# CONSUMER KNOWLEDGE AND BEHAVIOR

# TOWARD GREEN RESTAURANTS

By

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CONSUMER KNOWLEDGE AND BEHAVIOR TOWARD GREEN RESTAURANTS

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Abstract: Sustainability in restaurants has become an issue. Owners and managers wasn't to know what consumers value. This paper addresses this by studying the knowledge, attitude, and behavior of consumers in regards to environmental issues. The sample was made up of college student from one academic department in a southern mid-western state.31 surveys were submitted back to the researcher. A Pearson r Correlation was used to determine correlation between items in the survey to see what consumers care about. The results demonstrated a strong correlation across multiple categories. The findings also suggest areas for future research.

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# CHAPTER I

## INTRODUCTION

Sustainability in restaurants has become a hot button issue, in order to reduce pollution and food waste creation. In the United States 30 to 40 % of the food supply every year, and restaurants are responsible for 31% of that waste of waste, which corresponds to about 133 billion pounds of food being wasted every year (USDA). Restaurants across the globe are attempting to make their restaurants more sustainable, and consumers are looking for businesses that are sustainable and are willing to pay for them (Iaquito 2014, Dewald et al 2014**)**. Within this chapter will be the purpose for the study, a background summary of the literature reviewed, the objective of the study is attempting to accomplish, and some defined terms relevant to the study. Chapter two will give attention to the research that is already out there, on sustainability, food waste and consumers views on the subject. The purpose of this study is to investigate the practices restaurants are using in terms of Sustainability practices, such as food waste management, and customer's attitudes toward restaurants that make sustainable practices a priority.

## Purpose of Study

It has been recognized that food waste is becoming a large problem in the world. It is estimated that the food waste by the retail and consumer levels has been estimated at around 165.6 billion dollars in 2008, an average of $936 per household, or $2.56 per day (Buzby and Hyman 2012). However, the is no clear guidance for what food service operations can do in order to reduce their own contribution of waste, and how to be more sustainable (Dewald et al, 2014), as well as how consumers view certain sustainable practices.

## Need for the Study

Due to the fact that there are no clear legal guidelines of how to be a sustainable operation, the need for this study is to find out what things are already being done in the industry and finding out about how consumers feel about practices already being done, and if they are willing to pay more for these practices. The hope is that through this research a starting ground can be created for a possible legal set of guidelines for food service operations to follow in order to help become better for the environment.

## Objectives of the Study

There is a good amount of research about restaurants and sustainable practices, but not specifically what restaurants are doing to be sustainable and how what current practices in place could be used to help create a standard. Some research has been done about trying to create a standard however none of it has been used at a high enough level

and a requirement for restaurants to follow. The purpose of this study is to discover what practices are currently being used in food service operations in order to be more sustainable and how customers feel about these practices. In order to do this, we conducted a survey of College students at a University in the Southern Mid-West United States about their knowledge, attitude and behaviors about green practices. The questionnaire had 18 items from environmental attitudes and intentions (Shim, Im, Jung, & Severt, 2017).

**Definition of study terms**

For the purposes of our study, sustainability is defined as the focus on improving the quality of human life without harming the environment and the capability of natural systems (Jang et al., 2017).

| | |
|---|---|
| **Sustainability-** | The focus on improving the quality of human life without harming the environment and the capability of natural systems (Jang et al., 2017). |
| **Food Waste -** | Food lost at any stage of the supply chain, such as meats, bread, discarded or unserved restaurant-prepared food , or products that are un marketable for aesthetic reasons but otherwise edible and safe |
| **Green Restaurant -** | A restaurant that uses sustainable practices |

# CHAPTER II

## LITERATURE REVIEW

In 2003, the National Restaurant Association (NRA) predicted that Americans would spend over $426 billion on food outside of the home and the restaurant industry would generate a daily revenue of $1.2 billion per day in sales (Gustafson, 2005). In 2017 the NRA predicted that $825 billion would be spent on out of home food (National Restaurant Association, 2017). As the way of life has changed for Americans, so has the way they have treated restaurants. Customer satisfaction has always been a vital part of running a successful in turn results in customers remaining loyal to a particular brand (Szymanski & Henard, 2001). However, the consumer is changing and has become more focused on the environment (Dewald, Bruin, and Jang, 2014), and is consciously turning toward green purchase behavior (Kim & Choi, 2005), and the restaurant industry must take notice.

### Green Restaurants

For the purpose of this study, a green restaurant is a restaurant that engages in sustainable practices, such as but not limited to: energy conservation, water waste reduction, recycling, and composting. Consumers are making decisions based on whether a product or service has an effect on the natural environment (Mohr & Webb, 2005). Restaurants can make themselves greener by managing things such as energy, water, food waste, transportation, and recycling.

Consumers want to stay in a hotel that shows concern for the environment (Watkins, 1994). Today, consumers have more information available and are able to make more informed purchase decisions. While there has been a large amount of studies focusing on green initiatives in the hospitality industry as a whole, there are very few in the restaurant industry specifically (Hu, Parsa & Self, 2010). It is imperative that we understand what consumers look for when searching for a sustainable restaurant, the (2016) research done by Kwok, Huang and Hu examined consumers' attitudes toward green attributes, sustainable aspects, and how consumers would behave based on those attributes. Their research revealed that consumers believed that environmental factors were the most important; however, those that valued food and administration factors were more likely to wait longer and pay more for a product. Additional research in the field conducted by Dewald, Bruin, and Jang (2013) determined that more than half of consumers were willing to pay more for a meal and green restaurant experience. More specifically, the attributes they were looking for were fresh ingredients, healthy aspects, good value, easy access and good for the environment.

**Sustainability**

Sustainability development can be defined, as "…development that meets the needs of the present without compromising the ability of future generations to meet their own need" (WCED 1987, Pg 42). The challenge is giving people what they need to thrive now as well as anticipating what future generations need. Overuse of resources can make it difficult to meet the needs of now and the future, and this is why sustainability is becoming a hot button issue. Currently, there is no standard in the hospitality industry for measuring sustainability in a business (Baldwin, Wilberforce, & Kapur, 2010). Baldwin

et al., (2010) research was to assess the food service life cycle and develop some sort of a standard and certification that restaurants could follow. They grouped operational activities into four categories in order to determine where the highest impact was on environmental factors. Their research determined that food procurement was the highest impact on the environment with food storage contributed very little impact. Through their research, they created the Green Seal Standard for Food Services. This research was a stepping-stone to a master plan that all restaurants can follow because many restaurants were doing different things to be sustainable.

There is a fair amount of research about the sustainable practices used by operations. Iaquinto's (2014) research interviewed multiple independent restaurant owners in Japan about the sustainable practices they had within their restaurants. All restaurants were casual dining options, open at least five years, and owned by the original founder or family. Respondents were asked about if they implemented sustainable practices and were then further asked about more specific things related to saving energy, purchasing from local food sources, waste reduction, and recycling. However, when asked if they thought that the sustainability practices helped made the business more successful. The owners believed that outside of what they were already doing they could make their business more profitable. As larger projects would be costly in terms of time, money, and energy. Iaquinto's conclusion was that sustainability initiatives are usually incremental efforts and are different based on each restaurant's circumstances, and what they were able to accomplish.

Baldwin et al., (2010) developed a sustainability standard and create a certification program and create a sustainability standard. They grouped operational

activities into four categories in order to determine where the highest impact was on environmental factors. Their research determined that food procurement was the highest impact on the environment with food storage contributing very little impact. Through their research, they created the Green Seal Standard for Food Services.

There are multiple ways that the hospitality industry affects the environment, specific areas outlined are energy efficiency, waste disposal, and water consumption (Ahmad, Rashid, Razad, Yusof, & Shah., 2013).

**Energy Efficiency**

Energy can be a large portion of what restaurants can do to become more sustainable. In fact, 8 out of 10 restaurants are using energy efficient lighting, 6 in 10 use programmable thermostats, more than 4 in 10 use energy-star rated equipment, and 6 in 10 use start up and shut down schedules to reduce the energy drain on kitchen equipment (NRA, 2018). In a restaurant, food preparation generally takes more than one third of energy use (NRA,2018).

Energy Use Intensity (EUI) has been steadily increasing in the quick service restaurant industry for years (Zhang, 2011). This study identified three factors that appears to be the cause of driving up the energy usage in the quick service sector: heavy usage and implementation of drive through windows, expansion of menu items that requires more cooking appliances, and reduced square footage in a facility. They tested multiple appliances comparing older models with energy efficient ones in area such as cooking, refrigeration, mechanical systems and lighting, in locations across multiple climates. The results were a savings across the board of over 40% when using the full

effect of energy efficient machines; however, they pointed out that since most systems in a restaurant are intertwined together that it was not enough to replace one or two appliances. The whole restaurant needed to be re-designed and optimized for energy savings.

Energy savings can also be achieved by adjusting thermal comfort (Gutierrez-Aliaga & Williams 2016). Forty-two percent of the energy used by commercial buildings is used in heating, ventilation and air-conditioning (HVAC) systems (U.S. Energy Information Administration, 2011). Thermostat settings can be important in not only employee comfort but in energy savings. Their study concluded that changing thermostats to the minimum recommended setting could save a restaurant 1,300 GWh in electricity and 2,800 billion Btu in natural gas, which has the potential savings for $600 million in utility savings.

Commercial cooking equipment has a significant impact on total energy usage of a restaurant and kitchen exhaust ventilation is the largest consumer of energy in a facility (Smith, Frey & Nicoulin, 1997) with an energy cost of nearly $3 billion per year. One problem is current building codes require ventilation rates that are greater than what is actually needed. Significant energy savings and cost savings can be achieved by reducing the ventilation rates. There is a larger incremental heat gain from gas cooking appliances than from the electrical ventilation systems. It is recommended to use “ultra-efficient” cooling appliances and well as reduced flow rate exhaust hoods for these appliances, or demand controlled hood based on a schedule (Zhang et al., 2010)

### *Transportation*

Transportation has moved people, goods and information across the country for a long time and has become an important part of society (Banister Anderton, Bonilla, Givoni and Schwenen, 2011).and is a large contributor to harmful $CO_2$ emissions in the atmosphere  All products designed for use in the industry reaches the desired end user through various parts of a supply chain (Basu, Bai, & Palaniappan 2015), and involve some sort of transportation.  In multi-modal transportation, multiple methods are used to get the goods from the manufacturer to the end user through various methods like air, train or boat. However, most domestic freight is moved by road or train (Basu, Bai, & Palaniappan 2015). Route optimization is the most prominent green solution for limiting unnecessary movement (Basu, Bai, & Palaniappan 2015)

### Water

Hospitality businesses account for nearly 15% of commercial use of water, but there are many ways that restaurants can reduce the amount of water that they use. According to the National Restaurant Association many restaurants are conserving water in the restrooms. Nearly 44% of restaurants use low flush toilets, 21% use motion activated toilets or faucets, and 11% use waterless urinals.  Another significant change can be adding a low faucet aerator in hand sinks, which with as little use as fifteen minutes a day can save 9,000 gallons of hot water a year (NRA 2018).

In 2011, The New York City Department of Environmental Protection (NYC DEP) launched a program to start repair on the Delaware aqueduct. As a part of this plan, the Demand Management unit was tasked with creating key strategies to reduce water

usage across the city (Kenniff, Flowers and Pho, 2016). The non-residency program was designed to work with businesses to teach water efficiency, re-use, and alternative water use. The initial target in the hospitality industry was hotels, through the New York City Water Challenge in June 2014. At the end of the year program for hotels, 4 out of 11 hotels experienced a 5% reduced demand for water and an additional 4experienced a more than 10% reduction. When they moved their program to focus on restaurants, they helped participants create a custom water conservation plan, held workshops with conservation experts, provided monthly reports on water usage and published press releases. Restaurants in the program saved from 7 – 20 %. They also found that while businesses wanted to conserve water, the resources and time they had to use were often small and that there were often more urgent demands. Going forward, municipalities will require lots of time and labor to be able to work with businesses in order to work on reducing water usage (Kenniff et al 2016).

While in some regions like the Great Lakes, water seems to be abundant, when other regions begin to borrow from that water, water shortage can become a problem across the country (Levin, 2009). Levin proposes looking at water like it is the new oil. Between 2004 and 2008, the cost of water had gone up 6 percent. Levin (2009) suggests multiple ways that restaurants can use less water, mostly by changing equipment or making needed repairs. Levin (2009) recommends offering water to guests instead of automatically having in on the table., opting for low flow options like toilets, urinals, and pre- rinse sprayers can also work well. Using waterless toilets or urinals may save water, but come at a higher maintenance and labor cost (Levin, 2009).

## Food Waste

Food waste represents a significant portion of solid waste (Li Diederick, Flora and Berge, 2013). Tracking food waste is a common way for restaurants to see where the food is going. Forty-seven percent of all restaurants say that they track food waste in some way (NRA, 2018). Many restaurants recycle in some form and it is a quick way to minimize waste. Sixty-five percent of restaurants say that they recycle cardboard or paper, and 64% say that they recycle fat, oil, or grease, and most operators buy packaging or supplies made with recycled or compostable contents ((NRA, 2018).

In many countries, is its common for restaurants to offer a patron to take home any leftover food from their plates, however, some European countries like the Czech Republic and France do not generally offer the "doggy bag" (Sirieix, Lála, & Kocmanová, 2017). While understanding that levels of service are what customers look for in quality of dining service, understanding a customer's attitude about taking home leftovers in a country where this is not a common practice. They asked respondents from Czech Republic and France about how they felt about packing up the leftovers. The act of taking the food home was seen as being less financially secure, however while it was seen in poor taste in a French or Czech Restaurants, it was seen as acceptable in certain international restaurants such as Chinese, Italian, or Indian. The final results were that depending on the type of restaurant if taking home leftovers could create a higher level of customer loyalty and help with less food waste.

The research done by Garrone, Malacini and Perego in 2014 conducted case studies in order to create a model to identify food waste reduction. Their research

examined how limiting and managing surplus food and how it plays a role in reducing food waste. The model they created was customized to fit the particular situation and has not been tested on a larger scale supply chain (Garrone, Malacini and Perego, 2014).

Hydrothermal Carbonization (HTC) is a thermal conversion technique that has the ability to overcome many of the problems associated with biological treatment of food waste (Li et al., 2013). HTC is a wet and low temperature thermal conversion process that occurs under self-created pressures. During the process, the waste goes under simultaneous hydrolysis, dehydration, decarboxylation, aromatization, and condensation and created a high carbon and energy dense material the equivalent to low quality coal. The material can then be stored and used for energy generation as needed, however a study needs to be done to determine the feasibility of this technique (Li et al, 2013).

***Recycling***

Recycling is an easy step that most businesses can take to reduce some of the waste they produce. The Environmental Protection Agency defines recycling as,

> "as the recovery of materials, such as paper, glass, plastic, metals, construction and demolition (C&D) material and organics from the waste stream (e.g., municipal solid waste), along with the transformation of materials, to make new products and reduce the amount of virgin raw materials needed to meet consumer demands", "(EPA, 2017).

In addition to waste reduction to reducing waste recycling also helps conserve natural resources, such as timber, water and minerals, prevents pollution by reducing the need to collect new raw materials, and saves energy.

In 2012, the state of Ohio launched a program that would retrieve glass bottles from bars and restaurants, through a new law entitled the Glass Act (Bragg, 2013). This was started because a study previously conducted for the Ohio Department of Natural Resources determined that only 10% of glass containers in the state were being recycled and 90% of the glass was ending up in landfills, because there was no clear system for recycling the glass (Bragg, 2013). While there was curbside pickup for glass and other recycled materials in Columbus, for residential areas, restaurants and bars had to deal with their own (Bragg, 2013). However, with the new law businesses can receive as many recycling carts as they need as well as collection three days a week. Eventually the city is hoping that businesses will work together and eventually be able to pay for the collection fees which would be about $200 per business.

The Metropolitan Washington Council of Governments created a guidebook for recycling for the hospitality and restaurant industry in 2000 (Snarr & Pezza, 2000). They created a 7-step program for restaurants and hospitality businesses to follow in order to implement a recycling and waste reduction program: 1) Develop an environmental policy, 2) Perform a waste audit, 3) Reduce and reuse, 4) What and where to recycle, 5) Talking to your waste hauler, 6) Buying recycled products, and 7) Educate your employees and customers about your recycling program. Throughout the report they give tips for how to use this strategy in a small versus a large-scale business, as well as how to make your customers aware of the policy. This policy was implemented in 10 different locations as a case study (Snarr & Pezza, 2000).

### *Composting*

Composting is "biological process in which microbes metabolize readily degradable organic matter into nutrient rich humus, a structural component of soil," (Mitchell, 2001, p. 1). It requires specific criteria for the process to be successful. Technology is available for low maintenance on-site composting for restaurants. It is reported that approximately 40% of food is wasted during processing and distribution, while at commercial institutions, or at households (Li et al., 2013). In 2010, the United states threw away 30.8 million tons of food waste, accounting for 14% of total generated solid waste (EPA, 2011). Food waste diversion is currently being practiced across the world in Japan, the European union, and in several states across the US and in many commercial institutions, and is becoming prevalent on college campuses (Li et al., 2013). Diverted food waste is usually treated by biological means such as composing and anaerobic digestion. These techniques reduce the amount of greenhouse gasses that would usually be created during the decomposition of the waste and can create valuable resources such as fertilizer and greenhouse gasses (Li et al., 2013). The problem is that there are multiple operational challenges, such as food waste mixed with packaging. This must be separated prior to treating the waste, and it does not reduce the waste by a large amount (Li et al., 2013).

## Consumers Attitudes and Intentions

Environmental Psychology is a branch of psychology that was developed in the 1960s designed to look at the complex interactions between humans and the environment (Kollmuss & Agyeman, 2002). Over the last few decades, psychologists and sociologists have been asking the question: "Why do people act environmentally and what are the

barriers?" (Kollmuss & Agyeman, 2002, p.1). The earliest model used to understand this behavior is a linear model that asserts that having environmental knowledge would lead to an environmental attitude leading to pro-environmental behavior. The assumption was that educating people about environmental issues would lead to an immediate result of pro-environmental behavior (Kollmuss & Agyeman, 2002).

It was originally thought that green practices by restaurants were fine as an "out of sight out of mind" scenario, however it was brought to attention that consumers needed to see or know that the green practices were occurring (Dewald et al., 2013). Research shows that 12% of Americans regularly by "green" products, 68% buy them sometimes, and the remaining 20% never buy (Dewald et al., 2013; Hanas, 2007;).Other studies found that 72% of consumers would choose an organic labelled product over a regular labelled product (Prewitt, 2007; Dewald et al., 2013), and according to the National Restaurant Association, 6 out of 10 say that they ae likely to choose and restaurant based on how environmentally friendly it is (2007).

The amount of knowledge someone has on an issue significantly influences that person's decision making regarding that issue (Kaplan, 1991). Studies examined factors such as environmental knowledge, sociodemographics, and culture based attitudes on the ability to understand and evaluate the impact of society on the ecosystem (Hu, Parsa &Self, 2010). The studies cited by Hu, Parsa, and Self (2010) all led to a positive behavioral action towards the environment. Other studies show that knowledge about the environment encourages people to be more ecologically and environmentally responsible (Tilikidou 2007; Diamantopoulos et al. 2003; Laroche et al. 2001, Haron, Paim, and Yahaya 2005; Lee and Moscardo 2005; Fryxell and Lo 2003). However, some studies to

appear to contradict themselves, one study in Canada found that consumers that were highly knowledgeable about environmental issues would pay more for a green product, another found that consumers would only purchase green products if there was no price difference (Hu et al.,, 2010).

Therefore, the following research question was determined for this study: Is there a relationship between consumer's knowledge and attitude about environmental issues and behaviors towards Green Restaurants?

# CHAPTER III

# METHODS

The purpose of this study is to investigate consumers' attitudes and behaviors towards sustainable practices in restaurants. This finding of this study will give insight to restaurant owners as to what their consumers are looking for in terms of sustainability practices in their restaurants. This chapter will introduce the research design and procedures used to accomplish this task. The sampling frame, questionnaire instrument, data collection procedure and data analysis are described also.

## Research Design

A cross-sectional survey design was used for this study. Consumers' were asked what green practices that they actively practiced in their day to day lives as well as how they feel about locally sourced restaurants. This section also includes a description of the sampling frame, questionnaire and data collection procedures.

## Sampling Frame

The sample for this study came from university students pursuing a degree in Hospitality and Tourism Management from the same University in the Southern, Mid-Western United States. The questionnaire was distributed to multiple classes that are in the department for Hospitality and Tourism Management. After gaining permission from the

instructor of the course, the questionnaires were distributed and participants were given 3-5 minutes to complete.

**Questionnaire Instrument**

The questionnaire had two sections, 1) 18 items from environmental attitudes and intentions (Shim, Im, Jung, & Severt, 2017) and 2) a demographics section pertaining to gender, age, class ranking and if they currently work in the hospitality industry.

The first section of the survey consisted of 18 items used to look at consumer's knowledge and behaviors regarding environmental issues. Statements such as "I think environmental problems are very important," and "I am planning to visit a locally sourced restaurant when eating out in the future," we used in order to understand consumer's altitudes compared to behavior. These questions were answered on a 7-point Likert scale ranging from 1=Strongly Disagree to 7=Strongly Agree. An addition part of the attitude question was how they felt toward visiting a locally sourced restaurant on a 7-point scale with 1= Disadvantageous, foolish, unpleasant or unattractive, and 7=Advantageous, wise, pleasant, or attractive.

The second portion of the survey collected demographic data about participants. The questions in this section asked about gender, age, class standing, and if they currently work in the hospitality industry.

**Data Collection**

The method of data collection for this study was a self-administered paper survey. At the top of every questionnaire was a statement that described the purpose of the study and that the participants consent was implied if the optional survey was completed and returned. Additional verbal instructions were given by the primary researcher about what

to expect while filling out the questionnaire and informing participants that the research could be contacted, should a participant have an issue with their involvement or to request information about the results.

The questionnaire was administered to students enrolled in a Hospitality and Tourism Management course. The participants consisted of 31 students across multiple class standings. As the questionnaire was distributed to classes, the researcher explained the consent process and gave directions for accurate and thorough completion of the survey. It was explained that the questionnaires would be kept confidential and participation was voluntary.

# CHAPTER IV

# RESULTS

This section is organized by order of research question; the beginning portion gives a summary of demographic data by respondents the participated. The next section is the results that correspond to the first survey item. This was collected from the first part of the questionnaire. The second part of this chapter discusses the steps take to organize and analyze the data and are reinforced by a table displaying a Pearson r Correlation (*Table 3*). The closing section of this chapter gives a summary of outcomes for the findings of the research question and explains how the data can be interpreted collectively.

## Profile of Respondents

Out of the 31 Participants 19 were female, 61.3% and 11 males, 35.5%, and one that was undisclosed, 3.2%. The survey was distributed in upper division classes which can explain the lack of representation in the lower class ranks. The largest group was the Seniors at 74.2%, next the juniors at 16.1%, and the smallest group was sophomores at 9.7%. The age distribution correlated to the fact that the age most represented was 22, 38.7, followed by age 21 and 25+ at 19.4% each, Age 23 was 9.7% and ages 19 and 20 at 6.5% each. 83.9% of participants work in a hospitality environment. This data is show in the following tables:

***Table 1*: Demographic Profile of Respondents**

| Age | Frequency | Percent | Valid percent | Cumulative percent |
|---|---|---|---|---|
| 19 | 2 | 6.5 | 6.5 | 6.5 |
| 20 | 2 | 6.5 | 6.5 | 12.9 |
| 21 | 6 | 19.4 | 19.4 | 32.3 |
| 22 | 12 | 38.7 | 38.7 | 71.0 |
| 23 | 3 | 9.7 | 9.7 | 80.6 |
| 24 | 0 | 0 | 0 | 80.6 |
| 25+ | 6 | 19.4 | 19.4 | 100 |

| Class Rank | Frequency | Percent | Valid percent | Cumulative percent |
|---|---|---|---|---|
| Freshman | 0 | 0 | 0 | 0 |
| Sophomore | 3 | 9.7 | 9.7 | 9.7 |
| Junior | 5 | 16.1 | 16.1 | 25.8 |
| Senior | 23 | 74.2 | 74.2 | 100.0 |

| Work in Industry | Frequency | Percent | Valid percent | Cumulative percent |
|---|---|---|---|---|
| Yes | 26 | 83.9 | 83.9 | 83.9 |
| No | 5 | 16.1 | 16.1 | 100.0 |

**Research Question**

The questionnaire utilized a 7-point Likert scale for the participants to answer each question. The results from the completed questionnaires were analyzed and reorganized into tables of means, in order of the question on the survey. The numbers closer to 7 are interpreted as items that the participants strongly agree with, and the means closer to 1 were items that the participants strongly disagreed with. A high ranking mean is important because it shows what knowledge and behavior that participants have or do a lot, and lower means denote what they disagree with. The participants were asked about their own knowledge and behaviors of environmental issues, and their attitude about visiting a locally sourced restaurant. The attitude section was also on a 7-point

scale with 1 meaning a poor attitude, either disadvantageous, foolish, unattractive, or unpleasant, and 7 equating to advantageous, wise, pleasant, or attractive. A preliminary analysis was done to determine the reliability of the scales. The Knowledge and Behavior scale had good internal consistency, with a Cronbach alpha coefficient reported of .895, and the attitude scale had a coefficient of .921.

The questions with the strongest agreement for knowledge and behavior was, "I think environmental problems are very important.", "I think environmental problems cannot be ignored.", and "I think we should care about environmental problems.". This shows that participants believe that environmental issue are important. Of the remaining questions, in this section the means averaged between 4 and 5. The lowest was, "I know that I buy products and packages that are environmentally safe.," at 4.03 and the highest was "I will expend effort on visiting a locally sourced restaurant when eating out in the future", at 4.9. This indicated that many people are between neither disagreeing or agreeing, and slightly agreeing with these items. Based on these answers it is possible that participants would like to do these things but are worried about cost or other barriers when it comes to behaviors.

The attitude section showed that participants agreed for the most part about attitudes towards visiting a locally sourced restaurant. The means for all four questions varied between 5.3 and 5.4, with Unpleasant to Pleasant having the lowest of 5.32, but the highest standard deviation of 1.467. The full table can be viewed in *table 2.*

***Table 2***

| | # Valid | Mean | Std Deviation |
|---|---|---|---|
| I think environmental problems are very important. | 31 | 6.42 | .765 |
| I think environmental problems cannot be ignored. | 31 | 629 | .938 |
| I think we should care about environmental problems. | 31 | 6.65 | .486 |
| I know that I buy products and packages that are environmentally safe. | 31 | 4.03 | 1.329 |
| I know more about recycling than the average person. | 31 | 4.13 | 1.544 |
| I know how to select products and packages that reduce the amount of waste ending up in landfills. | 31 | 4.16 | 1.551 |
| I understand the environmental phrases and symbols on product package. | 31 | 4.61 | 1.667 |
| I am very knowledgeable about environmental issues. | 31 | 4.42 | 1.503 |
| I frequently engage in daily green activities (e.g., recycling, water/energy conservation). | 31 | 4.48 | 1.503 |
| I try to avoid buying disposable products (e.g., plastic knives, forks, and spoons or Styrofoam cups). | 31 | 4.55 | 1.71 |
| I use a recycling center or in some way recycle some of my household trash. | 31 | 4.81 | 1.701 |
| I am planning to visit a locally sourced restaurant when eating out in the future. | 31 | 4.55 | 1.947 |
| I intend to eat at a locally sourced restaurant when eating out in the future. | 31 | 4.81 | 1.797 |
| I will expend effort on visiting a locally sourced restaurant when eating out in the future. | 31 | 4.9 | 1.599 |
| Disadvantageous-Advantageous | 28 | 5.39 | 1.066 |
| Foolish-Wise | 29 | 5.38 | 1.265 |
| Unpleasant-Pleasant | 28 | 5.32 | 1.467 |
| Unattractive - Attractive | 29 | 5.38 | 1.522 |

**Research Question Outcomes**

When looking at the data as a whole it is clear the students have a very strong opinion that environmental issues are important but the remaining items were not as important. They still thought of them as positive but not as much as the other items. This may indicate of some sort of barrier that would prevent participants from certain behaviors.

Correlations between items was determined using a Pearson r Correlation. The items “I think environmental problems are very important.”, and “I think environmental problems cannot be ignored.” have a strong positive correlation, with $r=.568$, $n=31$, $p<.01$. There is also a strong positive correlation between “I think environmental problems are very important.” And “I think we should care about environmental problems.” with a strong positive correlation with $r=.593$, $n=31$, $p<.01$. Which further shows that participants believed that environmental issues are important. There is a strong positive correlation between the two items, “I know how to select products and packages that reduce the amount of waste ending up in landfills.” And with “I know how to select products and packages that reduce the amount of waste ending up in landfills.” with $r=.764$, $n=31$, $p<.01$. There is also a strong positive correlation between the item “I am very knowledgeable about environmental issues.” With multiple other items: With “I know that I buy products and packages that are environmentally safe” $r=.500$, $n=31$, $p<.01$, “I know more about recycling than the average person”, $r=.707$, $n=31$, $p<.01$, “I know how to select products and packages

that reduce the amount of waste ending up in landfills", r=.728, n=31, p<.01, and "I understand the environmental phrases and symbols on product package", r=.607 n=31, p<.01. The item, "I frequently engage in daily green activities (e.g., recycling, water/energy conservation)", has a strong positive correlation with "I know more about recycling than the average person", r=.719 n=31, p<.01, I know how to select products and packages that reduce the amount of waste ending up in landfills", r=.68 n=31, p<.01, and I am very knowledgeable about environmental issues" r=.668 n=31, p<.01. There is a moderate positive correlation between "I try to avoid buying disposable products (e.g., plastic knives, forks, and spoons or Styrofoam cups)." and "I know that I buy products and packages that are environmentally safe.", r=.476, n=31, p<.01. The item, "I use a recycling center or in some way recycle some of my household trash" has a strong correlation with the items, "I know that I buy products and packages that are environmentally safe," r=.578, n=31, p<.01, "I know how to select products and packages that reduce the amount of waste ending up in landfills." r=.581, n=31, p<.01, "I frequently engage in daily green activities (e.g., recycling, water/energy conservation)" r=.533, n=31, p<.01, and "I try to avoid buying disposable products (e.g., plastic knives, forks, and spoons or Styrofoam cups)" r=.645, n=31, p<.01. There was a strong positive correlation between the items "I am planning to visit a locally sourced restaurant when eating out in the future," and "I try to avoid buying disposable products (e.g., plastic knives, forks, and spoons or Styrofoam cups)", r=.528, n=31, p<.01. There is a strong positive correlation between "I intend to eat at a locally sourced restaurant when eating out in the future" and "I try to avoid buying disposable products (e.g., plastic knives, forks, and spoons or Styrofoam cups)" r=.557, n=31,

p<.01, as well as “I am planning to visit a locally sourced restaurant when eating out in the future.” r=.908, n=31, p<.01. There is a strong positive correlation with, “I will expend effort on visiting a locally sourced restaurant when eating out in the future,” and “I will expend effort on visiting a locally sourced restaurant when eating out in the future,” r=.636 n=31, p<.01, and I am very knowledgeable about environmental issues” r=.501, n=31, p<.01, as well as “I am planning to visit a locally sourced restaurant when eating out in the future,” r=.775, n=31, p<.01, and “I intend to eat at a locally sourced restaurant when eating out in the future,” r=.771, n=31, p<.01. A strong Positive correlation can also be found between whether a respondent felt that going to a locally sourced restaurant was “Advantageous/Disadvantageous” and “I am planning to visit a locally sourced restaurant when eating out in the future,” r=.694, n=28, p<.01 and “I intend to eat at a locally sourced restaurant when eating out in the future,” r=.544, n=28, p<.01 as well as if a respondent felt visiting a locally sourced restaurant was “Wise/Foolish” r=.559, n=29, p<.01. There was also a strong positive correlation between if a respondent felt visiting a locally sourced restaurant was “Pleasant/Unpleasant” and multiple items: “I am planning to visit a locally sourced restaurant when eating out in the future.” r=.565, n=28, p<.01, “I intend to eat at a locally sourced restaurant when eating out in the future,” r=.509, n=28, p<.01, “I will expend effort on visiting a locally sourced restaurant when eating out in the future.” r=.573, n=28, p<.01, and whether the respondent thought visiting a locally sourced restaurant was “Advantageous/Disadvantageous” r=.674, n=28, p<.01. There was also a Strong positive correlation between whether a respondent felt visiting a locally coursed restaurant was, “Attractive/Unattractive” with “I am planning to visit a locally

sourced restaurant when eating out in the future," r=.500, n=29, p<.01, whether they thought of visiting a locally sourced restaurant as "Advantageous/Disadvantageous" r=.606, n=29, p<.01, "Wise/Foolish" r=.825, n=29, p<.01, "Pleasant/Unpleasant" r=.967, n=29, p<.01. There was no significant correlation, positive or negative between the items and demographics.

Table 3: Descriptive Statistics and Correlations for all Variables

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. I think environmental problems are very important. | 1 | | | | | | | | | | | | | | | | | | | | | |
| 2. I think environmental problems cannot be ignored. | .568** | | | | | | | | | | | | | | | | | | | | | |
| 3. I think we should care about environmental problems. | .593** | .453* | | | | | | | | | | | | | | | | | | | | |
| 4. I know that I buy products and packages that are environmentally safe. | .117 | .313 | .121 | | | | | | | | | | | | | | | | | | | |
| 5. I know more about recycling than the average person. | .094 | .434 | .241 | .599* | | | | | | | | | | | | | | | | | | |
| 6. I know how to select products and packages that reduce the amount of waste ending up in landfills. | .082 | .219 | -.010 | .434* | .764** | | | | | | | | | | | | | | | | | |
| 7. I understand the environmental phrases and symbols on product package. | .455* | .288 | .236 | .232 | .357* | .489** | | | | | | | | | | | | | | | | |
| 8. I am very knowledgeable about environmental issues. | .363* | .391* | .278 | .500** | .707** | .728** | .607** | | | | | | | | | | | | | | | |
| 9. I frequently engage in daily green activities (e.g., recycling, water/energy conservation). | .166 | .181 | .288 | .459** | .719** | .680** | .437* | .668** | | | | | | | | | | | | | | |
| 10. I try to avoid buying disposable products (e.g., plastic knives, forks, and spoons or Styrofoam cups). | .303 | .251 | .202 | .476** | .313 | .393* | .241 | .392* | .425* | | | | | | | | | | | | | |
| 11. I use a recycling center or in some way recycle some of my household trash. | .013 | .308 | -.005 | .578** | .581 | .581** | .161 | .418* | .533** | .645** | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12. I am planning to visit a locally sourced restaurant when eating out in the future. | .199 | -.054 | .142 | .418* | .320 | .334 | .489** | .406* | .362* | .528** | .305 | | | | | | | | | | | |
| 13. I intend to eat at a locally sourced restaurant when eating out in the future. | .037 | -.124 | .033 | .352 | .322 | .370* | .364* | .369* | .431* | .557** | .325 | .908** | | | | | | | | | | |
| 14. I will expend effort on visiting a locally sourced restaurant when eating out in the future. | .171 | .086 | .083 | .347 | .329 | .396* | .636** | .501** | .409* | .361* | .324 | .757** | .771** | | | | | | | | | |
| 15.Advantageous/Disadvantageous | .048 | -.135 | -.219 | .125 | .061 | .163 | .343 | .065 | -.011 | .315 | .141 | .694** | .544** | .367 | | | | | | | | |
| 16. Wise/Foolish | -.188 | -.089 | -.245 | .070 | .122 | -.057 | .049 | -.125 | -.179 | -.015 | .001 | .230 | .132 | .172 | 559** | | | | | | | |
| 17. Pleasant/Unpleasant | -.104 | -.163 | -.196 | .046 | .157 | .043 | .280 | .044 | -.008 | .065 | .023 | .565** | .509** | .537** | .674** | .814 | | | | | | |
| 18. Attractive/Unattractive | -.096 | -.123 | -.204 | .085 | .116 | -.008 | .164 | -.003 | -.150 | .096 | .022 | .500** | .466* | .460* | .606** | .825** | .967** | | | | | |
| 19. Gender | -.065 | -.072 | -.196 | .201 | -.108 | -.095 | -.032 | .053 | .128 | .126 | .039 | .174 | .139 | .117 | .209 | .181 | .218 | .278 | | | | |
| 20. Age | .158 | .186 | .085 | -.107 | -.192 | -.058 | .169 | -.110 | -.270 | -.262 | -.166 | -.215 | -.301 | .068 | -.067 | .038 | .034 | -.060 | -.060 | | | |
| 21. Class Rank | .040 | -.151 | .197 | .127 | -.084 | .155 | .144 | .059 | -.056 | -.147 | -.152 | .234 | .221 | .282 | .219 | .007 | .057 | .110 | .229 | .510** | | |
| 22. Do You Currently Work in the Hospitality Industry | -.244 | -.138 | -.041 | -.145 | -.153 | -.104 | -.057 | -.006 | -.091 | -.091 | -.054 | -.309 | -.200 | -.140 | -.264 | -.066 | -.169 | -.055 | -.229 | .043 | -.030 | |

Scale reliabilities in parentheses on diagonal.
*. $p < 0.05$ level (2-tailed).
**. $p < 0.01$ level (2-tailed).

# CHAPTER V

## CONCLUSIONS AND IMPLICAITONS

This Chapter give an interpretation of the major findings from the study, included is a summary of the study, implications of major findings, limitations and suggestions for future research.

### Summary of the Study

The primary purpose of this study is to determine consumer's knowledge, attitude, and behaviors regarding sustainable practices of green restaurants. It was examined from the view of college students. The findings of this study are consistent that consumers care about the environment and fit with the literature. This demographic is important because they are the future of the industry and are important current consumers of the industry as well. The participant's responses give a look into what environmental values that consumers have in relationship to their knowledge and how they behave into their day to day lives.

### Implications

The outcome of the study revealed that consumers have knowledge about environmental issues, and their attitude shows that they think green actions are important, but have minimal positive reinforcement of behavior that corresponds with these values. This can be used by companies to develop more information about how their product or

service is good for the environment or creating packaging that is more environmentally friendly that brings consumers in. Current and future leaders in hospitality can use this to make a plan on how to better serve their consumers that have a more environmental mind set since a majority of respondents said that environmental issues are important. Making these changes and keeping them low cost could see an influx of more environmentally conscious consumers.

## Limitations

The limitations in this study stem from the limited demographic data. The questionnaires were distributed to students that were enrolled in Hospitality and Tourism undergraduate courses during different times and days of the week. The limitation that ensues was that there were not any participants from other disciplines across the campus or any older than age 28. An another limitation was that demographics were not examined by race, so there was no way to determine if it could have made a significant impact. The population of males to females also skewed the sampling population. This is likely because the degree of Hospitality and Tourism Management is commonly seen as a female dominated study plan. This study was also completed within an academic year that contains breaks as well as unforeseen bad weather days. The skill set of the researcher also limited the complexity of analysis due to minimal experience in statistical analysis.

## Suggestion for Further Research

Any company within the Hospitality industry as well as other industry fields can benefit from learning when consumers are looking for in terms of an environmental

products. This study presents insight into the knowledge, attitudes, and behaviors of consumers in term of environmental issues. Due to the limitations of this study there are multiple future opportunities for a more detailed analysis of similar work done by future researchers. A larger study either in a non-university setting or across multiple disciplines. By using amore broad sample, it could offer different results other than interdisciplinary students. Another way to further this research would be to understand the barriers between students' knowledge and attitudes and reflecting that in their behavior.

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APPENDICES

## Appendix A: Questionnaire

Questionnaire

This questionnaire will be used for a Senior HTM Student Undergraduate Honors Thesis. These questions are all about your own opinion and there are no right or wrong answers, so please answer honestly. Do not write your Name on this sheet.

This study is about Consumer Attitudes and Behaviors regarding Green restaurants.

Filling out this survey implies consent to use this information for the survey.

If you have any questions feel free to contact me at Kaitlyn.b.johnson@okstate.edu

| | 1 Strongly disagree | 2 Disagree | 3 Slightly Disagree | 4 Neither agree or disagree | 5 Slightly Agree | 6 Agree | 7 Strongly agree |
|---|---|---|---|---|---|---|---|
| I think environmental problems are very important. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I think environmental problems cannot be ignored. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I think we should care about environmental problems. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I know that I buy products and packages that are environmentally safe. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I know more about recycling than the average person. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I know how to select products and packages that reduce the amount of waste ending up in landfills. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I understand the environmental phrases and symbols on product package. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I am very knowledgeable about environmental issues. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I frequently engage in daily green activities (e.g., recycling, water/energy conservation). | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I try to avoid buying disposable products (e.g., plastic knives, forks, and spoons or Styrofoam cups). | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I use a recycling center or in some way recycle some of my household trash. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I am planning to visit a locally sourced restaurant when eating out in the future. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I intend to eat at a locally sourced restaurant when eating out in the future. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I will expend effort on visiting a locally sourced restaurant when eating out in the future. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Attitude towards visiting a locally sourced restaurant

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Disadvantageous | | | | | | Advantageous |
| Foolish | | | | | | Wise |
| Unpleasant | | | | | | Pleasant |
| Unattractive | | | | | | Attractive |

Demographics:

Gender You Prefer: _____

Age: _____

Class Rank: Freshman Sophomore Junior Senior

Do You Currently Work in the Hospitality Industry?: Yes No

If, Yes what position: _____

If yes, For How Long?: _____