

Guest Behavioural Intentions in Hotels: The role of Employee Practices and Customer Satisfaction in Hotels in the context of Sustainable Kitchen Practices.

Siddarth^{1*}, Yogesh Mehta²

¹SGT University, Gurugram, Haryana, India ORCID:0009-0007-7627-6029

²SOCM, SGT University, Gurugram, Haryana, India. ORCID:0000-0003-2256-1485

¹Author E-mail: siddhumachalparia@gmail.com

²Author E-mail: yogesh.mehta@sgtuniversity.org

Abstract: Purpose. A growing number of hotels are making their food and beverage operations sustainable – but it is not well understood how the actions a hotel takes in its kitchen and dining room translate to actions that will drive guest loyalty, nor how the sustainability of frontline staff's behavior influences the process. This study is based on the stimulus–organism–response (S-O-R) model and investigates how guest perceived sustainable kitchen practices (SKP) affect guest behavioural intentions (GBI) through customer satisfaction (CS) and whether perceived employee green practices (EGP) moderate the effect of the intervening variable.

Design/methodology/approach. A survey was conducted of 500 hotel guests who had occupied the hotel during the past six months when they used hotel food and beverage services. Reliability and validity of the model was measured through convergent test, discriminant test and Harman's single factor test for common method bias. Hypotheses were tested using regression-based path analyses, bias-corrected bootstrapping (5,000 resamples) for mediation and moderated-mediation analysis with conditional indirect effects.

Findings. The effect of SKP on CS was positive ($\beta = .58$) and the effect of SKP on GBI was positive ($\beta = .61$); the effect of CS on GBI was positive ($\beta = .63$). The indirect effect of CS (indirect effect = .23, 95% CI [.18, .28]ci) was also found to partially mediate the SKP–GBI relationship, accounting for some 39% of the total effect. Satisfaction return was also positively moderated by EGP ($\beta = .12$, $p < .01$): When employees were perceived to act sustainably, the satisfaction return was seen to be stronger. The index of moderated mediation was significant (.044, 95% CI [.017, .074]) and the conditional indirect effect of SKP on GBI was .14 in the low group (EGP) and .23 in the high group (EGP).

Originality/value. The two constructs, a back-of-house one (sustainable kitchen attitudes) and a front-of-house human one (employee green attitudes) are integrated within one S-O-R model: credible sustainable kitchen systems produce the signal, the employees verify, and if they are satisfied, they act. The findings lead hotel managers to an excellent activation opportunity: display kitchen sustainability investments to guests and in the employee's mind, and boost returns on guest loyalty.

This study assumes that there is not much relationship between Sustainable Kitchen Practices and customer satisfaction with the service as the Sustainable Kitchen Practices of the employees directly affect customer satisfaction. This study suggests a weak relationship between the Sustainable Kitchen Practices of the employees and satisfaction of their customers with the service as it is directly related to the customers.

Keywords: sustainable kitchen practices; customer satisfaction; guest behavioural intentions; employee green practices; green hospitality; sustainable food service; stimulus–organism–response (S-O-R); mediation; moderated mediation; hotel food and beverage



1. Introduction

Hospitality is a crucial aspect of the issue and a crucial site of sustainability action to and for clients. The food and beverage sector is at the crux of this conflict. The kitchen is a place where the environment is particularly under pressure, causing substantial food waste, energy and water consumption, or packaging waste, used oil and chemical flows, and where a hotel's environmental values are most clearly expressed. At the same time, the experience of dining is one of the most sensory, emotional and meaningful in a hotel stay and guests form an opinion about the environmental responsibility of a hotel, not seldom, based on the experience at the restaurant table. Knowing how to strategically leverage those impressions is therefore important and will lead to relevant and loyal behaviour.

A number of studies in the hospitality sector have demonstrated that green attributes at the hotel level can have a positive impact on guest satisfaction and re-visitation, as well as on other behaviors such as paying a premium and recommending the hotel. In the hotel context, sustainable development practices have an empirical link with customer satisfaction and behavioural intentions (Prud'homme & Raymond, 2013) and green attributes have been found to have an empirical impact on customer satisfaction (Robinot & Giannelloni, 2010). The sustainability of the food and service functions has been shown to influence restaurant guests' behavioural intentions, in food service specifically (Namkung & Jang, 2013). More recent studies have similarly confirmed the “stimulus-organism-response” (S-O-R) framework, as positive attitudes towards green hotel practices positively and significantly led to both loyalty and recommendations, satisfaction being an important mediator (e.g. in eco-friendly hotels PLS-SEM evidence, Genç 2025).

However, there are three gaps that prompt the present research. The term “green practices” is used for the first time in one of the first studies, but not the kitchen and food system, but rather a sum of “green practices” (rooms, energy, towels and recycling), as it is the bottom-line operational aspect of a hotel's environmental impact and a different experiential context for the guest. Secondly, on the demand side employees' role is under-theorised. The credibility of the messages of sustainability communicated by a hotel kitchen is probably going to be determined by what the guests can observe the staff do to apply the three principles of sustainability: plastics reduction, guests informed about policies, portion control and waste disposal. However, much guest-facing models neglect to include employee practices altogether and many employee-green-behaviour studies focus on organisational outcomes without tying in with guest psychology. Thirdly, in the literature, most of the testing of the mediation has been carried out as a simple mediation (practice → satisfaction → intention), without questioning the mediation strength and, where it is weak, managers are left in the dark as to what can do more to magnify the pay-off from sustainability investments.

This study seeks to address these gaps by proposing a theoretically coherent specific chain: guest perceived sustainable kitchen practices (SKP) as environmental stimuli, customer satisfaction (CS) as inner organismic state and guest behavioural intentions (GBI) as behavioural reaction, and at the same time introducing perceived employee green practices (EGP) as a contextual moderator of the SKP–CS relationship. The organising logic is based upon the S-O-R framework (Mehrabian & Russell, 1974) that proposes that the environmental cues are cognitively and affectively appraised and that appraisal leads to approach behaviours. We suggest that the actions around kitchen use are environmental cues, satisfaction is an organismic process that transforms that cue into sense of intent and that the employees are the “authenticating condition” in which the sense of intent is going to be strong or weak.

Based on that, the study has the following research questions: (RQ1) Does the guests' perception of sustainable kitchen practices affect customer satisfaction and guest behavioural intentions? (RQ2) Is customer satisfaction an intervening variable between the sustainable kitchen practices and guest behavioural intentions? (RQ3) Is the relationship between sustainable kitchen practices and satisfaction, and the indirect relationship between sustainable kitchen practices and behavioural intentions moderated by perceived employee green practices? This paper helps to answer these questions. It thus breaks the stimulus–response chain theory in theory, because it takes the kitchen out of it and sets the boundary condition, employee green practice, in the theoretical frame, credible hotel sustainability—co-production. It is best used with mediation testing and a formal moderated mediation and conditional indirect effects index in terms of method. In practice, it is a way of telling managers that loyalty towards kitchen sustainability isn't inborn, but it's increased when sustainability is evident in employee action, offering them a real and cost-effective means to do so.

2. Theoretical background and the development of the hypothesis.

2.1 The stimulus–organism–response framework

Mehrabian and Russell (1974) suggest that external stimuli (S) go through an internal organismic state (O) which includes cognitive and affective appraisals, and elicit approach or avoidance responses (R). The human experience of sustainability is central to the framework: through the environmental cues guests are able to see or hear, through feelings and behaviours, and the human experience of sustainability has become a lens through which green hospitality research is viewed. In recent studies S-O-R is used to show how green hotels affect value perceptions, satisfaction and green patronage and word of mouth intentions and how the strength and magnitude of these effects may be influenced by contextual factors such as environmental concern. In this current model, the stimulus is sustainable cooking practices, the organismic state is the satisfaction of the guests, and the guests' behavioural intentions is the response, where the contextual condition is the guests' appraisal of the stimulus (perceived level of employees' sustainable practices).

2.2 Sustainable kitchen practice as a stimulus to the environment

The guest perceived environmental practices made in a hotel's food and beverage service are called sustainable kitchen practices (SKP) and include responsible portioning and menu planning (to reduce food waste), minimisation of single-use plastics and packaging, local and seasonal sourcing, transparency of food-sustainability efforts, responsible water and energy use in dining areas, recycling and waste segregation, and the provision of sustainable menu options. They're not secret – they're practices people can see and guests make inferences about the environmental responsibility of a property based on these practices. SKP is considered an S-O-R stimulus, meaning that the environmental information is assessed by the visitors all during the dining and stay experience, and it is therefore a focal point and a credible 'signalling' with regard to sustainability.

2.3 Sustainable kitchen practices and customer satisfaction

Oliver (1980) has stated that Customer satisfaction (CS) is the overall evaluation of the hotel and food and beverage experience by the guest after consumption as compared to the expectations of the guest. Sustainable kitchen practices can have a number of paths to satisfaction. In the cognitive sphere, the 'sustainability' signals are perceived as a quality, care and competence and are associated with the environmental values that many contemporary travellers possess. The emotional aspect of eating in a responsible environment, on the other hand, can also produce warm glow and reduce guilt, thereby enhancing the emotional experience of eating. The link between sustainable development and green practices in the hospitality sector and customer satisfaction has been found empirically on many occasions (Prud'homme & Raymond, 2013; Robinot & Giannelloni, 2010), and perceptions of green practices have been shown to forecast customer satisfaction in eco-friendly hotels and restaurants. This in S-O-R is a linkage between stimulus and organism. Thus:

H1. Guest perception of sustainable kitchen actions positively influences on guest satisfaction.

Customer satisfaction is an important part of this process, as is the analysis of guests' behavioural intentions.

Guest behavioural intentions (GBI) are the answers given after the experience that are relevant to the concept of loyalty: intention to revisit, to recommend the hotel and say positive things (positive word of mouth), to prefer the hotel over other options, to pay a premium for real sustainability and to interact with the hotel's green actions. The greatest indicator of these positive intentions in the services and hospitality industry is satisfaction (Oliver, 1980; Zeithaml, Berry & Parasuraman, 1996). In recent hotel studies, it is invariably satisfaction that is found as a mediator between green attributes and the loyalty outcome, and satisfaction is a key factor in intentions to return to the establishment and intentions to recommend. If there is an organism-to-response aspect of S-O-R, then we should predict:

H2. Customer satisfaction has a positive effect on guests' behavioural intentions.

The direct effect and the mediating role of satisfaction is a component of the direct effect and the mediating role of satisfaction.

Sustainable kitchen practice can have a direct influence on intentions in addition to its indirect influence through satisfaction. Those guests who are interested in issues of sustainability may develop positive intentions, such as the willingness to pay more, and willing to engage in sustainable behaviours as an expression of their environmental identity, which is partly independent from their satisfaction towards the overall stay. At the same time S-O-R theory

assumes that much of the behavioural response to a stimulus occurs at the organismic response. Therefore, we expect that there will be a direct effect and a partial mediation through satisfaction.

H3. Guest perceived sustainable kitchen practices have positive impact on Guest behavioural intentions.

H4. Customer satisfaction is a mediator for the relationship between sustainable kitchen practices and guest behavioural intentions.

The second moderating boundary condition 2.6 Employee green practices was not quite as clear-cut. The second moderating boundary condition, 2.6 Employee green practices, was not as clear.

The most popular sustainable kitchen activity is people. The actual behaviors of the hotel employees are witnessed by guests and implemented in real time, and are the potential source of confirmation for a hotel's claims—reducing plastic, small food portions, educating guests and demonstrating green practices. Perceived employee green practices (EGP) is the guests' perception of the practice of employee's green practices and the encouragement of responsible behaviors. There are two mechanisms that suggest that EGP enhances the SKP–CS relationship. First, as a credibility cue, when employees act in a similar manner, scepticism and ‘greenwashing’ discounting is decreased, and when employees make the same kitchen practices public, these practices are regarded as more authentic, more satisfying. Second, the green employee, who co-creates the service can make sustainability a part of the service and not a hindrance or friction; in other words, can make the green effort experiential value. Without employee's sensation to the indications of sustainability, the compensation for their satisfaction can be decreased and overlooked. For this reason, the following Moderated Mediation approach designed to be the First Stage Moderation is proposed:

H5. Sustainable kitchen practices impact the customer satisfaction with the restaurant, and this impact is stronger when perceived employee green practices are higher; therefore, the impact of sustainable kitchen practices on customer satisfaction through customer behavioural intentions is moderated by perceived employee green practices (moderated mediation).

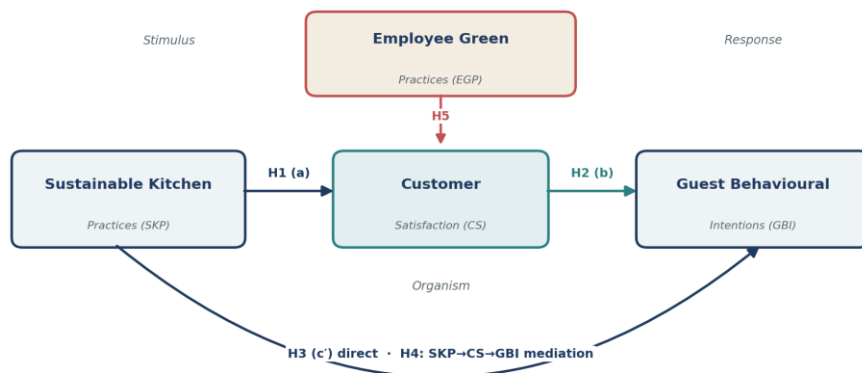


Figure 1. Conceptual model. Sustainable kitchen practice (stimulus) – employee green practice (organism) – customer satisfaction (response) – guest behavioural intention (stimulus).

3. Methodology

3.1 Research Management, methods, design and application

The type of survey design used was quantitative in nature and cross sectional. The study context was the hotel food and beverage experience, as food and beverage is the most sustainable aspect of the kitchen; the respondents were guests who have stayed at or used the dining services of a hotel and could, therefore, assess the service and kitchen sustainability directly. The design and instrument has been developed from the questionnaire that has been structured for the research stream with multi-item reflective scale for all latent constructs.

3.2 Measures

Each construct was assessed by using a multi-item reflective scale, with the items adapted from existing scales used in the hospitality and sustainability literature, and anchored on a five-point Likert-type agreement scale (1 - strongly disagree, and 5 - strongly agree). Six items were used to measure sustainable kitchen practices (SKP) which

included food-waste reduction, plastic and packaging minimisation, sustainable sourcing, communication of sustainability, responsible water and energy use and recycling. Four items measuring customer satisfaction (CS) captured the overall satisfaction, satisfaction with food and beverage service, satisfaction with the contribution of sustainability to satisfaction, and expectation confirmation. Five items measuring guest behavioural intentions (GBI) were developed: revisit intention, recommendation and positive word-of-mouth, preference over alternatives, willingness to pay a premium for authentic sustainability, and green practices. Items for perceived employee green practices (EGP) were divided into five items pertaining to guest perception regarding corrective action, employee conservation efforts, food waste, encouragement to employee green behavior and how guests perceive employees sort the waste. The Appendix contains all of the questions.

The instrument contained two attention check items, and at the end of the survey, the participants ensured that they had answered truthfully and based on their hotel experiences. Screening items ensured that the guests who had a relevant and recent (within 6 months) hotel food and beverage experience were retained.

3.3 Sampling and data collection

The hotels' guests were surveyed using an online questionnaire. All consenting respondents who passed the eligibility screens completed the survey, resulting in 500 valid responses, which is well above the minimum sample sizes for regression-type path analysis and moderated-mediation analysis as was used in this study, and is consistent with recommended sample sizes for such studies. Percentages of missing for the items were small, 288 cells (2.88%) of item data were missing. Because of low and non-uniform missingness, the mean imputation was used, itemwise, and no values were out-of-range after data cleaning.

3.4 Respondent profile

Summary of respondents' profile is presented in Table 1. This sample was balanced by gender (50.0% male and 46.8% female) and was biased towards the younger and middle adult age groups (33.6% ages 26–35). They had a good level of education – 39.4% had a post-graduate qualification, and 38.0% had an undergraduate qualification. Most (43.0% or 31.4%) had stayed in four-star (42.4%) or five-star (26.6%) properties mainly for leisure or business reasons. Most said that they had already experienced greens hotel (62.2%) and had the knowledge of sustainability on a moderate-to-high level (82.0%), thus the sample was well suited to evaluate sustainable kitchen practices.

Characteristic	Category	n	%
Gender	Male	250	50.0
	Female	234	46.8
	Prefer not to say / Missing	16	3.2
Age group	18–25	100	20.0
	26–35	168	33.6
	36–45	125	25.0
	46–55	75	15.0
	56 and above	28	5.6
Education	Undergraduate	190	38.0
	Postgraduate	197	39.4
	Diploma	60	12.0
	Doctorate	21	4.2

	Other	28	5.6
Hotel category	3-star	128	25.6
	4-star	215	43.0
	5-star	157	31.4
Visit purpose	Leisure	212	42.4
	Business	133	26.6
	Family / Social	78	15.6
	Conference / Event	54	10.8
	Other	23	4.6
Stay frequency	First time	166	33.2
	2–3 times	154	30.8
	4–5 times	106	21.2
	More than 5 times	74	14.8
Experience with green hotels before	Yes	311	62.2
	No	189	37.8
Sustainability awareness	High	152	30.4
	Moderate	258	51.6
	Low	90	18.0

Note. N = 500. Percentages may not add to 100 because of rounding and the fact that certain demographic responses were not recorded.

3.5 Analytical approach

The analysis was done in two steps. The internal consistency (Cronbach's alpha, composite reliability), convergent validity (average variance extracted, AVT and item loadings) and the discriminant validity (Fornell–Larcker criterion and heterotrait–monotrait ratio, HTMT) of the measurement model were then tested. The sampling adequacy was assessed using Kaiser-Meyer-Olkin (KMO) measure, and Bartlett's test of sphericity was used to test common method bias, using Harman's single factor test and full collinearity variance inflation factors (VIF). Ordinary least squares path regressions were performed for the second stage to test the structural hypotheses. Bootstrapping with bias-correction (BC) 95% confidence intervals (CI) with 5,000 resamples was used to test the mediating effect (H4). The moderating effect (H5) was examined by the product term regression analysis with standardised SKP, standardised EGP and the interaction between them, and by simple slope analysis at the ± 1 SD of the moderator. Lastly, the conditional indirect effects of SKP on GBI at low, mean, and high levels of EGP and the moderated mediation model were estimated for formal testing using bootstrapping.

4. Results

4.1 Relationships between variables

The Construct scale is moderately to favourably perceived with considerable variation (SKP M = 3.53, SD = 0.98; EGP M = 3.49, SD = 0.99; CS M = 3.53, SD = 1.04; GBI M = 3.49, SD = 0.95). The skewness (–0.21 to –0.41)

and kurtosis (−0.69 to −0.78) values were within the range of ± 1 indicating univariate normality and the suitability for using regression-based estimation. Table 2 shows the Descriptive Statistics.

Construct	Items	M	SD	Skewness	Kurtosis
Sustainable kitchen practices (SKP)	6	3.53	0.98	−0.39	−0.69
Employee green practices (EGP)	5	3.49	0.99	−0.36	−0.74
Customer satisfaction (CS)	4	3.53	1.04	−0.41	−0.71
Guest behavioural intentions (GBI)	5	3.49	0.95	−0.21	−0.77

Note. $N = 500$. Five point likert type scale (1 = strongly disagree - 5 = strongly agree).

The reliability and convergent validity of the measurement model were examined. Reliability and convergent validity of the measurement model were analyzed.

Cronbach's alpha was above .70 for all four constructs ranging from .853 to .895 and composite reliability (CR) ranged from .895 to .919. The item loadings were standardised ranging from .769 to .876 (a value of .70 or greater was taken as acceptable) and the average variance extracted (AVE) was .630 to .739 (a value of .50 or higher was taken as acceptable). Convergent validity was thus achieved. The results of the measurement-model are shown in Table 3.

Construct	Items	Loadings (range)	Cronbach's α	CR	AVE
SKP	6	.796–.830	.895	.919	.655
EGP	5	.791–.841	.877	.911	.671
CS	4	.852–.876	.883	.919	.739
GBI	5	.769–.813	.853	.895	.630

Note. CR = composite reliability, AVE = average variance extracted. All loadings are significant at $p < .001$.

4.2 Discriminant validity

Both indicators yielded support for the discriminant validity. The square root of all constructs (diagonal: SKP .81, EGP .82, CS .86, GBI .79) was tested with Fornell-Larcker test and the correlation of square root of all constructs met the requirement of being stronger than correlation with all other constructs. All of the heterotrait–monotrait ratios (HTMT) fell within the conservative range of .85 or below, from .57 to .72. The constructs are thus empirically different. The correlation matrix is shown in table 4, where the diagonal below the table shows the Fornell–Larcker diagonal and the above, in italics, shows the HTMT ratios.

	SKP	EGP	CS	GBI
SKP	0.81	0.65	0.65	0.70
EGP	0.58	0.82	0.57	0.61
CS	0.58	0.50	0.86	0.72
GBI	0.61	0.52	0.63	0.79

Note. $N = 500$. Inter-construct correlations are specified below the diagonal; the square root of AVE is shown on the diagonal; and HTMT ratios are shown above the diagonal. Correlations with $p < .001$ are considered significant.

4.2.1 Extending the study to other groups

The sampling adequacy was good ($KMO = .954$) and the Bartlett's test of sphericity was significant ($\chi^2 = 5,592.28$, $df = 190$, $p < .001$) suggesting that the data were appropriate for the factor analysis. Common method bias was explored since all data were self-reported from one source. By applying Harman's single factor test, it was found

that there are four factors with an Eigen value greater than one and the first factor which has the highest variance accounted for only 45.56% of the variance, which falls below the cut off value of 50%, therefore indicating that no single factor was dominating. Moreover, VIF values were also well below the critical level of 3.30 and they ranged from 1.65 to 2.01, indicating that common method bias was also not problematic.

4.3 Structural model and hypothesis tests

The results of the structure showed support for the three hypotheses of direct effect. The findings indicated that there was a significant and positive impact of sustainable kitchen practices on customer satisfaction ($B = .615$, $\beta = .58$, $t = 15.87$, $p < .001$) accounting for 33.6% of the variance and thus proving H1. Customer satisfaction significantly predicted guest behavioural intentions ($B = .573$, $\beta = .63$, $t = 17.92$, $p < .001$; $R^2 = .392$), supporting H2. Sustainable kitchen practices also had a direct effect on guest behavioural intentions (total effect $B = .593$, $\beta = .61$, $t = 17.22$, $p < .001$; $R^2 = .373$), which was in support of H3. The combination of both predictors accounted for 48.5% of the variance in behavioural intentions (SKP $\beta = .37$; CS $\beta = .41$). The results of the path are summarised in Table 5 and the structural overview in Figure 2.

Path	Hypothesis	B	β	t	p	Result
SKP $\rightarrow$ CS	H1	0.615	0.58	15.87	< .001	Supported
CS $\rightarrow$ GBI	H2	0.573	0.63	17.92	< .001	Supported
SKP $\rightarrow$ GBI (total, c)	H3	0.593	0.61	17.22	< .001	Supported
SKP $\rightarrow$ GBI (direct, c')	—	0.363	0.37	9.45	< .001	—
CS $\rightarrow$ GBI (controlling SKP)	—	0.375	0.41	10.37	< .001	—

Note. N = 500. B = Unstandardised coefficient; β = Standardised coefficient.

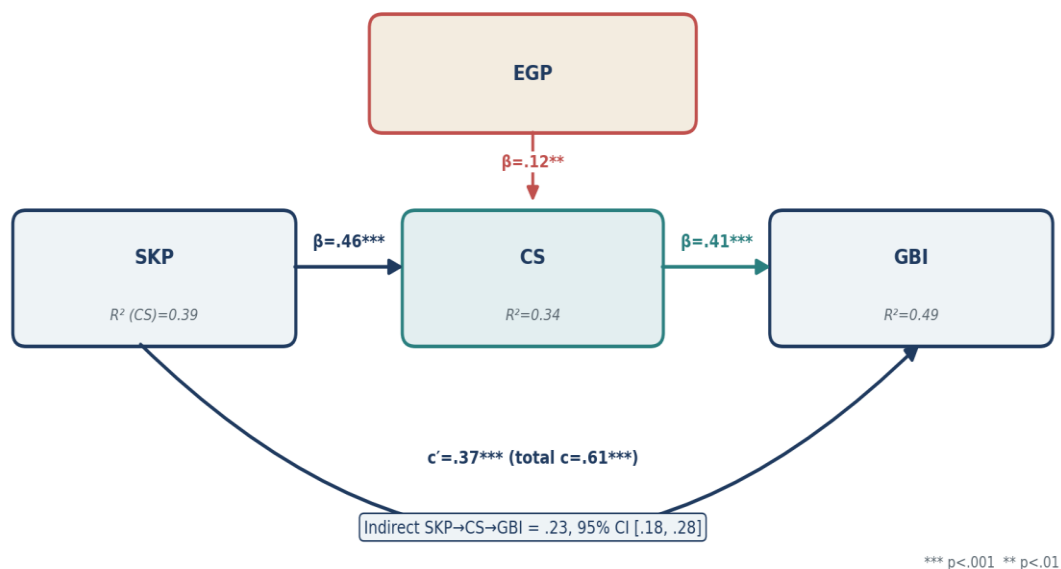


Figure 2. Standardised path coefficients in structural model. *** $p < .001$; ** $p < .01$.

4.4 Mediation analysis

H4 suggested that customer satisfaction plays a role as a mediator between SKP and GBI. The indirect effect ($a \times b$) was .230 and the 95% confidence interval for this effect did not contain zero [.180, .282], indicating that the indirect effect was significant. Satisfaction partially mediated the relationship between SKP and GBI as the direct effect of SKP on GBI was still significant when satisfaction was added ($c' = .363$, $p < .001$). The indirect effect (via satisfaction) was around 38.9% of the total effect, indicating that a substantial portion of the effects of sustainable kitchen practices on the behavioural intention operates through satisfaction, following the S-O-R logic. H4 was supported.

Significant effects are considered $p\text{-values} < 0.05$. Decision: If the p value is less than 0.05, then the effect is considered significant.

Effect	Coefficient	95% Bootstrap CI	Decision
a: SKP $\rightarrow$ CS	0.615	—	—
b: CS $\rightarrow$ GBI (controlling SKP)	0.375	—	—
c: total effect SKP $\rightarrow$ GBI	0.593	—	—
c': direct effect SKP $\rightarrow$ GBI	0.363	—	—
$a \times b$: indirect effect	0.230	[0.180, 0.282]	Supported

Note. 5,000 bootstrap resamples. Proportion mediated $\approx 38.9\%$. If the CI value is not 0, it means there is significant indirect effect.

4.5 Moderation and moderated mediation.

H5 posited that the SKP–CS relationship will be moderated by perceived employee green practice. A product-term regression of satisfaction on the standardised values of SKP, EGP and their interaction revealed that the interaction term was positive and significant ($B = .115$, $\beta = .12$, $t = 3.20$, $p = .001$) and the regression model accounted for 38.8% of the variance in satisfaction. The positive interaction shows that the impact of sustainable kitchen practices on the satisfaction is amplified with higher perceived sustainable kitchen practices among employees. Simple-slope analysis confirmed this pattern: the SKP–CS slope rose from .364 ($t = 6.82$, $p < .001$) at low EGP (-1 SD), to .479 ($t = 10.56$, $p < .001$) at mean EGP, to .594 ($t = 9.56$, $p < .001$) at high EGP ($+1$ SD). All slopes were positive and significant with the highest slopes when employees were perceived as doing things sustainably (Figure 3). H5 was supported.

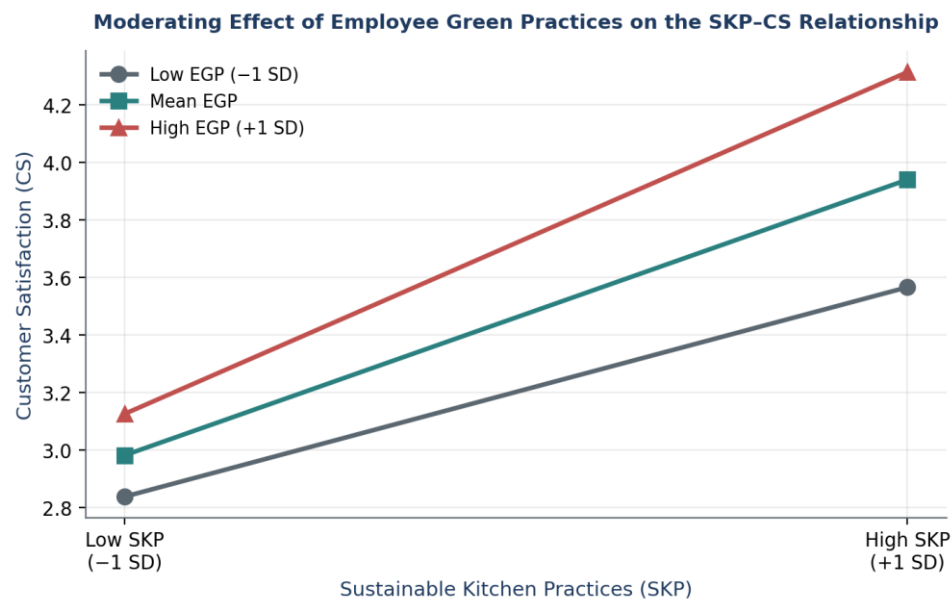


Figure 3. Simple slopes of the SKP–CS relationship at low (–1 SD), mean, and high (+1 SD) levels of perceived employee green practices.

The index of moderated mediation and conditional indirect effect of SKP on GBI via CS were estimated at three levels of EGP to formally test moderated mediation. The index of moderated mediation was significant (.044, 95% CI [.017, .074]) meaning that the strength of the mediation depends on the moderator, perceived employee green practices. The conditional indirect effect increased monotonically across levels of the moderator: .139 (95% CI [.093, .190]) at low EGP, .183 (95% CI [.141, .230]) at mean EGP, and .227 (95% CI [.175, .286]) at high EGP, with all confidence intervals excluding zero. As for outcomes, when guests perceive high employee green engagement, the payoff on loyalty, which results from satisfaction, is about 60% higher than when they don't perceive high employee green engagement. The moderation and moderated-mediation results are displayed in Table 6.

Test	Coefficient / Slope	SE	t / 95% CI	p / Decision
Interaction SKP × EGP → CS	0.115	0.036	t = 3.20	p = .001
Simple slope: low EGP (–1 SD)	0.364	0.053	t = 6.82	p < .001
Simple slope: mean EGP	0.479	0.045	t = 10.56	p < .001
Simple slope: high EGP (+1 SD)	0.594	0.062	t = 9.56	p < .001
Index of moderated mediation	0.044	—	[0.017, 0.074]	Supported
Conditional indirect: low EGP	0.139	—	[0.093, 0.190]	Significant
Conditional indirect: mean EGP	0.183	—	[0.141, 0.230]	Significant
Conditional indirect: high EGP	0.227	—	[0.175, 0.286]	Significant

Note. N = 500, 5000 bootstrapped resamples for indirect effects. Predictors standardised for the interaction model.

The five hypotheses were all supported. The first stage kitchen practices-satisfaction relationship is partially transmitted in the second stage (to intentions); satisfaction and kitchen practices both increase behavioural intentions; and perceived employee green practices increase both the first stage and second stage.

5. Discussion

This study identified within an S-O-R framework how guest perceptions of sustainable kitchen practices impact on guest behavioural intentions as well as the role of customer satisfaction as a mediator between guest perceptions of sustainable kitchen practices and guest behavioural intentions and the moderator effect of guest perceptions of employee green practices between guest perceptions of sustainable kitchen practices and guest behavioural intentions. The results are coherent: the kitchen itself is a legit environmental stimulus, satisfaction is a mechanism of the organism that turns the stimulus into intention-relevant-to-loyalty and the human condition is the employees who determine the intensity of the stimulus.

5.1 Theoretical contributions

The first study is special because it considers the kitchen and food service system as a unique S-O-R stimulus. While most of the existing hospitality research has investigated composite packages of green features, this research has found that the food and beverage sustainability domain can affect satisfaction ($\beta = .58$) and behavioural intentions ($\beta = .61$) alone. It clarifies the theory offering better insight of what it is guests are reacting to and reinforces that the back of house operational sustainability is felt and real in the front of house. This expands the results of food-service

contexts to the integrated context of hotel-staying that were discovered in the food-service contexts in prior studies (Namkung & Jang, 2013).

Second, and most importantly, the study adds the moderating boundary condition of perceived employee green practices, and demonstrates moderated mediation. There is a large amount of interaction and a large index of moderated mediation, thus credible sustainability is co-produced, by systems of kitchens and employee validation. It's a combination of these two seemingly segregated literatures – green-marketing from the Guest's point of view and green-behaviour from the employee's point of view – with the linkage between the two extremes being frontline behaviour and Guest psychology on one side and downstream loyalty on the other. In addition to the previously mentioned research, it contributes to the S-O-R tradition by adding to the stimulus-to-organism path a contextual amplifier of the path, variables of which include environmental concern.

Third, aside from mediation, the study reveals for the first time moderated mediation (conditional indirect effects) in this field. This mediation effect is not constant; when this effect does rise when the employee's level of green practice goes from .14 to .23, the indirect effect is a full contingency (instead of the average mediation effect as in previous studies).

5.2 Practical implications

The results contain a strategic message for hotel managers: ROI of kitchen sustainability is not one-size-fits-all, but comes in different forms depending on employee engagement that can be seen. Investments in sustainable kitchen systems (food-waste reduction, plastic minimisation, responsible sourcing, recycling) have a direct impact on satisfaction and intentions, and are far more impactful when kitchen and frontline employees are visibly embodying these kitchen systems. This implies that sustainability and engagement of employees must be dealt with in the kitchen, and both are two sides of the same coin, which must be addressed by managers jointly.

It translates in practical terms to operational green investments, along with training and recognition, and empowerment of employees that will be able to communicate, demonstrate and, naturally, embody the commitment with sustainability in the service encounter. Authenticity is important: honesty in communicating real kitchen practices combined with visibly committed staff, helps to eliminate the scepticism of greenwashing and turns environmental action into satisfaction. The potential to support premium positioning and guest participation in green initiatives was also an employee-authenticated sustainability that was credible – with a significant proportion of behavioural intention expressed as willingness to pay more for authentic sustainability, and willingness to take action in the form of green practices.

6. Conclusion, Limitations and Future Research

This study created a model of the kitchen sustainable practices to the behavioral intentions of the guests, and showed the pathway between sustainable kitchen practices and the guest behavioral intentions as the moderated-mediation model by using the guest satisfaction as mediator and perceived employees' green practices as a moderator. This contribution proposes a co-production perspective on credible hotel sustainability based on operational kitchen systems and human frontline behaviours that produce ambiance to support guest loyalty outcomes, and a comprehensive measurement model with conditionsensitive evidence.

There are a number of limitations to these conclusions, indicating further investigations. First, it is a cross-sectional design based on self-reported perceptions from a single source, though the results of common method bias test and the full-collinearity diagnostics showed that common method bias was not a major concern in the present study, it is advisable to use a longitudinal or multi-wave design for causal inferences. Second, employee green practices were assessed indirectly from guest, instead of from employees directly, and future research based on a two-source matched design (matching guest and employee responses at the hotel level) could provide better, multilevel evidence of the effect of actual employee practices and green human-resource practices on guest outcomes. Third, the organismic mechanism used in the model was satisfaction; other mediators (such as perceived authenticity, warm-glow, hedonic value, and utilitarian value) were not examined, and other moderators (such as level of environmental concern, hotel category, and cultural context) could be investigated in future studies. Finally, replication across regions, food-service type and food-service format would help give clarity about boundary conditions and generalisability of the co-production effect isolated here. Although there are a few caveats, the study offers theory-based and actionable evidence that sustainable kitchens can return the greatest loyalty, when they're literally alive in the workplace.

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