Restaurant customers' attitude toward sustainability and nutritional menu labels

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Abstract

This study investigates the dining behaviors of Hong Kong hotel restaurant customers, their health and environmental consciousness and lifestyles and their attitudes toward nutritional and sustainability menu labeling. Previous diners of an independent hotel are surveyed online resulting in 1,255 usable responses. Results suggested that respondents eat frequently outside their homes, particularly during weekends. They exhibited heightened health consciousness and environmental awareness than the ratings for healthy and environment-friendly lifestyles. In support of the signaling theory, restaurant menu labels are cues that allow customers to understand the nature of the products that they will order and consume. When evaluating menu labeling, customers consider multiple attributes of the menu in dining in a restaurant, and they prioritize nutritional aspects over sustainability. Significant differences were observed between the attitudes of male and female customers toward 14 nutritional and sustainability menu label descriptions, whereas age indicated no significant influence.

Keywords: Restaurants, menu labeling, healthy lifestyle, environmental awareness, sustainable consumption, nutrition

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INTRODUCTION

Food and beverage expenditures have been acknowledged as substantial contributors to a wide array of hospitality businesses. Given that the core dining product is the provision of food and beverage within a restaurant environment, operators should understand the customer dining experience to maintain their competitive advantage. Within restaurant settings, menus provide an important medium for communicating food and beverage offerings and for projecting an overall image for the establishment. As a prerequisite to designing and developing well-tailored menus, restaurateurs require insights into the perspective of contemporary consumers.

Evidence supporting that personal health management is becoming a global concern is increasing (Nielsen, 2015). How consumers seek out and respond to the provision of health information via their lifestyle choices tend to reflect their degree of health consciousness. Intuitively, those who pursue healthy lifestyles actively seek opportunities to make sustainable or environment-friendly food choices when dining out. In this context, sustainability is evidently becoming central to the prevailing restaurant business model. Triggered by the unprecedented consumer demand for healthy and environment-friendly products, a number of restaurants began offering sustainable food products and embracing reduced solid waste, water and energy consumption, and air pollution (Carbonara, 2007; Johnson, 2009). Proponents justify these initiatives because they may enhance the reputation of a restaurant as a sustainable operator and provide a mechanism for extending green practices across the supply chain (Tan & Yeap, 2012). Hu *et al.* (2013) advocated a broad applicability of sustainable food commodities across the

foodservice industry because the associated production and transportation processes help reduce energy consumption and carbon emissions.

As one of Asia's major cities, Hong Kong falls short at being environmentally sustainable. Based on a World Wildlife Fund report (WWF, 2016), Hong Kong's ecological footprint is the second largest in Asia after Singapore. The city's footprint, which measures the amount of productive land and sea areas necessary to feed the population, grew from 5.4 global hectares (gha) in 2014 to 6.7 gha per person in 2016. Daily consumption at individual, family, and company levels accounts for 76% of Hong Kong's ecological footprint. Food alone accounts for a 16% share of this amount. Increasing meat consumption is contributing to greenhouse gas emissions and to climate change. In the case of seafood, Hong Kong's per capita consumption ranks second in Asia and seventh in the world. The WWF report indicates that if everyone consumed at the same rate as Hong Kongers, roughly 3.9 earths would be needed to sustain humanity's lifestyle (Lau, 2016). Hong Kong lags behind Europe and parts of North America in making the connection between consumption, the adoption of sustainable practices, and the deterioration of the environment. In this context, the provision of green restaurants and green menu choices offers the prospect of increasing awareness on sustainable dining in Hong Kong.

With over 14,000 restaurants offering diverse cuisines, Hong Kong has been described as Asia's "culinary capital." In 2015, Hong Kong restaurants generated a HKD 104.4 billion revenue (Census and Statistics Department, 2016). Dining out is the norm for corporate entertainment, and it is a common pastime for local residents (HOFEX, 2015). According to a study by MasterCard (2015), Hong Kongers are among the most

optimistic in the region as regards the spending outlook on dining, travel, and luxury shopping; dining expenditure and spending outlook ranked number one. As cited in the 2015 Visa Affluent Survey of Hong Kong residents (Visa, 2016), the 2016 Hong Kong Consumer Spending Pattern on Dining Survey conducted by ESDlife emphasized the importance that Hong Kong consumers attach to dining out in celebration of birthdays, anniversaries, holidays, and other special occasions. Food quality is their most important criterion when deciding where to eat. Hong Kong residents enjoy pastimes such as weekend buffets and "afternoon teas." Visa reported that 84% of the respondents set aside an average of HKD 6,600 (USD 850) per month for discretionary spending, with much of this devoted to fine-dining restaurants and to nights out (Visa, 2016). Based on the 2016 Michelin Guide, 17 of the 61 restaurants in Hong Kong that have been awarded one to three stars are located in hotels (Michelin, 2016).

This study differs from prior research on restaurant menus that have focused on planning, pricing, designing, operating, and developing menus. The present study investigates the attitudes of customers toward the two types of cue communicated by the restaurant menu, namely, the nutritional and sustainability attributes of the menu items. Considering the substantial scale and significance of the restaurant sector, the prevalence of dining out, and the heightened awareness among Hong Kong residents on sustainable dining and availability of green restaurants and green menu choices, the following research questions are formulated for the study: 1) What are the dining-out behaviors of Hong Kong restaurant customers? 2) What are their health and environmental awareness and lifestyles? 3) What are their attitudes toward nutritional and sustainability menu labels when dining in a restaurant? 4) Do consumers of various age and gender have different attitudes toward

nutritional and sustainability menu labels? With these research questions in mind, this study **aims to understand the attitudes of hotel restaurant customers toward nutritional and sustainability menu labels, as well as their health and environmental consciousness and lifestyles and their dining-out behaviors.** Ultimately, we hope that the investigation will present insights for practitioners and researchers on how restaurant menus can serve as a medium to advance the sustainability agenda.

LITERATURE REVIEW

Restaurant Menus

Restaurant menus are important tools to market food and beverage offerings to customers (Pavesic, N.D.). They provide diners with an initial impression about the establishment and play an important role in communicating the restaurant's offerings (Bowen & Morris, 1995; Reynolds *et al.*, 2005). A carefully designed menu directs the customer's attention to particular items and facilitates their selections. Menu design directly influences the manner in which customers perceive the restaurant, as well as their attitudes and purchase intentions (McCall & Lynn, 2008). An abundance of studies have explored restaurant choices and restaurant selection criteria (e.g., Harrington *et al*. 2013; Jung *et a*l., 2015; Ponnam & Balaji, 2014). However, few studies have investigated how restaurant menus affect consumer food and beverage choices. Reynolds *et al.* (2005) summarized the results of these few studies and concluded that most have focused on the relationship between menu design and item sales, the roles of price information, graphics, and photos, the placement of menu items, and the conduct of gaze-motion studies. The authors suggested that the scope and scale of the research has been insufficient and that

increased attention should be given to menus across every segment of the food service industry. Ozdemir and Caliskan (2014) recently reviewed existing studies on restaurant menus and concluded that the major menu related issues are planning, pricing, design, operations, and menu development.

Menu labels as signals

Signaling theory (Spence, 1973) was initially used in the context of economics. Subsequently, it has been used widely in human resources, management, marketing, and consumer behavior. Signaling theory provides a framework to explain how sellers communicate information about the products that they sell to prospective consumers. The seller decides on the type of information (cues or signals) that will be communicated to consumers and the consumers subsequently interpret the information communicated to them (Connelly *et al*., 2011). The signals are extrinsic to the product and are usually positive in nature. These signals allow consumers to use the information to infer about product characteristics and quality (Atkinson & Rosenthal, 2014; Bloom & Reve, 1990). Signals can also be associated with different attributes, namely, search, experience, and credence. Search attributes are generally determined by the consumer prior to purchasing the product, and these include price, style, and color. Experience attributes, such as taste of the food, can only be determined after the purchase or consumption of the product. Finally, credence attribute is something that consumers may be unable to evaluate after their purchase or consumption of the product. For example, consumers struggle to verify claims including country of origin, nutritional level, caloric content, and food is production and preparation. However, they are expected to believe and trust such claims.

Menu labels provide information about the food and beverages served in a restaurant. They signal the "marketing claims" of the products being sold. Menu labels and descriptions can affect customer purchase behaviors, their perceptions of quality, and the value of the restaurant experience (Wansink *et al.*, 2001). Provision of nutritional and sustainability information on the menu items can help customers understand what they are consuming. As forms of credence attribute, such information is difficult for customers to evaluate and verify. Thus, customers must trust the restaurants to deliver their claims. Making effective use of such "cues" can help restaurants to build and communicate their competitive edge based on the characteristics of their food and beverages (Bloom & Reve, 1990).

When restaurant customers decide on what to order, menu labels function as cues that signal the attributes or characteristics of the food and beverages served by the restaurant. Based on multi-attribute utility theory and multi-attribute decision making process, consumers choose after considering multiple attributes and/or factors. The most commonly investigated food choice attributes include taste, sensory appeal, ethical concerns, conveniences, prices, weight control, nutritional value, cost, natural content, mood, familiarity, and health (Scheibehenne *et al.*, 2007). Consumers may attach varying importance to food attributes (Scheibehenne *et al.*, 2007). Previous studies have suggested that individual differences occur in the importance of the different attributes depending on age, gender, race, lifestyle, social economic status, cultural background, and education (Glanz *et al.*, 1998; Prescott *et al.*, 2002; Robinson and Smith, 2002; Satia *et al.*, 2005; Trudeau *et al.*, 1998).

Nutritional and sustainability labels

Over the past decade, restaurant menu research has focused on nutritional labeling and its effect on the menu item choices of consumers. Burton *et al.* (2006) suggested that nutritional information on restaurant menus influences consumer decisions about reducing their consumption of less healthy food. Nutritional information can assist restaurant diners to make informed decisions (Hwang & Lorenzen, 2008). Researchers have also found that positive encounters with restaurant menu labels improves customer satisfaction, increases sales, and stimulates positive behavioral intentions (Wansink *et al*., 2001). Certain countries now require restaurant menus to present nutritional information (such as total calories, fat, saturated fat, cholesterol, sodium, total carbohydrates, sugars, fiber, and protein), whereas others adopted a voluntary approach (Kim, E. *et al.*, 2013). The study of Kim, H.J. *et al.* (2013) on Korean restaurants concluded that perceived restaurant food healthiness, which includes nutritional information, fresh and natural ingredients, weight control, and nutritionally balanced diet, impact on the perceived value, satisfaction, and revisit intentions of patrons. Although restaurant menus that present nutritional information are now common, evidence on how it affects consumer attitudes toward establishment restaurants and on their dining intentions has been inconsistent (Kral *et al.*, 2002; Stubenitsky *et al.*, 2000; Sun, 2013).

In addition to nutritional information, contemporary consumers are increasingly aware of the environmental impacts of their dining behaviors and food choices. According to the WWF (2011), the production and consumption of food contributes substantially to global greenhouse gas emissions and to climate change. These impacts include biodiversity losses associated with land conversion, use of potentially harmful substances in the

growing and production processes, and water consumption. The processes of agriculture, food processing, transportation, and the preparation of meals contribute to the global emissions of greenhouse gases (Gossling *et al.*, 2011). Given that they have become progressively more aware of how their food consumption affects the environment, consumers are adopting more sustainable diets. These may be described as "the consumption of food with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. They are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable, nutritionally adequate, safe and healthy, while optimizing natural and human resources" (Burlingame & Dernini, 2010, P.7). The Live Well Healthy People Healthy Planet report published by the WWF (2011) suggests simple rules for a sustainable diet. These include eating less processed food, less food wastage, eating more plants, eating less meat, and buying food that meets a credible certified standard. Evidently, consumer interest increased in eco-friendly products and product-related information (Jang *et al.*, 2011). Despite this trend, comparatively little attention has been devoted to understanding the factors that influence the values and decisions of restaurant goers about sustainable food choices.

Most studies on "sustainable" or "green" restaurants have investigated operational aspects, including their food offers. As understood by restaurant operators and patrons, green food is commonly understood to be organic, local, and sustainable (LaVecchia, 2008). Curry *et al.*'s study (2013) indicated reasonable awareness about and concern for sustainable issues. However, a lack of clarity exists among stakeholders about the precise meaning of sustainable food in the dining out context. Previous researchers have noted that

many consumers are positively disposed to accessing nutritional information (Hwang & Lorenzen, 2008). Lien *et al.* (2012) suggested that the adoption of green consumption concepts by consumers would enhance their willingness to patronize restaurants that incorporate environmental protection concepts. In their study of upscale casual restaurant patrons, Namkung and Jang (2013) found that green practices that focus on foods (i.e., healthy and fresh menu choices, locally grown, organic, and sustainably produced foods) were more effective for enhancing a green brand image and behavioral intentions than adopting an environmental focus. Jang *et al.* (2011) also identified that emphasizing the use of natural or organic ingredients by restaurants and the availability of nutritional and healthy menu choices are factors that affect green restaurant selections. Sweden was a pioneer in the adoption of mandatory carbon emission labeling for grocery items and restaurant menus, as well as for dietary information (Rosenthal, 2009). The information on carbon emissions helps consumers understand the effects of their food consumption on the environment. The information conveys a message that changing one's diet can effectively reduce carbon emissions. However, the recommendations for improving food choices to reduce greenhouse gas emissions must be balanced against dietary requirements for health.

Customers are anticipated to be attentive to nutritional and sustainability information about the food that they consume when dining out. However, they are unlikely to evaluate the information when determining their menu selections. Previous studies have suggested that demographics (i.e., gender and age) may influence consumer dietary behaviors (e.g., Robinson and Smith, 2002; Satia *et al.*, 2005; Trudeau *et al.*, 1998). Satia *et al.* (2005) suggested that women are more attentive and likely to read nutrition labels than men, particularly in relation to serving sizes, energy, and energy from fat. The authors

also concluded that older respondents read nutrition labels and information on cholesterol content more actively than their younger counterparts. Trudeau *et al.* (1998) supported the view that women are keener than men on the consumption of fruits and vegetables. Robinson and Smith (2002) suggested that consumers aged 18 to 30 and aged 51 to 70 tend to have previously purchased sustainably produced foods, and those aged 61 to 70 are more likely to make future purchases of sustainably produced food. Similarly, Sosa *et al.* (2014) found that patrons between 18 and 35 are more likely to choose menu items that are deemed healthier, meet nutrition guidelines, or provide calorie-related information.

Health consciousness and healthy lifestyles

Health consciousness is the degree to which a person is concerned about their health and a person's readiness to do something for his/her own health (Chen, 2009). Health consciousness is also closely related to how the person seeks and responds to health information. Individuals vary in their degree of health consciousness (Namkung & Jang, 2013). Previous studies have shown that health consciousness is a predictor of health intentions and behaviors (e.g., Furnham & Forey, 1994; Gould, 1998).

The broad construct of lifestyle refers to how people conduct their lives across different areas, including activities, interests, and opinions (Peter & Olson, 1994; Wells & Tigert, 1971). Given the aim of keeping and improving people's health and well-being, the narrow and operationalized "healthy lifestyle" concept focuses on the relationship between physical health-related behaviors, such as natural food consumption, health care, and life equilibrium (Gil *et al.*, 2000).

Environmental consciousness and environment-friendly lifestyles

Environmental consciousness refers to individual perceptions on how human behavior affects the environment (Kollmuss & Agyeman, 2002). Dunlap and Jones (2002, p.485) defined it as "the degree to which people are aware of problems regarding the environment and support efforts to solve them and/or indicate the willingness to contribute personally to their solution." Environmental consciousness not only measures the importance of the environment, it also reflects green consumption (Alwitt & Pitts, 1996). As a former British colony that became a Special Administrative Region (SAR) within China, Hong Kong plays an important role in nurturing green businesses across Greater China (Lee, 2008; Mahoney, 2000). Compared with other developed cities across the world, Hong Kong was relatively late to adopt and promote sustainable development principles. The Hong Kong government established the Council for Sustainable Development only in 2003 to promote sustainable development in the SAR (Environment Bureau, 2016). Despite the belated government attention toward the issues, previous research has rarely investigated the perceptions of Hong Kong residents toward nature or the environment (Lee, 2010). An exception was by Chan (1998), who found that young Hong Kong consumers exhibited heightened environmental cognition on general and local environmental issues. However, this study only focused on the impact of the environmental knowledge of youngsters.

Environment-friendly and pro-environmental behaviors refer to the The term green purchasing refers to the purchase and consumption of products with minimal environmental impact (Marnieri *et al.*, 1997; Tilikidou, 2007). Studies have identified that an increasing number of individuals prefer environment-friendly enterprises (Kelly *et al.*,

2007; Marin & Jafari, 2002) and that they are willing to pay a premium for environment-friendly products (Laroche *et al.*, 2001; Manget *et al.*, 2008; Mohr & Webb, 2005; Tilikidou, 2007). In a global study on green consumerism (Manget *et al.*, 2008), many dual-income couples from different cities in China preferred to purchase natural ingredients and organic food, despite their higher prices. Based on a study by the Hong Kong Organic Resource Center (2012), green consumption in Hong Kong is growing, thereby paralleling global trends. The Report observed that 60% of the respondents purchased organic products and 30% of them purchase organic food at least once a week. The study findings suggest that the purchase and consumption of organic food is becoming a part of daily life in Hong Kong and that it has a huge growth potential (Hong Kong Organic Resource Centre, 2012).

Based on the literature review presented, consumers adopt a multi-attribute decision-making process and attach variable importance to different attributes. Grounded in signaling theory, menu labels and descriptions are cues that restaurants use to communicate the different attributes and characteristics of the food and beverages they offer. Consumers of different age and genders are believed to hold distinct attitudes toward various menu attributes. The objective of the present study is to understand hotel restaurant customer attitudes toward nutritional and sustainability menu labels, as well as their health and environmental consciousness and lifestyles and their dining-out behaviors. The study will also determine whether the attitudes of different customer genders and age groups consistently assess the importance of nutritional and sustainability labels on hotel restaurant menus.

METHODOLOGY

Questionnaire design

The present report forms part of a larger study on Hong Kong restaurant goers and their behaviors. An extensive literature review formed the basis for identifying items that might contribute to an instrument that would measure customers' perceived importance of nutritional and sustainability labels in restaurant menus (Green Restaurant Associations, 2014; Jang *et al.*, 2011; Scheibehenne *et al.*, 2007; WWF, 2011). During the initial stage, 25 academic experts (from Hong Kong, Taiwan, Mainland China, Australia, New Zealand, United States, and United Kingdom) were asked to evaluate the relevance of 20 statements describing nutritional and sustainability labels on restaurant menus. A scale of 1 to 5, ranging from not relevant at all to extremely relevant, was used to assess the statements. Over half of the experts ultimately assessed 14 statements as either relevant or extremely relevant to the investigation. Examples of statements that describe nutritional labels include "offers low-fat options," "offers low-calorie options," and "provides nutritional information," whereas those that describe sustainability labels include "uses ingredients from sustainable sources" and "uses fairly-traded food products."

The researchers also collected information about the attitudes of respondents toward health and the environment. The attitude measurements involved two elements: a cognitive component to measure respondents' health consciousness and their awareness of environmental problems, and a behavioral component to measure their healthy and environment-friendly lifestyles. The instrument that measures health consciousness is an adaption of earlier works by Chen (2009) and Michaelidou and Hassan (2008); from Chen (2009) and Chen (2011) for healthy lifestyles; from Lee (2010) for environmental

awareness; and from Laroche *et al.* (2001) for environment-friendly lifestyles. Respondents were also asked to provide information about their demographics and their frequency of dining out.

Data collection

In seeking respondents who can explain their sustainability behaviors, the authors capitalized on their access to a customer database of an independent Hong Kong-based hotel. The database contains the restaurant patron contact details that they have compiled since the hotel opened in 2011. The database allowed the researchers to gather inputs on various research issues that have been identified. The relevant property is a 262-room property that operates 3 restaurants (Chinese fine-dining, international buffet, and casual café and lounge) that serves different cuisines and offers various customer dining experiences (Hotel ICON, 2016). The property is strongly positioned around innovation and design and seeks to meet and exceed customer expectations, as well as enhance their guest experience; the property is rated by the Forbes Travel Guide as a four-star hotel (Forbes Travel Guide, 2016). The diversity of restaurant provision and styles provided the assurance that respondents cover a range of dining orientations and preferences.

The samples for the main study are Hong Kong residents aged 18 or above who have patronized various hotel restaurants. An online questionnaire was deployed. Information was obtained about respondent demographic characteristics, as well as their frequency of consuming meals outside the home (during the previous week), their health-related attitudes and lifestyles, environmental attitudes and lifestyles, and their perceived importance of nutritional and sustainability labels on restaurant menus. With assistance

from the hotel, email messages that invited participation were sent to the 21,429 names on their food and beverage customer database. The survey was made available for 7 days starting in June 2014. Respondents who completed the survey had the opportunity to enter a lucky draw for one of the three prizes (Hotel ICON dining voucher of HKD 1500, 1000, and 500 respectively). A total of 1,527 surveys were started (response rate of 7.1%) and of these, 1,329 respondents proceeded to complete the survey (87%). After removing responses with extensive missing information and possible outliers, 1,255 completed surveys were considered as usable for analysis. Random samples were compared from those who responded on the first and last days to assess non-response bias.

Respondents were asked to indicate their perceived importance of having nutritional and sustainability labels in a restaurant menu when dining out. A total of 14 statements were used to measure, and a scale of 1 to 7 was used where 1 = "not at all important" and 7 = "extremely important." The Cronbach's alpha of the statements was 0.946, which indicated the high reliability of these statements in measuring the concept of nutritional and sustainability labels on restaurant menu. A seven-point scale was used to measure health consciousness, healthy lifestyle, environmental awareness, and personal environment-friendly behavior. The Cronbach's alphas for the statements measuring the 4 constructs ranged from 0.830 to 0.903, which is indicative of high reliability. Descriptive statistics were used to analyze the demographic characteristics and dining out behaviors of the respondents. Independent t-test and one-way ANOVA were used to compare whether male and female respondents and respondents of different age groups attach different perceived importance to the nutritional and sustainability labels on restaurant menus.

RESULTS

Respondents' profiles

As shown in Table 1, female respondents represented 74.4% of the sample. More than two thirds of the respondents were aged 25–34 or aged 35–44 (32.0% and 39.0%, respectively), whereas the percentage of respondents in the age group "65 or above" only accounted for 0.4%. Over 50% of the respondents live in a household of 3–4 people.

{INSERT TABLE 1 HERE}

Dining out behaviors

Respondents were asked to indicate the meals they consumed outside the home during the week prior to the conduct of the survey. The percentage of the meals taken outside home was calculated by dividing the number of meals consumed outside the home by the total number of meals to be consumed by all valid respondents during the particular meal period. As shown in Table 2, for Monday breakfast, 568 out of 1,255 respondents indicated they consumed breakfast outside the home, thereby indicating 45.3% of the total breakfast consumed on Monday. Of the various weekdays, Monday reported the highest number of respondents eating out for breakfast. For lunch, Monday to Thursday have a similar number of respondents who consumed meals out (67.0% to 68.3%). Friday has the highest number of respondents eating out during lunch (70.6%). For dinner during weekdays, an increasing number of respondents eat out as the week progresses (from 25.5% on Monday to 48.0% on Friday). Other meals taken on weekdays are much fewer than the three main meals (ranging from 3.7% on Monday to 4.7% on Friday). For weekends (Saturday and Sunday), more respondents dine out for dinner and other meals

than on weekdays. Based on the data of the three main meals (breakfast, lunch, and dinner) taken out, the respondents were estimated to have eaten out 10.5 times per week (3.04 times for breakfast, 4.7 times for lunch, and 2.8 times for dinner).

{INSERT TABLE 2 HERE}

Health and environmental attitudes and behaviors

Table 3 shows the health and environmental attitudes and behaviors of the respondents. The mean scores for both health consciousness and environmental awareness are above 6 out of 7. This result indicates that the respondents' knowledge and attitudes toward their own health and the environment is high. The scores that relate to respondent attitudes are comparatively higher (6.05 and 6.07) than the comparable scores for healthy lifestyles and environment-friendly behaviors (5.02 and 5.01).

{INSERT TABLE 3 HERE}

Perceived importance of nutritional and sustainability labels

Table 4 shows the perceived importance that respondents attach to the nutritional and sustainability labels on restaurant menus. The most important labels include "offers low-fat options" (mean = 5.51), "offers low-salt options" (mean = 5.47), and "offers low-calorie options" (mean = 5.32). The ones judged as most important are nutritional labels. The least important are all sustainability labels, including "provides carbon emission/carbon footprint information for individual menu items" (mean = 4.65), "uses

organic food" (mean = 4.66), and "uses ingredients produced in an environmentally friendly way" (mean = 4.84).

{INSERT TABLE 4 HERE}

Table 5 shows higher mean scores for female respondents on the perceived importance that they attach to the nutritional and sustainability labels on restaurant menus compared with their male counterparts. Only 3 out of the 14 statements "Uses ingredients from sustainable sources," "Offers gluten-free options," and "Uses organic food" do not show significant differences for the two groups. For both groups, the three least important statements are "Uses ingredients produced in an environmentally friendly way," "Uses organic food," and "Provides carbon foot-print information."

{INSERT TABLE 5 HERE}

Respondents were separated into six groups to assess whether significant differences occur between age cohorts and the importance that they attach to nutritional and sustainability menu labels. As shown in Table 6, no significant differences were found among different age groups.

{INSERT TABLE 6 HERE}

DISCUSSION AND IMPLICATIONS

Discussion

The data were collected from a diverse group of diners with high spending capacities and expectations, as well as extensive dining out experiences. They are likely to be reflective of current dining trends and customer preferences. The present study investigated the importance that respondents attach to the nutritional and sustainability labels on restaurant menus. The findings indicated that hotel restaurants are popular places for locals to hang out, celebrate, gather with friends and families, or enjoy a special meal occasion. Notably, local residents form the majority of customers in Hong Kong hotel restaurants, as is the case with the current respondents. The authors concluded that exposure for local residents and diners to nutritional and sustainability insights can help inform them about food and sustainability. Menus provide an important channel to inform and educate customers when they share their dining experiences via social media.

Previous researchers have mentioned that a menu is intended to communicate, providing tangible evidence about the food and beverage on sale, and it is ultimately intended to sell the products (Bowen & Morris, 1995). Menus use a mixture of words, pictures, and graphics to describe and present product offerings. The provision of information about the menu items to customers can help them in deciding what to order and to determining whether to return again to the restaurant. This study set out to understand customers' perceived importance of nutritional and sustainability labels on restaurant menus. Incorporating customer view during the menu design process can support the achievement of business objectives by supporting the communication of intended messages.

According to "The State of American Dining in 2016" (Zagat, 2016), U.S.A. residents eat out on average 4.5 times per week (excluding breakfast). In the present study,

Hong Kong respondents were found to dine out roughly 7.5 times weekly, when breakfast is excluded and 10 times otherwise. These results support another Hong Kong dining study that concluded that 65% of the resident respondents eat out 4 or more days a week, with a third eating out daily (Chan, 2016). Evidence from the present study has also shown that on a weekly basis, respondents regularly consume most of their meals outside the home. The proportion of meals consumed outside the home increases further during weekends. Lunch is the meal consumed most commonly outside the home by Hong Kong consumers during the week (68.2%) and over weekends (63.7%). In comparison with the rest of the week, Saturday dinner (62.3%) is commonly eaten outside the home. Notably, breakfast is commonly consumed outside the home during the week. In light of the high volume of meals consumed outside the home, Hong Kong restaurateurs must recognize the effect of their products on consumer health and on the environment.

The study respondents generally exhibited high scores for health consciousness and healthy lifestyles. This result is consistent with the findings of the Global Health and Wellness Report (Nielson, 2015), which found that consumers globally are taking charge of their health and are showing increasing health consciousness. Prompted by government efforts to heighten awareness about the importance of staying healthy and active via announcements and commercials on TV, radio, and the government website, Hong Kong consumers are likely to progressively adopt healthy lifestyles and exhibit heightened health consciousness. The results of this study suggest that respondents are aware of Hong Kong's environmental challenges. Reduced energy and water consumption is the most frequently adopted environment-friendly lifestyle. However, behaviors that relate to the consumption of organic and sustainable food are found to be less commonplace. This finding may be

attributable to the lack of sustainable food labeling by food producers and restaurants. Furthermore, although current Hong Kong legislation requires nutritional labeling only for packaged food, this is not the case for food sold at restaurants. When the researchers compared respondent scores for health- and sustainability-related cognitive and behavioral attitudes, higher mean scores were evident for cognitive attitudes toward health and the environment (the mean scores for health consciousness and awareness of environmental problems were higher), compared with the behavioral attitude scores in both cases.

The five most important menu label items for both male and female respondents were found to be low-fat options, low-salt options, as well as items prepared using healthy cooking methods, low-calorie options, and low-carb options. Notably, nutritional information is more important than sustainability information when the researchers compared the restaurant goers' perceived importance of nutritional and sustainability information on restaurant menu labels. Locals appear to be becoming more aware of what they consume and rated healthiness as the most important criterion when eating out, thereby supporting the previous results of the Hong Kong food consumption study (Chan, 2016). On this basis, providing nutritional and health information on menus as awareness grows, which shows that what we eat has a direct bearing on health and wellness, is important.

Relative to nutritional information, respondents focused less on sustainability information on restaurant menus. This finding suggests that most diners regard sustainable menu information as the least important factor. This result contradicts the findings of The Green Restaurant Association study in the U.S.A. and the Sustainable Restaurant Association in the U.K., which suggested that consumers are knowledgeable and more

aware of sustainable and environment-friendly products and are willing to patronize businesses that support such initiatives (Green Restaurant Associations, 2014; Jang, *et al*., 2011; Sustainable Restaurant Association, 2014). According to Nielson's (2015) Global Health and Wellness Report, the highest level of interest in sustainably sourced ingredients was evident in the Asia-Pacific and Latin America regions.

The present study revealed that age is not a significant differentiator in perceptions about the importance of nutritional and sustainability labels on restaurant menus. This result challenges the findings of Robinson and Smith (2002) and Sosa *et al*. (2014). The latter publications suggested that older respondents are more aware than their younger counterparts of nutritional labels, health and sustainability information, and therefore exhibit higher purchasing intentions of sustainably produced food. This contradiction is probably because of the relatively small number of respondents who were over age 65 in this study. Although diners attach importance to information describing specific menu items (beef, lamb, poultry, or fish), they attach lesser value to the provision of information about environment-friendly and low carbon ingredients that emanate from sustainable sources. Significant differences were only evident between male and female respondents in the case of 3 out of 14 label descriptions (use of sustainable sources, use of organic food, and offers gluten-free options). The results of the present study provide only partial support for Satia *et al.* (2005) who suggested that gender and age influence dietary behaviors and who claimed that women read nutrition labels more assiduously than men.

Implications

Menu labels help communicate information about food and beverage products in restaurant settings. The results of our study suggest that customers do not attach equal importance to the cues that communicate the nutritional and sustainability attributes of the menu items. In support of signaling theory, we may characterize menu labels and item descriptions as cues that allow customers to understand the nature of the products that they will order and consume in a restaurant setting. Based on the multi-attribute decision making process, restaurant customers consider multiple attributes of the menu when they are dining in a restaurant. They have different perceptions about the importance of nutritional labels and sustainability labels when deciding their restaurant order.

Although menu labeling may only indirectly influence the selection and sales of healthier and sustainable menu items, it provides a prospective driver to increase the availability and awareness of those menu choices (Lassen *et al*., 2016). Given that many Hong Kong consumers patronize restaurants throughout the week, potential advantages exist of attracting diners to restaurants that cater to increasing consumer awareness of and support for healthy menu choices and for green alternatives (Jang, *et al.*, 2011; Namkung & Jang, 2013). If customer involvement is to be encouraged in support of sustainability initiatives, the first task will be to emphasize the need to use sustainable food and the associated rewards. Second, hotel marketers should emphasize nutrition information, cooking methods, low-salt, low-fat, low-calorie, and low carbon information in each menu item. An emphasis on these points might help with the preparation of effective marketing tools and with the promotion of menu items that address customer healthy choices.

Traditionally, the menu plays an important role in helping customers to make restaurant dining decisions. Restaurants commonly encourage service staff to provide

customers with explanations about the menu items or to make suggestions. By such means, service staff may communicate with their customers, even where information is not printed on the menu. Given the increasing popularity of new styles of dining experience and the convenience of ordering restaurant food via a dedicated app, restaurant operators need to re-think the types of online information that should be included on restaurant menus via websites or apps. The provision of relevant information is particularly important for restaurants offering a delivery service and online restaurant food delivery companies such as Foodpanda, Deliveroo, and Uber Eats.

Although the literature has indicated that restaurant customers are more inclined to support businesses that are proactive in promoting sustainable and environmentally friendly items, this study emphasized that Hong Kong hotel diners place less importance upon these attributes and relatively more on nutritional value and healthy choices. This finding may provide a useful insight for international hotel brands and restaurant franchises that are considering Hong Kong as a potential location for their business model. Notably, Hong Kong recently introduced (in October 2005), regulations on mandatory nutritional labelling of pre-packaged food to facilitate healthy consumer food choices (Center for Food Safety, 2016). To ensure a broad based effect through various channels, the government should strengthen its support for food producers, suppliers, vendors, and restaurants to encourage the adoption of sustainable practices. Given the substantial scale and importance of restaurant business in Hong Kong and the city's continuing mission to be an Asian culinary center, restaurants can also play an important role in educating and influencing their consumers to make healthy and sustainable dining choices.

LIMITATIONS AND OPPORTUNITIES FOR FUTURE RESEARCH

Although the findings generated valuable implications, a number of study limitations should be considered when interpreting the results. This study examined local residents who dined in the restaurants of an independent hotel in Hong Kong. In light of the study's focus on consumers who frequented three co-located (i.e., within a single hotel property) restaurants, the generalizability of the results and the applicability of the findings to other types of restaurants may be limited. Although the statements that describe the different nutritional and sustainability information have been generated from the literature and reviewed and commented upon by academic experts, the study remained specific to the Hong Kong context. The study findings may not be applicable in the case of countries at a more advanced level of sustainability development, as well as in settings where mandatory menu labeling is already implemented. Based on Guagnano *et al*.'s (1995) Attitude-Behavior-Context theory, future researchers may wish to test the relationship between customer attitudes toward health and sustainability, as well as their perceived importance of nutritional and sustainability labels on restaurant menus and ultimately their intention to order healthy or sustainable items from the menu with a bigger and more diverse population. Future studies could assess the interactive effects of different demographic characteristics on attitudes toward nutritional and sustainability labels on restaurant menus. Furthermore, in view of the increased popularity of restaurant food deliveries, the study may be worth replicating to investigate customer perceptions about the importance of nutritional and sustainability information in the case of online restaurant delivery menus.

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Table 1: Respondent demographic characteristics

Demographics	Frequency	Percent
Gender		
Male	321	25.6
Female	934	74.4
Age group		
18-24	49	3.9
25-34	401	32.0
35-44	490	39.0
45-54	249	19.8
55-64	61	4.9
65 or above	5	0.4
No. of people in household (including yourself)		
1	43	3.4
2	294	23.4
3	312	24.9
4	358	28.5
5 or more	248	19.8

Table 2: Meals consumed outside home

Day of the Week	Meal	Frequency	Percent
Monday	Breakfast	568	45.3
	Lunch	857	68.3
	Dinner	320	25.5
	Others	47	3.7
Tuesday	Breakfast	548	43.7
	Lunch	841	67.0
	Dinner	364	28.5
	Others	49	3.9
Wednesday	Breakfast	554	44.1
	Lunch	854	68.0
	Dinner	389	31.0
	Others	50	4.0
Thursday	Breakfast	536	42.7
	Lunch	844	67.3
	Dinner	387	30.8
	Others	50	4.0
Friday	Breakfast	560	44.6
	Lunch	886	70.6
	Dinner	603	48.0
	Others	59	4.7
Saturday	Breakfast	544	43.3
	Lunch	815	64.9
	Dinner	782	62.3
	Others	121	9.5
Sunday	Breakfast	506	40.3
	Lunch	783	62.4
	Dinner	665	53.0
	Others	126	10.0
Weekdays (Mon to Fri)	Breakfast	2,766	44.1
	Lunch	4,282	68.2
	Dinner	2,063	32.9
	Others	255	4.1
Weekend (Sat & Sun)	Breakfast	1,050	41.8
	Lunch	1,598	63.7
	Dinner	1,447	57.6
	Others	247	9.8

Table 3: Health and environmental attitudes and behaviors

Description	Mean	SD	Cronbach's Alpha
Health Consciousness [A]	***6.05***		***0.903***
My health is valuable to me.	6.45	.87	
I am aware of the changes in my health.	6.02	.90	
I take responsibility for the state of my health.	6.13	.92	
I am health conscious.	5.85	1.02	
I understand healthy eating.	5.82	.94	
Healthy Lifestyle [A]	***5.02***		***0.830***
I often eat fruit and vegetables.	5.56	1.17	
I balance my work and personal life.	5.31	1.10	
I can manage stress.	5.13	1.12	
I follow a healthy diet.	5.12	1.08	
I have quality sleep.	4.95	1.29	
Wherever possible I avoid eating processed food.	4.88	1.26	
I undergo regular body checks.	4.74	1.52	
I exercise regularly.	4.48	1.51	
Environmental Awareness [A]	***6.07***		***0.891***
Hong Kong's environmental problems are affecting our health.	6.20	.86	
It is urgent to tackle Hong Kong's environmental problems.	6.19	.87	
Hong Kong's environmental problems are worsening.	6.17	.86	
Environmental problems are affecting Hong Kong's reputation.	6.05	.95	
The current development of Hong Kong is destroying the environment.	5.72	1.10	
Environmentally Friendly Lifestyle [B]	***5.01***		***0.871***
Switch off lights when not in use.	5.82	1.12	
Turn off taps while brushing teeth, soaping hands, or shaving.	5.71	1.34	
Pay attention to energy-efficiency labels when purchasing electronic appliances.	5.49	1.38	
Use durable rather than disposable tableware.	5.34	1.25	
Turn off electronic appliances completely (not on stand-by) when not in use.	5.23	1.39	
Take shorter showers.	5.22	1.39	

Description	Mean	SD	Cronbach's Alpha
When shopping choose less packaged types of product, fewer plastic bags and paper wrappings.	4.97	1.41	
Use recycle bins to separate glass, aluminum, plastic, or paper waste.	4.93	1.54	
Donate unwanted electronic appliances, computers, toys, or clothing to charity groups.	4.73	1.64	
Buy organic food.	3.96	1.40	
Consume sustainable seafood *. (*Seafood comes from well-managed fisheries where seafood is caught or farmed in an ecologically-friendly way.)	3.73	1.60	

[A:] Note: Scale of 1 to 7 (1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neutral, 5 = somewhat agree, 6 = agree, 7 = strongly agree)

[B:] Note: Scale of 1 to 7 (1 = never, 2 = rarely (less than 10% of them time), 3 = occasionally (about 30% of the time), 4 = sometimes (about 50% of the time), 5 = frequent (about 70% of the time), 6 = usually (about 90% of the time), 7 = always)

Table 4: Perceived importance of nutritional and sustainability labels on restaurant menus

Nutritional /Sustainability Labels	Type of information	Mean	Standard Deviation
Offers low-fat options.	Nutritional	5.51	1.030
Offers low-salt options.	Nutritional	5.47	1.055
Offers low-calorie options.	Nutritional	5.32	1.121
Offers menu items prepared using healthy cooking methods.	Nutritional	5.27	1.059
Offers low-carb options.	Nutritional	5.15	1.155
Provides nutritional information for the individual menu item.	Nutritional	5.04	1.098
Provides information about ingredients used when preparing menu items.	Nutritional	4.98	1.046
Offers gluten-free options.	Nutritional	4.94	1.252
Uses ingredients from sustainable* sources. (*A process of cultivating, breeding, and producing food that does not damage the environment or negatively impact humans and other organisms.)	Sustainability	4.93	1.080
Offers vegetarian choices.	Sustainability	4.91	1.200
Uses fairly-traded food products (e.g., coffee beans, tea, or chocolate).	Sustainability	4.87	1.184
Uses ingredients produced in an environmentally friendly way.	Sustainability	4.84	1.036
Uses organic food.	Sustainability	4.66	1.085
Provides carbon emission/carbon foot-print information for individual menu items.	Sustainability	4.65	1.220

Note: Scale of 1 to 7 (1 = not important at all, 2 = very unimportant, 3 = unimportant, 4 = neutral, 5 = important, 6 = very important, 7 = extremely important)

Table 5: Perceived importance of nutritional and sustainability menu labels – a comparison of male and female respondents

	Male (n = 321)			Female (n = 934)					
	Rank	Mean	SD	Rank	Mean	SD	Mean Diff	t	p
Offers low-fat options.	1	5.37	1.041	1	5.56	1.023	-0.19	-2.861	0.004**
Offers low-salt options.	2	5.32	1.061	2	5.52	1.049	-0.20	-2.993	0.003**
Offers menu items prepared using healthy cooking methods.	3	5.16	1.068	4	5.31	1.054	-0.15	-2.138	0.033**
Offers low-calorie options.	4	5.11	1.118	3	5.39	1.114	-0.28	-3.876	0.000***
Offers low-carb options.	5	4.94	1.171	5	5.23	1.141	-0.29	-2.91	0.000***
Provides nutritional information for the individual menu item.	6	4.92	1.129	6	5.08	1.085	-0.16	-2.273	0.023*
Provides information about ingredients used when preparing menu items.	7	4.88	1.024	7	5.02	1.052	-0.14	-2.02	0.044*
Uses ingredients from sustainable sources.	8	4.84	1.100	10	4.96	1.072	-0.12	-1.693	0.091
Offers gluten-free options.	9	4.84	1.200	8	4.97	1.268	-0.13	-1.566	0.118
Uses fairly-traded food products	10	4.73	1.295	11	4.91	1.14	-0.18	-2.24	0.026*
Offers vegetarian choices.	11	4.73	1.199	8	4.97	1.195	-0.24	-3.127	0.002**
Uses ingredients produced in an environmentally friendly way.	12	4.72	1.074	12	4.88	1.02	-0.16	-2.493	0.013*
Uses organic food.	13	4.58	1.025	14	4.69	1.104	-0.11	-1.568	0.117
Provides carbon emission/carbon foot-print information for individual menu items.	14	4.44	1.249	13	4.73	1.203	-0.29	-3.622	0.000***

Note: Scale of 1 to 7 (1 = not important at all, 2 = very unimportant, 3 = unimportant, 4 = neutral, 5 = important, 6 = very important, 7 = extremely important)

*Significant at $p < 0.05$, **Significant at $p < 0.01$, ***Significant at $p < 0.001$

Table 6: Perceived importance of nutritional and sustainability menu labels – a comparison of different age groups

	Group 1 18-24 (n = 49)	Group 2 25-34 (n = 401)	Group 3 35-44 (n = 490)	Group 4 45-54 (n = 249)	Group 5 55-64 (n = 61)	Group 6 ≥ 65 (n = 5)	Total (n = 1255)	F	P
Uses ingredients produced in an environmentally friendly way.	4.88	4.74	4.85	4.94	4.97	4.80	4.84	1.491	0.190
Provides information about ingredients used when preparing menu items.	5.10	5.00	4.95	5.04	4.79	5.00	4.98	0.821	0.535
Uses ingredients from sustainable sources.	5.02	4.86	4.94	5.03	4.80	4.60	4.93	1.065	0.378
Provides nutritional information for the individual menu item.	5.16	5.13	4.99	5.04	4.77	5.00	5.04	1.668	0.139
Uses organic food.	4.71	4.67	4.63	4.75	4.52	4.00	4.66	1.008	0.411
Offers vegetarian choices.	5.06	4.91	4.87	4.96	4.89	4.80	4.91	0.374	0.867
Offers menu items prepared using healthy cooking methods.	5.39	5.30	5.21	5.34	5.20	4.80	5.27	1.006	0.413
Uses fairly-traded food products (e.g., coffee beans, tea, or chocolate).	5.00	4.87	4.82	4.95	4.74	5.20	4.87	0.757	0.581
Offers low-salt options.	5.53	5.54	5.43	5.61	5.49	5.20	5.51	1.029	0.399
Offers low-fat options.	5.53	5.54	5.43	5.61	5.49	5.20	5.51	1.144	0.335
Offers gluten-free options.	5.08	4.92	4.85	5.10	4.97	4.60	4.94	1.526	0.179
Offers low-calorie options.	5.37	5.34	5.27	5.39	5.34	5.00	5.32	0.552	0.737
Offers low-carb options.	5.22	5.21	5.08	5.22	5.11	4.00	5.15	1.825	0.105
Provides carbon emission/carbon foot-print information for individual menu items.	4.76	4.65	4.67	4.71	4.38	3.80	4.65	1.290	0.266

Note: Scale of 1 to 7 (1 = not important at all, 2 = very unimportant, 3 = unimportant, 4 = neutral, 5 = important, 6 = very important, 7 = extremely important)

* Significant at $p < 0.05$, ** Significant at $p < 0.01$, *** Significant at $p = 0.000$