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What influences restaurant dining out and diners’ self-protective intention during the COVID-19 pandemic: Applying the Protection Motivation Theory

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ABSTRACT

In this study, using the Protection Motivation Theory (PMT), we examine whether protection motivation can explain restaurant patron intention to practice self-protection. New normal practices are in place in the restaurant industry that influence dining out behavior during the COVID-19 pandemic. Based on 402 usable questionnaires collected face to face with residents in Phuket, Thailand, and using structural equation modeling to analyze the data, we found self-protective intention is influenced more by the perceived threat of COVID-19, but the actual behavior of visit frequency and protective behavior is influenced more by the positive PMT factors: perceived efficacy or self-confidence about protecting oneself and the expected rewards of dining out. In addition, the study highlights the important role of self-protective intention as a mediator in the relationships between PMT factors and actual behaviors of restaurant clients, especially their protection behaviors. Academic and practical implications are discussed.

1. Introduction

COVID-19 has significantly affected the hospitality industry, especially the restaurant sector. Many restaurants have closed as governments worldwide have restricted movement (Dube et al., 2020; Jeong et al., 2021). In addition, concern has been growing among consumers about the risks of COVID-19 infection when going out publicly including dining in restaurants (Kim and Lee, 2020). Many consumers make every effort to avoid social interactions with other people, minimizing most non-essential outdoor activities. Some worry about the possibility of catching coronavirus while dining at a restaurant because masks must be removed to eat. These concerns have resulted in the restaurant industry seeing sharp declines in patron visits. Thus, restaurants face devastating financial crises, and those that manage to survive need major adjustments to their business operations to comply with social distancing rules and other pandemic control measures. Furthermore, restaurants that used to rely on international tourists have been forced to shift their market targets to other more viable segments like the locals, which means modifying marketing, menus, and fewer contact services like delivery and drive through services (J. Kim et al., 2021).

Despite these concerns, as the pandemic continues, many restaurant operators have found ways to continue their businesses amid the pandemic. Moreover, consumers also need to continue their lives, and dining out is one need that is now practiced in differently, in what is called a new normal. However, knowing what determines a patron’s willingness to comply with regulations and new normal practices to protect themselves while dining out, as well as what drives restaurant visits during the COVID-19 pandemic, is still limited. Existing literature on the topic is scarce and tends to offer in-depth investigation of specific such factors as air-conditioning (Lu et al., 2020), hygiene (Yasami, 2021), contactless dining services (Yasami et al., 2022), food and packaging (Byrd, Fan, et al., 2021, Byrd, Her, et al., 2021), crowdedness (Wang et al., 2021), private dining facilities (Kim and Lee, 2020), consumers’ reservation session abandonment behavior (Peng and Chen, 2021) and restaurant dining behavior (Jeong et al., 2021). Although these studies offer valuable knowledge as a foundation to understanding customer behavior and practices in the restaurant industry during the pandemic, none of these studies except Jeong et al. (2021) has addressed specifically the body of knowledge that may explain customer willingness to accept the new normal requirements during a restaurant visit.

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addition, most of the existing literature also appears to lack a theoretical foundation to help explain the phenomenon. Therefore, further research is necessary to better understand restaurant visit behavior during the pandemic, especially those factors influencing restaurant visits and protective behaviors. The Protection Motivation Theory (PMT), which explains what stimulates individuals to guard themselves in response to a perceived health threat (Rogers, 1975), was used as the framework in this study because this theory has been widely and successfully used in previous health risk studies in the field of hospitality and tourism (Lopez-Velez and Bayas, 2007; Wang et al., 2019; Ryu et al., 2022). The theory is considered suitable in this study context as it specifically seeks to explain anticipated health risk, which is the COVID-19 pandemic in this study, and intention to perform self-protection behaviors against the health threat, which is the pandemic infection risk while dining in the restaurant in this situation. The findings of this research will provide marketing insights for restaurateurs. In addition, the results will help restaurant operators gain a better understanding of diner perceptions of the pandemic, restaurant visit frequency, and self-protective practices to adjust operations to survive the crisis.

Phuket was the location selected for the study. As a world class tourist destination and a city UNESCO called a City of Gastronomy, Phuket is rich in the variety of cuisines and restaurants on offer (Promsivapallop and Kannavakun, 2019). The types of restaurants reflect sophisticated demand pre-COVID of a mix of 14 million international and domestic tourists a year as well as the locals on the island. Without international tourists, restaurants were forced to redirect their marketing intermittently to domestic tourists. Nevertheless, due to the number of domestic tourists was insufficient, so restaurant operators relied more heavily on locals to keep their businesses going. Switching market focus from tourists to locals is unavoidable and must be swift, so businesses needed insights into the new normal behaviors of local customers at a major tourist destination and a UNESCO City of Gastronomy like Phuket, particularly when concerns about the pandemic have risen.

The primary aim of this study is to examine how well PMT can explain patron self-protection intentions and dining out behavior as restaurant customers continue their normal lives amidst the pandemic (Jeong et al., 2021). In addition, the study attempts to investigate the role of self-protective intention as a mediator in the relationships between PMT factors and the actual behaviors of restaurant patrons. We must establish a body of knowledge to help explicate key factors from the PMT perspective that dictate customer intention and behavior in new normal restaurant operations and consumption. The authors designed and conducted this research during the COVID-19 pandemic, so the research reflects the ongoing pandemic, indicating that restaurateurs in Phuket must target domestic tourists and residents for their businesses instead of international tourists. Therefore, the research model of the current research using PMT leads scholars and restaurant practitioners to understand more deeply resident behavioral intention to dine out during the COVID-19 pandemic. Practically, this study focuses on resident behaviors while dining in a restaurant as final outcomes because predicting these behaviors will provide restaurants in destinations popular among international tourists with new business insights into targeting locals during and after the COVID pandemic.

2. Literature review

2.1. COVID-19 pandemic and restaurant operations

Previous pandemics, like SARS (Alan et al., 2006), for instance, have had significant adverse effects on the restaurant industry, yet no prior pandemics have triggered such severe negative impacts on the industry as the current COVID-19 pandemic. This is due to the longer duration, larger geographic area affected, and greater severity of the COVID-19 pandemic than any previous outbreaks. Lockdown orders, lack of tourists, dining restrictions, and constricted operation requirements imposed by the government to curb the virus have caused drastic shifts in marketing and operations of restaurants worldwide (K. Kim et al., 2021). Social distancing and extra screening requirements make it too costly for many restaurant operators to continue operating because of reduced restaurant capacity and income but increased operational costs (J. Kim et al., 2021).

Demand for restaurant dining has declined substantially during the pandemic (Brizek et al., 2021). Restaurant patrons have grown concerned for their safety during dining. As the number of new COVID-19 cases continues to rise, diners worry more about eating at restaurants (J. Kim et al., 2021). Furthermore, many governments advise citizens to refrain from going out, thus minimizing social contacts and helping reduce the spread of COVID-19. In addition to concerns over the risk of infection, dining restrictions are so troublesome that diners find it less appealing to visit restaurants for pleasure (J. Kim et al., 2021). The number of restaurant visits have dropped dramatically although food delivery has increased.

Nevertheless, as vaccines become widely available, restaurant operators and restaurant diners will continue their lives although in a new normal. The complexity of dining in a restaurant has increased, so diners must consider as they decide to eat out. One existing theory that could appropriately explain this new normal is the PMT. It has been well-tested in investigations of those individual cognitive factors that contribute to the motivation to be proactive to reduce the risk of respiratory infectious diseases. One such action is being vaccinated for COVID-19 (Wang et al., 2021).

2.2. Protection Motivation Theory

PMT, developed by Rogers (1975), can explain what motivates individuals to protect themselves in response to a perceived health risk. The theory proposes that individuals protect themselves against threat mainly because of the perceived severity of a risk, the perceived probability of the occurrence (vulnerability), the efficacy of the recommended preventive behavior, and perceived self-efficacy (Choi et al., 2019). In addition, a number of scholars think perceived reward and response costs from engaging in risky events should be included as additional variables of PMT that help explain self-protective intention (Wang et al., 2019, 2021; Yan et al., 2014). Specifically, key central issues in PMT research relate to whether self-protective intention and protection behaviors depend on PMT variables including vulnerability, severity, perceived efficacy, rewards, and response costs (Xiao et al., 2016, 2014; Ruan et al., 2020).

The theory has been widely used to explain travel health risk perceptions as well as protective practices against tourist health threats (Wang et al., 2019). For restaurants, PMT can explain how diners perceive risk in ethnic restaurant visits (Lee et al., 2019) and protect themselves against hygiene risks (Yasami et al., 2020; Yasami, 2021) and food safety risks (Choi et al., 2019). These studies, which were conducted pre-COVID pandemic, used PMT to help explain restaurant visit behavior based on PMT variables.

As noted by Wang et al. (2019), previous PMT studies of tourism adopted PMT to investigate tourist risk perceptions. However, these studies tend to apply only one aspect or selected parts of the PMT model. For example, Sonmez and Graefe (1998) focused only on vulnerability or the probability of a risky event. Qi et al. (2009), among others, used only severity, which considers the harshness of the outcome of the risky event. Likewise, restaurant studies that adopted PMT took a similar approach, focusing only on certain aspects of the model. In addition, previous hospitality and tourism research tends to make behavioral intention the dependent variable of the study (Ruan et al., 2020; Choi et al., 2019; Ali et al., 2015; Harris et al., 2015), not the actual behavior. Wang et al. (2019) point out potential shortcomings of doing so. Although behavioral intentions may lead to actual behavior, this may not always be the case, particularly in the times full of uncertainties and unknowns such as the current COVID-19 crisis. Therefore, extending the study from simply understanding behavioral intention to further
investigate actual behavior is necessary.

This study fills the above theoretical gaps by providing a more complete investigation with the PMT model amidst the pandemic, integrating all PMT variables into restaurant patronage. Furthermore, the study contributes to the body of knowledge by examining the mediating role of self-protective intention in the relationship between PMT factors and actual behaviors, namely restaurant visit frequency and restaurant protective behavior.

2.3. Conceptual framework development

PMT assumes that two processes determine individual motivation or intention to self-protect from danger (i.e., COVID-19 in this study): threat appraisal and coping appraisal (Wang et al., 2021). In other words, individuals’ perceived health risks are assessed through threat appraisal and coping appraisal, which further induce their protection intention (Qiao et al., 2022). First, threat appraisal relates to individual perceptions of the severity of the health threat and the perception of vulnerability to the health threat. Threat appraisal incorporates the expected rewards or benefits of engaging in risky behavior and the perception of the potential health risk (Tsang and Wong, 2021). Individuals who perceive themselves as vulnerable to COVID-19 and see the consequences of infection as severe would consider themselves under COVID-19 threat. Therefore, based on previous PMT research, they would be expected to be more willing to protect themselves when dining in a restaurant during the pandemic (Byrd, Fan, et al., 2021, Byrd, Her, et al., 2021; Bhati et al., 2021; Yasami, 2021), visit restaurants less often (Ali et al., 2019; Harris et al., 2018), and seek more protective behaviors at a restaurant (Byrd, Fan, et al., 2021, Byrd, Her, et al., 2021; Wang et al., 2019; Williams et al., 2021). Concurrently, people who perceive higher benefits or rewards of restaurant visits during the pandemic would tend to have more motivation to visit a restaurant (Yan et al., 2014; Wang et al., 2019; Choi et al., 2019). Hence, they would tend to be more willing to comply with COVID-19 preventive measures and increase their self-protective intentions when visiting a restaurant, visit restaurants more frequently than those who perceive fewer benefits of visiting a restaurant, and practice COVID-19 protective behaviors when dining in a restaurant.

Second, coping appraisal depends on individual evaluations of whether diners can carry out a particular behavior and their confidence in the effectiveness of that behavior in reducing a health threat (i.e., perceived efficacy) and what response costs relate to engaging in a particular behavior to counter that health threat (Wang et al., 2021, 2019; Seow et al., 2021; Ruan et al., 2020). Based on these concepts, those who have high levels of perceived efficacy and confidence in their ability to protect themselves against COVID-19 should be willing to protect themselves more when dining in a restaurant during the pandemic (Min et al., 2021). They would tend to visit restaurants more often because they have more self-assurance in visiting restaurants and apply more protective behaviors while dining out (Chou, 2014; Steel-Fisher et al., 2013; Min et al., 2021). However, individuals who perceive high levels of costs or difficulty in applying protective practices would tend to have less intention to apply self-protection while dining out, visit restaurants less often, and practice fewer protective behaviors.

Therefore, we present the following hypotheses derived from the literature review:

H1-1. Perceived vulnerability has a relationship with self-protective intention.
H1-2. Perceived severity has a relationship with self-protective intention.
H1-3. Perceived efficacy has a relationship with self-protective intention.
H1-4. Perceived rewards have a relationship with self-protective intention.
H1-5. Perceived response costs have a relationship with self-protective intention.
H2-1. Perceived vulnerability has a relationship with frequency of restaurant visits.
H2-2. Perceived severity has a relationship with frequency of restaurant visits.
H2-3. Perceived efficacy has a relationship with frequency of restaurant visits.
H2-4. Perceived rewards have a relationship with frequency of restaurant visits.
H2-5. Perceived response costs have a relationship with frequency of restaurant visits.
H3-1. Perceived vulnerability has a relationship with protective behaviors in restaurants.
H3-2. Perceived severity has a relationship with protective behaviors in restaurants.
H3-3. Perceived efficacy has a relationship with protective behaviors in restaurants.
H3-4. Perceived rewards have a relationship with protective behaviors in restaurants.
H3-5. Perceived response costs have a relationship with protective behaviors in restaurants.

In addition, some evidence in the PMT literature supports the notion of self-protective intention leading to actual protection behaviors (Wang et al., 2019; Williams et al., 2015). For example, based on the PMT model, Lin et al. (2021) underscore the influence of intention on actual behavior by demonstrating the positive effect of the intention to quit using tobacco on actual quitting behavior. In addition, Wang et al. (2019) confirm in their PMT study that tourists with high self-protective intention tend to increase self-protection against health risks while on holiday abroad. Therefore, those who have higher self-protective intention levels tend to have more confidence in restaurant visits and thus visit restaurants more frequently, applying more protective behaviors while dining in a restaurant. Hence, we offer the following hypotheses:

H4-1. Self-protective intention has a relationship with frequency of restaurant visits.
H4-2. Self-protective intention has a relationship with protective behaviors at restaurants.

Furthermore, according to previous PMT studies (Wang et al., 2019), self-protective intention is a mediator between PMT and actual protective behaviors. The connections between PMT factors and self-protective intentions have been confirmed by Yasami (2021), while self-protective intentions lead to actual behaviors (Williams et al., 2015). In other words, PMT factors should lead to self-protective intentions and subsequently actual behaviors. Applying this to restaurants, PMT factors should influence restaurant patrons in self-protective intentions, which would then lead to visiting restaurants and to use self-protective behaviors while dining in a restaurant. Therefore, we propose the following hypotheses:

H5-1. Self-protective intention mediates the relationships between PMT factors and restaurant visit frequency.
H5-2. Self-protective intention mediates the relationships between PMT factors and restaurant protective behaviors.

The hypotheses and research model are depicted in Fig. 1:
3. Methods

3.1. Measures

The study instrument was developed based on previous literature (Miao, 2014; Wang et al., 2019; Xiao et al., 2016, 2014; Yasami et al., 2020), relying mainly on the PMT variables, which have high levels of validity and reliability. These measurements were adapted to suit the local resident behaviors during restaurant visits under the pandemic environment.

The questionnaire was developed in Thai and reviewed for face validity by three hospitality management researchers who have extensive experience in restaurant consumption and knowledge of COVID-19 situations in the studied area. The draft questionnaire was revised based on comments from the reviewers and was then pre-tested for accuracy and ease of understanding by 30 local residents who met the survey criteria. This resulted in further minor revisions to the questionnaire based on respondent comments as well as observations by the researchers during the pre-test. The revisions were mainly for wording and the clarity of the questionnaire. The instrument comprised three main parts with statements asking for opinions on COVID-19 and dining out based on PMT variables and self-protective intention, restaurant visit frequency, and demographics.

Based on Wang et al. (2019), perceived threat, an important component of threat appraisal, comprises perceived vulnerability and perceived severity. Following Wang et al. (2019), perceived vulnerability was measured with a single item asking respondents to indicate how likely they think they will be infected with COVID-19 if they dine out in a restaurant during the pandemic; the questions used a 5-point Likert-type scale (1 = very unlikely, 5 = very likely). To measure perceived severity, respondents were asked to rate four statements adapted from Xiao et al. (2014, 2016) and Wang et al. (2019) on how severe they think the consequences would be to them and their families if they are infected with COVID-19, again using a 5-point Likert-type scale (1 = strongly disagree, 5 = strongly agree). For example, “I will have serious health problems if I am infected with COVID-19”.

As part of threat appraisal, perceived rewards were conceptualized based on Wang et al. (2019), combining intrinsic reward and extrinsic reward as a single factor. Four items adapted from Xiao et al. (2014, 2016) asked respondents to evaluate the benefits they receive from visiting a restaurant during the pandemic, using a 5-point Likert-type scale (1 = strongly disagree, 5 = strongly agree). For example, “It is very enjoyable for me to visit a restaurant”.

Likewise, following Wang et al. (2019), perceived efficacy was a single construct comprising three items as proxies for measurement. These three items, adapted from Wang et al. (2019), asked the respondents to assess their confidence in their ability to protect themselves against COVID-19 infection while dining out; again, a 5-point Likert-type scale (1 = strongly disagree, 5 = strongly agree) was used. For example, “I am confident in my ability to protect myself from infection with COVID-19 when dining out in a restaurant”.

Perceived costs were measured by adapting two items from Xiao et al. (2014, 2016) and Wang et al. (2019), using a 5-point Likert-type scale (1 = strongly disagree, 5 = strongly agree). Respondents indicated how much they agreed with the disadvantages of protecting themselves against COVID-19. For example, “It is frustrating to follow COVID-19 protection regulations when dining out in a restaurant”.

Self-protective intention was measured as in Wang et al. (2019) and Miao (2014). Respondents assessed their agreement with three statements of their willingness to follow COVID-19 protection regulations (1 = strongly disagree, 5 = strongly agree). For example, “I am willing to strictly follow COVID-19 protection regulations required by the restaurant”.

Two items adapted from Bruening et al. (2014) and Doğan (2020) were used to gauge restaurant visit frequency using 5-point Likert-type scales. Respondents were asked to indicate how often they currently visited restaurants for pleasure (1 = “No, I don’t visit restaurants”, 5 = “six times or more per month”) and how often they currently visited restaurants compared to pre-COVID-19 (1 = “A lot less frequently”, 5 = “A lot more frequently than pre-COVID-19”).

Ten items adapted from various authors (Yasami et al., 2020; Doğan, 2020) were used as proxies for restaurant protection behaviors.
Examples for these items include “Wear mask at all times when not eating” and “Avoid contact with staff and other customers”.

3.2. Data collection

The population of this study consisted of fully COVID-19 vaccinated residents of Phuket, Thailand. Only vaccinated residents were included in the study as the majority of Phuket residents have been fully vaccinated by the time of data collection. Furthermore, most non-vaccinated residents were advised to stay home and thus tended to avoid restaurant visits. Hence, applying PMT to non-vaccinated residents may not be suitable. According to recent data released by Phuket Provincial Statistical Office (2020), Phuket population comprises 416,582 people. Based on Sekaran and Bougie (2016), a minimum of 384 questionnaires would be required to meet the minimum sample size at 95% confidence level. To compensate for potential unusable questionnaires, we planned to collect 500 questionnaires for the study.

The survey was conducted in October 2021 during the 3rd wave of the pandemic in Phuket. Restaurant patrons were alarmed during restaurant visits, despite a high rate of vaccination among the locals. Concerns were attributed to the start of Phuket Sandbox project launched in July where Phuket was reopened to welcome vaccinated international tourists without quarantine, coupled with an ongoing relatively high number of COVID-19 infection locally and a low trust in the vaccine effectiveness.

Data collection combined mall intercepts at four shopping malls (Chua et al., 2020) in commercial areas of Phuket and public areas in high streets in town centers. These locations were used because they permit reaching potential restaurant customers from wider geographic areas. Potential respondents were systematically selected to minimize sample-selection biases resulting from the convenience sampling used by Promsivapallop and Kannavaikan (2019). First, different times of data collection during the two-week period were scheduled to cover days, nights, weekdays, and weekends to reach all types of respondents. Second, every third shopper at the entrance of each shopping mall or pedestrian at the public areas in high streets was approached and invited to participate in the study. Research assistants were trained to fully understand all questions in the survey, and the survey process included COVID-19 precautions and consent procedures. Research assistants were instructed to avoid obtaining more than one respondent from the same peer group or family. After asking the screening questions and inviting only fully vaccinated residents, respondents who met the criteria were handed the questionnaire to complete. The research assistants were available to respondents at all times while they completed the questionnaire to ensure that they understood all questions, which helped minimize missing values. Each approached person who declined to participate in the study was replaced with the next counting. As a token of appreciation, each respondent was provided with a small pack of face masks.

In all, 460 questionnaires were collected, of which 58 were discarded, giving 402 completed questionnaires for analysis. The 58 questionnaires were unusable because 35 respondents were not vaccinated and 23 respondents provided incomplete answers. Details on the respondents are reported in Section 4.1.

4. Results

4.1. Demographic characteristics of the respondents

The demographic profiles of the respondents are in Table 1. Of 402 valid questionnaires, 200 (49.8%) were completed by males and 202 (50.2%) by females. Almost half of the respondents were between 35 and 44 years of age (44.3%) and worked as employees of private organizations (49.0%). More than half of the respondents graduated with bachelor’s degrees (54.2%) and earned between 10,000 and 40,000 Baht per month (69.2%). The distribution of residents is in line with the number of actual residents in the three districts of Phuket. Restaurant visit frequency is reported in Table 2. More than half of the respondents (55.5%) reported visiting restaurants with less frequency than pre-COVID-19 pandemic. Despite the lower frequency, 35.1% indicated the visiting restaurants for pleasure 2–3 times per month, and 34.3% 4–5 times per month during the pandemic.

4.2. Measurement model

The two-step approach was employed to empirically estimate reliabilities and validities of all indicators in this study before moving forward to the next data analysis stage, structural equation modeling. The first step was to check reliabilities of all indicators via Cronbach’s alpha coefficients. This study used SPSS 28.0 to calculate Cronbach’s alpha coefficients of each construct (i.e., perceived severity = 0.778; perceived efficacy = 0.706; perceived rewards = 0.748; perceived response costs = 0.760; self-protective intention = 0.851; restaurant visit frequency = 0.692; restaurant protection behavior = 0.857). The second step was to check validities of all indicators via a confirmatory factor analysis, estimating each indicator’s standardized factor loadings

| Table 1 | Demographic profiles of the respondents. |
|---------|------------------------------------------|
| Gender characteristics | Frequency | Percentage (%) |
| Male | 200 | 49.8 |
| Female | 202 | 50.2 |
| Age | | |
| 25–34 Years old | 161 | 40.0 |
| 35–44 Years old | 178 | 44.3 |
| 45–54 Years old | 37 | 9.2 |
| 55–64 Years old | 17 | 4.2 |
| 65 Years or older | 9 | 2.2 |
| Education | | |
| High school | 64 | 15.9 |
| Diploma | 107 | 26.6 |
| Bachelor degree | 218 | 54.2 |
| Master degree | 10 | 2.5 |
| PhD or higher | 3 | 0.7 |
| Occupation | | |
| Business owner | 77 | 19.2 |
| Private organization employees | 197 | 49.0 |
| Government staff | 27 | 6.7 |
| General services/employment | 94 | 23.4 |
| Others | 7 | 1.7 |
| Current income | | |
| Less than 10,000 Baht/month | 27 | 6.7 |
| 10,000–40,000 Baht/month | 278 | 69.2 |
| 40,001–70,000 Baht/month | 87 | 21.6 |
| 70,001–100,000 Baht/month | 8 | 2.0 |
| More than 100,000 Baht/month | 2 | 0.5 |
| District of residence | | |
| Muang | 193 | 48.0 |
| Kathu | 150 | 37.3 |
| Thalang | 59 | 14.7 |

| Table 2 | Restaurant visit frequency. |
|---------|-----------------------------|
| Frequency of current restaurant visit compared pre-COVID-19 pandemic | Frequency | Percentage (%) |
| A lot less frequent | 100 | 24.9 |
| Somewhat less frequent | 123 | 30.6 |
| About the same as pre-COVID-19 | 144 | 35.8 |
| More frequent than pre-COVID-19 | 35 | 8.7 |
| A lot more frequently than pre-COVID-19 | 0 | 0 |
| Current restaurant visit frequency | | |
| No, I don’t visit a restaurant at all | 20 | 5.0 |
| Once a month | 72 | 17.9 |
| Two or three times a month | 141 | 35.1 |
| Four or five times a month | 138 | 34.3 |
| Six times or more a month | 31 | 7.7 |
and critical ratios (see Table 3). This study employed AMOS 28.0 for conducting a confirmatory factor analysis, and 7 items were removed to maintain the acceptable level of validities (i.e., standardized factor loadings should be greater than 0.50, and critical ratios should be greater than 2.58, \( p < 0.01 \)). The fit indices of the measurement model were \( \chi^2 = 717.018 \), degree of freedom = 182 (\( \chi^2 \)/degree of freedom = 3.940), \( p < 0.001 \), Good of Fit (GFI) = 0.862, Standardized Root Mean Sequare Unitial (SRMR) = 0.070, Root Mean Square Error of Approximation (RMSEA) = 0.080 (i.e., a good fit should be less than 0.080), Normed Fit Index (NFI) = 0.824, Incremental Fit Index (IFI) = 0.863, and Comparative Fit Index (CFI) = 0.861. After the data purification process (i.e., item removal procedures), validities of all indicators were confirmed by indicating that all critical ratios were statistically significant (\( p < 0.01 \)).

Based on the results of confirmatory factor analysis, average variance extracted (AVE) values were estimated to check the discriminant validity of each construct except for the construct of perceived vulnerability measured with one item (Fornell and Larcker, 1981). Each AVE value was compared separately to the square of the coefficients between two constructs (e.g., perceived severity: AVE = 0.551 vs. 0.080, 0.259, 0.076, 0.697, 0.411, and 0.536). As indicated in Table 4, the squared correlations were less than respective AVE values that signified the discriminant validities of all constructs in this study.

### Testing of the Research Hypotheses

After signifying reliabilities and validities of all variables via Cronbach’s alpha coefficients and a confirmatory factor analysis, this study performed structural equation modeling via AMOS 28.0 to estimate the hypothesized associations in the proposed model. The fit indices of the model in this study were mediocre: \( \chi^2 = 717.018 \), degree of freedom = 182 (\( \chi^2 \)/degree of freedom = 3.940), \( p < 0.001 \), GFI = 0.862, SRMR = 0.070, RMSEA = 0.080, NFI = 0.824, IFI = 0.863, and CFI = 0.861. However, they were overall acceptable to test each research hypothesis (Ali et al., 2018). Table 5 demonstrates the standardized estimates and critical ratios of each path based on maximum likelihood estimates (MLE) and the empirical findings are displayed in Fig. 2.

The empirical findings indicated that self-protective intention was significantly influenced by perceived vulnerability (standardized estimate = 0.102, standardized error = 0.035, critical ratio = 1.971, \( p < 0.05 \)) and perceived severity (standardized estimate = 0.667, standardized error = 0.090, critical ratio = 8.477, \( p < 0.01 \)), supporting H1-1 and H1-2. However, perceived efficacy (standardized estimate = 0.095, standardized error = 0.059, critical ratio = 1.769, \( p > 0.05 \)), perceived rewards (standardized estimate = 0.001, standardized error = 0.050, critical ratio = 0.004, \( p > 0.05 \)), and perceived response costs (standardized estimate = 0.008, standardized error = 0.049, critical ratio = 0.122, \( p > 0.05 \)) did not have a significant impact on self-protective intention.

The empirical results addressed that restaurant visit frequency was significantly affected by perceived vulnerability (standardized estimate = 0.157, standardized error = 0.045, critical ratio = 2.412, \( p < 0.05 \)), perceived efficacy (standardized estimate = 0.155, standardized error = 0.077, critical ratio = 2.232, \( p < 0.05 \)) and perceived rewards (standardized estimate = 0.249, standardized error = 0.077, critical ratio = 2.232, \( p < 0.05 \)), supporting H2-1, H2-3 and H2-4. However, perceived severity (standardized estimate = 0.196, standardized error = 0.121, critical ratio = 1.846, \( p > 0.05 \)) and perceived response costs (standardized estimate = 0.016, standardized error = 0.062, critical ratio = 0.197, \( p > 0.05 \)) did not have a significant influence on restaurant visit frequency.

The empirical outcomes demonstrated that perceived vulnerability (standardized estimate = 0.607, standardized error = 0.040, critical ratio = 1.307, \( p < 0.05 \)), perceived rewards (standardized estimate = 0.021, standardized error = 0.055, critical ratio = 0.395, \( p > 0.05 \)), and perceived response costs (standardized estimate = 0.022, standardized error = 0.056, critical ratio = 0.351, \( p > 0.05 \)) did not have a significant effect on restaurant protection behavior. However, perceived severity (standardized estimate = 0.201, standardized error = 0.109, critical ratio = 3.287,
tourism; the research tends to provide only partial analysis of the PMT protective behaviors during a pandemic by filling the literature gap with a number of ways. First, it adds to the literature on restaurant dining and pandemic. Particularly, it contributes to the body of knowledge by theoretical gaps by offering a more comprehensive examination of the uncertainties (Wang et al., 2019). This study works to close these gaps.

The PMT theory has been extensively used to explain health, travel, and restaurant visit risk issues among tourists (Wang et al., 2019; Lee et al., 2019; Yasami, 2021; Ryu et al., 2022). This study provides evidence that confirms the usefulness of PMT in explaining self-protective behavior of restaurant patrons when dining out during the COVID-19 pandemic. Particularly, it contributes to the body of knowledge by providing an analysis of the full PMT model, including both behavioral intentions and actual behaviors in the framework of study. In addition, the study highlights self-protective intention as a mediator in the relationships between PMT factors, restaurant visit frequency, and actual self-protective behavior. In doing so, the study develops PMT measures applicable to restaurant dining behavior in the pandemic environment. To the best of our knowledge, this is the first study that applies PMT to restaurant dining and protective behaviors of local residents during the COVID-19 pandemic.

The study results confirm the positive influence of two PMT factors: perceived vulnerability and perceived severity (which are important in threat appraisal) on self-protective intention as hypothesized. Perceived efficacy, perceived rewards, and perceived response costs, however, demonstrate no influence on the outcome variable. Perceived severity was the strongest predictor of behavioral intention. The results indicate that self-protective intention of the restaurant diners depends largely on threat appraisal. This finding differs from previous studies such as Fisher et al. (2018), who found coping appraisal (efficacy) a stronger predictor of protective intention than threat appraisal among cruise passengers. This particular outcome in this study could be due to concerns about the severity of COVID-19 and patron vulnerability to it, making threat appraisal a stronger influence on protective intention during the pandemic than during normal situations.

Another interesting finding was the negative influence of efficacy on self-protective behavior, which differs from the findings of previous PMT researchers like Ruan et al. (2020), who noted efficacy has a positive effect on protective behavior intention. Furthermore, the positive effect of perceived efficiency and vulnerability on frequency of visits to restaurants was also confirmed in this study, a novel finding. The COVID-19 situation itself affected how perceived efficacy influenced both behaviors because all respondents had been fully vaccinated at the time of data collection. Therefore, fully vaccinated respondents may have a higher level of confidence in their immune system and trust in their ability to protect themselves despite some feelings of vulnerability. Thus, they may tend to relax their self-protective behavior in a restaurant and visit restaurants more often. This finding provides essential insights to the restaurant industry and governments because while vaccination has proved to prevent severe cases of the disease, it does not prevent infection and transmission (Swan et al., 2021). This result has implications for the restaurant industry, government bodies, and the public because perceived efficacy causes reduced self-protective intention in restaurants, encouraging more restaurant visits, which may subsequently increase the COVID-19 infection rate. Promoting self-protective intention and behavior is vital to restaurant customers, even among those who are fully vaccinated.

Yet another issue raised in the study relates to how well PMT predicts intention as compared to actual behavior. The PMT model predicts both the frequency of visiting restaurants and restaurant protective behavior but not as well as self-protective intention, as illustrated by R². Therefore, we conclude that PMT can predict protective intention better than actual protective behavior. This is consistent with previous hospitality and tourism research like Promsivallop and Kannaovakun (2019) who discovered that destination food image could explain actual food

### Table 4
Construct intercorrelations (Φ) and average variance extracted (AVE).

| Construct | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
|-----------|-----|-----|-----|-----|-----|-----|-----|-----|
| 1. Perceived vulnerability | (N/A) | 2. Perceived severity | 0.369 | (0.551) | 3. Perceived self-efficacy | 0.132 | 0.080 | (0.712) |
| 4. Perceived reward | 0.176 | 0.259 | 0.185 | (0.449) |
| 5. Perceived response costs | 0.282 | 0.078 | 0.465 | 0.243 | (0.629) |
| 6. Self-protective intention | 0.338 | 0.697 | -0.025 | 0.175 | -0.060 | (0.683) |
| 7. Restaurant visit frequency | 0.328 | 0.411 | 0.227 | 0.372 | 0.139 | 0.343 | (0.531) |
| 8. Restaurant protection behavior | 0.163 | 0.536 | -0.138 | 0.086 | -0.149 | 0.654 | 0.046 | (0.540) |

Note. AVE values are given in brackets.

p < 0.05) and perceived efficacy (standardized estimate = –0.118, standardized error = 0.069, critical ratio = –2.167, p < 0.05) had a significant impact on restaurant protection behavior, supporting H1-1, H3-2 and H3-3.

The empirical findings indicated that self-protective intention had a statistically significant impact on restaurant protection behavior (standardized estimate = 0.546, standardized error = 0.092, critical ratio = 6.571, p < 0.01), supporting H4-2, while restaurant visit frequency was significantly affected by self-protective intention (standardized estimate = 0.113, standardized error = 0.093, critical ratio = 1.213, p > 0.05).

Lastly, to test H5-1, H5-2 (the mediating role of self-protective intention in the relationship between PMT factors and restaurant visit frequency/restaurant protection behavior), the indirect paths from PMT factors to restaurant visit frequency and restaurant protection behavior via self-protective behavior were statistically estimated according to the Monte Carlo and Bootstrap maximum likelihood methods (at 95% confidence level). Table 5 indicates that self-protective intention played as a full mediator in the relationship between perceived severity and restaurant protection behavior (i.e., the indirect path from perceived severity to restaurant protection behavior was statistically significant [perceived severity = 0.358, p < 0.01]), partially supporting H5-1, H5-2.

### 5. Discussion and conclusion

#### 5.1. Discussion

The PMT theory has been extensively used to explain health, travel, and restaurant visit risk issues among tourists (Wang et al., 2019; Lee et al., 2019; Yasami, 2021; Ryu et al., 2022). This study provides evidence that confirms the usefulness of PMT in explaining self-protective behavior of restaurant patrons when dining out during the COVID-19 pandemic. Particularly, it contributes to the body of knowledge by providing an analysis of the full PMT model, including both behavioral intentions and actual behaviors in the framework of study. In addition, the study highlights self-protective intention as a mediator in the relationships between PMT factors and the actual behaviors of restaurant patrons, especially their protective behaviors.

Therefore, this research provides academic contributions in a number of ways. First, it adds to the literature on restaurant dining and protective behaviors during a pandemic by filling the literature gap with insights into resident risk perceptions and self-protective behaviors while dining out based on PMT. Moreover, as Wang et al. (2019) pointed out, most PMT literature is lacking information for hospitality and tourism; the research tends to provide only partial analysis of the PMT model. Previous PMT studies tended to investigate either risk perception or behavioral intention and did not include actual protective behaviors as part of the studies. Although behavioral intentions would tend to result in actual behavior, that may not occur during a pandemic so full of uncertainties (Wang et al., 2019). This study works to close these theoretical gaps by offering a more comprehensive examination of the study topic by adopting the full PMT model, including protective intention, restaurant visit frequency, and actual self-protective behavior. It offers a contribution to the body of knowledge by examining the mediating effects of self-protective intention in the relationships between PMT factors, restaurant visit frequency, and self-protective behavior while dining out. In doing so, the study develops PMT measures applicable to restaurant dining behavior in the pandemic environment. To the best of our knowledge, this is the first study that applies PMT to restaurant dining and protective behaviors of local residents during the COVID-19 pandemic.

The study results confirm the positive influence of two PMT factors: perceived vulnerability and perceived severity (which are important in threat appraisal) on self-protective intention as hypothesized. Perceived efficacy, perceived rewards, and perceived response costs, however, demonstrate no influence on the outcome variable. Perceived severity was the strongest predictor of behavioral intention. The results indicate that self-protective intention of the restaurant diners depends largely on threat appraisal. This finding differs from previous studies such as Fisher et al. (2018), who found coping appraisal (efficacy) a stronger predictor of protective intention than threat appraisal among cruise passengers. This particular outcome in this study could be due to concerns about the severity of COVID-19 and patron vulnerability to it, making threat appraisal a stronger influence on protective intention during the pandemic than during normal situations.

Another interesting finding was the negative influence of efficacy on self-protective behavior, which differs from the findings of previous PMT researchers like Ruan et al. (2020), who noted efficacy has a positive effect on protective behavior intention. Furthermore, the positive effect of perceived efficiency and vulnerability on frequency of visits to restaurants was also confirmed in this study, a novel finding. The COVID-19 situation itself affected how perceived efficacy influenced both behaviors because all respondents had been fully vaccinated at the time of data collection. Therefore, fully vaccinated respondents may have a higher level of confidence in their immune system and trust in their ability to protect themselves despite some feelings of vulnerability. Thus, they may tend to relax their self-protective behavior in a restaurant and visit restaurants more often. This finding provides essential insights to the restaurant industry and governments because while vaccination has proved to prevent severe cases of the disease, it does not prevent infection and transmission (Swan et al., 2021). This result has implications for the restaurant industry, government bodies, and the public because perceived efficacy causes reduced self-protective intention in restaurants, encouraging more restaurant visits, which may subsequently increase the COVID-19 infection rate. Promoting self-protective intention and behavior is vital to restaurant customers, even among those who are fully vaccinated.

Yet another issue raised in the study relates to how well PMT predicts intention as compared to actual behavior. The PMT model predicts both the frequency of visiting restaurants and restaurant protective behavior but not as well as self-protective intention, as illustrated by R². Therefore, we conclude that PMT can predict protective intention better than actual protective behavior. This is consistent with previous hospitality and tourism research like Promsivallop and Kannaovakun (2019) who discovered that destination food image could explain actual food
consumption among tourists relatively less than food consumption intention. This is because actual food consumption could be influenced by other factors at the consumption stage: food choice and access, price, and local food hygiene. Therefore, actual behavior of restaurant patrons including restaurant visit frequency and self-protective behavior would depend largely on their self-protective intention, which was influenced more by perceived rewards, and then by perceived efficacy, and perceived vulnerability respectively, while protective behavior is influenced by perceived severity and perceived efficacy. This suggests that the perceived threat of COVID-19 influences self-protective intention more than it influences actual visit frequency and protective behavior. These findings differ from previous PMT studies such as Milne et al. (2000) where in normal situations, coping appraisal (perceived efficacy and perceived costs) tend to more strongly influence the outcome variables. This study indeed highlights the different roles of the PMT factors, one showing influence only on the negative side (threat appraisal: perceived vulnerability and perceived severity) on self-protective intention and another showing influence on mainly the positive side (coping appraisal: perceived rewards and perceived efficacy) and partially the negative side (threat appraisal) on actual behavior. In addition, it is interesting to note the differences between the influence of PMT factors on self-protective intention and actual self-protective behavior. Our findings show restaurant visit frequency is influenced more by perceived rewards, and then by perceived efficacy, and perceived vulnerability respectively, while protective behavior is influenced by perceived severity and perceived efficacy. This suggests that the perceived threat of COVID-19 influences self-protective intention more than it influences actual visit frequency and protective behavior. These findings differ from previous PMT studies such as Milne et al. (2000) where in normal situations, coping appraisal (perceived efficacy and perceived costs) tend to more strongly influence the outcome variables. This study indeed highlights the different roles of the PMT factors, one showing influence only on the negative side (threat appraisal: perceived vulnerability and perceived severity) on self-protective intention and another showing influence on mainly the positive side (coping appraisal: perceived rewards and perceived efficacy) and partially the negative side (threat appraisal) on actual behavior.

This study also highlighted another important issue: the mediating role of self-protective intention. The results indicated self-protective intention was a full mediator in the relationship between PMT factors and restaurant protective behavior. Therefore, patron protective behaviors depend largely on their self-protective intention, which was influenced by PMT factors. This result further indicates that PMT is a powerful theory for explaining protective intention but not necessarily the actual protective behavior, which is better explained by the intention. The findings of this mediating role are consistent with previous studies (see Wang et al., 2019).
5.2. Implications

This study provides several implications to the restaurant industry. First, to promote customer intention to co-operate in applying self-protective practices for preventing COVID-19 infection while dining in a restaurant, managers should highlight messages on the severity of the disease and patron vulnerability in the ongoing pandemic. These two factors are the two predictors of self-protective intention. Restaurants should display messages and promotional materials in-house, reminding customers that the pandemic situation is still on-going and how easily the coronavirus is transmitted. Therefore, patrons must continue protective practices. Furthermore, as discussed in previous section, customers must understand vaccines may prevent severe symptoms of the disease, but they do not completely prevent infection and transmission (Swan et al., 2021). Therefore, restaurants should display and communicate reminders to their customers that encourage them to continue practicing COVID-19 protection while dining in the restaurant even if they are fully vaccinated.

Second, self-protective intention is vital as the mediator in the links between PMT factors and self-protective behaviors. Furthermore, the study proved that self-protective intention is the factor with the strongest influence on actual self-protective behaviors. Therefore, restaurants must encourage their patrons to increase self-protective intentions while dining. As suggested in the results, residents are generally willing to practice self-protection against COVID-19 while dining out, but restaurants should also strictly provide customers with operations practices and an environment adhering to COVID-19 preventive measures and regulations. These include preparing safe and hygienic food, services, and environment, practicing contactless and social distanced services, and obtaining COVID-19 safe and hygiene certification. Safety measures like having staff wear mask and gloves; sanitize tables, chairs, and menu; and wrapping cutlery should also be visible to encourage other protection practices as well as boost customer confidence. In addition, policymakers should also encourage and support restaurant operators to implement COVID-19 preventive measures by offering subsidies to restaurant operators to equip their restaurants with adequate protective screening facilities and sanitizers.

Furthermore, the negative effect of perceived efficacy on self-protective intention provides another important implication for restaurant managers and industry practitioners. Our results show that fully vaccinated customers may feel more confidence and relax and possibly ignore self-protective measures against COVID-19 while dining. Restaurant operators must remind their customers that even if customers are fully vaccinated, they are still at risk of infection, carrying the coronavirus, and transmitting it to others. Hence, regardless of vaccination, strict application of self-protective measures and compliance with government COVID-19 preventive measures are still necessary. Moreover, information about health and safety procedures implemented in the restaurant should also be communicated to target customers on websites, social medias, and promotional materials. These practices are expected to boost patrons’ confidence in restaurant dining, help them gain better understanding of what they are expected to practice and encourage them to increase self-protective intentions while dining.

In addition, the perceived reward of restaurant visits and perceived efficacy are significant and have important marketing implications for restaurants during the pandemic. Restaurant managers are advised to emphasize the rewards and benefits of dining out in their advertising and promotions by portraying the pleasure of customers in a restaurant. Furthermore, advertising should also highlight the efficacy and the effectiveness of vaccines, and COVID-19 preventive measures to boost customer confidence in eating out and attract them to the restaurant. These marketing practices should boost both patron demand and confidence in a restaurant even amid a pandemic.

5.3. Limitations and future research

This research has several limitations, and thus the results should be interpreted with caution. First, this study was conducted only in Phuket, using residents of Phuket as the subjects of investigation. Therefore, the results may not generalize to people with different cultural backgrounds, demographics, and lifestyles. Therefore, this study should be replicated in other types of locations such as major city destinations like Phuket.
Bangkok where residents may have different characteristics, levels of income, lifestyles, and living conditions. The results can be compared to this study. Second, the study was conducted during the pandemic, and most people in Phuket, including the respondents, were already fully vaccinated. The research might have had different outcomes if the respondents were not vaccinated. It would be interesting for future research to use both vaccinated and non-vaccinated respondents in a comparative study. Third, future study may also be extended to include expatriates who have different demographic profiles from the locals and thus may have different perceptions and dining behaviors.

Data Availability

Data will be made available on request.

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