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The mediation effects of consumers' need recognition and pre-purchase evaluation in consumers' decision-making on purchasing safe street food: The case in Nakhon Si Thammarat, Thailand

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ABSTRACT

Nakhon Si Thammarat province is one of the largest cities in Thailand and offers various types of street foods in the city. However, the number of street vendors that pass food safety certification is very low. Nevertheless, there are many consumers who still purchase street food because of their lifestyle who are exposed to food safety risks. Therefore, this research aims to evaluate how consumers make their decisions about the safety of the street food. This study investigates the importance of the need recognition and pre-purchase evaluation stages in consumers' decision-making in relation to their purchasing of safe street food. The results from the structural equation modeling analysis found that, at 95%, the confidential need recognition would act as a partial mediator between consumers' motivation → pre-purchase evaluation on purchasing safe food and consumers' food safety knowledge → pre-purchase evaluation. In turn, pre-purchase evaluation would act as a full mediator between consumers' motivation and safe street food purchasing. The findings signify that the stages of need recognition and pre-purchase evaluation in the decision-making process are important in order to reduce consumers' food risk while purchasing street food. Therefore, encouraging consumers to recognize the importance of purchasing safe food and convincing them to be concerned when selecting food is necessary to prevent consumers from unsafe food consumption.

KEYWORDS

Decision-making; food safety; mediation; need recognition; pre-purchase evaluation; street food

Introduction

The timing of food preparation has become more limited for consumers as their lifestyles and family structures change (J. Choi, Lee, & Ok, 2013). Consumers have to pay attention to other things, such as work, which they

believe are more important than cooking (Tiemmek, 2005). As a result, the demand for food outside the home is increased, as it saves consumers time. Moreover, consumers in Thailand are more likely to prefer street food than restaurants. Seventy to 80% of consumers choose street food because it complements their urban lifestyle, with lower food prices and convenience (Gunniga, 2009). Moreover, street food can be representative of local cultures and authentic cuisines (H. Y. Kim, Kim, & Lim, 2007). Consumers can also find food for their breakfast, lunch, dinner, or supper at almost any public area (Muyanja, Nayiga, Brenda, & Nasinyama, 2011).

While the street food business is growing, food safety is also a problem that warrants more concern. Despite the existence of regulations to control the food practices of street vendors, many of them do not properly pay attention to the regulations. In accordance with the Thai national target number of qualified street food stalls, 10 provinces from the overall 77 provinces failed the food safety qualification. In addition, Nakhon Si Thammarat (NST) province is the province that seems to have the greatest food safety problem as there has not been any evidence of improvement since 2010 (Ministry of Public Health, 2013). At the same time, diarrhea caused by unhygienic food preparation has remained a significant disease in NST for many years now. Thus, consumers in this province may have a higher chance of suffering from this disease.

As such, the food safety practices of street vendors in the NST province have not proven to be successful. Nonetheless, there is a lack of research addressed to the unsafe street food problem, especially in relation to street food consumption. The purchasing decisions of street food consumers that are based on food safety can probably give us insight into how consumers select safe food from the unsafe street food. Therefore, this study aims to examine the important roles of consumers' need recognition (NEED) and pre-purchase evaluation (PREP) stages in the purchasing decision-making process. Hence, a research model was tested by focusing on the mediation effects of consumers' NEED and PREP in order to influence consumers to purchase safe street food. Consequently, the study would be able to emphasize the roles of the two variables in the process of the purchasing decision that could probably persuade consumers to purchase safe street food.

Review of the literature

Consumer decision-making

Generally, consumers will buy a product when they have problems, such as in the case of a current product not functioning or an old item not fulfilling their needs (Scholz, Dorner, Franz, & Hinz, 2015). Nevertheless, the degree of involvement in the decision process depends on the type of the product of

interest. If consumers already have established enough information on the product, or if it is already a routinized response behavior, the degree of involvement in the decision process would be very low. Hence, the stage of searching information would be exempted from the decision process (Schiffman & Kanuk, 2009). In terms of safe street food purchasing (PURC), the decision-making process was adopted to explain how consumers purchase safe street food. Moreover, buying food is a routine behavior and not a complicated decision, so the process of the PURC decision is only comprised of three main stages. Accordingly, a road map of the “consumer decision process” (CDP) model of PURC in this study includes consumers’ NEED in PURC, consumers’ PREP on food safety, and consumers’ purchasing safe street food (Nobel Media, 2013; Richarme, 2007). Furthermore, there are three main significant individual differences factors (Blackwell, Miniard, & Engel, 2006)—consumers’ motivation (MOTI), consumers’ food safety knowledge (KNOW), and consumers’ lifestyle (LIFE)—based on food safety, which influence consumers’ decision process. This study is based on previous literature, demonstrated as a research model in Figure 1.

Generally, NEED is the first stage in the purchasing decision process (Blackwell et al., 2006). However, this study would like to examine the importance of the NEED stage in decision-making in order to encourage consumers to purchase safe street food. When consumers perceive food risk after consuming street food, they recognize the need for purchasing safe street food with the intention of ensuring their safety (J. Choi et al., 2013; D. J. Kim, Ferrin, & Rao, 2008). Therefore, the NEED stage would drive consumers to look for vendors who present good hygienic practices, which is the strategy of avoiding offending stalls (J. Choi et al., 2013; Yeung & Joe, 2001). Nevertheless, there are three other factors—MOTI, KNOW, and LIFE—that influence consumers’ choice evaluation as well.

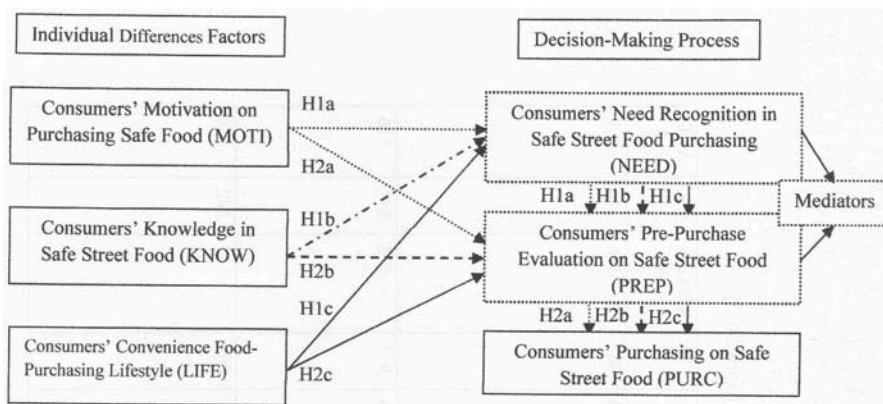


Figure 1. Model of mediators.

Mediation effect of consumers' NEED in PURC

As a result, the NEED can probably mediate the effects of the individual differences factors toward the PREP stage. In the first stage, this study therefore hypothesizes that:

H1a: The higher the MOTI for food safety, the more frequent their PREP of safe street food when it is fully mediated by consumers' NEED in PURC.

H1b: The higher the consumers' knowledge of safe street food, the more frequent their PREP of safe street food when it is fully mediated by consumers' NEED in PURC.

H1c: The higher the consumers' convenience food-purchasing lifestyle, the more frequent their PREP of safe street food when it is fully mediated by consumers' NEED in PURC.

The mediation effect of consumers' PREP of safe street food

The PREP stage is the stage that identifies what, when, or where the product will be chosen among the other competing products. Generally, consumers have their own rules to decide which item is selected (Blackwell et al., 2006). Therefore, this stage could be a middle variable that would persuade consumers to purchase a product that would satisfy their need. In terms of PURC, consumers may have their own decision-making process in deciding which food is safe based on the sight, smell, feeling, or sensory appeal (Judith, Alizon, & Elizabeth, 2003; Liu, Zhang, & Zhang, 2014). In addition, consumers in the United States mostly evaluate the cleanliness of food establishments before selecting a place for their meal (Henson et al., 2006). It should be emphasized that food safety quality could forecast consumers' PURC (Canavari, Castellini, & Spadoni, 2010). Hence, this study assumes that consumers cannot purchase safe street food without the PREP stage. Nevertheless, similar to the mediation effect of consumers' NEED stage, all the stages, including the PREP and purchasing stages, would be influenced by individual differences factors: MOTI, KNOW, and LIFE. Therefore, the second stage of this study examines the mediation effect of the PREP between the individual differences factors and the purchasing stage. Therefore, the hypotheses are stated as follows:

H2a: The higher the MOTI for food safety, the more frequent their purchasing of safe street food when it is fully mediated by consumers' PREP of safe street food.

H2b: The higher the consumers' knowledge of safe street food, the more frequent their purchasing of safe street food when it is fully mediated by consumers' PREP of safe street food.

H2c: The higher the consumers' convenience food-purchasing lifestyle, the more frequent their purchasing of safe street food when it is fully mediated by consumers' PREP of safe street food.

In summary, this study proposes that the strength of the effects of individual differences factors toward consumers' purchasing of safe street food increase when they are mediated by the NEED and PREP stages.

Methodology

Instrument development

To examine the mediation effects of consumers' NEED and PREP in the decision-making process, a survey questionnaire was developed in order to measure six relevant variables: MOTI, LIFE, KNOW, NEED, PREP, and PURC. Items from previous research and content from the preliminary study were adopted to develop the questionnaire items. The conditions of each construct are as follows. First, MOTI is relevant to lifestyle motivation (J. S. Chen, Legrand, & Sloan, 2009), health consciousness, personality motivation (M. F. Chen, 2011; J. S. Chen et al., 2009), and policy statement motivation (preliminary study). Second, LIFE is relevant to time, kitchen enjoyment, eating, value of money, and involvement (Buckley et al., 2005). Third, KNOW is relevant to equipment and utensils washing knowledge, food preparation knowledge, and food handling knowledge (Khomsan, 2009; Kongchuntuk, 2002; Ministry of Public Health, 2013). Fourth, NEED is relevant to ambient scent NEED, premise and practices NEED, staff and handling NEED, and food and location NEED (Fatimah, Boo, Murali, & Salleh, 2011). Fifth, PREP is relevant to premise and staff evaluation, previous bad experience evaluation, word of mouth evaluation (Danelon & Salay, 2012), and food appearance evaluation (Fatimah et al., 2011). The last construct, PURC, is relevant to previous bad experiences, word of mouth (Redmond & Griffith, 2005), ambient scent (Danelon & Salay, 2012), and food safety confidence (Danelon & Salay, 2012; preliminary study). Two types of scales were used to indicate the level of consumers' opinion or behavior related to the food safety of street food (Alreck & Settle, 2004). One was a 7-point Likert-type scale, which was used to identify consumers' degree of agreement (LIFE: 1 = *strongly disagree* and 7 = *strongly agree*) and degree of

importance related to the food safety of street food (NEED, MOTI: 1 = *not at all important* and 7 = *very important*). The other scale was a seven-point verbal frequency scale type that aimed to identify consumers' PREP and PURC behavior (PREP, PURC: 1 = *never* and 7 = *every time*). In terms of KNOW, yes/no answers were used to score consumers' KNOW (1 point for correct answers, -1 point for wrong answers, and no point for "no" answers; Ko, 2013).

Data collection

This study focuses on four districts in the NST province, as the data show food safety problems in those districts. Specifically, the study areas were city food courts, parks, beach fronts, and food festivals. A stratified random sampling technique was used to determine the number of sample per district. However, convenience sampling was the most suitable to identify the sample in the field (Burusukul, Binkley, & Sukalakamala, 2011; H. C. Choi, Maclaurin, & Cho, 2010; Lee, 2007). Self-administrative questionnaires were directly distributed to 720 respondents during December 1, 2013, until January 31, 2014. Consumers who had experience in purchasing street food were asked to be participants. After screening, only 707 usable observation responses were used.

Data analysis

Data screening and testing the appropriateness of the model

Structural equation modeling (SEM) analysis was used along with SPSS and AMOS software version 20 in this study. SEM is a well-recognized appropriate analysis that tests the fitness of a proposed model and data. Moreover, the SEM is also appropriate for analyzing complex relationships such as the mediation effects of variables in consumer behavior (Lee, 2007). Before the mediation effects of NEED and PREP were examined, all the assumptions of the confirmatory factor analysis (CFA) such as model fit, convergent validity (AVE), construct reliability (CR), discriminant validity, normality and outliers, had to be achieved (Hair et al., 2010).

Mediation effects testing

The bootstrapping method was used to test the effects, as this method was found to be more accurate than other methods (Preaches & Hayes, 2008). Two steps of mediation checking were involved in the analysis. First, the upper bound and lower bound values under 95% standardized indirect effects were checked. If "0" was not included in the range of the upper and lower bound values of the

measuring path, that path was considered to have a mediation effect. The next step was checking mediation types. The certain path would have a full mediation effect if the indirect effect of the two-tailed significance was $<.05$, but the direct effect was $>.05$. However, it would only be a partial mediation of the certain path if the overall effects—indirect, direct, and total effect—were $<.05$. The decision was to reject H_0 (null hypothesis) if there were mediation effects on the certain paths. The results are illustrated in [Tables 2](#) and [3](#).

Results and discussion

After all the assumptions were met, 653 of the questionnaires were still valid. The descriptive analysis of the SPSS version 20 was used to identify respondents' profiles, and it was found that most of the respondents, around 63%, were female. In addition, around 58% of the respondents were 20–30 years old. In terms of marital status, single respondents were the highest with 61.9%. College and non-college respondents were almost of equal number. Nearly half of the respondents were employed, although their monthly income was ranged averagely less than 20,000 Thai Baht (THB; US\$1 = 32 THB), which is slightly low.

The results from the assumptions test are presented in [Table 1](#), which demonstrate that the model fit with the data. A total of 24 out of 30 of the items remained from the overall five constructs: MOTI, LIFE, NEED, PREP, and PURC. In terms of KNOW, it was represented in the form of a total score because the measurement method to examine consumers' safe street food knowledge was different from the measurement of the other variables. Moreover, the discriminant validity of all constructs were totally valid with r^2 between two constructs $< AVE$.

[Table 2](#) represents the mediation effects of consumers' NEED. It shows that only two paths, MOTI \rightarrow PREP and KNOW \rightarrow PREP, were mediated by NEED. As demonstrated in [Table 2](#), “0” of those two paths were excluded from the range of lower and upper bound of BC 95% confidence interval at [.51, .20] and [.02, .09], respectively. After that, the types of mediations were investigated as partial mediation effect, as the overall effect of the two-tailed significance of both paths was significant at $p < .05$. Therefore, the decision was to reject H_0 (null hypothesis) of H_{1a} and H_{1c} . The results can be interpreted as demonstrating that consumers are willing to pay more attention to evaluating food safety before purchasing street food if they can recognize the need for safe food purchasing. The results support the findings of D. J. Kim et al. (2008) and J. Choi et al. (2013) in that if consumers wanted safe food, they would engage in the stage of evaluating their choices. This study stresses that the need for safe food can influence consumers toward evaluating their choices because it partially mediates MOTI for purchasing safe food and consumers' KNOW toward choice evaluation. In terms of LIFE \rightarrow PREP, there was no mediation

Table 1. Factor loading, CR, and AVE ($n = 653$).

Measurement Items	Factor loading+, >0.5, <10.0	CR> 0.7	AVE> 0.5
MOTI	0.77	0.841	0.516
I pay attention to food safety because it relates to my lifestyle			
I pay attention to food safety because I believe it can help me prevent food poisoning	0.76		
I pay attention to food safety when buying food because I am concerned with my health	0.74		
I pay attention to food safety because I believe it can force the vendors to improve their food safety practices.	0.69		
I pay attention to food safety because I am willing to follow the food safety campaign	0.62		
LIFE		0.8	0.50
Street food allows me to have time to relax	0.81	33	4
Street food reduces the amount of food preparation and washing up	0.78		
Street food is not expensive	0.69		
I really enjoy buying street food	0.69		
I do not usually prepare a proper meal when I am alone	0.55		
NEED		0.9	0.61
The vendor should avoid any foreign object in food or drink	0.84	06	6
The food should be cooked properly	0.83		
The stall should provide clean utensils	0.80		
The vendor should demonstrate high standard of personal hygiene	0.78		
No pest or domestic animal around the stall	0.77		
The stall should offer more fresh food	0.68		
PREP		0.8	0.63
I take the presentation of food/drink at the stall into consideration	0.92	70	0
I take the general atmosphere of the stall into consideration	0.85		
I check if there's an undesirable smell at food stall or surrounding area	0.77		
If I had an unpleasant experience, I will not go back to that stall	0.60		
PURC		0.829	0.550
I will choose the stall with good aroma of food	0.82		
I will only choose vendors that I have confidence with their food hygiene	0.81		
Even if I am loyal to one vendor, I will compare the food safety with others	0.69		
When the stall I am confident with is running out of food, I will not buy from other stalls	0.63		

effect because “0” was included in the range $[-.02, .00]$. As it can be seen, LIFE did not influence PREP (no significance at $p < .05$) on the path. Thus, NEED could not mediate LIFE \rightarrow PREP because there was no relationship between LIFE and PREP.

In Table 3, the mediation effects of consumers' PREP, the results were similar to the effect of NEED. On the path LIFE \rightarrow PURC, it could not be mediated by PREP because $p = .624$ ($p > .05$), which was not significant at 95%. In addition, the PREP also could not mediate KNOW \rightarrow PURC. However, the role of PREP in the path had an indirect effect because, before adding the PREP, there was no direct effect between KNOW and PURC ($p = .183, >.05$). Nevertheless, PREP was important in order to be a bridge between the KNOW and PURC of consumers. On the other hand,

Table 2. Mediation effect of consumers' NEED.

Casual Paths	Standardized Indirect Estimates	SE	Bias Corrected 95% Confidence Interval		<i>p</i>
			Lower Bound	Upper Bound	
MOTI → PREP	0.12	0.04	0.51	0.20	.002
Indirect effect	...	...	...	...	.002
Direct effect	...	...	...	...	.002
Total effect	...	...	...	...	.002
Conclusion: Partial mediation effect					
LIFE → PREP	-0.01	0.01	-0.02	0.00	.194
Indirect effect	...	...	...	...	.189
Direct effect	...	...	...	...	.493
Total effect	...	...	...	...	.674
Conclusion: No mediation					
KNOW → PREP	0.05	0.02	0.02	0.09	.001
Indirect effect	...	...	...	...	.001
Direct effect	...	...	...	...	.004
Total effect	...	...	...	...	.003
Conclusion: Partial mediation effect					

Note. SE: Standard error.

Table 3. Mediation effect of consumers' PREP.

Casual Paths	Standardized Indirect Estimates	SE	Bias Corrected 95% Confidence Interval		<i>p</i>
			Lower Bound	Upper Bound	
MOTI → PURC	0.38	0.05	0.29	0.49	.001
Indirect effect	...	...	...	...	.002
Direct effect	...	...	...	...	.067
Total effect	...	...	...	...	.003
Conclusion: Full mediation effect					
LIFE → PURC	0.01	0.02	-0.03	0.05	.627
Indirect effect	...	...	...	...	.614
Direct effect	...	...	...	...	.002
Total effect	...	...	...	...	.002
Conclusion: No mediation					
KNOW → PURC	0.14	0.03	0.09	0.20	.002
Indirect effect	...	...	...	...	.002
Direct effect	...	...	...	...	.176
Total effect	...	...	...	...	.003
Conclusion: Indirect effect					

PREP could fully mediate the path MOTI → PURC. Prior to adding the mediator, the direct effect of the path was significant ($p = .034$), but, after adding it, the indirect effect was significant ($p = .002$) instead. Accordingly, only H0 (null hypothesis) of H2a was rejected. This result signifies that consumers are motivated to purchase safe street food if they have chances to evaluate their food choices based on food safety, as is supported by the research of Henson et al. (2006) and Canavari et al. (2010).

Conclusion and implications

These findings emphasize that neither the NEED nor PREP stage could influence consumers to purchase safe street food if the consumers are highly involved in the convenience food-purchasing lifestyle. However, the choices evaluation stage based on food safety really influences consumers to avoid unsafe street food consumption, though consumers must have enough motivation to purchase safe street food as well. Moreover, while consumers are purchasing street food, consumers may perceive food risk and recognize the need to purchase safe food, and, as such, the consumers' NEED could activate their MOTI to purchase safe street food. Furthermore, the need to purchase safe food could initiate consumers to recall their KNOW related to street food from their memory when purchasing the food. Nevertheless, NEED cannot be a full mediator because sometimes in the process of generating food safety needs, consumers may perceive that the food safety problem is greater than is acceptable, and thus would prefer to stop consuming instead.

To provide consumers with safe consumption of street food, local authorities, or related organization, should address consumers on the risk of consuming food that is unhygienic or not properly prepared. At the same time, they should promote consumers with good strategies to select safe food. Additionally, the authorities must force all street vendors to follow food safety regulations and withdraw permission licenses from unqualified vendors. The authorities might organize a street food zone that can promote sanitation. Lastly, food vendors themselves should be concerned to reduce risk and improve their food safety quality. Hence, all consumers can purchase safe street food without being strongly engaged in the choice evaluation process.

Limitations and suggestions for future study

This study only focused on the respondents who patronized street food. However, if the study could identify the reasons other respondents were not interested in street food it would be able to investigate more deeply into the decision-making process of purchasing street food. Thus, future studies could survey both types of respondents and better explain the reasoning and behavior behind those who have never purchased street food.

In addition, this study examines the importance of the NEED and PREP stages in the purchasing decision-making process. The findings found that the PREP stage was a full mediator on the path KNOW → PURC. It signifies that more opportunity to evaluate the choices increases the opportunity to obtain safe food. The preliminary study in this research suggested that street

food zones provide consumers with time to select the foods. A future study is also recommended to investigate onto consumers' opinions toward organizing street food zones in order to reduce food risk from food purchasing. Moreover, street food is representative of local cultures, which can make it a destination for tourists, if there is good organization, especially in terms of sanitation.

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