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The Potential Impacts of Green Certification Programs Focused on Food Waste Reduction on the Tourism Industry

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Abstract

As food contributes to 40% of the solid waste generated by resorts, food waste is a primary concern for the hospitality industry, which seeks to decrease costs in a low-margin business. Thus, industry and non-govenmental organizations have begun to address the issue. While consumer demand and willingness to pay premiums for sustainable practices and green-certified destinations continues to grow, the hospitality industry struggles to provide the experience environmentally conscious consumers seek. Resorts and tourism destinations are known for overuse and abuse of resources, resulting in long-term negative social and environmental impacts to local communities. The current study sets forth a plan to assess consumer awareness of green certification programs, the importance of food waste reduction in such certification programs, and their willingness to pay premiums at certified resorts. Results will provide pertinent information about the potential benefits of third-party green certification programs to the hospitality industry.

Keywords: consumer willingness to pay, food waste, green certification, tourism

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Introduction

The US Department of Agriculture (USDA) estimates food waste in the United States comprises approximately 35% of the total food supply. An estimated 133 billion pounds of food was wasted in 2010, valued at $161 billion USD (Buzby et al. 2014). In 2008, $47 billion of food at grocery stores was discarded and the amount of uneaten food in households and restaurants was valued at $390 per resident (Buzby and Hyman 2012). The economic, social, and environmental impacts of food waste are so immense, the USDA and the Environmental Protection Agency (EPA) have joined forces to establish the "U.S. Food Waste Challenge" which seeks to reduce food waste by 50 percent by 2030. Additionally, the Food Waste Reduction Alliance, a cross-industry effort consisting of restaurants, supermarkets, and grocery stores was initiated to define opportunities to reduce food waste and lobby for policies aimed at reducing waste and rewarding waste reduction.

Food waste is a primary concern for the hospitality industry, seeking to decrease costs in a low-margin business, and thus, industry and non-govenmental organizations have begun to address the issue (Green Hotelier 2014). Third-party organizations like the International Eco Tourism Society, Green Key Global, Eco Crown Hospitality, and Earth Check provide eco-rating and green resort certification programs for the hospitality industry, many of which address food waste management and reduction. The Las Vegas hospitality industry implemented a comprehensive recycling program with intensive sorting procedures which saves the resorts and restaurants thousands of dollars monthly through reclaimed tableware and linens inadvertently tossed, as wellas waste hauling fees. Nearly 40 percent of the waste generated at resorts in Las Vegas is food, food waste is sorted and is then used for animal feed at local farms (Miller 2011).

While consumer demand and willingness to pay premiums for eco-labeled products, use of sustainable practices, and green-certified destinations continues to grow (Campbell et al. 2015; Jensen et al. 2004), the hospitality industry struggles to provide the experience environmentally conscious consumers seek. Resorts and tourism destinations are known for overuse and abuse of resources, in fact, eco-tourism has been cited as an oxymoron in the media (Rose 2013; Wilcox 2015), which documents the enormous waste generated, endangerment to wildlife, and long-term negative environmental impact of resorts on local communities. For example, Sealey and Smith (2014) show that one single resort in the Bahamas contributes 36% of the total waste generated on the island.

The hospitality industry feels the third-party and self-certification programs address the needs and concerns of the environmentally concerned traveler (Green Hotelier 2014), but studies show (Wink 2005) that certification programs do not sufficiently distribute the necessary information to consumers interested in eco-friendly or green tourism destinations. Further, a study by Blackman and Rivera (2010) found that in only six of 37 case studies did certification lead to actual environmental or socioeconomic benefits. Three of the case studies focused on tourism. The authors found that eco-certification at a resort in Costa Rica did generate significant economic benefits (through premium pricing), but two other studies found certification actually decreased environmental performance at two ski resorts in the United States.

The current study adds to the literature by assessing consumer awareness of green, eco-friendly, and sustainable certification programs, the importance of food waste reduction in their decision

making, and their willingness to pay premiums at certified resorts. Results will provide pertinent information about the potential impact and benefits of these programs to the hospitality industry.

Data Collection and Modeling

An experimental study conducted through a nationwide online survey will take place in the fall of 2016. The survey questions will assess traveler familiarity with green/sustainable certification programs, preferences for food waste reduction in the hospitality industry, demographics, psychographics, past travel experiences, and their willingness to pay for resort services at Green Key certified establishments versus those that not not cerify or self-certify. The choice sets will ask participants to choose among four separate resort brochures exhibiting resort features, various certification program labels, and pricing.

Each choice set will consist of three alternatives, two different resorts at stated prices, and a "neither" alternative. By showing six choice sets, each respondent is offered choices for every possible combination of resorts in the study (Resort 1vs. Resort 2; Resort 1 vs. Resort 3; Resort 1 vs. Resort 4; Resort 2 vs. Resort 3; Resort 2 vs. Resort 4; Resort 3 vs. Resort 4). The order in which these choices are presented to respondents, and the order of resort placement left to right, is randomized and also randomly distributed across respondents. One half of the surveys are randomly assigned the "Green Key Eco-Rating" label (Resort 3) and one half are randomly assigned the "sustainable practices" designation (Resort 4).

Other than the individual resort characteristics and sustainability designations, the only other attribute in the survey choice sets is price. The distribution of prices was constructed to ensure a realistic survey design covering a range of plausible prices. In consultation with travel agents, it was determined that resort prices per night typically fluctuate between $190 and $460. The choice sets are simple priving only price and resort attributes. This simplicity, combined with the fact that tastes and preferences vary across consumers, enables us to use prices that are, by design, orthogonal to the resort attributes without sacrificing realism or efficiency in estimation.

A standard random-utility framework is used (Train 2003), where the choices indicated are assumed to provide the highest level of utility to the respondent among the alternatives. As a simple starting point, we assume the unobserved or latent utility to respondent *i* of alternative *j* is a linear function of the attributes of the alternatives and an unobserved random component of utility:

$$(1) \quad u_{ij}^{*} = \beta \,\text{Price}_{j} + \delta\, X_{j} + \varepsilon_{ij}$$

The latent utility of respondent i for alternative j is denoted u_{ij}^{*}. The coefficient β represents the marginal utility associated with paying for alternative j (note that β is expected to be negative). The quantity X_j represented a vector of attributes describing alternative j and δ represents the vector of associated marginal increments to utility associated with each attribute. In this model, each alternative is described completely by a price and set of indicators for resort

and designation. Note that both $Price_j$ and the vector X_j are equal to zero for the "neither" alternative.

Random utility models, such as the one described above, can be estimated using maximum likelihood by assuming a distribution for the unobserved component of utility. Using the techniques described in Train (2003) we assume the errors are distributed jointly normal and estimate the models with an alternative-specific multinomial probit model. This model has the advantage of being free from the independence of irrelevant alternatives assumption inherent in logit models. The probit-based model also permits us to employ an error structure that allows for cross-alternative heteroscedasticity and an unstructured cross-alternative correlation pattern. To account for the panel, or repeated-choice, nature of the data we employee standard errors that are clustered at the respondent level.

To illustrate this methodology, consider a simplified version of the choice sets. Suppose there were only two resorts (Resort 1 and Resort 3) and one designation (Green Key Eco-Rating) that varied the label on Resort 3. The vector X_j would then consist of three variables, a constant for the omitted category (Resort 1 in this case), a dummy variable for Resort 3, and a dummy variable for the interaction between Resort 3 and the *Green Key* designation. Representative utility would then be modeled as:

$$(2) \quad u_{ij}^{*} = \beta \,\mathrm{Price}_j + \delta_0 + \delta_1 \,\mathrm{Re}\,sort3_j + \delta_2 GreenKey_j * \mathrm{Re}\,sort3_j + \varepsilon_{ij}$$

A test of the statistical significance of the parameter δ_2 indicates any meaningful difference to utility and choice probability when the *Green Key* designation is shown compared to simply being offered "Resort 3" with no designation. As an important extension, we also allow for a relaxation of the assumption of homogeneous preferences by allowing the parameters of the utility function to vary with respondent characteristics through the use of interaction terms.

Willingness to pay (WTP) for a particular alternative *j* can be estimated by solving for the price that would make the representative consumer with the indicated utility function indifferent between paying for alternative *j* at the stated price or not. Let this price be denoted Price_j^{*} and set utility equal to zero:

$$(3) \quad u_{ij}^{*} = \beta \,\mathrm{Price}_j^{*} + \delta\, X_j = 0$$

Solving for Price_j^{*} yields:

$$(4) \quad \text{WTP for alternative } j = \mathrm{Price}_j^{*} = \frac{\delta\, X_j}{-\beta}$$

The marginal WTP is calculated by taking the derivative of Price_j^{*} with respect to a given characteristic. Confidence intervals for WTP and marginal WTP are calculated via the parametric bootstrap method described by Krinsky and Robb (1986 and 1990), by taking a large number of draws from the estimated variance-covariance matrix of the parameter estimates. The

means of this distribution are given by the parameter estimates, and the covariance is given by the variance-covariance matrix of the parameter estimates (Hole 2007; Bosworth et al. 2009).

Results and Importance

Study results will provide the hospitality industry and certifiers with important information regarding consumer perceptions and awareness of green certification programs, the importance of food waste reduction, as well as their willingness to pay for services at certified establishments. Study results will illustrate any potential need for change or improvements to current certification programs in terms of sustainable or eco practices certified, such as food waste, resort monitoring, and other needs. Additionally, the results will illustrate the potential impact of increased consumer awareness of certifications programs on their decisions, as well as which promotional strategies may be more effective at reaching consumers. Finally, study results will provide valuable insight on traveler demand and pricing at certified resorts. All of these elements will assist resorts in understanding the certification benefits regarding cost reduction and/or revenue enhancement, which will ultimately impact their decision to not certify, self-certify, or use a third-party certifier.

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