

## **“Green” attributes and customer satisfaction: Optimization of resource allocation and performance**

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Slevitch, L., Kim, M., Scott, S., & Karpova, E. (2013). “Green” attributes and customer satisfaction: optimization of resource allocation and performance. *International Journal of Contemporary Hospitality Management*, 25(6), 802-22.

Made available courtesy of Emerald: <http://dx.doi.org/10.1108/IJCHM-07-2012-0111>

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### **Abstract:**

Purpose – The purpose of this paper is to address issues of performance optimization through accounting for asymmetric responses of customer satisfaction to different types of product or service attributes: core, facilitating and “green” (eco-friendly). The primary research inquiry was to explore how these attributes affect customer satisfaction and account for interactions among them in order to identify an optimal combination that would maximize customer satisfaction in lodging industry settings.

Design/methodology/approach – An experimental design and a web-based survey were used to collect data from a convenience sample of faculty and staff of two US universities. Univariate and regression analysis were two primary methods of data analysis.

Findings – The findings confirmed non-linear nature of customer satisfaction response and indicated that “green” attributes impact customer satisfaction similarly to facilitating attributes but differently from the core type of attributes in the context of lodging industry.

Research limitations/implications – Generalizability of the findings is bounded by convenience sampling technique. Additionally, only limited number of hotel attributes was examined.

Practical implications – The current findings help to solve the problem of performance optimization and allow creating hotel offerings that yield maximum levels of customer satisfaction and optimal resource allocation.

Originality/value – The study provides additional knowledge about factor structure of customer satisfaction and points on the place and role of “green” attributes in formation of CS in the context of lodging industry.

**Keywords:** Consumer behavior | Customer satisfaction | Product attributes | Hotels | United States of America | Attribute-level performance | Kano’s model | Eco-friendly/“green” attributes | Performance optimization | Asymmetrical effects

## Article:

### Introduction

Despite numerous publications on the topic of assessment and antecedents of customer satisfaction (CS), there is still no consensus on what contributes to CS and how it can be achieved effectively (Bartikowski and Llosa, 2003). Most of the researchers and practitioners agree that CS depends on a number of determinants at a product or service attribute level and attribute performance plays a significant role in CS formation (Oliver, 2010; Yi, 1990). In order to achieve a strong CS-profit connection, product or service providers should design products or services with attributes that maximize CS (Knutson et al., 2003; Yoo et al., 2011). Nevertheless, disagreement exists regarding the nature of the relationship between attribute performance and CS (Busacca and Padula, 2005; Chowdhary and Prakash, 2005).

The majority of the CS literature stipulates that the relationship between attribute performance and CS is linear and, therefore, advocates the policy of performance maximization (Chen, 2012; Tontini and Silveira, 2007). However, the most recent research developments indicate that the relationship between CS and attribute performance is asymmetric, or non-linear, implying that the nature of the CS function is multiplicative, not additive (Anderson and Mittal, 2000; Busacca and Padula, 2005; Hui et al., 2005; Kano et al., 1984; Mittal et al., 1998; Slevitch and Oh, 2010). Thus, such asymmetry should be accounted for in order to organize resources efficiently. Simply maximizing performance on all attributes would be a waste of resources that does not comply with the principles of business intelligence (Anderson and Mittal, 2000). However, if developed, an optimization approach that accounts for asymmetrical effects would overcome the latter problem. Such approach allows marketers to obtain peak levels of CS efficiently, without unnecessary dispersion of resources on the attributes that insignificantly impact CS.

While exploring the asymmetric pattern of relationships between attribute performance and CS, Kano et al. (1984) proposed a multiple-factor perspective on the CS function. According to Kano et al. (1984) and Kano (2001) attributes can be divided into five categories based on the linear and non-linear impact patterns those attributes have on CS. Following the same principle, some of the latest studies on the subject, divided attributes into two categories: core and facilitating (Slevitch and Oh, 2010). Such simplified classification was grounded in Levitt’s

(1983) Ring Model commonly used in marketing literature. Core attributes would correspond with basic and performance factors in Kano's model and facilitating would fall into the excitement category. Basic factors are absolute musts and performance factors are the features that are consistently offered by all competitors in the industry. For example, a bed in a hotel room would be a basic factor and attentive personnel can be described as a performance factor. Both of those types of attributes are similar to core category because they have a profound negative impact on CS when not fulfilled. Facilitating and excitement attributes are the features that are not viewed as necessary by customers; those features provide an unexpected delight to customers and often differentiate from competition, i.e. complimentary snacks.

Distinguishing between different types of attributes is critical in order to achieve optimal allocation of resources (Matzler and Sauerwein, 2002; Witell and Löfgren, 2007). Basic attributes should be kept in an adequate range to avoid negative impacts on CS. At the same time, an increase above that level in their performance does not lead to an increase in CS (Busacca and Padula, 2005). Performance attributes should be kept in higher than adequate range due to their consistent impact on CS. Excitement factors, unexpected "delights", should be added if possible because when combined with adequate performance of basic and performance attributes, they allow for standing out above the competition.

In spite of the progress about the asymmetric nature of the CS function and performance optimization, certain issues still remain unsettled. Though providing valuable contribution, the early supporters of asymmetric view of the CS function left certain questions unanswered. For instance, it was unclear what might cause the asymmetry as well as on what basis attributes should be placed in a particular category (Chowdhary and Prakash, 2005).

The study by Slevitch and Oh (2010) and Hui et al. (2005) addressed the first issue and showed that interaction effects caused the observed asymmetry as some groups of attributes moderated effects of other attributes on CS. In particular, performance of core attributes moderated the effects of facilitating attributes on CS. Nevertheless, the issue of factor structure of CS remains mainly unexplored in spite of the exponentially growing need for optimizing resource allocation, particularly in the highly competitive lodging industry (Busacca and Padula, 2005). Proper classification of attributes remains challenging due to the fact that customers' perceptions of product or service attributes are dynamic. An attribute that was once facilitating, a "delight", may become an industry norm and, thus migrate into the basic or core category (Kano, 2001).

The latter issue becomes particularly acute, as more and more lodging operators keep designing new features, such as "green" attributes and emphasize eco-friendliness of their offerings. Currently, all major lodging industry players are gearing toward a more socially responsible "green" way of running their businesses. "Greenness" has become very much in vogue. It is commonly agreed that hospitality operators need to be concerned about how "green" they are for reasons including increased profits, desire to be seen as a good corporate citizen, and just to remain competitive (Iwanowski and Rushmore, 1994; Du et al., 2010). Sankar and Bhattacharya (2001) state that environmentally conscious customers are rapidly growing in

numbers and 73 percent of hospitality consumers consider themselves environmentally minded and inclined toward “green” offerings. Following this “green” demand, hospitality operators strive to position themselves as eco-friendly and provide “green” products or services. At the same time, little is known about how “green” attributes would affect CS, particularly bearing in mind Kano’s optimization approach. The place of “green” attributes in factor structure of CS remains unknown, though the subject appears important considering the most recent hospitality industry trends.

The main contribution of the current study and the reason to investigate “green” attributes comes from the distinctive nature of this group of attributes. The popular core-facilitating classification is constrained within the individual’s ego-utilitarian dimension and does not take into consideration the group of attributes providing benefits on a larger scale, for the entire society, such as eco-friendliness (“greenness”) and sustainability. The major difference between “green” attributes and the core-facilitating dimension is that “green” attributes mostly appeal to self-actualization needs of customers (Maslow, 1954). Maslow indicated that self-actualization involves the desire for an individual to be the best that one can be, therefore being eco-conscious provides opportunities for intrinsic growth - becoming a better human being by doing something that is beneficial for the entire society, i.e. taking better care of the environment. In contrast, core-facilitating attributes focus on deficiency needs (physiological, safety, social, and esteem). In view of this difference, it seems logical to assume that “green” attributes may produce a unique pattern of effects on CS. Additionally; “green” attributes may influence how performance of core and facilitating groups impacts CS. Without knowledge about such topics achieving recourse optimization and CS maximization seems problematic (Hui et al., 2005; Mittal et al., 1998; Tontini and Silveira, 2007; Chen, 2012). Equally distributing resources among core, facilitating, and “green” attribute dimensions in order to increase CS would not be efficient and may not result in profit gains for lodging companies.

The purpose of the current study is to extend the knowledge about CS and provide better insight into the complexity of factor structure of CS. In particular, the place and role of “green” attributes in formation of CS are explored in the context of lodging industry. The specific research questions are:

RQ1. What kind of impact pattern do “green” attributes produce on CS and what is the place of “green” attributes in the factor structure of CS?

RQ2. What kind of interaction patterns exist among such attribute performance categories as core, facilitating, and “green” with regard to CS response?

RQ3. What kind of attribute performance allocation will produce maximum CS and will allow optimal resource distribution in the lodging industry context?

## **Literature review**

## Attributes as dimensions of products or services

Attributes are typically described as dimensions of a product or service. Customers perceive all products or services as a combination of attributes, i.e. price, convenience, design, etc. (Kotler et al., 2003). The subject of attributes is considered pivotal in marketing literature due to the central role attribute performance plays in CS formation and, consequently, in profitability of businesses. When consumers make evaluative judgments, their opinion is greatly influenced by how they perceive attributes comprising an offering (Oliver, 2010). Therefore, to achieve a strong satisfaction-profit chain it is necessary to design products or services with attributes that would maximize CS (Busacca and Padula, 2005).

Different topologies and categorizations of product or service attributes have been developed over the years. The Ring Model proposed by Levitt (1983) has been frequently used across various business disciplines to describe attributes. Core attributes, often called the “musts”, represent the innermost ring of this model. Core attributes represent what the basic product or service in that category must have as perceived by consumers. The outer rings, delights or facilitators, are pleasant surprises that differentiate one offering from another. Those attributes are often described as something that is nice to have but not necessary. Similarly, Chowdhary and Prakash (2005) divided attributes into vantage or qualifying using competition as a classification factor. According to them, qualifying factors enable products or services to be considered in a competitive pool and vantage factors place products or services ahead of the competition. Such view on product or service attributes is comparable to Levitt’s categorization because qualifying attributes are essentially “the musts” and vantage factors are similar to facilitating attributes.

Prior to Levitt’s (1983) categorization, Swan and Combs (1976) developed a topology that utilizes tangible and intangible qualities of a product and came up with instrumental and expressive categories of attributes. While instrumental attributes signify the tangible aspect or the physical performance of a product; expressive attributes refer to the intangible side or the psychological dimension of performance. It should be noted that Swan and Combs (1976) categorization was originally developed for products and, consequently, may not be applicable to services.

Later, Gronroos (1984) and Lehtinen and Lehtinen (1991) proposed an alternative to the traditional Levitt’s Ring Model. These researchers categorize attributes into two groups: process or technical quality and outcome or functional quality. Process quality attributes reflect how customers receive a product or service. Outcome quality attributes signify what customers obtain when they buy a product or service. As Ekinici (2002) suggests this model has supporters but its weakness lies in the meager empirical support of the underlying idea of attributes division.

Another noteworthy categorization was developed by Kano et al. (1984) who divided attributes into five categories based on perceived quality:

- (1) attractive quality;
- (2) one-dimensional quality;
- (3) must-have quality;
- (4) indifferent quality; and
- (5) reverse quality.

Attractive quality attributes are similar to Levitt's (1983) delights and represent surprises for customers, something they would not normally expect. This group of attributes yields satisfaction when offered, but does not cause dissatisfaction when not offered. One-dimensional quality attributes cause satisfaction when fulfilled and equal amount of dissatisfaction when not fulfilled. Must-be quality attributes are features that are taken for granted when offered, but causes significant dissatisfaction when not offered. Indifferent quality attributes evoke a sense of indifference and do not result in either satisfaction or dissatisfaction. Reverse quality attributes are the ones that cause dissatisfaction when fulfilled and lead to satisfaction when not fulfilled. Similar to Kano et al. (1984), Kahn and Meyer (1991) suggested that attributes could be split into utility-preserving or utility-enhancing. Utility preserving attributes produce a lot of dissatisfaction when not fulfilled (Kotler et al., 2003) and utility-enhancing attributes yield significant positive affect on satisfaction when fulfilled.

To summarize, some of the classifications described above have similar underlying ideas. Only Levitt's (1983) ring model and Kano et al.'s model (Kano, 1984) have strong theoretical and empirical support. Yet, Levitt's categorization is more commonly used in marketing literature than the other categorizations. Thus, Levitt's categorization was applied in the current study.

### Asymmetric factor structure of CS

The idea behind multiple factor asymmetric view of CS stems from the two-factor theory by Herzberg (1967). Herzberg applied his ideas to employee motivation and proposed two groups of motivating factors, job content and job context, based on their effect patterns on employee satisfaction. Job content factors (motivators) were mostly associated with producing satisfaction when fulfilled. Job context factors (hygiene factors) were reported to cause dissatisfaction if not fulfilled. Instead of concluding that satisfaction function was non-linear based on the observed difference in the effects of hygiene factors and motivators, Herzberg (1967) deduced that satisfaction was a uni-polar concept, suggesting that satisfaction and dissatisfaction were not the opposites of the same continuum. According to Herzberg, the opposite of satisfaction is no satisfaction, and the opposite of dissatisfaction is no dissatisfaction.

Several researchers tested Herzberg's (1967) theory in commercial settings and showed that CS was not proportional to the level of performance: things that made customers satisfied when performed well did not have the same negative effect when performed poorly (Bitner et al., 1990; Cadotte and Turgeon, 1988; Johnston, 1995; Maddox, 1981; Mersha and Adhlaka, 1992;

Mittal et al., 1998). Matzler et al. (2004) and Witell and Löfgren (2007) particularly distinguish a study by Kano et al. (1984) that not only demonstrated that some attributes have asymmetric impact on CS, but also proposed attribute categorization based on the non-linear nature of CS function.

According to Kano (2001), attribute performance can affect CS in five ways and based on the nature of effect patterns attributes can be divided into basic factors, performance factors, and excitement factors, indifferent factors, and reverse factors (see Figure 1).

Basic factors (dissatisfiers) are critical when performance is inadequate, because in such case they have a profound negative effect on CS and yield high levels of dissatisfaction. At the same time, their influence on overall satisfaction diminishes as attribute performance improves. The opposite tendency is true for excitement factors (satisfiers). They become affluent determinants of CS when attribute performance is satisfactory but have minimal impact when attribute performance is poor. Performance factors (neutrals) have symmetric effect on CS, equal when performed adequately and inadequately (Matzler et al., 2004). Indifferent factors have no impact on CS and reverse factors have negative impact on CS as performance improves. It should be noted that indifferent and reverse factors are rather rare and, consequently, Kano's model is often reduced to basic, excitement, and performance factors and is often called a three-factor model (Löfgren and Witell, 2008; Mikulic and Prebežac, 2011).



Another key idea of Kano's model is the necessity to distinguish between different types of attributes in order to achieve optimal allocation of resources. Basic attributes should be kept in an adequate range to avoid negative impacts on CS. At the same time, an increase above that level in their performance does not lead to an increase in CS. Performance attributes should be kept in higher than adequate range due to their consistent impact on CS. The excitement factor, unexpected "delights", should be added if possible, because when combined with adequate performance of basic and performance attributes, they allow standing out above the competition.

Following the same principle of non-linearity of CS function, some of the latest studies on the subject, divided attributes into just two categories: core and facilitating (Slevitch and Oh, 2010), where the core category corresponds with basic and performance factors and the facilitating category with excitement factors. The latter study as well as the study by Hui et al. (2005) introduced interaction effects as a reason for witnessed asymmetry of the CS function. Slevitch and Oh (2010) show that core attributes moderate effects of facilitating attributes on CS. Busacca and Padula (2005) and Chen (2012) also suggest using interaction terms for Kano's model or similar categorizations based on asymmetric nature of CS function.

It is important to point out that all described above categorizations are dynamic and contextual (Chen, 2012). Attribute groups are not defined a priori implying that the categorization varies between industries and market segments (Matzler et al., 2004). For example, current facilitating factors can convert to core factors as those become industry norms. As Kano (2001) and Oliver (1997, 2010) suggest, attributes migrate from one category to another due to competition as all competing products or services duplicate each other's features, thus, creating new "musts" perceived by consumers. Knowing to which category attributes belong is important for resource optimization purposes (Kano, 2001). As it was shown by several authors (Hui et al., 2005; Slevitch and Oh, 2010), CS function is multiplicative, meaning that simply increasing resource allocation to maximize performance along all product or service attributes will not pay off. To optimize resource allocation, core attribute performance should be kept in a positive range, and then facilitating attributes should receive investment attention.

As it was stated in the Introduction section, "green" attributes have become widely practiced in the lodging industry (AHLA, 2011), but have not become a must for all lodging companies. At the same time "green" attributes are unique as those appeal to higher level needs that lie beyond the boundaries of ego-utilitarian needs. Subsequently, it remains unknown what kind of effect pattern those attributes would exhibit relative to CS. Based on the notion that not every lodging company offers "green" services and taking into consideration moderating role of core attributes on the relationships between facilitating attributes and CS, the following hypotheses can be formulated:

H1. The effect of "green" attribute performance on CS will be moderated by core attribute performance.

H2. "Green" attributes will have the same effect pattern on CS as facilitating attributes.

## **Methods**

Faculty and permanent full-time staff (7,500) of two large universities from the same region of the US formed the sample of the study. Calder et al. (1981), Greenberg et al. (1987), and Reynolds et al. (2002) state that using a relatively homogeneous sample is appropriate for

experimentally testing theories because in such case extraneous variables have less chance to intervene. Quasi-experimental design with random assignment of experimental conditions was used in the current study. The process of data collection included a role-play of a customer whose experience as a vacation traveler staying in a mid-priced (\$90-\$150) popular chain hotel was described in a written scenario. The experiment employed a 2 (core attributes performance: excellent, poor) x 2 (facilitating attributes performance: excellent, poor) x 2 (“green” attributes performance: excellent, poor) between-subjects factorial design. The scenarios and the measurement scales for core and facilitating attributes were adopted from Slevitch and Oh (2010). The core attributes included room cleanliness (C1), bed/pillow comfort (C2), property safety (C3), and responsiveness of essential personnel (C4) as recommended by Slevitch and Oh (2010). Facilitating attributes included personalized services (F1), complimentary snacks (F2), ambience of public facilities (F3), and hot tub/sauna (F4). Three “green” attributes, energy- and water-saving practices (G1 and G2) and recycling (G3), were identified based on the most commonly applied practices reported by American Hotel & Lodging Educational Institute ([www.ei-ahla.org](http://www.ei-ahla.org)) and incorporated into scenarios (See the Appendix).

The data was collected online with all participants receiving a survey link with a request to complete a survey. Then, the respondents were randomly given one of the scenarios. After reading the assigned scenario the respondents were asked to complete a questionnaire containing the same set of questions for all scenarios. The questionnaire following the scenarios was divided into two parts. The first part contained questions assessing attribute performances (seven-point “poor-excellent” rating scale) as well as questions about the level of satisfaction (Slevitch and Oh, 2010; Söderlund, 2006). The second part was comprised of questions characterizing respondents’ demographic profiles. The scenarios and measurement scales were pre-tested to check the clarity of wording and proposed categorization of attributes were examined with a focus group of four faculty members from one of the universities participating in the study. There were 138 randomly chosen members of the main sample used in a pilot conducted electronically to assure the proposed manipulation effects. ANOVA was performed to examine if experimental manipulations would produce different levels of responses in different scenarios. The ANOVA results indicated significant differences ( $p < .05$ ) in the attribute performance scores for different manipulation levels: excellent and poor. Consequently, experimental manipulations were considered satisfactory.

The total of 1,140 valid responses were obtained (15.2 percent response rate). Univariate analysis of variance was used to check the effectiveness of the experimental manipulations. Confirmatory factor analysis was used to examine convergent and discriminant validity as well as reliability of the research instrument. Regression analysis as recommended by Baron and Kenny (1986) was applied to test hypotheses and examine interactions and the strength of the attribute performance’s impact on CS.

## **Results**

The majority of respondents were female (62.8 percent) and married (70.6 percent) and 60.3 percent of the respondents aged between 30 and 50 years. Annual household income varied from \$30,001 to \$60,000 for 29.7.5 percent of the respondents, from \$60,001 to \$100,000 for 35.0 percent, and more than \$100,000 for 31.6 percent. The majority of respondents (60.1 percent) stayed 4-10 nights per year at a hotel on vacation and paid \$50 to \$100 for a hotel room (52.6 percent). Such age, income, and travel patterns of respondents were similar to the general hotel guest profile in the US (AHLA, 2011).

The potential for overlap among core, facilitating and “green” attribute performance variables was theoretically quite high. Therefore, confirmatory factor analysis was conducted to examine the convergent and discriminant validity. The three-factor model fit the data relatively well (see Tables I and II).

The Chi-square value was significant  $\chi^2 (df) = 720:66$ ,  $p - \text{value} = 0:00$ : The comparative fit index (CFI) was high at 0.97. The non-normed fit index (NNFI) was also high at 0.96. Additionally, the standardized root mean square error (SRMR) was 0.048. All of these fit indices followed the recommendations of Brown (2006) and Kline (2005) with the exception of RMSEA, which is slightly outside the 0.10 threshold. In assessing the RMSEA score, the modification indices were examined and it was determined that the indicator F1 had the potential to cross-load on to the latent variable ‘core.’ By allowing this the model fit was then improved to a RMSEA of 0.089. This may suggest a revision of the theoretical underpinnings of the core and facilitating variables in that personalized services may be a core feature to hotel guests. However, since the fit indices outside of RMSEA were all satisfactory, the measurement model was considered as acceptable. Finally, both the average variance extracted (AVE) and composite reliability (CR) met the suggested thresholds provided by Hair et al. (1998) such that CR should be greater than 0.7 and AVE greater than 0.5, indicating that the validity of the variables and construct are strong.

**Table 1.** The measurement model properties

	Factor loadings	<i>t</i> -value	Average variance extracted	Composite reliability
<i>Core</i>			0.72	0.90
C1	1.0			
C2	0.93	119.11		
C3	0.88	91.96		
C4	0.96	119.74		
Facilitating			0.59	0.74

F1	0.98	60.01		
F2	0.98	62.97		
F3	1.0			
F4	1.04	60.95		
Green			0.81	0.85
G1	1.0			
G2	0.99	116.76		
G3	0.99	107.87		

**Table II.** The measurement model properties

Correlation matrix	Mean	SD	1	2	3	4
1. Core	3.97	2.48	(0.98)			
2. Facilitating	3.64	2.24	0.38**	(0.96)		
3. “Green”	3.72	2.33	0.23**	0.26**	(0.98)	
4. Satisfaction	3.33	2.19	0.89**	0.58**	0.35**	(0.98)

Notes:  $\chi^2 (df) = 720:66 (41)$ . p-value = 0.00. CFI = 0.97; NNFI = 0.96; RMSEA = 0.012; SD = Standard deviation. Cronbach’s a listed on diagonal in italics

To ensure that the regional differences between two universities samples were not affecting the results, a one-way analysis of variance (ANOVA) was conducted to first differentiate if there was a difference in responses between samples (see Table III).

There were no significant differences in responses between the two samples at p , 0.05 level. Therefore, responses from two samples were combined for the consequent analysis.

### Hypotheses testing

Before running moderated regression sets to test the hypotheses, satisfaction, core, facilitating, and “green” dimensions were mean centered based on high internal consistency of the constructs (Aiken and West, 1991). To test for multicollinearity, the variance inflation factors were assessed and all were far below the thresholds of 10, ranging from 1.154 to 1.217.

The results of the moderated regression tests are summarized in Table IV.

Gender, age, marital status, education, and income were used as control variables, however as seen in Table IV, none of those variables were significant in predicting satisfaction at the  $p > 0.05$  level. Then, core, facilitating and “green” variables were added and each was significant in predicting satisfaction at the  $p < 0.01$  level ( $\beta = 0.766$ ;  $p < 0.01$ ;  $\beta = 0.256$ ;  $p < 0.01$ ,  $\beta = 115$ ;  $p < 0.01$ ). The next step was to determine how the interactions among the core, facilitating, and “green” variables worked in the moderated regression model. Both the facilitating and “green” variables were moderated by core variable with satisfaction as a dependent variable as supported by significant interactions two-way interactions and insignificant three-way interaction and an  $R^2 = 0.897$ : Therefore, *H1* was supported.

**Table III.** ANOVA results

	Sum of squares	df	Mean square	F	Sig.
Average core					
Between groups	2.320	1	2.320	0.377	0.539
Within groups	7002.647	1138	6.153		
Total	7004.967	1139			
Average facilitating					
Between groups	5.975	1	5.975	1.187	0.276
Within groups	5729.114	1138	5.034		
Total	5735.089	1139			
Average “green”					
Between groups	15.672	1	15.672	2.902	0.089
Within groups	6144.454	1138	5.399		
Total	6160.126	1139			
Average satisfaction					
Between groups	3.313	1	3.313	0.689	0.407
Within groups	5469.924	1138	4.807		
Total	5473.236	1139			

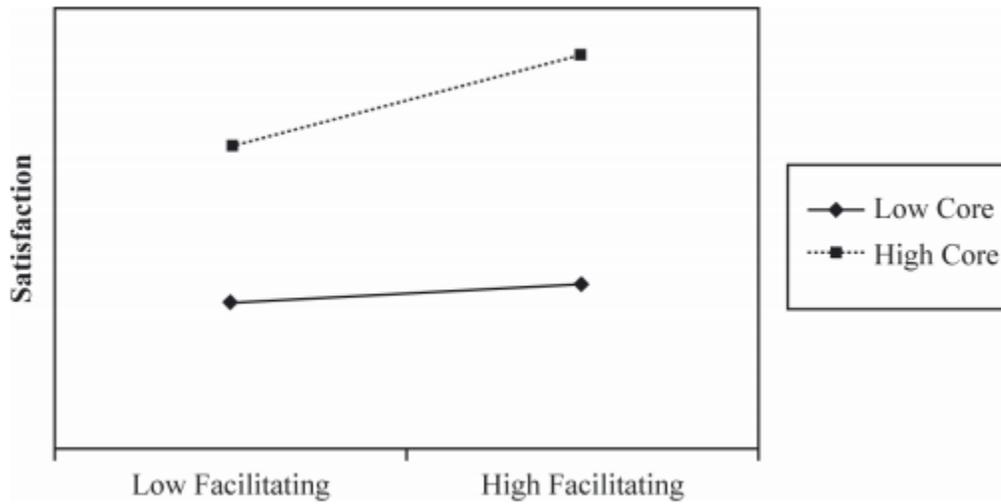
**Table IV.** Results of moderated regression tests

	Step 1	Step 2	Step 3	Step 4
	Controls to DV	IVs and control to DV	Focal International (Green X Core, Facilitating X Core)	Focal Interactions (Core X Green, Facilitating X Green, Core X Facilitating, Core X Facilitating X Green) Controlling for all other variables
Age	-0.059	0.005	-0.001	-0.001
Gender	-0.033	-0.005	-0.022*	-0.022*
Marital status	-0.047	-0.016	-0.012	-0.012
Education	0.010	-0.007	0.006	-0.006
Income	-0.028	-0.027*	-0.021	-0.022
Core		0.766**	0.764**	0.765**
Facilitating		0.256**	0.216**	0.216**
Green		0.115**	0.105**	0.105**
Green X Core			0.063**	0.062**
Facilitating X Core			0.143*	0.143**
Core X Facilitating X Green				0.001
F	1.436	898.733**	925.881**	840.924**
R <sup>2</sup>	0.007	0.870	0.897	0.897
ΔR <sup>2</sup>		0.863	0.027	0.000

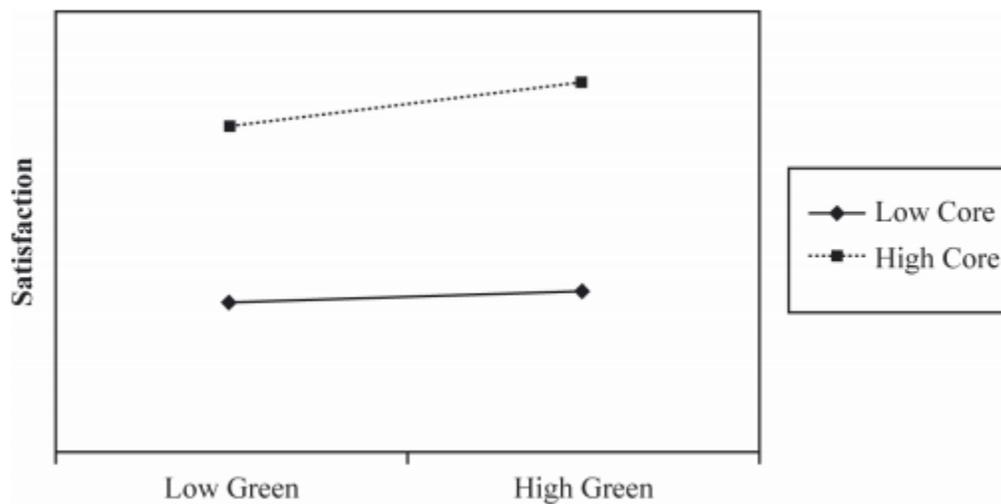
Note: \*p < 0.05, \*\*p < 0.01. IV = Independent variable. DV = Dependent variable. Effects reported are standardized Betas. DV = Satisfaction

Figures 2 and 3 provide additional support to H1 and also confirm H2.

When compared, Figure 2 and 3 are quite similar and, as shown in both, facilitating and “green” attributes have distinctive CS response trends in different core attributes states. The effects of facilitating and “green” attributes were at the highest level when combined with high core attribute performance. However, when core attribute performance was below adequate level, the effects of facilitating and “green” attributes were diminished as evidenced by the flattened slope in the low core condition. The combined results of Table IV and Figures 2 and 3 provide evidence supporting H2 as “green” attributes exhibit the same impact pattern on satisfaction.



**Figure 2**



**Figure 3**

## **Discussion and implications**

In summary, the results show that the “green” group of attributes exhibited the same relationship pattern as facilitating attributes with regard to CS. It was also found that core attributes performance moderated how facilitating and “green” attribute performances affect CS and interaction effects between core, facilitating, and “green” attributes were an influential factor in CS creation.

Implications of this study are two-fold. First, from a theoretical perspective, the current study provides additional evidence in support of multiple-factor view of CS. The non-linear, multiplicative nature of the attribute performance- CS chain was confirmed empirically. More importantly, the “green” group of attributes was positioned in the “core-facilitating” framework. In compliance with several previous studies (Busacca and Padula, 2005; Chen, 2012; Kano, 2001; Slevitch and Oh, 2010), the current findings show that in order to achieve maximum level of CS, core attribute performance should be kept in a range above acceptable level. In such case facilitating attributes performance (including “green”) will reach its full potential and produce higher levels of CS.

From a practical perspective, the current findings help to resolve the problem of optimal resource allocation. Any business initiative is an investment from which a positive return is anticipated. But in a highly competitive lodging business, optimization becomes a paramount issue as simply maximizing performance for all product or service features may put a company out of business. Consequently, it becomes imperative to set correct priorities and account for multiplicative nature of CS when making investment decisions (Busacca and Padula, 2005). The most difficult issue in such case is to identify which product or service attributes yield the highest returns and under what conditions. As it was stated before, priority should be given to core attributes. Lodging operators should identify what is considered a norm in their segment and ensure adequate performance for all these attributes. Failing to do so can have a significant detrimental impact on guests’ satisfaction and hotel’s competitiveness. To illustrate, 2012 North America Hotel Guest Satisfaction Index Study conducted by J.D. Power and Associates indicates that free Wi-Fi access is something that guests expect and when not offered are displeased to the extent that it drags down the overall satisfaction with their hotel experience (North America Hotel Guest Satisfaction Index Study, 2012).

After securing core attributes performance, lodging practitioners should invest into facilitating factors that put them ahead of competition. Knowing that “green” attributes have the same impact on CS as facilitating attributes (consequently, can be viewed as facilitating) can help to avoid “putting all the chips” on features often labeled as unexpected delights or “wow” factors but having minimal impacts on CS when core attributes fail to meet customers expected level. Lodging practitioners should keep core attributes in a positive range and, then, spend resources on the “green” features, thus, allowing them to reach maximum effect of guests’ satisfaction. The later condition is particularly applicable to small independent hotels as those often imitate big players with the facilitating (“wow”) factors overlooking core requirements.

At the same time, practitioners should consider that though consumers choose hotels based mostly on utilitarian functions, green aspect of lodging experience could involve powerful

hedonic dimension that triggers emotional concern for environmental protection (Hun et al., 2011). That in return, can facilitate forming positive attitudes toward “green” hotels, which was found to have a positive effect on intentions to choose a hotel and being satisfied with consumption experience (Kang et al., 2011; Ryu et al., 2012).

Additionally, lodging managers should make attributes categorization part of their guests’ feedback practice. By doing so they would be able to track hotel’s performance effectively and at the same time making sure that resources are spent on what truly makes a difference for customers. Procedures proposed by Chen (2012) and Busacca and Padula (2005) can be applied for a proper attribute categorization. The original method of attribute categorization have been criticized for not being always respondents – friendly as positively and negatively charged questions about the same subject sometimes make respondents confused (Löfgren and Witell, 2008). Chen’s (2012) and Arbore and Busacca’s (2009) developed a new framework that allows to overcome the later limitation and uses common performance ratings and overall satisfaction measurement for categorizing attributes according to Kano’s model. The new framework utilizes regression approach that considers interactions between attribute performance and satisfaction and uses multiple regression coefficients as differentiation indicators.

To sum up practical implications of the current study, the following tactical steps are recommended for lodging operators:

- First, attribute categorization should be conducted. That can be achieved through customer surveys and close examination of direct competitors or by applying Chen’s (2012) regression analysis method.
- Second, a system that would allocate sufficient resources to core attributes to keep them in positive range should be implemented. Service staff should be trained and fully committed to adequate performance on core attribute dimension.
- Third, available resources should be allocated into facilitating attributes (including “green). At this stage priority should be given to the features that have maximum impact on CS. Customer surveys and focus groups can be used to identify the most powerful facilitating features and incorporate them into the service portfolio.
- And last, lodging practitioners should monitor attribute categorization on a continuous basis, as facilitating attributes may become core when all providers incorporate them into their portfolios.

## **Conclusion**

Understanding what maximizes CS is an important task for hospitality practitioners and researchers (Yoo et al., 2011). The current study expanded on what has been previously reported in the CS literature and advanced this topic by further investigating asymmetric response of CS to different types of attributes. Additionally, the study assessed the place and role of “green” attributes in formation of CS in the context of lodging industry. In particular, it was found that the “green” attributes produce on CS was moderated by the performance of core attributes. This

finding should be accounted for while assessing levels of CS and making decisions about how to achieve high levels of CS with an optimal amount of resources.

### Limitations and suggestions for future research

Application of convenience sampling technique can be considered as one of the biggest limitations of the current study as it bounds generalizability. Additionally, using a particular lodging setting and limited number of attributes may be viewed as another drawback. A study with a more comprehensive context of lodging industry may yield results with higher levels of validity and reliability. This study utilized only few core, facilitating, and “green” attributes in a particular context of a vacation stay at a mid-price hotel. In other contexts, distinct sets of attributes may be more appropriate because the range of hotel attributes varies tremendously when, for example, we compare budget and luxury segments. Another limitation stems from the narrow perspective on “green” attributes as fulfilling self-actualization needs only. The underlying motivation behind “green” behavior is much more complex.

Due to the fact that over time attributes change positions in multiple-factor framework, facilitating attributes of today may become core attributes tomorrow as more and more customers perceive them as an industry norm (Kano, 2001; Oliver, 2010). Thus, future research may need to re-examine existing placements of attributes within the core-facilitating framework and ideally do it for different contexts based on hotel’s segment, price, location, and travel purpose.

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## **APPENDIX OMITTED**