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Research Paper

# Determinants of sustainable behavior of firms and the consequences for customer satisfaction in hospitality

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ABSTRACT

The literature on determinants of firm sustainable behavior and its effects on firm performance is rich. However, there are still important questions that lack definitive conclusions. One revolves around factors mediating the link between organizational determinants and firm sustainable behavior, which may still be regarded as a black box. Another stresses the impact of sustainable behavior on customer satisfaction. Using a sample of survey data from 974 small and medium-sized German hotels and 62,766 independent reviews, this paper examines the links between innovativeness, managers' sustainability attitudes and firm sustainable behavior while taking into account perceived advantages of sustainable behavior as a mediator. Furthermore, the relationship between sustainable behavior and customer satisfaction is examined. A model is proposed and tested using structural equation modeling. The results confirm innovativeness and sustainability attitudes as determinants of sustainable behavior and perceived advantage as a mediator. Sustainable behavior shows a positive relation to customer satisfaction.

## 1. Introduction

Since the United Nations General Assembly in 1987 and the publication of the often cited definition of sustainable development (WCED, 1987), attention on sustainability has grown steadily and become a global megatrend both in practice and research (Leonidou and Leonidou, 2011). Within the hospitality industry, businesses have started to integrate sustainability measures into their regular activities. Following the triple bottom line framework conceptualized by Elkington (1997), sustainable behavior should capture the environmental, social and economic aspects to focus on the corresponding value creation and minimizing negative effects. Previous research on firm sustainable behavior has either focused mainly on the economic dimension of sustainability (e.g. Prudhomme and Raymond (2013); Susskind, 2014) or dealt specifically with the environmental dimension (e.g. Fraj et al., 2015; Ramanathan et al., 2016; Yu et al., 2017; Garay et al., 2019). Few studies have emphasized that sustainability management comprises the three pillars of sustainability (e.g. Horak et al., 2018; Gerdt et al., 2019; Kuokkanen and Sun, 2019).

In this course, researchers have pointed out different motivations and antecedents leading to firm sustainable behavior and investigated its consequences for business performance (Porter and Reinhard, 2007; Molina-Azorín et al., 2009; Kornilaki et al., 2019). In addition to building competitive advantages, motivations for managers to engage in sustainability include pursuing intrinsic norms, values and beliefs; gaining legitimacy; and complying with regulations (e.g. Albort-Morant et al., 2016; Jones et al., 2014; Martinez-Martinez et al., 2019). Beyond relatively static internal determinants, such as company size, age and ownership type (e.g. Álvarez-Gil et al., 2001; Zhu et al., 2014), the role of organizational determinants, such as general dynamic capabilities (Albort-Morant et al., 2016), learning orientation, environmental knowledge and innovativeness (Fraj et al., 2015; Martinez-Martinez et al., 2019) has thus far gained less attention (Leonidou et al., 2015). The behavior of hotel managers can be seen as an important determinant, as the majority of firms in the hospitality industry are small and medium sized enterprises (SMEs), which are highly dependent on individual manager decisions in contrast to large hotel chains (Park et al., 2014; Kornilaki et al., 2019).

To gain a deeper understanding of what drives the sustainable behavior of firms, it is necessary to further advance the field of research dealing with dynamic organizational determinants and possible mediators. Therefore, we examine the relationship between innovativeness and sustainability attitudes on sustainable behaviors in the presence of the mediator perceived advantage of sustainable behavior.

However, regardless of how hotels engage in sustainability, to survive within the competitive industry, it is crucial for hotels to focus on customer satisfaction (Assaf and Magnini, 2012). When integrating sustainability according to the triple bottom line, hotel managers thus

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need to gain an understanding of how this can be achieved in line with preserving and/or increasing customer satisfaction (Berezan et al., 2013). Although current research in the field has thus far mostly neglected customer satisfaction as a performance measure, financial indicators may only paint a short-term picture (e.g. Rodríguez and Cruz, 2007; Ramanathan et al., 2016). Electronic word of mouth (eWOM) was rarely investigated as an original, unbiased source (Zhou et al., 2014; Schuckert et al., 2015) for the assessment of customer satisfaction (Lu and Stepchenkova, 2012; Brazytė et al., 2016; Yu et al., 2017; Gerdt et al., 2019). In addition to the analysis of the determinants of sustainable behavior, we include an analysis of the consequences on customer satisfaction using online ratings as an objective data source.

The present study contributes to the field of research by proposing a model that takes into account managers' sustainability attitudes and innovativeness as determinants of the sustainable behavior of the firm regarding the impact of such behavior on customer satisfaction. In this study, we develop a comprehensive measurement for sustainable behavior and investigate the role of the perceived advantages of the sustainable behavior of the firm as a possible mediating factor. To test the model, we collected data from 974 German hotel managers of SMEs via an online survey and connected these to the respective review scores of the hotels (62,766), which we scraped from an online review site to analyze customer satisfaction. Research on the German hospitality industry has been widely neglected, although travel and tourism accounts for 8.6 % of the GDP and 12 % of employment (World Travel and Tourism Council (WTTC, 2019). Moreover, interest in sustainable travel is present as Germans are looking for an ecologically (49 %) or socially (56 %) responsible holiday (44 % for both) (Deutscher Tourismus Verband, e. V (DTV, 2016).

This paper is structured as follows: First, we provide a brief overview of the literature and the theoretical background to develop the central hypotheses of the paper. We then describe our research method before presenting and discussing the results. In the last section we provide theoretical and practical implications as well as the limitations of our study.

## 2. Theoretical framework and hypothesis development

### 2.1. Sustainability attitude and sustainable behavior

In regard to organizational performance, skills and competences are not the only factors that affect the output of a firm. In particular, the attitude of the manager seems important, as it affects the decision-making process (Roxas and Coetzer, 2012). In the context of sustainable behavior, managers' sustainable attitudes can be defined as "the collection of beliefs, affect, and behavioral intentions a person holds regarding environmentally [and socially] related activities or issues" (Schultz et al., 2005, p. 458). Cognitive dissonance theory places the relation between attitude and behavior into a framework and postulates that individuals will try to translate their attitude into a corresponding behavior, which might otherwise lead to cognitive dissonance (Festinger, 1957). Cognitive dissonance describes the concept that people feel psychological discomfort when they face an inconsistency between their attitude and their behavior. This phenomenon occurs when people have a clear desire to achieve a certain goal and value the outcome (Festinger, 1957). An observed response to cognitive dissonance is that people either adjust their behavior to their beliefs and attitudes or vice versa to achieve a state of consonance (Kassarjian and Cohen, 1965). In the field of sustainable tourism, few authors have used cognitive dissonance theory to explain behavior (e.g. Hares et al., 2010; Juvan and Dolnicar, 2014).

Additionally, in the context of the organizational behavior of owner-managers in SMEs, the upper echelons theory provides an explanation for how managers can translate their attitude into a corresponding behavior. This theory describes that strategic decisions and corporate performance are influenced by the attitudes, values and personalities of executives (Hambrick and Mason, 1984; Hambrick, 2007). Concerning sustainable behavior, the manager's field of vision, selective perception and the interpretation of sustainability are hereby important predictors of his/her actual decision (Hambrick and Snow, 1977; Hambrick and Mason, 1984). The upper echelons theory is thus highly relevant for the hospitality industry, as it is characterized by a large number of small, often owner-managed businesses, which respond to a relatively unstable demand with differentiated offers (Park et al., 2014). In such settings, the manager's power is often greater and thus corresponds to an attitude that is of greater relevance for strategic decisions (Finkelstein and Hambrick, 1990; Banerjee, 2002; Park et al., 2014).

Regarding the hospitality industry, studies have revealed that the personal attitudes of hotel managers play a central role in environmental management decisions (Tzschentke et al., 2008; López-Gamero et al., 2011). We assume that this relationship holds true for sustainable practices in hospitality:

**Hypothesis 1.** The manager's sustainability attitude is positively related to the sustainable behavior of the firm.

Despite the theoretical and empirical evidence for the positive relationship between the manager's sustainability attitude and the concerning behavior, the occurrence of the attitude or intention-behavior gap requires further investigation (Tilley, 1999; Antimova et al., 2012). This gap is connected to the theory of planned behavior (TPB), introduced by Ajzen (1991). The TBP states that perceived behavioral control, attitude and subjective norms are antecedents of behavioral intention, whereas behavioral intention determines actual behavior (Ajzen, 1991). The TPB has been applied in hospitality research and demonstrates validated results in the sustainability context (Garay et al., 2019) and is therefore not further analyzed in this study. However, as stated above, scholars have also found evidence for an attitude-behavior gap in the sustainability context, which shows that hotel managers' attitudes or intentions to behave pro-sustainably do not necessarily lead to the corresponding behavior (Nicholls and Kang, 2012). In particular, small and owner-managed firms struggle to translate attitudes into behaviors (Tilley, 1999; Roxas and Coetzer, 2012).

Scholars therefore have investigated possible factors that can bridge the attitude behavior gap. Kornilaki et al. (2019) found in a qualitative analysis that the owner-managers of small tourism firms are more willing to adapt sustainability practices, if they have high self-efficacy beliefs. Dunk et al. (2016) found that pro-environmental philosophies and the corresponding business benefits are required to commit to sustainable practices such as certification. Similarly, Park et al. (2014) found evidence for a mediator and concluded that the perceived advantages of ecological behavior mediate the relationship between environmental attitudes and the actual behaviors in hospitality. In this context, these perceived advantages may be enhanced stakeholder relations, operational efficiency and marketing benefits (Park et al., 2014). The authors state that the top manager's attitude towards environmental sustainability aspects first needs to be translated into business advantages before these aspects are adapted by the company. As the investigation of the attitude-behavior gap has been outlined as an important research direction, we further investigate this relationship in a sustainability context:

**Hypothesis 2.** The perceived advantage of sustainable behavior mediates the relationship between the manager's sustainability attitude and the sustainable behavior of the firm.

### 2.2. Innovativeness and sustainable behavior

Innovativeness describes a company's openness to new ideas and the capacity to generate and introduce new products, services or operational changes in the organization (Hurley and Hult, 1998; Hult et al., 2004; Damanpour, 1991; Thompson, 1965). Innovativeness in hospitality covers a wide range of activities, such as developing appropriate

strategies, improved services, new information and communication technologies and supportive leadership (Tajeddini, 2010). Additionally, Fraj et al. (2015) place innovation capacity in the context of ecological strategies in the hotel industry. They describe that the development of ecological strategies requires a corporate culture that proactively seeks environmentally friendly measures and is open to the implementation of new ideas. A crucial prerequisite for an organization to be innovative is the use of market intelligence. Organizations need to study the market and its stakeholders to be able to translate this into effective innovations (Hult et al., 2004).

The resource-based view and dynamic capabilities theory provides an explanation for an organization's need to channel resources into the development of innovations (Barney, 1991; Teece et al., 1997). Innovativeness can be understood as a dynamic capability of an organization (Wang and Ahmed, 2004), which is necessary to respond to changes that occur in its environment or as a proactive move to exert influence on the development of the market (Teece et al., 1997). In the long run, it is necessary for both survival and competitive advantage (Stieglitz and Heine, 2007). The adaption of an innovation generally pursues the goal of improving efficiency or contributing to general strategic objectives (Damanpour, 1991).

Many scholars have empirically examined the antecedents of innovativeness and the link between innovativeness and business performance (Noble et al., 2002; Hult et al., 2004). However, relatively few studies have considered the domain that translates innovation capacity into a desired result. As sustainability has been established as a megatrend and has become increasingly valued by tourists (Deutscher Tourismus Verband, e. V (DTV, 2016), innovativeness should be translated into sustainable practices to address this demand. Taking this into consideration, a motivation for the sustainable behavior of a hotel may include environmental and social concerns or attitudes and be rooted in the rationale of seeking opportunities to develop a competitive advantage. Following the literature on innovativeness, organizations with high innovation capacities are likely among the first to have identified sustainability as a trend and proactively translate it into practice (Bhupendra and Sangle, 2015; Hart, 1995). In line with this, Fraj et al. (2015) found a positive relation between innovativeness and proactive environmental strategies regarding a sample of Spanish hotels.

This leads us to our third hypothesis.

**Hypothesis 3.** The innovativeness of a firm is positively related to its sustainable behavior.

Considering the hospitality industry, which in Europe is especially characterized by a highly competitive and fragmented market with many small and owner-managed businesses, a scarcity of organizational and financial resources may hinder organizations with high innovation capacities in translating their full proactive potential and creativity into actual measures. Thus, it seems reasonable that hotel managers have to carefully consider different options to contribute to a sustainable development up front. In the case of necessary tradeoffs, they may be likely to first promote measures that promise the most economic advantages (e.g., financial benefits through increasing efficiency or intangible benefits such as improvement of reputation) (Berezan et al., 2013) and do not require large up front investments or significant organizational changes (e.g. measures to encourage guests to save resources such as water-saving shower heads). Moreover, competing with ideas to drive customer satisfaction that do not contribute to or are diametrically opposed to the concept of sustainability (e.g. to introduce new non-regional products for the sake of cost saving or an advancement of perceived luxury), sustainable services or products may even be rejected if they do not promise clear and superior advantages. Therefore, we argue that the perceived advantage of sustainable behavior mediates the relationship between innovativeness and firm sustainable behaviors. Accordingly, we derive the fourth hypothesis:

**Hypothesis 4.** The relation between innovativeness and sustainable behavior is mediated by the manager's perceived advantage of sustainable behavior of the firm.

### 2.3. Sustainable behavior and customer satisfaction

Customer satisfaction is seen as a key performance indicator within the hospitality industry. It is defined as "an overall evaluation based on the customer's total purchase and consumption experience with a good or service over time." (Luo and Bhattacharya, 2006, p. 3).

A high level of customer satisfaction may contribute to long-term business performance in at least two ways: 1) it relates to high levels of regulars contributing to future occupancy at lower acquisition costs, and 2) it relates to positive word of mouth and recommendations contributing to the future occupancy of new guests (Assaf and Magnini, 2012). This is especially important for the hospitality industry, as customers usually cannot test or try hotel products/services beforehand and thus have to rely on information from the accommodation provider, an intermediary or previous guests (Litvin et al., 2008). Hence, hotel managers traditionally have a strong focus on achieving customer satisfaction (Gerdt et al., 2019).

The relationship between the sustainable behavior of firms and business performance has been a topic of great interest in recent years, (e.g., Molina-Azorín et al., 2009). The vast majority of these studies have found a positive relation between the sustainable behavior of the firm and business performance. However, most researchers have employed economic performance indices, such as return on investment, Tobin's Q and the booking rate, based on self-assessments as measures of business performance (e.g., Álvarez-Gil et al., 2001; Claver-Cortés et al., 2007; Garay and Font, 2012), neglecting customer satisfaction as a reliable indicator of the long-term success of hotel businesses (Assaf and Magnini, 2012; Vavra, 1997).

The majority of studies in the context of sustainability that apply customer satisfaction as a performance indicator predominantly measure it applying a survey-based approach. This approach runs the risk of producing results that suffer from social desirability bias, possibly leading to an overestimation of the importance of sustainability (Fernandes and Randall, 1992; Roxas and Lindsay, 2012; Gerdt et al., 2019). One possible way to avoid this bias consists in the use of eWOM as an original, unbiased data source (Zhou et al., 2014; Schuckert et al., 2015).

eWOM is understood as "any positive or negative statement made by potential, actual or former consumers" outside of traditional buyer-seller relations (Hennig-Thurau et al., 2004, p. 39). For the hotel industry eWOM occurs predominantly on online review sites (RS), such as tripadvisor.de and holidaycheck.de, and online review sections on online travel agency (OTA) websites, such as booking.com and hrs.de, and it is publicly available (Zhou et al., 2014; Schuckert et al., 2015). Each customer review on these websites includes at least an overall rating score, which expresses the customer's assessment of the hotel in the form of a numerical value.

To date many studies on customer satisfaction within the field of hospitality and beyond have applied eWOM as a data source (for a detailed overview see Gerdt et al., 2019). However, only a few studies that concentrate on the relationship between sustainability and customer satisfaction have done so (e.g. Brazytė et al., 2016; Lu and Stepchenkova, 2012; Gerdt et al., 2019). In contrast to the present study, these studies focused on general hotel attributes (Lu and Stepchenkova, 2012), specific sustainability measures (Gerdt et al., 2019) or specifically green hotels (Brazytė et al., 2016; Yu et al., 2017). A comprehensive measurement of firm sustainable behavior has not yet been applied in this setting.

As previous research based on eWOM in hospitality (Brazytė et al., 2016; Lu and Stepchenkova, 2012; Gerdt et al., 2019) has provided indications for a positive relation between customer satisfaction and

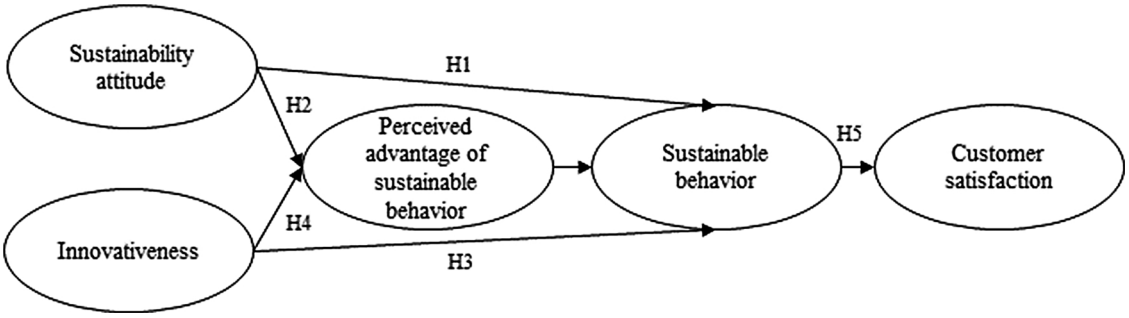


**Fig. 1.** Research Model.

sustainability and the demand for sustainability is observably increasing, we hypothesize a positive relationship between the sustainable behavior of the firm and customer satisfaction.

**H5.** The sustainable behavior of an organization is positively related to customer satisfaction.

Fig. 1 shows the research model and the corresponding hypotheses.

## 3. Methodology

### 3.1. Measurement of variables

An online questionnaire was employed to gain data on sustainable behavior and its determinants, as there is not enough publicly available data on the sustainable behavior of hotels (Aragón-Correa et al., 2008).

Most of the variables were measured with a 7-point Likert scale ranging from “I strongly disagree (1)” to “I strongly agree (7)”. Managers’ sustainability attitudes were measured with 6 items following the study of Kuckertz and Wagner (2010, p. 531), who included items on social and ecological attitudes such as "Corporate social responsibility should be part of the foundations of each company". Innovativeness was measured using five items adapted from Tajeddini (2010, p. 226) and included items such as "Management actively seeks innovative ideas". The perceived advantage of sustainable behavior was measured by three items adapted from Park et al. (2014, p. 106), e.g., "Environmental management contributes to reducing operational costs". A summary of the variables can be found in Table A1 in the appendix.

Sustainable behavior has, to date, not been investigated as one factor comprising items impacting the triple bottom line. Therefore, we conducted a literature search focusing on previously investigated items and grouped them into subgroups. The final item set was discussed and checked by two experts. Questions covering ecological aspects focused on energy and water saving measures, waste management and environmental friendly mobility and products (e.g., Álvarez-Gil et al., 2001; Garay and Font, 2012; Park et al., 2014; Weber and Taufer, 2016; Mensah, 2006; López-Gamero et al., 2011). Social and economic aspects included questions on progressive working conditions for employees, support for local culture and social engagement and support for the regional economy (De Grosbois, 2012; Tsai et al., 2012; Mensah, 2006; Garay and Font, 2012; Erdogan and Baris, 2007).

Customer satisfaction was measured using independent customer ratings taken from holidaycheck.de. To gather the rating scores, we developed a web crawler to visit the subdomains of all identified hotels on holidaycheck.de. We linked the ratings to the survey responses using code matching, which allowed for merging of the review and survey data while ensuring anonymity of the participating hotels. Holidaycheck.de is the largest German-language hotel rating portal with 8.7 million hotel ratings and 24 million daily page impressions (Holiday Check AG, 2020a; 2020b). The individual customer ratings for each hotel on holidaycheck.de range on a scale from 1 to 6. For this analysis, we used automatically aggregated ratings consisting of several subcategories, such as hotel, room, service, emplacement, gastronomy and sport. We chose the aggregated score as online users refer to this rating to make booking decisions (FUR, 2017). Outliers were detected via a visual inspection of box plots and eliminated from further analysis. The final data set comprises 62,766 aggregated review scores, accounting for on average 72 ratings per hotel, which can be seen as a suitable quantity for further analysis.

### 3.2. Data collection

For this study, 15,853 German hotels were contacted in June 2017 via e-mail taken from the hotel portal holidaycheck.de and the database “Dafne”. Overall, 1856 (11.7 %) hotels responded to the questionnaire. Following Hair et al. (2006), responses were excluded if more than 50 % of the answers were missing. Furthermore, only responses from hotel owners or managers from non-chain hotels were considered for further analysis. The final data set contains 974 cases, indicating a response rate of 6.14 %. Fig. 2 shows that the survey satisfactorily represents the hotel industry in Germany. The response rate per federal state is largely in line with the share of overnight stays per German state in 2016, and the deviation accounts for an average of 2.2 % (DEHOGA, 2017).

We checked for nonresponse bias (Armstrong and Overton, 1977) by dividing the data set into two samples: one containing early responses and the other containing responses from participants who responded after the first or second reminder (Lankford et al., 1995; Roxas and Coetzer, 2012). According to Armstrong and Overton (1977), late respondents are considered similar to nonrespondents. A *t*-test was conducted comparing demographic variables, such as star classification, rating score, price and occupancy rate. As a result, the analyzed variables did not differ significantly between the two samples, indicating that nonresponse bias was not an issue.

Furthermore, we aimed to prevent a possible common method bias, which occurs when only one respondent from each hotel is considered in the survey (Fraj et al., 2015). Following Podsakoff et al. (2003), one can control for a common method bias by the design of the survey and statistical controls. Concerning the study design, we used a secondary data source for the customer satisfaction variable so that a direct link was not given. Furthermore, we ensured the anonymity of the responses and included only those from owners or managers so that the possibility of falsified responses was minimized (Podsakoff et al., 2003; Fraj et al., 2015). Moreover, the independent and dependent variables were retrieved independently within the survey so that no links could be established (Fraj et al., 2015). An exploratory factor analysis including all variables was conducted with SPSS 25. According to Harman (1976), a study is subject to a common method bias when a factor accounts for more than 50 % of the variance of all items included in a factor analysis or only one single factor emerges. The results yielded eight distinct factors, with the highest factor accounting for 25 % of the variance. In addition, we conducted a confirmatory factor analysis using R and loaded all items on a single factor. The goodness of fit indices were considerably lower than they were in our investigated model. These tests suggest that a common method bias is not an issue within this data set.

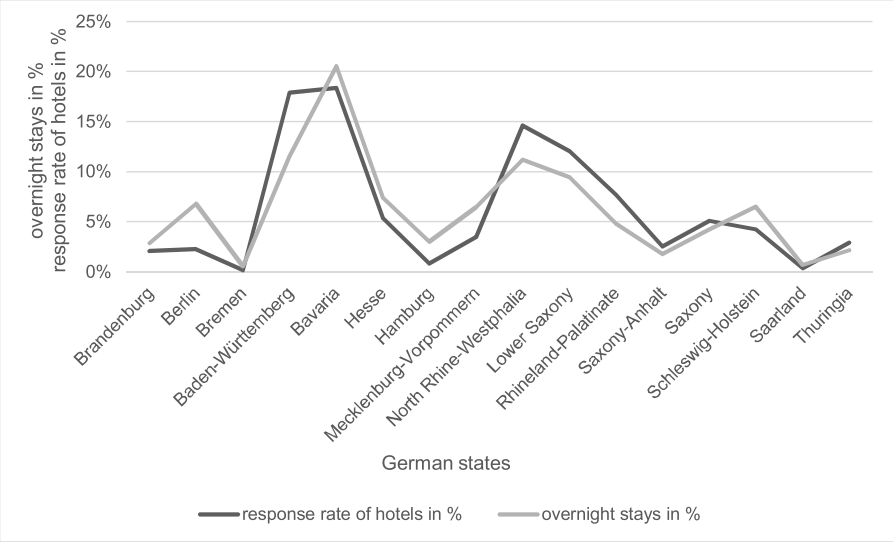


**Fig. 2.** Comparison of the distribution of included hotels and overnight stays among German states.

## 4. Results

### 4.1. Descriptive statistics

The descriptive statistics are presented in Tables 1 and 2. Hotels and hotel garnis represent the majority of the sample (81 %), while 18 % are guesthouses and other accommodations. The vast majority of the hotels are 3- or 4-star hotels, while 30 % do not have a star classification. All hotels do not belong to a chain and most are owner-managed (92 %). Approximately three quarters of the responses came from owners, and one quarter came from hotel managers. The average age of the hotels in the sample is 27 years, and the average number of rooms is 25, with an average price of 87€ per night for a double room. The mean occupancy rate of the surveyed hotels is 63 %, which corresponds to the average occupancy rate of German hotels (62.1 %) in 2017 (DEHOGA, 2017).

**Table 1**
Descriptive statistics of nominal-/ordinal-scaled variables.

| Type of Accommodation | Frequency | Percent |
|---|---|---|
| Hotel | 533 | 54.7 |
| Hotel garni | 254 | 26.1 |
| Guesthouse | 150 | 15 |
| Other | 32 | 3.3 |
| N/A | 5 | 0.5 |
| Total | 974 | 100 |
| Stars | | |
| 1 | 4 | 0.41 |
| 2 | 39 | 4.00 |
| 3 | 471 | 48.36 |
| 4 | 158 | 16.22 |
| 5 | 12 | 1.23 |
| N/A | 280 | 29.8 |
| Total | 974 | 100.0 |
| private Ownership | | |
| Yes | 66 | 6.8 |
| No | 898 | 92.2 |
| N/A | 10 | 1.0 |
| Total | 974 | 100 |
| Position of Respondent | | |
| Owner | 706 | 72.5 |
| Manager | 268 | 27.5 |
| Total | 974 | 100.0 |

**Table 2**
Descriptive statistics of metric-scaled variables.

| Variable | Minimum | Maximum | Mean | Standard Deviation |
|---|---|---|---|---|
| Number of rooms | 2 | 66 | 24.90 | 14.512 |
| Number of staff | 1 | 31 | 10.02 | 7.406 |
| Occupancy rate (percent) | 28 | 100 | 62.72 | 15.882 |
| Price (double room/night in €) | 39 | 137 | 86.71 | 18.822 |
| Age of hotel (years) | 0 | 82 | 26.95 | 19.831 |
| Age of respondent (years) | 22 | 79 | 48.02 | 10.761 |

### 4.2. Results of structural equation modeling

Sustainable behavior is measured by ecological, social and economic variables. To include all relevant variables in one factor, a second-order factor is generated. As this scale has not yet been validated, an exploratory factor analysis was conducted to extract the underlying factors. Principal component analysis with varimax rotation was used as the extraction method. Five factors explained 63,38 % of the variance of sustainable behavior. Nine items were deleted due to factor loadings under 0.5 or two-component solutions. The five factors extracted are sustainable goods ($\alpha = 0.852$), sustainable resource consumption ($\alpha = 0.692$), regional aspects ($\alpha = 0.689$), social working conditions ($\alpha = 0.645$), and ecological transportation ($\alpha = 0.645$). The results for the exploratory factor analysis are shown in Table A2 in the appendix. The Cronbach's $\alpha$ values are all above the suggested threshold of 0.6 and demonstrate reliable acceptance for exploratory research (Hair et al., 2006).

In the next step, a confirmatory factor analysis was conducted by including all model variables in R using the lavaan package. The analysis of data yielded the results for factor loadings and construct validity, as shown in Table A3 in the appendix. All factor loadings are above the suggested threshold of 0.5 (Hair et al., 2006). The construct reliability was calculated according to Hair et al. (2006). The composite reliability provides a good fit with all values above 0.6 (Hair et al., 2006). The average variance extracted does not always meet the suggested threshold of 0.5. This is due to accepted factor loadings lower than 0.7 (Hair et al., 2006). The Cronbach's $\alpha$ range in the above

**Table 3**
Measures of model validity for SEM.

| Fit measures | Threshold | Model Results |
|---|---|---|
| Chi square /d.f. | < 5 | 2.539 |
| *Absolute fit measures* | | |
| GFI | > 0.9 | 0.907 |
| RMSR | < 0.08 | 0.049 |
| RMSEA | < 0.07 | 0.049 |
| *Incremental fit indices* | | |
| CFI | > 0.9 | 0.912 |
| TLI | > 0.9 | 0.902 |
| RNI | > 0.9 | 0.912 |

explained the thresholds. A confirmatory factor analysis for the second-order factor "Sustainable Behavior" was conducted by including the first-order factors shown in Table A4 in the appendix. The Cronbach's α coefficient is above the suggested threshold of 0.6 (Hair et al., 2006).

Next, a structural equation model (SEM) was calculated. The model validity corresponds to all criteria following Hair et al. (2006) (cf. Table 3). Concerning the absolute fit measures, the goodness-of-fit index (GFI) exceeds the suggested threshold of 0.9. The root means square residual (RMSR) and the root mean square error of approximation (RMSEA) meet the criteria with RMSR = 0.049 and RMSEA = 0.049, respectively. The incremental fit indices comply with the suggested threshold of 0.9 with the comparative fit index (CFI) = 0.912, Tucker Lewis Index (TLI) = 0.902 and the relative noncentrality index (RNI) = 0.912.

All hypotheses, with the exception of hypothesis 1, are supported. Hypothesis 1 is not supported, as the relationship between sustainable attitude and sustainable behavior is fully mediated by the perceived advantages of sustainable behavior (H2) with β = 0.263. Hypothesis 3 is supported, as innovativeness is significantly related to sustainable behavior (β = 0.255). Innovativeness is partially mediated by the perceived advantages of sustainable behavior; thus, hypothesis 4 can also be supported (β = 0.087). Finally, hypothesis 5 can be accepted, and the findings suggest a significant relationship of β = 0.169. The results of the path coefficients for the hypotheses are presented in Table 4.

The direct path coefficients are presented in Fig. 3 and in Table A5 in the appendix. All indicated coefficients are significant with $p < 0.001$. Nonsignificant relationships are indicated with n. s.

## 5. Discussion

Our study provides evidence that the relationship between the manager's sustainable attitude and firm behavior is fully mediated by the perceived advantages of the sustainable behavior of the firm. This evidence is in line with Park et al's (2014) findings on the mediating role of the perceived advantages of pro-environmental behavior. Managers have a higher tendency to employ sustainable practices if they perceive an advantage considering costs, marketing or stakeholder relations.

**Table 4**
Path coefficients for the SEM.

| Hypothesis | Path | β | z-value | Result |
|---|---|---|---|---|
| H1 | sa→sb | 0.071 | 1.038 | not supported |
| H2 | sa→pasb→sb | 0.263 | 4.897*** | supported |
| H3 | inno→sb | 0.255 | 4.452*** | supported |
| H4 | inno→pasb→sb | 0.087 | 3.137*** | supported |
| H5 | sb→cs | 0.169 | 3.508*** | supported |

*Note*: *** $p < 0.001$; sa = sustainability attitude; sb = sustainable behavior; pasb = perceived advantage of sustainable behavior; inno = innovativeness; cs = customer satisfaction.

As previously stated, upper echelons theory and cognitive dissonance theory may explain why managers try to implement a behavior that corresponds to their attitudes. However, we investigate the important aspect of the behavior of the firm and not the corresponding personal behavior. For managers, irrespective of their personal, private behavior, within their function as executives of a firm, they are dedicated to the firms' survival and development, which relies on the necessary condition of financial soundness. Accordingly, managers have professional goals that they need to keep in mind when making work-related decisions. An explanation for the gap between managers' personal attitudes and the sustainable behaviors of the firm as well as the observed mediating role of the perceived advantages may be that managers withhold their personal attitudes and resulting preferences in their professional positions as long as they are not consistent with the firm's financial wellbeing. To align their personal attitudes with the firms' goals and vice versa, managers may seek sustainability measures that offer clear advantages for the firm. Consequently, the cognitive dissonance theory offers an explanation for why managers with a higher sustainable attitude recognize the advantages of the sustainable behaviors of the firm better, adding to the understanding of this phenomenon and providing approaches for other stakeholders to foster this behavior.

Regarding innovativeness, our findings indicate that if a hotel is innovative and proactive, then it is more likely to develop a high degree of sustainable behavior. This relationship is only partly dependent on the perceived advantages of sustainable behavior. There are two major explanations for this finding:

First, in contrast to managers' sustainability attitudes, innovativeness reflects the dynamic capability of the whole organization (Wang and Ahmed, 2004). This innovation culture may encourage fast reactions to a changing environment (Teece et al., 1997) without assessing the direct advantages in detail. Our findings show that this explanation can be translated into the sustainability context. This may be especially important for sustainability measures that are rather unobservable and are indirectly affecting the hotel guests. These measures are classified as neutrals (Cadotte and Turgeon, 1988; Gerdt et al., 2019). For example, if the organization identifies and fully supports a sustainable innovation (e.g. practices to improve employee health or using sustainable cleaning products), which has no directly perceivable advantages, then the hotel might nevertheless implement the innovation.

Second, the partial mediation shows that the perceived advantages of sustainable behavior also play a role, which may be because some sustainable practices require great effort, and SMEs often have limited funds and resources to implement such practices. These sustainable practices could be e.g. solar panels or the implementation of sustainable transportation, which are observable by guests and may interfere with their hotel stay. Those measures can be classified as satisfiers, as they receive compliments, when implemented but no complaints, if the practice is missing (Cadotte and Turgeon, 1988; Gerdt et al., 2019).

As innovativeness is considered one of the most important organizational drivers in attaining financial performance, our results emphasize that innovativeness, translated into sustainable behaviors, has a positive impact on customer satisfaction and thus most likely on long-term firm performance.

We find a significant positive relationship between sustainable behaviors and customer satisfaction, indicating that sustainable behavior can be understood as a factor that translates organizational culture and settings into customer satisfaction. Our findings demonstrate that a

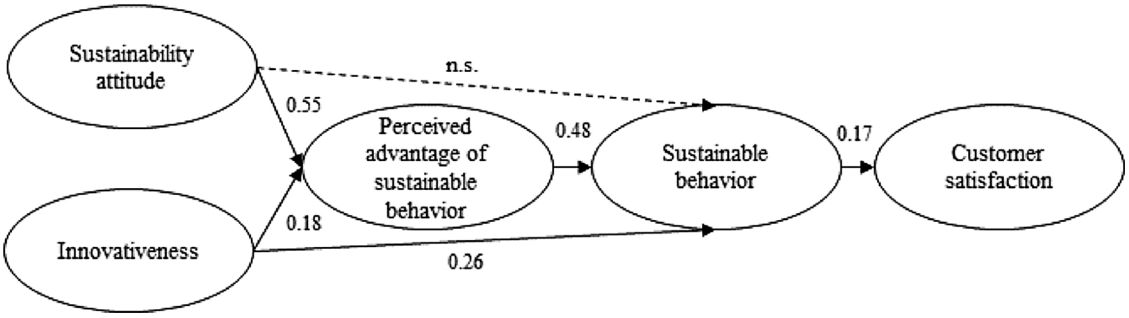


**Fig. 3.** Overview of the model and results for path coefficients.

high sustainable behavior of hotels is noticed and rewarded by guests. This is in accordance with the findings of Martínez and del Bosque (2013) and Lee and Heo (2009). We assume that hotel guests are more likely to perceive the sustainable behavior of hotels and subsequently evaluate it positively on hotel portals, as sustainability is generally more appreciated by tourists (FUR, 2017).

## 6. Conclusion

Motivated by the lack of studies using objective, unbiased data to analyze the relationship between customer satisfaction, and sustainable behavior and its antecedents, we conducted a representative study collecting surveys from 974 German hotel managers and merging the data with the respective 62,766 online reviews drawn from a RS. The results offer both research implications and implications for hotel managers and actors within the hospitality industry.

### 6.1. Theoretical contributions

In contrast to previous studies, we measured the sustainable behaviors of firms as a second-order factor comprising ecological transportation and goods, sustainable resource consumption, social working conditions and regional aspects. Previous studies have focused mainly on environmental sustainability, neglecting the triple bottom line. We encourage the use of a more complex variable structure that accounts for all dimensions of sustainability.

This study aims to offer additional validation of the relationship between managers' sustainability attitudes and the sustainable behaviors of the firm. We contribute to the literature on the attitude-behavior gap by showing that the relationship between managers' sustainability attitudes and the sustainable behaviors of firms is fully mediated by the perceived advantages of the sustainable behaviors of the firm. This observation supports cognitive dissonance theory (Festinger, 1957), as managers seem to seek opportunities to align their executive decisions with their personal attitudes by identifying overlaps between their own and firms' goal systems to prevent cognitive dissonance.

Our research provides evidence that innovativeness is positively associated with the sustainable behavior of firms. Furthermore, we provide evidence that this relation is partly mediated by managers' perceived advantages of sustainable behavior. This relationship has not yet been studied in the hospitality context. To validate this finding, further studies are required.

Finally, we encourage the employment of online reviews as an unbiased data source for the measurement of customer satisfaction.

### 6.2. Practical contributions

As a practical contribution, the findings suggest opportunities for hotel managers to improve their executive decisions and firms' sustainable behaviors. Furthermore, it provides approaches for actors within the hospitality industry to accelerate the diffusion of sustainable tourism.

Hotel managers should be aware that the thoughtful implementation and communication of sustainable behavior increases customer satisfaction. Customer satisfaction, as previously mentioned, can be considered the most important performance metric. Accordingly, managers should include observable sustainable practices in their hotels to ensure positive eWOM and long-term success. This provides the opportunity for managers to prevent cognitive dissonance between their personal attitudes and executive decisions, as it shows that the sustainable behavior of the firm does not conflict with, but rather promotes, success. Sustainable behavior can thus be included within firms' goal system.

To generate fruitful ideas for sustainable behaviors that cope with customer demands and generate competitive advantages, hotel managers should encourage innovativeness within their organization. Actively sensitizing employees for sustainability and involving them in the process of idea generation and execution may boost their potential to develop processes, services and products that impress customers and lead to positive word of mouth.

Nevertheless, taking into consideration resource scarcity, managers should be aware of the benefits and sacrifices of certain sustainability practices not only for the firm itself but also for the customer. They should carefully assess the different impacts of each sustainability practice beforehand and clearly define the goals they are trying to achieve before implementing such practice. As Gerdt et al. (2019) point out, some sustainability practices, such as installing low-pressure showerheads, may be economically efficient for the hotel, whereas they may lower the level of comfort for the guest. Measures such as this should not be among the first to be implemented, and there needs to be clear communication with guests to prevent them from feeling that they have to make a sacrifice for the sake of the hotel's efficiency. A way to assess this beforehand is to question whether a guest is directly affected by a sustainability measure and ensure that it does not lower the quality of the stay to preserve or increase customer satisfaction. Therefore, it is recommended to introduce measures that do not directly affect guests but may be beneficial in the context of sustainability and economics for the hotel, such as installing solar roof panels, or that directly affect the guest but offer benefits, such as serving organic food (Cadotte and Turgeon, 1988; Gerdt et al., 2019).

Finally, for sustainability consultants, certifiers and organizations, we recommend to clearly demonstrate the benefits of sustainable behavior for the firm to convince managers to adopt sustainability practices. OTAs and RS should proactively provide information on the sustainable behavior of hotels to support sustainable development in hospitality.

### 6.3. Limitations and further research

This study has some limitations, which offer opportunities for further investigations. First, the way we measure the sustainable behaviors of firms can be understood as a holistic approach, although it has not been applied in this way before and thus needs to be validated in subsequent studies. Furthermore, our data are based on a survey assessment by the respective hotel managers. Therefore, when interpreting the results, one must keep in mind the potential for social desirability bias. Social desirability responding is the tendency to present oneself better than the truth in questions about generally accepted social values (Zerbe and Paulhus, 1987; Randall and Fernandes, 1991). However, the bias in self-completing surveys is lower because there is an increased perceived anonymity on the part of respondents (Nederhof, 1985; Randall and Fernandes, 1991).

The collected online review scores for the participating hotels originate from one RS only. Although RS have extensive control over the customer ratings posted, we cannot say with certainty that there are no fake ratings in our data set. It would therefore be useful to include ratings from other RS or OTAs in future studies to validate the findings.

Regarding the relationship between the sustainable behavior of a firm and customer satisfaction, we apply a holistic approach measuring sustainable behavior. It must be kept in mind that sustainable behavior has many facets, which in detail may have different consequences for customer satisfaction depending on the consumer (Beckmann, 2007; Rivera et al., 2016). Therefore, future studies should consider consumer-based mediating and/or moderating variables that may play a role in this relationship to gain a deeper understanding.

Finally, our results point towards a cognitive dissonance of managers with a sustainable attitude. Future investigations could add to the field of sustainable tourism and especially the sustainable behavior of firms by testing the degree of the cognitive dissonance of managers.

Despite possible biases and shortcomings, the present study helps to gain a better understanding of the role of organizational determinants and mediators of the sustainable behavior of firms. Furthermore, it provides important evidence for a positive relationship between the sustainable behavior of firms and customer satisfaction in the hospitality industry.

## Appendix A

**Table A1**
Questionnaire and corresponding sources.

| Factor / Item | | |
|---|---|---|
| *sustainable ressource consumption* | | Álvarez Gil et al., 2001; Garay and Font, 2012; Park et al., 2014; Weber and Taufer, 2016; Mensah, 2006; López-Gamero et al. (2011) |
| res1 | We use energy-efficient lighting. | |
| res2 | We use energy-efficient appliances. | |
| res3 | We pay attention to CO2 reduction. | |
| res5 | We implement water-saving measures. | |
| *social working conditions* | | Weber and Taufer, 2016; De Grosbois, 2012; Tsai et al., 2012; Garay and Font, 2012 |
| work1 | The working conditions for our employees are fair and attractive. | |
| work2 | We offer our employees voluntary social benefits. | |
| work3 | We involve our employees in decision-making processes. | |
| *regional aspects* | | Mensah, 2006; Erdogan and Baris, 2007; De Grosbois, 2012; Garay and Font, 2012 |
| reg1 | We promote local customs. | |
| reg2 | We promote social activities and exchange between guests and locals. | |
| reg3 | We prefer to buy regional products and services. | |
| *sustainable goods* | | Teng et al., 2012; Tzschentke et al., 2008; Mensah, 2006; Garay and Font, 2012 |
| good1 | We mainly buy organic and fairtrade food. | |
| good2 | We mainly buy organic and fairtrade hygiene articles. | |
| good3 | We mainly buy organic and fairtrade products for our furnishings. | |
| *ecological transportation* | | Tzschentke et al., 2008; Weber and Taufer, 2016; Teng et al., 2012 |
| trans1 | We offer our guests a discounted use of public transport. | |
| trans2 | We offer our guests discounted environmentally friendly transport options. | |
| trans3 | We inform our guests about an environmentally friendly arrival and departure. | |
| *perceived advantage of sustainable behavior* | | Park et al., 2014 |
| adv1 | Our most important stakeholders are in favor of sustainable hotel management. | |
| adv2 | Sustainable hotel management leads to cost savings. | |
| adv3 | Sustainable hotel management leads to an improvement in the hotel image and thus to an increase in booking figures. | |
| *sustainability attitude* | | Kuckertz and Wagner, 2010 |
| att1 | German companies should play a leading international role in the field of environmental protection. | |
| att4 | Social responsibility should be part of every company. | |
| att5 | Environmental problems are part of the greatest challenges facing our society. | |
| att6 | Entrepreneurs and companies should do more for social commitment. | |
| *innovativeness* | | Tajeddini, 2010 |
| inno1 | The hotel management is actively looking for innovative ideas. | |
| inno2 | Innovations based on research results are readily accepted in our hotel. | |
| inno3 | Innovations are readily accepted by our management. | |
| inno5 | Innovative ability is promoted in our company. | |

*Note*: sa = sustainability attitude; sb = sustainable behavior; pasb = perceived advantage of sustainable behavior; inno = innovativeness; cs = customer satisfaction.

**Table A2**
Results of exploratory factor analysis for sustainable behavior components.

| Factor / Item | Factor Loading | Variance Extracted | Cumulative Variance Extracted | Cronbach's α |
|---|---|---|---|---|
| *sustainable goods* | | 27.939 | 27.939 | 0.851 |
| good 2 | 0.846 | | | |
| good 3 | 0.842 | | | |
| good 1 | 0.827 | | | |
| *sustainable resource consumption* | | 10.858 | 38.796 | 0.693 |
| res2 | 0.800 | | | |
| res1 | 0.798 | | | |
| res3 | 0.648 | | | |
| res5 | 0.584 | | | |
| *social working conditions* | | 9.393 | 48.189 | 0.648 |
| work3 | 0.762 | | | |
| work1 | 0.731 | | | |
| work2 | 0.723 | | | |
| *ecological transportation* | | 8.200 | 56.390 | 0.651 |
| trans2 | 0.793 | | | |
| trans1 | 0.725 | | | |
| trans3 | 0.675 | | | |
| *regional aspects* | | 6.998 | 63.388 | 0.679 |
| reg1 | 0.837 | | | |
| reg2 | 0.758 | | | |
| reg3 | 0.590 | | | |

Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization.
*Note*: sa = sustainability attitude; sb = sustainable behavior; pasb = perceived advantage of sustainable behavior; inno = innovativeness; cs = customer satisfaction.

**Table A3**
Results of confirmatory factor analysis for all included factors.

| Factor / Item | Factor Loading | Cronbach's α | Construct Reliability | Average Variance Extracted |
|---|---|---|---|---|
| *sustainable resource consumption* | | 0.683 | 0.724 | 0.368 |
| res1 | 0.633 | | | |
| res2 | 0.785 | | | |
| res3 | 0.582 | | | |
| res5 | 0.502 | | | |
| *social working conditions* | | 0.663 | 0.696 | 0.403 |
| work1 | 0.738 | | | |
| work2 | 0.576 | | | |
| work3 | 0.656 | | | |
| *regional aspects* | | 0.678 | 0.702 | 0.450 |
| reg1 | 0.767 | | | |
| reg2 | 0.734 | | | |
| reg3 | 0.471 | | | |
| *sustainable goods* | | 0.850 | 0.850 | 0.655 |
| good1 | 0.767 | | | |
| good2 | 0.829 | | | |
| good3 | 0.832 | | | |
| *ecological transportation* | | 0.641 | 0.645 | 0.379 |
| trans1 | 0.513 | | | |
| trans2 | 0.637 | | | |
| trans3 | 0.687 | | | |
| *perceived advantage of sustainable behavior* | | 0.714 | 0.724 | 0.473 |
| adv1 | 0.772 | | | |
| adv2 | 0.545 | | | |
| adv3 | 0.721 | | | |
| *sustainability attitude* | | 0.810 | 0.812 | 0.518 |
| att1 | 0.658 | | | |
| att4 | 0.774 | | | |
| att5 | 0.653 | | | |
| att6 | 0.793 | | | |
| *innovativeness* | | 0.833 | 0.840 | 0.572 |
| inno1 | 0.658 | | | |
| inno2 | 0.852 | | | |
| inno3 | 0.892 | | | |
| inno5 | 0.590 | | | |

*Note*: sa = sustainability attitude; sb = sustainable behavior; pasb = perceived advantage of sustainable behavior; inno = innovativeness; cs = customer satisfaction.

**Table A4**
Results of second-order confirmatory factor analysis for sustainable behavior.

| Factor / Item | Factor Loading | Cronbach's α | Construct Reliability | Average Variance Extracted |
|---|---|---|---|---|
| *sustainable behavior* | | 0.813 | 0.424 | 0.785 |
| res | 0.584 | | | |
| work | 0.715 | | | |
| reg | 0.645 | | | |
| good | 0.659 | | | |
| trans | 0.645 | | | |

*Note*: sa = sustainability attitude; sb = sustainable behavior; pasb = perceived advantage of sustainable behavior; inno = innovativeness; cs = customer satisfaction.

**Table A5**
Results of the Regression Analysis.

| | Estimate | Standard Error | z-Value | P(> IzI) | Standardized Estimate |
|---|---|---|---|---|---|
| dv*: Sustainable behavior (sb)* | | | | | |
| sa | 0.028 | 0.027 | 1.038 | 0.299 | 0.071 |
| pasb | 0.146 | 0.026 | 5.578 | 0.000 | 0.481 |
| inno | 0.094 | 0.021 | 4.452 | 0.000 | 0.255 |
| dv*: Perceived advantages of sustainable behavior (pasb)* | | | | | |
| sa | 0.707 | 0.076 | 9.310 | 0.000 | 0.548 |
| inno | 0.220 | 0.060 | 3.673 | 0.000 | 0.181 |
| *DV: Customer Satisfaction (cs)* | | | | | |
| sb | 0.174 | 0.050 | 3.508 | 0.000 | 0.169 |

*Note*: dv = dependent variable; sa = sustainability attitude; sb = sustainable behavior; pasb = perceived advantage of sustainable behavior; inno = innovativeness; cs = customer satisfaction.

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