

# Factors Affecting Purchase Intentions of Plant-Based Food Products in Mueang Lampang

Pithoon Thanabordeekij<sup>1</sup> and Phuwit Kitiya<sup>2</sup>

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## Abstract

The world is facing climate change problems, which have many causes to contribute to them. One is meat production, which contributes to large amounts of greenhouse gases that cause global warming. There has been reduced consumption in developed countries and a growing market in Thailand. It led to the recommendations for reducing meat consumption and moving toward plant-based consumption. This study looked at the effects of each factor on the purchase intention of plant-based food products in Mueang Lampang, a smaller and less developed area, than in cities such as Chiang Mai or Bangkok. The result reveals that environmental concerns, subjective norms, and perceived consumers' effectiveness factors affect the purchase intention of plant-based food products. The firms that produce plant-based products should communicate to consumers clearly and truthfully about how their products are better for the environment than those from animals. Also, promote the consumers' engagement program. Consumers are a part of helping and improving the environment.

**Keywords:** Plant-based Product, Purchase Intentions, Mueang Lampang

## Introduction

### Background of the Study

Today, the world faces many problems from climate change, with rising temperatures, rising sea levels, and more extreme weather situations like drought and heavy rains. It causes a severe shortage of food supplied, especially in African countries, where biodiversity is destroyed (Foundation Myclimate, n.d.)

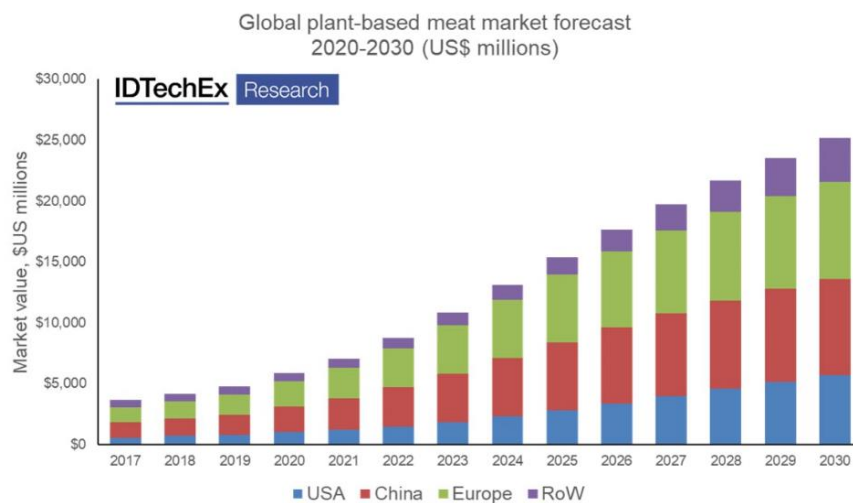
For many years scientists have found the causes of climate change, and the leading cause is human activities that emit greenhouse gas, carbon dioxide, methane, and nitrous oxide (European Commission, n.d.). One human activity contributing to climate change is meat production, which accounts for more than 50% of world greenhouse emissions (Goodland & Anhang, 2009). The methane is released during production. The deforestation of farming areas also releases Carbon Dioxide. To lower the emission of these gas, the Intergovernmental Panel

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<sup>1,2</sup>Faculty of Economics Chiang Mai University, Thailand  
E-mail: pithoon.th@cmu.ac.th

on Climate Change (IPCC) recommends that people reduce their consumption of meats, which could reduce greenhouse gas emissions by up to 50% (Gerken & Rowlett, 2021).

Because of this, the consumption of meat products decreased, especially in developed countries, like the U.K., which found a 17% decrease. Many people have started to consume alternatives like plant-based foods, and the market for these products sees an increase in market value. The global market of plant-based meat grew up by 40% between 2017-2019, and have been forecasted that the market will increase from under 5 billion U.S. Dollars to 30 billion U.S. Dollars in 2030 (Dent, 2019) and 300 billion U.S. Dollars in overall plant-based products (Bloomberg Intelligence, 2021).



**Figure 1** Global Plant-based Meat Market Forecast 2020-2030

**Source:** IDTechEx report plant-based and cultured meat 2020-2030

In the meantime, the market in Thailand is also growing, with a market valued at 28 billion Thai baht in 2019, and it has been forecasted to grow to 45 billion baht in 2024. The survey in 2021 also shows that up to 27% have been trying to increase consuming these products (GlobalData, 2021). However, it is the survey overall country and only goes into other areas with different cultures and characteristics.

This study examines how local areas like Mueang Lampang purchase intentions on plant-based foods. These will come with the recommendation to the companies to improve their strategies to market their product in Mueang Lampang and other areas in Thailand.

### Research Objective

To determine the factors affecting the purchase intention of plant-based food products in Meung Lampang.

### Literature Review

This sector contains all relevant theories and variables used to examine the purchase intention of plant-based food products.

## **Introduction of Relevant Theories and Variables**

### **Theory of Planned Behaviour**

The Theory of Planned Behaviour or TPB (Ajzen, 1991) is a theory that extends from the theory of reasoned action or TRA (Ajzen & Fishbein, 1980). According to the TRA, an individual's behavioral intention is under volitional control. People will do that behavior if they have a positive attitude toward that behavior and believe that other people will have a positive impact if he or she is doing so or have a positive from subjective norms. Attitudes are believed to what likely consequences or other attributes of behavior. They come from the sum individual's behavioral beliefs, which each one will multiply with their expected outcome. If it comes positively, it will result in that person having a positive attitude (Sutton, 2001). Subjective norms mean believing in what a particular person or group of people of this individual think on how they will approve and support his or her behaviors. He or she will do things if he or she receives positive pressure from others. However, this model must be revised to predict behavior because people might only do those behaviors with positive motivation. The results in an extension of this theory by adding perceived behavioral control, which is a degree of control over those behaviors. The higher degree of control, the more likely that person will engage in those behaviors (Yeon & Chung, 2011). For example, if that person has more resources such as skill, time, or money, he or she will have a higher degree of control which means more chance to do those behaviors.

A TPB has been used in previous studies of purchase intention on more environmental products, including organic meat (Nguyen et al., 2021; Yeon & Chung, 2011) and plant-based food products (Kopplin & Rausch, 2021), these studies can predict the consumers' purchase intentions, and this study included variables from those studies.

### **Environmental Concerns**

Environmental concerns are an attitude toward events or behavior that have the impact of environmental consequences (Weigel, 1983). It has been focussed on previous research for purchasing greener products and plant-based food. They suggested a degree of concern for the environment and their support of solving the issue (Rhead et al., 2015), and the degree of concern might differ in areas (Milfont et al., 2006).

### **Animal Welfare Concern**

Concerns for animal welfare are also essential as they represent consumers' attitudes. It is referred to as animal welfare concerns covering social and nutritional aspects, such as the well-being of animals and farming practices. It also expands to food quality and safety (Harper & Makatouni, 2002).

### **Health Consciousness**

Health consciousness is a variable that reflects a person's perception of the health problem and takes care of their health (Gould, 1988; Kraft & Goodell, 1993; Newsom et al., 2005). People concerned about their health have higher knowledge of nutritional information, making them good consumers of health-related products (Latvala et al., 2012; Mullee et al., 2017). Craig (found that a vegetarian or plant-based diet could improve consumers' health, such as lower cholesterol, blood pressure, and the chance of heart disease.

### **Perceived consumer effectiveness**

Perceived consumer effectiveness is related to perceived behavioral control in which how they feel their behavior controls their performance (Rothbaum et al., 1982). Perceived consumer effectiveness estimates consumers' abilities to contribute to substantially related outcomes through specific behaviors (Hanss & Doran, 2019). It evaluates their belief in themselves on that practical issue rather than an object.

### **Subjective Norm**

Subjective norm is imposed by comprehending social pressure from external factors, such as people in society, for an individual to behave in a certain way and their motivation to comply with people's views (Ham et al., 2015).

### **Relationship Between Relevant Variables and the Research Hypothesis Environmental Concerns and Purchase Intention**

According to Chan (2001), the purchase intention of green products was determined by ecological knowledge and ecological effect at different degrees. Ecological effects tended to have more effect than ecological knowledge to purchase intention. Arisal and Atalar (2016) and Lee (2008) suggested that environmental concerns influenced purchase intention on green products, especially regarding food-related products. Rosenlöw and Hansson (2020) and Shen and Chen (2020) found that environmental concerns significantly affect the purchase intention of plant-based food products.

**Hypothesis 1:** Environmental concern has a positive impact on purchase intention.

### **Animal Welfare Concern and Purchase Intention**

According to Janssen et al. (2016), animal welfare concern was the most substantial reason people decided to follow a vegan diet. People affected by animal aspects tended to have a favorable view of animal welfare concerns as they believed that switching to plant-based food products would contribute less to animal suffering. That view also led to positive purchase intention. However, Kopplin and Rausch's (2021) research suggested that animal welfare concerns did not significantly contribute to purchase intention, despite significantly contributing to a vegan diet.

**Hypothesis 2:** Animal welfare concern has a positive impact on purchase intention.

### **Health Consciousness and Purchase Intention**

According to Bryant (2019), health consciousness was linked to a greater perception of vegan products, especially among people with higher health knowledge, who believed that vegan products were healthier than meat and prevented some diseases (Lea et al., 2006). That perception increased the purchase intention of these products (Wen & Li, 2013).

**Hypothesis 3:** Health consciousness has a positive impact on purchase intention.

### **Perceived Consumers' Effectiveness and Purchase Intention**

Perceived consumer effectiveness is an essential factor in influencing consumer purchase intention. Previous studies suggested that consumers tended to have high purchase intention if they had high perceived consumer effectiveness (Ellen et al., 1991; Berger & Corbin, 1992; Roberts, 1996; Lee & Holden, 1999), which, according to Roberts (1996), to archive that, consumers needed to believe that their actions would affect environment. However, the availability and price of products were barriers that caused lower perceived consumer effectiveness and purchase intention (Lee & Holden, 1999; Rosenlöw & Hansson, 2020).

**Hypothesis 4:** Perceived consumer effectiveness has a positive impact on purchase intention.

### **Subjective Norms and Purchase Intention**

As subjective norms referred to how a particular person or group of people of those people expected their actions, they were also an essential factor for purchase intention, as they

received some recommendations for opportunities to try the product from friends or families (Rosenlöw & Hansson, 2020).

**Hypothesis 5:** Subjective norms has a positive impact on purchase intention.

These five variables were extracted to study the purchase intention of plant-based food products, including environmental concerns, animal welfare concerns, health consciousness, perceived consumer effectiveness, and subjective norms. All five variables are expected to positively influence the purchase intention of plant-based food products. The following section describes the method used to test these hypotheses.

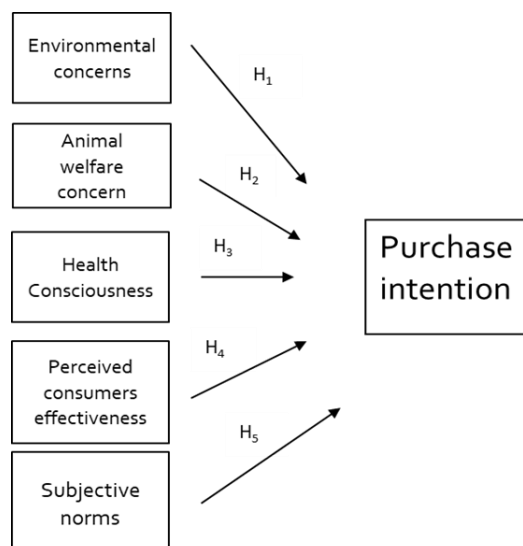
## Methodology

This section presents the approach employed for studying the effect of each factor on the purchase intention of Plant-based food products in Mueang Lampang. The Department of Provincial Administration reported that, in 2020, the population of Mueang Lampang was 223,116 people. Using Taro Yamane’s sample size calculation (Yamane, 1973) to determine the sample for this study, the calculated values are about 400 people.

### Conceptual Framework

This paper is based on the Theory of Planned Behaviour (TPB) (Ajzen, 1991), used to expand and predict consumers’ purchase intention. It explains, which has attitude, which represents three variables: environmental concerns, animal welfare concerns, health consciousness, subjective norm, and perceived behavior, which presents as perceived consumer effectiveness. This study will look at each of these independent variables that affect the purchase intention of plant-based food products in Mueang Lampang to make a recommendation for the firms.

Based on the literature review, a framework for the current study is shown in Figure 2. This framework describes the hypothesized relationships among environmental concerns, animal welfare concerns, health consciousness, social norm, perceived behavior, and purchase intention.



**Figure 2** Conceptual Framework Adapted from Kopplin and Rausch (2021), Lea et al. (2006), Lee (2008), and Miguel et al. (2020)

**Hypotheses of this study are:**

- H<sub>1</sub>: Environmental concern has a positive impact on purchase intention
- H<sub>2</sub>: Animal welfare concern has a positive impact on purchase intention
- H<sub>3</sub>: Health consciousness has a positive impact on purchase intention
- H<sub>4</sub>: Perceived consumer effectiveness has a positive impact on purchase intention
- H<sub>5</sub>: Subjective norms have a positive impact on purchase intention.

The target population of this study was people who lived in Mueang Lampang. Accounting The Department of Provincial Administration reported that, in 2020, the population of Mueang Lampang was 223,116 people. Using Taro Yamane’s sample size calculation (Yamane, 1973) to determine the sample for this study, the minimum required sample size was 400.

**Research Instruments and Data Collection**

This study performed a quantitative research method, using survey questionnaires to collect data from the sample. The simple random sampling method was used to collect the data. The questionnaires were used to conduct the survey and collect the data. A questionnaire consists of 2 parts: the screening and the main question. A survey was conducted through various places within the city.

Elements in the questionnaire were derived from the available literature review. Necessary modifications were made to make it suitable for the Thailand context.

**Table 1** Sample Questionnaires

Screening	Variable Questions	Reference
<ul style="list-style-type: none"> <li>- Required age at 18 years old or more.</li> <li>- Are you Vegetarian/vegan or not?</li> <li>- Consume Plant-based Food Products Before.</li> </ul>	Environmental concerns - I am concerned about the country’s environment. - I am concerned about how human actions affect the environment. - I am concerned about future environmental development. - I am concerned that the food they consume will affect the environment.	Kopplin and Rausch (2021), Miguel, Coelho, and Bairrada, (2020). Nguyen et al., (2021).
	Animal welfare concerns - I care about the welfare of animals. - Animals must not suffer. - My food must be produced so that animals have not experienced pain.	Kopplin and Rausch (2021) Miguel Coelho, and Bairrada, (2020).
	Health Consciousness - I take care of my health. - I eat in a way that expresses care for my body. - I lead a healthy lifestyle.	Kopplin and Rausch (2021). Martinelli and de Canio (2021).

**Table 1** Sample Questionnaires (Con.)

Screening	Variable questions	Reference
	Perceived consumers effectiveness - Purchasing plant-based foods saves valuable environmental resources. - I can protect the environment when purchasing plant-based foods - I can decrease environmental problems with the purchase of plant-based foods.	Kopplin and Rausch (2021).
	Subjective norms - My family expects me to buy plant-based foods. - People who are important to me expect me to buy plant-based foods. - My friends expect me to buy plant-based foods.	Kopplin and Rausch (2021). Miguel Coelho, and Bairrada, (2020).
	Purchase intention - I will buy plant-based foods in the future. - I intend to buy plant-based foods instead of animal-based products in the future. - I will buy plant-based foods if I see them at the place where I regularly buy food.	Kopplin and Rausch (2021) Miguel Coelho, and Bairrada, (2020).

Five-point Likert scales were used in the questionnaires, ranging from (1) strongly disagree to (5) strongly agree based on each variable.

#### **Data Analysis**

First, all the questions will be tested for reliability analysis, Cronbach's alpha coefficients, which required coefficients at 0.7 after collecting the data (Tavakol & Dennick, 2011) then used multiple linear regression to perform statistical analysis.

## **Research Finding and Discussion**

### **Demographic Profiles**

The survey collected general information: age, gender, and salary of respondents. There are 488 out of 521 respondents whose information can be taken into the analysis as they are not vegetarian or vegan but used to take plant-based food products before. These respondents consist of 5.5 percent aged 18 to 21 years old, 37.3 percent aged 22 to 30 years old, 27.3 percent aged 31 to 49 years old, 18.0 percent aged 50 to 59 years, and 11.9 percent aged 60 years and above. Regarding gender, 37.5 percent are male, and 62.5 percent are female. Finally, in terms of their salary, 13.1 percent earn less than 5,000 baht per month, 20.5 percent earn between 5,000 and 10,000 baht per month, 27.7 percent earn between 10,001 and 15,000 baht per month, 16.4 percent earn between 15,001 and 20,000 baht per month, 16.4 percent earn between 20,001 and 30,000 baht per month, 3.9 percent earn between 30,001 and 40,000 baht per month, 1.6 percent earn between 40,001 and 50,000 baht per month, and 0.4 percent earn more than 50,000 baht per month.

**Relationship in Relevant Variables and Research Hypothesis**

First, all the questions were tested for reliability using Cronbach's alpha coefficients, which required coefficients at 0.7 after collecting the data. All items were passed using this test.

**Table 2** Cronbach's Alpha Scale Reliability Results

Variables	Cronbach's Alpha (n = 488)	Items	Means
Environmental Concerns	0.905	E1	4.19
		E2	4.12
		E3	4.06
		E4	4.00
Animal Welfare Concerns	0.827	A1	3.99
		A2	4.00
		A3	3.90
Health Consciousness	0.931	H1	4.28
		H2	4.20
		H3	4.06
Perceived Consumers Effectiveness	0.919	P1	3.71
		P2	3.74
		P3	3.74
Subjective Norms	0.941	S1	3.61
		S2	3.52
		S3	3.50
Purchase Intention	0.935	PI1	3.92
		PI2	3.81
		PI3	3.85

**Source:** Author's calculation

Linear regression was employed to find the coefficient, t-value, and p-value. For hypotheses to be accepted that they supported that factor has a significant effect on purchase intention of plant-based food products, the p-value must be less than 0.05 for a 95 percent confidence level. Based on findings in Table 4 suggests that factors that have a significant effect on the purchase intention of plant-based food products are environmental concerns ( $\beta = 0.160$ ,  $p < 0.001$ ), Perceived consumers effectiveness ( $\beta = 0.502$ ,  $p < 0.001$ ), and subjective norms ( $\beta = 0.328$ ,  $p < 0.001$ ), and as their coefficient show the positive value that means they have a positive effect on purchase intention. At the same time, animal welfare concerns and health consciousness do not significantly affect the purchase intention of plant-based food products.



**Table 4** Summary of Hypotheses Testing

No.	Hypothesis Path	Beta( $\beta$ )	t-value	p-value	Hypo Thesis Supported
$H_1$	Environmental Concerns $\rightarrow$ Purchase Intention	0.160	4.300	0.000	Yes
$H_2$	Animal Welfare Concerns $\rightarrow$ Purchase Intention	-0.078	-1.702	0.089	No
$H_3$	Health Consciousness $\rightarrow$ Purchase Intention	0.016	0.363	0.717	No
$H_4$	Perceived Consumers' Effectiveness $\rightarrow$ Purchase intention	0.502	10.346	0.000	Yes
$H_5$	Subjective Norms $\rightarrow$ Purchase Intention	0.328	8.101	0.000	Yes

Source:  $R^2 = 0.715$ , the significant level at 0.05, p-value < 0.05

## Conclusions and Policy Recommendation

This study aims to identify the factors that affect the purchase intention of plant-based food products in Mueang Lampang and make recommendations for the firms to market the products. The result of the analysis reveals that environmental concerns affect the purchase intention of plant-based food products, inconsistent with Rosenlöw and Hansson (2020) and Shen and Chen (2020), the firms should communicate to consumers clearly and truthfully about (1) how their products are better for the environment, and consumers are a significant contributor to save the environment, and (2) identify that how consuming plant-based product can reduce animal suffering on factory and farming.

Subjective norms also have an impact on purchasing intention. The firms should make products so tasty, give an excellent experience to consumers, and have promotions to encourage them to share how good the products are, like sharing it on social networks reaching friends, families, or other people, so they buy the products because of them. Consumers will buy the products if they have been recommended or influenced by their family members, friends, and essential People.

This research offers a view of purchase intention from an area. In the future, it should study the areas to find the big picture of purchase intention of plant-based food products in our country and use more advanced analysis tools.

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