LAB University of Applied Sciences

Environmental awareness on plant-based meat consumption in Vietnam

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Abstract

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Abstract

This thesis research aims to examine one factor that influences Vietnamese consumers' willingness to purchase meat substitutes, which is environmental awareness. Three hypotheses were drawn to measure consumers environmental awareness, effect of said awareness on plant-based alternatives consumption, and whether it affects willingness for continuous consumption. An empirical study was constructed, which collected 151 response (n= 151) through quantitative methodology.

The results revealed that even though there exists a high environmental awareness among Vietnamese consumers, especially the young population, there is no correlation between awareness and consumption level of plant-based meat, as meat is still perceived as a necessity to consumers dietary. However, despite not resulting in a direct impact and visible increase in plant-based meat consumption, higher environmental awareness has some correlation with consumers' willingness to incorporate plant-based meat to their diets. That said, further research is needed to examine factors regarding consumption, as the findings also indicate certain level of influence from religious and spiritual factors among Vietnamese consumers.

Keywords

Plant-based meat, Vietnamese market, consumer behaviors, consumer values, environmental awareness

Contents

1 Introduction

1.1 Background of the Research

During the last decades, meat consumption has experienced a global increase. In developed countries, consumption is peaking, while the expanding middle-class in the developing world is consuming more meat as they are getting wealthier, contributing a large part to the 58% global increase between 1998 and 2018 (OECD 2021). In terms of the environment, general human health, and animal welfare, meat consumption has been established as being unfavorable, if not detrimental. (De Vires & De Boer 2010). The rate at which feed is converted into animal protein suitable for human consumption is inefficient. It's been estimated that fewer than 20% of the protein in animal feed is converted to protein and fat for human consumption in beef production, for example. If the same number of resources were utilized to generate plant-based protein for human consumption, the process would be significantly more efficient (Smil 2002).

Given that meat consumption is both inefficient and brings negative impact upon the environment (Godfray et al 2018), it is mandatory that plant-based alternatives be developed as part of the measures to combat climate change, as it has been established that plant-based alternative is beneficial to both environmental well-being and human health (Graça et al. 2015). In order to encourage plant-based diet, it is important to understand how these new alternatives are currently perceived among consumers. Understanding the purchase meat substitutes can help in positioning, promotion, and future development of the products.

This thesis research aims to examine one factor that influences Vietnamese consumers willingness to purchase meat substitutes, which is environmental awareness. The market for plant-based alternatives in Vietnam is not new, but it is expanding fast and gaining traction, with market value currently estimated to be around 249 million USD (Research & Market 2020), indicating that plant-based meat substitutes as a product category have promising market potential. However, there is a lack of previous research about this product category among Vietnamese consumers. As a result, a study of environmental awareness and attitudes toward plant-based meat eating in Vietnam could be useful in guiding the industry's corporate strategy and know-how in order to affect consumption motivation and achieve the meat reduction goal.

1.2 Objectives and Research Questions

The purpose of this thesis is to investigate Vietnam's environmental concerns and attitudes concerning plant-based meat eating. Insight about consumer dietary intelligence, awareness, and consumption values from this research will be able to assist the alternative protein industry as a whole, paving direction for future investment in the products and marketing activities. Customers and businesses both interact with the environment on a daily basis. Market research and management help a company understand the internal and external dynamics that affect their product at any one time. Additionally, based on research data, marketers can sometimes understand their customers' behavior and intentions better than the customers can understand themselves. Customer behaviors, on the other hand, alter as the conditions around them change. Consumer behavior studies would be extremely helpful in predicting the phenomenon (Evert G. 2008).

The research covers both secondary and primary data. The secondary data is divided into four sections: (1) meat production and effect on the environment; (2) consumer consumption behaviors; (3) consumer values influencing decision; and (4) Vietnamese market for plant-based alternatives.

To collect primary data, quantitative research will be used. Theories based on secondary data are used to draw a connection between environmental awareness and plant-based meat consumption behavior. The study's target group will be Vietnamese residents, who will be divided by age and gender. The issue will be presented as a series of statements, with replies based on Likert scales (Evert G. 2008). The findings will be analyzed to confirm following major hypotheses:

Hypothesis 1: Consumers are aware of environmental issues and impact of meat production.

Hypothesis 2: Environmental awareness correlates to higher level of plant-based meat consumption.

Hypothesis 3: Consumers are willing to reduce/ avoid high level of meat consumption by opting for plant-based alternatives due to environmental issues.

1.3 Methodology

Quantitative and qualitative research are the two main research approaches recognized in academic study. Qualitative research employs descriptive data to approach complex and subjective assumptions. Quantitative research, on the other hand, generates a more objective manner of studying things by collecting numerical data and evaluating the outcomes

using mathematical and statistical methods. When multiple perspectives are needed, researchers may choose to blend qualitative and quantitative methods in their research (White, B. 2000).

Only quantitative methods were used to develop this study. The reason for this decision is that consumer's behavior and attitude would best be observed from a large-scale population. An objective outcome will be generated based on the subpopulation's environmental awareness. Plant-based meat consumption is a consumer's business. For this reason, the more opinions collected, the more reliable results yield.

1.4 Limitations

Because the research procedure was thoroughly conducted and recorded to assure the integrity of the results, the results of this study are expected to be valid and reliable. This research does, however, have significant limitations. First, the data gathering procedure may introduce bias into the sample. The author will collect data via social media, which may result in a skewed sample that is not representative of the Vietnamese population. Second, the researcher's analytical skills may prohibit the most effective use of the data collection and mathematical calculations. Last but not least, there are considerable time constraints and limited resources in conducting this study.

1.5 Thesis Structure

The first step is to conduct a review of relevant theory and previous research. The second chapter gathers and examines past research and theoretical background on the environmental implications of food production, consumer behavior, consumer values, and the trajectory of meat substitute acceptance in Vietnam. Hypotheses are formulated and presented in chapter three, and the research approach, as well as the data collecting and analysis procedures used, are explained, followed by the outcomes.

In chapter four, the data and descriptive statistics are provided. Following that, there is a detailed discussion of the findings, as well as responses to the study questions. Theoretical and practical contributions of the research are presented based on the findings. Finally, a reliability and validity assessment is provided, as well as recommendations for future study on consumer behavior in relation to plant-based meat alternatives.

2 Literature review

2.1 Meat production effect on the environment

The food we eat has a significant impact on the environment. Food production necessitates a wide range of natural resources, and demand for food products increases as the world's population grows. According to Hallström et al. (2015), worldwide food production consumes more than a third of the earth's land surface and accounts for more than 30% of all greenhouse gas (GHG) emissions. According to the Food and Agriculture Organization (FAO), livestock accounts for roughly two-thirds of total GHG emissions in agriculture and 78 percent of methane emissions, which are created mainly by cattle's digestive system (2020).

According to life cycle analysis studies, meat production, in particular, has a substantial impact on the natural environment. A life cycle analysis (LCA) is a method for calculating a product's environmental impact over its entire life cycle, from raw material extraction to disposal. Meat production necessitates a lot of water, land, and energy since animals are fed much feed, which requires a lot of cropland and water to grow. Furthermore, animal husbandry necessitates many pasturelands, which degrade air and water quality in their adjacent area (Smil 2002). Feed conversion to animal protein suitable for human consumption is inefficient, as one kilogram of meat can cost up to ten kilograms of grain which could have been consumed directly by humans (Hoek et al. 2013). When compared to plants, this is true for all meat products; however, the severity of the environmental impact varies depending on the type of meat. Because of the large areas of pastureland, farmland, and water requirements, beef production has a disproportionately significant environmental impact. Cattle, as ruminants, are the least efficient at turning grain into animal protein that can be consumed (De Vires & De Boer 2010)). Additionally, cattle production generates five times more GHG emissions than pigs, poultry, and eggs; needs six times more fertilizer and eleven times more irrigation water, and uses 28 times more land (Skerrett, P. J. 2014).

As the demand for meat rises, more area is devoted to crops and pastureland. In locations where more and more land is used for agriculture, livestock production is the primary cause of habitat degradation, posing a threat to biodiversity (Mac Hovinaa et al. 2015). Consumers can lessen their environmental impact by modifying their eating habits and purchasing patterns. By reducing meat consumption, consumers can reduce land-use requirements and GHG emissions caused by their dietary choices. Although substituting monogastric meat or dairy products for ruminant meat can help the environment, the most effective method is to replace meat products with plant-based alternatives. According to research, switching to a

vegetarian or vegan diet can help reduce GHG emissions by 50% and reduce the land use for food production by 50-60%. (Hallström et al. 2015)

Growing meat consumption has negative consequences for human health, animal welfare, and the environment. Western diets high in meat have resulted in an increase in chronic diseases. According to a study conducted by the World Health Organization (WHO), consuming a lot of processed red meat increases the risk of cancer (2015). The environment and public health benefit by consuming fewer animal-based products and shifting to a more plant-based diet (Van Loo et al. 2017). Heart disease, cancer, and type 2 diabetes are reduced when people eat a more plant-based diet (Lea et al. 2006). One report has shown that European consumers should decrease their meat consumption by 77% to reach the planetary health diet limits. (EAT-Lancet Commission 2019)

Meat alternatives are frequently highly processed items, which has a negative environmental impact because processing necessitates the use of energy and other resources. Despite this, the most typical meat replacements have a significantly lower environmental impact than equivalent meat products, according to an LCA study. Of all the regularly used meat replacements, mycoprotein-based meat substitutes have the most significant environmental impact. Depending on the level of processing and principal ingredient utilized, other options have a moderate to medium impact. Thus, it can be said that plant-based protein alternatives are more environmentally friendly than ruminant and monastic meat. (Smetana et al. 2015)

The negative effects of meat production and consumption can be reduced by developing and promoting appealing plant-based meat substitutes. In order to improve the production and advertising of meat alternatives, it is critical to understand how customers behave and what factors influence their inclination to purchase various items. The following chapters cover consumer behavior, consumer values, and Vietnamese consumers to give context and theoretical support for this study.

2.2 Consumer's behavior

Kotler & Keller (2015) outline that consumer's buying behavior is driven by four factors: cultural, social, personal and psychological factors, outlined in Figure 1.

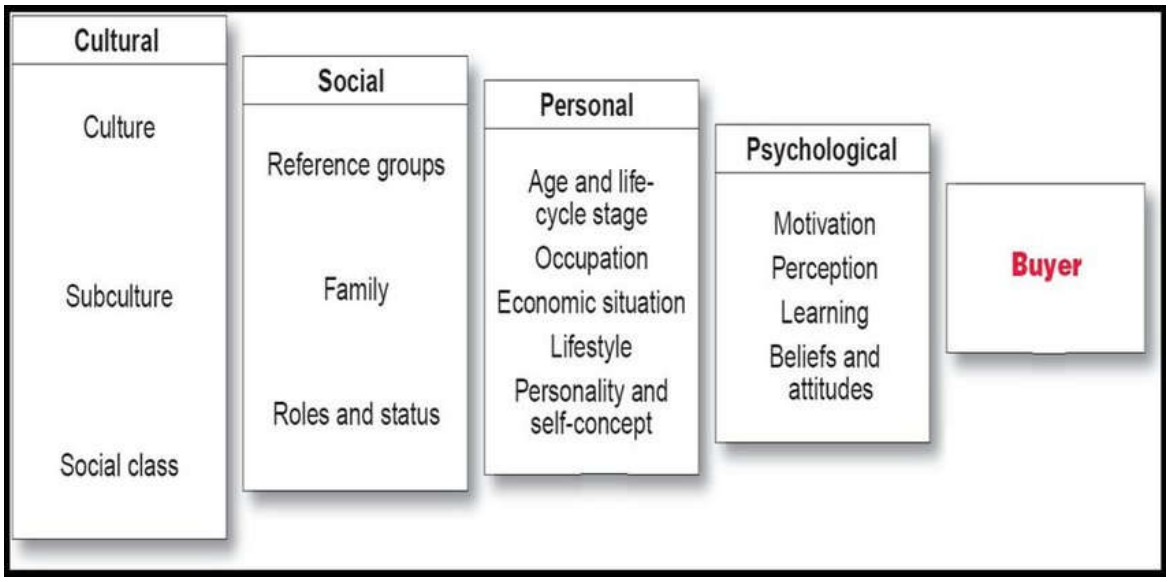

Figure 1 Four factor on consumer behavior (Source: Kotler & Keller 2015)

2.2.1 Cultural factors

The influence of culture on an individual's desires and actions is important. Culture encompasses a specific set of people's characteristics and expertise, such as language, religion, cuisine, social behaviors, music, and the arts. Culture, subculture, and social status all impact consumer purchasing behavior. Each culture is divided into smaller subcultures that vary per region. People are divided into subcultures based on common ideas and practices. Subcultures include nationalities, religions, racial groups, and geographic areas. As a result, firms should create customized marketing campaigns to appeal to certain cultural values (Kotler & Keller 2015).

Each person belongs to a distinct social class, according to Kotler & Keller (2015), which influences their purchase decisions. People of the same social class share similar interests, values, and actions. As a result, people from different social strata shop in different ways and like different brands. To understand how to best sell existing products and uncover new product opportunities, marketers must pay close attention to cultural norms in each country.

2.2.2 Social factors

Social variables such as peer groups, family, and social roles and status, in addition to cultural factors, impact consumer purchase decisions. A person's reference group is a group to which he or she aspires to belong and be treated as a member. A consumer's decision to buy a product or service can be influenced by family, friends, neighbors, and religious, professional, and trade-union groups. It has been discovered that all members of the reference group have comparable purchasing habits and have a significant influence on one

another's product and brand choices. As a result, marketers should determine which responsibilities within the reference group impact other people's behavior (Kotler & Keller 2015).

In a person's decision-making, family members are considered as the most important reference group, especially when purchasing certain items and services. Furthermore, a person's family has an impact on their personality, attitude, and viewpoints. A buyer's life is separated into two families, according to Kotler & Keller (2015): an orientation family and a procreation family. The orientation family consists of parents and siblings, and parents have a considerable impact on a person's conduct. A family of procreation, on the other hand, includes the person's spouse and children, and tastes tend to vary as the spouse's power grows. The social standing and role of a person have an impact on their purchase decisions. For example, a person in a top role of corporation hierarchy is expected to buy things that enhance their status. Long before a product is endorsed, marketers should endeavor to understand the individual's position and role (Kotler & Keller 2015).

2.2.3 Personal factors

Personal attributes such as age and life cycle stage, occupation and economic situations, personality and self-concept, lifestyle, and values directly impact consumer behavior. As a result, marketers must comprehend this issue before developing a marketing plan.

A consumer's taste and preferences are usually determined by their age. This is most commonly found in the purchases of food, clothing, and leisure activity. People tend to buy numerous things throughout their lives at various stages of their lives. A perfume brand that a person used a few years ago, for example, may no longer meet his or her present goals and desires. As a result, consumer preferences for product acquisition are always changing (Kotler & Keller 2015).

Consumer behavior in the marketplace is also influenced by occupation and economic situations. The individual's economic circumstances influence both product and brand selection. On the other hand, individuals are more likely to purchase things and services that promote their profession and status in society. Buying habits differ depending on a person's profession (Kotler & Keller 2015).

Consumer purchasing behavior is heavily influenced by personality and self-concept factors. Personality, according to Kotler and Keller (2015), is a set of human psychological characteristics that lead to predictable and long-lasting behavior buying responses. Each brand has its own individuality. Brands that represent a customer's personality and are consistent with their self-concept (or how they see themselves) are more likely to be chosen

and used. In order to portray brand personality, marketers must carefully examine brand experiences of consumers.

According to Kotler & Keller, consumer buying behavior is also influenced by lifestyle and underlying values (2015). In this context, lifestyle refers to a person's interests, attitudes, and behaviors that reflect their way of living in society. Core values, on the other hand, guide people's long-term decisions, as well as their attitudes and behaviors. As a result, marketers should place an emphasis on consumers' underlying values, as appealing to people's inner selves might sway their purchasing decisions.

2.2.4 Psychological factors

Consumer behavior is also heavily influenced by psychological factors. This includes motivation, perception, learning, and memory. Some demands are biogenic, meaning they are triggered by physiological states of tension such as hunger, thirst, or discomfort. Others, on the other hand, are psychogenic, stemming from physiological states of tension such as a need for recognition, esteem, or belonging. As a result, before moving on to the next demand, people will try to address the most pressing one (Kotler & Keller 2015).

Motivated consumers are more inclined to react to situations depending on their perceptions. Perception is a psychological term that describes how a person chooses, organizes, and interprets input to form a cohesive picture of the world. Different people have different experiences with the same goods depending on their perspectives and attitudes. As a result, marketers should try to understand each individual's behavior and attitude in order to bring their attention to their products (Kotler & Keller 2015).

The learning process begins with a consumer's experiences and ends with action. Learning is formed by drives, stimuli, cues, reactions, and reinforcement, according to Kotler & Keller (2015), which indicates that if a customer has a pleasant purchase experience, the buyer will prefer the same brand in the future.

Consumers typically have several strong associations and facts about a brand, resulting in fundamental brand knowledge. Customers form brand connections through their thoughts and feelings, perceptions and images, experiences, beliefs, and attitudes. As a result, marketers must guarantee that consumers have the product and service experiences that help them acquire the proper brand knowledge and remember it (Kotler & Keller 2015).

2.3 Consumer values

When it comes to choosing sustainable products, the relevance of values is noticeable. Personal values and beliefs have a more significant impact on some consumers than others. Values are described as desirable and situational goals that serve as guiding principles in the life of a person, according to Schwartz's value theory (1992). When there is a disagreement between two values, they are ranked in order of priority. Benevolence, universalism, self-direction, stimulation, hedonism, achievement, power, security, conformity, and tradition are among the ten values domains outlined by Schwartz. The values are plotted on a two-dimensional axis in a circle: 1. Change-openness against conservatism. 2. Self-improvement vs. self-transcendence. Figure 2 is a visual presentation of Schwartz's theory.

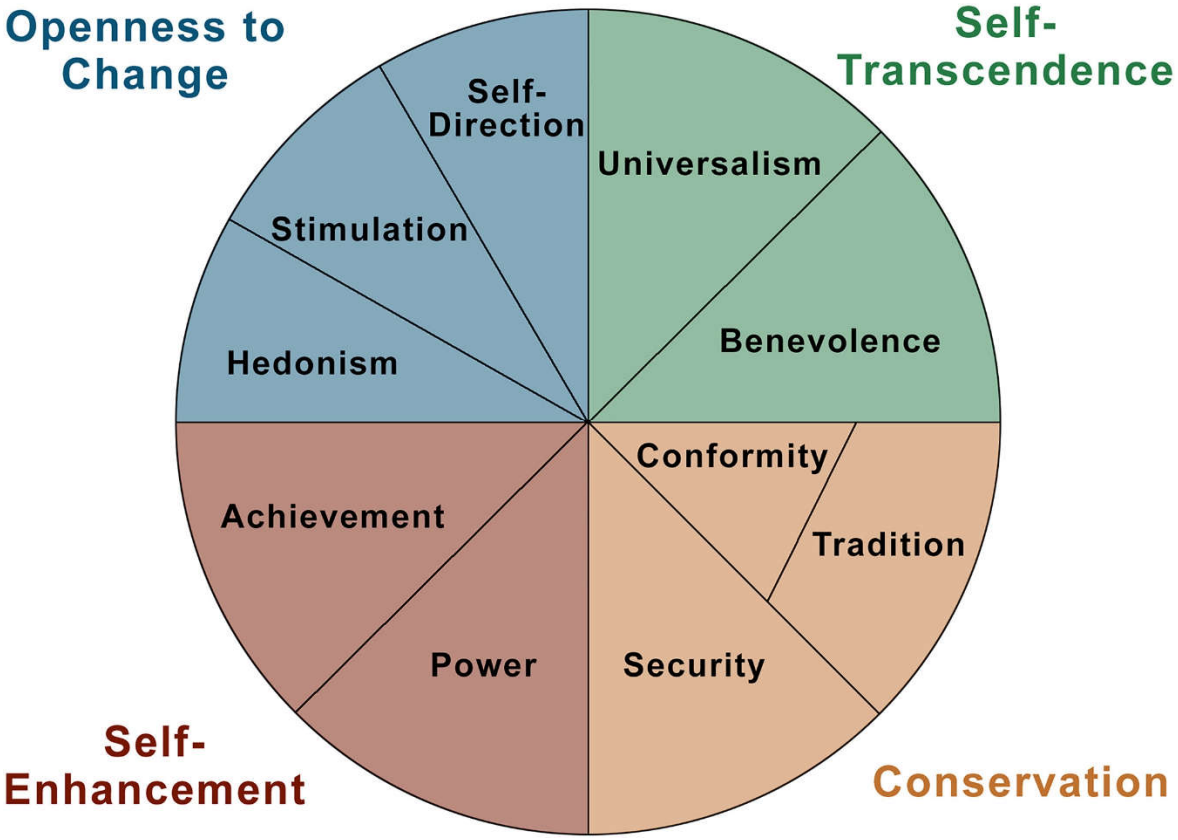

Figure 2 Schwartz consumer values (1992)

When it comes to consumer behavior, it is assumed that people with diverse value systems will behave differently regarding purchasing. Previous research on differentiated items like meat replacements has been based on this theory. As a result, it is expected that it will also match the framework of this study. Consumers that prioritize self-improvement ideas such as power, hedonism, and authority, according to a previous study, are more likely to have positive attitudes regarding meat-eating (Allen & Hung Ng 2003).

Consumers who value self-transcendence ideals such as compassion, universalism, and environmental conservation, on the other hand, are more likely to embrace plant-based products. Some customers are motivated by hedonistic goals such as personal sensory pleasure and convenience, whereas others are motivated by universal implications such as climate change. Plant-based eating can be considered sustainable because it has a lesser environmental impact than meat-eating. Meat intake is frequently motivated by more personal factors such as taste, convenience, and a lack of desire to change long-standing habits. (Allen et al. 2000)

Consumers' ecologically significant behavior (ESB) is influenced by three unique value orientation types defined by environmental psychologists: Egoistic, Altruistic, and Biospheric. Egoistic value orientation emphasized values that are similar to Schwartz's self-enhancement dimension, which encourages consumers to make environmentally responsible decisions only when perceived personal benefits outweigh perceived personal costs. Altruistic value orientation, on the other hand, emphasizes the perceived cost and benefit to others. Biospheric value orientation guides people's decisions based on the perceived cost and benefit to the environment, other species, and the biosphere (de Groot & Steg 2008). The three value orientations are shown in Figure 3 below.

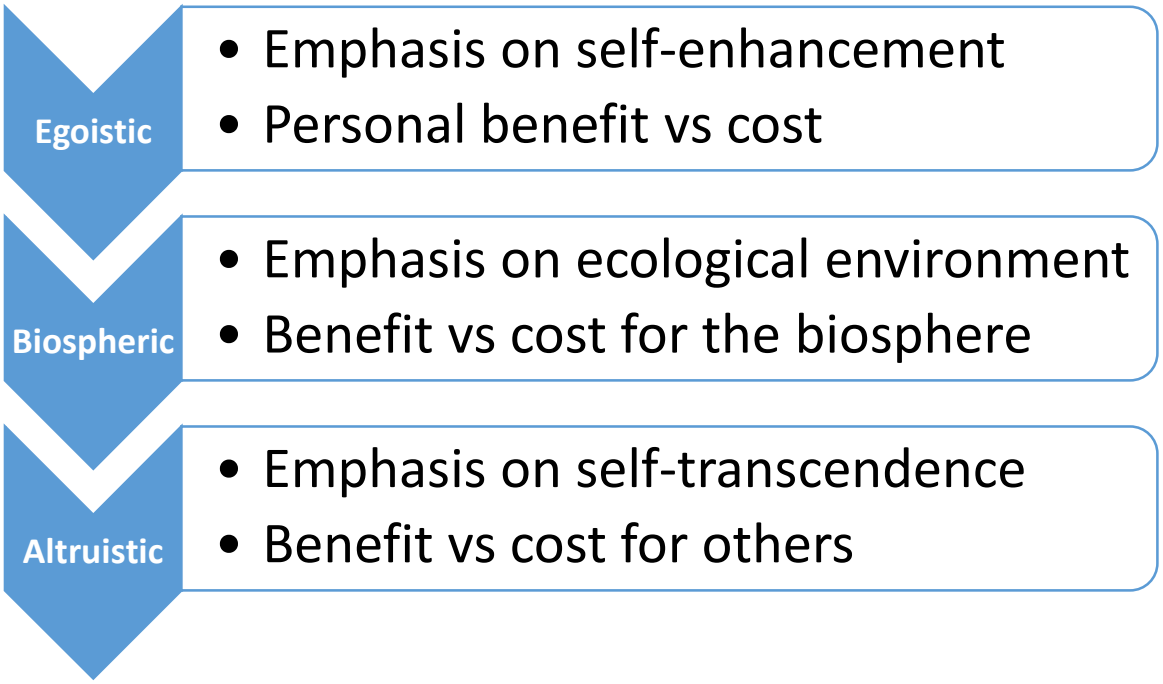

Figure 3 Value orientations (De Groot & Steg 2008)

According to the value-belief-norm hypothesis of environmentally significant behavior, people with Biospheric and Altruistic value orientations are more likely to create personal norms to behave in sustainable ways (De Groot & Steg 2008). Consumers with these values and

attitudes are more likely to choose sustainable alternatives. On the other side, people with an Egoistic value orientation construct personal norms that prioritize personal rewards and are more likely to value behaviors that benefit them personally. Personal value frameworks have been found to have an impact on specific food choices and nutrition attitudes (Fotopoulos et al. 2011). These findings show that Egoistic consumers stick to their current eating patterns and are less inclined to try meat alternatives unless they believe the personal benefit justifies the personal cost. Altruistic and Biospheric value orientations places more emphasis on the well-being and benefits of the social group and environmental well-being, respectively. As a result, consumers with said values are more likely to embrace sustainable plant-protein alternatives (Allen & Hung Ng 2003). This thesis incorporates these three value orientations in the end to see if there are any discernible links between values and willingness to purchase meat alternatives. The next chapter provides a quick summary of meat substitutes on the Vietnamese market.

2.4 Vietnamese Market

Vietnam is a developing country with a very high population, currently ranking 15th in the world at more than 90 million people (UN 2019). With a young and growing workforce, it is expected that Vietnamese meat market would see more expansion in the following years, which would come as a detriment to the environment given the harmfulness of meat consumption and production. However, similar to other Asian countries, Vietnam enjoys a much lower meat consumption per capita compared to the West. According to Ipsos Business Consulting (Nguyen & Ngo 2016), Vietnamese meat consumption is estimated to be around 33.2 kg per capita, of which poultry, pork and beef contribute 7.8 kg, 22.2 kg and 3.3 kg respectively. That number is much lower than the average of 107 kg in the US and 76 kg in the EU as shown in Figure 4 below. Also, according to Ipsos, the reason for low consumption and overall small meat market in Vietnam can be traced back to geographical limitations, as the lack of large grassland makes meat production unable to scale to the level seen in Western countries.

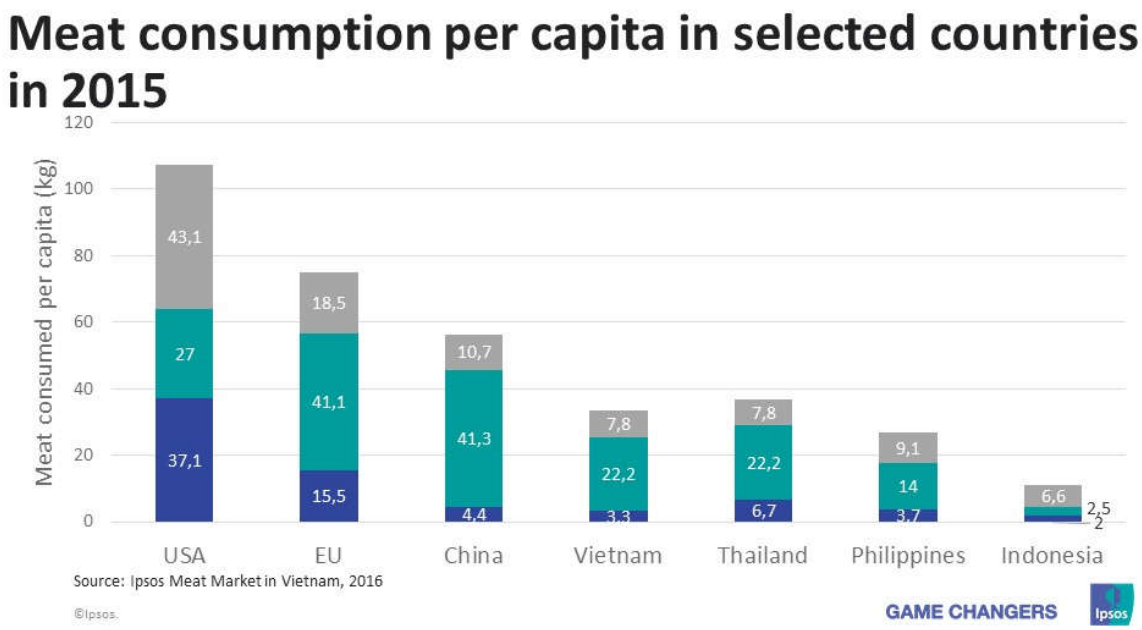

Figure 4 Meat consumption per capita in Vietnam and other countries, 2015

On the other hand, an increasing number of people in Vietnam are adopting a plant-based diet, which aligns with Buddhist teachings about abstaining from killing animals and eating meat in order to promote human mercy and generosity (Kaza 2005). Aside from typical vegan and vegetarian diets, many Vietnamese follow a plant-based meat diet just on the first and fifteenth lunar calendar days of each month, or four days per month. Plant-based diets are becoming increasingly popular in Vietnam, particularly in the south, where outstanding plant-based dishes can be found at fancy restaurants, family restaurants, simple inns, and even curbside kiosks. Vietnam's tropical environment makes it ideal for the growing of a wide variety of vegetables, fruits, and plants. As a result, plant-based foods are common in the area. It is forecasted that the meat substitute market in Vietnam is expected to double its 2021 value by 2027. (Techsci Research 2021)

Further research has also shown that young Vietnamese population are environmentally aware and this has positive correlation on purchasing tendency (Hoang & Nguyen 2012). This is, according to said study, a result of rapid economic growth and integration of Vietnam into the world, resulting in wide dissemination of ideas popular in the west into the younger generations, who generally has more connectivity via social media and the internet. A study conducted in Southern Vietnam (Nguyen H, et al 2021) also pointed out another positive connection between environmental awareness towards organic meat consumption.

However, there is currently little link between environmental awareness and plant-based meat. The author believes that the Vietnamese public's attitude toward plant-based meat consumption should be tested using various consumer behaviors and values models from the literature to see if these factors influence consumption decisions, as well as the correlation of environmental awareness on plant-based alternatives consumption decisions. As a result, the empirical framework is made up of surveys based on consumer behavior theories and selected model literature.

3 Research methodology

3.1 Method and sampling

The research carries on to devising research methods after developing objectives and collecting secondary data. There are two types of consumer research, as the author explains above: qualitative and quantitative (Schiffman 2015). The author takes a quantitative method, gathering data using an online survey. A questionnaire was chosen because it provides useful information for comparing and forecasting consumer behavior, which is a good match for the study's objectives. Observing environmental awareness in a sub-population will yield an objective result. The more perspectives gathered, the more trustworthy the results will be.

Quantitative research utilizes experimentation, surveys, and observation to gather data from customers in order to help marketers pinpoint their satisfaction, attitude, and behavior. Data will be statistically calculated, and results will be presented as descriptive and empirical findings (Schiffman 2015). This research is carried out at a university (LAB University of Applied Sciences) under the supervision of a lecturer. Other sources of information include the library and the internet, as well as online articles and books. The author conducts survey research and develops a 13-statement online survey questionnaire (appendix 1). There are 10 statements answered in Likert behavior scale ranging from one to five (1-5), of which one is strongly agree and five is strongly disagree. The statements are extensively distributed to consumers currently residing in Vietnam. Primary data was collected and used to analyze and confirm hypotheses. Finally, the findings reports and conclusion are drawn.

Because it is impossible to collect data from the entire population, the study uses a sample of the population. The sample will be utilized to represent the study as a whole. There are two types of sample selection: random and non-random. Because of the limitations of the study, the author opts for the random technique (Schiffman, L. G. et al. 2015).

As a result, the research target group is divided into two categories: gender and age. The study's researcher will review and analyze completed questionnaire in order to create confirmation for the presented hypotheses.

Hypotheses are:

Hypothesis 1: Consumers are aware of environmental issues and impact of meat production.

Hypothesis 2: Environmental awareness correlates to higher level of plant-based meat consumption.

Hypothesis 3: Environmentally aware consumers are willing to opt for plant-based alternatives due to environmental issues.

3.2 Data collection

Researchers use survey methods to get information. Interviews or questionnaires, or both, are the two most common ways to conduct a survey. Because it entails expense, time, and size, to consult everyone in the population, using both interviews and questionnaires is a rarely employed method. Interview surveys are primarily employed in qualitative research; however, they might be utilized in quantitative research if the researchers applied a coding approach (White, B. 2000). Questionnaires, on the other hand, are a popular tool in quantitative research, and this study employs them.

The questions are created using Google Forms, an online platform, and distributed online via Facebook and Zalo, both of which are popular social media channels in Vietnam. On these channels, the survey was shared indiscriminately on random groups unrelated to the survey topics (environmental awareness and plant-based meat) to ensure that it can reach as much people as possible with no bias in the data. There are a total of 13 questions divided into demographic and three sections based on three hypotheses supplied, and survey respondents are assured of anonymity. The survey data will be processed and used exclusively by the author in this study (n= 151).

Using online questionnaires for research has both advantages and problems. Questionnaires are less expensive and require less travel time, making them ideal for big samples. The anonymous elements give the interview a neutral tone. Responses are more unbiased. However, when respondents are anonymous, the participants' identities cannot be guaranteed as perfectly authentic or trustworthy. Because the questions on the questionnaires must be short and easy to respond, the amount of information available is limited and sometimes superficial. External forces may also influence how respondents answer the questions because all questions are shown on the same page or when respondents seek recommendations (White, B. 2000).

4 Empirical framework and analysis

4.1 Demographic data

The study proceeds to the experimental part after explaining secondary data and the methods used for the analysis. For the 13 questions in the survey questionnaires, there were 153 responses. The survey was published in April 2022, and participants information will remain anonymous. Due to respondents leaving blank sections of the survey, two responses are not legible, leaving 151 (n= 151) for analysis. As can be seen from Figure 5, the survey questionnaires start with the demographic questions for general data on gender and age.

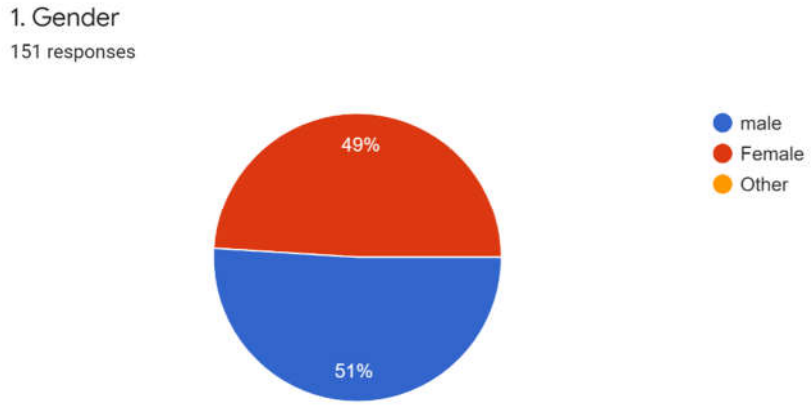

Figure 5 Gender

From the total number of 151 participants, there are 74 females and 77 males, and none identify as other, which account for 49% and 51% respectively. The difference between male and female participants are small (3 response), thus it is safe to presume that the survey data is reliable as it reflects the correct gender ratio.

The second question is regarding the participant's age. There are four options as 18 to 29 years old, 30 to 44 years old, 45 to 59 years old and lastly 60 years old and above. The pie graph (Figure 6) is created based on percentage values of the frequency numbers, in which the numbers are 49.7%, 25.2%, 18.5%, and 6.6% respectively.

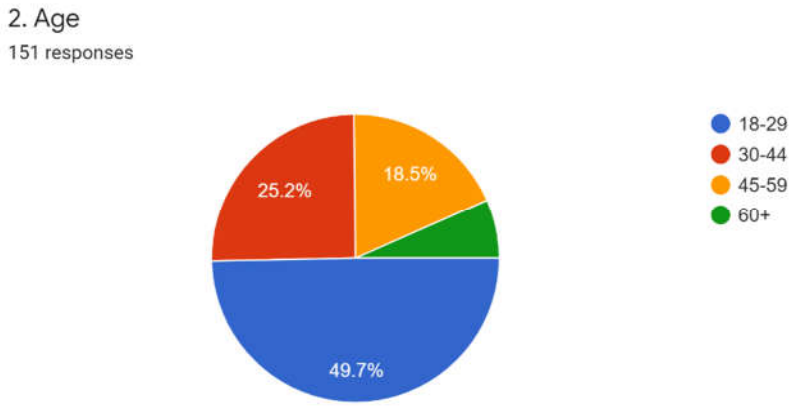

Figure 6 Age

Fortunately, this age representation is very close to Vietnam's age demographics (UN 2019), suggesting that data from this survey is high in terms of reliability. This would allows the author to further analyze any difference in consumption habit of each age group.

4.2 Hypotheses analysis

Answers are decoded by Likert scales from 1 to 5 (1: Strongly Disagree; 2: Somewhat Disagree; 3: Neither Agree nor Disagree; 4: Somewhat Agree; 5: Strongly Agree).

There are three hypotheses to analyze, and in order to confirm each, the researcher proposes the null hypothesis (H0) as a statement that must be rejected in order to confirm the alternatives (H1, H2, H3). Descriptive frequency, correlations, comparing variables, and cross-table analysis are among the main forms of analysis. Tables and graphs are used to display the data.

The results are explained to reject or accept the null hypothesis based on the researcher's analytical viewpoint; if the null hypothesis is rejected, the alternative is confirmed.

4.3 Vietnamese Consumer Environmental Awareness

$H0$: Consumers express no concern to the environment and impact of meat production.

$H1$: Consumers are aware of environmental issues and impact of meat production.

The researcher provides 5 statements in the survey questionnaires answer in Likert 5 scales from 1 (Strongly Disagree) to 5 (Strongly Agree). The answers are used for analysis can be observed individually or combined for correlation. Question 3 answers, as presented in Figure 7, is first to be analyzed.

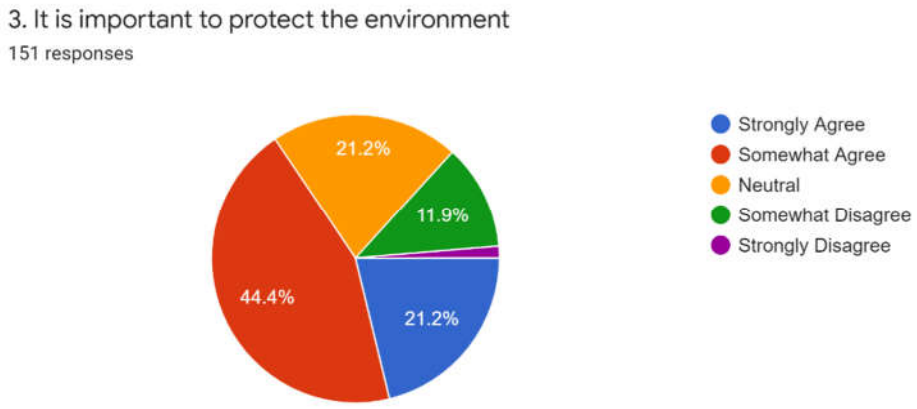

Figure 7 Question 3 answers

Question 3 asked whether or not the respondee agree with the statement “It is important to protect the environment”. This question was meant to be the first criteria to measures environmental awareness of people in Vietnam. Of the 151 responses, more than 65% was positive regarding environmental protection, about one fifth was neutral and less than 15% was negative. This is a clear pre-indicator of high environmental awareness. However, more questions would need to be analyzed before coming up with a conclusion.

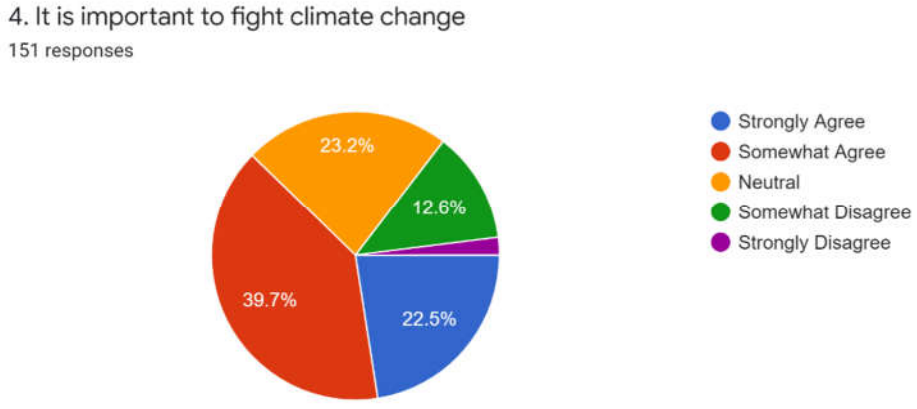

Figure 8 Question 4 answers

Figure 8 represent the responses regarding stance on fighting climate change. The percentage compared to question 3 was almost identical. The Pearson Correlation Coefficient of question 3 and 4 responses is 0.825.

According to Freedman (2007), Pearson Correlation ranges from -1 to 1, with -1 being perfect negative correlation, 1 being perfect positive correlation, and 0 as having no correlation at all. Thus, a coefficient of 0.825 between question 3 and 4 is a positive correlation. This means that a big majority of people who agree that it is important to protect the environment also agree that it is also important to fight climate change. If we only stop at this point, it would be safe to conclude that Vietnamese has a relatively high level of concerns for the environment.

However, when the author does cross-table analysis of questions 3 responses with the age groups of respondees, the result yields a different conclusion. As seen from Table 1 below, of the 99 positive responses towards the environment, 65 belongs to the 18-29 age group. This means that the skew in data is driven mostly by the more environmentally conscious young population. Nevertheless, for the majority of the older age group, most of the response were neutral leaning, displaying a lack of awareness, not that they are against protecting the environment per se.

Q3 cross-tab	**strongly agree**	**somewhat agree**	**neutral**	**somewhat disagree**	**strongly disagree**	**total**
18-29	25	40	9	1	0	75
30-44	4	18	7	8	1	38
45-59	1	7	11	9	0	28
60+	2	2	5	0	1	10
total	32	67	32	18	2	151

Table 1 Question 3 Cross-table analysis*Age

The next two question (Figure 9) ask whether the respondees are aware of the detrimental effects of meat production on the planet in general. This question is crucial as it denotes an understanding of the issues, and that the respondee did gather information to gain knowledge about the climate, a sign of a developed environmental awareness.

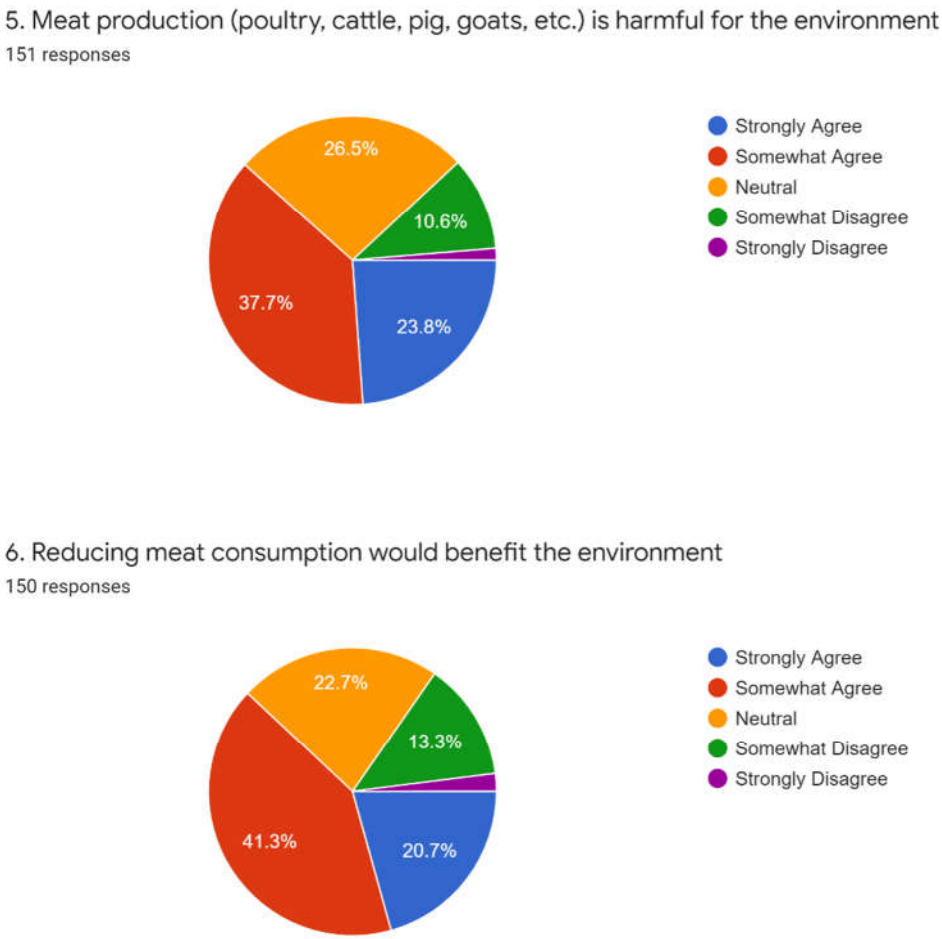

Figure 9 Question 5 & 6 answers

The responses in question 5 and 6 follows the trend set up by the 2 earlier questions. The majority of responses was negative about meat production's effect on the environment and that it would be beneficial to reduce consumption. The cumulative percentages of responses with said views are 61.5% and 62% respectively. This means that a person who acknowledge the harmful consequences of meat production would also advocate for its decreased consumption.

Pearson Correlation Coefficient is now calculated again to decipher the correlation between question 3 and question 5 responses, as shown in Table 2.

Pearson Correlation Coefficient (n=151)	3. It is important to protect the environment	5. Meat production (poultry, cattle, pig, goats, etc.) is harmful for the environment

3. It is important to protect the environment	1	0.7159736748
5. Meat production (poultry, cattle, pig, goats, etc.) is harmful for the environment	0.7159736748	1

Table 2 Pearson Correlation of question 3 and 5

With a coefficient of 0.716, it is safe to assume that participants who are concerned about the environment are also aware of the ramification of meat production on it. Although the number is a bit further away from perfect positive correlation value of 1, it is still a solid positive one, and proves the consistency of this data set.

In theory, Vietnamese customers, particularly the younger generation, have a solid understanding of environmental issues and are well-educated in this area. On the other hand, such awareness is not typical of the older population, as the majority of them have little environmental concern. This generational gap could be explained by Vietnam's strong economic expansion in recent decades, which has resulted in a younger generation that is more globally connected and cognizant of global issues.

As a result of the data analysis, people in Vietnam, particularly young adults aged 18 to 30, have a moderately high level of environmental awareness. In this instance, the null hypothesis should be rejected. The alternative hypothesis has been proven correct.

$H1$: Consumer are aware of environmental issues and impact of meat production.

4.4 Correlation between consumption and environmental awareness

$H0$: Environmental awareness does not affect the level of plant-based meat consumption.

$H2$: Environmental awareness correlates to higher level of plant-based meat consumption.

There are 3 statements/ questions given to respondents under the second hypothesis which seek to understand the attitude of Vietnamese consumers toward both meat and plant-based meat. The answer to each statement will be analyzed in the following, starting with question 7 (Figure 10).

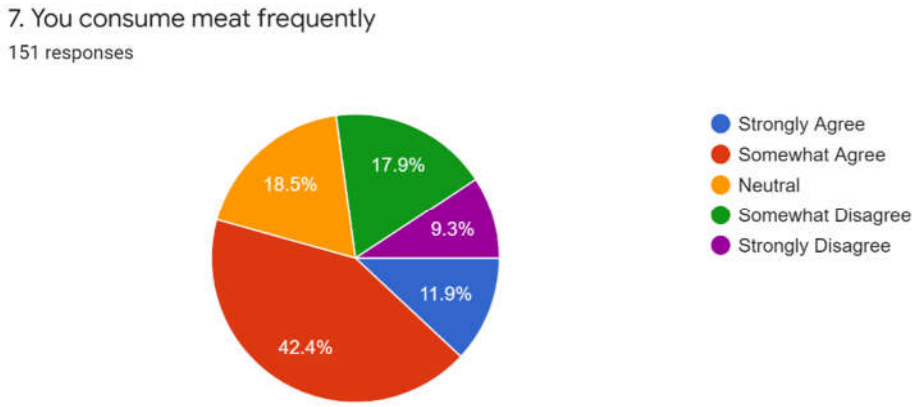

Figure 10 Question 7 answers

The response to question 7 yielded different results. Despite in the earlier question there were strong support to reduce meat consumption, people are still consuming meat on a frequent basis, with 11.9% strongly agree and 42.4% somewhat agree, aggregating to more than 50% of the response.

Pearson Correlation Coefficient calculation of question 6 and 7 (Table 3) yielded similar result to the above statement, with a value of near zero (-0.006), there is almost no correlation between a person's stance on supporting lower meat consumption versus their daily meat consumption habit.

Pearson Correlation Coefficient (n=151)	6. Reducing meat consumption would benefit the environment	7. You consume meat frequently
6. Reducing meat consumption would benefit the environment	1	-0.006765098971
7. You consume meat frequently	-0.006765098971	1

Table 3 Pearson Correlation of question 6 and 7

With the cross-table analysis below, some surprising results came clear. Despite being environmentally aware and the strongest advocator for lower meat consumption, the young age group are also the one to consume meat the most. In the category of "Somewhat disagree", 30+ age groups take up the majority (17 on 26 submission), while in the "somewhat agree" category, the 18-29 age group takes up the majority. (38 on 64 submission)

Q7 cross-tab	strongly agree	somewhat agree	neu-tral	somewhat disa-gree	strongly disa-gree	to-tal
18-29	11	38	14	10	2	75
30-44	7	14	5	9	3	38
45-59	0	9	7	6	6	28
60+	1	3	2	1	3	10
total	19	64	28	26	14	151

Table 4 Question 7 Cross-table analysis*Age

The next question is meant to ask the participants about their viewpoint on meat-based diet on their body and well-being, as contrasted from question 6 which asked about the perceived effect on the environment. The result is presented in Figure 11 below.

Figure 11 Question 8 answers

The result is almost evenly split among the 2 block and neither take over a majority. This time there is a large concentration of response in the “neutral” category (27.2%). The figures show there is still a small favor to meat-products, as meat is still perceived to be necessary for its dietary features (29.1% somewhat agree to 26.5% somewhat disagree).

Furthermore, Pearson Correlation calculation from Table 5 yielded a value of 0.662, indicating a mild positive relationship between meat consumption frequency and high valuation of meat as an integral part of the diet. That said, the correlation value is further away from 1, so even though it is still a positive correlation, it is not as strong. With this data, it is safe to assume that the reason why Vietnamese consumers still prioritize meat is because of the perceived necessity of doing so.

Pearson Correlation Coefficient (n=151)	8. You think meat-based diet is essential to your body	7. You consume meat frequently
8. You think meat-based diet is essential to your body	1	0.6624111128
7. You consume meat frequently	0.6624111128	1

Table 5 Pearson Correlation of question 7 and 8

However, question 9 (Figure 12) again draws a very different picture. It asks whether the respondent have tried plant-based meat diet, to which the response was overwhelmingly positive. More than 80% of respondents have tried some form of plant-based meat. This could very well be Kotler's Cultural and Social Factor at play, in which Vietnamese people decision to consume plant-based meat diet are partly because of their culture. As mentioned earlier, Buddhist vegetarianism played a role in shaping the dietary landscape of Vietnamese cuisine, with specific date on the lunar calendar dedicated to the consumption of vegetarian diet. However, the effect of such factor is still in speculation, as the questionnaire was first designed to measure environmental awareness, not cultural influence, as a main social factor to plant-based meat consumption.

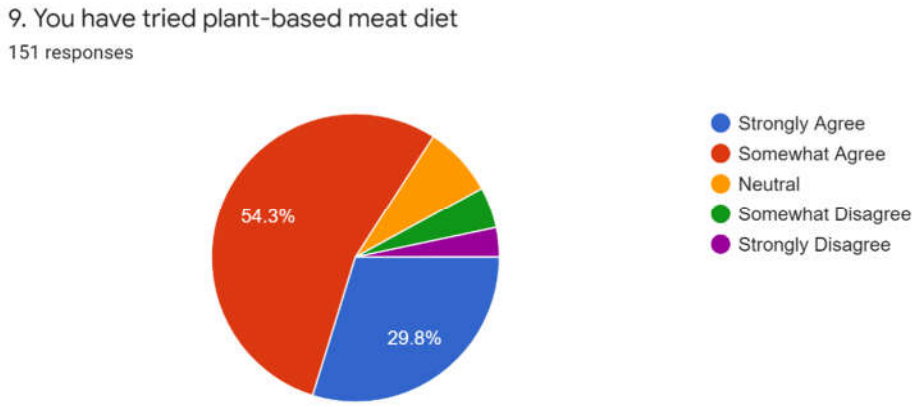

Figure 12 Question 9 answers

Pearson Correlation between question 6 and 9 is calculated. The result of 0.179 is expected, as responses from earlier questions already denote a weak link between environmental awareness and plant-based meat consumption. This very weak correlation from the

coefficient is a further proof of that, as a person stance on reducing meat consumption has low connection with their experience with plant-based alternatives.

Pearson Correlation Coefficient (n=151)	6. Reducing meat consumption would benefit the environment	9. You have tried plant-based meat diet
6. Reducing meat consumption would benefit the environment	1	0.1793854097
9. You have tried plant-based meat diet	0.1793854097	1

Table 6 Pearson Correlation of question 6 and 9

Question 10 (Figure 13) aims to further analyze the consumption trend of plant-based meat, to see if high exposure would lead to continuous consumption habits. However, that is not the case, as the responses for question 10 are rather evenly scattered (standard deviation = 1.202). Of the more than 80% who responded positively to plant-based meat, only 47.7% are willing to replace meat and switch to plant-based alternatives for permanent consumption.

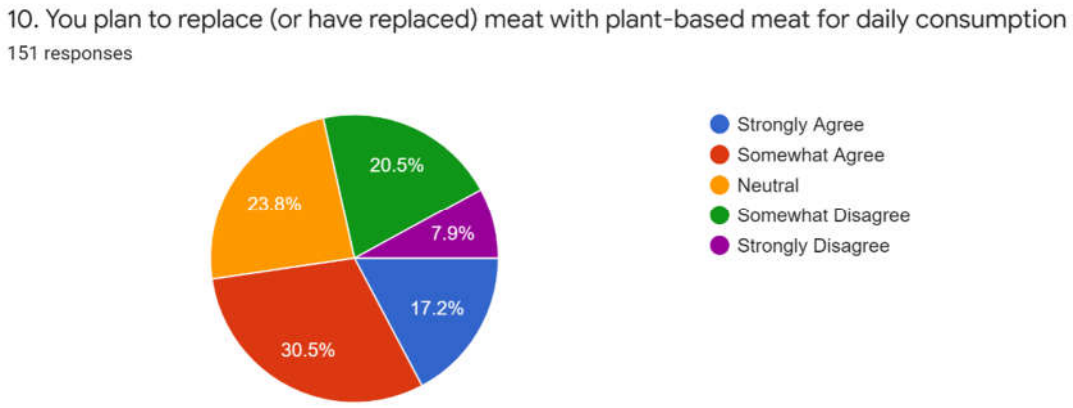

Figure 13 Question 10 answers

Pearson Correlation between question 6 and 10 results in a similar fashion compared to the previous one, with a value of 0.087 there is little to no connection between a person's environmental awareness and their plan to terminate all meat-based diet.

Pearson Correlation Coefficient (n=151)	6. Reducing meat consumption would benefit the environment	10. You plan to replace (or have replaced) meat with plant-based meat for daily consumption

6. Reducing meat consumption would benefit the environment	1	0.08796803174
10. You plan to replace (or have replaced) meat with plant-based meat for daily consumption	0.08796803174	1

Table 7 Pearson Correlation of question 6 and 10

This can also be observed from the cross-table analysis in Table 8. It is worth remembering that from question 3-6, it is already established that the majority of the young (18-29) population are in favor of protecting the climate and generally has more environmental awareness. Now, in Table 8, it is clearly revealed that such affinity does not translate to higher willingness to completely replace meat as part of the diet. Shockingly, of the total 31 response in the “somewhat disagree” category, 21 are from people under 30. The reverse is also as surprising, of the 27 responses in the “strongly agree” category, 17 are from people age between 30 and 59, indicating that middle aged adults, although not well-versed in environmental awareness and education, show a much higher commitment to the consumption of plant-based meat.

Q10 cross-tab	**strongly agree**	**somewhat agree**	**neutral**	**somewhat disagree**	**strongly disagree**	total
18-29	6	22	21	21	5	75
30-44	8	12	9	4	5	38
45-59	9	8	5	4	2	28
60+	4	3	1	2	0	10
total	27	45	36	31	12	151

Table 8 Question 10 Cross-table analysis*Age

From the analysis, it can be seen that Vietnamese people generally possess a rather high concern for the environmental issues and are aware of the danger impact from meat production and consumption. However, the majority of that group, which mostly comprises of young people, do not act in accordance with their awareness since most people are not ready or certain about giving up meat consumption. In contrast, older population group tends to consume more plant-based meat despite lacking more in environmental awareness.

Interestingly, data from question 9 and 10 could also means that plant-based meat are more often viewed as a supplementary diet on top of traditional meat, instead of being a complete replacement.

The results of the analysis of the responses to the statements under hypothesis 2 show that environmental concern has no immediate impact on the degree of plant-based meat consumption. Even while some older people are strongly committed to plant-based diets, people want to keep their preference for meat-based products. The null hypothesis, as a result, cannot be rejected.

$H0$: Environmental awareness does not affect the level of plant-based meat consumption.

4.5 Consumers' willingness to adopt plant-based meat

$H0$: Consumers will not change dietary for environmental reasons.

$H3$: Environmentally aware consumers are willing to opt for plant-based alternatives due to environmental issues.

In order to confirm the last hypothesis about whether consumers are willing to purchase more plant-based protein due to environmental issues, the researcher studies factors influencing consumption choice under theoretical framework, more specifically Biospheric Value from the ESB due to how strongly it correlates with the topic and uses the framework to set up a list of statement/ questions for respondents in the survey questionnaires. Specifically, questions from 11 to 13 in the survey are analyzed. Figure 14 below represents data gathered from question 11 and 12.

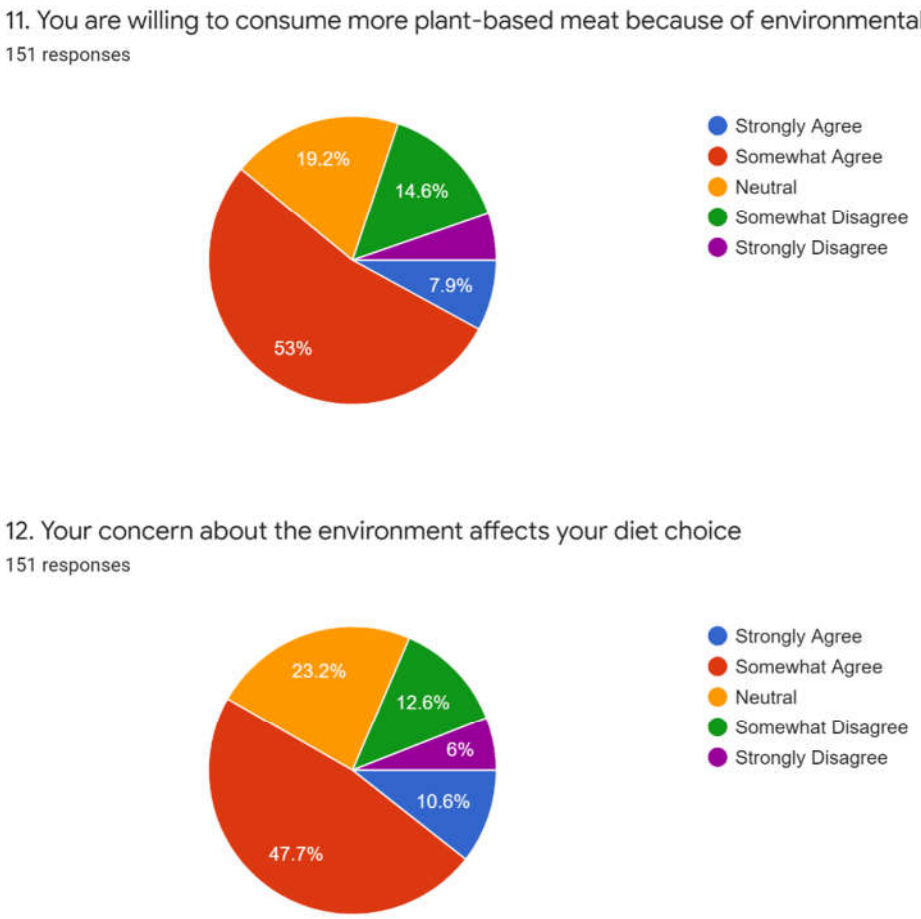

Figure 14 Question 11 & 12 answers

The data from question 11 and 12 is interesting. They ask whether environmental concerns affect food choice, with question 11 being more specific about plant-based meat while question 12 being more about general preference, which resulted in similar majority with positive response (60.9% and 58.3%). The correlation is strong again, with a Pearson coefficient of 0.812, it is safe to say that the higher a person rank environmental factor (Biospheric Values) in their choice of diet, the more they are willing to increase their consumption of plant-based alternatives.

When the response from question 11 are cross-table analyzed with age, the consistency in data shows up once again. Of 90 positive responses about willingness to consume plant-based alternatives based on environmental factors, 64 are from young people aged below 30, who are already presumed to be more environmentally conscious compared to other age groups. The same can also be said regarding people of older demographics, they are mostly neutral-leaning regarding the environment.

Q11 cross-tab	strongly agree	somewhat agree	neu-tral	somewhat disa-gree	strongly disa-gree	to-tal
18-29	10	54	7	2	2	75
30-44	3	14	10	7	4	38
45-59	0	8	9	10	1	28
60+	0	3	3	3	1	10
total	11	79	29	22	8	151

Table 9 Question 11 Cross-table analysis*Age

The final question serves both as a confirmation to fully see the effect of Biospheric value (high concerns about the environment) on consumption preference of plant-based meat. The other options are exploratory in nature, but due to resources and topic constraints could not see further expansion. However, they are still listed here as they could be groundwork for future research. They are Spiritualism and Religion factor (relates to Altruistic value), Sensory Experience, Nutrients, and Costs (relates to Egoistic value).

The results (Figure 15) display an even distribution of the 3 values and their corresponding preferences. Environments factor constitute about a bit over one third (35.8%) of all sub-mission, followed by Spiritualism related factors (30.5%).

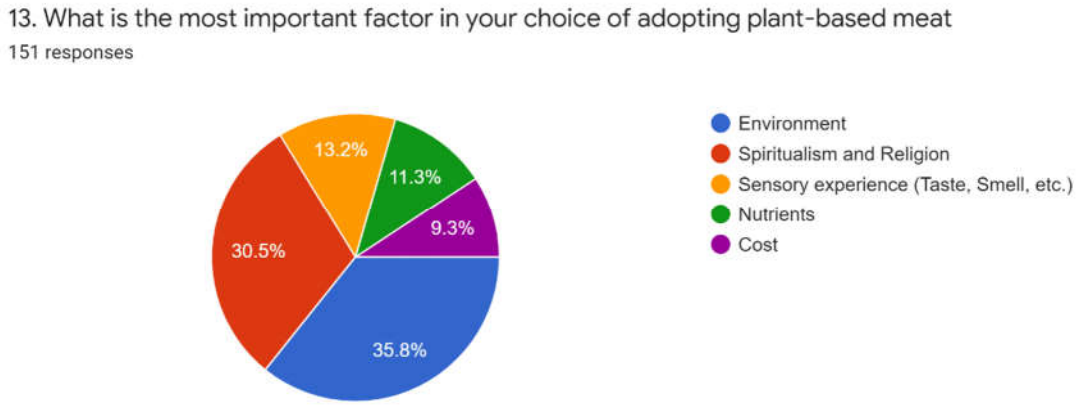

Figure 15 Question 13 answers

Cross-table analysis here acts as a data consistency check, and the data has again proven to be consistent. The people whose most important factor in adopting plant-based meat are environmental factors are relatively young, as 43 out of 54 submissions in that category are below 30 years old.

It is also worth noting that the majority of the older population groups chooses Spiritualism factors as their determinant in adopting plant-based alternatives. The 3 remaining factors related to Egoistic Values are distributed rather proportionately among all the age group.

Q13 cross-tab	Environ-ment	Spiritualism and Religion	Sensory experience (Taste, Smell, etc.)	Nutri-ents	Cost	to-tal
18-29	43	5	10	10	7	75
30-44	9	16	5	3	5	38
45-59	0	20	5	2	1	28
60+	2	5	0	2	1	10
total	54	46	20	17	14	151

Table 10 Question 13 Cross-table analysis*Age

Furthermore, we can cross-table analyze this question 13 (Most important factor in plant-based meat adoption) versus question 10 (Complete replacement of plant-based meat for daily consumption). The results are not as surprising but provide lots of insight. From Table 11 below, it can be observed that people who place high emphasis on Spirituality (Altruistic values) are also very active in their plant-based meat consumption. Of the top 26 who “strongly agree” that they have adopted a no meat diet, 19 place highest emphasis on their Spirituality factor.

Trailing behind, we have people whose most important factors lie in the Environmental one. They also have commitment to plant-based alternative, which is positively aligned with their ideology, although it is more neutral leaning. Finally, the one whose Egoistic values are emphasized, had the lowest commitment to plant-based food in general, resulting in a mostly negative correlation.

Q13 crosstab w/Q10	Environ-ment	Spiritualism and Religion	Sensory experience (Taste, Smell, etc.)	Nutrients	Cost	total
strongly agree	6	19	0	1	0	26
somewhat agree	21	18	2	3	2	46
neutral	17	4	9	3	3	36
somewhat dis-agree	10	5	7	6	3	31
strongly disa-gree	0	0	2	4	6	12

total	54	46	20	17	14	151

Table 11 Question 13 vs Question 10 Cross-table Analysis

Result: Meat-based consumers with high environmental awareness, although not likely to change their consumption behavior perfectly, show some willingness to reduce meat consumption and opt for plant-based alternative as a supplement due to environmental concerns.

$H3$: Environmentally aware consumers are willing to opt for plant-based alternatives due to environmental issues.

4.6 Research results

Empirical evidence has shown the lack of positive correlation between environmental awareness and plant-based meat consumption. Young consumers in Vietnam express significant concern toward the environmental issues and climate change, while older consumers are more or less ignorant of such issues. That said, they have comparable level of plant-based meat consumption, which surprisingly skews more toward the older population. Of the meat-based consumers, there is little willingness to completely change diet, as meat is still perceived as being important and thus not to be discarded.

However, despite the lack of positive correlation, there still exists a large base of plant-based consumer in Vietnam. This can be explained due to multiples consumer behavior factor laid out by Kotler, specifically the Cultural and Social Factors, as plant-based meat consumption level was unaffected by environmental awareness.

In general, despite not resulting in a direct impact and visible increase in plant-based meat consumption, higher environmental awareness has some correlation with consumers' willingness to incorporate plant-based meat to their diets. This has proven the Value Orientation theory, that Biospheric values does correlate to a positive attitude toward plant-based meats.

Other interesting data found in the research also reveals that the majority of consumers of plant-based meats hold some form of Altruistic values, as they consider Spirituality and Religion their main factor in deciding food-choice. Concordantly, Egoistic values emphasizers remains rather critical and negative towards plant-based food. Nevertheless, these findings are supplementary in nature and only works best as a groundwork for future research about this area.

4.7 Reliability and validity

The degree to which a measurement of a phenomenon produces reliable and consistent results is referred to as reliability. Testing for reliability is critical in the research process since it ensures consistency. High internal consistency is demonstrated when items are uniform and measure the same concept, with Cronbach Alpha coefficient being the most often used index to determine internal consistency, especially when using Likert Scales (Huck 2007, Robinson 2009). Although there are no set guidelines for determining internal consistency, four suggested cut-off points for reliability have been offered: excellent reliability (0.90 and above), high reliability (0.70 – 0.90), moderate reliability (0.50 – 0.70), and low reliability (0.50 and below) (Hinton et al. 2004).

Using Microsoft Excel statistics tools, the Cronbach Alpha calculated from 10 question answers in Likert scales resulted in 0.746, which means that the study ranked high in reliability and data consistency.

Furthermore, apart from the consistency measured by Cronbach Alpha, the reliability of this research can be observed from the sample population. As mentioned earlier, the age demographic of this sample size is close to the demographics of Vietnamese population. Thus, it is safe to say that the finding is reliable; however, it is worth noting that the small sample size (n= 151) is a limitation to its reliability.

On the other hand, validity is defined as the precision with which measurements are taken and the amount to which the results answer the study topic (Burns et al. 2016, 215). The following questions are used to assess a study's validity (Saunders, Lewis, and Thornhill 2016 202):

• Do the study measures used to examine the phenomenon measure what they are supposed to measure - are they appropriate for their intended purpose?

• Is the interpretation of the data being carried out correctly?

• What do the research findings show: does the claim regarding their generalizability hold up?

To ensure the validity of the research findings, the survey was conducted online, with participants having complete control over when, where, and how they participated. This also eliminates the possibility of participant error and bias. In comparison to public evaluation, the level of honesty of interviewees is deemed high when they can engage in a survey on their devices in their spare time. The researcher avoided leading or biased questions at all

costs regarding survey questions, thus maintaining the accuracy of the research to ensure high validity.

4.8 Recommendation for future research

Many studies and research have been conducted on environmental awareness and meat-eating to induce future reductions in consumption. A wide range of materials and publications were employed to support the research in this study.

However, individual consumption cannot be changed in a short period or regulated by the government; behavioral intention must come from the consumers themselves through social responsibility and understanding. Future research on this subject should develop and integrate the importance of the environment in the purchasing process. Protecting the environment will become as vital as securing necessities as one's lifestyle progresses. Each country has its standard for how much meat should be consumed per year. To meet the goal, feasible and implementable methods must be developed. Researchers in the country must monitor customers' expectations and desires to produce alternative items and techniques.

Furthermore, due to the findings in the final questions of this study, it is also recommended to approach this topic not from an environmentalist view but through a religious and cultural lens. Vietnam is a country with deep roots in Buddhism, a strong advocate of vegetarianism; thus, understanding its culture could be vital to penetrating the plant-based market.

5 Summary

The research aimed to draw correlation between environmental awareness and plant-based meat consumption in the Vietnamese market. At the beginning, the research discussed different theories about consumers behaviors and values, namely Kotler's Four Factor and Schwartz Value Theory, which laid the groundwork for further analysis of Vietnamese consumer trend and habit regarding the plant-based market.

Vietnamese market was discussed next, which revealed that Vietnamese consumers in generally rank low in meat consumption compared to Western standard. Furthermore, Vietnamese culture has a deep root toward veganism due to its Buddhist heritage, thus its plant-based meat market was developed very early as a form of traditional meal. With that in mind, the author set to see if consumption in said market are influenced by environmental awareness or not, as earlier research already pointed out positive correlation between environmental awareness to other related markets already, namely organic meat.

Empirical framework was then determined, and the quantitative method was chosen given that it fits with the current theme of research. Primary data was collected via online survey to confirm three different hypotheses central to the study. Fortunately, the sample size from the questionnaire was representative of Vietnamese age demographics, thus the results of this research can be deemed reliable.

Regarding the study result, it is seen from the empirical study under hypothesis 1, that participants of the survey mostly are environmentally aware, and agree to the knowledge that meat production would result in adverse effect on the climate. That said, such observation mostly come from the younger population, as the 30+ age segment express little concern towards environmental issues.

However, further analysis from hypothesis 2 reveals that such awareness of the climate did not translate to higher level of plant-based meat consumption, and older participant reported higher consumption despite not being environmentally conscious. This can be traced back to Kotler Cultural and Social factors in consumer behaviors, as Vietnam has a rich cultural heritage in plant-based meat, thus explain the lack of correlation between environmental awareness and consumption.

Nevertheless, in hypothesis 3, it is confirmed that environmentally conscious consumers, even though reluctant to replace meat completely, are willing to consume more plant-based meat, which align with their values. Schwartz Value Theory was utilized in analyzing the data, as consumers with high commitment to plant-based alternative show a strong affinity towards Altruistic and Biospheric values, which opens new opportunity for future research.

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APPENDICES

Appendix 1. Questionnaire, translated to English from Vietnamese

Survey on consumption of plant-based meat and environmental awareness

This questionnaire is part of LAB University of Applied Sciences' bachelor's thesis in international business. The goal is to map out customer views and behavior regarding plant-based meat consumption based on environmental awareness.

Personal information will not be gathered, and answers will remain anonymous.

By completing this form, you agree to the anonymous collecting and use of your responses for thesis research. Plant-based meat replacements are defined in this study as items manufactured from plant ingredients intended to mimic the sensory qualities and uses of meat.

The questionnaire consists of 13 questions and takes maximum of 5 minutes to complete.

1. Gender

Male

Female

Others

2. Age

18-29

30-44

45-59

60+

For the following statements, rate them in the scale from 1 to 5 (1= strongly disagree, 5= strongly agree)

3. It is important to protect the environment

4. It is important to fight climate change

5. Meat production (poultry, cattle, pig, goats, etc.) is harmful for the environment

6. Reducing meat consumption would benefit the environment

7. You consume meat frequently

8. You think meat-based diet is essential to your body

9. You have tried plant-based meat diet

10. You plan to replace (or have replaced) meat with plant-based meat for daily consumption

11. You are willing to consume more plant-based meat because of environmental issues

12. Your concern about the environment affects your diet choice

13. What is the most important factor in your choice of adopting plant-based meat

Environment

Spiritualism and Religion

Sensory experience (Taste, Smell, etc.)

Nutrients

Cost

Thank you for completing the survey!