

Consumers' Perceptions of Noncommunicable Diseases and Perceived Product Value Impacts on Healthy Food Purchasing Decisions

Khatesiree Sripoothon, Usanee Sengpanich, Rattana Sittioum

Abstract—The objective of this study is to examine the factors influencing consumer purchasing decisions about healthy food. This model consists of two latent variables: Consumer Perception relating to NCDs and Consumer Perceived Product Value. The study was conducted in the northern provinces of Thailand, which are popular with tourists and have received support from the government for health and wellness tourism. A survey was used as the data collection method, and the questionnaire was applied to 385 consumers. An accidental sampling method was used to identify the sample. The statistics of frequency, percentage, mean, and structural equation model were used to analyze the data obtained. Additionally, all factors had a significant positive influence on healthy food purchasing decisions ($p < 0.001$) and were predictive of healthy food purchasing decisions at 46.20% ($R^2 = 0.462$). Also, these findings seem to underline the supposition that consumer perceptions of NCDs and perceived product value are key variables that strengthen the competitive effects of healthy-friendly business entrepreneurs. Moreover, it reduces the countries' public health costs for treating patients with the disease of NCDs in Thailand.

Keywords—Healthy food, perceived product value, perception of noncommunicable diseases, purchasing decisions.

I. INTRODUCTION

FAST foods have become increasingly popular among the population because people have a hurried life and they need the quickest food possible. In 2019, the fast-food industry was worth \$647.7 billion and is predicted to grow to \$931.7 billion by 2027, with a CAGR of 4.6 percent throughout that time. [1]. Most fast foods are junk foods with low nutritional value and are high in fat, sugar, and salt. For example, hamburgers, pasta, pizza, and tacos can be considered either healthy or junk food depending on their ingredients and preparation methods [2]. Excessive junk food consumption and physical inactivity are the root causes of NCDs (noncommunicable diseases) such as cardiovascular disease, type 2 diabetes, obesity, some cancers, and nonalcoholic fatty liver disease. World health organization (WHO) reports have focused on the NCDs epidemic since NCDs are the leading cause of premature death globally and are responsible for just over 71% of deaths worldwide and 74% of the Thai population [3]. As the above situation shows, there is a consistent correlation between the increasing severity of NCDs and the increasing growth of the fast-food market valued. The importance of this study was to determine perceptions of

NCDs and perceived product value impacts on healthy food purchasing decisions. These variables can be used to create new marketing strategies that can promote healthy fast-food businesses and be accepted by consumers. to enable health-friendly businesses to run with the sustainability of consumers' health.

II. CONCEPTUAL FRAMEWORK

The literature review is a review of variables and related theories in order to summarize the following research concepts.

NCDs perceptions mean that a person receives information or anything and that information is interpreted according to previous attitudes or experiences. It is associated with NCDs, resulting in higher awareness of NCDs [4]. The accuracy and amount of information perceived will vary from person to person. It depends on the person's background [5]. In addition, disease awareness can raise awareness among consumers and result in purchasing decisions. It also recognizes the importance and value of the product [6].

Perceived product value means that consumers are encouraged to be open to information until they are able to recognize the benefits and values that will be obtained from owning or using that service [7], which can influence consumer purchasing decisions [8].

Purchasing decisions mean that the consumer goes through the process of evaluating options until they find what they think best suits their own needs. and agree to trade for it in exchange for possession of or use of that service [7]. Therefore, it can be formulated as a research hypothesis. This can be as follows:

- H1: Consumers' perception of NCDs impacts on consumers' perceived product value.
- H2: Consumers' perception of NCDs impacts on consumers' buying decision for healthy food.
- H3: Consumers' perceived product value impacts on consumers' buying decision for healthy food.

The conceptual framework of this study as shown in Fig. 1.

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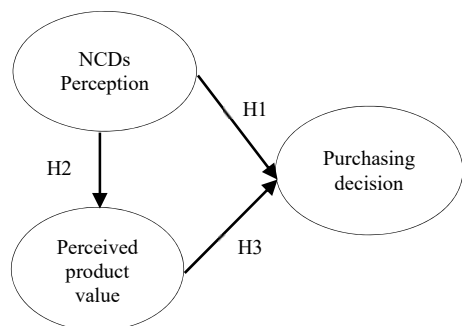


Fig. 1 A conceptual framework of consumers' perceptions of noncommunicable diseases and perceived product value impacts on healthy food purchasing decisions

III. AIM AND METHODOLOGY OF THE STUDY

The aim of this study is to determine the perceptions of NCDs and perceived product value that influence the healthy food purchasing decisions of consumers who are staying in 17 provinces in northern Thailand.

There are some studies in the literature that investigate the effects of perception and perceived value [4]-[11]. However, there are few studies on consumer perceptions of NCDs and the perceived value of healthy food products. Therefore, it is expected that this study will be useful for future studies.

To collect the data for this study, we employed a questionnaire that comprised three parts. The first part includes eight questions that aim to determine the demographic characteristics of the respondents (gender, age, education, occupation, income, marital status, residential position, and health problems). The second part of the survey includes 35 questions to determine the perception level of NCDs and the perceived product value of consumers. The third part includes 20 questions to determine the consumers' purchasing decisions for healthy food. The statements in the questionnaire were rated on a five-point Likert-type scale. The consumers were asked to evaluate their opinions on the level of NCDs perception and perceived product value between "strongly disagree" = 1 and "strongly agree" = 5. The second part of the questionnaire was developed by reviewing studies conducted earlier in this study [4]-[11] and in the third part [12], the content and the comprehensiveness of the questionnaire were checked, and the Cronbach's alpha values were provided to present the results of the reliability analysis. To collect the data for the study, a survey method was utilized. The sample comprises consumers who are staying in 17 provinces in northern Thailand (Chiang Rai, Chiang Mai, Lamphun, Lampang, Phrae, Nan, Phayao, Mae Hong Son, Uttaradit, Tak, Phitsanulok, Sukothai, Phetchabun, Phichit, Kamphaeng Phet, Nakhon Sawan, and Uthai Thani.) The sample group was 385 people by determination using the concept by [13] with a 95% confidence level. This sample group is considered to meet the criteria specified in the analysis of the Structural Equations Model (SEM) by using Analysis of Moment Structure (IBM SPSS Amos 18) based on the concept of [14] that the sample size should be 10-20 times that of the observed variable. The study was completed over a period of four total months between

September 2020 and December 2020.

Table I includes convergent validity and discriminant validity for confirmatory factor analysis. According to these results, the standardized factor loading of each observable variable is greater than 0.6 [14], the Average Variance Extracted of each latent variable is greater than 0.5 [15], and the construct reliability of each latent variable is greater than 0.7 [16].

TABLE I
 CONFIRMATORY FACTOR ANALYSIS OF TEST

Latent variables	Observed variables	Factor Loading	AVE	CR
NCDs Perception	Risks	0.38	0.560	0.775
	Symptoms	0.92		
	Effects	0.83		
Perceived product value	Emotional	0.85	0.816	0.946
	Social	0.90		
	Functional	0.93		
	Epistemic	0.93		
	Quality	0.95		
Purchasing decision	Brand	0.76	0.726	0.913
	Innovative	0.71		
	Price	0.96		

IV. FINDINGS & DISCUSSION

The demographic characteristics of the respondents consist of 91 males (23.6%) and 294 females (76.4%) who responded to the questionnaire, with 60.8% of the respondents under 20 years of age, 83.6% are single, 62.6% have a lower education with a bachelor's degree, 64.9% are students, 64.7% had incomes of less than 10,000 baht, 61.3% lived in rural areas, and 90.1% had no health problems.

The findings for the means, standard deviations, and level of the consumers' perceptions about NCDs, perceive product value, and purchasing decisions are shown in Table II. According to these results, it can be stated that consumers have moderate perceptions of NCDs. In particular, they may not have enough public health information, and public health agencies may have unreliable channels for communicating information to the public. If there were more perceptions, it could have a positive effect on the NCDs situation. Furthermore, both the perceived product value and the purchasing decision were at a high level, thus revealing that consumers are paying attention to the products used in this study. Moreover, they are conscious of the value of the product, quality, and innovation of the product. Therefore, green business entrepreneurs should respond to this consumer demand in order to gain a competitive advantage.

The results of development and analysis of a causal relationship model consisting of consumers' perceptions of noncommunicable diseases and perceived product value impacts on healthy food purchasing decisions as shown in Fig. 2.

TABLE II
DESCRIPTIONS OF LATENT AND OBSERVED VARIABLES (N=385)

Latent variables	Observed variables	\bar{x}	d.f.	Level
NCDs Perception		3.20	1.06	Moderate
	Risks	3.42	1.20	Moderate
	Symptoms	3.20	1.16	Moderate
	Effects	2.98	1.14	Moderate
Perceived product value		3.94	0.91	High
	Emotional	3.94	0.92	High
	Social	3.94	0.96	High
	Functional	3.98	1.01	High
	Epistemic	3.94	0.91	High
Purchasing decision		3.59	0.80	High
	Quality	3.99	0.83	High
	Brand	3.35	0.97	Moderate
	Innovative	3.59	0.93	High
	Price	3.28	0.95	Moderate

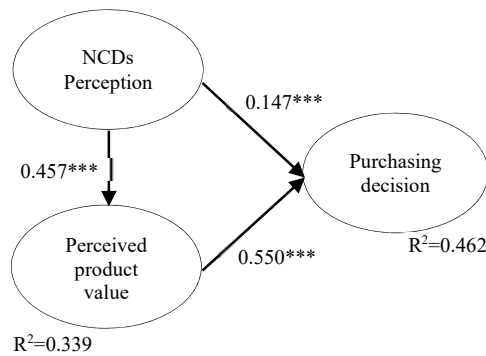


Fig. 2 A causal relationship model of consumers' perceptions of noncommunicable diseases and perceived product value impacts on healthy food purchasing decisions (Note: * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$)

The results of the model testing showed that all the statistics after the model were standardized and consistent with the empirical data with statistical value of the chi-square ratio to degree of Freedom (χ^2/df) = 1.227, P-value = 0.186, GFI = 0.985, CFI = 0.998, RMR = 0.019, and RMSEA = 0.024. The statistics obtained are compared with the criteria for determining that the statistical value of the chi-square ratio to the degree of freedom should be less than 2 and the P-value must be statistically insignificant, GFI and CFI value should be more than 0.90 and, RMR and RMSEA value should be less than 0.05 thus, making the model fit with the theoretical model.

Table III includes hypothesis tests for three hypotheses of this study. Hypothesis 1, the NCDs perception had a statistically significant influence on the purchasing decision of the product at the 0.001 level with a route coefficient of 0.147 ($\beta = 0.147$, $t = 3.977$, $p < 0.001$). Hypothesis 2, the NCDs perception had a statistically significant influence on the perceived product value at the 0.001 level with a route coefficient of 0.457 ($\beta = 0.457$, $t = 7.836$, $p < 0.001$). Hypothesis 3, the perceived product value had a statistically significant influence on the purchasing decision of the product at the 0.001 level with a route coefficient of 0.550 ($\beta = 0.550$, $t = 11.117$, $p < 0.001$). For the hypothesis

test, the results of the study supported all of the hypotheses. That means the results are consistent with previous studies reviewed.

TABLE III
HYPOTHESIS TEST

Hypotheses	Pathways	(β)	t-value	Results
H1	PNCD→DECI	0.147	3.977***	Supported
H2	PNCD→PERV	0.457	7.836***	Supported
H3	PERV→DECI	0.550	11.117***	Supported

Note: 1) * Means statistically significant at level 0.05 ($p < 0.05$) ($1.96 \leq t$ -value < 2.576)

2) ** Means statistically significant at level 0.01 ($p < 0.01$) (t -value ≥ 2.576)

3) *** Means statistically significant at level 0.001 ($p < 0.001$) (t -value ≥ 3.291)

4) PNCD = NCDs perception 5) PERV = Perceived product value 6) DECI = Purchasing decision

Table IV includes effect size and R-squared results for the comparison of the effect size of variables (NCDs perception and perceived product value) to purchasing decisions. According to these results, the NCDs perception and perceived product value impacts of healthy food purchasing decision do demonstrate statistically significant influence ($p < 0.001$). The effect with total effect on the consumer purchasing decision of healthy food, the most is (1) perceived product value (TE=0.553) and (2) NCDs perception (TE=0.510) respectively. All factors are used to predict 46.2% ($R^2=46.2$) of consumer purchasing decisions. In this study model, there are three paths to influence purchasing decisions: (1) NCDs perception to perceived product value to purchasing decision (2) NCDs perception to purchasing decisions, and (3) perceived product value to purchasing decisions. We can state that a green business that can provide health information along with the value proposition of a product will have a positive influence on healthy product purchasing decisions. Because raising perceptions of disease has a huge influence on perceived product value, and perceived product value had the greatest influence on purchasing decisions in this study.

TABLE IV
EFFECT SIZE AND PREDICTIVE OF THE VARIABLES

Latent variables	R^2	Effect	Antecedents	
			NCDs Perception	Perceive product value
Perceive product value	0.339	Direct effect	0.582	0.000
		Indirect effect	0.000	0.000
		Total effect	0.582***	0.000
Purchasing decision	0.462	Direct effect	0.188	0.553
		Indirect effect	0.322	0.000
		Total effect	0.510***	0.553***

Note: 1) * Means statistically significant at level 0.05 ($p < 0.05$) ($1.96 \leq t$ -value < 2.576)

2) ** Means statistically significant at level 0.01 ($p < 0.01$) (t -value ≥ 2.576)

3) *** Means statistically significant at level 0.001 ($p < 0.001$) (t -value ≥ 3.291)

V. CONCLUSION

Today, health perception has become a major component of business advertising. The global trend is shifting towards a

wellness lifestyle. Consumers are motivated to purchase a product based on the health information and health value they receive from the product. Health-friendly entrepreneurship is a worthwhile phenomenon that has attracted a lot of attention, but there is still little research in this area. As more hurried lives are the new normal, as well as eating behavior changes and more NCDs cases, policy makers and researchers have shifted to the urgent need to move towards a more health sustainable development path. These will benefit the health of consumers, the growth of a health-friendly business, and reduce the country's public health expenditure.

The purpose of this study was to determine the perceptions of NCDs and perceived product value influencing healthy food purchasing decisions of consumers and to analyze these variables in 17 provinces in northern Thailand. The analysis of the Structural Equations Model (SEM) was used to identify the variables that influence these purchasing decisions. For this purpose, the researchers identified three latent variables and 11 observed variables by reviewing the literature and a questionnaire was put to the experts.

Based on the results of this study, consumers in northern Thailand have a moderate level of NCD perception. Both perceive product value and purchasing decisions at a high level. All of the variables had a significant positive influence on healthy food purchasing decisions ($p < 0.001$) and were predictive of healthy food purchasing decisions at 46.20% ($R^2 = 0.462$). Hence, this may show the coherence of perception levels with the increasing number of NCDs cases in the opposite direction. Therefore, public health agencies in the country need to formulate public health policies to increase public perception of the disease and decrease new cases of NCDs.

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