard, customer evaluations are a critical dimension of service performance because they are closely associated with customer satisfaction and relational quality (e.g., trust, commitment, and affection) (Olsen et al. 2014; Papista and Krystallis 2013). In the online context, business competition often features homogenization and information overload, making customer evaluations a core differentiating factor (Lu and Stepchenkova 2012; Radojevic et al. 2017). Customers not only evaluate and share their consumption experience online but also refer to others' evaluations when making purchase decisions (Vo et al. 2019). As such, customer evaluations are particularly valuable and influential for building brand reputation and customer relations (Gerdt et al. 2019; Vo et al. 2019).

In the context of environmental management, the government is the primary force for promoting green practices, especially in emerging markets like China (Shu et al. 2016; Walker et al. 2014). Facing the deterioration of the ecological environment, the Chinese government has considered environmental protection a top political mandate (Wang et al. 2018). To achieve the nation's environmental goals, the government exerts coercive power on firms' environmental management behaviors by issuing regulations, adopting policy instruments, and imposing legal sanctions (Yang et al. 2019). Customers also represent a salient stakeholder group for corporate environmentalism. Firms experience normative pressures from customers to proactively manage their green endeavors, because customers are increasingly concerned about the environmental impact of commercial goods (Millar et al. 2012; Robinot and Giannelloni 2010).

A contingent framework

According to stakeholder theory, external environments and internal firm characteristics affect how stakeholders perceive and interpret firm behaviors and in turn the outcomes of these behaviors (Garcia-Castro and Francoeur 2016; Jones et al. 2018). In particular, external environments determine the competitive activities firms take, and thus affect how customers interpret and evaluate their environmental actions. Customers also rely on firm characteristics to form expectations and infer a firm's underlying motives for engaging in green initiatives, thereby make their evaluations of the firm (Banerjee et al. 2003; Jones et al. 2018).

Two external contingencies are particularly relevant to customer online responses in emerging markets such as China: internet penetration and market complexity. Internet penetration represents a key index of internet development and digital civilization (Yue et al. 2019). China has become one of the most digitally evolved markets in the world, with a 70.4% internet penetration rate across the country.² Despite such a remarkable achievement, uneven economic growth and institutional development have led to great variation in internet penetration across regions in China (Luo et al. 2016). Market complexity likely influences customer reactions to green practices because it shapes a firm's competitive behaviors and strategic commitment on environmental endeavor (Aragón-Correa and Sharma 2003; Katsikeas et al. 2016). Chinese markets are highly complex because of frequently changing regulations, evolving market-supporting institutions, and intense competition between diverse business forms (Peng 2003; Yang et al. 2019).

Regarding firm-level characteristics, service innovativeness acts as a critical means to fulfill customer needs and achieve differentiating advantage, thus it is salient for shaping customer perceptions of and their relationships with the firm (Luo and Bhattacharya 2006). In particular,

² <http://media.people.com.cn/BIG5/n1/2021/0204/c40606-32021885.html>

service innovativeness increases customer confidence in a firm's core capabilities (Stock 2011) and serves as a heuristic for customers to evaluate the credibility and utility of the firm's green practices (Ng et al. 2014; Olsen et al. 2014). Hotel type (business vs. non-business hotel) reflects variations in customer demand and travel motives (Gupta et al. 2019). Business hotels, unlike others (e.g., budget/economy, or resort hotels), target mainly frequent business travelers who possess distinctive psychographic characteristics (Millar et al. 2012). Catering to frequent business travelers, business hotels are generally located in downtown or commercial districts, offer meticulous and attentive services, feature high-end and modern décor, and provide business facilities and supplies including in-room computers, information technology infrastructure, and conference halls (Lawrence and Perrigot 2015).

Hypotheses

Green practices and customer evaluations

We argue that adopting green practices leads to better customer evaluations of the overall service experience. First, green practices can enhance customers' positive attitudes towards a firm, strengthening customer beliefs in its service quality (Olsen et al. 2014). As one of the primary stakeholder groups, customers are both economic beings who care about their consumption experience and community members concerned with the service consequences for other stakeholder groups and the natural environment (Jones et al. 2018). Because service is a co-creation process in which customers interact closely with employees, customers can develop first-hand knowledge of the benefits of green practices (Merli et al. 2019). For instance, a healthy environment in a hotel is not only good for customers but also conducive to the long-term wellbeing of employees and local communities. As such, by demonstrating environmental responsibility, green practices help a firm build an image in the eyes of customers that suggests it

is respectful and trustworthy and operates with integrity (Guo et al. 2017; Papista and Krystallis 2013). Such positive perceptions likely boost customer evaluations of the service experience.

Second, because service requires active engagement with customers, green practices in hotels encourage customers to take part in prosocial behaviors. Engaging in prosocial behaviors enhances customer perceptions of their own social worth, leading to warm glowing feelings and subsequently enhancing the overall service experience (Tezer and Bodur 2020). Customers perceive themselves as respectful individuals when they believe that their behaviors contribute to social welfare and the public good (Giebelhausen et al. 2016). Accordingly, firms engaging in green practices can satisfy customers' underlying needs for social approval, self-esteem, and moral satisfaction (Olsen et al. 2014; Papista and Krystallis 2013). Such perceived social or altruistic value elicits warm glowing feelings, a positive mental state customers experience when performing a good deed (Giebelhausen et al. 2016). As a result, green practices foster positive customer evaluations by providing psychological utility to customers.

Hypothesis 1: Green practices positively impact customer evaluations of the service experience.

The contingent effects of external environmental factors

Internet penetration impacts the extent to which firms in a region can offer online information and their ability to promote user-generated content (Luo et al. 2016). We posit that internet penetration negatively moderates the relationship between green practices and customer evaluations. A high level of internet penetration may intensify business competition in the local region because it increases the number of hotels that operate online and compete using various tactics (Gerdt et al. 2019). Customers are thus exposed to a large quantity of promotion information from multiple competitors in the same destination, which may reduce their awareness of and attention to green practices (Papista and Krystallis 2013). Hence, such

abundant information likely dilutes the role of green practices in inducing positive customer attitudes towards a firm, consequently weakening the impact of green practices on customer evaluations.

Furthermore, in regions with high internet penetration, information on firm strategy and activities (e.g., green positioning) are more likely to be dissimilated to and imitated by competitors, weakening the role of green practices in inducing customers' positive perceptions of the firm and subsequent service evaluations. Internet penetration accelerates the speed and extends the reach of information dissemination on interactive media platforms (Luo et al. 2016). In such regions, green competitiveness can be quickly observed and used as benchmarks by competitors, which consequently raises regional standard norms and customer expectation. Therefore, the perceived value derived from green practices decreases, leading to a reduced impact of green practices on customer evaluations of service experience. We therefore propose the following:

Hypothesis 2: The positive relationship between green practices and customer evaluations is weaker in regions with higher levels of internet penetration.

Market complexity reflects uncertainty and ambiguity in the external business environment (Miller and Friesen 1983). Facing high uncertainty, firms tend to increase product variety to reduce the risk of concentrating on a few products or market segments (Aragón-Correa and Sharma 2003). In ambiguous markets, firms are reluctant to adopt resource-demanding and risky approaches to avoid over investment in certain areas (Katsikeas et al. 2016). Therefore, prior studies indicate that market complexity challenges the initiation and implementation of environmental strategy (Aragón-Correa and Sharma 2003; Katsikeas et al. 2016).

We argue that market complexity negatively moderates the relationship between green practices and customer evaluations. First, firms in complex environments often take varying forms of competitive practices in order to cope with the changing and unpredictable business conditions (Miller and Friesen 1983). Customers therefore may face a large variety of service alternatives with diverse promotion packages. Under such circumstances, customers may pay less attention to environmental practices; they also lack consistent clues and established rules to inform their decision-making, including evaluating green practices (Feng and Wang 2016). As a result, green practices likely have a weaker impact on customer evaluations of service experiences.

Second, firms operating in highly complex markets likely adopt less substantiated environmental endeavors, reducing customers' perceived value of green practices for service evaluations. High market complexity makes it difficult for firms to determine the key strategic factors for success (Amit and Schoemaker 1993). When firms perceive high ambiguity, they prefer to make minor adjustments (e.g., symbolic green activities) rather than radical changes that require strategic repositioning or technological advancement (Aragón-Correa and Sharma 2003). As such, customer value derived from green practices reduces in these markets, weakening the positive relationship between green practices and service evaluations. Thus, we predict:

Hypothesis 3: The positive relationship between green practices and customer evaluations is weaker as market complexity increases.

The contingent effects of firm-level characteristics

Service innovativeness reflects a firm's competitive posture of continuous innovation (Stock 2011). To develop innovative services or products, firms need to be willing to accept changes, tolerate risk, and proactively search for new opportunities (Hurley and Hult 1998). Prior research

highlights that service innovativeness serves as an important driver of customer satisfaction, corporate reputation, and financial performance (Feng and Wang 2016; Nijssen et al. 2006; Stock 2011).

We argue that service innovativeness positively moderates the relationship between green practices and customer evaluations. First, service innovativeness strengthens the credibility of a firm's environmental efforts, enhancing the positive role of green practices in customer evaluations. Service innovativeness provides an important signal to customers that a firm is capable of fulfilling customer needs and expectations (Stock 2011). Prior research indicates that customers may be concerned about whether firms adopt green practices as a strategy for greenwashing or window-dressing (Olsen et al. 2014). By demonstrating superior capability through innovative services, a firm's green practices are likely to generate favorable attributions and customer trust, because customers believe that innovative firms would engage in pro-social activities in pursuit of good causes (Guo et al. 2017; Luo and Bhattacharya 2006). As a result, with higher levels of service innovativeness, a firm engaging in green practices is likely to receive better customer evaluations.

Second, service innovativeness may enhance customers' perceived psychological utility of green practices. Innovative firms likely develop unique ways to integrate green practices into the service delivery process, which encourages customers to participate in and co-create green values (Gupta et al. 2019; Merli et al. 2019). Customers' active participation and involvement help them better understand the environmental impact of green service attributes and contribute to stronger affective experiences with pro-environmental behaviors (Olsen et al. 2014; Tezer and Bodur 2020). Customers thus may derive greater social value from green practices and evaluate the accompanying services more favorably. We therefore predict:

Hypothesis 4: The positive relationship between green practices and customer evaluations is stronger for hotels with higher levels of service innovativeness.

Hotel type (business vs. non-business) is a key factor in customers' purchase decisions (Lawrence and Perrigot 2015). Customers select hotels depending on their travel purposes and preferences, which influence how they perceive and evaluate green practices in hotels (Gupta et al. 2019).

We predict that green practices likely make customer evaluations of business hotels more positive. A major group of business hotel customers are frequent business travelers, who tend to be experienced at spotting green practices. Business travelers are generally astute about and demanding of service quality given their high levels of knowledge and expertise regarding hotel services (Lawrence and Perrigot 2015). Green practices thus may constitute a core element in service differentiation and corporate identity for those customers (Han et al. 2018). Thus, business customers are likely to be aware of hotels' green practices and take them into account in forming overall impressions when they evaluate the service experience.

Furthermore, prior research indicates that business travelers have stronger environmental concerns and are more willing to become involved in green practices than non-business (e.g., leisure) travelers (Millar et al. 2012). Thus, business customers likely derive greater psychological value from green practices, leading to more positive evaluations of the service experience (Merli et al. 2019). In contrast, leisure travelers are more concerned with hedonic experience, pleasure, or luxury during service consumption (Gerdt et al. 2019). When hedonic or indulgence goals are evoked, most customers display lower levels of environmental concern than when they are in home or work contexts (Dolnicar et al. 2017). As such, hedonic motives likely reduce the positive psychological responses resulting from pro-environmental behaviors, diluting

the role of green practices in promoting positive customer evaluations. We therefore propose the following:

Hypothesis 5: The positive relationship between green practices and customer evaluations is stronger in business hotels than in non-business hotels.

Methodology

Sample and data collection

To test our hypotheses, we collected a unique dataset of information on Chinese hotels drawn from three independent sources: a multi-respondent survey, the Ctrip website, and China City Statistical Yearbook. By focusing on a single industry, we are able to control for unobserved industry-level heterogeneities. More importantly, we choose the Chinese hotel industry as the empirical setting because of its increasing economic and environmental significance.

Driven by growing domestic consumption, the increasing need for business trips, and its growing reputation as an international tourist destination, the hotel sector in China is experiencing robust growth (Ji 2019; Research and Markets 2019). Growth in China's hotel industry carries substantial consequences with respect to energy use, water consumption, and carbon emissions. In China, hotels consume more water and energy per square meter and per occupied room than their counterparts in developed markets such as the US, the UK, and Canada (Noordzy et al. 2016). For example, hotels in the US consume 627 liters of water per occupied room on average, compared with 1,555 liters in China. The impact of the industry on the natural environment could be devastating if it continues to develop at the current rate without implementing sustainability measures (Noordzy et al. 2016). Hence, the Chinese government has developed policies to promote environmental protection and sustainability in the hospitality

industry. For instance, since July 2019, hotels in Shanghai have been subject to fines of up to 5,000 yuan for providing guests with disposable items like toothbrushes and combs.

To collect our data, we first developed a questionnaire using procedures recommended by Gerbing and Anderson (1988). To gain a deep understanding of green practices, we conducted in-depth interviews with twelve senior managers who are directly involved in hotel management, based on which we developed an English version of the questionnaire. We then translated the questionnaire into Chinese and back into English to ensure conceptual equivalence. We further revised question items after another round of interviews with senior hotel managers.

We downloaded lists of officially registered hotels from city administrations responsible for industry and commerce. We selected hotels with a minimum capacity of 50 rooms because smaller hotels rarely adopt green practices. We then randomly distributed our survey to 800 hotels. We first contacted hotel managers by telephone to solicit their cooperation and screen them for eligibility. When available, we made appointments with them to conduct on-site interviews, which further helped us ensure respondents' correct understanding of the terms that would appear on the survey. To reduce common method bias, we adopted a multi-respondent approach by interviewing two senior managers from each hotel in the final survey. All surveys were conducted in person between March and September 2017. After deleting questionnaires with missing values, we obtained 182 usable responses (364 senior managers) for a response rate of 22.8%.

We then downloaded information pertaining to customer evaluations in 2018 from the Ctrip website, which is one of the largest online providers of hotel and flight bookings in China. Afterward, we matched the customer evaluation data with the survey dataset. We dropped 25 hotels because they lacked customer rating information, leaving us with 157 hotels in our final

sample. In addition, we obtained information on internet penetration rates from the 2017 Chinese City Statistical Yearbook and matched the information to the sampled hotels based on location. Hotels in our final sample are located in more than 22 cities in 15 Chinese provinces, including Xiamen, Chengdu, Hangzhou, Wuhan, and Guiyang. On average, these hotels have been in operation for 7.8 years and maintain 145 rooms.

Measurement

We report the measurement items of surveyed constructs in Table 1. In survey research, 5-point and 7-point Likert scales are most widely used: the former is often used in surveys with customer respondents and the latter is generally adopted in research that recruits senior managers as key informants (Churchill et al. 2010; Malhotra et al. 2008). Therefore, we follow previous environmental management studies (Feng and Wang 2016; Leonidou et al. 2013; Shu et al. 2016) to adopt 7-point Likert scale for perceptual measures in the questionnaire. To enhance response accuracy, we provided descriptions for each scale point in the questionnaire instruction, i.e., 1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neutral, 5 = somewhat agree, 6 = agree, and 7 = strongly agree.

*** Insert Table 1 about here. ***

Customer evaluations. Customer evaluations are operationalized using customer ratings for each hotel on the Ctrip website. We downloaded both customer rating scores (a score ranging from 1 to 5 was given by individual customers who stayed at the hotels and rated service quality, facilities, cleanliness, and indoor and surrounding environments) and customer recommendation percentages (the percentage of customers that would recommend a given hotel to others) for 2018. The two values were highly correlated, so we standardized them and calculated their mean

value as the final customer evaluation for each hotel. Therefore, the customer evaluations range from -1 to 1, with a mean value of 0.

Green practices. Following prior literature (Leonidou et al. 2013), we measured green practices using seven questionnaire items to capture several aspects of a hotel's environmental-management practices, including energy savings, waste management, provision of ecological products, proactiveness in environmental protection, and collaboration with other organizations for green purposes. One senior manager in each hotel served as the respondent for these questions. To ensure that respondents had an adequate understanding of environmental-management actions, we prepared a list of specific practices before they answered the questions. These practices included, for instance, the use of efficient lighting, low-temperature water, low-flow shower heads, and recycling bins; no provision of disposable hygiene items (e.g., toothbrushes and combs), towel and linen changes upon request only, food-waste management, and many others (Berezan et al. 2014; Berezan et al. 2013; Millar et al. 2012).

Internet penetration is the percentage of people who have used the internet divided by the total population of a city (Yue et al. 2019). We collected these data from the China City Statistical Yearbook (2017).

Market complexity. Based on prior study (Katsikeas et al. 2016), we measured market complexity with two survey items asking hotel managers about the extent to which they perceive the market environment as ambiguous and complicated.

Service innovativeness. In consistent with prior study (Stock 2011), we assessed service innovativeness by asking hotel managers to gauge the extent to which their hotel services are novel, unique, and unconventional.

Hotel type (business vs. non-business) is a dummy variable indicating whether a hotel targets business customers, which takes the value of 1 if it is a business hotel and 0 otherwise. Overall, 67% of the sample hotels identified themselves as business hotels. Data on hotel types were provided by senior managers other than those who answered questions about green practices.

Control variables. We included several important hotel-specific factors in our analyses to rule out alternative explanations. First, we controlled for *hotel age* (measured as the logarithm of the number of years a hotel has been operating) and *hotel size* (measured as the logarithm of the number of hotel rooms). As hotels mature with age, they could build reputational and brand status (Kularatne et al. 2019); however, older hotels may also be associated with dated facilities that affect customer evaluations negatively. With regard to hotel size, while larger hotels often have more resources and enjoy superior reputations, there are also studies showing that offering a disproportionately large number of rooms makes hotels congested and causes service quality to deteriorate (Radojevic et al. 2017).

Second, we controlled for *hotel star* because earning stars reflects specific quality standards and serves as crucial information impacting customers' purchase decisions. The existing literature further confirms the validity of hotel star as a reliable predictor of customer satisfaction and positive evaluations (Gerdt et al. 2019). We also included *occupancy rate* as a control. Occupancy rate reflects the average capacity utilization in a hotel, which has been closely linked with perceived service quality (Madanoglu and Ozdemir 2016).

Third, *green certification* is a dummy variable that indicates whether a hotel has been granted green certification by the government or third-party certifying authorities for engaging in

environmentally friendly practices. Having a green certification is one of the most important green attributes of hotels and thus may affect customers' service evaluations (Millar et al. 2012).

Fourth, we included a dummy variable, *franchising*, because managerial discretion differs between independent and franchised hotels in terms of initiating and designing specific service attributes such as green practices (Lawrence and Perrigot 2015). The franchising variable indicates a hotel's governance mode by taking the value of 1 if it operates under a franchising agreement or 0 if it is managed independently. Lastly, we used two dummy variables, *state ownership* and *foreign ownership*, to indicate a hotel's ownership structure. Each variable takes the value of 1 if a hotel is state- or foreign-owned and 0 otherwise.

Construct Validity

We used confirmatory factor analysis to analyze the reliability and validity of our multi-item scales. Specifically, AMOS was used to estimate a measurement model for the multi-item scales to assess the hypothesized unidimensionality of the measures as well as their reliability and convergent and discriminant validity. The model was specified so that the items loaded on only their corresponding latent constructs. We report the results in Table 1, which suggest that the data fit the hypothesized measurement structure quite well ($\chi^2/df = 1.29$; RMSEA = 0.04, CFI = 0.98, TLI = 0.98, IFI = 0.98).

The composite reliability of green practices, market complexity, and service innovativeness constructs are 0.87, 0.65, and 0.93, respectively, suggesting that there was an adequate level of reliability (Fornell and Larcker 1981). All factor loadings are large and highly significant ($p < 0.01$) and the average variance extracted (AVE) of both constructs are above the threshold of 0.50 (except for market complexity, which is 0.49), showing evidence of convergent validity (Fornell and Larcker 1981). Regarding discriminant validity, the square roots of both constructs'

AVE are clearly greater than the value of shared variance with each other. Also, the unconstrained model (with free correlation between the two constructs) exhibits a better fit than the constrained model (the correlation between the two is set to 1) and the chi-square difference is significant at the 0.01 level, indicating the distinctiveness of the two constructs (Bagozzi et al. 1991). The correlations between and descriptive statistics for all these variables appear in Table 2.

*** Insert Table 2 about here. ***

Analyses and Results

We tested our hypotheses using stepwise regression to assess the explanatory power of each set of variables. For moderating hypotheses, we mean-centered each scale to construct the interaction terms (Aiken and West 1991). The regression results are reported in Table 3.

*** Insert Table 3 about here. ***

In Table 3 we report the results obtained using Model 1 to test the effects of the control variables and four moderators on customer evaluations. As expected, hotel star has a positive effect whereas hotel age negatively relates to customer evaluations. Franchising and state-owned hotels are more likely than other types to generate positive customer evaluations.

Regarding our variables of interest, Hypothesis 1 predicts that a hotel's green practices will have a positive impact on its customer evaluations. The coefficient for green practices from Model 2 is positive and significant ($b = 0.237, p < 0.01$), demonstrating that green practices are positively associated with customer evaluations, in support of Hypothesis 1.

We used Models 3, 4, 5 and 6 to test the moderating effects of internet penetration, market complexity, service innovativeness, and hotel type, respectively. Specifically, the interaction term for green practices and internet penetration is negative and significant ($b = -1.720, p < 0.01$;

Model 3), in support of Hypothesis 2. To facilitate the interpretation of these findings, we plotted the interaction effects when internet penetration is high (one standard deviation above the mean) and low (one standard deviation below the mean) following the procedure described by Aiken and West (1991). Panel A of Figure 2 shows that the positive effects of green practices on customer evaluations are significant in the presence of low internet penetration ($b = 0.609, p < 0.01$) but not with high internet penetration ($b = -0.063, n.s.$). These findings provide support for Hypothesis 2, which predicts that internet penetration negatively moderates the relationship between green practices and customer evaluations.

The interaction term for green practices and market complexity is also negative and significant ($b = -0.151, p < 0.05$; Model 4), supporting Hypothesis 3. Panel B of Figure 2 shows that the positive effects of green practices on customer evaluations are significant when market complexity is low ($b = 0.443, p < 0.01$) but not when it is high ($b = 0.103, n.s.$). The slope results support Hypothesis 3, which predicts that market complexity negatively moderates the relationship between green practices and customer evaluations.

The interaction term for green practices and service innovativeness is positive and significant ($b = 0.148, p < 0.05$; Model 5), in support of Hypothesis 4. Panel C of Figure 2 shows that in hotels with high service innovativeness, green practices have a positive relationship with customer evaluations ($b = 0.419, p < 0.01$), yet the effects become non-significant for hotels with low service innovativeness ($b = 0.127, n.s.$). This offers further support for Hypothesis 4, which predicts that service innovativeness positively moderates the effects of green practices on customer evaluations.

The interaction term for green practices and hotel type is positive and significant ($b = 0.434, p < 0.05$; Model 6), in support of Hypothesis 5. Panel D of Figure 2 shows that green practices

have a positive relationship with customer evaluations for business hotels ($b = 0.470, p < 0.01$), yet the effect is not significant for non-business hotels ($b = 0.097, n.s.$), which is consistent with Hypothesis 5. Results obtained from the full model (Model 7) show that both the direct effects of green practices and the four moderating effects remain robust.

*** Insert Figure 2 about here. ***

Additional tests

We further test the mediating effects of customer feelings to explore the underlying mechanism between green practices and customer evaluations. We collected data on customer feelings by asking senior managers the extent to which they agree with the following statements: “Staying at our hotel is a joy for most customers” and “Staying at our hotel is a delight for most customers”. We adapted these two items from the scales used in prior studies that measure the emotional aspect of customer value in service delivery (Leroi-Werelds et al. 2014; Petrick 2002). We used both a multistep regression approach (Baron & Kenny, 1986) and bootstrapping analyses (Preacher & Hayes, 2004) for the mediation tests. The regression results show that green practices significantly affect customer evaluations ($b = 0.237, p < 0.01$) and customer feelings ($b = 0.453, p < 0.01$). Customer feelings are also significantly associated with customer evaluations ($b = 0.167, p < 0.05$). When including the mediator of customer feelings in the model, the effects of green practices on customer evaluations weaken substantially and become only marginally significant ($b = 0.161, p < 0.1$). Furthermore, results of bootstrapping analyses suggest a significant mediating role for customer feelings because the 95% bootstrapped confidence intervals around the indirect effect do not contain zero (0.005, 0.164). Hence, empirical results support a partial mediating role of customer feelings in the relationship between green practices and customer evaluations.

Discussion

Building on stakeholder theory, our study examines, in the setting of the Chinese hotel sector, the impact of green practices on customer evaluations of the service experience in conjunction with important contingencies associated with a firm's external environments and internal contingencies. Our findings show that adopting green practices leads to better customer evaluations of the service experience. Furthermore, this positive impact is weakened by high internet penetration and market complexity but is stronger for hotels with innovative services and for business hotels. These findings contribute to the extant literature in three major ways.

First, our study contributes to the environmental ethics literature and stakeholder theory by revealing the role of green practices in promoting positive customer evaluations of the service experience. Prior research has examined several firm-level outcomes of green practices (Huang and Li 2017; Wei et al. 2017) and also customer perceptions of green products and purchase intentions (Bodur et al. 2015; Peloza et al. 2013). Despite the unique characteristics of services (vs. those of goods), and the fact that customers interact with green practices during service consumption, limited attention has been paid to the implications of green practices for customer evaluations of the service experience. Extending prior research, our study argues that green practices can boost positive customer evaluations because green practices enhance customer perceptions of service providers and elicit positive feelings that are interwoven with the consumption experience. Based on online ratings from real customers combined with a multi-respondent survey and archival data, our findings indicate that, green practices positively impact customer evaluations of the consumption experience in Chinese hotels. The results of mediation tests further confirm that green practices affect service evaluations partially through inducing

positive customer feelings. As such, our study applies stakeholder theory to build a customer evaluation model that highlights the critical role of green practices in shaping service experience.

Second, our study extends stakeholder theory by revealing the moderating role that external business environments play in the green practices–customer evaluations relationship. Previous work has shown that firms’ ability to capture value from green initiatives depends on external contextual factors such as environmental dynamism (Katsikeas et al. 2016), competitive intensity (Leonidou et al. 2017), and industrial pollution intensity (Leonidou et al. 2013; Sadovnikova and Pujari 2017; Yao et al. 2021). Enriching this line of inquiry, our study focuses on two external environmental factors that are highly relevant to customers’ online evaluations in an emerging market. In particular, our findings show that the positive role that green practices play in shaping customer evaluations weakens in regions with high internet penetration, adding a boundary condition to the results of prior ethics study (Vo et al. 2019) that indicate that corporate social responsibility (CSR) engagement enhances a firm’s online word-of-mouth profile. Moreover, while Aragón-Correa and Sharma (2003) made a general theoretical prediction that market complexity would strengthen the association between a proactive environmental strategy and competitive advantage, our empirical results illustrate that the positive impact of green practices on customer evaluations is weaker in highly complex markets.

Third, we test two firm characteristics as important moderators in the link between green practices and customer evaluations in response to calls in environmental management research for additional investigation of firm-level contingencies (Alt et al. 2015; Huang et al. 2021). In particular, our study reveals that green practices are more effective in improving customer evaluations for hotels with high service innovativeness or large business-customer bases. Prior studies show that stakeholders use firm-level information such as prior environmental

performance (Berrone et al. 2017; Sadovnikova and Pujari 2017) and brand (Olsen et al. 2014) to determine their reactions to green practices. Our findings indicate that high service innovativeness also serves as a strong signal that customers use to form their perceptions of and responses to green practices. Moreover, the current environmentalism literature pertaining to the hotel sector has found that hotel size (Ouyang et al. 2019) and rating stars (Gerdt et al. 2019) influence customers' expectations of and satisfaction derived from sustainable management. Enriching this research stream, our findings indicate that hotel types that cater to distinct market segments (i.e., business vs. others) affect customer-perceived service outcomes of green practices.

Managerial Implications

Our findings provide important implications for service managers. First, going green can help a firm achieve better customer evaluations of the overall service experience. This finding contrasts with past experience indicating that green practices hurt customer satisfaction by causing inconvenience and reducing experiential pleasure. Instead, our findings suggest that hotels should implement green initiatives robustly to elicit positive customer evaluations. Managers should invest in green actions such as adopting energy-saving systems and waste-management practices as well as providing ecological products and services. Managers also could initiate voluntary green programs such as towel reuse and reduction of disposables and incentivize customers to participate in such programs. Managers could engage in active collaboration with business partners, local communities, and government agencies to design green activities and advocate for environmental protection.

Second, managers should be aware that the positive impact of green practices on customer evaluations depends on the external environments. In particular, in firms located in cities with

low internet penetration, managers should make greater efforts to adopt green services to generate better customer evaluations. In contrast, in areas with high levels of internet development, managers should focus on developing sophisticated green practices that are difficult for competitors to imitate so as to increase customer awareness and evaluations of green practices. Furthermore, managers should strive to build brand differentiation centered on green concepts to improve service evaluations in less complex markets. By contrast, in highly complex markets, managers need to improve green credence of their environmental actions (e.g., certification) and make sufficient resources investment if they are to benefit from green practices for customer evaluations.

Third, managers should understand that firm characteristics affect the strategic role of green practices. In particular, managers should invest more effort in service innovation to reinforce customers' positive responses to green initiatives. Managers should cultivate a spirit of innovativeness among organizational members, particularly frontline employees, to continuously learn and transform knowledge and ideas into new service elements. Managers also need to establish a corporate service philosophy centering on uniqueness, novelty, and unconventionality, and effectively communicate this philosophy to customers. In addition, green practices are more effective at improving customer evaluations for service firms that target businesspersons. Thus, business hotels should take proactive measures to enhance their green practices to foster a superior customer experience.

Limitations and Future Research

There are ample opportunities to extend our study. First, we investigate green practices using an aggregate concept. As customer responses vary across green practices (Robinot and Giannelloni 2010), future research could disentangle green practices into various types (e.g., pollution

reduction and pollution prevention) and examine their impacts on customer evaluations separately. Second, our study focuses on firm-level customer evaluations, which reflect the average level of all customer ratings. An interesting future research direction would involve revealing individual heterogeneity in customer responses to green practices by linking customer IDs and booking information with review content and evaluations. For instance, future studies could combine survey data on green practices from hotel managers with customer information gleaned from booking platforms (e.g., Ctrip, Qunar, Dianping) in terms of their travel purposes, reviewer grades, checked-in room types, and review topics.

Third, we argue that green practices enhance customer evaluations through eliciting positive attitudes and feelings towards a firm during service consumption. Despite our effort in conducting mediation tests, future studies could collect customer data using multi-item scales to further explore the underlying mechanisms that drive the relationship between green practices and customer evaluations. Fourth, we consider two external environmental factors (i.e., internet penetration and market complexity) and two firm-level characteristics (i.e., service innovativeness and hotel type). To fully reveal the role of green practices across regions and countries, future studies could incorporate institutional factors such as regional pollution (Wang et al. 2018) and the legal environment (Wei et al. 2017).

Finally, because our study employed a sample of Chinese hotels, one should be cautious in generalizing our findings to other service industries (e.g., banking or healthcare) and economic contexts. Our research context has two unique features for studying green practices: (1) The Chinese government has issued regulations and policies to promote environmental protection in the hotel industry, which has fostered strong environmental awareness and concerns among customers in this sector (Ouyang et al. 2019). (2) Hotel services allow customers to become

deeply involved in many green practices during the consumption experience. As such, our findings may not generalize to service industries with low-contact features or where customers are not significantly concerned about environmental quality. We encourage further research to empirically test such boundary conditions pertaining to the relationship between green practices and customer evaluations of the service experience.

Compliance with Ethical Standards

Ethical approval: “All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.”

Informed consent: “Informed consent was obtained from all individual participants included in the study.”

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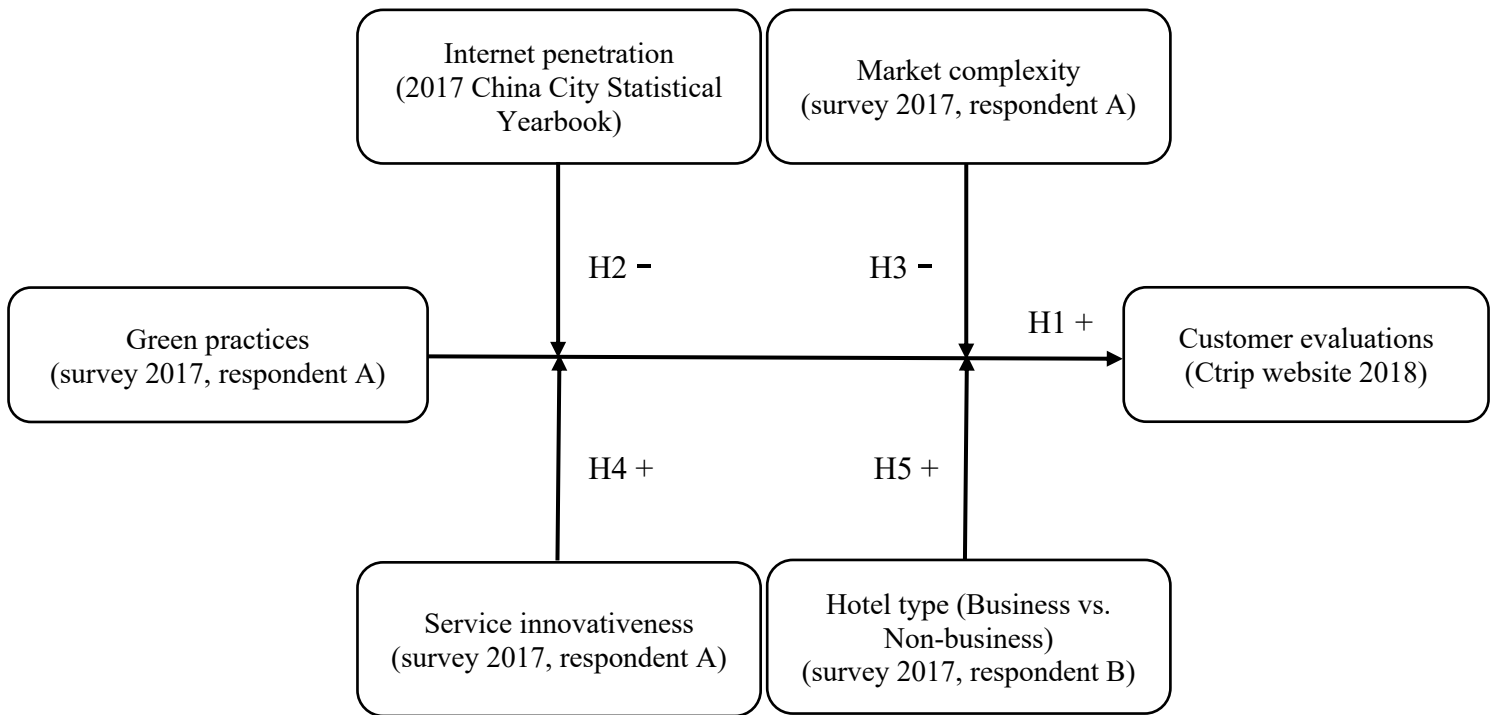
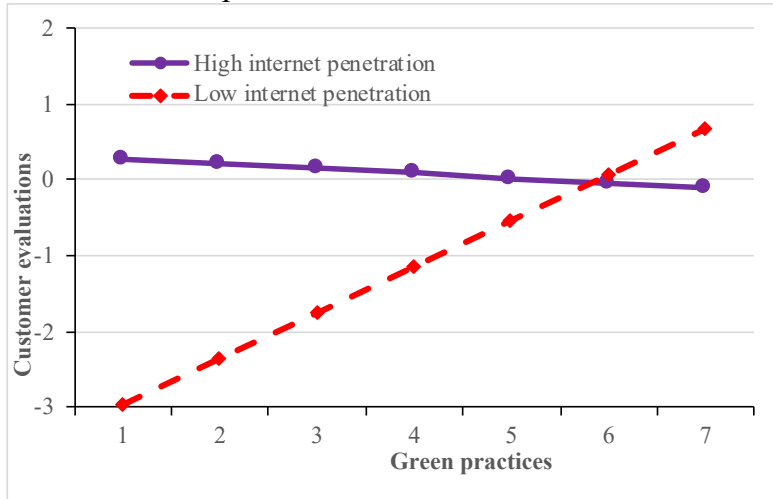
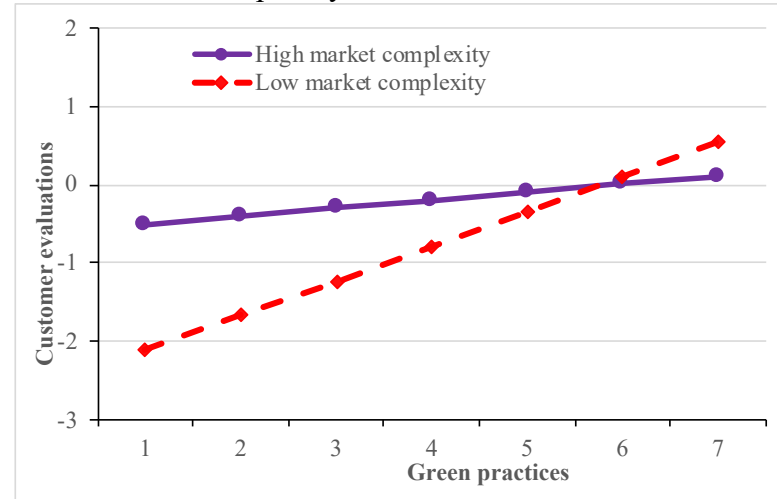


Figure 1. Conceptual framework

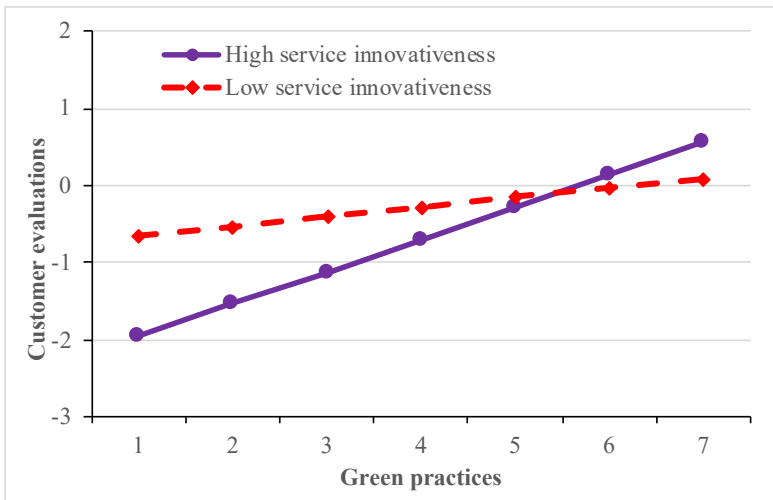
Panel A: Internet penetration



Panel B: Market complexity



Panel C: Service innovativeness



Panel D: Hotel type (Business vs. Non-business hotel)

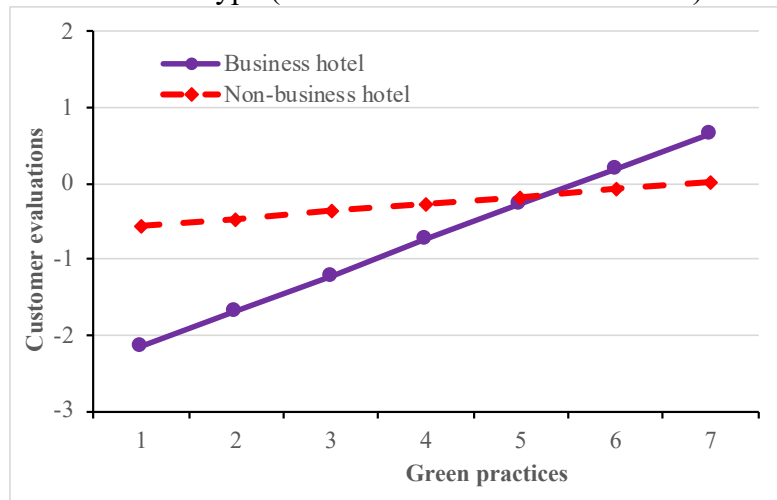


Figure 2: Interaction effects

Table 1. Construct Measurement Items and Validity Assessment

Model fit: $\chi^2/df = 1.29$; RMSEA = 0.04, CFI = 0.98, TLI = 0.98, IFI = 0.98.	SFL	AVE	CR
<i>Green practices</i>			
1. We apply energy saving practices in our guestrooms and common areas.	0.84	0.50	0.87
2. We apply waste management practices in our guestrooms and common areas.	0.62		
3. Our hotel collaborates with local communities, governmental agencies, and other hotels in implementing environmental practices and improving environmental standards.	0.85		
4. Our hotel gives priority to offering ecological products and services.	0.74		
5. Our hotel is active in implementing green practices.	0.59		
6. We encourage visitors to take part in environmental protection, e.g., voluntary changing of towels.	0.68		
7. We encourage visitors to consider the environment when using hotel facilities.	0.57		
<i>Market complexity</i>			
1. The environment in which our hotel operates is ambiguous.	0.84	0.49	0.65
2. The environment in which our hotel operates is complicated.	0.53		
<i>Service innovativeness</i>			
1. The services of our hotel are novel.	0.85	0.82	0.93
2. The services of our hotel are unique.	0.97		
3. The services of our hotel are unconventional.	0.90		
Additional tests			
<i>Customer feelings</i>			
1. Staying at our hotel is a joy for most customers	0.94	0.88	0.94
2. Staying at our hotel is a delight for most customers	0.94		

Notes: SFL = standardized factor loading; AVE = average variance extracted; CR = composite reliability; RMSEA = root mean square error of approximation, CFI = comparative fit index, TLI = Tucker-Lewis index, IFI = incremental fit index.

Table 2. Descriptive statistics

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Customer evaluations														
2. Green practices	0.25**													
3. Hotel type (Business)	0.11	0.01												
4. Service innovativeness	0.10	0.28**	-0.13											
5. Market complexity	-0.02	0.13	0.07	0.10										
6. Internet penetration	0.02	0.08	-0.01	-0.06	-0.16*									
7. Hotel age	-0.06	-0.07	0.08	-0.16*	0.12	-0.10								
8. Hotel size	0.24**	-0.02	0.18*	-0.06	-0.03	-0.05	0.18*							
9. Hotel star	0.34**	0.05	0.21**	0.02	-0.10	-0.01	0.12	0.48**						
10. Occupancy rate	0.09	0.01	0.11	-0.01	0.12	-0.01	0.04	0.24**	-0.02					
11. Green certification	0.09	0.15†	-0.05	0.21**	0.11	-0.26**	0.16*	0.06	-0.13	0.08				
12. Franchising	0.06	-0.01	-0.22**	0.20*	0.03	0.00	0.01	-0.13†	0.12	-0.18*	0.02			
13. State ownership	0.16†	0.03	-0.03	-0.21**	-0.04	0.10	0.30**	0.22**	0.01	0.18*	-0.12	0.11		
14. Foreign ownership	0.11	0.13	0.14†	0.15†	0.02	0.14†	0.02	0.13	-0.04	0.19*	-0.03	-0.12	-0.04	
Mean	0.00 ^a	5.69	0.67	5.00	4.38	0.64	2.05	4.98	2.63	4.03	0.39	0.17	0.12	0.10
S.D.	0.93	0.83	0.47	1.14	1.17	0.18	0.76	0.84	1.01	0.72	0.49	0.38	0.33	0.29

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (two-tailed tests).

^a average of standardized customer rating score (original mean = 4.41, S.D. = 0.40) and standardized customer recommendation rate (original mean = 94.02%, S.D. = 5.45%).

Table 3. Regression results

Variables	DV= Customer evaluations													
	M1		M2		M3		M4		M5		M6		M7	
	b	se	b	se	b	se	b	se	b	se	b	se	b	se
Hotel age	-0.220*	0.101	-0.198*	0.099	-0.175†	0.098	-0.178†	0.099	-0.174†	0.099	-0.198*	0.095	-0.137	0.093
Hotel size	0.092	0.101	0.108	0.099	0.088	0.098	0.129	0.099	0.115	0.098	0.136	0.096	0.145	0.093
Hotel star	0.259**	0.082	0.251**	0.081	0.262**	0.080	0.231**	0.080	0.239**	0.080	0.230**	0.078	0.209**	0.075
Occupancy rate	0.083	0.105	0.070	0.103	0.103	0.102	0.072	0.101	0.094	0.102	0.048	0.099	0.100	0.096
Green certification	0.135	0.157	0.085	0.155	0.075	0.152	0.118	0.153	0.108	0.153	0.004	0.150	0.041	0.145
Franchising	0.364†	0.197	0.392*	0.193	0.397*	0.190	0.385*	0.191	0.360†	0.192	0.378*	0.186	0.345†	0.179
State ownership	0.510*	0.241	0.446†	0.237	0.434†	0.233	0.385	0.235	0.361	0.238	0.420†	0.227	0.272	0.223
Foreign ownership	0.193	0.252	0.133	0.248	0.108	0.244	0.042	0.248	0.121	0.246	0.191	0.239	0.084	0.232
Internet penetration (IP)	0.060	0.413	-0.058	0.407	-0.029	0.400	0.006	0.402	-0.012	0.403	-0.295	0.396	-0.189	0.381
Market complexity (MC)	0.010	0.062	-0.009	0.061	-0.020	0.061	-0.022	0.061	0.029	0.064	-0.028	0.059	-0.013	0.060
Service Innovativeness (SI)	0.057	0.068	0.013	0.068	0.038	0.068	0.037	0.068	0.016	0.067	0.004	0.065	0.048	0.064
Hotel type (Business)	0.180	0.158	0.168	0.155	0.179	0.153	0.216	0.155	0.171	0.154	0.150	0.149	0.202	0.144
H1: Green practices (GP)			0.237**	0.088	0.213*	0.087	0.288**	0.090	0.208*	0.088	0.274**	0.085	0.273**	0.086
H2: GP * IP					-1.720**	0.477							-1.849**	0.458
H3: GP * MC							-0.151*	0.075					-0.145*	0.071
H4: GP * SI									0.148*	0.068			0.128*	0.064
H5: GP * Business											0.434*	0.183	0.372*	0.175
R ²	0.201		0.240		0.268		0.264		0.261		0.303		0.612	
Change in R ²			0.039**		0.029*		0.024*		0.021*		0.063**		0.372**	
F	3.018**		3.464**		3.723**		3.643**		3.574**		4.415**		4.899**	

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$ (two-tailed tests).