Customers' perceptions and expectations of environmentally sustainable restaurant and the development of green index: The case of the Gold Coast, Australia

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Abstract

Green awareness has created the necessity in people's minds for purchasing eco-friendly products; as a result, the market responded with the offer of sustainable merchandise and operations in different economic sectors including the food and hospitality sector. Restaurants are characterised by their high waste production rate. Many restaurants have adapted their operations toward eco-friendly operations. The current study assessed customers' expectations and attitudes toward green restaurants in the Gold Coast, a major tourist destination. Five hypotheses revolving around the influence of awareness, gender, age, and income were conceptualised based on studies from other communities around the world. A survey instrument was administered. The results suggested that although only 40% of the population are aware of the environmental impacts of restaurant operations, 78% would be willing to pay an extra 5% on average in a green restaurant. Men indicated that they would pay more for the green service than women (5.4% vs 4.3%). However, more women were willing to pay an extra fee than men (89.2% vs 59%). The willingness to pay was also positively correlated with the level of education. The youngest age group and the lowest income bracket were more willing to pay a higher premium than other demographic groups. Nevertheless, no significant differences were detected among the demographic groups. Contrary to the commonly held perception, income did not have a significant effect on the green tendencies of customers. The results also suggested that there was a gender bias in the green tendencies of the population with women having a higher green index (GI) =3.29 than men (GI=2.66). Nearly 98% of the respondents suggested that having environmentally sustainable practices would positively influence their customer review. Although an opportunity exists for the restaurant industry to adopt sustainable practices to attract new customers and to gain goodwill, they should be careful not to treat the provision of this service as a new source of profit because the demand showed high sensitivity to the price.

Keywords: Green restaurant; sustainable food service; environmental management; sustainable tourism; green index

1. Introduction

Consumer behavior is more and more being influenced by environmental or 'green' values influencing what people buy and the restaurants they would like to eat in (Doszhanov & Ahmad, 2015; Mohd, 2013). This new trend has created a new market with an environmental conscience and new competitive advantages for companies who are willing to adapt these strategies to their activities. Economic growth and the global increase in food demand have placed greater demand on the food industry; and consequently, greater impacts on the environment. Of specific concern are land degradation, over-consumption of natural resources and greenhouse gases emissions (Garnett, 2013; Millward & Garnett, 2010). On the other hand, rising environmental awareness and health concern about the safety of current food production systems have contributed to increasing number of people considering the purchase of "eco-friendly" food (Mohd, 2013). Furthermore, the search for better flavours and taste are promoting the consumption of organic food with less chemical incorporation (Kim, Njite, & Hancer, 2013; Sirieix, Kledal, & Sulitang, 2011; Yin, Wu, Du, & Chen, 2010). The reduction of red meat consumption, an increase of vegetable intake, cutting of high fructose corn syrup use, and the support of local market are listed as environmentally responsible initiatives at the consumption stage (Martinez, 2010; Hillier et al., 2009; Weber & Matthews, 2008).

The emergence of a 'green customer', a person who is interested in the environment is worldwide evident. For example, in India, environmentally conscious people tend to choose green alternatives in the hotelier sector (Manaktola & Jauhari, 2007) and in the USA, health-aware people prefer green restaurants, since they offer local, organic, sustainable and healthy food (Namkung & Jang, 2017). A typical stereotype of the 'green customer' is that they implement green practices at home (B. DiPietro, Cao, & Partlow, 2013), they are mid-high income earners, female (Han, Hsu, Lee, & Sheu, 2011) and youths (Baltescu, 2017). Baltescu (2017) surveyed 264 students in Brasov; their results showed that although only 34% were aware of the green restaurant concept, 95% consider themselves as highly environmentally concerned. To young adults, an ecofriendly restaurant attributes are; use of renewable energies, attention to the use of ingredients, avoiding of frying procedures, and the use of organic ingredients (Baltescu, 2017). In view of these results, it is possible to draw a relation between the customers' perception of ecofriendly restaurant and healthy food, which is consisted with the findings of Iraldo, Tesla, Lanzini and Battaglia (2017) about the small and medium enterprises (SME) in the food service industry.

Research pointed out that the young generation, particularly, females and high earners, have presented a high preference to organic options (Yu, Gao, & Zeng, 2014; Mohd, 2013). They are also

more willing to pay higher prices for organic meats and products (Yu et al, 2014). On the other hand, the older generations are more resistant to adopt new green initiatives in their diet and more reluctant to pay an extra fee to receive green services (Yu et al, 2014). Ginsberg & Bloom (2004) explain the attitude of the older age group by the rigid diet traditions, which make it difficult to change their daily food habits for more eco-friendly options. Nevertheless, Kwok, Huang and Hu (2016) studied the support of green restaurant concept among different sociodemographic groups through three behavioural intentions: willingness to pay more; wait longer and travel farther. Their results confirmed difference between genders but were not conclusive among the others demographic groups (age, income, educational level and members in the family).

In response to the emerging trend, food companies have developed green marketing strategies, an added driver of green consumption and marketing campaigns, which intend to attract customers concerned about the consequences of non-healthy diets. This strategy has proved to be the most effective marketing strategy in food marketing (Kim et al., 2013). However, of particular concern is the approach of the food companies to green customers, which often relies on charging higher prices and use of complex jargon. This poor understanding of customers' needs, product shortage and the shallow relation of managers-staff and establishments-customers are some of the obstacles to the growth of the eco-friendly food market (Iraldo et al., 2017; Perrea, Grunert, & Krystallis, 2015).

Eco-labelling is a tool that helps to identify environmentally responsible products or services and is used as a competitive strategy, and differentiation tool (Chkanikova & Lehner, 2015). The green certification's main goal is to assure that the product or the service achieves certain environmental conditions. Generally, there are two broad eco-labeling classes: a certification done eternally by the organisation or brand owner and third-party certification which involves an external agent for the environmental evaluation (Teisl, Roe, & Hicks, 2002). An advantage of eco-certification is that it can reduce the risk of 'greenwashing'. Greenwashing is the practice of deceptively marketing a product or a service as being environmentally sound. The general response of the customer toward eco-labeling is positive, and it is related to education of potential customers, and their perception of the reliability of the eco-label that is presented (Chekima, Syed, Igau, Chekima, & Sondoh, 2016). In the restaurant industry, different certifications are available; green seal certificate, green restaurants association certification, certified green, gen green cert, and the green table network. The green table certification is the most relevant in the Australian context. However, these certifications are not well known to the majority of people (DiPietro et al., 2013).

Based on the literature reviewed, the following hypotheses were formulated:

- **Hypothesis 1:** *Patrons are aware of the environmental impacts of restaurant activities.*
- **Hypothesis 2:** *Patrons are willing to pay a premium to support green initiatives of restaurants.*
- **Hypothesis 3:** *Females are more willing to support green restaurant initiatives.*
- **Hypothesis 4:** *Support for green restaurant initiatives is higher among young people.*
- **Hypothesis 5:** *Higher income earners are more supportive of green restaurant initiatives.*

The level of the customers' response to sustainable initiatives and their final purchase decision is marked by multiple dimensions: functional factors related to the physical characteristics of the meal (taste, smell, consistency, for example); social factors such as the linkage formed during the purchase action to a certain social group; hedonic factors such the emotions triggered by the purchase action; and ethical stand including the feeling that the purchase has supported an environmental or sustainable cause (Holbrook, 2006). These factors are highly contextual; for that reason, businesses with green intentions should understand the profile of their customers, and find the real necessity that the customer is trying to fulfill with the green image of their purchase. Willingness to pay is the most popular method to gauge the green tendencies of customers; however, this may be inadequate in complex situations where many factors may affect the customer decision. In this study, a 'Green Index' was developed to take into account other factors to provide a better understanding of customers' green at. The hypotheses were tested on the Gold Coast metropolitan case, a popular world tourism destination.

2. Case study

Gold Coast is located in the South-east Queensland region. It is the 6th largest city in Australia with a population of 568,000. The main economic activities in the Gold Coast are tourism, construction, and retail. The Gold Coast has strong population growth due to great weather and the attraction of a flexible workforce. This workforce has been mainly represented by the employment of part-time in accommodation, retail and healthcare sectors (KPMG, 2015).

Tourism is one of the most important sectors in the Gold Coast with more than 4 million visitors and a revenue of 731 million during 2014 (Gold Coast Tourism industry & Griffith Institute for Tourism, 2014). The solid industry performance positively affects the development of the accommodation and the food service sectors. Approximately 500 restaurants and cafés with different ranges of flavours and styles operate in the Gold Coast (City of Gold Coast, 2017). This sector along with the beverage services, generated sales of \$1,698 million during the 2015/2016 fiscal year; representing 2.8% of the total sales and providing 7% of the total employment in the city (City of Gold Coast, 2016). The

suburbs with the highest density of restaurants are; Main Beach, Surfers Paradise, Broadbeach, Labrador, and Coolangatta.

According to tourists, the main attractions of the Gold Coast are (Tourism Research Australia, 2013):

- good weather
- the range of dining options
- perfect place to spend quality time
- the warm and welcoming holiday atmosphere

Gold Coast will host the 2018 Commonwealth Games which will be a massive event. The games are expected to attract the participation of 6,500 athletes and officials from 71 countries and nearly 1.5 million spectators. The city is getting ready to host this event and has placed great emphasis on sustainability. Some activities like the reduction of waste, sustainable procurement of low environmental impacts products, and the inclusion of healthy, local, seasonal and organic food are part of this event (Queensland Government, 2017).

The aim of this study is to identify customers' expectations of 'Green Restaurants' and their attitudes towards restaurants with environmentally responsible practices in the Gold Coast in view of the 5 hypotheses formulated earlier and to develop the concept of the 'Green index' to measure customer's green tendency.

3. Methods

This study employed quantitative research methods which included hypothesis setting, survey instrument design, pilot testing, data collection, instrument validation, data cleaning and validation, data analysis and hypothesis testing and finally index development.

3.1. Survey design

To test the above hypotheses, a survey instrument was designed. The first section of the survey contained questions to profile the respondents, including gender, age, education, income, and resident status. Additionally, this section included questions about the dine-out habits and type of diet. The second section attempted to measure the respondents' environmental awareness of restaurants operations. The third section was designed to capture customers' responses to environmentally responsible activities by the restaurant and included a willingness to pay extra to receive eco-friendly activities and influence on their customer review of the restaurant. This premium fee reflects the real perception of the people toward green actions (Namkung & Jang,

2017; Slevitch, Mathe, Karpova, & Scott-Halsell, 2013; Manaktola & Jauhari, 2007).

The fourth section was about the sustainable activities expected by customers from an environmentally responsible restaurant (Weller et al., 2014; DiPietro et al., 2013; Lockie, Lyons, Lawrence, & Mummery, 2002). This section intended to clarify where the restaurant should focus their green strategy in order to attract the 'green customers'. The last section of the survey related to the green marketing and ecolabels, as they are an important factor for a successful eco-friendly business. This section was adapted from from Doszhanov & Ahmad (2015) and Chkanikova & Lehner (2015). A sample of the survey is included in Appendix A.

3.2. Survey validation

To ensure the integrity and validity of the survey instrument, the developed survey was subjected to validation process as described by Collingridge (2014). The process included:

- 1- Establishing the face validity of the instrument which consisted of two stages:
 - a. Review of the literature to identify the general guidelines of the survey construction, design, and the main topics that should be included in the questionnaire.
 - b. Review of the questionnaire for the suitability of the local characteristics. This was achieved in consultation with two academic experts.
- 2- Pilot testing of the developed instrument. The developed instrument was administered to a random sample (10 people) from the target population. After analysis of the results from the pilot run, the instrument was modified by eliminating one redundant question and the re-wording of another.

3.3. Population and sampling

The Gold Coast city has a total population of 567,644 inhabitants of which 383,830 are older than 18 years (Profile.id, 2015). The target of this study are the potential restaurant customers in the Gold Coast including tourists as they are integral component of restaurant patrons. Under 18-year-old people were excluded as they are minors. Equation 1 was used to estimate the minimum sample size to ensure a 95% confidence level and 10% margin of error.

$$n = \frac{\frac{z^2 * p(1-p)}{e^2}}{1 + \frac{z^2 * p(1-p)}{e^2 N}}$$

Equation 1

z=z-score related to the confident value=1.96

p=fraction of the population that is over 18 years old=67%

e=Margin of error (10%)

N=Total population=567,644

n=sample size

Based on the formula, a minimum sample size of 85 respondents is required. However, to ensure the integrity and quality of the results a total of 140 responses were collected.

3.4. Survey administration

An aleatory selection of people was done at different points of the city, which included Surfers Paradise, Burleigh Heads, Southport, Broadbeach, and Mermaid Beach (see Figure 2 highlighted in blue), over a period of 60 days (April 1-May 31/ 2017). These suburbs were selected because they possess a higher density of population and they receive a big part of the tourists. The paper-based survey was administered on site to potential participants. Respondents were asked to fill the survey and return it on-site. Only people who appeared older than 18 years were approached and if it was not possible to tell the age from the physical appearance, the potential participant was asked to confirm that they were more than 18 years old.

Figure 1. Sites where the survey was administered.

3.5. Post Treatment and data validation

In total 141 completed forms were collected. All the data collected in the paper survey was digitalized in an Excel file. All analyses were conducted on the digitized data, and the paper forms were kept safely to ensure the confidentiality and integrity of the data. The data were screened for obvious bias responses or anomalies and returned forms that exhibited obvious anomalies were

excluded to maintain the level of confidence expected. The following general cleaning was performed on the data:

1. Eight forms were excluded because they were identical, as they were completed by same family members or group of friends which may have influenced each other's responses.
2. Three forms were eliminated because they have blanks (unanswered questions) and inconsistent demographic profile.
3. All remaining forms were analysed to identify consistent patterns in the answers or bias. No clear patterns or bias was identified and as such were deemed valid responses.
4. Non-linear principal component analysis (PCA) was used to gauge the effectiveness of the instrument in measuring the latent variable of the study (i.e., the attitude of the people in the Gold Coast towards environmentally responsible practices of restaurants).

The data analysis for the current results included: (1) General descriptive statistics – especially for the demographic characterisation of the sample; (2) Kolmogorov-Smirnov test to measure the normality proper of the data; (3) Whitney and Kruskal-Wallis test, to discover significant possible relations among different social groups. All data analysis was carried out using SPSS™.

3.6. Green Index

To provide a summative measure of the customer attitude to the 'green restaurant' concept, the Green index (GI) was developed. The GI is defined as in Equation 2:

$$GI = \frac{f}{n} * (\sum_{j=1}^m \sum_{i=1}^n W_j * x_{i,j})$$

Equation 2

where W_j is the weight assigned to question j as derived from the component analysis t and $x_{i,j}$ is the response of participant i to question j , n is the number of respondents. f is a scaling factor calculated as following:

$$f = \frac{5}{\sum_{j=1}^m \max(x_j)}$$

The green index can assume any value between 0 and 5; where zero represents poor attitude toward green restaurants and five means best attitude.

4. Results and Discussion

Out of the 130 valid responses, 56 were females (43.1%), which is under-representative of the population (48.6). The age distribution of the respondents is shown in Figure 2 (a). All age groups were represented in the sample. Compared to the Gold Coast total population, the sample was in

general agreement with the age distribution. Nevertheless, there is an over-representation of the 18-24 years age group who made up 23.1% of the sample compared to 12.1% of the Gold Coast population while the older than 65 years age group was under-represented. All other age groups were reasonably represented. Figure 2 (b) shows the distribution of respondents according to their highest education level. It can be seen that the university educated group are over-represented in the sample compared to the general population of the Gold Coast region. This discrepancy may correlate to the higher percentage of respondents in the age groups of 18-34 as well as the fact that 30% of the respondents identified their residency status as overseas university students. The income distribution of the sample is shown in Figure 2 (c). The weighted average for the sample income is \$30,638 per year, which is lower than the average income of the Gold Coast population (\$38,575). This is likely due to the over-representation of younger people and university students. These discrepancies between the sample and the population may introduce some bias in the results. However, it is unlikely to be significant as the sample size is substantially larger (53%) than the required minimum sample size and the effects will be limited to the overall averages rather than group levels. Therefore, for the purpose of this research, the collected data are realistically representative of the population.

Figure 2. Demographic characteristics of respondents

4.1. Dining habits

The survey found that 85% of the respondents are omnivores, followed by semi-vegetarians (12%) while the remaining 3% were either strictly vegetarians or vegans which is in-line with the general population diet preferences. Nearly two-thirds of the respondents reported that they normally dine-out 1-2 times per week. The eating-out frequency observed in this study is also consistent with the national average of 4.2 times per month (Ipsos Australia, 2016).

Figure 3. Restaurants preference of the respondents

Figure 3 shows the types of restaurants according to the dining-out preferences of respondents. Casual dining, ethnic food, and cafés are the three top choices for the customers, which are in agreement with the national trends. The ‘Eating Out in Australia 2017’ survey conducted by ‘The intermedia group (2017)’ exposed Australians’ preference for casual dining restaurants, the development of healthy options restaurants - mainly related to Korean and Japanese cuisine, and the growth of the cafés, boosted by the redefinition of the breakfast as a dine out occasion (The Intermedia Group Pty Ltd, 2017). These results gave further assurance of the validity of collected data and the representativeness of the sample.

4.2. Customers’ perception and expectations of ‘Green Restaurant’

This section attempts to gauge the level of customer consciousness of the environmental issues encouraged by the restaurants, and consequently define the concept of ‘green restaurant’ in the industry from the customer’s perspective. Surprisingly, 60% of the respondents were unaware of the environmental impacts of a restaurant. Only 40% of the respondents were able to identify at least one environmental aspect of restaurant operations. Waste in general including food waste and packaging was the main environmental aspect pointed out by respondents. Von Massow & McAdams (2015) discussed the concept of “plate waste”. Plate waste is a term directly related to the concept of waste in restaurants, and it is the edible food that is not consumed by the patron

after the completion of their meal. This concept reflects the waste of energy and transport, and the contamination of the landfill. It is also an indicator for the restaurants' managers about how good is perceived the food that they offer (Von Massow & McAdams, 2015). The plate waste can also help managers redefine their serving size in order to reduce the amount wasted or design menus or systems that discourage waste.

The results revealed that people associated 'green restaurants' with 'healthy food' and 'vegetarian and vegan' type of restaurants as shown in *Figure 4*. Although fast food big chains have implemented sustainable plans for their operations -as they advertise on their web pages, these kinds of policies have not been effective in winning people's attention. Possibly, the increasing obesity rates and the continuous media attention have hardened people's views about these types of restaurants.

Figure 4. Restaurants associated with eco-friendly activities

Regarding people's expectation of the environmental activities that a green restaurant should engage in; recycling (94.6%), energy saving (84.6%), water saving (80.8%) and use of recycled materials (80%) were the most prominent. These results bare some similarities to a study conducted in the United States in which, chemical and pollution reduction, Recycling, and Energy efficiency practices were identified (Dewald, Bruin, & Jang, 2014). However, Gold Coast costumers seemed to add water saving to the list. This is possibly due to the recent draught which affected the South East Queensland region and the extensive campaigns to encourage people to save water. Purchase of local and seasonal produce, despite being extremely important indicators of sustainability, was the least anticipated by customers (53.8% and 49.2%, respectively). This confirms our finding about the consumers' low level of awareness about the environmental impacts of restaurants reported by the participants in this study. Customers focused on an end-of-pipe approach to sustainability rather than considering a more comprehensive approach, which

encompasses the full supply chain. This is likely because waste, energy, and water are tangible aspects that the customer has direct experience with. Another reason could be the familiarity of customers with programs dealing with these aspects because they are widely promoted in other sectors.

When participants were asked about what sustainability indicators they would like a green restaurant to report on, the response largely mirrored the anticipated sustainability programs. As shown in *Figure 5*, respondents indicated that they would like to see the restaurant report on their energy and water savings, waste reduction and recycling during the past periods. Interestingly, participants' response to 'support of local market and social inclusion' did not correlate well with their response about 'food miles'. Nevertheless, they were more enthusiastic about the 'carbon footprint'. This further supports the notion that respondents chose concepts that they were familiar with. Another interesting observation is that although none of the participants expected the restaurant to include the 'Green Table Certification' as one of the sustainability programs, 39% of the respondents indicated that they would like the restaurant to report on their 'Environmental certification to local or international standards'; further affirming the lack of awareness about existing sustainability programs in the restaurant industry.

Figure 5 Data expected by the customer in a green restaurant

Customers mentioned that they would like to see the restaurant reports about their sustainability indicators in prominent locations where it can be easily seen and attract attention; for example a display board, the menu, and/or external signage. Furthermore, 98% have responded that having environmentally sustainable practices can positively influence their customer review of the eating place, thus giving restaurants with good environmental practices a competitive advantage. This is particularly important as more than 50% of potential customers rely on other customers' reviews in choosing where to dine (TripAdvisor, 2017).

4.3. Environmental fee

More than three-quarter of the respondents suggested that they are willing to pay an extra fee in restaurants with green policies, thus confirming the Hypothesis 2. Table 1 shows the summary of different social groups' willingness to pay an extra fee for dining in a green restaurant. On average, customers are willing to pay 4.8% extra on the cost of their meals in order to receive an environmentally sustainable service in a restaurant. Considering gender, females were more willing to pay the extra fee than males but they placed a lower value on the environmental service than their male counterparts. When considering age groups, the youngest age group (18-24) were more willing than the rest. This may explain the surprising finding that the income group of <18,000 were more willing to pay an extra fee as those are most likely to belong to the youngest age group. This outcome can be explained by the fact that young people usually are more informed about the environmental issues (Evanschitzky & Wunderlich, 2006); therefore, they are more attentive to environment protection (Hu, Parsa, & Self, 2010). It was also observed that there is a positive correlation between the willingness to pay and the education level of the respondent. It was not surprising that people who indicated lack of awareness about the environmental impacts of restaurants were less willing to pay an extra fee. Statistical analysis (Kruskal-Wallis test followed by pairwise Mann-Whitney tests) confirmed that the 18-24 years old group was significantly different from the 25-34, 35-44 and 55-64 age groups but only marginally different from the 45-55 age group at the 5% significance level. Surprisingly, willingness to pay extra fee was inversely correlated with income. Nevertheless, no significant differences were observed among income groups with the exception between the <18,000 and the 50,000-80,000 income groups. With the exception to income, our findings are consistent with previous studies on the foodservice which concluded a gender and age bias (Namkung & Jang, 2017; Dewald, Bruin, & Jang, 2014; Kang, Stein, Heo, & Lee, 2012 Dutta, Umashankar, Choi, & Parsa, 2008). As such, the results lend support to Hypotheses 2 and 3. On the other hand, this study did not find evidence to conclude that willingness to pay an environmental fee is related to the income level of the customer.

Despite the fact that 78% of the customers suggested that they were willing to pay extra fee to receive environmentally sustainable service in the restaurant; the value they attached to the service was generally low (~5% on average). Although charging this extra fee may help the restaurant recover some of the cost associated with implementing environmentally sustainable practices, restaurant operators should be careful not to overcharge or use the fee as profit source as the data suggest a high price elasticity of demand. The relative price elasticity of demand can be calculated as $e_p = \frac{\Delta Q/Q}{\Delta P/P}$. It can be seen from Table 1, that 78% of the respondents indicated their willingness

to pay an extra 5% on their meals which may translate to decrease in demand by 22% in response to a 5% price increase ($e_p = 4.4$). A further increase in the fee value from 5% to 10% may lead to demand decrease from 78% to 18%; in other words $e_p = 12$ which is $\gg 1$ further confirming the high elasticity nature of the price-demand curve. Therefore, the focus of providing the environmental service should be to enhance customer experience and foster goodwill. Financial reward can still be gained through better customer reviews and widening customer base.

Table 1. Willingness to pay an extra fee to receive environmentally sustainable services in a restaurant.

Extra payment		Mean	5% more		10% more		15% more		No extra payment	
			Freq.	%	Freq.	%	Freq.	%	Freq.	%
Gender	Female	4.3%	39	69.6%	11	19.6%	0	0.0%	6	11%
	Male	5.4%	39	52.7%	11	14.9%	1	1.4%	23	31%
Age	18-24	6.1%	16	53.3%	9	30.0%	1	3.3%	4	13%
	25-34	4.4%	25	59.5%	6	14.3%	0	0.0%	11	26%
	35-44	2.7%	10	55.6%	0	0.0%	0	0.0%	8	44%
	45-54	5.7%	14	73.7%	4	21.1%	0	0.0%	1	5%
	55-64	4.0%	10	66.7%	1	6.7%	0	0.0%	4	27%
	65 or older	5.8%	3	50.0%	2	33.3%	0	0.0%	1	17%
Education	Primary	4.0%	14	70.0%	1	5.0%	0	0.0%	5	25%
	Secondary	4.16%	13	72.2%	1	5.6%	0	0.0%	4	22%
	Diploma or certificate	4.5%	12	50.0%	5	20.8%	0	0.0%	7	29%
	University or Higher	5.2%	39	57.4%	15	22.1%	1	1.5%	13	19%
Income	Less than \$18,000	5.9%	11	52.4%	7	33.3%	0	0.0%	3	14%
	\$18,000 - \$30,000	5.6%	20	55.6%	9	25.0%	1	2.8%	6	17%
	\$30,000-\$50,000	4.7%	17	77.3%	2	9.1%	0	0.0%	3	14%
	\$50,000 - \$80,000	3.4%	15	53.6%	2	7.1%	0	0.0%	11	39%
	\$80,000 or more	4.1%	15	65.2%	2	8.7%	0	0.0%	6	26%
Status in the country	Local	4.6%	44	58.7%	11	14.7%	1	1.3%	19	25%
	International	5.0%	34	61.8%	11	20.0%	0	0.0%	10	18%
Aware of environmental impacts	No	4.6%	45	57.7%	12	15.4%	1	1.3%	20	26%
	Yes	5.0%	33	63.5%	10	19.2%	0	0.0%	9	17%
Total		4.8%	78	60.0%	22	16.9%	1	0.8%	29	22%

4.4. Green Index

Non-linear principle component analysis was used to identify the significant questions to include in the calculation of the green index and their corresponding weightings (loading factor). With the exception of the 'willingness to pay' values, all other parameters were binary. Therefore a coding system was introduced to represent the variable values. A value of '1' was assigned to indicate the presence and a value of '0' to represent the absence of the choice. Table 2 shows the significant parameters which predict the green tendency of the customer and their corresponding weights.

Equation 2 was then used to calculate the green index of different social groups. The average value for all the samples was 2.93, and the results for each demographic group are presented in Table 3.

Table 2 Factor Loading of the component analysis

Component Loadings	
Item	Loading
Qa Awareness of environmental impacts	14%
Qb Willingness to pay for a green restaurants service	14%
Qd Relation ecofriendly - Healthy	18%
Qd Relation ecofriendly - Trendy	18%
Qd Relation ecofriendly - Vegetarian	20%
Qe Recycling	22%
Qe Energy Savings	33%
Qe Water savings	31%
Qe Donation of leftover	29%
Qe Composting	35%
Qe Organic food	22%
Qe Local purchase	31%
Qe Use of recycle materials	29%
Qe Seasonal food	32%
Qf Energy and water savings of last periods	23%
Qf Food Miles	21%
Qf Carbon footprint in the last period	26%
Qf Waste reduction	17%
Qf Recycled suppliers	19%
Qf Support the local and seasonal product	13%
Qf Environmental certification	17%
<i>Eigenvalue</i>	<i>4.987</i>
<i>% of variance</i>	<i>0.237</i>
<i>Cronbach's alpha - α</i>	<i>0.839</i>

To determine if the differences between the demographic groups were significant, statistical testing was carried out. First, it was important to test the normality of the GI distribution. Kolmogorov-Smirnov test revealed that the GI was not normally distributed; $D(130) = 0.099$, $p\text{-value} = 0.001 < 0.05$. Therefore, Mann-Whitney and Kruskal-Wallis tests were employed which revealed that there was a significant difference between the GI of males and females ($U=1395$, $z=-3.18$, $p\text{-value} = 0.001 < 0.05$). This result is consistent with Fisher, Bashyal, & Bachman (2012) and Roberts (1996) studies, which have reflected that women have higher eco-friendly awareness, thus supporting hypothesis 3. It is worthy to note here that there is a discrepancy between the willingness to pay values and the GI values. For example the average extra fee that women were willing to pay was less than that of the men; nevertheless, when other factors were included, women were more supportive of the green

restaurant concept. A similar situation is also seen in the case of residency status (local vs international). With regards to age, pairwise comparisons confirmed that there was significant differences between the 18-34 age group and the 55-64 age group. No significant differences were observed among other demographic groups. Contrary to hypothesis 4, the GI values suggest that support for the green restaurant concept is more prevalent among the older age groups (>45). Even though, no significant differences were observed among the different income groups, the higher income earners are not necessarily more supportive of the green restaurant concept which is contrary to what hypothesis 5 suggests.

Table 3 Green Index Profile

	<i>Extra payment</i>	<i>Mean</i>
Gender	Female	3.2
	Male	2.6
Age	18-24	2.7
	25-34	2.6
	35-45	3.0
	45-55	3.3
	55-64	3.1
	65 or older	3.2
Education	Primary	2.6
	Secondary	2.9
	Diploma or certificate	3.2
	University or Higher	2.8
Income	Less than \$18,000	3.1
	\$18,000 - \$30,000	2.7
	\$30,000-\$50,000	3.0
	\$50,000 - \$80,000	2.6
	\$80,000 or more	3.2
Status in the country	Local	3.1
	International	2.7
	Total	2.9

As shown in Table 3, locals showed higher support to the green restaurant concept compared to international visitors. The Gold Coast, especially the 2018 Commonwealth Games, places great emphasis on promoting itself as a sustainable and green destination. Therefore, to improve the sustainability of the destination, environmental awareness and educational campaigns targeting international visitors may be needed. This study also provides insights to restaurant and related

activities about leveraging green initiatives to improve customer satisfaction and widen their customer base.

5. Conclusions

Customers' expectation of the 'green restaurant' and their willingness to pay to receive 'green' services in a restaurant were investigated. The concept of the green index (GI) to measure the 'green' tendencies of customers was also introduced. The study revealed that majority of people were not aware of the environmental impacts of restaurant operations. Nevertheless, customers were willing to pay a premium fee if the restaurant had sustainable environmental practices. The willingness to pay correlated positively with the customer's level of education. This correlation held well for the green index except for the case of university degree holders. The results suggested very high elasticity of demand and therefore, providing the service should not be viewed as a new source of profit. Instead, providers should view it as a method to gain the good will and expand customer base. It was also found that green tendencies of customers were gender biased with females having a higher green index than males despite the fact that females were willing to pay less of a premium than their male counterparts. The results of this study suggest that willingness to pay is not a good surrogate measure of customer green tendencies. A more comprehensive measure that takes into account other customer behaviours and characteristics such as the introduced green index may give a better indication of the level of greenness of the different demographic segments.

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Highlights

- Customers expect recycling, energy and water saving programs from green restaurant
- 78% of the customers are willing to pay more for their meals in a green restaurant
- Willingness to pay for green service is small with high price elasticity of demand
- The Green Customer Index (GI) was introduced
- Women had higher GI than men but they were less willing to pay for green service

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