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Consumers’ perceived effectiveness of COVID-19 mitigation strategies in restaurants: What went well and what could we do better?

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ABSTRACT

As restaurants are resuming normal operations, COVID-19 mitigation strategies are still in place. An effective COVID-19 mitigation protocol may facilitate a more successful rebound since consumers may perceive a lowered risk to purchase food from the restaurant with protocols in place. However, little is known regarding how consumers evaluate restaurants’ present efforts to contain the transmission of COVID-19. By using a rigorous scale development procedure, this study creates a scale to measure restaurant consumers’ perceptions of COVID-19 mitigation strategies (acronym: PHASE): Protective equipment/technology (P); Health and hygiene (H); Access of purchase/serving (A); Safety measure for customers (S); and Employee safety measure (E). The study further identifies the areas that need to be improved by using importance-performance analysis. Findings of this study provide guidelines for restaurant professionals to potentially reallocate their existing resources to refine their COVID-19 mitigation strategies and to better prepare for the future.

1. Introduction

On March 11, 2020, the World Health Organization proclaimed the COVID-19 outbreak a global pandemic (World Health Organization, 2020). Since then, many countries, including the United States, have imposed state or local regulations to restrict activities and close facilities. Many businesses have been affected by the partial or full lockdowns in the initial stage of the pandemic. A study reported that 41.3% of businesses in the United States were closed due to the pandemic (Bartik et al., 2020).

The restaurant industry suffered among the greatest impact when the pandemic hit in 2020. The National Restaurant Association (2021) estimated that, by the end of 2020, restaurants had lost $240 billion in revenue. In addition, 110,000 properties were closed, and 2.5 million jobs were lost. Scholars from foodservice management also confirmed the devastating impact of the COVID-19 pandemic on the industry in the early stage of the pandemic. For example, a study conducted in South Carolina suggested that a quarter of the independent restaurants did not survive a two-month closure (Brizek et al., 2021).

In order to maintain a safe and healthy operation environment and to bring customers back, many restaurants have implemented service modifications, such as contactless delivery and curbside pickup, as well as onsite mitigation strategies, such as mask mandates and physical distancing. Recent studies have investigated the influence of public and business responses of COVID-19 on business resiliencies in European countries (Neise et al., 2021; Sanabria-Díaz et al., 2021). A more recent study examined how perceived COVID-19 response efficacy could influence consumers’ staying intentions in U.S. hotels (Hsieh et al., 2021). However, to date, little is known regarding consumer perceptions about how well businesses did to mitigate COVID-19 within the U.S. restaurant industry. As variants are expected to develop and people are learning to live with COVID-19, some mitigation strategies will remain and become the norm that people are expecting to see (Ducharme, 2021; Hochman, 2020; Rab et al., 2020). It is, therefore, critical to understand consumers’ converting perceptions and evaluations toward operations’ precautionary measures.

Consumers often use environmental cues to make judgments about service operations. During the COVID-19 pandemic, many restaurants used a plethora of techniques to visually showcase their commitment to cleanliness (e.g., personal protection equipment), enhanced wayfinding and signage, and minimized shared objects (e.g., moving to single-use service items). The servicescape model (Bitner, 1992) suggests that consumers evaluate their physical surroundings to make decisions about approaching or avoiding a service environment. The underlying

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servicescape perceptions include aspects such as physical (e.g., facility and equipment), employee, customer, cleanliness, and service (order) fulfillment elements (Bitner, 1992; Kautish et al., 2021; Line and Hanks, 2020; Xu and Gursoy, 2021). Based on these servicescape studies, COVID-19 mitigation strategies taking effect in restaurants, such as the use of touchless facilities, the implementation of contactless service provisions, and the practice of physical distancing, may signal various dimensions within the servicescape, such as physical, service fulfillment, and employee/customer servicescape elements.

According to Bove and Benoit (2020), the inclusion of the servicescape elements could make it a more informative classification of safety signals available within a service provider during the COVID-19 pandemic. Further, those signals are critical to consumers, as they help to identify safe service providers (Bove and Benoit, 2020). Therefore, this study aims to create a set of scales to measure consumer perceptions of restaurants’ COVID-19 mitigation strategies by using the servicescape model as a theoretical foundation.

It behooves restaurant managers to understand how operational decisions affect customer satisfaction. Among the many models that examine business performance, the importance-performance analysis (IPA; Martilla and James, 1977) provides valuable information for business professionals to evaluate performances that are easy to interpret (Beoley et al., 2017). IPA might be useful especially when industry professionals are considering the reallocation of scarce resources (Taplin, 2012). By using this practical tool, the current research further investigates consumer evaluations toward restaurants’ COVID-19 mitigation strategies to discover what went well and what could have been done better. Results of this study provide guidelines for restaurant professionals to identify key aspects of COVID-19 mitigations and, therefore, better reallocation of scarce resources to satisfy the changing expectations of restaurant consumers.

2. Literature review

2.1. Influence of COVID-19 pandemic on the restaurant industry

By the end of 2020, it was estimated that the devastating impact of the pandemic on the restaurant industry led to revenue losses of approximately a quarter trillion dollars, shutdowns of more than 100,000 food and drink establishments, and layoffs of close to eight million employees (National Restaurant Association, 2021). Scholars from foodservice management have also comprehensively investigated the impact of COVID-19 on U.S. restaurants. Researchers concentrated on broad areas of topics such as restaurant operations, economic and financial impacts, employee well-being, and consumer online experiences and risk perceptions.

For instance, Brizek et al. (2021) advised independent restaurants to further expand their operations to carryout, curbside pickup, and delivery to compensate for indoor dining revenue losses. Chang et al. (2021) demonstrated the importance of restaurants’ cleaner indoor air quality on the mitigation of COVID-19 and called for restaurants to improve their ventilation systems. Song et al. (2021), examined publicly traded restaurants’ financial performances and inferred that smaller restaurants may be more vulnerable to COVID-19, as they may not have the same sufficient funding sources as large firms do. Using big data analysis, Yang et al. (2020) econometric model revealed that stay-at-home orders and new COVID-19 cases negatively influenced restaurant demand.

As for the influences on restaurants’ internal (i.e., employee) and external consumers, scholars have also made extensive investigations. Investigations into employees’ well-being shed light on the negative impacts of COVID-19 on their psychological distress, job insecurity, and emotional exhaustion (Bufquin et al., 2021; Chen and Eyoun, 2021). In terms of consumer behavior, Brewer and Sebby (2021) suggested that restaurants’ online menu visual appeal and informativeness, as well as consumers’ perceptions of COVID-19 risk, positively influenced their desire for food and perceived convenience of online ordering. Desire for food and perceived convenience, in turn, positively influenced consumers’ purchase intentions. Although extensive, current research in foodservice management rarely explored consumers’ perceptions of restaurants’ COVID-19 mitigation efforts, indicating the need for further investigation.

2.2. COVID-19 mitigation strategies

In order to contain and limit the spread of the disease, mitigation strategies have taken effect locally and worldwide. One of the most important mitigation strategies is social (physical) distancing (i.e., staying 6 ft or 1.5–2 m apart from other individuals). Studies suggested that social distancing would effectively decrease the transmission of COVID-19 by about 60% (Anderson et al., 2020; de Bruin et al., 2020). Health safety and personal hygiene are other critical mitigation strategies that help prevent individuals from contracting COVID-19. It is recommended that individuals practice hand hygiene (20-second handwashing) and cough and sneeze etiquette (cover with elbow), to avoid touching surfaces and infectious materials, to use contactless payment, to wear personal protective equipment (e.g., masks), to self-quarantine if someone is sick in the household, and to prescreen COVID-like symptoms (e.g., take temperature; de Bruin et al., 2020).

Ebrahim et al. (2020) provided a summary regarding COVID-19 mitigation tools, which is available from individual and collective perspectives. According to the study, individuals are obligated to protect people, including themselves. Key responsibilities, including tactics such as practice personal hygiene (e.g., hand hygiene, practice cough hygiene), quarantine if sick, avoid touching face without washing hands, avoid close contact with others, keep social distancing, wear facial masks, and clean and disinfect frequently used surfaces. From the collective (shared) mitigation perspective, businesses are obligated to innovate their services, including service deliveries, drive-throughs, and pickups, in addition to maintaining social distancing inside their establishments. Although medical experts have provided their suggestions and guidelines, scant research is available on the influence of environmental mitigation strategies on consumer behaviors, especially within restaurants.

2.3. Servicescape model

Bitner (1992) proposed the servicescape model to explain how environmental factors (physical surroundings) could influence individual behaviors. The model comprised three dimensions of perceived servicescape: ambient conditions (e.g., air quality); space/function (e.g., equipment); and signs, symbols, and artifacts (e.g., signage). Although the original servicescape model introduced people (i.e., staff and customer) as part of the moderator, scholars from hospitality and tourism expanded the model and considered individuals as part of the servicescape dimensions (e.g., Garmaaoudi et al., 2021; Lin et al., 2020; Line and Hanks, 2020).

Studies that utilize servicescape as their theoretical premises commonly distinguish between two general aspects of servicescape, denoted as physical and social servicescape (e.g., Li and Wei, 2021; Xu and Gursoy, 2021), or substantive and communicative servicescape (e.g., Li, 2021; Song et al., 2021). The physical or substantive servicescape represents the physical surroundings of the service environment and, therefore, includes the original three dimensions of the perceived servicescape (Li, 2021; Li and Wei, 2021). The social or communicative servicescape highlights the presence of humans in the service setting, such as employees’ service presentations, and individuals’ interactions (Li, 2021; Li and Wei, 2021). As in the original servicescape model, this social or communicative servicescape is also depicted as perceptions, such as employees’ appearance and hospitality (Li, 2021; Li and Wei, 2021). Table 1 summarizes the most recent servicescape studies published in notable hospitality journals. The table is organized by research
Table 1
Summary of servicescape studies in hospitality and tourism.

| Settings          | Objectives                                                                 | Method                  | Key Findings/Results                                                                 | Servicescape Aspects                      | Reference         |
|-------------------|----------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------|------------------------------------------|-------------------|
| Hotels            | To examine the mediation effect of customer mindfulness on the relationship between hotel servicescape and customer experience, and to test the moderation effect of length of stay | Quantitative (survey)   | Significant mediation effect of customer mindfulness, and moderation effect of length of stay were found | Substantive staging (physical servicescape); Communicative staging (employee servicescape) | Haobin et al. (2021) |
|                   | To develop a measurement scale for upscale hotel consumers’ perceptions of servicescape | Mixed (literature review and survey) | Dimensions of servicescape were identified, and a measurement scale was developed | Aesthetic quality, functionality, atmosphere, spaciousness, physiological conditions (physical servicescape) | Lockwood and Pyun (2020) |
|                   | To propose and test the “servicescape-value-engagement” model               | Quantitative (survey)   | Substantive and communicative servicescape significantly influenced customer engagements, while wellness and functional value partially or fully mediated the relationship | Substantive servicescape (physical); Communicative servicescape (employee) | Li (2021)         |
|                   | To investigate the relationship between hotel servicescape and customer citizenship behaviors by examining the mediation role of engagement, and moderation role of gender | Quantitative (survey)   | Significant mediation effect of engagement was found, and the relationships were contingent on gender. | Physical servicescape; Social servicescape (employee) | Li and Wei (2021) |
| Restaurants       | To investigate the effect of indoor natural plants on consumer satisfaction and loyalty, and to explore the mechanism of the effect by adopting experiential value | Quantitative (survey)   | Presence of indoor natural plants significantly influenced consumer satisfaction and loyalty, and the relationship was mediated by experiential value | Natural plants (atmospheric servicescape) | Apaolaza et al. (2020) |
|                   | To examine how interactions among customers could influence their experiences and coping behaviors | Quantitative (survey)   | Aspects of customer-to-customer interactions could significantly different interaction experiences, and could subsequently influence overall experience evaluations and future interaction intentions | Social servicescape (customer interactions) | Lin et al. (2020) |
|                   | To test the influence of social and physical servicescape in fast casual restaurant settings | Quantitative (survey)   | Social and physical servicescape both significantly influenced consumer behavior, and the relationships were contingent on crowding | Customer and employee servicescape (perceived similarity, physical appearance, suitable behavior); Physical servicescape (ambient conditions, facilities, layout, seating comfort) | Line and Hanks (2020) |
|                   | To explore the relationships among socially distant servicescape, consumers perceptions of safety and comfort, and intentions to dine in | Quantitative (survey)   | The relationship between socially distant servicescape and intentions to dine-in was significant, and was mediated by safe and comfortable perceptions. Space tables (partitions between tables) were more favorable than placing mannequins at tables | Socially distant servicescape | Taylor (2020) |
| Hotel and restaurant | To examine the influence of branded social cues on brand perceptions and evaluations | Quantitative (survey)   | Social cues directly, indirectly, and jointly influenced brand perceptions and evaluations | Social servicescape (employee; customer) | Garmaroudi et al. (2021) |
| Hotel, restaurant, and retail | To develop and test a scenario-based customer social servicescape manipulation for experimental research | Quantitative (survey)   | Significant and consistent results were found across all service settings. Therefore, the social servicescape manipulations can be used as a research tool | Social servicescape (customer: similarity, physical appearance, suitable behavior, density) | Hanks et al. (2021) |
| Hotel and Airline | To test the relationships among servicescape dimensions, emotions, perceived value and word of mouth, and to examine the moderation effects of accommodation type and design | Quantitative (survey)   | The proposed relationships were significant, and were contingent on accommodation type and design style | Substantive servicescape (physical and atmospheric); Communicative servicescape (staff) | Song et al. (2021) |
| Hospitality rentals | To identify dimensions of short-term hospitality rental servicescape (STHR), and to develop a measurement scale | Mixed (testing and survey) | STHR servicescape dimensions were identified, and a 16-factor scale was developed. | Physical servicescape (interior décor, ambient conditions, spaciousness, amenities, house manual, ease-of-finding, room view, location and accessibility, cleanliness, bed comfort, bath comfort, complex environment, residential density); Social servicescape (hosts’ and guests’ physical appearance, similarity, suitable behavior) | Xu and Gursoy (2021) |
|                   | To examine the influence of servicescape dimensions on consumer intentions by exploring the mediation effect of place attachment | Quantitative (survey)   | Four physical and two social servicescape dimensions significantly influenced place attachment, and subsequently influenced intentions to recommend | Physical servicescape (interior décor, ambient conditions, spaciousness, amenities, house manual, ease-of-finding, room view, location and accessibility, cleanliness, bed comfort, bath comfort, complex environment, | Xu and Gursoy (2020) |

(continued on next page)
settings (e.g., restaurants, hotels).

3. Methodology

3.1. Phase 1: scale development

The first phase of the current study developed a scale to measure consumer perceived effectiveness of COVID-19 mitigation strategies taken by the restaurant industry during the pandemic. To achieve this, we executed the following three stages. The first stage identified domains of constructs and generated a pool of items. The second stage assessed the content adequacy of the measurement items. The last stage developed a questionnaire in regard to item purification and finalization. Development of the scale items was accomplished following the most recurrent methodologies in the social sciences field (i.e., Churchill, 1979).

3.1.1. Stage 1: domain specification and item generation

The initial stage specified the domain of the constructs and generated a pool of items by conducting a thorough literature review. Based on the domains structured established in the servicescape model, prior studies and literature regarding COVID-19 mitigation strategies prevalent in restaurants and general hospitality business (e.g., FDA, 2020; Hu et al., 2021; Line and Hanks, 2020; Lockwood and Pyun, 2020; Xu and Gursoy, 2021) as well as industry association recovery and response reports (i.e., National Restaurant Association, 2021) were reviewed. A total of 52 items were initially pooled.

The first domain of the construct was adopted from the original servicescape model, which incorporates physical environmental dimensions, such as facility, equipment, artifacts, and signage (Bitner, 1992). This domain of construct was a part of the physical or substantive servicescape, which represents elements of tangible, man-made physical surroundings (Jang, 2021; Li, 2021; Line and Hanks, 2020). According to this concept, COVID-19 mitigation tactics such as the use of touchless facilities, the display of social distancing signage, and the application of on-site technologies (equipment) could fit into this servicescape dimension.

The second domain of the construct was generally known as the cleanliness or perceived cleanliness in hospitality studies (Magnini and Zehrer, 2021; Peng et al., 2020; Xu and Gursoy, 2021). It was also a part of the physical servicescape, however, as it is different from man-made equipment. Defined by Xu and Gursoy (2021) as “cleanliness and hygiene” (p. 6) of the hospitality sector, this construct reflects the conditions of being clean and to maintain health. Therefore, COVID-19 mitigation strategies such as the cleaning of equipment and disinfection of tableware could be placed into this domain.

The third domain of construct was adopted from the concept of e-tail servicescape (Kautish et al., 2021), which is relatively new to the servicescape studies. Specifically, this construct was derived from the order fulfillment dimension of the e-tail servicescape. According to Kautish et al. (2021), order fulfillment consisted of aspects such as product availability, delivery, and billing. Hence, restaurants’ order fulfillment options during the pandemic such as curbside pickup and contactless delivery can be positioned into this construct.

The fourth and fifth domains of constructs were referred to as the customer and employee servicescape (Line and Hanks, 2019a, 2019b, 2020). Those two dimensions of servicescape were originated from the concept of social or communicative servicescape, which highlighted the importance of people in a service environment (Li, 2021; Li and Wei, 2021). The current study specifically retrieved constructs of employees’ and customers’ suitable behaviors of the model proposed by Line and Hanks (2019a, 2019b, 2020) and placed suitable behaviors during the pandemic, such as wearing face masks and keeping social distancing, into these two categories. A review the domain constructs is shown in Table 2.

3.1.2. Stage 2: content adequacy evaluation

The next stage assesses content adequacy by checking the content and face validity of the items. Content validity is defined as the extent to which an instrument can represent an appropriate sample of items for the construct being measured (Nunnally and Bernstein, 1967). Face validity is a component of content validity (Haynes et al., 1995) and refers to the “degree that respondents or end users judge that the items of an assessment instruments are appropriate to the targeted construct and assessment objectives” (Haynes et al., 1995, p. 243).

In this step, the content validity of the initial instrument was established through scale refinement by asking industry experts, peers, and colleagues from the restaurant industry and academia to review those items. Table 3 summarizes the demographic profile of the content validity consultants, consisting of two restaurant industry experts, four colleagues, and four peers. Industry experts had more than 15 years of working experiences in restaurants. Colleagues had several years of working experiences in higher education and previous experiences working in the restaurant and/or general hospitality industry (e.g., hotels, resorts, events). Peers were consumers of restaurants who had experiences in ordering foods (take-out/delivery/dine-in) from restaurants during the current pandemic. Prior studies have stated expert judgment as a frequently used technique for initial validity verifications (DeVellis, 2017; Netemeyer et al., 2003).

Based on the feedback, some items were removed due to redundancy (i.e., items that reviewers perceived to have the same meaning) and uncommonness (e.g., the use of UV lights). Minor adjustments were also made to clarify the statements and to respond to the collected comments after careful examination, resulting in a pool of 44 items.

After obtaining the initial set of 44 revised items, the pool was then pre-tested among 249 participants recruited from Amazon MTurk by...
Table 2
The 44-item scale after content adequacy evaluation.

| Servicescape Dimension | Items pulled | Source |
|-----------------------|--------------|--------|
| Physical Environment  | Restaurants use disposable tableware (e.g., utensils, dishes, napkins) for dine-in services. Restaurants exhibit partnership with cleaning and disinfecting product manufacturers (e.g., Lysol, Clorox). Restaurants provide a written prevention plan for COVID-19. Restaurants display disinfection and cleaning logos. Restaurants introduce disinfection robotic devices (e.g., UV light disinfection robot). Restaurants equip onsite self-service technology (e.g., kiosk, tablet) to minimize in-person contact while ordering. Restaurants improve its ventilation systems. Restaurants adopt mobile point of sale (POS) systems. Restaurants install touchless facilities (e.g., automatic door, hands-free faucets). Restaurants separate its entry and exit points. Restaurants post effective handwashing procedure in restrooms. Restaurants provide hand sanitizer at prominent locations. Restaurants show signage of physical (social) distancing. Restaurants place a physical barrier (e.g., plastic or plexiglass) at the cash register, and between tables. Restaurants space tables to ensure physical (social) distancing. Restaurants offer disposable or contactless menus (e.g., QR codes). Restaurants take temperature for everyone entering the property. Restaurants screen employees for symptoms of COVID-19 before working. Restaurants instruct employees with COVID-19 symptoms to stay at home. Restaurants reinforce personal hygiene of employees. Restaurants intensify the cleaning of equipment. Restaurants strengthen disinfection of tablewares. Restaurants reinforce training for food safety and sanitation. Restaurants notify possible exposure of COVID-19 to customers. | Bitner (1992); Jang (2021); Li (2021); Line and Hanks (2020) |
| Cleanliness Health & Hygiene | Restaurants enhance disinfection of surfaces. Restaurants increase cleaning frequency of restrooms. Restaurants offer crafted pre-prepared meal kits and family meals for customers to cook at home. Restaurants provide contactless food ordering options (i.e., online order, phone order). Restaurants provide contactless payment options (i.e., mobile payment, online payment). Restaurants offer curb-side pickup or drive-through. Restaurants provide contactless food delivery option (i.e., limited or no contact with the driver) in the area. Restaurants notify order updates through mobile device (e.g., app notification, text message, email). Restaurants designate parking spaces for curb-side pickup. Restaurants provide outdoor or patio dining space. Customer | Kautish et al. (2021) (e-tail servicescape) |
| | Other customers cover their mouths and noses when coughing or sneezing. Other customers effectively wash their hands. Other customers in the restaurant wear face coverings all the time while not eating. Other customers practice physical (social) distancing whenever possible. Other customers avoid touching their faces. | Line and Hanks (2019a, 2019b, 2020) |
| | Employees cover their mouths and noses when coughing or sneezing. Employees frequently and effectively wash their hands. Employees avoid touching their faces. Employees wear face coverings all the time while working. Employees practice physical (social) distancing whenever possible. | Line and Hanks (2019a, 2019b) |

using an online survey. The respondents who agreed to participate were asked a set of screening questions at the beginning, including their eligibility (i.e., must be adults, live in the United States) and their dining behaviors (dine in/delivery/take-out/pickup) from restaurants during the COVID-19 pandemic in the past three months. The respondents were then asked to evaluate each dimension regarding what restaurants should do to alleviate the risk of COVID-19. Each item was measured on a 7-point Likert scale from 1 = strongly disagree to 7 = strongly agree. To ensure data collected from the MTurk platform were of sufficient quality, responders with the same IDs were filtered out for data analyses. The data set was then examined for careless responses. Cases with
Table 3
Demographic profile of the content validity consultants.

| Role        | Gender | Age | Education | Designation          | Relevance                        |
|-------------|--------|-----|-----------|----------------------|----------------------------------|
| Industry    | Male   | 50  | Bachelor’s degree in Hotel, Restaurant, and Institutional Management | Restaurant Owner | Worked in the restaurant industry for 26 years |
| Expert      | Female | 45  | Bachelor’s degree in Hotel, Restaurant, and Institutional Management | Restaurant Owner | Worked in the restaurant industry for 19 years |
| Colleague   | Male   | 45  | Ph.D. in Hospitality Management | Department Chair | Specialized in hospitality management research, with 5 years of industry working experiences, and 11 years of higher education experiences |
| Female      | 38     |     | Ph.D. in Hospitality Management | Assistant Professor | Specialized foodservice/restaurant management research, with 2–3 years of industry working experiences, and 4 years of higher education experiences |
| Colleague   | Female | 32  | Master’s in Hospitality Management | Ph.D. Candidate | Concentration in foodservice/restaurant management research |
| Peer        | Female | 26  | Master’s | Student | Restaurant consumer |
| Peer        | Female | 26  | Master’s | Student | Restaurant consumer |
| Peer        | Male   | 28  | Master’s | Student | Restaurant consumer |
| Peer        | Male   | 30  | Ph.D. in Business Analytics | Company Employee | Restaurant consumer |

identical patterns (e.g., all “7” or “1”) were further excluded for analyses. Then, data from the pretest were analyzed for internal item correlation via Cronbach’s alpha. The purpose of doing this was to identify items that were potentially inconsistent with other items within the proposed construct (i.e., internal consistency). All 44 items were retained (Table 2).

3.1.3. Stage 3: data collection, item purification, and finalization

Based on the pretest result, a structured survey was developed and distributed online by recruiting participants from MTurk. Scholars indicated that data collected from MTurk are representative of the population in the United States (Buhrmester et al., 2011; Paolacci et al., 2010). Moreover, data collection via MTurk platform was suggested to be more advantageous than traditional methods (e.g., lab- and standard Internet-based), such as its ability to recruit a demographically more diverse sample (Buhrmester et al., 2011; Paolacci et al., 2010). Participants were asked to evaluate their perceptions of importance and performance for each of the 44 items (retained from the previous stage) regarding restaurants’ mitigation strategies. The same screening and demographic questions asked in the pretest were also used in this structured survey.

A total of 585 responses were collected. After deleting cases with significant incomplete responses, same participation IDs, and careless responses, 560 questionnaires were retained for further analyses. These data were randomly split into two samples in order to conduct separate exploratory factor analysis (EFA) (n = 224) and confirmatory factor analysis (CFA) analyses (n = 336) (e.g., Koenigsfeld et al., 2012; Wong and Kim, 2020). According to DeVellis (2017), splitting samples could lower the possibility of inflations of the results (i.e., effect by chance) and could avoid having samples from a different population.

3.2. Phase 2: importance-performance analysis

Scholars consider the importance-performance analysis (IPA; Martilla and James, 1977) as one of the most useful and popular tools to assess consumer satisfaction and business strategies (Boley et al., 2017; Sever, 2015). It provides management with valuable information that is easy to interpret (Boley et al., 2017). IPA is diagnostic in nature in that it facilitates the identification of product or service attributes that are under- or well-performed by considering the relative importance (Dwyer et al., 2012; Sever, 2015). According to Martilla and James (1977), IPA is consumers’ evaluations of acceptance on attributes based on self-perceptions (Liu and Tse, 2018). Those attributes could be selected or developed (Lai and Hitchcock, 2015; Martilla and James, 1977).

In terms of hospitality and tourism research, researchers could create new or adopt existing attributes but are not recommended to duplicate existing attributes from different settings (Lai and Hitchcock, 2015). For restaurants with a specific practice, it is the consumer’s evaluation of an existing attribute. As for restaurants that do not embrace a specific action, it is the consumer’s assessment of an attribute to be developed, therefore reflecting an overall general evaluation or perception. The current paper used the newly developed attributes through the scale-development process that followed a rigorous research procedure.

IPA combines consumer perceptions of importance and performance of service attributes into a two-dimensional grid. With the x axis being perceived performance and the y axis being perceived importance, four quadrants can be identified (Martilla and James, 1977): keep up the good work (upper right); concentrate here (upper left); low priority (lower left); and possible overkill (lower right). The two quadrants on the right indicate that consumers perceive companies performing well on the service attributes but are either considered as high importance (keep up the good work) or low importance (possible overkill) to consume themselves. The two quadrants on the left suggest that consumers are either unsatisfied with the service attributes (concentrate here) or of no great concern to consumers (low priority).

One of the important steps to conduct IPA is the choosing or mapping of the vertical and horizontal grid lines or the cross-hair placement (Boley et al., 2017). The original IPA study suggested that the selection of cross-hair is about judgment and indicated that it “lies in identifying relative rather than absolute levels of importance and performance” (Martilla and James, 1977, p. 79). Researchers can use two common
methods to place cross-hairs, i.e., scale-centered or data-centered approach (Bacon, 2003; Bi et al., 2019). The scale-centered approach places the vertical and horizontal lines at the midpoint of the scale (e.g., three for 5-point Likert scale), whereas the data-centered approach usually positions the cross-hairs at the mean value of the data (Bacon, 2003; Bi et al., 2019; Boley et al., 2017).

The use of the scale-centered approach is controversial, as results may be inflated due to the "ceiling effects" (Oh, 2001, p. 622), in which survey respondents tend to report higher importance and performance scores that are greater than the midpoints (Bi et al., 2019; Boley et al., 2017; Taplin, 2012). To better position the cross-hair that reflects relative importance and performance, researchers more frequently used the data-centered approach (Bi et al., 2019; Eskildsen and Kristensen, 2006).

As suggested by Taplin (2012), the data-centered approach is advantageous when it is used to make relative comparisons among attributes. Moreover, this approach helps to solve the "ceiling effects" and provide high discriminative power (Bi et al., 2019; Boley et al., 2017). Specifically, the data-centered approach ensures that attributes on the IPA are scattered across the four quadrants (Boley et al., 2017). Also, this approach provides a more practical meaning to industry professionals when considering the reallocation of scarce resources (Taplin, 2012). Based on these, the current study selected the cross-hairs by using the data-centered approach to document the relative importance and performance.

According to the IPA research framework proposed by Lai and Hitchcock (2015), construct reliability and validity should be established through EFA, CFA, Cronbach’s alpha, average variance extracted (AVE), composite reliability (CR), and correlation analyses before doing IPA analysis. Phase 1 of this study fulfilled this prerequisite. Based on the method used by Kao et al. (2008), the combined data were then used for IPA analysis. Mean scores of the constructs in terms of their perceived importance and perceived performance were calculated to determine the cross-hairs (i.e., data-centered approach). After that, results were mapped on a two-dimensional grid to visualize the output. An overall framework of this study is presented in Fig. 1.

4. Results

4.1. Descriptive statistics

Table 4 summarizes the demographic profile of participants. As the data set was randomly split to conduct separate EFA and CFA analyses, the structure of the demographic in EFA and CFA was almost identical. The majority of the participants were adults ages between 30 and 39 years old (EFA: 39.73%; CFA: 34.82%; combined: 36.79%). More males than females participated in the survey (EFA: 55.36%; CFA: 50.89%; combined: 52.68%). Most of the respondents had a four-year college degree (EFA: 49.11%; CFA: 50.89%; combined: 50.18%). As for annual household income, the majority of the participants had a household income between $40,000 to $59,999 (EFA: 30.36%; CFA: 27.08%; combined: 28.39%).

Participants of this study tend to be younger adults who are also highly educated. According to a report by the USDA, those younger, highly educated adults are more likely to purchase or consume food away from home (Saksena, 2018). Therefore, samples of this study represent its target population.

4.2. EFA results

EFA using the first set of data was performed to further refine the measurement. The 44 items were subjected to the initial EFA using a principal component analysis with varimax rotation. A total of 11 items had high cross loadings (>0.40) on two or more factors and were eliminated. Two items with factor loading less than 0.50 (Item A: 0.46; Item B: 0.45) were excluded; items with factor loading greater than 0.50 were kept. Due to the conceptually inconsistencies with items under the designated construct, five items were removed additionally from the pool.

The factorability of the sample was evaluated by Kaiser-Meyer-Olkin (KMO) analysis and Bartlett’s test of sphericity. The KMO value was 0.94, which exceeded the recommended minimum value of 0.60 (Hair et al., 2006). The Bartlett’s test of sphericity was also significant at the alpha level of 0.01, indicating adequacy for inclusion in the EFA.

With a total of 25 items, five factors were named as follows: Protective equipment/technology; Health and hygiene; Access of purchase/serving; Safety measures for customer; Employee safety measure (acronym of PHASE). The five factors with eigenvalues higher than 0.95 explained 69.29% of the variance, and all items had factor loadings greater than 0.60. It is important to note that, although studies traditionally embrace the idea that eigenvalue should be greater than 1, researchers have criticized this view due to potential missing information while using principal component analysis (Camiz and Pillar, 2018; Jolliffe, 1972). Researchers further suggested that the eigenvalue should be set at 0.70 minimum. Therefore, this paper embraces this view and uses the suggested 0.70 as the threshold for eigenvalues. The internal consistency of items within each construct ranged from 0.82 to 0.91.
indicating that the reliability of the measurement items was satisfactory. The EFA results are presented in Table 5.

The first factor, “Protective equipment/technology” (P), includes five items: installing self-service technology to minimize contacts, using touchless facilities (i.e., automatic doors), using disinfection equipment, enhancing ventilation systems, and using mobile POS technology (M = 4.72). This “Protective equipment/technology”? factor captured 8.44% of the total variance with the lowest factor mean value, which is considered as the least vital element consumers consider safe when re-opening of restaurants.

The second factor, “Health and hygiene” (H), contains six items: screening employees with symptoms of COVID-19; monitoring employee health; reinforcing food safety and sanitation training; strengthening disinfection of tableware; reinforcing employee personal hygiene; intensifying the cleaning equipment. “Health and hygiene” captures the largest variance (46.48%), and the factor mean is 5.33.

The third factor is “Access of purchase/serving” (A) and includes four measurement items: offering drive-through/curbside pickup; notifying order updates via mobile device; providing contactless payment option; and offering contactless food ordering option (online order, phone order). The mean of the factor is 5.41, which is the second highest among those five factors and explains 3.83% of the variance.

The fourth factor is “Safety measures for the customer” (S), which includes wearing a face covering, practice physical distancing, avoiding face touching, covering when coughing and sneezing, and washing hands frequently and effectively. This factor explains 5.65% of the variances (M = 5.16).

The last factor, “Employee safety measure” (E), indicates employees practicing good safety measures during restaurant operations. Similar to the customers’ safety measure, five items are included in this factor: wearing face covering; practice physical distancing; avoiding face touching; covering when coughing and sneezing; and washing hands frequently and effectively. “Employee safety measure” reveals that 4.90% of variance has the highest factor mean value (M = 5.56) among the five factors, indicating it is the most important.

| Table 4 | Descriptive statistics of the samples. |
|---------|----------------------------------------|
| Characteristic | EFA | CFA | Combined |
| | n | % | n | % | n | % |
| Age | | | | | | |
| 18–29 years | 53 | 23.66 | 79 | 23.51 | 132 | 23.57 |
| 30–39 years | 89 | 39.73 | 117 | 34.82 | 206 | 36.79 |
| 40–49 years | 42 | 18.75 | 62 | 18.45 | 104 | 18.57 |
| 50–59 years | 26 | 11.61 | 49 | 14.58 | 75 | 13.39 |
| Older than 60 | 12 | 5.36 | 27 | 8.04 | 39 | 6.96 |
| | Prefer not to answer | 2 | 0.89 | 2 | 0.60 | 4 | 0.71 |
| Gender | | | | | | |
| Male | 124 | 55.36 | 171 | 50.89 | 295 | 52.68 |
| Female | 97 | 43.30 | 162 | 48.21 | 259 | 46.25 |
| Other (and/or prefer not to answer) | 3 | 1.34 | 3 | 0.89 | 6 | 1.07 |
| Education | | | | | | |
| High school | 16 | 7.14 | 17 | 5.06 | 33 | 5.89 |
| Some college | 24 | 10.71 | 35 | 10.42 | 59 | 10.54 |
| 2-year degree | 13 | 5.80 | 26 | 7.74 | 39 | 6.96 |
| 4-year degree | 110 | 49.11 | 171 | 50.89 | 281 | 50.18 |
| Professional degree | 11 | 4.91 | 16 | 4.76 | 27 | 4.82 |
| Master’s | 47 | 20.98 | 66 | 19.64 | 113 | 20.18 |
| Doctorate | 2 | 0.89 | 5 | 1.49 | 7 | 1.25 |
| | Prefer not to answer | 1 | 0.45 | 0 | 0.00 | 1 | 0.18 |
| Annual household income | | | | | | |
| Lower than $2,000 | 18 | 8.04 | 33 | 9.82 | 51 | 9.11 |
| $2,000–$9,999 | 37 | 16.52 | 46 | 13.69 | 83 | 14.82 |
| $10,000–$19,999 | 68 | 30.36 | 91 | 27.08 | 159 | 28.39 |
| $20,000–$49,999 | 37 | 16.52 | 66 | 19.4 | 103 | 18.39 |
| $50,000–$99,999 | 25 | 11.16 | 48 | 14.29 | 73 | 13.04 |
| $100,000–$149,999 | 26 | 11.61 | 37 | 11.01 | 63 | 11.25 |
| More than $150,000 | 12 | 5.36 | 15 | 4.46 | 27 | 4.82 |
| | Prefer not to answer | 1 | 0.45 | 0 | 0.00 | 1 | 0.18 |

| Table 5 | EFA result (PHASE). |
|---------|----------------------|
| Variables (Cronbach’s alpha) | Factor Loading | Eigenvalues | Variance Explained | Mean |
| Protective equipment/technology (P; α = 0.87) | 0.70 |
| P1 Restaurants equip onsite self-service technology to minimize in-person contact while ordering. | | |
| P2 Restaurants install touchless facilities (e.g., automatic door, hands-free faucets). | 0.75 |
| P3 Restaurants introduce disinfection robotic devices (e.g., UV light disinfection robot). | 0.60 |
| P4 Restaurants improve its ventilation systems. | 0.75 |
| P5 Restaurants adopt mobile point of sale (POS) systems. | 0.79 |
| Health & hygiene (H; α = 0.91) | 11.62 | 46.48 | 5.33 |
| H1 Restaurants screen employees for symptoms of COVID-19 before working. | 0.72 |
| H2 Restaurants instruct employees with COVID-19 symptoms to stay at home. | 0.73 |
| H3 Restaurants reinforce training for food safety and sanitation. | 0.75 |
| H4 Restaurants strengthen disinfection of tableware. | 0.62 |
| H5 Restaurants reinforce personal hygiene of employees. | 0.68 |
| H6 Restaurants intensify the cleaning of equipment. | 0.68 |
| Access of purchase/serving (A; α = 0.82) | 0.96 | 3.83 | 5.41 |
| A1 Restaurants offer curbside pickup or drive-through. | 0.62 |
| A2 Restaurants notify order updates through mobile device (e.g., app notification, text message, email) | 0.64 |
| A3 Restaurants provide contactless payment options (i.e., mobile payment, online payment). | 0.71 |
| A4 Restaurants provide contactless food ordering options (i.e., online order, phone order). | 0.74 |
| Safety measures for customer (S; α = 0.89) | 1.41 | 5.65 | 5.16 |
| S1 Other customers in the restaurant wear face coverings all the time while not eating | 0.78 |

(continued on next page)
4.3. CFA results

After the exploratory analysis, a CFA with the reduced 25 items was conducted using the other set of the data, and by utilizing maximum likelihood estimation. The final CFA result (Table 6) for the measurement model shows that the model had a reasonable fit ($\chi^2 = 587.48$, df = 265, $p < .01$; RMSEA = .06; CFI = .94; TLI = .93; SRMR = .05). The internal consistency level for the five constructs ranges from 0.85 to 0.89, which exceeds the minimum requirement of 0.60 (Hair et al., 2006). All measurement items have standardized loadings from 0.68 or higher, and all items are significant at an alpha level lower than 0.01. The AVE of the five constructs exceeds the minimum requirement of 0.50, showing support of a reasonable convergent validity.

To assess the discriminant validity of each construct, the squared correlations between the constructs were compared with AVEs (Fornell and Larcker, 1981; Table 7). Although some of the construct’s squared correlations were higher than the AVEs, follow-up complementary tests on confidence intervals of correlations (Anderson and Gerbing, 1988) suggested that all of the correlations were significantly different from 1 (95% CI: H-A [0.73, 0.84]; H-E [0.80, 0.89]; H-S [0.67, 0.80]; A-E [0.71, 0.83]), providing support for the factors’ discriminant validity.

The model was further tested to investigate whether there was a common method bias (CMB; Podsakoff et al., 2003). Previous studies from hospitality and tourism scholars suggested that Harman’s single factor test prevailed among statistic techniques used to address concerns regarding CMB (Kock et al., 2021; Min et al., 2016). The current study therefore utilizes the Harman’s test to assess CMB by taking the following two steps:

First, a one-factor model was conducted to evaluate model fit. According to Kock et al. (2021) and Malhotra et al. (2006), CMB could occur if the one-factor model fits the data well. However, results of the one-factor model revealed that the single factor model had an inadequate fit ($\chi^2 = 1451.05$, df = 275; $p < .01$; RMSEA = .11; CFI = .76; TLI = .57). The model was further tested to investigate whether there was a risk of CMB (Hao and Chon, 2021). Based on these results, it is then reasonable to conclude that CMB may not be of great concern for this specific value for the current study is 29.38%, indicating a low variance explained by one factor should be less than 50%. Results show that this specific value for the current study is 29.38%, indicating a low risk of CMB (Hao and Chon, 2021). Based on these results, it is then reasonable to conclude that CMB may not be of great concern for this study.

4.4. IPA analysis

The final measurement scale, i.e., PHASE, was then tested by using the IPA proposed by previous studies. The cross-hair point was positioned at mean importance of 5.68, and mean performance of 5.23 (Table 8). Results of the IPA analyses reveal that “Employee safety measures” (E; Mean importance = 5.94, SD = 1.13; Mean performance = 5.51, SD = 1.13) and “Health and hygiene” (H; Mean importance = 5.85, SD = 1.18; Mean performance = 5.31, SD = 1.16) are considered the “keep up the good work” dimension (high importance, high performance). Respondents were satisfied with restaurants’ current executions on these practices in

| Variables (Cronbach’s alpha) | Factor Loading | Eigenvalues | Variance Explained | Mean |
|------------------------------|----------------|-------------|--------------------|------|
| S2 Other customers practice physical (social) distancing whenever possible. | 0.72 | 0.72 | 5.56 |
| S3 Other customers avoid touching their faces. | 0.69 | 0.69 | |
| S4 Other customers cover their mouths and noses when coughing or sneezing. | 0.63 | 0.63 | |
| S5 Other customers effectively wash their hands. | 0.72 | 0.72 | |

| Table 6 | CFA result (PHASE). |
|---------|---------------------|
| Factor Loading t p AVE CR |
| Protective equipment/technology | 0.55 | 0.86 |
| P< | 0.01 |
| P2 | 0.78 | 12.62 | <.01 |
| P3 | 0.76 | 12.53 | <.01 |
| P4 | 0.77 | 12.18 | <.01 |
| P5 | 0.71 | 11.59 | <.01 |
| Health & hygiene (H) | 0.57 | 0.89 |
| H1 | 0.69 | 12.12 | <.01 |
| H2 | 0.71 | 12.12 | <.01 |
| H3 | 0.79 | 13.28 | <.01 |
| H4 | 0.77 | 12.80 | <.01 |
| H5 | 0.78 | 12.82 | <.01 |
| H6 | 0.80 | 13.22 | <.01 |
| Access of purchase/serving (A) | 0.58 | 0.85 |
| A1 | 0.68 | 12.19 | <.01 |
| A2 | 0.77 | 12.45 | <.01 |
| A4 | 0.80 | 12.80 | <.01 |
| Safety measures for customer (S) | 0.57 | 0.87 |
| S1 | 0.76 | 14.36 | <.01 |
| S2 | 0.77 | 14.04 | <.01 |
| S4 | 0.72 | 13.08 | <.01 |
| S5 | 0.77 | 13.68 | <.01 |
| Employee safety measures (E) | 0.59 | 0.88 |
| E1 | 0.77 | 13.66 | <.01 |
| E2 | 0.73 | 14.44 | <.01 |
| E4 | 0.78 | 14.66 | <.01 |
| E5 | 0.80 | 15.03 | <.01 |

| Table 7 | Discriminant validity. |
|---------|------------------------|
| P H A S E |
| P | 0.55 | 0.44 | 0.33 | 0.37 | 0.23 |
| H | 0.66 | 0.57 | 0.62 | 0.59 | 0.72 |
| A | 0.57 | 0.78 | 0.58 | 0.41 | 0.59 |
| S | 0.61 | 0.77 | 0.64 | 0.57 | 0.53 |
| E | 0.48 | 0.85 | 0.77 | 0.73 | 0.59 |

Note. Values on the diagonal represent average variance extracted (AVE); values below the diagonal are correlation estimates among constructs; values above the diagonal are squared correlations. = .74; SRMR = .08). Therefore, the proposed model in this study may not be subject to CMB.

Second, a latent, single factor was added to the proposed model to calculate the most shared variance (i.e., covariance) explained by this single factor. Based on Hao and Chon’s (2021) study, the most shared variance explained by one factor should be less than 50%. Results show that this specific value for the current study is 29.38%, indicating a low risk of CMB (Hao and Chon, 2021). Based on these results, it is then reasonable to conclude that CMB may not be of great concern for this study.
Therefore, restaurants should continue to perform well in these areas, such as rigorous disinfection practices and COVID-19 transmission mitigation measures for staff.

The “Safety measure for customers” (S) falls into the “concentrate here” category (high importance, low performance; \( M_{\text{importance}} = 5.79, SD = 1.25; M_{\text{performance}} = 5.15, SD = 1.24 \)), highlighting the importance of restaurants to recommend and remind all customers to practice COVID-19 precautionary measures while inside a restaurant.

“Access of purchase/serving” (A) was positioned as “possible overkill” (low importance, high performance; \( M_{\text{importance}} = 5.62, SD = 1.38; M_{\text{performance}} = 5.43, SD = 1.21 \)). Although respondents perceived that restaurants are performing well on providing contactless food ordering, payment, and delivery methods to minimize in-person contact, those practices may not be considered as key components of restaurants’ COVID-19 mitigation practices.

Last, “Protective equipment/technology” (P) fall into the “low priority quadrant” (low importance, low performance; \( M_{\text{importance}} = 5.16, SD = 1.43; M_{\text{performance}} = 4.75, SD = 1.37 \)). This finding suggests that adopting facilities and technologies that help minimize in-person contacts were not considered as critical to consumers, nor do they perceived as well executed. Fig. 2 visualizes the IPA results.

Table 8

| Factors                        | Importance Mean | Importance SD | Performance Mean | Performance SD | IPA Quadrants       |
|--------------------------------|-----------------|---------------|------------------|----------------|---------------------|
| Protective equipment/technology (P) | 5.16            | 1.43          | 4.75             | 1.37           | Low priority        |
| Health & hygiene (H)            | 5.85            | 1.18          | 5.31             | 1.16           | Keep up the good work |
| Access of purchase/serving (A)  | 5.62            | 1.38          | 5.43             | 1.21           | Possible overkill   |
| Safety measure for customer (S) | 5.79            | 1.25          | 5.15             | 1.24           | Concentrate here    |
| Employee safety measure (E)     | 5.94            | 1.13          | 5.51             | 1.13           | Keep up the good work |
| Mean (All items)                | 5.68            | 1.10          | 5.23             | 1.00           |                     |

5. Discussion and conclusion

5.1. General discussion

As of early 2022, the United States is experiencing a surge brought by the Omicron variant (Leatherby et al., 2021). Despite the emergence of the new variant, the majority of the adults in the United States (65%) are comfortable dining inside restaurants (Case, 2021). Industry is also reporting a strong growth in restaurants’ performance (Black Box Intelligence, 2021). While the pandemic will eventually end up as an endemic, the disease may be here to stay, and the mitigation tools will be utilized as the new normal that people are living with the disease (Ducharme, 2021; Hochman, 2020; Rab et al., 2020).

Previous studies in psychology suggest that an individual’s habits can be formed in about two months (Lally et al., 2010). With that being the case, COVID-19 mitigation strategies that have taken place in restaurants may become important service attributes fulfilling consumers’ expectations while ordering from restaurants. The PHASE scale and the IPA results presented in this paper enables restaurant professionals to have a better understanding of consumers’ perceptions and satisfaction with the newly formed service attributes centered around the mitigation strategies.

The first factor in the PHASE measurement scale is “Protective equipment/technology” (P). The dimension is comprised of five items that represent mitigation strategies with regard to the physical servicescape. Results from the IPA model reveal that this factor falls under the category of low priority (low importance, low performance). Therefore, adopting facilities and technologies that can help in minimizing in-person contacts was not considered as critical to consumers nor was it perceived as being well executed. Therefore, as restaurants are struggling to survive during the pandemic, they may not need to further invest in technological innovations (e.g., self-service devices) or facility renovations (e.g., touchless facilities) inside their restaurants.

The second factor is “Health and hygiene” (H), which is comprised of six items. Prior studies have revealed “cleanliness” as an important factor in the servicescape model (Xu and Gursoy, 2021). Personal hygiene is another important mitigation strategy, which has been utilized to avoid contracting the disease (de Bruin et al., 2020). “Health and hygiene” fall into the “keep up the good work” quadrant (high importance, high performance). The results reveal that restaurants should continue to reinforce training for food safety and sanitation and employee hygiene. At the same time, consumers also considered...
intensive and frequent restaurant cleaning as vital.

The third factor, “Access of purchase/serving” (A), suggests a new servicescape dimension (i.e., Kautish et al., 2021) under service modifications and innovations during the COVID-19 pandemic. This factor is identified as a combination of items such as contactless payments (i.e., mobile payment, online payment), contactless food ordering options (i.e., online order, phone order), curbside pickup or drive-through, and notification of order updates using technology (e.g., app notification, text message, email). There has been increased dependency on technology during the COVID-19 pandemic, and previous studies have discussed the importance of using apps for food delivery and their impact on consumer behavior (Ray et al., 2019). Technology has also played a major role in leveraging customer experiences, which has helped to gain competitive advantages and consumer trust (Paul and Rosenbaum, 2020; Talwar et al., 2020). The items determined under this dimension are important for service (order) fulfillment and, in an innovative service setting, i.e., service (order) fulfillment, have become critical elements of the servicescape model (Kautish et al., 2021).

In the IPA model, the dimension of “Access of purchase/serving” (A) was positioned as possible overkill (low importance, high performance). This specific result indicates that, although respondents perceived that restaurants are performing well in providing contactless food ordering, payment, and delivery method to minimize in-person contact, those practices may no longer be considered as key components. One explanation for this finding may be attributed to the massive communications (e.g., ad campaigns or emails) consumers received from restaurants that promoted their contactless services (e.g., contactless delivery) during the initial stages of the pandemic. Thus, restaurants are suggested to reallocate some of these resources to aspects that fall below consumer expectations.

The fourth factor, “Safety measures for customers” (five items; S), and the fifth factor, “Employee safety measures” (E) (five items), represent items that are consistent with prior studies and have been identified in precautionary measures from an individual and shared responsibility perspective (Ebrahim et al., 2020). To limit the spread of COVID-19, several mitigation strategies have been adopted by local and global platforms. Social or physical distancing was identified as one of the strongest strategies that can reduce virus transmission (de Bruin et al., 2020). Mitigation strategies identified under this dimension comprised practices such as maintaining social distancing, avoid touching face and other sense organs, frequent handwashing etiquettes, and wearing a face covering whenever possible.

The results of the IPA analysis reveals that the fourth factor, i.e., “Safety measures for customers” (S), belongs to the “concentrate here” quadrant (high importance, low performance), whereas the fifth factor, “Employee safety measures” (E), falls into the “keep up the good work” category (high importance, high performance). In one aspect, this result highlights the importance of restaurants to recommend and remind all their customers to practice COVID-19 precautionary measures while inside the restaurants (e.g., physical distancing). The results also reveal that consumers may consider the employees’ efforts to mitigate transmission of COVID-19 (e.g., wearing face coverings) and intensive and frequent restaurant cleanings as vital. At the same time, they may be satisfied with restaurants’ current executions on these practices. Therefore, restaurants should continue to perform well on social distancing practice and rigorous use of protective measures such as use of face covering and handwashing etiquette in restaurants and staffs’ COVID-19 transmission mitigation measures.

5.2. Theoretical implications

The current study contributes to the restaurant literature by developing a scale to measure consumer perceptions regarding COVID-19 mitigation strategies (i.e., PHASE). By utilizing the servicescape model as a foundation, this study further extends the application of this model in service settings during a health crisis, which, to our best knowledge, has not been examined in previous research on servicescape. Furthermore, unlike most servicescape studies that utilized perceived service-scape as a two-dimensional concept (i.e., physical and social, or substantive and communicative), the current paper further expands the model by incorporating a broader area of perceived servicescape (e.g., access of service/order that was adopted from the concept of service fulfillment).

More specifically, this study comprehensively considered precautionary measures in personal health important in the service setting. As proposed in the service triangle model of relationship marketing (Grönroos, 1996, 1997), company, employee, and customer are all critical components in a service setting that may influence customer satisfaction (Cheng et al., 2021; Hsieh, 2018). However, with recent technological advancements, the importance of technology in the service triangle model cannot be neglected (Cheng et al., 2021). Indeed, in the original service triangle model, Grönroos (1996, 1997) positioned technology as another important type of resource, similar to employees. The PHASE scale proposed in this paper echoes these propositions, and reflects a more comprehensive view in building a meaningful relationship marketing among service attributes in restaurants that were formed during the pandemic.

The subsequent IPA further fulfilled customer satisfaction research during the COVID-19 pandemic within the restaurant industry. While a previous study took the big data approach to investigate restaurants’ satisfaction during the pandemic (Kostromitina et al., 2021), this study further provides a closer insight on customer satisfaction by using consumer surveys.

Moreover, this research extends restaurants’ service attributes that are substantial to quality of service, specifically with regard to mitigation strategies formed during the pandemic. Previous studies suggested that servicescape elements are closely associated with quality of service in the hospitality industry (Haobin et al., 2021; Hong et al., 2020; Line and Hanks, 2019a). As Cheng et al. (2021) summarized, having a proper and accurate measurement of service quality is the prerequisite of effective service quality assessments. By incorporating the PHASE scale that was developed based on servicescape, this current paper enables researchers to have a more comprehensive evaluations on service attributes that are critical to the concept of service quality now and in the future. Furthermore, the PHASE scale could be a supplement of the long-established DINESERV (Stevens et al., 1995), to facilitate researchers gaining extensive insights into determinates of service quality and consumer behaviors during and after the pandemic.

5.3. Practical implications

In terms of practical and managerial implications of the present study, the findings provide useful information for managers and marketers in restaurant businesses. From a general perspective, the PHASE scale developed in this study provide an additional tool for managers to comprehensively evaluate customer satisfaction. As previously discussed in this paper, during the COVID-19 pandemic, consumers may have formed habitual perceptions and expectations toward personal health precautionary measures taken place in businesses (i.e., the new norm). According to the well-established expectation confirmation theory (Oliver, 1980), meeting consumer expectations are the prerequisites of consumer satisfaction. Therefore, the PHASE scale provides a glance at areas that would ensure customer satisfaction, in addition to typically focused foods and employee services attributes at restaurants.

In particular, this paper facilitates restaurant managers to better reallocate existing resources to ensure customer satisfaction. As summarized by Cheng et al. (2021), doing this would enable restaurants to gain competitive advantages. The IPA results of this study provide insights into areas that managers may need to work on. For example, the results revealed that restaurants performed well on consumer access of purchase/serving (e.g., curbside pickup, contactless services), however, consumers no longer perceived these items as very important. As
previously discussed, through massive communications during the pandemic, those services are well recognized by consumers, and possibly perceived as “take it for granted” services. Therefore, restaurant professionals could reallocate their resources on promoting consumer precautionary measures while inside the restaurant (i.e., “S” in the PHASE scale).

The current study’s IPA result suggests that restaurants should concentrate on safety measures for consumers (i.e., consumers’ suitable behaviors). Although restaurants have limited abilities to restrict the behaviors of their consumers, they could encourage proper behavior to increase safety perceptions. For instance, restaurants could post signage at the entrance and notify that face covering are recommended indoors by the CDC when not eating or indicating that masks are encouraged. As aforementioned, restaurants could switch their communication strategies from concentration on contactless services to encouragement of onsite personal health precautionary measures. Doing so may also help to increase the number of patrons who will be comfortable dining inside restaurants.

The IPA results also suggested that restaurants do not need to put more investments or resources on protective equipment or technologies at least as of now. Therefore, for those managers who would like to update their equipment or technologies, they could pause it for now, since updating the equipment and technologies could have minimum influences on consumer satisfaction. Alternatively, for those restaurants who had a sufficient budget to update equipment or technologies, they are more encouraged to invest on existing resources to maintain customer satisfactions on employee safety and restaurant sanitations (i.e., “E” and “H” in the PHASE scale).

5.4. Limitations and future studies

While the current study contributes significantly toward an understanding of customer perceptions of mitigation strategies in the restaurant sector, certain limitations need to be addressed. The first is the domain in which this study has been conducted. While the results of the present research provide support for effective mitigation strategies in the restaurant business, it is possible that these results are not analogous in other contexts, and the perceptions of customers may differ in other consumption contexts (e.g., fine dining, cafés, fast-casual and fast-food restaurants). Future research can adapt this scale for other types of restaurants such as fast-casual or cafés. Furthermore, it would be useful to replicate and modify this scale in additional industries, such as hotels and travel, which have also been impacted by COVID-19. Researchers can also evaluate the pre- and post-COVID-19 customer perceptions about the mitigation strategies in these varying consumption contexts.

The second limitation is that the scale is based on U.S. representative samples and is subject to a series of validity and reliability tests. Therefore, the findings may not be generalized to other countries. Future research may test this scale using different populations in different cultures to establish external validity. This may also potentially help researchers in gaining a deeper understanding of customer perceptions and the factors they consider as important in COVID-19 mitigations across different cultures and populations.

Although the data-centered cross-hair selection in this study follows rigorous recommendations from previous studies, it is important to note that the interpretation of the results are based on the relative importance and performance, rather than the actual or absolute importance and performance. As suggested by previous studies, if actual means were chosen, or if a different cross-hair placement was used, or if another statistical method was conducted to document the importance and performance of attributes, it will be more likely to change the results of the study by having different categorizations of attributes (Boley et al., 2017; Oh, 2001). Therefore, the IPA results of this study can only be used to make relative references, rather than absolute arbitrations.

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