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How Online Reviews Influence Consumer Restaurant Selection

by

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ABSTRACT

Since social media has been growing rapidly, the restaurant industry has been exploring this area extensively. Given that social media provides restaurant consumers with an opportunity to share their dining experiences, several studies have examined the impact of social media on consumer restaurant selection (Tran, 2015). As a part of the social media umbrella, online reviews are significant factors that influence consumer restaurant selection (Park & Nicolau, 2015; Yang, Hlee, Lee, Koo, 2017). However, there is a lack of understanding with regard to which attributes of restaurant online reviews are the most influential when it comes to customer decision making. Therefore, this study aims to investigate the relative importance of online review attributes in consumer restaurant selection. Particularly, this study focuses on the number of online reviews, the overall restaurant rating, and the following restaurant attributes: food quality, service quality, atmosphere, and price, to address the purpose of the research.

Based on the recommendation of Orme, (2010), 353 respondents are recruited via Amazon's Mechanical Turk, and a choice-based-conjoint (CBC) analysis is performed. The CBC analysis reveals the relative importance of each attribute for customer decision making. Based on the CBC analysis, the results confirms that food quality is the most important attribute in consumer restaurant selection. This factor is followed by overall restaurant rating, price, service quality, the number of online reviews, and atmosphere. Additionally, the overall restaurant rating is determined to be a substantially important factor that influences consumer restaurant selection, while the rest of the attributes vary in their rank. The market simulation calculated the preference

estimates for the products for each respondent. This approach predicts the impact of each attribute on the market share. Food quality and overall restaurant rating are used for the market simulations. Therefore, it is also found that in relation to the market simulation, the decrease of food quality influenced the market share by about 58.88%. The findings of this study contribute greatly to the knowledge of the importance of food quality, and as a result, an overall restaurant rating. Therefore, restaurant managers should prioritize these key attributes to manage strategies for the restaurant industry.

CHAPTER ONE: INTRODUCTION

The 21st century has witnessed the significant influence of social media on consumer behavior that is affecting awareness of products, purchase behavior, opinions, and evaluation of products (Mangold & Faulds, 2009). Social media has provided the most effective means of communication for organizations to connect with consumers on a worldwide scale. With social media rising rapidly within general demographics, many companies have noticed the potential of social media, and they have changed their marketing strategies to take advantage of these new opportunities. Consequently, social media enables consumers to share their purchasing experiences through electronic word of mouth (eWOM) to create a reliable source for other consumers (Tran, 2015). Essentially, this new form of web communication (eWOM) offers the sharing of information between service providers and consumers via the Internet (Pantelidis, 2010). According to Parikh (2013), eWOM is more influential than traditional WOM, and it extends far beyond the members of physical communities. For this reason, eWOM has allowed potential diners to find restaurants in an interactive way (Fox, 2013). Additionally, online consumer reviews are a form of eWOM in the restaurant selection process, and this has helped consumers gain detailed information with trustworthiness and credibility as opposed to information provided by the industry, which might be viewed with skepticism and possible disbelief (Park & Nicolau, 2015). Therefore, most consumers generally refer to their attention on online reviews before purchasing (Suresh, Roohi, Eirinaki, & Varlamis, 2014). In recent years, online reviews have become

available for many categories of products, including hotels, and restaurants, which connects potential consumers with many other consumers (Zhang, Ye, Law, & Li, 2010).

Online restaurant review websites include a brief overview of each restaurant's name, address, and the overall opinion of its food and service quality by the reviewer (Zhang et al., 2010). As a result of this, potential consumers are notified through online restaurant reviews of possible strengths and weaknesses of a restaurant. When these potential consumers select a restaurant, online reviews are counted as expert opinions (Parikh, 2013). Additionally, online reviews are frequently used by restaurant consumers as an additional source when they are unfamiliar with a restaurant, and these reviews include both exceptional and poor consumers' experiences (Parikh, Behnke, Vorvoreanu, Almanza & Nelson, 2014). In particular, online restaurant reviews offer a massive amount of data that includes consumer feedback, consumer overall rating, the food both served by the restaurant and tried by consumers, and locations that the reviewed party can refer to improve the consumer experience (Jurafsky, Chahuneasu, Routledge, & Smith, 2014). Thus, online reviews today have the power to connect the potential consumer directly with a restaurant even before he/she walks through the doors of a restaurant (Yang et al., 2017). Moreover, the popularity of online review websites' (e.g., Yelp.com, TripAdvisor, and Angie's List) have increased in recent years, and thus more reviews have been created for a variety of products and services. For instance, Yelp.com has helped consumers select local organizations, such as restaurant, bars, etc. with displaying shared information on dining experiences, (Luca & Zervas, 2016) and it presents an opportunity to its users to reach the information quickly and easily regarding many restaurants Parikh (2013). Furthermore, Yelp.com had 142 million visitors in 2015 and 2.1 million various organizations registered on the website (Prasad, Ganguly, Mukherjee, Kumari, & Kumar, 2016). It is also noted by Parikh et al. (2014) that this indicated rather strongly

that these online review websites could potentially be rich sources of information and thus have helped to decrease the percentage of poor purchasing experiences for consumers. For instance, the number of online reviews may influence consumer purchasing intention, and a high number of online reviews mainly leads consumers to purchase that item or service (Park, Lee, & Han 2007). Additionally, Zhang et al. (2010) states that the consumer-generated ratings represent the quality of food, environment, and service, and the number of online reviews are positively associated with the popularity of the restaurant in an online platform. Similarly, consumer value ratings are increasingly stated through online reviews websites (Kovács, Carroll, & Lehman, 2013). For instance, on Yelp, online users can read and write restaurant reviews. In order to leave a review, users must rate any restaurant 1 to 5 stars, and the number of the average rating is presented. Anderson and Magruder (2012) mentions that there is a positive impact of Yelp star rating system on restaurant operations and states that the half-star differences (i.e., 3.5 to 4.0) increased restaurant sales by upwards of 19%.

Zhang et al. (2010) highlights that these online reviews displayed the restaurant aspects (e.g., food quality, service quality, and environment), and the restaurant consumers perceive the quality of a restaurant by reading these online reviews. Some scholars examine the restaurant attributes by analyzing online reviews (Chaves, Laurel, Sacramento, & Pedron 2014; Pantelidis 2010). Chaves et al. (2014) studies the restaurant attributes by analyzing online reviews, and the study indicates that the quality of food is the most frequent type of aspects from consumer's perspective. Additionally, the restaurant aspects are listed in the study from most frequent to the least frequent; the following are listed aspects from the study; staff and communication, price, atmosphere, a variety of menu, quality of service. Pantelidis (2010) examines the experiences of the consumer in an online platform, and he indicates six frequently encountered restaurants

attributes that may influence consumer's restaurant selection. The six attributes are ranked from the most important to the least important: food, service, atmosphere, price, menu, and design. In general, the restaurant industry has observed that different types of attributes that may be expressed in restaurant reviews and restaurateurs can evaluate which qualifications encourage consumers during restaurant selection (Chaves et al., 2014). The most important restaurant attributes have been examined by the scholars (Chaves et al., 2014; Pantelidis, 2010), and similarly, this study has aimed to identify the important restaurant attributes. DINESERV dimensions. (Kim, Ng, & Kim, 2009) indicates that DINESERV dimensions are frequently considered by consumers when selecting a restaurant. Based on this study, the restaurant industry may get a better understanding of consumer demands (Parikh et al., 2014; Titz, Lanza-Abbott, & Cruz, 2004).

The original model of DINESERV is developed by Stevens, Knutson, and Patton, (1996) to measure service quality in the restaurant. In fact, this study adopts DINESERV dimensions based on the study of Kim et al. (2009), which narrows the study to six dimensions of restaurant attributes. The most significant DINESERV dimensions (e.g., food quality, service quality, atmosphere, price, value, and convenience) are revised by Kim et al. (2009) and these six dimensions are determined as important factors in consumer restaurant selection (Kim et al, 2009). The five of DINESERV Dimensions are presented in the literature review.

Based on the literature review, the online reviews and the restaurant attributes are studied separately (Chaves et al., 2014; Jeong & Jang, 2011; Kim et al., 2009; Koo, Tao, & Yeung, 1999; Kovács et al., 2013; Stevens et al., 1995). However, this study focuses on the online reviews (e.g., the overall restaurant ratings and the number of online reviews) and restaurant attributes simultaneously. The study proposes to identify the most important restaurant attribute in consumer restaurant selection. Also, this study's intent is to find a connection between restaurant attributes

and online reviews. To find a connection between restaurant attributes and online reviews, the literature review discusses the DINESERV dimensions and the online reviews (e.g., the number of online reviews and the overall restaurant rating). The findings of this study may be helpful for the restaurant management to measure overall quality within analyzing key attributes in the restaurant industry. Through analyses of the study, restaurant management may have an opportunity in regards to the most important attributes that influence consumer restaurant selection Additionally, this study may be an opportunity for restaurateurs to develop several strategies to increase the overall dining experience for consumers. For instance, Jeong and Jang (2011) indicates that consumers' dining experience represent their perception of overall quality, and their personal opinions regarding a restaurant may reflect the other consumers' decisions. Thus, restaurateurs should focus on consumer's attention in terms of restaurant attributes. Therefore, the intent of this research is to fill the gap in terms of the relationship between online reviews and restaurant attributes. Additionally, this study may contribute to knowledge about the simultaneous assessment of key attributes for restaurant selection. For instance, this study may examine the significant restaurant attributes altogether, and restaurant management may create a favorable reputation in the market based on these key attributes.

CHAPTER TWO: LITERATURE REVIEW

The online reviews have changed the style of consumer's purchasing behavior in the restaurant industry, and many scholars have studied the implication of online reviews in the restaurant industry (DiPietro, Crews, Gustafson, & Strick, 2012; Schindler & Bickart, 2012; Taylor & Atay, 2016; Yan, Wang, & Chau, 2015). When consumers only have limited information about the quality of a service or product until a particular service has been purchased, they are more likely to look for this information ahead of time (Parikh et al., 2014). The restaurant reviews present a variety of information that helps the restaurant's consumers to make selections beforehand. By reading restaurant reviews, consumers can get more detailed information about previous consumers' overall dining experiences, such as the quality of the food and service. Online reviews help consumers by providing information from previous customers before selecting a particular restaurant to visit (Titz et al., 2004). In addition, online restaurant reviews yield potential consumers to build a connection with many other users, and they are able to choose a restaurant which suits their selection criteria with reading online reviews (Parikh et al., 2016). Taylor and Aday (2016) conclude that consumers pay more attention to a restaurant which has positive reviews rather than negative ones. Similarly, Kim et al. (2009) indicates that the restaurant consumers are more likely to share positive word-of-mouth. Additionally, Jeong and Jang (2011) states that positive eWOM increases the overall number of consumers, and it has a significant impact on increasing a restaurant's reputation. Since the online reviews has such a critical impact on consumers' restaurant selection, this study focuses on the online reviews in the restaurant

industry, the impact of a number of online reviews, and overall restaurant rating in the first part of the literature review. The second part of the literature review presents DINESERV dimensions as restaurant attributes (e.g., food quality, service quality, price, atmosphere, and value). Based on the literature review, the purpose of the study examines which attributes are more likely to affect consumers' restaurant selection.

Online Reviews in the Restaurant Industry

Social media has changed many aspects of the operations of restaurateurs, including their marketing strategies and policies for engaging consumers. (Pantelidis, 2010). According to the study revealed by Ipsos MediaCT and the National Restaurant Association (NRA), social media is found as the most-used marketing tactic by the restaurant industry. Based on the findings, 80% of restaurants firms use social media to create marketing strategies (eMarketer, 2013). NRA's 2014 Forecast highlights that 63% of consumers recently used restaurant-related technology options. Based on the information provided by NRA, consumers are likely to obtain information by social media tools (Facebook or Twitter), and consumer-driven review sites (e.g., Yelp.com) before they dine at a restaurant. (NRA, 2014). Furthermore, restaurateurs have begun paying attention to the existing complications regarding operations using social media. Restaurateurs have become more aware of how good or bad consumers' dining experience could possibly impact the adaptation of social media (Pantelidis, 2010). In addition, social media offers restaurant consumers to express their opinions about the services or products (Kim, Koh, Cha, & Lee, 2015). Meanwhile, restaurant consumers have started consulting not only friends or relatives when they selected a restaurant, but they also have considered social media sites (Pantelidis, 2010). For this reason, consumers always tend to seek WOM information from previous diners. As a result of this tendency, WOM

has become an effective marketing strategy for the restaurant industry, (Jalilvand, Salimipour, Elyasi, & Mohammadi, 2017) and it has been defined as a critical factor that influences consumers' restaurant selection (Pantedilis, 2010). Kim et al. (2009) reveals that consumers are willing to share their dining experience via WOM. Several restaurant industry studies (Fox, 2017; Jeong & Jang, 2011; Parikh 2013, Tran, 2016) demonstrate the significant impact of eWOM on consumers' restaurant selection. Jeong and Jang (2011) adds that positive dining experience in terms of restaurant attributes (e.g., food, service, atmosphere, and price) shared by consumers leads them to share positive eWOM. Because of this, positive eWOM can possibly change potential consumers' opinions before a restaurant is selected.

Since online social media has developed quite rapidly, extensive opportunities have been provided to the restaurant industry. Therefore, an enormous number of online consumers have relied on online restaurant reviews websites, discussion forums, and personal blogs, etc. (Yang, et al., 2017). Similarly, online reviews help other users to judge whether or not the restaurants are worth visiting (Cheung & Lee, 2012). Therefore, an impact of online reviews on restaurant selection has been studied by numerous researchers (Cheung & Lee, 2012; Fox, 2013; Parikh, 2013; Parikh 2014; Yang, 2017), and a positive relationship has been found between the attributes and restaurant visit intentions. Essentially, the context of online reviews enables customers to observe how many people recommend a product or service, and it greatly impacts consumers' purchasing intentions. Online restaurant reviews are considered as a platform that offered consumers to express their ideas individuality. For instance, Yelp.com allows users to participate in discussions based on local restaurants, culture, food etc. Yelp.com also has an important role in increasing engagement with reviewers and previous consumers. It allows reviewers to talk on an online platform and share experiences. (Parikh et al., 2016). Additionally, online restaurant

reviews offer an abundance of information in terms of food, service, physical environment, quality, and price (Yang, et al., 2017). These attributes are displayed in different type of restaurant reviews, such as professional reviews (New York Magazine), semi-professional (Zagat), and user-generated reviews (Yelp.com). Parikh et al. (2016) concludes that these different structures of restaurant reviews presents important information for both consumers and restaurateurs. For instance, TripAdvisor allows restaurant managers to reply to online reviews in a way to increase engagement with potential consumers (Beuscart, Mellet, & Trespeuch, 2016).

The Number of Online Reviews

The number of reviews have a very important role in that it makes consumers' selection much quicker than it would be otherwise. (Zhang et al., 2014). Online users perceive the number of reviews as the popularity of restaurant (Zhang et al., 2010). Additionally, the more online reviews present could possibly increase the chance of online users to click the restaurants' webpages (Zhang et al., 2010). Lu, Ba, Huang, and Feng (2013) finds that a larger number of online reviews (greater volume) have a positive impact on restaurant sales and an overall number of restaurant consumers, and as pointed out by the researchers, consumers mostly prefer the restaurant which has a large number of online reviews. Consequently, Luca and Zervas (2016) states that a large of amount of online reviews have an impact on consumers' restaurant decisions. For instance, consumers may choose a pricy restaurant that has a large number of online reviews as opposed to a cheaper restaurant with fewer reviews. As a result, restaurant online reviews have become an influential and invaluable source of information in the restaurant industry, and it often gives a powerful impression when consumers are performing the decision-making process (Yim, Lee, &

Kim, 2014). A large number of online reviews are priceless sources of information for restaurants to investigate their consumers' dining experiences, help restaurants to increase engagement with consumers and restaurants, and to spread a massive information to potential patrons to win their business (Gan, Ferns, Yu, & Jin, 2016). A restaurant review's context includes the consumer's own evaluation of their prior experience, and the quality of food is one of the most influential aspects of a consumer's given opinions. For this reason, the attitudes of consumers could be changed by reviewing the attributes of consumers' recommendations based particularly on the quality of the food served at a particular restaurant (Lee, 2016). Similarly, prior studies indicate that the number of online reviews is verified as an important attribute to address the research question. (Gan et al., 2016; Luca et al., 2016; Lu et al., 2013; Yim et al., 2014; Zhang et al., 2010; Zhang et al., 2014). The level of number of online reviews is displayed as a numeric value, such as 4, 24, 107, 256, and 547, respectively. These numbers are adopted from a study "Winning the Battle: The Importance of Price and Online Reviews for Hotel Selection," done by Ciftci, Cavusoglu, Berezina, Cobanoglu (2016).

Overall Restaurant Rating

Online consumer ratings represent an important key factor of restaurants' performance (Kovács et al., 2013). Online ratings have been observed by several different research teams, and it has been described as the "J-shaped distribution". For example, Amazon.com includes far more (five-star) than negative (one-star or two-star) or generally positive (three-star or four stars) reviews. Moreover, this distribution has been observed in the restaurant industry (Aral, 2014). The restaurant ratings are known as a powerful indicator for consumers to make their decisions before

going to a restaurant (Ha, Park, & Park, 2016). Tran (2015) mentions that there is a positive relationship between restaurants' high ranking and attracting more consumers. Star ratings are an important factor that determines online business success, and it plays a vital role in building consumer trust. Most users rely on others expressed opinions in online reviews, and convenient ratings, such as that of a one to five-star ranking system, appear to be more useful for them (Gan, et al., 2016). According to Jurafsky et al, (2014), a restaurant which has a one-star review (rating) makes consumers think before selecting rather than discussing food or service. Gan et al. (2016) concludes that overall rating is influenced by restaurant attributes such as food, service, ambiance, and price. Therefore, the researchers conclude that the consumers are likely to choose a restaurant which has a higher rating rather than a restaurant with a lower rating. Also, Ha et al. (2016) states the potential consumers may perceive a lower rating as a sign of poor restaurant quality or low popularity, and this would almost certainly impact the decision-making process. In addition, it is indicated that the overall rating of a restaurant has a large impact on restaurant revenue. For example, a one-star increase in restaurant rating is associated with 19% increase in restaurant revenue (Luca & Zervas, 2016). Kovács et al. (2014) indicates that the restaurant ratings are of influential importance for organizational performance. However, based on the best of author's knowledge, there has been limited research regarding the impact of overall rating on potential consumers' restaurant selection. For this reason, the study aims to use the overall restaurant rating to investigate the impact on consumers' restaurant selection. Furthermore, the rating is displayed as a star, and each star shows a different level of overall restaurant ratings (e.g., one star = poor, two stars = fair, three stars = good, four stars = very good, and five stars = excellent). In this study, the restaurant attributes are displayed as a star rating, except for price and number of reviews. For instance, one star represent restaurant which has "poor rating" or 5 means that a restaurant has

"excellent rating". These levels of attributes are explained in chapter three, and each level of restaurant rating is displayed in Table 1.

Overall, the impact of the number of online reviews (Lu et al., 2013; Luca & Zervas, 2016; Yim et al., 2014; Zhang et al., 2010) and overall restaurant rating (Ha et al., 2016; Tran, 2015) are indicated on consumer restaurant selection in the previous studies. For this reason, the number of online reviews and overall restaurant rating are represented as restaurant attributes.

DINESERV Dimensions

The DINESERV model is developed by Stevens et al. (1995) to determine consumers' expectations of service quality and value standards in the restaurant industry. The DINESERV model has helped restaurateurs to measure restaurant's overall quality from the consumer perspective. The 29 items of the DINESERV questionnaire measures service quality standards in the following categories: assurance, empathy, reliability, responsiveness, and tangibles (Kim et al., 2009). Therefore, the goal of the DINESERV is to give restaurant operators and owners a way to measure the service quality in the restaurant industry. Consequently, it may fill the gap between restaurateurs and consumers' needs and wants (Hansen, 2014). In fact, Kim et al. (2009) revised the influence of DINESERV dimensions on consumer satisfaction, return intention, and WOM. According to the results, five DINESERV dimensions (e.g., food quality, atmosphere, service quality, price, and value) demonstrates a positive effect on consumer satisfaction. The researchers add that focusing on these dimensions may improve consumers' satisfaction, and may drive consumers to spread positive WOM.

Based on the above review of the literature, the scholars indicate the variety of restaurant attributes (Chaves et al., 2014; Pantelidis 2010). However, this study aims to identify what restaurant attributes are considered as the most important in restaurant selection. The study has adopted the DINESERV dimensions to get a better understanding of restaurant consumer's demands (Kim et. al., 2009; Stevens et., 1995). Each attribute is briefly discussed in the following paragraphs.

Value

Consumer value is defined as a ratio between quality (benefit) and cost (price) (Clemes, Gan, & Ren, 2010). A large number of service firms tend to ensure competitive advantages by providing greater value for their consumers (Cheng, Lin, & Wang, 2010). According to Zeithaml (1988), the value has been considered differently, and it is identified in different ways. The value is identified into four different definitions from consumer's perspective: value is a low price, what consumers desire in a product, quality that consumers require for a price, and what consumers define as an acceptable trade (Zeithaml, 1988).

Fredericks and Salter (1995) identify that consumer value is generally a good indicator of the consumer's satisfaction. Also, the consumer value comprises important variables such as price, product quality, innovation, service quality, and company image (Federicks & Salter, 1995). Similarity, Jensen, and Hensen (2007) adds that the consumer value is identified as an important impact on consumer's restaurant experience, though Oliver (1997) highlights that the consumer value is a perceived value (as cited in Jensen & Hensen, 2007). Yuksel and Yuksel (2003) states the value for money is one of the most significant impacts of restaurant consumers' decisions. The perceived value is identified as an effective tool to measure consumer intentions to return to a

restaurant. It is also defined as a powerful predictor in consumer dining decisions (Oh, 2000). Even though previous studies (Jensen & Hensen, 2007; Hyun et al., 2011; Oh, 2000; Yuksel & Yuksel, 2003) illustrate the importance of value in the restaurant industry, this study does not use value as a restaurant attribute. Based on the previous study (Yuksel & Yuksel, 2003), the value is considered to be a part of the price and thus it is not considered as its own attribute.

Food Quality

Schroeder (1985) indicates that the food quality is the best qualifier out of nine different important aspects of a restaurant based on consumers' reviews. Similarity, food quality is ranked as the most influential attribute by consumers (Gregory & Kim, 2004). Thus, food presentation and food variety are indicated as a component of the food quality (Namkung & Jang, 2008). In addition, Kivela (1999) and Auty (1992) indicates that food type and food quality are the most efficient attributes of a restaurant selection. Consumer decision-making choice is highly correlated with food quality (Jung, Sydnor, Lee, & Almanza, 2015). Similarly, overall food quality is found as the most critical factor influencing consumers' repurchasing decision for a restaurant (Harrington et al., 2011; Parikh 2013). Parikh (2013) concludes that whether or not a restaurant has good service or atmosphere, if the restaurant fails to provide at the very least good quality of food, consumers will perceive dining experience negatively. Food quality has a strong effect on creating a positive relationship between restaurants and consumers (Clemes et al., 2010), and it impacts consumers' motivation to share their dining experience by eWOM (Jeong & Jang, 2011). Ponnam and Balaji (2014) emphasizes that restaurateurs should have been considered delivering quality food and service to reach better results from consumers' dining experience. Thus, food

quality is considered as a powerful indicator of a consumer's restaurant experience (Raajpoot, 2002). The study investigates the importance of food quality in restaurant selection. In the data analysis, the food quality is displayed as a star between one to five, and each star represents a different level of food quality (e.g., one star = poor, two stars = fair, three stars = good, four stars = very good, and five stars = excellent).

Service Quality

Service quality is initially defined as a difference between customer expectations of service and the performance they received (Parasuraman et al., 1988 cited in Jaksa, Kivela, Inbakaran, John, & Reece, 1999). In fact, service quality is accepted as an evaluation that reflected consumers' perceptions of specific dimensions (Zeithaml, & Bitner, 2003). Service quality is highlighted as a key role of restaurant services, and it is indicated as an effective tool to influence the satisfaction of restaurant consumers. The restaurateurs should have observed the consumer's perceived service quality, and by doing so, would help to reduce any negative emotions, as it helps to maximize customer's satisfaction (Yim, et al., 2014). Thus, positive interactions between service employees and consumers could be an influential factor of quality service and helpful employees could provide consumers' demands of time, cost, and interpersonal service quality (Jin & Lee, 2016). The behavior of employees has a strong effect on consumers' perception of the service quality and it contributes greatly to establishing brand meaning in the industry (Wall & Berry, 2007). Additionally, Fox (2013) states that both qualities of food and quality of service are major attributes that are quite often mentioned by consumers on their online reviews. This study investigates the importance of service quality in restaurant selection. Service quality is displayed

as a star between one to five, and each star represents different level of service quality of a restaurant (e.g., one star = poor, two stars = fair, three stars = good, four stars = very good, and five stars = excellent).

Atmosphere

According to Sulek and Hensley (2004), the atmosphere is presented as an important aspect of the restaurant's physical environment. Restaurant atmosphere encompasses several factors, including décor, noise level, temperature, cleanliness, odors, lighting, color, and music. A comfortable dining atmosphere helps restaurateurs to retain consumers who are most likely to revisit as well as those who might not have been so inclined to revisit before visiting the restaurant for the first time, and it should have been one of important implication for restaurateurs (Kim et al., 2009). Namkung and Jang (2007) states that atmosphere is shown in all consumer's positive comments based on their dining experience. Therefore, Kim (1996) points out that atmosphere should have been considered as a component of the total dining experience. A study done by Jeong and Jang (2011) mentions that a good restaurant atmosphere motivated restaurant consumers to spread positive eWOM. Auty (1992) emphasizes that a restaurant's style and its atmosphere becomes an important element of consumers' restaurant choice process. For instance, the creative restaurant design might have served as an appealing marketing tool and may contribute to the overall favorable dining experience (Heung & Gu, 2012). Ha and Jang (2010) reveals that there is a relationship between consumer's' quality perception and restaurant atmosphere. Basically, the consumers' perceived quality depends on the atmosphere of a dining area. This study investigates the importance of atmosphere in restaurant selection. Therefore, the atmosphere is presented as a

star from one to five stars, and each star shows a different level of service quality of a restaurant (e.g., one star = poor, two stars = fair, three stars = good, four stars = very good, and five stars = excellent)

Price of the Meal

The price is identified as a strong impact on consumer behavior as well as being an important aspect of the restaurant industry itself. Due to restaurant consumers' experiences including personal experience, it would be more subjective, as each individual consumer perceives experiences differently. Due to this, a wide range of prices is shown in a variety of dining menus to restaurant consumers (Jung, 2013). Because of this, the restaurant industry might have encouraged itself to view price as a strong aspect of consumers' decision-making process (Han & Ryu, 2009). A study by Kim et al. (2006) states that price is an expense to purchase a product or service from a consumer's perspectives. Also, the price is consistently ranked the most critical factor influencing consumers dining choices (Jung et al., 2015). Price is indicated as a significant predictor of satisfaction, and it may impact both restaurant's profits and consumer satisfaction (Kim et al., 2006; Yuksel & Yuksel, 2003). As a result, the price is found as one of the most important aspects of restaurant selection, and it is critically assessed by consumers while choosing between multiple alternatives (Kwun & Oh, 2004). For this reason, restaurateurs have started using the pricing strategy as a surrogate communicator of perceived quality and value. They have also mentioned that price, in general, did impact consumer's perceptions of quality and value (Naipaul & Parsa, 2001). According to Parikh (2013), online reviews are a form of restaurant advertising. For instance, when reviewers notice a restaurant has online reviews in terms of good quality, they

might have attempted to pay more. Also, restaurateurs might have been acutely aware of consumers' concern. For instance, if consumers mention that the restaurant is too pricy, the restaurateurs should possibly consider revisiting their pricing policies as to avoid pushing away potential new and revisiting consumers. Thus, restaurants should offer reasonable prices in a competitive environment to attract and retain consumers (Soriano, 2002). Accordingly, the price is found as one of the most important aspects of restaurant selection. For the data analysis, the price range is adopted from the study "Yelp Versus Inspection Reports: Is Quality Correlated with Sanitation in Retail Food Facilities?" done by Park, Kim, and Almanza, (2016). Based on the study, price range signs are defined as: $ (under $10), $$ ($11–30), $$$ ($31–$60), $$$$ (above $61), and is shown in Table 1.

The six attributes, which have been presented above in the literature review, are examined with statistical analysis. Based on the literature review this study proposes the following research question:

R1: What attributes are the most important in restaurant selection?

Table 1. *The attributes, levels, and the references*

Attributes	Levels	References
Food Quality (Shown as ⭐)	⭐ (Poor)	Gupta et al., (2010)
	⭐ (Fair)	
	⭐ (Good)	
	⭐ (Very good)	
	⭐ (Excellent)	
Service Quality (Shown as ⭐)	⭐ (Poor)	Gupta et al., (2010)
	⭐ (Fair)	
	⭐ (Good)	
	⭐ (Very good)	
	⭐ (Excellent)	
Atmosphere (Shown as ⭐)	⭐ (Poor)	Gupta et al., (2010)
	⭐ (Fair)	
	⭐ (Good)	
	⭐ (Very good)	
	⭐ (Excellent)	
Price Range (Shown as "$")	$= under $10	Park et al. (2016)
	$$= $11-$30	
	$$$= $31-$60	
	$$$$= above $61	
Number of Online Reviews	4	Ciftci et al. (2017)
	24	
	107	
	256	
	547	
Overall Restaurant Rating (Yelp.com) (Shown as ⭐)	⭐ (Poor)	Gupta et al., (2010)
	⭐ (Fair)	
	⭐ (Good)	
	⭐ (Very good)	
	⭐ (Excellent)	

CHAPTER THREE: METHOD

This study takes a quantitative approach to addressing the proposed research question while incorporating a choice-based conjoint analysis. Choice-based conjoint (CBC) experiments investigate which attributes are the most important in restaurant selection. The main purpose of the study is to examine the most important attributes in restaurant selection. Six restaurant attributes (e.g. food quality, service quality, atmosphere, price, the number of online reviews, overall restaurant rating) are selected after a thorough review of the literature.

Conjoint Model

This study measure what attributes are important in restaurant selection by using CBC analysis. Green & Wind (1973) mention that conjoint analysis provides valuable information about the relative importance of various attributes of products. Conjoint analysis is described as a trade-off analysis, and two basic assumptions are based on the conjoint analysis. First, the set of attributes could be described as a combination of levels of product/service, and, second, these attribute levels determine the importance attributes of product/service from consumers' perspectives (Koo, et al., 1999). The CBC methods consider the consumers' decision-making process, and it makes the respondents choose between two different combinations (Danaher, 1997). In addition, the CBC analysis could help to understand how consumers trade off one product attribute against another (Orme, 2010).

The study investigates the most important attributes in restaurant selection by using the CBC method. The CBC method presents different combinations of CBC analysis, and asks respondents to choose a restaurant from out of two options, as well as presenting an option for "neither of them". The combinations include each attribute with levels such as poor, fair, good, very good, and excellent, and each combination is presented to the respondents one at a time.

Sample and Data Collection

The target population for this study consists of US resident who has been at a restaurant at least once and also who checks online reviews for restaurant selection. The online survey is designed in Question-Pro, and Amazon's Mechanical Turk (MTurk) platform is used to recruit respondents. The MTurk platform lists a study's link in their online platform and the workers (as they called) select to be a part of the study. Additionally, the MTurk platform offers a diverse population and an access to subjects for researchers, and it costs lower than the other options (Mason & Suri, 2011).

Orme (2010) suggests that the sample size for conjoint studies generally range from 150 to 1,200 respondents. This study should recruit 350 respondents based on the recommendations from Orme's (2010) work. The number of incomplete surveys and invalid responses are included. The researcher determines the minimum sample size using the formula shown in Equation 1 :

Equation 1. *Choice-Based-Conjoint Sample Size Formula*

$$\frac{n * t * a}{c} \geq 500$$

Where n is the number of respondents, t is the number of tasks, a is the number of alternatives per task (not including the none alternative), and c is the number of analysis cells (Orme, 2010). Therefore, with two choice alternatives (a=2), five choice tasks (t=5) and five as the maximum number of levels (c=5), the sample is calculated as n=250 (threshold) using this formula. The number of incomplete surveys and valid responses are added to this amount, and for this reason, this study has recruited 353 respondents. Orme (2010) recommends at least 300 respondents for conjoint studies, and this number fits well within this recommendation.

The Questionnaire

The survey questions are developed based on literature review. A structured questionnaire consists of four sections: the first part states the purpose of the study; the second part of the questionnaire is intended to understand more about respondents' restaurant preferences. In addition, the second part of questionnaires comprises of three qualifying questions. The respondents are deleted from the final data who failed with these qualifying questions. The 18-item questionnaire is adopted from Chen & Chen (2015)'s work to identify the most important attributes. This study adopts the measurement scale form Chen & Chen (2015)'s work to support the proposed research question. The measurement scale includes eighteen questions and respondents rated on a 7-point Likert-scale ranging from 1=Very unimportant to 7=Very important. The third section includes different scenarios with CBC analysis built in Question-Pro. In each scenario, the respondents are asked to choose one restaurant from two options presented to them. Respondents also have an option to choose none of the restaurants. The fourth part of the questionnaire collects respondents' demographic data.

Reliability and Validity

The reliability refers to how consistent respondents are in applying an evaluative strategy (Orme, 2010). Segal (1984) suggests that the study of reliability and validity should be considered by using conjoint analysis. According to Orme (2010), if the simple combinations (e.g., the product has the lowest price) are asked to the respondents, the study would receive much higher reliability scores than complex combinations. Orme (2010) suggests that the researchers should have repeated a conjoint questions or choice task later in the questionnaire to examine if the respondents would give the same answer again. In addition, this practice helps researchers to measure how consistently respondents answer if given the same question multiple times in a process called hold-out sample. Thus, 75 to 80 percent of respondents should answer the same way with the repeated conjoint questions (Orme, 2010). In fact, the researcher (Zhu, 2007) indicates that reliability is difficult to evaluate when the researcher use simulation data in online formats. The validity has demonstrated the ability of conjoint analysis to predict the actual choice behavior of respondents (Green & Srinivasan, 1990). In addition, validity is identified as a correspondence between predicted and observed choice measures of respondents in real markets (Louviere, 1988). This study adopts the face validity to clarify whether the respondents understand the choice sets. The pilot study then checks if the combinations of CBC are clear to them. Furthermore, the study compares the results of ranking and CBC analysis to check the reliability of choice sets. The reliability and validity of CBC analysis are explained in chapter four.

Data Analysis

This study chooses the six attributes based on the previous literature review: food quality, service quality, atmosphere, price, the number of online reviews, and overall restaurant rating scale. The five attributes are added in each set and each choice is determined by 5 levels, and the price is also determined by 5 levels. The five attributes are varied at 5 levels and the four attributes (food quality, service quality, atmosphere, overall restaurant rating) are indicated as a star (Gupta et al., 2010). For instance, one star represents quality as "very poor", 2 stars represents as "poor", 3 stars represents as "fair", 4 stars represents as "good", and 5 stars represents quality as "excellent". The study uses the price range from Yelp.com, and the price is shown with the "$" symbol. This study adopts "$" to indicate the levels of the attribute from the study of Park, Kim, and Almanza, (2016). For instance, "$" presents the under $10 for a meal, "$$" represents the cost between $11 and $30, "$$$" represents the cost between $31 and $60, and "$$$$" represents the cost above $61 (Park et al., 2016). Yelp allows visitors to leave reviews for each restaurant, and it displays total numbers when the readers select a restaurant. This study performs a pilot test to check the clarity and reliability of measurement items employed in the survey. The pilot test is used to develop the levels of the number of reviews attribute. The pilot test questionnaire ideally will prove right that the number of online reviews that they associated with every level of this variable. Each level of this variable is adopted from the study "Winning the Battle: The Importance of Price and Online Reviews for Hotel Selection" done by Ciftci et al. (2017). Based on the results, the levels for the number of online reviews are developed and are integrated into the conjoint analysis. In addition, the pilot study asks respondents to provide their comments on the instrument developed for this study. The pilot test recruits 61 respondents via MTurk.

CHAPTER FOUR: RESULTS

MTurk Pilot Test

The pilot test is designed in Question-Pro, and the MTurk platform is used to recruit respondents. A total of 102 responses is collected. However, 61 valid responses are analyzed after a thorough analysis of the data, which includes deleting complete responses and responses that failed to adequately answer the qualifying questions.

Demographic Characteristics

The pilot survey is taken by US resident who has been at a restaurant at least once and who checks online reviews for the restaurant selection. The remaining 41 responses are either incomplete or failed qualifying questions and are therefore excluded from the analyses. The gender proportion of online reviewers is 60.7% female and 37.7% male. 41% of respondents are between 25 and 34 years old, and 44.5% of the respondents are married. The majority of the respondents (90.2%) have a university bachelor's or advanced degree. The detailed demographic characteristics are presented in Table 2.

Table 2. *Demographic Characteristics*

Variables	F	(%)	Variables	F	(%)
Gender			**Marital Status**		
Male	23	37.7	Single	17	27.9
Female	37	60.7	In a relationship not living together	5	8.2
Prefer not to answer	2	1.6	Living with a partner	10	16.4
Age			Married without children	10	16.4
18 to 24-year-old	8	13.1	Married with children	17	27.9
25 to 34-year-old	25	41.0	Divorced	1	2.6
35 to 44-year-old	18	29.5	Prefer not to answer	1	1
45 to 54-year-old	7	11.5	**Level of Education**		
55 to 64-year-old	2	3.3	High school GED	5	8.2
Prefer not to answer	1	1.6	Some college	11	18
			2year College Degree	9	14.8
			4year College Degree	25	16.4
			Master's Degree	10	1.6

*N=61

Reliability of the Scale

Cronbach's coefficient alpha, which measures the reliability of a set of questions in a survey instrument (Grau, 2007), is the most commonly used measurement of internal consistency (Pallant, 2013). Cronbach's alpha has been widely used in many studies, and the instrument is considered to be very reliable based on the use of alpha by researchers in all social sciences (DeVellis 2012). Pallant (2013) concludes that if the value of Cronbach's alpha is above 0.7, it could be considered as acceptable, and also if values are above 0.8, it could be preferable. The overall value of Cronbach's alpha is calculated by using SPSS Statistics, and it is 0.941.

Data Analysis Method

The purpose of the pilot study is to prove accurate the levels of the number of online reviews, validate the data, and eliminate any unnecessary or unreliable scores in the collected data. For example, for respondents who failed the qualifying questions, their responses are deleted from the final data. The level of the number of online reviews is considered to be accurate and is therefore accepted for the main study. The respondents are asked to clarify if the conjoint combinations look realistic or not. Most of the respondents (91.8%) state that the combinations looked realistic. Similarly, the suggestions and comments are mostly considered to check these items. Based on the results of the pilot study, the restaurant attributes with levels are considered as realistic and each item used with same levels in the further analysis. In order to address the most important restaurant attributes, the ranking question ask the respondents to state their preferences from the most important (1) to the least important (6). The respondent's most preferred choice is food quality (M=2.54, SD= 1.946) and their least preferred choice is the atmosphere (M=4.18, SD=1.455).

Final Data Collection

A sample size of 445 respondents is collected for the final dataset using the MTurk platform. Out of 445 respondents, 92 people failed the attention questions and are excluded from the analysis. A total of 353 respondents are used for answering the research questions. Final data is analyzed both using Question-Pro and the Statistical Package for Social Science (SPSS) Version 20.0 program. In this study, six questions are asked about respondents' demographic characteristics, such as gender, age, marital status, annual income, the level of education, and employment. From the 353 final respondents, 267 respondents prefer to eat dinner, 71 respondents

prefer to eat lunch, and 14 respondents prefer to eat breakfast at a restaurant. The survey is presented to a US resident who has been at a restaurant and also who checks online reviews for restaurant selection.

Demographic Characteristics

Respondents are asked about their gender, age, marital status, approximate annual income, level of education, and their current employment status. The majority of the respondents are female whose sample consists of 63.45% or 224 respondents, while the rest of the respondents are male, which consists of 36% or 127 respondents, and 0.57% of respondents' genders are unknown. In terms of age range, those between 24 to 34 years old are the highest proportion among 352 respondents, consisting about 40.8% or 144 respondents, followed by the age range between 35 to 44 years old consisting of 20.1% or 71 respondents. The results reveal that 35.4% or 125 of respondents are married. This is followed by the respondents who are single, which account for 30.9% or 109 of respondents. The rest of the marital status categories have been distributed inconsistently; the respondents that are in a relationship not living together (11.9% or 42), living with a partner (13.6% or 48), divorced (6.5% or 23) and widowed (1.7% or 6). Similarly, the pilot test also determines educational results, with a majority that either attended or graduated from college (75.9% or 268), followed by High school GED (2.9% or 28), graduate school (12.2% or 43) and professional degree JD, MD (4% or 14). The respondents' household incomes are between $25,000-$39,000 (21.2% or 75), followed by $40,000-$54,999 (19.5% or 69). A majority of the respondents are employed (62.3% or 220), followed by self-employed (13% or 46). All the demographic characteristics of the sample are presented in Table 3.

Table 3. *Demographic Characteristics*

Variables	F	(%)	Variables	F	(%)
Gender			**Marital status**		
Male	127	35.98	Single	109	30.9
Female	224	63.45	In a relationship not living together	42	11.9
Prefer not to answer	2	0.57	Living with a partner	48	13.6
Age			Married without children	34	9.6
18 to 24-year-old	52	14.7	Married with children	91	25.8
25 to 34-year-old	144	40.8	Divorced	23	6.5
35 to 44-year-old	71	20.1	Widowed	6	1.7
45 to 54-year-old	46	13.0			
55 to 64-year-old	30	8.5			
65 years and older	10	2.8			
Annual household income			**Current employment status**		
Under $25,000	50	14.2	Employed for wages	220	62.3
$25,000 - $39,999	75	21.2	Self-employed	46	13.0
$40,000 - $54,999	69	19.5	Out of work and looking for work	13	3.7
$55,000 - $69,999	53	15.0	Out of work but not currently looking for work	3	0.8
$70,000 - $84,999	40	11.3	A homemaker	23	6.5
$85,000 - $99,999	24	6.8	A student	27	7.6
Over $100,000	36	10.2	Military	2	0.6
Prefer not to answer	6	1.7	Retired	15	4.2
			Unable to work	4	1.1
Level of education					
High school GED	28	7.9			
Some college	83	23.5			
2-year College Degree	47	13.3			
4-year College Degree	138	39.1			
Master's Degree	39	11.0			
Doctoral Degree	4	1.1			
Professional Degree JD, MD	14	4.0			

*N=363

Descriptive Statistics

Table 4 shows the descriptive statistics of food quality, service quality, atmosphere, price, the number of online reviews, and overall restaurant rating. Respondents are asked to rank each restaurant attributes based on their decision about selecting a restaurant from 1=the most important to 6=the least important. The mean values of the six attributes are calculated and presented in Table 4. The number of online reviews has the highest mean of 4.65, which indicates that it is selected as the least important. Subsequently, it is followed by the atmosphere and overall restaurant rating, which are 4.18 and 4.05 respectively. Table 4 indicates that food quality (M=1.85, SD=1.518) has the lowest mean at 1.85, therefore, it is ranked as the most important factor in restaurant selection.

Table 4. *Ranking of the Most Important Attributes When Select a Restaurant*

Variables	Mean	SD	F	(%)
Food Quality	1.85	1.518	233	66.0
Price	3.12	1.352	11	3.1
Service Quality	3.16	1.168	52	14.7
Overall Restaurant Rating	4.05	1.646	27	7.6
Atmosphere	4.18	1.340	20	5.7
The Number of Online Reviews	4.65	1.567	10	2.8

* N=363

The mean values of importance for all 18 restaurant attributes are calculated and displayed in Table 5. SPSS is used to display the overall mean values for the importance of restaurant attributes. The measurement scale includes eighteen questions, and respondents are asked to rate on a 7-point Likert-scale ranging from 1=Very unimportant to 7=Very important. As it is shown in the table, the taste of the food (M=6.68, SD=0.840) is rated as the most important. The rest of mean values of the restaurant attributes is shown in Table 5.

Table 5. *The Mean Values of Importance*

Variables	Mean	SD	Variables	Mean	SD
Taste of the food	6.68	.840	Level of comfort in the dining	5.76	1.116
Overall quality of food	6.67	.860	Attentive staff	5.66	1.140
Freshness of the food	6.38	1.007	Dining area environment	5.56	1.221
Cleanliness of facilities	6.32	1.038	Eye appeal of the food	5.35	1.361
Good value for the price	6.27	.966	Convenient location	5.35	1.319
Reasonable price	6.27	.986	Staff's professional knowledge	5.25	1.318
Reliable service	6.08	.959	Staff appearance	4.76	1.482
Appropriate amount of food	5.94	1.115	Please select neutral	4.00	.000
Overall value of the dining experience	5.93	1.045	Short walking distance	3.51	1.915
Staff's service attitude	5.89	1.146			

*N=363

Scale Measurement

Reliability Test

It is necessary to perform reliability analysis, and Cronbach's alpha is used to examine the reliability of the total 18 items as it is used for the pilot test previously. Final data is analyzed using SPSS software. Based on the recommendation of Pullant (2013), the reliability of all variables could be considered acceptable if the alpha is 0.7 or above. The overall reliability score is calculated by using SPSS Statistics, and it is 0.898.

Respondents' Restaurant Preferences

In terms of the frequency of visits to a restaurant, a 34.3% or 121 of respondents dine at a restaurant every week, followed by every month 21% or 24, and every two weeks 20.7% or 73. In

addition, respondents are asked to verify the last time they dined at a restaurant. Similarly, most

of the respondents (37.4% or 132) dine at a restaurant within a week, followed closely by 33.1%

or 117 who dine at a restaurant within the past days. The majority of respondents (91.3% or 322)

dine at a restaurant more than once a month. The largest number of respondents (75.6% or 282)

are those who dine at a restaurant for dinner, followed by those who dine for lunch (20.1% or 71).

The lowest number of respondents (4.0% or 14) dine at a restaurant for breakfast. All the results

are displayed in Table 6.

Table 6. *Frequency of Dining Out, Last dining out, Preferred Meal Time*

Variables	F	(%)	Variables	F	(%)
Frequency of dining out			**Last dining out**		
Multiple times a week	54	15.3	Within the past days	117	33.1
Every week	121	34.3	Within a week	132	37.4
Every two weeks	73	20.7	Within a month	81	22.9
Every month	74	21	Within three months	13	3.7
Every three months	18	5.1	Within six months	6	1.7
Every six months	7	2	Within a year	3	0.8
Less often than every six months	4	1.1	More than a year ago	1	0.3
Other	2	0.6	**Preferred meal time**		
			Breakfast	14	4
			Lunch	71	20.1
			Dinner	267	75.6
			Other	1	0.3

N=363

Table 7 indicates that out of 353 respondents, the majority (62%) of the respondents report

online reviews that influenced their restaurant selection for dining out, followed by word-of-mouth

(17.8%), Google search and reviews (14.4%), restaurant websites (3.7%), radio advertisements

(2%), and television advertisements (1.1%).

Table 7. *The social media choice, Frequency of Checking Online Reviews, and Trustworthiness Other's Online Reviews*

Variables	F	(%)
The modes of social media which influence restaurant selection		
Online Reviews (Yelp, TripAdvisor, Zagat)	219	62
Restaurant's Websites	13	3.7
Google Search, Google Reviews	51	14.4
Word-of-mouth	63	17.8
Television adverts shows	4	1.1
Radio adverts	7	2
Frequency of checking online reviews before dining		
Sometimes	81	22.9
About half of the time	76	21.5
Most of the time	148	41.9
Always	48	13.6
Trustworthiness other's online reviews		
Strongly disagree	1	3
Somewhat disagree	16	4.5
Neither agree or disagree	41	11.6
Somewhat agree	250	70.7
Strongly agree	45	12.7

*N=363

The results indicate that 41.9% of respondents check online reviews before dining out most of the time, followed by the respondents who sometimes check online reviews (22.9%), the respondents who check online reviews about half of time (21.5%), and then followed by the respondents who always check online reviews (13.6%) before dining at a restaurant.

For this study, the respondents are asked to rate whether the other's online reviews are trustworthy on a 5-point Likert scale, with 1 representing 'strongly disagree' and 5 representing 'strongly agree'. The majority of the respondents (83.4%) either strongly agree (12.7%) or somewhat agree (70.7%) to trust the other's online reviews.

Conjoint Analysis Results

This study utilizes a CBC analysis to explore the importance of the key attributes in evaluating restaurants from the perspectives of restaurant consumers who frequently use online reviews. CBC has been used by marketing researchers since the early 2000s, and CBC analysis has been determined as an excellent technique to understand how consumers develop their preferences for a product or service (Millar, 2009), as well as serving as an excellent method of directly asking respondents to choose products or services (Orme, 2010). Additionally, CBC is a research method where respondents are shown three to five product or service concepts at the same and are asked which one they would choose (Orme, 2010). The analysis of CBC is explained in the following paragraphs.

In this study, the importance scores for six attributes (food quality, service quality, atmosphere, price, the number of online reviews, and overall restaurant rating) are calculated using conjoint analysis. The Question-Pro produces a score for the relative importance of each attribute. Essentially, the relative importance of each attribute explains which attribute makes a difference in restaurant selection. The importance of attributes can be directly compared with each other. Table 8 shows the importance values for each attribute, and this provides answers to the research question. A higher score represents a greater value of the attribute which is placed on by respondents. Attribute important scores are usually calculated by finding the percentage of the range in utilities across all of the attributes (Orme, 2010), and the relative importance scores across all attributes will total up to 100 percent (Hair et al., 2010). The attribute importance is directly connected with the attribute level ranges (Orme, 2010), and the importance of attribute is determined by the part-worth scores. As it is shown in Table 9, food quality has a part-worth score

which is equal to 1.09, and this indicates that food quality is the most desirable aspect. The results of the conjoint analysis show that food quality is considered the most important factor in restaurant selection, with a score of 34.42. Similarly, overall restaurant rating (21.62%), price (15.25%), service quality (15.09%) are identified as important attributes to respondents. Conversely, the total number of online reviews (6.92%), and atmosphere (6.69%) both score comparatively lower than other attributes. Based on the findings, it seems that food quality, overall restaurant rating, and price are relatively more important than service quality, the total number of online reviews, and atmosphere.

Table 8. *Relative Attribute Importance Scores*

Attributes	Importance (%)	Rank
Food quality	34.42	1
Overall restaurant rating	21.62	2
Price	15.25	3
Service quality	15.09	4
The number of online reviews	6.92	5
Atmosphere	6.69	6

N=363

In general, conjoint analysis allows consumers to evaluate the value of products or services based on the importance of attributes, and the sum of these values represent the consumers' overall preference of a product or service. "Utility" represents the total worth or overall preference of an object and can be thought of as the sum of what the product parts are worth (Hair, Black, Babin, & Anderson, 2010). Because each attribute level displays exactly once with every other level, it is recommended to compute the utility scores for each level, which is also known as part-worths. Additionally, it is assumed that products or services with higher utility values are more preferred and have a higher opportunity of choice. Because of this, the part-worth scores are extremely useful

for determining which levels are preferred, and the relative importance of each attributes (Orme, 2010). Hair et al., (2010) states that the part-worths might have been both negative and positive values, and many different software programs convert the part-worth scores to some common scale, such as minimum of zero to a maximum of 100 points. In this study, the part-worth for each level of attributes, and relative importance of restaurant attributes, are presented in the following paragraphs.

The CBC analysis used here is built in Question-Pro, and it calculates the utility scores (or part-worths) for each attribute with its levels. The research question can be addressed based on these part-worths values. The research question asks which restaurant attributes would be the most important for restaurant consumers. Each restaurant attribute has 5 levels, except for price, thus each of these attributes has resulting part-worth scores. The part-worth scores are presented in Table 9. The attribute level with the greatest positive part-worth score is perceived the most important by all the respondents that are displayed. The part-worth score depends on the level of each attribute. The results display that food quality has the highest part-worth score (1.09), and the highest relative score as well (34.42%). Consequently, it is determined the most important attribute in restaurant selection. It shows that food quality is more desirable than other attributes. Based on the findings, the remaining restaurant attributes are perceived less important followed by overall restaurant rating (part-worth is equal to 0.6), price (part-worth is equal to 0.52), service quality (part-worth is equal to 0.45), and the number of online reviews (part-worth is equal to 0.23). Based on these results, the score for price decreases from 0.48 to -0.72 when the price increases. It seems that the conjoint analysis is able to identify that the respondents have rather acute price sensitivity in restaurant selection. The conjoint results indicate that most of the respondents are willing to

select a restaurant that costs on average $11-$30. However, the rest of the respondents typically

do not prefer to dine at a restaurant that cost above $30.

Table 9. *Part-Worths Utilities*

Attributes Levels	Part-Worths	Part-Worths	Part-Worths	Part-Worths	Part-Worths
Food quality	Poor: -1.71	Fair: -0.56	Good: 0.39	Very good: 0.79	Excellent: 1.09
Service quality	Poor: -0.78	Fair: -0.38	Good: 0.28	Very good: 0.42	Excellent: 0.45
Atmosphere	Poor: -0.33	Fair: -0.14	Good: 0.14	Very good: 0.22	Excellent: 0.11
Overall restaurant rating	Poor: -1.16	Fair: -0.20	Good: 0.40	Very good: 0.36	Excellent: 0.60
The number of online reviews	4: -0.33	24: -0.03	107: -0.05	256: 0.18	547: 0.23
Price	$ (Under $10): 0.48	$$ ($11-$30): 0.52	$$$ ($31-$60): -0.28	$$$=above $61: -0.72	

Conjoint Reliability and Validity

The questionnaire used for this study is built in the software Question-Pro, and it is

distributed to the respondents as various scenarios. Respondents make their choices from these

scenarios. Bhaskaran (2005) states that these scenarios are simulations and as per Zhu (2007), it is

challenging to assess the reliability of CBC analysis based on the simulation data. Considering

these arguments, the reliability of CBC cannot be evaluated for the current study. CBC analysis

asks the respondent to choose a product/service from a set of alternatives profiles as a choice set

which contains the inherent face validity (Hair et al., 2010). In order to check the validity of the

study, the choice sets are tested in the pilot test with 61 respondents before they are used for the

main study. The choice sets are observed by the respondents in order to examine clarity, as well as to ensure the respondents understand what is being asked. The reality check question is asked to the respondents to identify the validity of choice sets.

Best and Worst Profiles

In this study, the respondents are asked to select a restaurant they would be mostly likely to dine at within each choice set. In general, CBC allow respondents to choose a full profile from a set of an alternative profile, known as a "choice set". This method is much more representative of the actual selection process of a product from a set of competing products (Hair et al., 2010). Furthermore, Orme, (2010) concludes that CBC shows the choice sets of products in full-profile, and it facilitates the respondents to choose a product/service. Furthermore, this study adopts a full-profile model to understand the actual process of selecting a restaurant. This method offers the respondents two restaurant choices as well as an option for "none of them". The full-profile model includes each attribute with levels, and a set of choices are presented to the respondents once at a time. Question-Pro is also used to capture the best profile and the worst profile based on the method known as "full-profile method". The results display both profiles in Table 10. As shown in Table 10, the majority of the respondents select a restaurant which offered excellent food and service quality, very good atmosphere, excellent overall restaurant rating, 547 online reviews, and price range of $11-30$. Additionally, the worst restaurant option has poor overall quality (food, service), atmosphere, overall rating, only 4 online reviews, and a high price range (above $61).

Table 10. *The Best and Worst Profile*

Variables	Best Profile	Worst Profile
Food quality	Excellent	Poor
Service quality	Excellent	Poor
Atmosphere	Very good	Poor
Price	$$= $11-$30	$$$$= above $61
The number of online reviews	547	4
Overall restaurant rating	Excellent	Poor

Market Simulations

In the study, key attributes are used to examine the impact of different levels on the market share. The market share simulations are performed using Question-Pro, and are presented in Table 11 and Table 12.

Table 11. *Market Simulation for Food Quality*

Service Quality	Atmosphere	Price	Number of Online Reviews	Overall Rating	Food Quality Concept 1	Food Quality Concept 2	Market Share Concept 1	Market Share Concept 2	Difference in Market
Excellent	Excellent	Very good	547	$31-$60	Excellent	Poor	79.44%	20.56%	58.88%
					Excellent	Fair	70.24%	29.76%	40.48
					Excellent	Good	58.49%	41.51%	16.98
					Excellent	Very Good	54.16%	45.84%	8.32

The study also uses the market share simulations for different level of food quality which are displayed in Table 11. While service quality (excellent), atmosphere (very good), price ($31-60), and number of reviews (547) are kept constant, the decrease of food quality (from excellent

to poor) influences the market share by a remarkable 58.88%, and it is followed by the decrease of level (from excellent to fair) that influences the market share by 40.48%, the decrease of level (from excellent to good) influences the market share by 16.98%, and the decrease of level (from excellent to very good) influences the market share by 8.32%.

Table 12. *Market Simulations for Overall Restaurant Rating*

Food Quality	Service Quality	Atmosphere	Price	Number of Online Reviews	Overall Rating Score of Concept 1	Overall Rating Score of Concept 2	Market Share Concept 1	Market Share Concept 2	Difference in Market
Excellent	Excellent	Very good	$31-$60	547	Excellent	Poor	66.44%	33.56%	32.88%
					Excellent	Fair	60.24%	39.76%	20.48%
					Excellent	Good	53.72%	46.28%	7.44%
					Excellent	Very Good	54.35%	45.65%	8.7%%

The result of the market share simulations demonstrates that when overall rating decrease from excellent to poor, while food quality (excellent), service quality (excellent), atmosphere (very good), price ($31-60), and number of reviews (547) are kept constant, the market share decreases by 32.88%. In the other case, while each attribute is kept constant, the changes of overall rating from excellent to fair influences the market share by 20.48%, and it is followed by the decrease of level from excellent to good affecting the market share by 7.44%, while the decrease of level (from excellent to very good) influences the market share by 8.7%.

The largest decrease (58.88%) is determined in the market share simulation when food quality decreases from excellent to poor, while service quality, atmosphere, price, the number of

online reviews, and overall rating are kept constant at a fixed level. As Table 11 and Table 12 show, all of the market simulations indicate the great changes in market share among different choices sets.

CHAPTER FIVE: CONCLUSION and DISCUSSION

Conclusion

Restaurant consumers are increasingly using and relying on online reviews to make their dining choices. Also, restaurant attributes that influenced consumers' restaurant selection have been studied greatly by many researchers (Chen et al., 2015; Danaher, 1997; Harrington et al., 2011; Kim et al., 2009; Koo et al., 1999; Ponnam et al., 2014; Sulek & Hensley, 2004). Previous studies has examined the different attributes that influenced restaurant selection, such as food quality, (Clemes et al., 2010; Jung et al., 2015; Namkung et al., 2007;), the number of reviews, (Gan et al., 2016; Lee, 2016; Luca et al., 2016; Lu et al., 2013), and the overall restaurant rating (Gan et al., 2016; Ha et al., 2016; Jurafsky et al., 2014). The objective of this study is to examine the most important attributes in restaurant selection by consumers. Most of the previous studies on this topic has examined the importance of the frequent restaurant attributes (e.g., food quality, service quality, atmosphere, price), and the importance of the number of reviews and overall restaurant rating. Additionally, the current study is intended to fill a gap in terms of the connection between restaurant attributes and online reviews.

The current study intends to explore the most important attributes of selecting a restaurant, and conjoint analysis is performed to help achieve this goal. The results of conjoint analyses reports the importance of each attributes score, and the impact of level changes for each attribute on the market share. Additionally, the respondents are asked to rank the restaurant attributes from one to six that would be considered by consumers in restaurant selection.

The findings of the ranking questions demonstrate that the food quality is ranked as the single most important attribute in restaurant selection. Through the conjoint analysis, food quality is reported to be the most important factor that influences consumer restaurant selection, with an important score of 34.42%. Additionally, the findings of market simulations reports that food quality has the greatest impact on the market share. For instance, when the food quality decreases from excellent to fair, it influenced the market share by a startling 58.88%.

The previous studies concluded that price has a significant impact on consumer restaurant selection (Jung et al., 2015, Kim et al., 2006; Kwun & Oh, 2004; Yuksel & Yuksel, 2003). In fact, this study indicates that price is ranked as the second important factor that influences consumer restaurant selection. However, based on the conjoint analysis, the price is reported as the third important factor in consumer restaurant selection, with a score of 15.25%. It seems that price is ranked as the second important when it is asked the respondents to rank options, however, the price is perceived less important when they selected a restaurant out of two options.

Service quality is ranked as the third most important factor that influences consumer restaurant selection. In fact, the conjoint analysis indicates that service quality is perceived as being less important than price and overall restaurant rating, with a score of 15.09%. The results indicate that service quality is an important concern to consumers just as much as price and food quality. In contrast, it is found to not be all too important to consumers when they select a restaurant from a variety of available choices when compared to other attributes, such as price.

The overall restaurant rating is examined as an important indication of building consumer trust (Tran, 2015), and it is influenced by restaurant consumers' overall opinions regarding food, service, ambiance and price (Gan et al., 2016). Consequently, overall restaurant rating is ranked as the fourth most important attributes by respondents. Nevertheless, overall restaurant rating is

reported as the second most important attribute in regard to conjoint analysis, with a noticeable score of 21.62%. Likewise, in relation to market simulations, overall restaurant rating has a large impact on the market share (32.88%).

In regard to the atmosphere studies, it has been examined that the effect of the atmosphere in a restaurant is an important factor that motivates consumers to select a restaurant (Kim, 1996; Namkung & Jang, 2007; Sulek & Hensley, 2004). However, the current study indicates that atmosphere is ranked as the least most important attributes out of six. Similarly, the atmosphere is reported to be an insignificant attribute based on the conjoint analysis, with a score of 6.69%.

Overall, the number of online reviews has been examined by several researchers (Luca et al., 2016; Lu et al., 2013; Gan et al., 2016; Yim et al., 2014) in relation to consumer restaurant selection. Restaurant consumers mostly select a restaurant which has a large number of online reviews (Luca et al., 2016), and the number of online reviews have become a significant influence for restaurant consumers in their decision-making process (Yim et. al., 2014). Despite this, the current study discovers that the number of online reviews is an unimportant restaurant attribute. For instance, it is ranked as the fifth attribute out of six. This study determines there is less impact of the number of online reviews on consumer restaurant selection.

Discussion

In this study, online reviews (the number of online reviews, and overall restaurant rating) are examined with the restaurant attributes simultaneously in terms of their importance on consumer restaurant selection. In addition, the current study attempts to fill the gap in regard to the connection between online reviews and significant restaurant attributes. The current study determines that the overall restaurant rating has a larger influence on restaurant consumer choice

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than the number online reviews. Consistent with the results of other studies (Lu et al., 2013; Luca & Zervas, 2016; Yim et al., 2014; Zhang et al., 2010), the restaurant overall rating has a large impact on consumer restaurant selection. Whereas, the existing literature related to the number of online reviews (Gan et al., 2016; Luca et al., 2016; Lu et al., 2013; Yim et al., 2014; Zhang et al., 2010; Zhang et al., 2014). stated that it is very important in consumer restaurant selection, the current study demonstrates that the number of online reviews is less effective in terms of restaurant attributes. In addition, restaurant consumers are found to be more concerned about overall rating rather than both the number of online reviews and other restaurant attributes.

The study uses CBC methods to address the research question that is "What attributes are the most important in restaurant selection?". The most important implication of this study is that CBC methods report the importance score of each attribute, as well as utility score of each level. These findings lead to the discussion that which attributes mostly influence the respondents' restaurant preferences may be readily examined and obtained via conjoint analysis. Similar to other studies (Chaves et al., 2014; Pantelidis, 2010), food quality is determined to be the most important attributes in regard to the findings of CBC methods. The atmosphere is found to be a minor attribute in consumer restaurant selection unless it is indicated as an important factor that influences consumer restaurant selection in the previous studies (Kim, 1996; Namkung & Jang, 2007; Sulek & Hensley, 2004). Unlike other studies where price is found as a significant attribute in restaurant selection (Jung et al., 2015; Kwun & Oh, 2004), the current study reports that price is a less important attribute in consumer restaurant selection. Lastly, service quality is determined as the most important attributes after overall restaurant rating and food quality.

Implications

This research attempts to fill the gap in terms of linkage between online reviews and restaurant attributes that are perceived as important factors when selecting a restaurant. The results of the study indicate that food quality and overall restaurant rating of the restaurant have the greatest impact on consumer's restaurant selection. Thus, the current study contributes greatly towards the importance of food quality and perceived ratings for overall quality in the restaurant industry. For instance, restaurant management may start tracking the overall restaurant rating on online platforms to inquire about opinions and feelings from respondents based on their dining experience. Therefore, it presents an opportunity to restaurant management to develop strategies to improve the overall dining experience, and to become prosperous in the restaurant industry. Particularly, restaurant management should have increased utilization of online rating platforms within the industry to increase the number of consumers, which would in turn result in higher restaurant revenues. Research of previous studies indicates that as the overall rating increases, the number of consumers (Tina, 2016), and restaurant revenues overall increase (Luca & Zervas, 2016). Implementation of rating systems has been examined by Pantelidis, (2010) who suggests that restaurant management should use a star rating system to track overall ratings over the long-term. Gan et al. (2014) indicates that overall ratings are also influenced by food quality, service quality and ambience. Similarly, the restaurant management should maintain or increase food quality to increase the overall rating in restaurant reviews. Overall, restaurant management should prioritize key attributes such as: food quality, and overall restaurant rating, to create a favorable reputation in the market.

Limitations and Future Research

The study has identified four main aspects that limit the results. The greatest hindering limitation of the study is the type of restaurant in analyses. The author does not focus on a specific type of restaurant in the experiments' design. For this reason, the results are generalized to encompass all type of restaurants, such as full-service restaurants or even fast food restaurants. For example, the impact of taste of the food is found as a significant factor that influenced the consumers' preferences in the fast food restaurant demographic (Chen & Then, 2015). In contrast, the fine dining restaurant consumers considers the price/ value (e.g., value of food, value of experience, drinks or services) when they select a restaurant (Harrington et al., 2011). Additionally, the responsiveness, gourmet taste, and food presentation are ranked as significant factors that influence the consumer's preference within the casual dining restaurant demographic. Findings from respondents' comments indicate that restaurant location is requested, however, this is considered as lack of information from the study. Respondents' state that this might affect their restaurant selection. The current study present the different combinations of food quality, service quality, atmosphere, price, number of reviews, and overall restaurant rating to the respondents, and the author is unable to control the scenarios. Respondent comments identify that several scenarios presented and these are considered unrealistic. Additionally, the study does not evaluate the reliability based on the researcher's conclusion on the previous study (Zhu, 2007).

Lastly, future studies may reattempt this experiment with the additional factor of restaurant type to gain better understanding of the greatest attribute that influence consumers. Therefore, the researchers might have verified the location of restaurant to verify the environment in consumer restaurant selection. In addition, the researchers may use different software such as Sawtooth. That

software also allows the researcher to provide holdout question to evaluate the reliability. Also, future studies may apply internal and external validity to check validity of CBC analysis.

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APPENDIX 1: QUESTIONNAIRE

Restaurant Preferences

1) Do you check online reviews by other diners before dine at a restaurant?

    Yes   (Next)

    No   (End of survey)

2) When was the last time you dined at a restaurant?

    Last Week

    Last Month

    Three Months ago

    Six Months ago

    One year ago

    More than one year ago

    I haven't been at a restaurant [Validity Check Question]

3) How often do you go to full-service restaurant?

    Multiple times a week

    Every week

    Every two weeks

    Every month

    Every three months

    Every six months

    Less often than every six months

4) Which meal do you eat most often at a restaurant?

> Breakfast
>
> Lunch
>
> Dinner
>
> Other (Allow Text Entry)

5) Which of the following modes of media would most influence your restaurant selection for dining out?

> Online Reviews (i.e. Yelp, Zagat, UrbanSpoon, City, Tripadvisor)
>
> Restaurant's website
>
> Google Search
>
> Word-of-mouth
>
> Television adverts/ shows
>
> Radio adverts
>
> Newspaper reviews/ food critic

6) How often do you check online reviews by other diners before dining at a restaurant? (End Of survey)

> Never (Validity Check Question)
>
> Sometimes
>
> About half of the time
>
> Most of the time
>
> Always

7) I trust other diners' reviews about restaurants

> Strongly disagree
>
> Somewhat disagree
>
> Neither agree or disagree
>
> Somewhat agree
>
> Strongly agree

8) Please rank the following factors based on their importance for your decision about selecting a restaurant. Please rank the most important factor as 1, and the least important factor as 6.

   Food quality

   Service quality,

   Atmosphere,

   Service Quality,

   The number of online reviews,

   Overall Restaurant Rating

9) Please indicate the degree of important in your response to each question. (1= Very unimportant from 7= Very important).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Overall quality of food							
Taste of the food							
Eye appeal of the food							
Freshness of the food							
Staff appearance							
Attentive staff							
Staff's service attitude							
Staff's professional knowledge							
Reliable service							
Good value for the price							
Appropriate amount of food							
Reasonable price							
Overall value of the dining experience							
Cleanliness of facilities							
Dining area environment							
Level of comfort in the dining							
Convenient location							
Short walking distance							

*1=Very Unimportant, 2=Moderately Unimportant, 3=Slightly Unimportant, 4=Neutral, 5=Slightly Important, 6=Moderately Important, 7=Very Important

Conjoint Block

10) Attributes, Levels, and References

Attributes	Levels	Reference
Food Quality (Shown as ⭐)	⭐ (Poor)	Gupta et al., (2010)
	⭐ (Fair)	
	⭐ (Good)	
	⭐ (Very good)	
	⭐ (Excellent)	
Service Quality (Shown as ⭐)	⭐ (Poor)	Gupta et al., (2010)
	⭐ (Fair)	
	⭐ (Good)	
	⭐ (Very good)	
	⭐ (Excellent)	
Atmosphere (Shown as ⭐)	⭐ (Poor)	Gupta et al., (2010)
	⭐ (Fair)	
	⭐ (Good)	
	⭐ (Very good)	
	⭐ (Excellent)	
Price Range (Shown as "$")	$= under $10	Park et al. (2016)
	$$= $11-$30	
	$$$= $31-$60	
	$$$$= above $61	
Number of Online Reviews	4	Ciftci et al. (2017)
	24	
	107	
	256	
	547	
	⭐ (Poor)	Gupta et al., (2010)
	⭐ (Fair)	

Overall Restaurant Rating (Yelp.com) (Shown as ⭐)	⭐⭐⭐ (Good)	
	⭐⭐⭐⭐ (Very good)	
	⭐⭐⭐⭐⭐ (Excellent)	

Demographic Information

11) Gender

12) What is your age?

13) What is your marital status?

14) What is your household income range?

15) What is the highest degree or level of education you have completed?

16) Which occupational category best describes your employment?

17) Comment/Suggestions:

APPENDIX 2: IRB APPROVAL LETTER

January 24, 2017

Nefike Gunden
USF Sarasota/Manatee - College of Hospitality and Tourism Leadership
8350 N Tamiami Trail
Sarasota, FL 34243

RE: **Exempt Certification**
IRB#:   Pro00029221
Title: How online reviews influence consumer restaurant selection

Dear Nefike Gunden:

On 1/23/2017, the Institutional Review Board (IRB) determined that your research meets criteria for exemption from the federal regulations as outlined by 45CFR46.101(b):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

As the principal investigator for this study, it is your responsibility to ensure that this research is conducted as outlined in your application and consistent with the ethical principles outlined in the Belmont Report and with USF HRPP policies and procedures.

Please note, as per USF HRPP Policy, once the Exempt determination is made, the application is closed in ARC. Any proposed or anticipated changes to the study design that was previously declared exempt from IRB review must be submitted to the IRB as a new study prior to initiation of the change. However, administrative changes, including changes in research personnel, do not warrant an amendment or new application.

Given the determination of exemption, this application is being closed in ARC. This does not limit your ability to conduct your research project. We appreciate your dedication to the ethical

conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

John Schinka, Ph.D., Chairperson
USF Institutional Review Board