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Consumers’ dining behaviors during the COVID-19 pandemic: An Application of the Protection Motivation Theory and the Safety Signal Framework

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ABSTRACT

With the long-lasting impacts of the COVID-19 pandemic, it is critically important that restaurateurs understand predictors of consumers’ dining behaviors to better foster strategies to recover their revenue during the re-opening stage. Based on the Safety Signal Framework and the Protection Motivation Theory, this study developed and tested a model investigating the combined effects of restaurateurs’ measures and consumers’ protective motivations on their dine-out frequencies and dine-in likelihoods. Consistent with propositions of the Protection Motivation Theory, the results confirmed that both the threat and coping appraisals influenced consumers’ dining behaviors. The coping appraisal process is affected by “access to servicescape,” “servicescape,” and “communication.” Additionally, the results of the gap analysis revealed four safety signaling strategies perceived as effective by consumers but with a low implementation rate in the restaurant industry. Theoretical and practical implications were provided to restaurateurs.

1. Introduction

The year 2020 and moving on has been challenging for the restaurant industry in the U.S. According to the National Restaurant Association [NRA] report, the total sales were $659 billion in 2020, which was $240 billion lower than expected (NRA, 2021). In addition, due to the reduced visitation of customers during the COVID-19 pandemic, nearly 110,000 restaurant locations were temporarily or permanently closed (Dube, Nhamo, & Chikodzi, 2021; NRA, 2021). As a result, total employment was down by almost one-fourth compared with the expected number in the absence of a pandemic (NRA, 2021). Among those industries that have been negatively impacted by the pandemic, the restaurant industry was hit the hardest (Gosling, Scott, & Hall, 2020). The lockdown and the seating capacity restrictions led to reduced revenue; making it especially difficult for restaurants to survive. For example, in South Carolina, researchers found that nearly 25% of the restaurants they studied did not survive during the lockdown period in 2020 (Brizek, Frash, McLeod, & Patience, 2021).

Due to the fear of COVID-19, the need for social distancing, and the increasing health and safety concerns, consumers’ perceptions and behaviors have changed significantly since the pandemic (Prentice, Quach, & Thaichon, 2021). According to the results of a marketing study, the majority of the consumers believed that foods purchased from groceries stores were safer than those sold by restaurants (Datassential, 2020). Consequently, consumers’ dine-out frequencies dropped significantly at the beginning of the pandemic, with restaurant visitation declining by nearly 90% (Dube et al., 2021). In addition, in March and April 2020, there were almost no seated diners. Although the recovery started to occur in June 2020 when the seated diner rate slowly increased, the number is still far from the pre-pandemic level (OpenTable, 2021).

Researchers believed that using appropriate and actionable measures, such as improving communication through messages to consumers, may reduce barriers, encourage consumers to purchase restaurant foods, and help restaurant businesses strive (Byrd et al., 2021; Wang, Yao, & Martin, 2021). Accordingly, studies have been conducted to explain customers’ dining behaviors during the COVID-19 pandemic worldwide. For example, Dedegül and Bogan (2021) found that sociability and affect regulation positively predicted consumers’ intention to dine in upscale restaurants in Turkey. In Australia, Wang et al. (2021) examined the effects of crowdedness and safety measures employed in restaurants on consumers’ food purchasing options (e.g., takeout, dine-in). In the U.S., Kim, Yang, Min, and White (2021) studied how...
hope and fear mediate the relationship between consumers’ protective motivations and their food purchase-related behavior intentions. Additionally, Zhong and Moon (2021) compared how subjective norms and restaurants’ precautionous measures impact consumers’ risk perceptions (i.e., physical & psychological risk perceptions) and consumers’ dining-related behaviors in China and Korea. Focusing on message framing, Kim, Bonn, and Cho (2021) found that clean safety messages positively influenced customers’ intention to purchase related menu items. In sum, previous studies have heavily focused on consumers’ risk perceptions and restaurants’ strategies. Very few studies have combined these two scopes, examining customers’ reactions towards restaurants’ safety strategies and their actual behaviors during a pandemic.

The current study intends to close the research gaps by building consumers’ cognitive perceptions and restaurants’ coping strategies into a research model to investigate restaurants’ newly adopted safety measures’ impacts on consumers’ dining-related behaviors. Given the long-lasting impacts of the pandemic and the need to ‘re-set,’ it is critically vital that restaurateurs understand consumers’ dining-related perceptions and behaviors. Furthermore, this understanding is vital for restaurateurs to foster strategies to minimize consumers’ risk perceptions and enhance their confidence and perceived safety for dining in. Therefore, the purpose of this study was to examine consumers’ dining behaviors during the COVID-19 pandemic using the Protection Motivation Theory and the Safety Signal Framework. Specifically, this study aims to achieve the following study objectives: (1) to explore and identify the safety signals that predicted consumers’ perceived response efficacies of restaurants during the pandemic; (2) to examine the impact of threat appraisal and coping appraisal on consumers’ dining behaviors during the pandemic; (3) to compare the perceived effectiveness of safety signals and their implementation rate in restaurants in order to identify the most appropriate safety signal strategies that need attention from restaurant operators.

2. Literature review

2.1. Safety signals framework

The COVID-19 pandemic has brought many challenges to the service industry, including the restaurant industry, which strives to provide a safe environment to overcome customers’ fear toward dining in (Bove & Benoit, 2020). Researchers had developed a framework with servicescape elements to guide the service industry to better prepare a safe environment for customers during the COVID-19 pandemic (Bove & Benoit, 2020). This servicescape framework was built upon the signaling theory and was believed to assist the service industry in the recovery stage from the impact of the pandemic (Bove & Benoit, 2020). The safety signals are generally categorized into three dimensions: “access to servicescape,” “servicescape,” and “communication about servicescape.” In addition, “access to servicescape” refers to the safety signals that are introduced to customers when service is activated, usually upon the arrival of customers (Flietl & Kleinaltenkamp, 2004; Moeller, 2008). Moreover, “servicescape” is typically manifested through four aspects: “physical environment,” “tangibles,” “staff,” and “other customers.” Once customers enter the service environment, the physical environment (i.e., servicescape) and the moveable tangibles will trigger different safety signals to customers (Bittner, 1992). It is further pointed out that the social elements inside the service environment, such as staff and other customers, may become potential sources of safety signals (Rosenbaum & Massiah, 2011). Lastly, “communication” means that service providers can communicate with customers about their safety protocols (Bove & Benoit, 2020).

Hospitality researchers have conducted various studies to examine how restaurants can make customers feel safer during their dining experiences, especially in COVID times. For instance, through a quasi-experimental design study, Taylor (2020) found that customers preferred partitions in-between tables to mannequins at tables as ways to set up social distance between customer groups in restaurants. The partitions can be used as a strategy in servicescape to increase consumers’ intentions to dine out in restaurants (Taylor, 2020). By conducting four experiments and integrating the theories about the psychological effects of risk, Kim and Lee (2020) found that consumers felt more comfortable sitting at a private dining table or in a private dining room when dining in full-service restaurants during the pandemic. This study proved that the availability of private dining could be part of the servicescape that reduces consumers’ risk perceptions when eating out (Kim & Lee, 2020).

As the restaurant industry returns to normal operation, previously studied measures such as partitions and private dining rooms may not always be applicable. Thus, guided by the safety signal framework, this study proposed testing the impacts of six broad categories of safety signals on tourists’ perceptions. In addition, the Protection Motivation Theory (PMT) suggests that response efficacy, which is a key element in the coping appraisal process, reflects people’s evaluation of the perceived effectiveness of protection measures (Rogers, 1975). When it comes to application, Liu, Schroeder, Pennington-Gray, and Farajat (2016) used this construct to measure the source markets’ assessment of practitioners’ safety measures. Thus, based on the literature, this study proposed the following hypotheses:

H1a. Access to servicescape has a positive impact on restaurants’ response efficacy.
H1b. Servicescape has a positive impact on restaurants’ response efficacy.
H1c. Tangibles have a positive impact on restaurants’ response efficacy.
H1d. Technology has a positive impact on restaurants’ response efficacy.
H1e. Other customers have a positive impact on restaurants’ response efficacy.
H1f. Communication has a positive impact on restaurants’ response efficacy.

2.2. Protection Motivation Theory

The Protection Motivation Theory (PMT) was proposed by Rogers (1975) to explain how emerging health issues affect individuals’ attitudes and behavioral changes (Rogers & Prentice-Dunn, 1997). According to PMT, an individual’s selection and decision of behaviors can be impacted by fear-arousing communications (Rogers, 1975). Although, initially, PMT was designed for health-related issues; nowadays, PMT has been widely applied in studies of various disciplines, including the hospitality and tourism management field. In the PMT research model, individuals typically reach their decisions through two cognitive mediating processes (Floyd, Prentice-Dunn, & Rogers, 2000). One is the threat appraisal process, while the other is the coping appraisal process (Floyd et al., 2000). The threat appraisal process is also defined as the process of how individuals perceive the risk (Grothmann & Reusswig, 2006). Under this condition, individuals first identify the risk, then determine its severity and their vulnerability to the risk (Harris et al., 2014, 2018).

Furthermore, in the coping appraisal process, response efficacy describes an individual’s beliefs in the effectiveness of a recommended behavior or a protective measure, that is, how likely the threat will be removed (Rogers, 1975). The outcome of the PMT model, therefore, involves individuals’ intention or decision to either initiate, continue, or inhibit the corresponding adaptive responses (Floyd et al., 2000). Based on propositions of the PMT, the following hypotheses were proposed:

H2a. Response efficacy has a positive impact on their risk perceptions toward dining in restaurants during the pandemic.
H2b. Response efficacy has a positive impact on their trust perception toward dining in restaurants during the pandemic.

H3. The COVID threat perceived by consumers has a positive impact on their risk perceptions toward dining in restaurants during the pandemic.

The ongoing COVID-19 pandemic has multidimensional effects on different aspects of the hospitality and tourism industry. Understanding consumers’ behaviors are critically essential for hospitality operators better to serve the changing needs of consumers during the pandemic. Researchers have applied the PMT in various studies to investigate how consumers mitigate the risks or respond to the risk when traveling during the pandemic. By studying hotel customers, Hsieh, Chen, and Wang (2021) found that perceived threats significantly impacted customers’ intention to stay in a hotel during the COVID-19 pandemic, while response efficacy significantly increased customers’ intention to stay in a hotel. In the food safety research field, the PMT model was used to understand customers’ intention to visit a restaurant with a previous foodborne illness outbreak (Ali, Harris, & Ryu, 2019). Specifically, consumers’ perceived severity and perceived vulnerability predicted their intention to visit, while the type of restaurant moderated the relationship between perceived severity and consumers’ intention to visit a restaurant with foodborne illness outbreaks (Ali et al., 2019).

Using the PMT research framework, researchers surveyed restaurant customers in the U.S. between the first and second wave of the COVID-19 pandemic and found that consumers tend to commit to health-focused behaviors, support local businesses, and engage in conscious consumption during the pandemic (Kim et al., 2021). Specifically, fear and hope mediated the relationships between consumers’ protective motivation and dining intentions (Kim et al., 2021). Researchers also noticed the role of trust, whose impacts varied by context. By building trust into the research model, researchers identified that government and social trusts mediated the relationship between customers’ response efficacy and their intention to stay in hotels (Hsieh et al., 2021). In Turkey, researchers found that the relationship between motivational factors and customers’ visiting intentions to upscale restaurants was moderated by their risk perceptions toward COVID-19 and their trust toward the government (Dedeoğlu & Bogan, 2021).

According to the literature mentioned above, risk perceptions and trust both played important roles in shaping consumers’ behaviors during the pandemic. In the context of the current study, the output behavior is defined as consumers’ dine-out frequency and the likelihood to eat inside the restaurant. Therefore, based on the two cognitive mediating processes of PMT (Floyd et al., 2000) and previous literature, the current study proposed that both risk perceptions and trust toward the restaurant had significant impacts on consumers’ dine-out frequencies and dine-in likelihoods. In specific:

H4a. Consumers’ risk perceptions have negative impacts on their frequencies of dining out during the pandemic.

H4b. Consumers’ risk perceptions have negative impacts on their likelihood of dining in restaurants during the pandemic.

H5a. Consumers’ trust toward restaurants has a positive impact on their frequency of dining out during the pandemic.

H5b. Consumers’ trust toward restaurants has a positive impact on their likelihood of dining in restaurants during the pandemic.

Fig. 1 summarizes all hypotheses proposed in the current study. According to PMT, safety signals were grouped as the source of information for consumers. The two paths – threat appraisal process and coping appraisal process – were referred to as the cognitive mediating process (Floyd et al., 2000). In addition, dine-out frequency and dine-in likelihood were the dependent variables in the proposed research model (Fig. 1).

3. Methodology

The research design and methods were approved by the Institutional Review Board of a large university in the U.S. before data collection. This study employed a quantitative approach and used an online survey instrument to collect research data. The population of this study is restaurant customers in the U.S. (age greater than 18 years old), and the sample mirrored the demographic characteristics reported in the census.

3.1. Instrument development

An online survey instrument was developed based on a thorough review of literature on safety signaling, consumer risk perception, and consumer behavior. Five constructs are included in the proposed research model. To start with, the measurement of safety signals was adapted from the scale developed by Bove and Benoit (2020). Since this scale was developed for the retail context, it was further revised by editing the items based on hospitality literature to fit the restaurant context. Specifically, one item of the “Access to Servicescape” and two items of “Communications” were adopted from Brizek et al. (2021), three items of “Servicescape” were adopted from Kim and Lee (2020), and Taylor (2020), four items in “Tangibles” and “Staff” were revised...
based on Gursoy and Chi’s (2020) study. The constructs of perceived COVID threat were adapted from the research studies about COVID and its impact on the hospitality and tourism industry (Kim & Lee, 2020; Zheng, Luo, & Ritchie, 2021).

Additionally, the items of response efficacy were adapted from (Liu et al., 2016), where the respondents were asked to evaluate the effectiveness of restaurants’ measures in protecting themselves against COVID-19. Trust was measured by directly asking the participants to indicate to what extent they believe in the restaurant’s ability to manage the COVID-19 situation. Items measuring the perceived risk of dining in a full-service restaurant were adapted from Kim, Almanza, Ghiselli, and Sydnor (2017). All items were evaluated by the 5-point Likert scale from 1 being “Strongly Disagree” to 5 being “Strongly Agree.”

Further, participants were asked to indicate their intention to dine in the restaurant again in the next three months, from 1 being “Extremely Unlikely” to 7 being “Extreme Likely.” In terms of dine-out frequencies, participants were asked to indicate their frequencies of dining in full-service restaurants during the last three months. Their answers were coded into 1 being “never,” 2 being “monthly,” and 3 being “weekly.” This study primarily focused on the context of full-service restaurants, where participants’ dining behaviors and safety signals were all positioned in full-service restaurants with sit-down, in-person services.

3.2. Data collection

All data in this research were collected by a survey sampling company, where the link to the survey was distributed to their panel members who belong to our target population – restaurant consumers (age greater than 18 years old) in the U.S. A pilot test (N = 30) was conducted through the survey sampling company before the formal data collection. The reliability of survey constructs and the clarity of survey instructions were checked at the pilot test. As all constructs showed Cronbach Alpha levels higher than 0.7 (Nunnally, 1978) and no comments about the survey instrument were made, we proceeded to the final data collection in January 2021. Two attention checking questions were embedded in the survey to ensure that participants read all survey questions and provided valid answers. Those who failed the attention checking questions were excluded from the survey data collection and analyses process. A total of 351 valid responses were collected, including the 30 responses from the pilot study, as no changes were made to the final survey after the pilot test.

3.3. Data analyses

First, the Statistical Package for the Social Sciences (SPSS) was used to summarize the survey data. Descriptive analyses (e.g., mean, frequency), data coding, reliability of scale items was performed and calculated by using SPSS. Second, the proposed research model was measured by the SmartPLS statistical software package, through the method of Structural Equation Modeling – Partial Least Squares (SEM-PLS). This method is considered reliable and robust when measuring the survey data in that many hospitality researchers had used in their studies (Herath & Rao, 2009; Simkin & McLeod, 2010). Using the SmartPLS software, factor loadings, the Average Variance Extracted (AVE), and Cronbach’s alpha levels were calculated to check the validity and reliability of measurements in the proposed research model. Afterward, the path coefficients in the structural model were calculated by using the bootstrapping method. According to Peng and Lai (2012), the minimum sample size for using the SEM-PLS method is ten times the largest number of indicators in the constructs. Therefore, the minimum sample size of this study is 90, as the largest number of indicators is 9, for dine-in likelihood. As we collected 351 valid responses, the sample size is considered sufficient to perform all planned analyses.

4. Results and discussion

4.1. Sample profile

A total of 351 valid responses were collected and included in the data analyses processes. Nearly half of the sample are female (N = 179, 50.4%), and the other half are male (N = 173, 49.3%). Participants of this study were recruited from different age groups, with 50.4% of them from 18 to 44 years old and 49.5% of them between 45 and 74 years old. Regarding educational backgrounds, 47.6% of participants have Bachelor’s degrees or above, while 10.3% of participants hold Associate degrees. Further, as summarized in Table 1, participants’ marital statuses, household incomes, and regions of residence are consistent with the U.S. census data (https://www.census.gov/en.html; accessed July 2021). Overall, the participants’ demographic backgrounds show a good representation of general consumers in the U.S.

4.2. Measurement and the structural model

The inner and outer models were specified in SmartPLS. The PLS-SEM algorithm, which applies a path-weighting scheme, was run to calculate the reliability and validity of the construct measures in the outer model. Results of the measurement items in the proposed model are summarized in Table 2. The convergent validity of the constructs

| Table 1 | Demographic characteristics (N = 351). |
|---------|---------------------------------------|
| Gender  |                                       |
| Female  | 177                                   |
| Male    | 173                                   |
| Prefer not to answer | 1 | 0.3 |
| Age     |                                       |
| 18-24   | 31                                     |
| 25-34   | 68                                     |
| 35-44   | 78                                     |
| 45-54   | 57                                     |
| 55-64   | 64                                     |
| 65-74   | 53                                     |
| Educational Level |                               |
| Less than high school | 5 | 1.4 |
| High school graduate or GED | 60 | 17.1 |
| Some college | 82 | 23.4 |
| Associate degree | 36 | 10.3 |
| Bachelor’s degree | 101 | 28.8 |
| Master’s degree | 57 | 16.2 |
| Doctorate degree | 9 | 2.6 |
| Others | 1 | 0.3 |
| Marital Status |                              |
| Single | 125 | 35.6 |
| Married | 157 | 44.7 |
| In a domestic relationship | 20 | 5.7 |
| Divorced | 36 | 10.3 |
| widowed | 13 | 3.7 |
| Household Income |                      |
| Less than $10,000 | 14 | 4.0 |
| $10,000 - $19,999 | 29 | 8.3 |
| $20,000 - $29,999 | 34 | 9.7 |
| $30,000 - $39,999 | 39 | 11.1 |
| $40,000 - $49,999 | 35 | 10.0 |
| $50,000 - $59,999 | 35 | 10.0 |
| $60,000 - $69,999 | 34 | 9.7 |
| $70,000 - $79,999 | 23 | 6.6 |
| $80,000 - $89,999 | 16 | 4.6 |
| $90,000 - $99,999 | 23 | 6.6 |
| $100,000 - $149,999 | 44 | 12.5 |
| More than $150,000 | 25 | 7.1 |
| Region of Residency |                  |
| Northeast | 89 | 25.3 |
| Midwest | 83 | 23.6 |
| South | 114 | 32.5 |
| West | 65 | 18.5 |
was evaluated by calculating the factor loadings of measurement items and the Average Variance Extracted (AVE) of constructs. As shown in Table 2, the factor loadings of all the constructs were far above the minimum threshold value of 0.7 (Hair, Hult, Ringle, & Sarstedt, 2016). In terms of reliability, the Cronbach’s alpha values of all constructs were higher than the minimum threshold value of 0.7 suggested by Nunnally (1978). On the other hand, the value of the AVE for all constructs exceeded 0.5 (Fornell & Larcker, 1981; Hair et al., 2016). In sum, the model demonstrated good construct reliability and validity. Therefore, all constructs were kept for further analyses.

SmartPLS was used to test all hypothesized relationships in the proposed research model. A collinearity assessment was performed on the constructs before running a path analysis. Since all VIFs were all below the minimum threshold value of 5, no multicollinearity problem was identified in this proposed model (Hair, Ringle, & Sarstedt, 2011). A bootstrapping method with 500 iterations was conducted to examine the statistical significance of path coefficients and the coefficient of determination ($R^2$ value) (Hair et al., 2016).

Fig. 2 presents the path coefficients and path significance levels of the tested structural model. Overall, the model demonstrated a good fit (SRMR = 0.054). As presented, access to servicescape ($\beta =$ 0.233, $p <$ 0.001), servicescape ($\beta =$ 0.288, $p <$ 0.001), and communications ($\beta =$ 0.252, $p <$ 0.001) positively predicted restaurants’ response efficacy, while response efficacy further positively predicted consumers’ trust toward the restaurants ($\beta =$ 0.861, $p <$ 0.001) and negatively predicted consumers’ risk perceptions ($\beta =$ 0.261, $p <$ 0.001). Consumers’ perceptions of the COVID threat positively influenced their risk perceptions of dining in restaurants ($\beta =$ 0.606, $p <$ 0.001). In addition, consumers’ risk perceptions negatively influenced their dining out frequency and dine-in likelihood ($\beta =$ -0.205, $p <$ 0.001; $\beta =$ -0.325, $p <$ 0.001), while their trust toward the restaurants positively influenced their dining-related behaviors ($\beta =$ 0.331, $p <$ 0.001; $\beta =$ 0.216, $p <$ 0.001). In conclusion, all hypotheses were supported except $H_1c$, $H_1d$, and $H_1e$.

Coefficients of determination ($R^2$ values) were examined for the hypothesized model. In specific, 21.4% of consumers’ dine-in likelihood and 21.2% of consumers’ dining-out frequency were explained by consumers’ risk perceptions and their trust toward restaurants. In addition, 46.7% of consumers’ risk perceptions of dining in restaurants were explained by their perceived COVID threat and their evaluation of the response efficacy of restaurants. Restaurants’ response efficacy, on the other hand, explained 74.3% of the variance in consumers’ trust toward restaurants.

### 4.3. Safety signals vs. perceived effectiveness

In the survey instrument, participants were asked to rate their perceived effectiveness of preventive measures in restaurants and whether the restaurant of their latest visit had implemented these methods. A gap analysis (mirror the “Importance Performance Analysis [IPA]” by Martilla & James, 1977) was performed to find out the areas for improvement for restaurants. Table 3 summarizes the mean and
standard deviations of each strategy and the percentage of restaurants that implemented these strategies.

Fig. 3 illustrates the locations of these strategies in the four-quadrant matrix. The mean value of perceived effectiveness is 3.52, while the mean value of implementation is 39.4%. These mean values were plotted in the figure as red dashes horizontally and vertically. Quadrant I ("Keep up the Good Work") included seven strategies, which refer to those strategies that are perceived as effective by consumers and widely implemented in restaurants. Quadrant III ("Low Priority") refers to those strategies that are not perceived as highly effective but also not frequently used by restaurateurs. A total of nine strategies fell into this quadrant. Two strategies were in Quadrant IV ("Possible Overkill"), which refers to those strategies that were widely adopted by restaurants but not being perceived as very effective by consumers.

Quadrant II ("Concentrate Here") comprised the strategies perceived as very effective by consumers but not widely implemented in restaurants. A total of four strategies are located in this quadrant, including one item from “Servicescape” (outdoor or balcony tables), two items from “Tangibles” (protective equipment for customers; single-use utensils and dishes), and one item from “Technology” (digital menus). Quadrant II is the most critical area from the gap analyses as it provided us with information about how restaurants can improve in the future to make customers feel safe in an epidemic environment.

5. Discussions

Regarding consumers’ perceptions and decision-making, the findings of this study provided direct support to the key propositions of PMT (Floyd et al., 2000), indicating that the processes of threat and coping appraisals both affected consumers’ dining behaviors. More specifically, the results showed that participants’ perceived threat of COVID-19 negatively influenced their intention to dine out in restaurants, which is consistent with the prediction of the threat appraisal. On the other hand, the results revealed that response efficacy, which is the key element in the coping appraisal, also affected the sample’s dining behaviors. Despite the potential negative impacts of the threat appraisal, it is widely believed that coping appraisal assumes a more critical role in driving people’s behaviors in both health and hospitality contexts (Floyd et al., 2000; Liu et al., 2016).

In addition to the support of the effects of these two appraisals processes, the findings of this study suggest that these two processes might be intertwined. For example, the results of this study showed that participants’ perceived risk of dining out is shaped by both the pandemic and restaurants’ management efforts. This finding is evidenced by the statistical relationships between perceived threat, response efficacy, and perceived risk. It is encouraging since this particular finding suggests that consumers’ perceived risk of dining out, although greatly influenced by the pandemic, can be re-shaped by having effective strategies in place. This particular finding is also similar to previous studies (e.g., Liu et al., 2016), which suggest that efficacy might moderate the relationships between threat and the outcome variable in a hospitality context.

This study also noted the influences of trust on participants’ dining behaviors. Previous studies have addressed the significant role played by government trust and social trust in mitigating the negative impacts of the pandemic (Dedeoglu & Bogan, 2021; Hsieh et al., 2021); while the findings of this study revealed another dimension of trust, which addresses on the industry level and involves restauranteurs’ efforts. Compared with previous research conducted in China and Korea (Zhong & Moon, 2021), this study not only measured U.S. consumers’ dining-related behaviors and perceptions during the COVID-19 pandemic but also expanded the scope beyond consumers’ risk perception and purchasing intentions. More importantly, this study showed that restaurants’ active response to the pandemic and newly adopted safety measures could greatly enhance consumer trust, which affects their actual dining activities. These findings present a more comprehensive interpretation of the dynamic between the hospitality industry and consumers. The inclusion of new variables also sheds light on future studies, which can consider replicating this study in a global context and identify potential cross-cultural differences.

Furthermore, this study highlights the significance of crafting effective crisis management strategies from practitioners. Response efficacy is a key component in the coping appraisal in PMT and is directly related to individuals’ behavioral responses. When it comes to this study, the results showed that participants’ level of response efficacy is related to the following components in the safety signal framework: “access to servicescape,” “servicescape,” and “communication,” all of which had significantly predicted the response efficacy of restaurants. In other words, customers’ assessment of how safe a restaurant is can be visual and largely depends on (1) how restaurants restrict and control customers access, (2) how restaurants reorganize the layout to facilitate social distancing, and (3) signs and messages used by restaurant operators to communicate COVID-19 safety protocols with incoming customers.

To a large extent, these notions are consistent with previous studies, which suggest that changes in servicescape such as using partitions in between tables and setting out private dining facilities are essential in attracting and comforting customers to dine out during pandemic times (Kim & Lee, 2020; Taylor, 2020). Compared with a previous study conducted by Hsieh et al. (2021), which found that individuals’ response efficacy positively influenced consumers’ intentions to stay in hotels during the pandemic, the current study revealed that restaurants’

Fig. 2. Path coefficients of the structural model.
widely spread smartphone usage among consumers in various genera. For example, consumers expect more restaurants to provide outdoor seating as one of the re-opening methods for restaurant operations during the pandemic (Govonor.NY.Gov, 2021). In addition, consumers want restaurants to provide more protective equipment and use single-use utensils and dishes. Finally, with the rapid advance of digital technologies, consumers demand restaurants to provide easy-to-use methods for customers to wash their hands. The notion of communication stays aligned with the scope of industry initiatives. For instance, the South Carolina Restaurant and Lodging Association recommended that restaurants post signage and messages on public entrance doors and receiving doors to recommend that people not enter the facility if they are experiencing COVID-related symptoms (Brizek et al., 2021). Our findings explained the measure by illustrating the positive influences of messages and signs on consumers’ response efficacy and subsequent behaviors. In the same vein, direct communications such as advisories related to handwashing and self-wiping cards also could generate similar outcomes.

Lastly, the results of gap analyses outlined the key strategies that need to be in place in restaurants, as they were perceived necessary by consumers but not sufficiently addressed by current operations. These strategies are related to “Servicescape,” “Tangibles,” and “Technology.” For example, consumers expect more restaurants to provide outdoor patio seating or balcony tables. New York State sets a benchmark for encouraging outdoor seating as one of the re-opening methods for restaurant operations during the pandemic (Govonor.NY.Gov, 2021). In addition, consumers want restaurants to provide more protective equipment and use single-use utensils and dishes. Finally, with the widely spread smartphone usage among consumers in various generations, digital menus are more accessible and generally perceived as safe and effective. This research finding further verified the suggestions made in previous studies that digital menus or digital payments can help reduce human contact in the restaurant setting (Gursoy & Chi, 2020; Gursoy, Chi, & Chen, 2020).

Table 3
Effectiveness implementation report.

| Constructs & Measurement items | Perceived Effectiveness M (S.D.) | Implementation (%) | Quadrant |
|-------------------------------|----------------------------------|--------------------|----------|
| Access to Servicescape        |                                  |                    |          |
| A1. The number of customers dining in is restricted. | 3.60 (1.080) | 53.6 | I        |
| A2. The seating capacity is reduced to maintain social distance. | 3.61 (1.089) | 51.4 | I        |
| A3. The restaurant is commencing or reducing its service portfolio to delivery. | 3.49 (1.082) | 33.5 | III      |
| A4. The restaurant designated dining hours for key workers and vulnerable customers. | 3.33 (1.010) | 30.5 | III      |
| Servicescape                  |                                  |                    |          |
| S1. The restaurant changed the way customers access the facility (e.g., label “in” and “out” on doors) | 3.21 (1.095) | 36.8 | III      |
| S2. Glass partitions are used between tables. | 3.38 (1.140) | 31.3 | III      |
| S3. Private dining rooms are available. | 3.38 (1.130) | 27.5 | III      |
| S4. Outdoor or balcony tables are available for customers. | 3.59 (1.053) | 37.4 | II       |
| Tangibles                     |                                  |                    |          |
| T1. Protective equipment is given to customers (e.g., sanitizers, face shields, masks, gloves) | 3.66 (1.063) | 34.6 | II       |
| T2. The restaurant used single-used utensils and dishes. | 3.61 (1.063) | 34.1 | II       |
| T3. Service staff was mandated to wear masks, gloves, and/or protective shields. | 3.84 (1.101) | 55.5 | I        |
| Technology                    |                                  |                    |          |
| E1. Digital payment methods (e.g., Apple pay, contactless bank cards) are available for customers. | 3.73 (1.026) | 42.3 | I        |
| E2. Digital menus that can be viewed on personal mobile devices are available for customers. | 3.63 (1.111) | 37.6 | II       |
| E3. The self-service kiosk is used to facilitate food ordering. | 3.35 (1.087) | 28.3 | III      |
| E4. Service robots are used to reduce human-human interactions in the dining room. | 3.25 (1.101) | 20.6 | III      |
| Other Customers               |                                  |                    |          |
| O1. The temperature of customers was checked at the entrance. | 3.37 (1.177) | 29.7 | III      |
| O2. Other customers were required to wear masks when they were not eating. | 3.57 (1.100) | 47.3 | I        |
| O3. Other customers were seated farther than 6 ft from my/our table. | 3.73 (1.108) | 56 | I        |
| Communications                |                                  |                    |          |
| C1. Signs or messages about preventive measures (e.g., social distancing, wearing masks) were posted in the restaurant. | 3.51 (1.097) | 56.6 | IV       |
| C2. Signages are provided at each public entrance to inform all employees, customers, suppliers, and vendors that they are not allowed to enter if they feel generally unwell, have a fever, or persistent cough. | 3.65 (1.062) | 39.6 | I        |
| C3. The restaurant advised customers to wash their hands. | 3.49 (1.079) | 31.3 | III      |
| C4. The restaurant advised customers to self-wipe cards on payments. | 3.49 (1.079) | 31.3 | III      |

Fig. 3. Effectiveness-implementation matrix.

response efficacy could also affect consumers’ dining-related behaviors through trust and perceived risks. Thus, the findings of this study advance our understanding of the roles response efficacy could play during customers’ decision-making in hospitality and tourism.
6. Conclusion and implications

Built on the Protection Motivation Theory and the Safety Signal Framework, the current study investigated the mechanism of dining behaviors among U.S. consumers during the COVID-19 pandemic. The final data analysis included two steps. First, a conceptual model was developed and tested to (1) identify the key factors that influence consumers’ assessment of restaurants’ COVID-19 management efforts and (2) reveal the combined impacts of these evaluations and their risk perceptions on their dining activities. Second, a gap analysis was performed to identify areas for improvement and outline the key strategies that have been currently overlooked by restaurants. Meaningful theoretical and practical implications were presented below based on the study results, while limitations and future research directions were discussed at the end of this section.

6.1. Theoretical implications

The study contributed to the existing literature in several ways. First, in the current study, researchers successfully applied the Protection Motivation Theory to understand consumers’ dining-related behaviors during the COVID-19 pandemic. The findings not only contributed to the literature on PMT but also expanded our understanding of the theory in the context of restaurant dining. Second, this is the first study that applied the Safety Signal Framework to the restaurant sector. Previously, the safety signal framework was originated and applied in the retailing industry. The successful application of the safety signal framework not only expanded our understanding of the framework but also showcased the linkage between the restaurant industry and the retail industry when addressing consumers’ fear and concerns during the pandemic. Third, this study proposed and tested a model that uncovered predictors of consumers’ dining-related behaviors during the pandemic. The proposed model offers opportunities for future researchers to apply and test it, targeting different populations and in different contexts.

6.2. Practical implications

This study offered various practical implications to managers or operators in the restaurant industry. These implications were essential for the restaurant industry because nearly 70% of restaurants in the U.S. are single-unit operations (NRA, 2021), which have minimal access to information or resources circulated in large chain foodservice operations. The study results demonstrated that, even though consumers were hesitant to dine out in restaurants due to the fear of COVID-19, restaurant operators, through adopting effective management measures, can increase their response efficacy, which further enhances their level of trust, reduces the perceived risk of dining-out, and results in a higher frequency of dining out.

Restaurant managers or operators should focus on creating a safe servicescape and utilizing communications strategies as these efforts will significantly improve consumers’ perceptions of response efficacy. For capacity management, restaurants can consider removing some of the furniture in the dining room to avoid congregation and promote a mood of social distancing. In fact, Dunkin’, McDonald’s, and many other large restaurant chains had already utilized this strategy and removed all furniture in their public space during the pandemic (Dawson, 2020). This strategy is more applicable to fast foods restaurants or limit-service restaurants where customers would be encouraged to get the order to-go with limited seating available.

Additionally, restricted seating or reduced seating capacity has imposed challenges for restaurant operators, especially the owners of small independent restaurants (Brizek et al., 2021). Therefore, restaurant operators can diversify their product offerings to gain revenue from other areas to cover the loss. For example, restaurants can sell meal kits with instructions to help customers quickly prepare foods they like with easy steps. In addition, they can also consider expanding to-go options by adding additional take-home-friendly food items such as customized bento box sushi. Furthermore, working with delivery apps such as DoorDash and GrubHub has become a popular choice among restaurant operators in 2020. Other examples include but are not limited to Ghost Kitchen, off-site catering, and virtual cooking classes with materials delivered. The diversified portfolio will give restaurant operators more options and flexibility to cope with future challenges, and it has become a post-pandemic trend in the restaurant industry.

In terms of providing outdoor patio seating or balcony tables, the re-opening guideline published on the New York governor website clearly defines outdoor seating servicescape requirements such as seating capacity and floorplan layout (Govonor.NY.Gov, 2021). However, such a program in New York also received critiques, as it encouraged the privatization of sidewalks and further impacted the public’s access to sidewalks (Yang, 2021). Therefore, restaurant operators should strive to find out a balance between accommodating customers without over-use public spaces. Using partitions to create private dining spaces within the dining room may be a better alternative. In addition, this finding also offers directions for new restaurant developers or those operators who plan to conduct renovation projects. An outdoor patio or rooftop open space is highly recommended for new restaurant projects as it creates flexibility for business owners to deal with future crises (Killifer, 2021).

Technology not only drives changes in the restaurant industry but also offers opportunities for restaurants to better cope with challenges imposed by the global pandemic. Large restaurant chains typically have more responses and access to adopt digital measures and contactless payment quickly in their operations. However, our study results revealed that the current efforts toward using digital menus are inadequate. More restaurant operators should consider adopting this strategy as consumers perceive it as an effective safety method. For small restaurants or independent restaurant owners, some online software and smartphone applications provide solutions by offering a platform for restaurants to create their online menu through Q.R. codes.

6.3. Limitation and future research

The current study was not exempted from limitations. First, an online survey instrument was developed and used for data collection that participants may be impacted by the social desirability bias when filling out the online survey. Future studies may use other data collection methods, such as second-hand sales/revenue data, or observations, to gather insights. Second, this study employed the safety signal framework to study consumers’ behaviors. There may be other safety measures used by the restaurants that were not included in the current study. Future research may explore and compare a more extensive range of safety measures and further evaluate their effectiveness. Third, this study targeted U.S. consumers, and the data collection was conducted in the U.S. only. Results may not be generalizable to other countries. With different safety protocols and policies employed in different countries and the different stages of pandemics in different countries, cross-culture studies are vital and recommended for future studies. Even within the U.S., the severity of the COVID-19 situation varies with key developments (e.g., the invention of the vaccine) and regions. The current study did not link consumers’ behaviors to these factors. Thus, future research may take it into consideration and explore the impact of regional differences on consumers’ behaviors. Forth, the participants of this study were recruited through online panels where no access was provided regarding subjects who refused to take the survey. Future studies should consider using probability-based sampling strategies and conducting non-response bias tests. Last but not least, the COVID-19 pandemic is still ongoing, and consumers’ behaviors are changing simultaneously. Longitudinal studies are recommended for future research to compare consumers’ behaviors at different stages of the pandemic.
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