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How were perceived quality, satisfaction, and loyalty affected by sensory in F&B?

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Abstract: The food and beverage (F&B) industry encompasses businesses engaged in the creation, preparation, distribution, and sale of food and drinks. In this industry, customer satisfaction relies not only on the product but also on the service delivery process, directly influencing the customer's sensory experience. This research investigates how the five senses impact perceived quality, customer satisfaction, and loyalty in the context of the COVID-19 pandemic within F&B establishments. Surveying 646 clients across 30 F&B stores in Vietnam, the study reveals that consumers' visual, auditory, olfactory, gustatory, and tactile senses significantly influence perceived quality and satisfaction. Furthermore, these two factors positively correlate with customer loyalty. The study also highlights age and gender as contributing factors to the variations in the relationships between consumers' senses and their perception of service quality at the point of sale.

Keywords: perceived quality; customer satisfaction; loyalty; customer experience; marketing; F&B service.

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1 Introduction

Sensory is defined as the five main human senses including visual, auditory, olfactory, gustatory and tactile. According to Brakus et al. (2009), sensory, along with mood, intelligence and behaviour are the four factors that affect customers' service experience, which stimulates their behaviour and has a positive, significant impact on customer satisfaction and loyalty (Hultén, 2011; Iglesias et al., 2019). Therefore, sensory evaluation is considered to be an effective method to analyse consumers' reactions to the perceived quality of products or services, especially in the Food and Beverage industry, where sensory experience is of paramount importance. Sensory marketing – a change from the traditional marketing model (Satti et al., 2021), is defined as the marketing involving the five senses of customers, that will shape their perceptions, behaviours, and decisions (Krishna, 2012). This strategy activates consumer perception of product-specific factors such as taste, colour, quality, etc. or enhances the customer's perceived quality for the elements of colour, sound, taste, and aroma (Krishna, 2012). Sensory marketing has effects on creating a competitive advantage and positioning a business's unique qualities. Therefore, businesses, especially F&B businesses can make full use of this strategy in attracting new customers while creating customer satisfaction and loyalty through the services they provide. Those five senses affecting perceived product quality were demonstrated by Moreina et al. in 2017 and further developed by Haase et al. (2018) in a study at a coffee house. Lashkova et al. (2020) also point to customer satisfaction built and reinforced on sensory marketing. However, previous studies when measuring variables usually only use the SERVQUAL model (Parasuraman et al., 1988). In addition, these studies only approach the sensory perception of factors such as products and brands, not the entire process of providing direct services, and have not yet made specific recommendations and effective solutions to improve customer loyalty for businesses; the scope of research is mostly limited to one restaurant. Although there have been previous studies demonstrating that the impact from senses to perceived quality differs across age (Kumar and Lim, 2008) and gender (Wang et al., 2017; Ma et al., 2014) but is only measured on the product, not the perceived perception of the product and service combination, especially in the F&B industry. This situation makes

businesses not have the best overview of the impact of the sensory or apply sensory marketing strategies without effectiveness.

The novel coronavirus (COVID-19) altered practically several elements of all industries, especially F&B, in order to protect the public's health and safety. Customers tend to refrain from enjoying a meal outside, but order food online (Marcella et al., 2023). In the 2020–2022 period, several researches related to sensory marketing impact on loyalty have been conducted, but they did not consider the whole five sensory factors (Aljumah et al., 2022) or just investigated only one field (Bui and Nguyen, 2022). It is crucial to note that, in the context of COVID-19, no study on the impact of five-sensory marketing on perceived quality, satisfaction, and consumer loyalty and their linkages has been conducted systematically. An empirical investigation on this topic, especially in developing nations, is urgently required to supplement consumer behaviour theory.

The gaps mentioned above are exactly what this study aims to address, in addition to testing new hypotheses. The research team will consider:

1 the difference in the impact of five senses including visual, auditory, olfactory, gustatory, tactile on perceived quality

2 customer satisfaction

3 the impact of perceived quality and satisfaction on loyalty

4 the effect of age and gender on the relationship between five senses and perceived quality, all under the pandemic context.

Thereby, the study contributes to the theory of consumer behaviour, service experience, and customer perception and offers suggestions and solutions in attracting new customers as well as constructing customer loyalty in F&B businesses, as well as how to deal with sudden crisis such as COVID-19.

2 Theoretical basis and research model

2.1 Theoretical foundations of sensory perception of service quality, customer satisfaction, and loyalty

2.1.1 Sensory perception of service quality

Service quality is crucial for both managers and academic researchers across different service industries to achieve success. Notably, in the food and beverage industry, Ryu and Han (2010) stated that perceived service quality is the main factor that must be measured and improved continuously to attract and keep the customers. Perceived service quality is a difficult factor to define and measure (Brady and Cronin, 2001) because the nature of service is intangible, inseparable, and heterogeneous. Parasuraman et al. (1988) created the SERVQUAL scale to measure perceived service quality based on the difference between expectations and perceptions about five dimensions: reliability, assurance, tangibles, empathy, and responsiveness. However, the limitation of this scale is the ambiguity about the above five structures and the lack of flexibility and efficiency when applied to specific industries (Augustyn and Seakhoa-King, 2005). Therefore, many alternative measures have been developed to measure the perception of service quality. From 1990 to early 2000, the service delivery process, service delivery results,

and physical environment are the factors that govern service quality. Later, sensory marketing flourished, with sensory stimuli such as colour, light (Özkul et al., 2020), music, scent (Spangenberg et al., 2006) increasing positive perceptions and evaluations, promoting consumer behaviour (Krishna, 2012; Helmefalk, 2019; Duong et al., 2022). However, previous studies were only conducted on F&B products but not focus on environmental and human factors affecting the five senses, while other studies only perceived service quality through one of the five senses. Overcoming the above limitations, Yang et al. (2020) have proposed a sensory perception service quality model (SPSERVQUAL), in which visual, auditory, gustatory, tactile, and olfactory perception are the channels to judge service quality intuitively and specifically.

2.1.2 Customer satisfaction

Customer satisfaction is closely related to the business performance of enterprises (Bernhardt et al., 2000), and contributes to increased profits in the long run (Anderson et al., 1994). High satisfaction is both a goal and a powerful marketing tool for customer-centric businesses (Kotler and Keller, 2012). Therefore, satisfaction is highly personal, mainly derived from customers' physiological responses when there is a difference between their perception after experiencing the product or service and their expectations before the experience. To promote satisfaction, businesses can focus on aspects such as increased reliability and responsiveness to customers in all situations. However, the authors approach F&B customer satisfaction from a completely different perspective, derived from the awareness of the physical environment, F&B services, and products at the point of supply through the five human senses. Clearly, with the increasing competition in the F&B industry, factors such as reliability, responsiveness, or taste of food are not enough for restaurants to satisfy customers, they need to provide attractive total sensory experience in spaces containing sensory attributes such as unique restaurant design, airy spaces (Ryu and Jang, 2008), appropriate music, clean (Hoang and Tučková, 2021). Thus, sensory experience is considered as the core factor affecting customer satisfaction in F&B restaurants. However, the level of influence of each sense on each customer is completely different. In fact, F&B businesses mainly rely on the taste of the product to improve customer satisfaction, followed by visual, olfactory, and other sensory stimuli that have not been given much attention. Therefore, the authors will exploit this gap in the research paper.

2.1.3 Loyalty

Newman and Werbel (1973) define customer loyalty as a strong commitment to repurchase or continue to purchase a product or service of a brand in the future, regardless of the impact of the environment or marketing efforts to change the buying behaviour of competitors. In addition, loyalty is a positive response to products and services, a willingness to spend more, and a positive recommendation of others to use products and services. In a nutshell, customer loyalty is reflected in customer attitudes and behaviours. In particular, loyal customers will show a favourable attitude towards products and services when compared to competitors, return to use products and services, refer acquaintances, and be willing to spend more money on those products and services. Loyal customers will not be easily swayed by the availability or price of a product or service. In the F&B sector, loyal customers will return and tell others about a positive

experience at their favourite restaurant, including a sensory experience. A positive sensory experience increases a positive brand image and promotes customer loyalty. Therefore, creating a high-quality experience for customers through impacting the senses is one of the key points to form customer loyalty. So, sensory marketing in restaurants is one of the useful ways to improve customer loyalty through impact on satisfaction because usually satisfied customers will become loyal customers (Carranza et al., 2018).

2.2 Hypotheses and research model

2.2.1 Visual

Visual stimulations have long been used in sensory marketing as building unique brand recognition and bringing memorable consumers' visual experiences, thereby influencing consumers' perception and behaviour regarding products and services (Randhir et al., 2016). When customers perceive visual stimuli positively, they tend to judge product and service quality higher, and simultaneously perceive the time, money, and effort spent to consume products and services worthwhile (Baker et al., 2002). The foods' appearance, the restaurant's interior design, the restaurant's layout design, and convenient facilities enhance the sense of enjoyment, comfort, and satisfaction (Namkung and Jang, 2008). Brands making good use of visual stimuli can create uniqueness and stand out from competitors, thereby, easily grabbing customers' attention. Especially, in highly competitive industries, where customers always seek products and services' differences, it is recognised that aesthetics of space organisation and convenience for special consumption are the key to making a great first impression with customers, to launch or reposition a product or service. Visual stimulations applied for expanded product and service-related aspects over time, namely product, logo, packaging, service space, employee uniform, etc. enhance customers' positive emotions, customer pleasure while promoting their purchase decision. In the context of the COVID-19 pandemic, where there are restrictions on dining and social distancing measures in place, customers have changed their preferences towards takeout and delivery services (Vandenhaute et al., 2022). The importance of visual experiences related to restaurant decor has decreased, but food visuals using high-quality photography and attractive packaging, and showcasing them on social media platforms through appetising images and videos, are being emphasised. Additionally, customer priorities have shifted towards health and safety concerns, which affect their expectations regarding food preparation and cleanliness services (Vandenhaute et al., 2022). Research by Hoang (2023) underscores the importance of restaurant atmosphere and cleanliness in ensuring customers. In conclusion, visual stimuli are one of the factors affecting customers' perceived quality, especially in the F&B industry (Hoang and Tučková, 2021).Therefore, the authors hypothesise that:

H1a (+) Positive visual perception has a positive influence on customers' perceived quality when consuming F&B services at the selling point.

H1b (+) Positive visual perception has a positive influence on customer satisfaction when consuming F&B services at the selling point.

2.2.2 Auditory

Positive auditory experiences have positive effects on customers' emotions and can change customer behaviour, including consumption behaviour (Randhir et al., 2016). In particular, music rhythms suitable for personal preferences can enhance customers' emotions, promote positive perception about the service space, products, services, and increase brand satisfaction (Beverland et al., 2006). An interesting finding is that sound resonates with images and can provide a great service experience for customers. Besides music, the machinery and equipment's noises, and the conversation of customers in the service space, the traffic noise surrounding it can lead to an unfriendly view towards the service provider. In the F&B industry, customer perception of service and brand image is not only influenced by the sound from the space, but also the sound from the product itself. For instance, when eating chicken at KFC, customers tend to judge the quality of chicken pieces to the standard by feeling the brittleness from the sound produced while biting (Beverland et al., 2006). These auditory experiences have strong impacts on customer emotions and then shape customers' perceived service quality and satisfaction. Therefore, one of the effective methods to enhance customers' perceived service quality and satisfaction is to evoke the ideal mood to consume products and services by optimal auditory stimulations (Soars, 2009). However, the effects of auditory stimuli on perceived service quality in the food and beverage industry after the COVID-19 pandemic are still uncertain. Previous studies have found that auditory cues like background music, ambient noise, and staff interactions influence customer satisfaction. However, the pandemic has brought new factors into consideration. Chiang et al. (2022) conducted research that shows that in the current COVID-19 context, where talking during dining is often discouraged, background music can have a positive impact on customers' emotions and behavioural responses during their dining experience. Therefore, the authors hypothesise that:

H2a (+) Positive auditory perception has a positive influence on customers' perceived quality when consuming F&B services at the selling point.

H2b (+) Positive auditory perception has a positive influence on customer satisfaction when consuming F&B services at the selling point.

2.2.3 Olfactory

Olfactory stimulation plays an important role in product and experience marketing. Strong stimulating scent easily captures customers' attention to experience and perception about products and services (Krishna et al., 2010). Moreover, customers tend to be attracted to brands that have a signature scent. It is indicated that scents inconsistent with the product and service personality tend to trigger negative influences on the evaluation of the product and service, even leading to customers' dissatisfaction. Pleasant scents induce a sense of well-being and positive emotions, while unpleasant scents negatively affect consumers' perceptions. Therefore, customers express clearly satisfaction or not during the experience service process (Morrin et al., 2011). The impact of scent on emotions is most evident in the grocery chain. In addition to influencing the perceptual process, scent is an important factor in customer experience (Randhir et al., 2016). Scent stimuli as signs for customers to choose fresh foods and recognise spoiled foods, thereby significantly predicting customers' response and evaluation to the brand.

In addition, the scent has a direct connection with people's memory, thus, can drive customers to return to the store. Therefore, the authors hypothesise that:

H3a (+) Positive olfactory perception has a positive influence on customers' perceived quality when consuming F&B services at the selling point.

H3b (+) Positive olfactory perception has a positive influence on customer satisfaction when consuming F&B services at the selling point.

2.2.4 Tactile

Tactile is the first human sense to develop and the last to lose with age (Hultén, 2020). People tend to gather information and evaluate products through the sense of touch before consuming (McCabe and Nowlis, 2003). It is the initial touch sensations that orientate customers' attitudes and behaviours when shopping (Hornik, 2014). Customers' haptic perception has a specific connection with customer pleasure, and can attract customers' hearts and minds (Peck and Wiggins, 2006; Ranaweera, 2022). Research has shown that touch perception in different situations enhances customers' positive feelings (Hornik, 2014) and drives consumer behaviour. In the F&B industry, customers often evaluate the overall perceived service quality after perceiving the ambient of the restaurant (Haase and Wiedmann, 2018), the sense of comfort contact with eating utensils, and interior equipment at the restaurant (Hoang and Tučková, 2021). In some cases, customers have to rely on tactile properties to recognise the brand; therefore, tactile properties are also to be deemed as a sign of brand identity. In the context of the COVID-19 pandemic, the perception and interaction with tactile elements in the food and beverage industry may be altered, as people now prioritise hygiene and cleanliness, especially of surfaces that they come into contact with, such as menus, utensils, and table settings. Therefore, the authors hypothesise that:

H4a (+) Positive tactile perception has a positive influence on customers' perceived quality when consuming F&B services at the selling point.

H4b (+) Positive tactile perception has a positive influence on customer satisfaction when consuming F&B services at the selling point.

2.2.5 Gustatory

Humans can perceive taste stimuli most clearly through direct contact with the tongue. Taste perception is highly subjective and difficult to interpret because it depends on each person's taste. However, F&B businesses always make an effort to build product marketing strategies through taste, aiming to satisfy the majority of customers. This is because taste has been shown to have the strongest impact on the perceived quality of food and is the determining factor in consumers' perception and attitude towards that food brand (Namkung and Jang, 2007). Specifically, research conducted at Starbucks stores demonstrates that the taste of food and beverages arouses customer positive emotions and customer satisfaction. Therefore, Starbucks customers are always willing to pay a higher price to experience Starbucks' products and services. However, taste stimuli in marketing are most effective when combined with other sensory stimuli, such as eye-catching presentation of food as well as appealing scents (Elder and Krishna, 2010).

In fast-food restaurants, the taste of the dishes determines the retention of customers (Hanaysha, 2016). Therefore, the authors hypothesise that:

H5a (+) Positive gustatory perception has a positive influence on customers' perceived quality when consuming F&B services at the selling point.

H5b (+) Positive gustatory perception has a positive influence on customer satisfaction when consuming F&B services at the selling point.

2.2.6 The impact of perceived quality on customer satisfaction

Perceived quality is an antecedent factor, directly and positively affecting the level of customer satisfaction (Iglesias and Guillén, 2004), thereby significantly predicting fluctuations in their emotions and behaviours (Hume and Mort, 2010). Customers judge positively about service quality, which means that they are satisfied with the service provided, willing to tell others about their positive experience with the service, and have less service provider switching intention. In the F&B industry, food quality, physical environment, and service quality indirectly affect satisfaction through the intermediary factors of perceived quality and restaurant image (Ryu et al., 2012). From the perspective of sensory experience, positive sensory stimuli in restaurants create interesting service consumption experiences, arouse customers' pleasure, and drive a positive evaluation of service quality. Therefore, the authors hypothesise that:

H6 (+) Positive perceived service quality has a positive influence on customer satisfaction when consuming F&B services at the selling point.

2.2.7 The impact of customer satisfaction on customer loyalty

Customer satisfaction has a positive influence on customer loyalty in many different service industries, such as retail banking (Omoregie et al., 2019), high-speed railway service (Dölarslan, 2014), and also F&B services (Abdullah et al., 2023). Research has shown that customers who are satisfied with the business's overall service are more likely to become loyal customers. Customer satisfaction drives customers to re-consume products and services while encouraging others to consume. Therefore, the authors hypothesise that:

H7 (+) Customer satisfaction has a positive influence on customer loyalty when consuming F&B services at the selling point.

2.2.8 The impact of perceived quality on customer loyalty

Perceived quality is to be deemed as the main premise creating customer loyalty to the brand. Research by Ariffin et al. (2016) has shown that customers' perceived quality has a significant impact on customers' re-consumption intention. This statement has been previously confirmed by Wu and Chen (2014). Furthermore, as customers' perceived quality increases, customers are more likely to stay with the service provider, recommend their current provider to others, and have less service provider switching (Souki and Filho, 2008). On the other hand, many studies have indicated that good perceived quality has a positive but indirect effect on customer loyalty, through overall satisfaction as well as customer trust (Giovanis et al., 2015). Therefore, the authors hypothesise that:

H8 (+) Positive perceived service quality has a positive influence on customer loyalty when consuming F&B services at the selling point

2.2.9 Customer age moderates the relationship between sensory perception and perceived service quality

There is a significant difference in the relationship between customers' sensory perception and perceived service quality in different age groups (Kumar and Lim, 2008). The discrepancy in the level of human five-sensory development, and the ability to recognise sensory properties can explain the difference in perceived quality between age groups. Firstly, age has influences on the ability to perceive sensory properties in foods (Drewnowski, 2000). Research has shown that the elderly have a decreasing ability to distinguish smells and tastes of foods (Herne, 1995). Meanwhile, younger customers show a better perception of the presence and relevance of scents (Sandell, 2019). In addition, young people have a sense of interest in the space with lively Western-style music, while the elderly prefer slow-paced music (Hussain, 2018). Younger consumers generally have a more positive perception of visual attributes (store decorations, employee uniform, lighting, layout design, etc.) (Joyce and Lambert, 1996). Secondly, age-dependent changes in health status tend to change consumers' perceptions of food choices (Drewnowski, 2000). The elderly with poor oral health often avoid hard and chewy foods (Quandt et al., 2010). Besides the above reasons, the complicated context of the COVID-19 epidemic also contributes to increasing middle-aged and old customers' anxiety when consuming foods at the selling point. Middle-aged and old customers appreciate better restaurants that are clean and ensure good epidemic prevention, such as preparing disinfectant solutions, building screens between dining tables, or being fully equipped with masks for guests and staff at the store. Therefore, the authors hypothesise that:

H9 Customer age moderates the relationship between sensory perception and perceived service quality.

2.2.10 Gender moderates the relationship between sensory perception and perceived service quality

Gender has a significant impact on the relationship between perception about sensory marketing and customers' emotion and behaviour (Kim et al., 2020). The difference in sensory evaluation between females and males leads to the discrepancy in perceived service quality (Yang et al., 2020). Specifically, female customers will pay more attention to the ambient conditions at the selling point than male customers. For example, women tend to respond more strongly to the full smoke area than men. In addition, visual stimulation will attract female customers' more than male customers. Females have higher expectations for visual aspects such as product appearance, spatial aesthetics, artefacts, and personnel in retail stores (Erasmus and Grabowski, 2013). They prefer spacious layouts, which facilitate the purchasing process, allow them to identify new products and product information (Prendergast and Lam, 2013). Therefore, the authors hypothesise that:

H10 Gender moderates the relationship between sensory perception and perceived service quality.

3 Methodology

3.1 Questionnaire and measurement

The questionnaire and research scale were adapted from Yüksel and Yüksel (2003), Ryu and Jang (2008), Han and Ryu (2009), Chen and Lin (2017), and Hoang and Tučková (2021). The study examines not just the influence of the five senses on items, but also the impact of F&B services as a whole. As a result, in addition to product scales, the team has included service scales such as KFC, Lotteria, Jolibe franchising restaurant layout, décor style, and fragrances from various regions of the restaurant, among other things, allowing the study's scales to be properly examined.

Furthermore, the authors discovered that consumers are also particularly interested in preventing COVID-19 in public spaces after speaking with specialists and certain consumers. As a result, for the perceived service quality variable, the team created the scale 'Safety in the Prevention of COVID-19'. A five-point Likert scale was employed, with 1 representing 'strongly disagree' and 5 representing 'strongly agree'.

3.2 Sample and procedure

F&B items are offered to a wide range of customers and venues. Due to the COVID-19 pandemic and the organisation's limited resources, the group chose 30 eateries at random in Hanoi that were located in green zones (or 'safe zone', areas that have not reported COVID-19 cases within 14 days) and were open at the time of the study. Respondents were instructed to complete the questionnaire within 15 minutes of receiving service at the restaurant. To guarantee that the sample was representative of the community, the team employed a random sampling survey approach and collected samples on all days of the week. A sample size of 400 is adequate based on the sample size rule of exploratory factor analysis (EFA) (Hair et al., 2010) and multivariate regression analysis (Tabachnick and Fidell, 2006) with model and investigative accessibility The team offered each participant a tiny memento to boost the response rate and the dependability of each answer. Following that, the team gathered 646 genuine responses. The gender, age, frequency of service usage and income of survey participants are shown in Table 2.

3.3 Data analysis techniques

The research team used Cronbach's alpha test (Cronbach, 1951) to give the reliability coefficient for the scale and eliminate the bad variables with a small total correlation coefficient. A measure is considered satisfactory when the correlation coefficient of the total variable corrected item – total correlation ≥ 0.3 (Nunnally, J., 1978).

To evaluate the value of the scale, the research team conducted an EFA. This is a statistical method used to explore the underlying structure of a set of variables, thereby determining the convergent and discriminant value of the scale. The evaluation criteria in the EFA analysis include $0.5 \leq$ KMO coefficient (Kaiser-Meyer-Olkin) ≤ 1; Sig. Bartlett's test < 0.05; all factors have Eigenvalue ≥ 1; total variance explained $\geq 50\%$; factor loading > 0.3 (Hair et al., 2010).

Table 1 Measurement scales

Constructs	*Items*	*Label*	*References*
Visual	Lighting creates a comfortable atmosphere	visual_1	Ryu and Jang (2008) Han and Ryu (2009)
	Menu presentation is attractive	visual_2	Yüksel and Yüksel (2003)
	Employees are neat and well dressed	visual_3	Yüksel and Yüksel (2003) Ryu and Jang (2008)
	Layout makes it easy for me to move around	visual_4	Ryu and Jang (2008) Han and Ryu (2009)
	Decor and artefacts are attractive	visual_5	Ryu and Jang (2008) Han and Ryu (2009)
	Packaging is visually attractive	visual_6	Proposed by the authors
	Furniture (e.g., dining table, chair) is of high quality.	visual_7	Ryu and Jang (2008) Han and Ryu (2009)
	Food and drinks are decorated in an attractive manner	visual_8	Hoang and Tučková (2020) Yüksel and Yüksel (2003)
	The restaurant is clean	visual_9	Hoang and Tučková (2020) Yüksel and Yüksel (2003)
Auditory	Background music is pleasing	auditory_1	Han and Ryu (2009)
	I like the style of music played at this restaurant	auditory_2	Chen and Lin (2017)
	The sound when chewing or drinking is pleasant	auditory_3	Proposed by the authors
	Crowd level of restaurant surroundings is appropriate	auditory_4	Yüksel and Yüksel (2003)
	Noise level from cooking area is appropriate	auditory_5	Yüksel and Yüksel (2003)
	Noise level from staffs is appropriate	auditory_6	Yüksel and Yüksel (2003)
Gustatory	Food and drinks have a special gustatory	gustatory_1	Hoang and Tučková (2020)
	Fresh ingredients	gustatory_2	Yüksel and Yüksel (2003)
	Food and drinks suit my gustatory	gustatory_3	Proposed by the authors
	Stability of gustatory	gustatory_4	Yüksel and Yüksel (2003)
	Variety of attractive flavours	gustatory_5	Hoang and Tučková (2020)
Olfactory	The smell of food and drinks is very attractive	olfactory_1	Hoang and Tučková (2020)
	The smell of food and drinks is special and distinctive	olfactory_2	Hoang and Tučková (2020)
	The smell of toilets is pleasant	olfactory_3	Proposed by the authors

Table 1 Measurement scales (continued)

Constructs	*Items*	*Label*	*References*
Olfactory	The smell of cooking area is attractive	olfactory_4	Proposed by the authors
	Unpleasant odours (cigarettes, body odours, …)	olfactory_5	Proposed by the authors
	The smell of the area around the restaurant is pleasant	olfactory_6	Proposed by the authors
Tactile	Temperature is comfortable	tactile_1	Han and Ryu (2009) Chen and Lin (2017)
	High quality utensils	tactile_2	Chen and Lin (2017)
	Safe utensils	tactile_3	Proposed by the authors
	Clean utensils	tactile_4	Yüksel and Yüksel (2003)
Perceived quality	Healthy food and drinks	per_1	Yüksel and Yüksel (2003)
	Appropriate portions	per_2	Yüksel and Yüksel (2003)
	The quality of service at the restaurant is consistent and standardised	per_3	Yüksel and Yüksel (2003)
	The attitude of the staff is polite and attentive	per_4	Yüksel and Yüksel (2003)
	Good sanitation against COVID-19	per_5	Proposed by the authors
	Easy to choose favourite dishes at the restaurant	per_6	Proposed by the authors
	Waiting time to use the service at the restaurant is not annoying	per_7	Yüksel and Yüksel (2003)
Satisfaction	Worth to use the service at this restaurant	satis_1	Han and Ryu (2009)
	Experience food and drinks services in this restaurant meets my expectation	satis_2	Hoang and Tučková (2020)
	Overall feeling I get from this restaurant puts me in a good mood	satis_3	Han and Ryu (2009)
Loyalty	I am willing to spend more than I planned at this restaurant	loyalty_1	Han and Ryu (2009) Chen and Lin (2017)
	I would recommend this restaurant to others	loyalty_2	Han and Ryu (2009) Chen and Lin (2017)
	I am willing to come back more frequently in the future	loyalty_3	Han and Ryu (2009)
	I will go to the right store of the system when moving accommodation or going on a business trip	loyalty_4	Proposed by the authors
	I will continue to use this restaurant service even though the price goes up	loyalty_5	Kim et al. (2020)

Table 2 Respondent profile

Characteristics	*Frequency*	*Ratio (%)*	*Characteristics*	*Frequency*	*Ratio (%)*
Gender			Age		
Male	302	46.75%	13 to 18	122	18.89%
Female	344	53.25%	18 to 30	378	58.51%
Monthly earning (USD)			30 or older	146	22.60%
$200 or less	517	80.03%	Frequency of visits		
$200–$400	74	11.46%	Everyday	36	5.57%
$400–$800	34	5.26%	Every week	140	21.67%
$800–$1,600	15	2.32%	Every month	208	32.20%
$1,600 and more	6	0.93%	Every quarter	110	17.03%
			Other	152	23.53%

Source: Analysed from survey data by the author (2022)

Then, the research team carried out CFA confirmatory factor analysis to establish well-suited measurement models used to test the structural model. According to Hair et al. (2010), reliability CR ≥ 0.7; calculate convergence AVE ≥ 0.5; MSV < AVE discriminant, CFA analysis results are satisfactory.

Finally, the structural linear model, or SEM, is used to analyse the multidimensional relationship between the variables in a model (Haenlein and Kaplan, 2004). With SEM, the research team can check the strong or weak relationship between the factors.

Testing the difference between age and sex groups in regulating sensory relationships and the perceived quality of customers, the authors use the one-way ANOVA Analysis of the mean difference test.

3.4 Data analysis program

After collecting observations, the author synthesises input data and describes statistics using Microsoft Excel software. At the same time, in this step, the authors remove observations that provide inappropriate and unbiased information such as choosing only one answer for all questions. After that, the data was entered into IBM SPSS Statistics 26.0 software to build the rating scale, remove unsatisfactory observed variables and analyse the one-way ANOVA mean difference of the moderator variable. Finally, use AMOS Graphics for the SEM model, measuring the impact between the observed variables.

4 Research results

4.1 Scale assessment

Based on eigenvalue index > 1, eight latent constructs were identified, indicating that these eight factors best reflect 46 observed variables. The CR composite reliability value is between 0.865 and 0.926, and the AVE convergence value is between 0.518 and 0.750,

indicating that the scale fulfils the aggregate reliability and convergence standards. Discriminant validity is ensured by the MSV index AVE.

Table 3 Results of evaluation of reliability, validity, and convergence of the scale

Variable group	*Number of variables*	*Cronbach's alpha*	*CR*	*AVE*	*MSV*
Visual	9	0.923	0.924	0.573	0.527
Auditory	6	0.866	0.865	0.518	0.157
Gustatory	5	0.886	0.888	0.613	0.539
Olfactory	7	0.926	0.926	0.641	0.412
Tactile	4	0.902	0.903	0.699	0.442
Perceived quality	7	0.901	0.902	0.570	0.561
Satisfaction	3	0.899	0.900	0.750	0.561
Loyalty	5	0.888	0.890	0.618	0.539

Note: Composite reliability (CR), average variance extracted (AVE), maximum shared variance (MSV) < AVE.

4.2 Model assessment and test of hypotheses

4.2.1 Model assessment

The results of testing the suitability of the research model are shown in Figure 1: the model has values of /df = 2.174, respectively; GFI = 0.871; CFI = 0.944; TLI = 0.939; RMSEA = 0.043 and PCLOSE = 1.000. According to Hu and Bentler (1999), /df3; CFI ≥ 0.9; TLI ≥ 0.9; GFI ≥ 0.8; RMSEA ≤ 0.06; PCLOSE ≥ 0.05 indicate that the model fits the data very well. This also means that the model proposed by the research team is consistent with the data collected from the market.

4.2.2 Common method bias

First, to mitigate the CMB problem, we implemented some suggestions of Lindell and Whitney (2001) and Podsakoff et al. (2003). Firstly, in the questionnaire design phase, we use many questions to form different observed variables for each element in the model. Simultaneously, eliminate questions that are unclear or difficult to answer. Second, each individual answering the questionnaire is anonymous; we make sure that information is completely confidential. We also emphasise there is no true or false answer to ensure they answer the questionnaire honestly. Third, we do not arrange the questions as in the order of the variables in the model to ensure that the respondents do not use the previous answer to apply to the next question.

Second, to detect CBM, the authors use Harman's single-factor test. Harman's single-factor analysis is a post hoc procedure that is conducted after data collection to check whether a single factor is responsible for differences in the data. Harman's single-factor test is a simple and widespread statistical tool that detects CMB or CMV (Fuller et al., 2016), but the limitation is that this test has not required knowing the potential sources of CMV and can not measure CMV or eliminate its effects (Malhotra et al., 2017). This is a test most commonly performed by researchers to assuage concerns about the possibility of common method effects underlying observed results (Aguirre-Urreta and Hu, 2019). If CMV is non-exist, there is no component that will

account for more than 50% of the covariance between the items and the criterion constructs (Podsakoff et al., 2003). The results of Harman's single-factor test by EFA in this study showed that the single factor explained 38.832% of the total variation. This means that CBM was not detected in this research.

Table 4 Common method bias result – Harman's single-factor test

Component	*Initial eigenvalues*			*Extraction sums of squared loadings*		
	Total	*% of variance*	*Cumulative %*	*Total*	*% of variance*	*Cumulative %*
1	17.863	38.832	38.832	17.863	38.832	38.832
2	3.395	7.380	46.212			
3	2.906	6.316	52.528			
4	1.925	4.184	56.712			
5	1.676	3.644	60.357			
6	1.409	3.063	63.419			
7	1.233	2.681	66.100			
8	1.021	2.219	68.319			
9	0.824	1.791	70.110			
10	0.692	1.503	71.614			
11	0.649	1.412	73.025			
12	0.608	1.322	74.348			
13	0.600	1.305	75.653			
14	0.588	1.278	76.931			
15	0.556	1.208	78.138			
16	0.519	1.129	79.267			
17	0.510	1.108	80.375			
18	0.486	1.055	81.430			
19	0.462	1.005	82.436			
20	0.452	0.983	83.419			
21	0.432	0.940	84.359			
22	0.415	0.901	85.260			
23	0.398	0.866	86.126			
24	0.387	0.842	86.968			
25	0.377	0.820	87.788			
26	0.368	0.801	88.589			
27	0.360	0.783	89.371			
28	0.341	0.741	90.112			
29	0.332	0.721	90.833			
30	0.323	0.702	91.535			
31	0.314	0.682	92.217			
32	0.300	0.652	92.870			

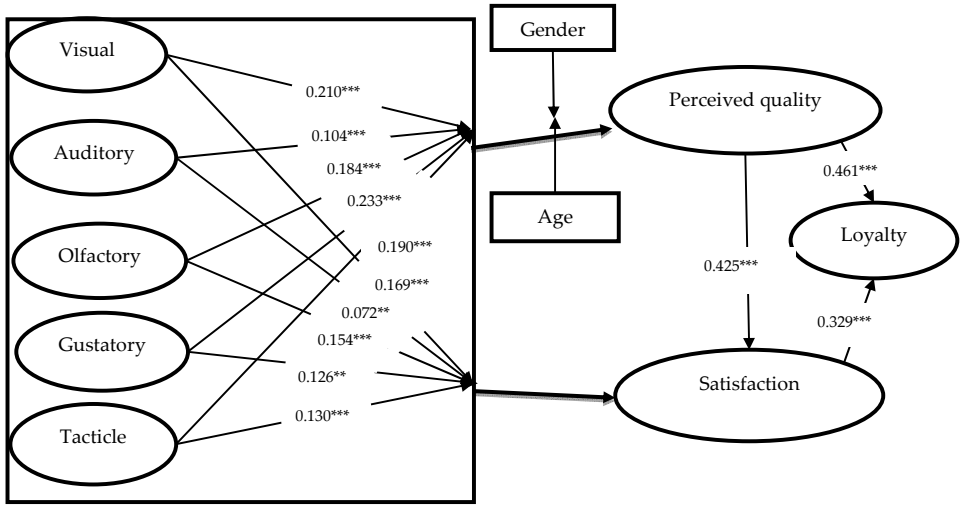
Note: Extraction method: Principal component analysis.

Table 4 Common method bias result – Harman's single-factor test (continued)

Component	*Initial eigenvalues*			*Extraction sums of squared loadings*		
	Total	*% of variance*	*Cumulative %*	*Total*	*% of variance*	*Cumulative %*
33	0.296	0.643	93.512			
34	0.284	0.618	94.131			
35	0.283	0.615	94.745			
36	0.268	0.582	95.327			
37	0.265	0.577	95.904			
38	0.250	0.543	96.446			
39	0.244	0.530	96.976			
40	0.234	0.509	97.485			
41	0.219	0.476	97.961			
42	0.213	0.464	98.424			
43	0.205	0.446	98.870			
44	0.188	0.409	99.279			
45	0.177	0.386	99.664			
46	0.154	0.336	100.000			

Note: Extraction method: Principal component analysis.

Figure 1 Research model and results of weighted regression the relationship between variables



Note: **: p-value ≤ 5%; ***: p-value ≤ 1%.

To further prove that the research model does not suffer from the CMB problem, we use the common latent factor (CLF) analysis recommended by Williams and Anderson (1994). Besides Harman's single-factor test, latent method construct or latent method factor is also very popular in the IS discipline (Aguirre-Urreta and Hu, 2019). In this method, all observations are exerted by one latent construct, CLF (Afthanorhan et al.,

2021). The estimate difference is then calculated by subtracting the estimate without CLF from the estimate with CLF. If the difference between them is more extensive than 0.2, then we can retain the CLF and construct a model (Lowry and Gaskin, 2014). In this study, we find out that the method bias does not exist in the research model since all the observations are below that threshold value as enumerated in Table 5.

Table 5 Standardised regression weight CLF

			Estimate with CLF	*Estimate without CLF*	*Difference*
Visual_5	←	Visual	1.0000	1.0000	0.0000
Visual_4	←	Visual	0.9670	0.9780	–0.0110
Visual_7	←	Visual	1.0360	1.0280	0.0080
Visual_6	←	Visual	0.9390	0.9550	–0.0160
Visual_1	←	Visual	0.8960	0.9250	–0.0290
Visual_3	←	Visual	0.9650	0.9780	–0.0130
Visual_2	←	Visual	0.9140	0.9550	–0.0410
Visual_8	←	Visual	0.9730	0.9950	–0.0220
Visual_9	←	Visual	0.9630	1.0010	–0.0380
Olfactory_4	←	Olfactory	1.0000	1.0000	0.0000
Olfactory_2	←	Olfactory	1.0380	1.0400	–0.0020
Olfactory_1	←	Olfactory	1.0330	1.0360	–0.0030
Olfactory_3	←	Olfactory	0.9620	0.9800	–0.0180
Olfactory_6	←	Olfactory	0.9030	0.9220	–0.0190
Olfactory_5	←	Olfactory	0.9230	0.9370	–0.0140
Olfactory_7	←	Olfactory	0.9850	1.0060	–0.0210
Auditory_2	←	Auditory	1.0000	1.0000	0.0000
Auditory_1	←	Auditory	0.9130	0.9190	–0.0060
Auditory_4	←	Auditory	0.8380	0.8860	–0.0480
Auditory_5	←	Auditory	0.6960	0.7670	–0.0710
Auditory_6	←	Auditory	0.6790	0.7690	–0.0900
Auditory_3	←	Auditory	0.6550	0.7210	–0.0660
Gustatory_3	←	Gustatory	1.0000	1.0000	0.0000
Gustatory_1	←	Gustatory	1.1350	1.0940	0.0410
Gustatory_2	←	Gustatory	1.0770	1.0590	0.0180
Gustatory_5	←	Gustatory	0.9640	0.9790	–0.0150
Gustatory_4	←	Gustatory	0.8830	0.9110	–0.0280
Per_1	←	Perceived quality	1.0000	1.0000	0.0000
Per_2	←	Perceived quality	1.0800	1.0930	–0.0130
Per_4	←	Perceived quality	1.0950	1.1240	–0.0290
Per_6	←	Perceived quality	1.0560	1.0800	–0.0240
Per_3	←	Perceived quality	0.9550	0.9970	–0.0420

Note: CLF: Common latent factor.

Table 5 Standardised regression weight CLF (continued)

			Estimate with CLF	*Estimate without CLF*	*Difference*
Per _7	←	Perceived quality	1.0920	1.1050	–0.0130
Per_5	←	Perceived quality	1.0110	1.0390	–0.0280
Loyalty_4	←	Loyalty	1.0000	1.0000	0.0000
Loyalty_3	←	Loyalty	1.0320	1.0480	–0.0160
Loyalty_5	←	Loyalty	1.0410	1.0540	–0.0130
Loyalty_2	←	Loyalty	1.0100	1.0300	–0.0200
Loyalty_1	←	Loyalty	0.8530	0.8910	–0.0380
Tactile_3	←	Tactile	1.0000	1.0000	0.0000
Tactile_4	←	Tactile	0.9830	0.9930	–0.0100
Tactile_2	←	Tactile	0.9610	0.9650	–0.0040
Tactile_1	←	Tactile	0.7900	0.8270	–0.0370
Satis_1	←	Satisfaction	1.0000	1.0000	0.0000
Satis_2	←	Satisfaction	1.0350	1.0310	0.0040
Satis_3	←	Satisfaction	0.9510	0.9650	–0.0140

Note: CLF: Common latent factor.

5 Results and discussion

An examination of the estimated model parameters in Table 3 reveals that all five sensory factors exert significant direct influences on customer's Perceived quality: visual (0.231, p = 0.000); auditory (0.132, p = 0.000); olfactory (0.240, p = 0.000); tactile (0.236, p = 0.000); gustatory (0.242, p = 0.000). Therefore, all five hypotheses – H1a, H2a, H3a, H4a, and H5a are accepted.

Table 6 presents the results of testing the research hypothesis. First of all, hypotheses H1a, H2a, H3a, H4a and H5a which represent the relationship between the five senses and the perceived quality of customers are validated. The P-values and estimated coefficients of these hypotheses are visual (β = 0.231, p = 0.000); auditory (β = 0.132, p = 0.000); olfactory (β = 0.240, p = 0.000); tactile (β = 0.236, p = 0.000); gustatory (β = 0.242, p = 0.000). This proves that all senses have an impact on the perceived quality of customers.

In the context of directly experiencing products and services in F&B restaurant chains in Vietnam, gustatory has the strongest impact on customers' perceived quality. When experiencing an F&B restaurant, the gustatory of the food or drink that brings a good gustatory experience to the customer will lead to a much higher increase in perceived quality in comparison with other sensories. The affecting order of variables in respectively descending is olfactory, tactile, visual and auditory. This has contributed to strengthening the conclusion of Hultén (2020); contemporaneously, all five senses have a positive and direct influence on perception is consistent with the findings of Randhir et al. (2016). Notwithstanding, in comparison with the Iranian market in Torabi's research or Mauritius's in Monishan's study, at the Vietnamese F&B restaurant chain,

customers are more concerned about touch or contact with objects and utensils in the restaurant. Since during the period our team carried out and collected data for this research in Vietnam, the COVID-19 epidemic had spread, thus customers tend to pay special attention to the tactile factors as well as COVID-19 prevention when experienced directly at the chain of F&B restaurants.

Table 6 Research hypothesis test results

Hypothesis	*Parameter*	*P-value*	*Estimated coefficient (β)*
H1a	Visual → Per	***	0.231
H2a	Auditory → Per	***	0.132
H3a	Olfactory → Per	***	0.240
H4a	Tactile → Per	***	0.236
H5a	Gustatory → Per	***	0.242
H1b	Visual → Satis.	0.004	0.150
H2b	Auditory → Satis.	0.030	0.074
H3b	Olfactory → Satis.	***	0.163
H4b	Tactile → Satis.	0.003	0.132
H5b	Gustatory → Satis.	0.020	0.107
H6	Per → Satis.	***	0.345
H7	Satis. → Loyalty	***	0.366
H8	Per → Loyalty	***	0.416

Customer perception about F&B service in the context of COVID-19 has also undergone significant changes. With the heightened emphasis on hygiene and safety, customers are now more attentive to their sensory experiences when interacting with products or services. They may rely more on touchless options, such as contactless payments or online shopping, to minimise physical contact. Additionally, their requirements have evolved to prioritise cleanliness, social distancing, and adherence to health protocols. Businesses must adapt to these shifts in customer perception by implementing innovative solutions that cater to their sensory preferences and address their updated requirements.

Similarly, assumptions H1b, H2b, H3b, H4b, and H5b that show the influence of the five senses on customer satisfaction are also validated. All hypotheses have P-value (< 0.05), within the standard level. The estimated coefficients are: visual (β = 0.150, p = 0.004); auditory (β = 0.074, p = 0.030); olfactory (β = 0.163, p = 0.000); tactile (β = 0.132, p = 0.003); gustatory (β = 0.107, p = 0.020). In comparison with the relationship between senses and perceived quality, the order of impact levels of the senses on satisfaction change. Customer satisfaction is affected by five senses with decreasing order of variables as follows: olfactory, visual, tactile, gustatory and auditory. This result is consistent with studies of Isen and Shalker (1982), Mitchell and Mitchell (1995) and Morrin et al. (2011).

Although olfactory is not at the first position in relation to perceived quality like gustatory, it is the variable that has the strongest contact on satisfaction. As stated by Isen and Shalker (1982), the scent has a great impact on customers' evaluation of products as well as restaurant space, when customers synthesise those evaluations, satisfaction will be formed. During the COVID-19 pandemic, the olfactory impact on customer

satisfaction in F&B service is significant. As restaurants and cafes adapted to new safety protocols, the sense of smell became more crucial in creating a positive dining experience. A pleasant aroma enhances the ambiance and can help mask any unpleasant smells associated with sanitisation measures. Studies have shown that pleasant scents can also influence customers' perceptions of food quality and gustatory (Krishna et al., 2010; Morrin et al., 2011). Therefore, F&B establishments need to pay attention to their olfactory environment by using appropriate air fresheners or diffusers to ensure customer satisfaction and enhance their overall dining experience during these challenging times. Research by Hoang and Tučková (2021) also shows that in the five senses, smell has a great impact on satisfaction. But this study only looked at the scent of the product and inside the restaurant space. Meanwhile, the authors' study further found that the scent of the outside restaurant, (e.g., front door, parking lot, etc.) or restroom and the scent created by other customers in the restaurant space, (e.g., the smell of cigarettes, body smell, etc.) will also have a certain influence on satisfaction.

For F&B restaurants, consumers will always pay attention to their contact with eating utensils, tables and chairs, and other objects in the restaurant. Especially in the context of the COVID-19 epidemic, this is even more concerning; leading to the fact that tactile has a greater impact on satisfaction than gustatory and auditory.

Hypothesis H6 and H7 that our research team proposed about the relationship between perceived quality and satisfaction, between satisfaction and loyalty are also validated with estimated coefficients (β) of 0.345 and 0.366, respectively. Perceived quality is a prerequisite factor that positively affects customer satisfaction. When customers have a positive perception, they are more satisfied with the service at F&B restaurant chains. When customers have a positive perception, they are more satisfied with the service at F&B restaurant chains, hence, loyalty is formed. This result has been demonstrated by Taylor and Baker (1994), Iglesias and Guillén (2004) and Ryu et al. (2012) in their research.

Finally, Hypothesis H8 is accepted with an estimated coefficient of 0.416 showing the effect of perceived quality on loyalty. This implies that if customers have a positive feeling about the restaurant, customers will want to use the product next time or visit more often. Gradually form loyalty, even when other restaurants have promotions, they still appreciate the restaurant that has provided a good sensory experience for them. Research by Kim and Choi (2013), Wu and Chen (2014) and Ariffin et al. (2016) have shown a positive relationship between perceived quality to loyalty. On top of that, the direct impact from perceived quality to loyalty has a stronger estimator index than satisfaction affects loyalty. Hence, when perceived quality increases, customers will be more loyal to the F&B restaurant, return more times or recommend the restaurant to others (Souki and Filho, 2008).

Overall, the five senses of visual, auditory, olfactory, gustatory, and tactile have a positive impact on the perceived quality of customers at F&B restaurants. In which, olfactory, visual, and tactile respectively are the three most influential factors. This is explained by the unique features in the culinary culture of Vietnamese people who like bold, eye-catching things that leave a strong impression. Such a result in the context that F&B restaurants in Vietnam are being affected by the COVID-19 epidemic is very reasonable when consumers were paying great attention to the epidemic prevention factor. The prevention of epidemics is reflected in the cleanliness of the restaurant, the fresh air, the ventilation, etc. The better it is done, the higher the customer satisfaction will be. The study also shows that perceived quality has an impact on satisfaction,

perceived quality and satisfaction also positively affect customer loyalty. When experiencing the service, customers' satisfaction grows positively with their loyalty to the service provider.

Table 7 Gender hypotheses comparison

Hypotheses	*Male*			*Female*		
	SRW	*P-value*	*Result*	*SRW*	*P-value*	*Result*
Visual → Per	0.069	0.393	NS	0.417	***	S
Auditory → Per	0.116	0.040	S	0.072	0.097	NS
Olfactory → Per	0.150	0.032	S	0.196	***	S
Tactile → Per	0.202	0.004	S	0.251	***	S
Gustatory → Per	0.407	***	S	0.164	0.002	S

Note: SRW: Standardised regression weights, NS: Not significant, S: Significant, Per.

Based on the results of Table 7, our research team made comments on the distinction in the impact of variables in the model between respondents of different genders. While the relationship from visual to perceived quality of males is not statistically significant, visual is the sense that has the strongest arouse on perceived quality for females. In addition, the olfactory and tactile of females also have a more sensitive effect on perceived quality than men. Because women are more likely than men to experience services through their senses. Erasmus and Grabowski (2013) and Prendergast and Lam (2013) discuss evidence indicating women's senses, such as sight, smell, and hearing, are more sensitive than men's. Only men's gustatory sense is the sense that men have a stronger impact on perceived quality than women. This is a new finding in our study because previous studies did not reach the same conclusion. Gustatory of men who consume products directly at Vietnam F&B restaurants has a more pronounced impact on perceived quality.

Table 8 Age hypotheses comparison

Hypotheses	*13–18 year-old*			*18–30 year-old*			*Over-30 year-old*		
	SRW	*P-value*	*Result*	*SRW*	*P-value*	*Result*	*SRW*	*P-value*	*Result*
Visual → Per	0.435	0.003	S	0.079	0.252	NS	0.179	0.072	NS
Auditory → Per	0.035	0.633	NS	0.115	0.024	S	0.056	0.428	NS
Olfactory → Per	0.068	0.347	NS	0.242	***	S	0.114	0.133	NS
Tactile → Per	0.302	0.013	S	0.270	***	S	0.288	0.001	S
Gustatory → Per	0.211	0.011	S	0.280	***	S	0.490	***	S

Note: SRW: Standardised regression weights, NS: Not significant, S: Significant.

Table 8 results show the difference in the impact of the five senses on the perceived quality of the age groups. Only in the 13–18 year-old group is the relationship from visual to perceived quality significant and even this relationship is the strongest among the five senses of this age group. In comparison with other age groups, the 13–18 year-old group also has tactile that affects perceived quality more sensitively. The 18–30

year-old group was the only group where the relationship between the effects of auditory and olfactory on perceived quality was significant. The 18–30 year-old group regularly visits F&B restaurants, so their senses often have a better effect on perceived quality. Younger customers show a better perception of the senses (Sandell, 2019). The group over 30 years old has the most sensitive gustatory buds when it comes to the impact on Perceived quality. This result has been shown by research (Herne, 1995).

In general, the results of Tables 7 and 8 reveal that age and gender have the function of regulating the impact relationship between senses and the perceived quality of customers, H9 and H10 are validated.

6 Conclusions

Academically, this research has contributed to the theory of consumer behaviour, service experience and customer sensory. The customer's direct experience at the service point can only be perfect when the five senses' perception of the overall service is fully satisfied, from which they are satisfied and loyal.

When there are changes in consumer consumption behaviour due to the COVID-19 epidemic, restaurants must take extra particular steps to retain their customers. Because sight is one of the most important criteria, restaurants may exploit the popularity of social networks to broadcast high-quality photographs and videos of their cuisine to increase customers' desires and expectations. Managers may also record individual appreciation messages from chefs or employees to experienced customers in order to create feelings of connection. Customers will have a better experience in the open space. Restaurants should offer distinctive scents, for instance create a gentle aroma in addition to the typical aromas of products and install odour-absorbing systems to limit unpleasant or unpleasant odours. Moreover, managers should raise awareness of each employee, paying attention to behaviour, words, manners and investing in uniforms. In particular, repairing inappropriate/unnecessary points for each customer segment at the store. In the context of the epidemic, F&B administrators should have quick response measures, innovate business models in accordance with the characteristics of the COVID-19 epidemic and change buying behaviour such as: expanding the customer segment, socialising and fragmenting the marketing model, complying with the 5K rule: facemask (*Khau trang*) – disinfection (*Khu khuan*) – distance (*Khoang cac*h) – no gathering (*Khong tu tap*) – Health declaration (*Khai bao y te*), having a medical declaration check-in system, fully providing disinfectant spray and ensuring distance.

The research is limited when it only focuses on the influence of the senses on the direct experience of customers at the service point of service whilst not considering the aspect of online F&B service provisual, after-sales service, or delivery service, also investigates the factor only under the sensory aspect. Therefore, the authors wish to expand the aspect to several impact factors to perceive quality such as service environment, social influences, marketing strategies, etc. in the future.

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