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# Restaurant Industry Practices to Promote Healthy Sustainable Eating: A Content Analysis of Restaurant Websites Using the Value Chain Approach

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**Abstract:** The purpose of this study is to help researchers and restaurant owners gain an understanding of healthy sustainable initiatives within restaurant businesses. This study applied a content analysis of 93 restaurant chains' websites with a systematic coding procedure. The study identified fifteen healthy sustainable initiatives under a value chain framework, four of which follow value chain dimensions: sourcing, production, marketing, and service. The most frequently mentioned healthy sustainable practice was presenting nutrition-related information, followed by providing healthy menu options and using organic/natural produce. Sit-down restaurants were more likely to engage in healthy sustainable eating initiatives than were fast-food restaurants (e.g., increasing the availability of healthy options, smaller/reduced portion sizes, using fresh and local food, and using healthy cooking methods). This study contributes to the restaurant/foodservice management and food marketing literature by showing a comprehensive picture of what U.S. restaurant chains are doing to promote healthy sustainable eating. The findings can be used as a benchmark tool for practitioners to evaluate and develop healthy sustainable restaurant initiatives and as the foundation of measurement items for scholars.

**Keywords:** healthy food; sustainable food; healthy eating; sustainability; restaurant; content analysis; value chain

## 1. Introduction

The prevalence of obesity has been one of the biggest health issues in the United States. In 2014, more than 35% of men and 40% of women were obese in the United States [1]. Scholars in the public health field have argued that the food environment influences the consumer's diet and eating behaviors [2,3]. The current high rates of obesity and the corresponding health issues are likely to accelerate by promoting unhealthy dietary behaviors and habits in restaurant dining [3,4]. Previous studies show that the foods consumed at restaurants are higher in calories, total fat, and saturated fat or are lower in dietary fiber, calcium, and iron compared to home-prepared foods [4]. There has been criticism that the big portion size and poor quality of foods in restaurants are the potential key drivers of the increased prevalence of obesity in the U.S. population [5–7]. With the increasing concern for public health, mandatory nutrition labeling launched for restaurant chains that have more than 20 units [8].

Besides the criticism that foods served outside of the home contribute to obesity [4], foodservice businesses' social and ethical responsibilities have become a growing focus area. There is an

increasing demand for foodservice businesses to protect the environment and local communities. This demand leads organizations that are engaging in sustainable practices to gain an edge over competitors [9,10]. Many restaurants have followed the trend of moving toward becoming greener by implementing various socially and environmentally sustainable practices. The National Restaurant Association (2020) [11] reported that one of the top trends in the restaurant industry is sustainability and the use of locally sourced and grown meats and produce. Professional chefs also claimed that sustainability is one of the top culinary themes for 2020, and the foodservice industry is following an analogous sustainability trend [12]. For example, Chipotle, a Mexican grill restaurant, has attempted to introduce many locally grown or naturally raised ingredients without antibiotics in their menu to reduce adverse environmental impacts [13]. Starbucks also participated in the sustainable movement by purchasing their coffees from Fair Trade Certified suppliers to support sustainable agriculture [14].

In response to increasing interests in public health and sustainable issues, foodservice operations recognize their role in creating a healthy and sustainable eating environment. Several major restaurants have voluntarily participated in various healthy sustainable initiatives to improve their brand image as well as to address societal issues. For example, restaurants use local produce to support local communities, increase the availability of healthy menu options, such as low calories, whole grains foods, and half-portion options, and promote animal welfare and fair-trade produce [15,16]. Nutrition labeling has also encouraged restaurants to develop new menu recipes with lower calories and healthier options. Bleich et al. (2015) [15] state that 66 large U.S. chain restaurants introduced new menu items with fewer calories after the nutrition labeling policy launched in 2012.

Researchers argue that a restaurant's commitment to promote healthy and sustainable eating initiatives generates many benefits for its business. One of the benefits is increasing customers' visiting intentions [17] and attracting health-conscious consumers to the restaurant [17,18]. Other benefits include creating a favorable healthy or sustainable green image for the restaurant [19] and enhancing dining value and customers' satisfaction [18]. Furthermore, healthy sustainable restaurant initiatives are considered as socially responsible practices for consumers, the community, and society [9,10].

Although the importance and benefits of restaurants' role in creating a healthy and sustainable eating environment have been discussed by foodservice researchers and industry players, few studies have investigated the types of practices used to promote consumers' healthy sustainable eating and which of these practices have been implemented in restaurants. Jones et al. (2006) [20] examined how the top ten food retailers in the United Kingdom are promoting healthy eating within stores as a part of the corporate social responsibility (CSR) strategy. This information could provide a glimpse into the foodservice industry's response to the healthy eating issue. Previous studies focused merely on one or two particular types of health promotion practices (e.g., offering nutrition information and healthy menu) and environmentally sustainable practices (e.g., using local/organic food). However, the healthy sustainable initiative could be applied to different features and phases of food preparation, from purchasing ingredients to serving food to customers. Furthermore, a comprehensive framework of a healthy sustainable restaurant initiative is important for restaurant executives and managers to plan and implement as well as evaluate their current health and environmentally related practices. Therefore, the main purpose of the study is to provide a comprehensive picture of restaurant healthy sustainable initiatives to better understand how the restaurant industry is implementing practices to promote healthy sustainable eating.

## 2. Literature Review

### 2.1. Healthy and Sustainable Initiatives in the Restaurant Industry

The increasing demand for healthy sustainable foods and rising interest in health and well-being have encouraged many restaurants to engage in various healthy sustainable initiatives. The primary purpose of healthy sustainable food initiatives is to create a supportive eating environment that could influence consumers' behaviors to make healthier and sustainable food choices [3,21]. Scholars have

argued that the foodservice industry (e.g., restaurants and retail food establishments) plays an important role in influencing consumer diets through food sourcing, marketing, pricing, and the availability of healthy sustainable food options and nutrition information [3,21,22]. Initiatives include increasing the accessibility and availability of sustainable and healthy foods (e.g., local/organic food, low-calorie options, and fair-trade products), presenting nutritional information, and promoting a healthy labeled menu.

This paper reviewed the literature related to healthy food attributes, sustainable food, healthy and sustainable restaurants, and restaurant food healthiness to explore the current healthy sustainable restaurant initiatives. The existing healthy food attribute studies suggest that food healthiness implies nutrient types/amounts, food types, and food quality. In a study measuring the nutrition environment for restaurants, a healthy menu (entrees) was defined as less than 800 calories, less than 30% of calories from fat, and less than 10% of calories from saturated fat [16]. Additionally, U.S. government agencies extended the concept of healthy food toward various food types, such as whole, fresh products, vegetables, and fruits, rather than just food with a low-fat and low-sugar content [23]. From the consumers' perspective, the quality of the food and the ingredients (e.g., freshness and organic/natural) is one of the most important characteristics for defining healthy food [24].

To develop a more comprehensive review of restaurant-oriented initiatives, this study continued to review additional articles to identify the practices that may promote healthy and sustainable eating in the restaurant environment. Saelens et al. (2007) [16] evaluated the restaurant health environment by measuring the availability of healthy options (e.g., light and low-fat) and health-promoting pricing (e.g., encourages the selection of healthier options or consumption of less food) and by conducting a promotion strategy (e.g., highlighting healthy options). The study measured the following facilitators of healthy eating in the restaurant industry: (a) nutrition information on the menu, (b) menu labeled as being healthier, (c) reduced-size portions, (d) special requests for modifying the menu, and (e) information encouraging healthy eating. Kim et al. (2013) [18] reviewed and developed multi-attributes of food healthiness in the restaurant setting as follows: (a) availability of light food options, (b) availability of a nutritionally balanced diet, (c) use of fresh and natural/organic ingredients, (d) contribution to weight control, (e) use of healthy cooking methods, and (f) presentation of nutritional information.

To create a healthy restaurant environment, the U.S. Food and Drug Administration requires restaurants to provide nutritional information on their menu [8]. The nutrition labeling motivates restaurants to participate in the healthy movement. More specifically, restaurants developed new menu recipes with smaller portion sizes, healthier cooking methods [25], and healthier options for children [26]. Bleich et al. (2015) [15] found that 66 of the large U.S. chain restaurants introduced new menu items with lower calories after nutrition labeling launched in 2012. Beyond presenting the nutrition profile of foods in restaurants, scholars suggested that the provision of general healthy eating information, utilization of signs, and the promotion of healthy food should be measured to assess the eating environment of restaurants [16].

As consumers expect businesses to engage in greener and more socially responsible behaviors, restaurant-oriented sustainable food initiatives have reflected the trends of sustainability and sustainable agriculture [9,10,27]. Although sustainability is a broad and multidimensional concept with environmental, economic, and social dimensions, the concept of sustainable food/diet is often narrowed down to environmental and social sustainability [21], which will be the focal meaning of sustainability in the context of sustainable foods as covered in the present study. Maloni and Brown (2006) [10] developed a framework for the food industry that emphasizes the industry's expansive and relatively unique set of sustainability issues, including environmental as well as social elements. They suggested the sustainable practices for food should be researched further to better understand how the industry could address and apply these practices that could offer a differentiating competitive advantage. Recently, scholars explored the sustainable practices for food in the restaurant context and found the operational practices adopted by restaurants. The practices include the purchase of

locally produced food, the use of energy- and water-efficient devices and equipment, food waste reduction, the implementation of recycling programs, and the organization of local community support programs [27–29]. Moreover, using sustainable foods that have a low environmental impact and purchasing ingredients from animal welfare, environmentally-friendly, or fair-trade suppliers represent a restaurant's practices to benefit the environment and society's well-being [10]. Starbucks is a good example of a restaurant that emphasizes its responsibilities and roles in protecting the welfare of farmworkers and the environment [14]. Chipotle has focused on investments in developing local suppliers, which has an impact on the welfare of the local economy as well as production standards [13]. Therefore, restaurants are more likely to use environmentally and socially sustainable actions and put effort into using sustainable foods (e.g., fresh, organic, and local food) as a marketing strategy to attract customers and build a positive green restaurant image [19].

In summary, healthy sustainable eating initiatives within the restaurant setting are defined as the practices that address the consumers' health and well-being by providing healthy and sustainable food and promoting healthy and sustainable food consumption. The literature reveals that the concept of restaurant healthy sustainable initiatives includes any type of practices to (a) improve food-focused characteristics, (b) increase the accessibility and availability of sustainable and healthy food, and (c) provide information that facilitates consumers' healthy sustainable eating.
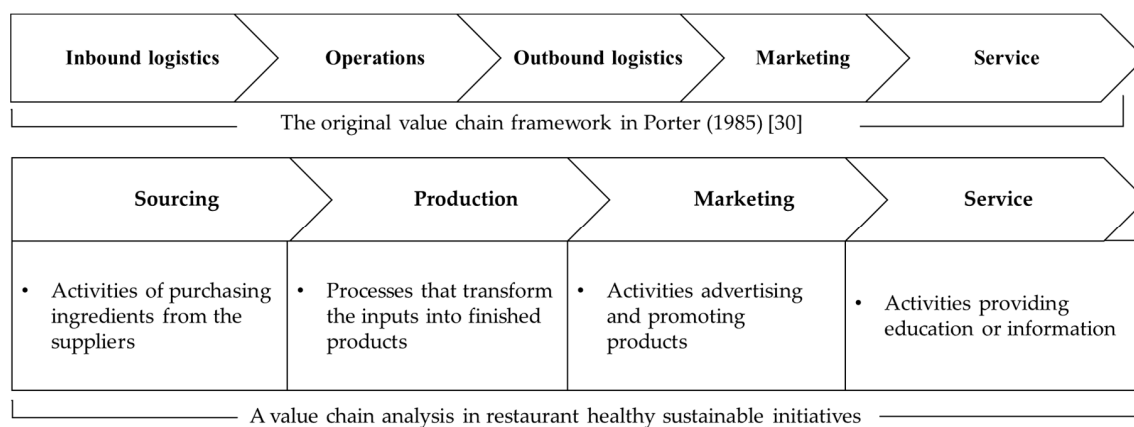
*2.2. Value Chain Framework*

This study defines healthy sustainable initiatives as practices that restaurants could implement to promote healthy sustainable eating. These initiatives respond to increasing demands for environment protection and public health. The definition includes both food-oriented characteristics and facilitating activities to support consumers' healthy sustainable eating. The present study applies the value chain approach [30], which illustrates a comprehensive picture of healthy sustainable restaurant initiatives as a series of activities from a managerial perspective.

Porter (1985) [30] introduced a value chain analysis that describes the full range of activities required to produce a product/service for consumers [31]. The value chain framework includes five primary activities: inbound logistics, operations, outbound logistics, marketing, and service [30]. Inbound logistics refers to all activities related to receiving, storing, and distributing materials from suppliers. Operations include the transformation activities that change inputs into outputs that are then sold to customers. Outbound logistics is the process related to the storage and movement of the final product to consumers (e.g., warehousing and store management). Marketing activity informs buyers about products/services by creating communications and delivering offers to persuade buyers to purchase products. Lastly, service includes the activities related to maintaining or increasing a product's value by offering warranties, repair services, education, and updating product information.

The original value chain framework was developed for the manufacturing industry, so it has rarely been applied in the service business context. Outbound logistic activity is considered to have no value in its functions in the service industry context because a service cannot be stored or saved like a manufactured product, for later use [32]. For that reason, outbound logistic activity is not commonly and easily codified in the foodservice industry. Sharma et al. (2014) [33] applied the value chain framework in identifying activities that influence restaurant managers' decisions to purchase local foods. The authors modified the original value chain dimension with sourcing, operations, and products/services to ensure that these activities are observable. In this sense, the value chain framework is applied to determine how and where healthy sustainable restaurant initiatives have been implemented to promote healthy and sustainable eating.

Along with the value chain framework, the current study applies the concept of the food product flow. The food product flow refers to the sequence within the foodservice operations that the food may follow. This begins with the purchase of ingredients and ends with the service to customers [34]. This flow includes the activities associated with purchasing, preparing, cooking, marketing, and communicating with customers. Based on the definition of the value chain framework

and a discussion with professionals (i.e., chefs, managers, and researchers), the study describes healthy sustainable restaurant initiatives with four value dimensions: sourcing, production, marketing, and service (Figure 1).



| Inbound logistics | Operations | Outbound logistics | Marketing | Service |

The original value chain framework in Porter (1985) [30]

| Sourcing | Production | Marketing | Service |

| • Activities of purchasing ingredients from the suppliers | • Processes that transform the inputs into finished products | • Activities advertising and promoting products | • Activities providing education or information |

A value chain analysis in restaurant healthy sustainable initiatives

**Figure 1.** Comparison between the original value chain model and the revised value chain model for the study.

### 2.3. Restaurant Classification

In this paper, restaurants are classified as either fast-food or sit-down restaurants. According to the North American Industry Classification System, fast-food restaurants were defined as having limited services where diners order and pay for food before eating it. This is also referred to as a limited-service restaurant. Fast-food restaurants emphasize prompt service, convenience, relatively low food prices, and low food quality. Regarding the food flow process, most of the food at fast-food restaurants is served by a ready-prepared foodservice system in which the food is frozen or cooked in advance for service later [34]. By adopting this foodservice system, the restaurants can take advantage of a reduction in labor cost and the peaks and valleys of workloads.

Sit-down restaurants are characterized by table ordering and service and use the combined foodservice system. Some of the menu items at sit-down restaurants are prepared and cooked to order in the individual restaurant units. Other menu items, such as sauces and soups could be prepared, chilled or frozen, and distributed by centralized production facilities until heated for service later [34]. Consumers visiting sit-down restaurants tend to expect and seek good quality food, menu variety, customized menus, and healthier food [35]. Considering the difference in the food preparation process and the desired consumer values in each restaurant type, it is expected that the healthy sustainable initiatives a restaurant can implement will vary across restaurant types.

With the increase in calories consumed outside of the home and in big portion sizes in restaurants, several scholars in public health attempted to reveal the relationship between the two [36,37]. The previous studies generated mixed and inconsistent outcomes by analyzing the published papers regarding the relationship between accessibility to restaurants (fast-food and sit-down) and obesity prevalence from a systematic review process. The mixed results regarding the impact of the food environment on consumers' food choice encourage scholars to compare how the food environment in restaurants influences both an organization's food-related strategy and a consumer's eating behavior. Previous studies found that the food environment and the impact of healthy sustainable food practices differed by restaurant types. Saelens et al. (2007) [16] found that sit-down restaurants had healthier options (e.g., non-fried vegetables and 100% fruit juice) and reduced sized portions, while fast-food restaurants did not. Fast-food restaurants frequently encouraged large portions and unhealthful eating. Namkung and Jang (2013) [19] reported that healthy sustainable food practices (e.g., healthy and fresh menu choices and local, organic, and sustainable foods) were effective in enhancing an upscale restaurant's brand image and behavioral intentions. However, it had no effect on the brand image of fast-food restaurants. Following the recommendations in the previous studies, the current study

examined whether or not the healthy sustainable restaurant initiatives vary depending on the restaurant type (e.g., fast-food vs. sit-down restaurants).

## 3. Methods

### 3.1. Sample

Data were obtained from the top 100 restaurant chains listed in the Nations' Restaurant News [38], whose data are based on U.S. system-wide sales in 2016. After an examination of the restaurant list, it was determined that convenience store chains (n = 5) and retail stores (n = 2) would be excluded from the analysis. This is because their revenue is not mainly attributed to selling food and beverage products. Consequently, 93 restaurant chains remained for data analysis.

The data were collected from the websites of the sampled restaurant chains between June and September of 2018. Data included information addressing practices/activities related to food purchasing, preparation, production, marketing, menu design, nutrition-related information, and generally healthy and sustainable eating/dining statements. The data also included downloadable PDFs or any equivalent document regarding health, sustainability, and food issues from the websites. Hyperlinks were included whereas forwarding links that required leaving the restaurant website or the website of its parent company were excluded. The restaurant type information was obtained from the organization's website and annual report.

### 3.2. Procedure for Conducting Content Analysis

A content analysis was applied, as this is the most appropriate method for identifying patterns, themes, and categories in the case of new and emerging subjects [39]. In the past, content analysis has been applied to explore food retailers' socially responsible practices to address health issues [20] and environmental policies and practices in the hospitality literature [40]. This study applied content analysis by identifying the restaurants' healthy sustainable practices as coding criteria and then checking their presence on the websites based on the coding protocol recommended by Stemler [41]. Two coders, who were graduate students majoring in hospitality and tourism management, were selected for the content analysis. They participated in a training session before analyzing and coding the sample. In the training session, the coders learned the coding protocol and coding criteria. Five sampled restaurant websites were selected for a pretest to ensure that the coders understood the coding procedure. Two coders analyzed the content of websites based upon the coding criteria, and they coded independently to ensure the reliability of the analysis. The coders used a binomial approach to code the restaurants' healthy sustainable practices: "Yes" and "No" were used to code the presence or absence of the healthy sustainable practices on the restaurant chains' websites, respectively. For example, if a restaurant's website presents information that they are purchasing their coffees from Fair Trade Certified suppliers, then the coder checked "Yes" on the practice of "have a partnership with certified sustainable suppliers."

### 3.3. Coding Criteria

Coding criteria were developed to define healthy sustainable practices and minimize the subjectivity of the coders [39]. The coding criteria were based on the recommendations in the previous literature and interviews with professionals. Throughout the literature review on healthy food attributes, sustainable food, healthy eating, and the healthiness of a restaurant [16,18,21], the researchers initially developed twelve potential restaurant healthy sustainable eating initiatives. Regarding healthy children's menus, the researchers followed the guidelines of healthy menus for children in terms of food components by the nutrition standards for a school lunch [42]. The recommendation is to serve five food components. The present study defines a healthy children's menu as a menu that offers food from the following five food groups: vegetables, fruits, grains/bread, meat/meat alternatives, and milk/dairy products.

The potential healthy sustainable eating initiatives were reviewed by two hospitality professors, two professional chefs, and two restaurant managers of these practices. The results of the interview with the experts indicated that all of the twelve initial items were identified as being appropriate, sustainable, and healthy restaurant practices. Based on the interview, three practices were added and some wording was further refined to describe the practices more clearly. For example, "don't use health-concerning ingredients (e.g., MSG, trans-fats, artificial flavors, artificial colors, or high fructose corn syrup)," "having a partnership with certified healthy eating programs," and "disclosing food policies/reports addressing its food philosophy and mission" were added into the coding criteria. Therefore, fifteen items were generated as the universe of attributes that represented the healthy sustainable eating initiatives in the restaurant industry. Table 1 contains the list of healthy sustainable practices that were developed as coding criteria for the content analysis.

**Table 1.** Description of healthy sustainable initiatives and the value chain dimension.

| Value Chain Dimension | Healthy Sustainable Practices | Description of Restaurant Activities |
|---|---|---|
| Sourcing | Use locally sourced/grown produce | Purchases locally sourced meats and seafood or locally grown produce |
| | Use organic/natural ingredients | Uses organic and/or naturally grown produce without specific artificial chemicals or antibiotics |
| | Use fresh produce | Uses fresh or seasonal produce |
| | Have a partnership with certified sustainable suppliers | Purchases ingredients from certified animal welfare suppliers, fair-trade or environmentally friendly suppliers |
| Production | Provide smaller/reduced portion sizes | Provides smaller, half-sized, or reduced-sized options |
| | Use healthy cooking methods | Uses healthy cooking methods that require less oil (e.g., bake or grill instead of frying) |
| | Don't use health concerning ingredients | Does not use MSG, trans-fats, artificial flavors, artificial colors, or high fructose corn syrup |
| Marketing | Provide healthy menu options | Provides healthy menu options (e.g., low-calories and low-fat) |
| | Create signs/logos/symbols for a healthy menu | Creates special signs, logos, or symbols for highlighting healthy menu options |
| | Offer a healthy children's menu | Offers a healthy children's menu with five food components from the following categories: vegetables, fruits, grain/breads, meat/meat alternatives, and milk/dairy products |
| | Encourage a healthier menu | Encourages special requests to change the menu toward healthier options (e.g., can substitute vegetables for French fries) |
| Service | Present nutrition information | Presents nutrition-related information (e.g., calories, ingredients, allergens) |
| | Provide healthy dining information | Provides general healthy dining information and/or guidelines |
| | Have a partnership with certified healthy eating programs | Promotes a healthy menu with certified healthy eating programs (e.g., "Kids Live Well," "Healthier America," and "Healthydiningfinder.com") |
| | Disclose food policies/reports | Discloses its food policy/report addressing its food philosophy and mission |

### 3.4. Reliability Tests

Upon completion of the coding process, the inter-coder reliability was tested. This involved two steps: stability testing and reproducibility testing. First, the stability was checked. Stability is defined as the extent to which the same coder obtains the same results after recoding the same data [41]. Second, the reproducibility was tested. Reproducibility determines the inter-coder reliability, indicating the level of agreement among the coders. The results reveal that the stability was 95% and the reproducibility was 87%, which indicates excellent agreement and high levels of reliability [41]. Subsequently, when different coding results existed, the researchers and coders discussed the discrepancies and made the final decisions.

The two researchers of the current study independently classified the coded healthy sustainable practices into the value chain dimensions. The inter-rater reliability was measured using Cohen's kappa coefficient [43]. The kappa coefficient is a common reliability index used in social science research. It is considered to be a more robust measurement than a simple proportion agreement measurement because it takes into consideration the agreement which happens by chance [44]. The kappa coefficient

was calculated as 0.83, which suggests an outstanding reliability that results from the fact that the level of agreement between the two researchers did not occur strictly by chance.

### 3.5. Additional Analysis

For further analysis, the study used descriptive and chi-square ($\chi^2$) tests to determine the difference in the frequency of healthy sustainable eating initiatives by restaurant types. The results of the content analysis were interpreted by the researchers. The methodological process for identifying healthy sustainable practices is illustrated in Figure 2.
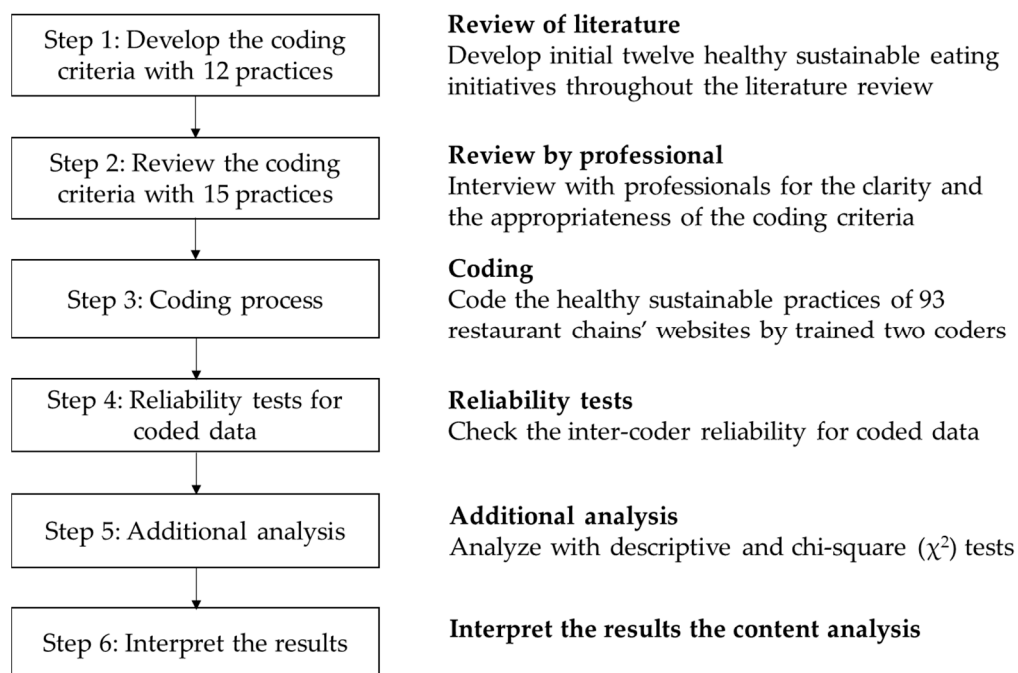
| | |
|---|---|
| **Step 1: Develop the coding criteria with 12 practices** | **Review of literature** <br> Develop initial twelve healthy sustainable eating initiatives throughout the literature review |
| **Step 2: Review the coding criteria with 15 practices** | **Review by professional** <br> Interview with professionals for the clarity and the appropriateness of the coding criteria |
| **Step 3: Coding process** | **Coding** <br> Code the healthy sustainable practices of 93 restaurant chains' websites by trained two coders |
| **Step 4: Reliability tests for coded data** | **Reliability tests** <br> Check the inter-coder reliability for coded data |
| **Step 5: Additional analysis** | **Additional analysis** <br> Analyze with descriptive and chi-square ($\chi^2$) tests |
| **Step 6: Interpret the results** | **Interpret the results the content analysis** |

**Figure 2.** The methodological process for identifying healthy sustainable initiatives.

## 4. Results and Discussion

### 4.1. Healthy Sustainable Initiatives by Restaurants and Value Chain Dimensions

The content analysis of the restaurant chains' websites revealed fifteen healthy sustainable eating practices. Each practice was categorized into either sourcing, production, marketing, or service dimensions (Table 1). The results demonstrated how the U.S. restaurant industry is addressing the increasing number of consumer and industry demands for health, environment, and food-related issues.

Four practices were identified in the sourcing dimension of healthy sustainable initiatives: (a) using locally sourced produce, (b) using organic/naturally grown ingredients, (c) using fresh produce, and (d) having a partnership with certified sustainable suppliers. As an example, Chipotle uses ingredients sourced from certified suppliers, naturally raised animals without antibiotics, and produce sourced from local farms within a 350-mile radius of the restaurant. Ruby Tuesday, Bob Evans, and Longhorn Steak House purchase farm-fresh and seasonal ingredients to maintain their food quality and support the local communities. Three nationwide restaurant chains, McDonald's, Burger King, and Wendy's, announced that they plan to purchase produce from animal and environmentally friendly suppliers. These examples show that sourcing-related healthy sustainable practices are focused on the way the product is produced (e.g., local/organic, animal welfare, or fair-trade products). These identified practices reflect consumers' concerns with the social trend of the sustainable food movement [10,21] and food quality [24].

Production refers to the activity related to food preparation and cooking. Four practices were assigned to production-related healthy sustainable initiatives: (a) providing a smaller/reduced-size

portion, (b) using healthy cooking methods which require less oil (e.g., grilling, baking, and steaming rather than frying), and (c) don't use health concerning ingredients (e.g., MSG, trans-fats, high fructose corn syrup, and artificial colors/flavors). McAlister's offers half-sandwich options for diners looking for light and smaller portion sizes. Applebee's and The Cheesecake Factory provide a size choice of the entrée portion (lunch-sized portion or half-portion). Many restaurants (i.e., Chili's, Chipotle, Olive Garden, Panera Bread, Subway, and Wendy's) have announced that they aim to avoid trans-fats and artificial flavors and colors. The results reveal that the restaurant industry is attempting to respond to the growing concern about large portion sizes, unhealthy cooking methods, and the recipes used to prepare food served at restaurants [5–7].

Four healthy sustainable practices were identified in the marketing dimension: (a) providing healthy menu options; (b) using signs, logos, or symbols for highlighting healthy menu options; (c) offering a healthy children's menu; and (d) encouraging special requests for modifying the menu to be healthier (e.g., substituting vegetables for French fries). The marketing practices illustrate how the restaurant industry has attempted to promote and encourage healthy sustainable eating by enhancing the availability of healthier menus. Some restaurants created a special sign, logo, or symbol to highlight their healthier menu items. Applebee's promotes menu items under 550 calories with "Light fare" logos. The Cheesecake Factory created "Skinnylicious" and provides a separate section of the menu with items of 590 calories or less. Chili's has a "Guiltless Grill" section on the menu, which includes items that are 630 calories or less; these items also include a variety of vegetables and/or fruits. These examples imply that the restaurant industry not only markets their products differently, but also highlights their efforts designed to promote healthy eating [16]. The increasing awareness of the contribution of the food environment to the diet of children has led restaurants to make changes to their children's menus by including fruits, vegetables and dairy products. McDonald's replaced French fries with apple slices on the kid's menu. They also serve yogurt and milk as an additional side item and drink for children's meals. Major U.S. fast-food chains (i.e., McDonald's, Wendy's, and Burger King) dropped soft drinks from their children's menus, shifting the default beverage to healthier options. Within the original value chain framework, service refers to warranties, repair services, education, and updating information to maintain the product's value [30]. The primary purpose of service is to increase product value by sharing information and educating consumers. Service includes the following healthy and sustainable eating practices: (a) providing nutrition-related information (e.g., calories, ingredients, and allergens), (b) offering information that encourages healthy eating, (c) having a partnership with certified healthy eating programs, and (d) disclosing restaurants' food policies and/or reports.

Service practices aim to improve consumer understanding and access to the information that facilitates healthy eating. For example, Olive Garden provides "Smart Dining Tips" with information about how to choose nutritionally balanced and healthier meals. Subway provides monthly newsletters addressing food and health issues written by registered dietitians (e.g., nutrition details about packed school lunches). The content analysis reveals that restaurant chains promote their healthy menus by having a partnership with certified healthy eating programs, such as "Kids Live Well", "Healthier America", and "Healthydiningfinder.com". Participation in healthy eating programs could help consumers recognize restaurants' availability of healthier menu options. Eventually, this could lead the customer to choose to order from the healthy menus. Having a partnership with or certification by external agencies can assist an organization in achieving the key purpose of service. This purpose is to increase product value and create a favorable reputation [45].

Restaurants also disclosed their policies and reports that address the restaurants' commitment to healthy and sustainable foods. For instance, the Panera Bread webpage provides a "Food Promise" section, disclosing what the restaurant believes food served to customers should be. Einstein Bros. Bagels introduced "Good-food fight" and Cracker Barrel introduced "Food with Care"; these are sections on their websites that illustrate how the organization is committed to their supply of healthy and sustainable foods. As seen in these examples, the restaurant industry attempts to communicate

about healthy sustainable foods by providing information and knowledge that is more cognitively appealing. The findings provide empirical evidence of the restaurant industry's communication practices for healthy sustainable food consumption. Bublitz and Peracchino (2015) [46] reviewed the studies and concluded that the food and beverage industry's communication practices for healthy foods are different from their practices for hedonic/unhealthy foods. While producers and marketers of healthy sustainable foods often focus on the cognitive information, such as nutrition information, societal and environmental benefits, other dimensions of healthfulness, and the health benefits of consuming the product, communication for hedonic/unhealthy food focuses on taste or the sensory experience of a product, which may trigger an effective response [46].

### 4.2. Frequency and Comparison of Healthy Sustainable Practices by Restaurant Type

The frequency and comparison of restaurants' healthy sustainable practices by restaurant type are provided in Table 2. All sampled restaurants provide nutrition-related information. This is because posting nutritional information is mandatory for restaurant chains having more than 20 units, according to U.S. nutrition labeling regulations [8]. The second most frequently applied practice by restaurant chains is providing healthy menu options (65.6%). The provision of healthy menu options is encouraged by many scholars for organizations to develop a healthier eating environment [3,16] and to improve the perception of food healthiness in the restaurant menu [18]. The practice of using organic and/or naturally grown produce without antibiotics is the third most frequently reported practice by restaurants (36.6%) to provide sustainable food.

**Table 2.** Healthy sustainable initiatives by restaurant types.

| Healthy Sustainable Practices | Restaurant Type | | | |
|---|---|---|---|---|
| | Fast-Food n (%) [a] (n = 43) | Sit-Down n (%) [a] (n = 50) | Total n (%) (n = 93) | *p* Value |
| **Sourcing** | | | | |
| Use locally sourced/grown produce | 1 (2.3) | 9 (18.0) | 10 (10.8) | 0.015 * |
| Use organic/natural ingredients | 12 (27.9) | 22 (44.0) | 34 (36.6) | 0.108 |
| Use fresh produce | 8 (18.6) | 22 (44.0) | 30 (32.3) | 0.009 ** |
| Have a partnership with certified suppliers | 8 (18.6) | 15 (30.0) | 23 (24.7) | 0.204 |
| **Production** | | | | |
| Provide smaller/reduced portion sizes | 1 (2.3) | 9 (18.0) | 10 (10.8) | 0.015 * |
| Use healthy cooking methods | 1 (2.3) | 7 (14.0) | 8 (8.6) | 0.045 * |
| Don't use health concerning ingredients | 3 (7.0) | 10 (20.0) | 13 (14.0) | 0.071 |
| **Marketing** | | | | |
| Provide healthy menu options | 23 (53.5) | 38 (76.0) | 61 (65.6) | 0.023 * |
| Create signs/logos/symbols for a healthy menu | 6 (14.0) | 17 (34.0) | 23 (24.7) | 0.025* |
| Offer a healthy children's menu | 3 (7.0) | 9 (18.0) | 12 (12.9) | 0.114 |
| Encourage a healthier menu | 3 (7.0) | 17 (34.0) | 20 (21.5) | <0.001 *** |
| **Service** | | | | |
| Present nutrition information | 43 (100) | 50 (100) | 93 (100) | ns |
| Provide healthy dining information | 6 (14.0) | 5 (12.5) | 11 (11.8) | 0.556 |
| Have a partnership with certified healthy eating programs | 3 (7.0) | 9 (18.0) | 12 (12.9) | 0.114 |
| Disclose food policies/reports | 10 (23.3) | 13 (26.0) | 23 (24.7) | 0.760 |

[a] Number of restaurants using each healthy sustainable practice / total number of restaurants in each type. * *p* < 0.05.; ** *p* < 0.01; *** *p* < 0.001.

Using healthy cooking methods (8.6%), sourcing locally sourced and/or grown produce (10.8%), and providing smaller/reduced portion sizes (10.8%) were the least frequently applied healthy sustainable practices by restaurants. The results might imply that there may be challenges that restaurant businesses face in relation to these practices. Changing cooking methods to reduce fat by using less oil was the most recommended strategy mentioned by chefs in the U.S. restaurant industry to provide healthier food (i.e., low-calorie) [25]. However, this method may not be practical for a restaurant chain, especially a fast-food restaurant that typically serves deep-fried foods (e.g., French

fries). One of the plausible reasons for cooking methods having the lowest percentage of mention may be the practices related to cooking occurring in the kitchen rather than being visible to customers. For example, Kassinis and Soteriou (2003) [47] revealed that the green and sustainable restaurant initiatives, which especially occur in the production process as back-of-house activities, are not reported and noticed by customers.

As many scholars have highlighted, the impact of increased portion sizes on energy intake [48] and the availability of offering smaller portion sizes have been suggested to provide a healthier restaurant environment [16]. However, restaurants may not want to mention the option of smaller or reduced portion sizes on their websites. The decrease in the portion size influences the perception of value for money [49,50]. Consumers are more likely to choose a larger portion when several food portion options are available because they feel they are getting more value for money. This result is consistent with that of Young and Nestle (2007) [7], who stated that the three leading fast-food chains had not reduced the portion sizes of sodas, French fries, or hamburgers for the previous five years.

Regarding sourcing local food, restaurants operating nationwide and having multiple units at different locations might experience barriers or be less likely to use local food because of the lack of year-round availability, the ability to obtain an adequate food supply, and food quantity [21,51]. Another challenge of using locally sourced food is the safety concern of the food itself. Chipotle, which is known for sourcing local food in the United States, had several prominent outbreaks of E. coli and other serious foodborne illnesses associated with the purchasing of food from local producers [52].

The results of the chi-square test illustrate differences in the levels of healthy sustainable practices by restaurant types. The analysis provides evidence that sit-down restaurants are more actively implementing healthy sustainable eating practices in sourcing, production, and marketing dimensions when compared to fast-food restaurant chains. The findings were consistent with the previous studies, reporting that the healthy sustainable initiatives a restaurant can implement varied across restaurant types [16,19]. For example, sit-down restaurants had healthier food options (e.g., non-fried vegetable) and reduced sized portion availability than did fast-food restaurants [16].

The findings could be explained by the different food preparation processes and the desired consumer value in the different types of restaurants. There are two primary explanations. First, foods in fast-food restaurants are typically pre-made. Hence, it is difficult to change the recipes, the ingredients, or the cooking methods to satisfy customer requests [34]. Second, consumers have different desires and values across the restaurant types. While good taste, menu variety, healthy sustainable foods, and high-quality foods were the main desired values for customers visiting sit-down restaurants, fast-food diners valued prompt service, convenience, low prices, and economic value [35]. Based on the different desired consumer values, restaurant operators developed different healthy sustainable practices for each segment. Therefore, sit-down restaurants made a greater effort to implement different types of healthy sustainable eating initiatives to meet the customers' desired value of healthy and sustainable foods than did fast-food restaurants.

There were no statistically significant differences in service-related healthy sustainable eating practices by restaurant types. In addition, few restaurants implemented communication strategies to address their commitment to public health and environment, except for the practices of presenting nutrition information, which is mandatory for restaurant chains. The findings imply that restaurant chains could do much more to address their commitment toward food, health and social and environmental issues on their websites, which could enhance consumer understanding and access to the information that assists in developing the healthy and sustainable eating regime.

## 5. Conclusions

Knowledge about the creation of a healthy sustainable eating environment is becoming more important to restaurants and public health policy makers. However, there is a lack of complete understanding of healthy sustainable food initiatives within restaurant businesses. The goal of this research was to identify healthy sustainable food initiatives by restaurant chains based on the value

chain approach and then to provide practical applications to foodservice professionals by comparing the practices by restaurant types.

The study provides several theoretical implications. First, the study extended the limited number of healthy sustainable restaurant practices by including additional practices not previously identified in the literature. The prior work by Kim et al. (2014) [18] identified four restaurant healthiness attributes in the Korean restaurant setting, but their work may not show a holistic and accurate picture of healthy restaurant initiatives and limits that apply to the United States. In addition, Saelens et al. (2007) [16] offer five criteria for restaurant health practices to evaluate the restaurant health environment. However, the criteria do not reflect the current status of the restaurant industry. Thus, our findings are the first to show restaurant healthy sustainable initiatives to be developed using a systematic content analysis of currently implemented restaurants' efforts to make a healthier and greener eating environment.

Second, the study contributes to the theoretical foundation for further studies that investigate restaurant strategies to promote healthy and sustainable eating. Unlike prior studies, this study applied a value chain approach to provide a broad understanding of restaurant healthy and sustainable eating initiatives. It is meaningful to consider the value chain framework because it could show how and where healthy sustainable restaurant initiatives have been implemented. By identifying the multiple practices with the value chain dimensions of healthy sustainable initiatives, the study enables researchers and practitioners to investigate the distinct effects of the restaurant's healthy sustainable initiatives. In addition, the discovery of knowledge in restaurant healthy sustainable initiatives could extend as the foundation for developing a multi-attribute item or variable of healthy sustainable eating initiatives to provide a fuller and more accurate picture.

This research also provides relevant managerial implications for foodservice practitioners and policymakers in the foodservice industry. The findings of the study enable managers to understand and evaluate their current implementation status of health and sustainable eating initiatives at different dimensions of the value chain. Managers and practitioners can use the framework as a diagnostic tool to evaluate their current programs and to identify which aspects of their programs are strong or week. Our research can help provide guidance to restaurant organizations on how to better design and implement health and sustainability-related programs.

In addition, the findings of the differences of restaurants' healthy sustainable practices by restaurant type show that the sit-down restaurants were more actively participating in these initiatives than are fast-food restaurants. As more consumers put a high priority on healthy and sustainable foods at sit-down and up-scale restaurants [19,35], sit-down restaurants were more actively participating in healthy and environmentally sustainable food initiatives than were fast-food restaurants. For restaurant executives and marketing managers, this study provides insights into what types of healthy sustainable food practices could be available by type of restaurant when they seek to engage in the healthy sustainable foods movement. Accordingly, restaurant managers should understand that healthy sustainable eating practices in sourcing, production, and marketing dimensions would be more applicable in the implementation of healthy sustainable initiatives than service-related practices in sit-down restaurants.

The results from the study provide insights that can be integrated into a sustainable and healthy eating policy design and implementation. As an increase in the frequency of dining out is associated with the presence of obesity [4], policymakers attempt to develop campaigns, public education, menu labeling, and communication means to encourage consumers to adopt healthier and more sustainable food consumption behavior. The results suggest that different features of healthy sustainable initiatives could be applied to reach the goal of promoting health for the public. For example, a health logo, sign, or symbol as an add-on to presenting calorie information, which is currently mandated for many restaurants, is suggested as an effective alternative for increasing awareness of healthy options and stimulating consumers' healthy dining.

## 6. Limitations and Future Research

Some limitations of the present study and future research directions should be noted. First, the study relied on self-reported data posted on the restaurant chains' websites. The information on healthy sustainable initiatives may not reflect the actual practices of each restaurant. Thus, the results could show the restaurant chains' claims rather than the real actions that they are doing. In addition, webpage information may be changed and added at any point in time. The findings are based on a snapshot of available U.S. restaurant chain webpages in 2018. It is recommended that future studies extend the data through other communication channels (e.g., news releases, interviews, and social media) in a longitudinal manner. Another limitation is the use of a convenience sample of 93 U.S. restaurant chains' webpages. The findings may not generalize the results to small, independent, and/or local restaurants that were not a part of the sample of this particular study. Researchers in a future study are strongly encouraged to conduct the study to determine whether the customers are aware of the restaurants' healthy sustainable initiatives and whether the practices are effective in creating a favorable image and attitude toward the restaurants. Notwithstanding these limitations, we believe that this study assists in providing a systematic and comprehensive picture of restaurant healthy sustainable initiatives that could be valuable for restaurant managers, practitioners, and policymakers to evaluate and develop their healthy and sustainable eating practices.

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