

CONSUMERS' VIEWS, PREFERENCES AND WILLINGNESS TO BUY HOMEMADE VEGETARIAN DENDENG IN KLANG VALLEY, SELANGOR

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Abstract. There are two types of dendeng: moist jerky and dried jerky. However, vegetarian dendeng remains unpopular in society due to limited exposure and availability. This study aimed to: (1) to evaluate the level of consumers' views, preferences and willingness to buy homemade vegetarian dendeng among Klang valley residents in Selangor; (2) examine how views and preferences influence willingness to buy; and (3) compare responses across different social demographic backgrounds. More than 400 questionnaires were distributed both online and offline using convenience sampling, yielding in 223 online and 177 offline responses. Data were analyzed using IBM SPSS Statistics (Version 27) through descriptive, reliability, regression and correlation analyses. Findings revealed a positive consumer perception (mean=3.471; .001) and favorable preferences (mean=3.661; .025), while willingness to buy was a neutral (mean=3.321; .065). Reliability scores were 0.665 for views (0.665), 0.792 for preferences, and 0.930 for willingness to buy. Both consumers' views and preferences significantly influenced willingness to buy. Gender and meat consumption frequency showed significant differences in consumer responses, whereas age, race, religion, income, education and occupation did not. The study concludes that while consumer willingness to purchase is moderate, positive perceptions and preferences indicate potential for vegetarian dendeng as a viable market product.

Keywords: dendeng, mushroom, plant-based, preferences, willingness to buy

Introduction

In the rapidly evolving food industry, plant-based meat alternatives (PBMA) have emerged as a promising solution to environmental and health concerns. Roughly, 20% of customers bought a PBMA at least once, while 12% did so more than once. Only 2.79% of families bought PBMA. Although 86% of PBMA purchasers also purchased ground meat, PBMA purchasers paid 13% less for it (Neuhofer and Lusk, 2022). Concerns about health and the environment are not the only factors driving the global move to plant-based food diets; there is also an increasing need for sustainable as well as ethical food options. According to New Nutrition Business, "plant-based" has been one of the top ten worldwide food trends since 2014 and is expected to be one of the top three by 2020. Homemade plant-based meat has become a viable alternative to commercially offered plant-based meat replacements, providing consumers with a greater degree of autonomy over ingredients and manufacturing techniques. Research on customers' opinions and willingness to buy homemade plant-based meat products is still lacking, despite the increased interest in plant-based diets. By examining customers' opinions, tastes, and purchasing patterns about homemade vegetarian dendeng, this study aims to close this gap. Dendeng is a finely sliced dried beef that is fried until it becomes dry and preserved with a blend of unique flavors. The most popular spices used in the making of dendeng include coriander, garlic, galangal, pepper, tamarind, cinnamon, cumin, and lime.

Regarding plant-based meat, there are a few ethical issues that have been lingering in society. Firstly, ethical issues such as animal welfare, are feeding the controversy associated with meat consumption. Another issue concerns the role of livestock in agrobiodiversity, as the maintenance of agroecosystems (ecosystem services) is possible when animals are properly integrated into the ecosystem (Escribano et al., 2021). Much research on conventional meat production techniques has indicated that they use a lot of energy, land, and water. To produce large amounts of farm-grown meat, many animals need to live indoors under strictly controlled conditions and to be slaughtered, creating ethical issues. As consumers have learned about these issues, they feel conflicted when eating meat (Hwang et al., 2020). Livestock production faces some ethical issues, including animal welfare and environmental impacts. Cultured meat and meat made from plants have been presented as substitutes for conventional meat, addressing many of the issues associated with conventional meat intake. Furthermore, ethical consumption is a crucial consideration when consumers select meals, especially meat (Hwang et al., 2020).

To fill a gap in the existing literature, this study attempts to achieve the following research objectives: (1) to evaluate consumers' views, preferences, and willingness to buy homemade vegetarian dendeng among potential consumers in Klang Valley, Selangor; (2) to investigate the relationship between consumers' views and preferences that affect the consumers' willingness to buy homemade vegetarian dendeng among potential consumers in Klang Valley, Selangor; and (3) to compare the consumers' views, preferences, and willingness to buy for homemade vegetarian dendeng across different social demographic backgrounds.

Literature review

Dendeng originates from a country named Indonesia. It is known as the traditional food of Indonesia's West Sumatra. A classic Indonesian meal called dendeng is renowned for its unique preparation and mouth-watering flavors. Its roots are in the Minangkabau ethnic group of Indonesia's West Sumatra. Dendeng is often created with thinly sliced beef that has been marinated in a blend of spices, including ginger, garlic, and coriander, and then sun-dried or fried to give it a crispy texture. In Indonesia's tropical climate, where refrigeration was previously unavailable, this preservation technique was crucial. The dish is well known for its distinctive blend of savory, spicy, and sweet flavors, which are frequently accentuated by the addition of tamarind, sugar, and chili. Over time, dendeng has changed, absorbing regional cooking methods and spices in its different versions. It is still a well-liked dish in Indonesia today, eaten as a snack or to go with rice meals. To meet the increasing demand for vegetarian and vegan options while maintaining traditional flavors and cooking techniques, the modern vegetarian version of dendeng replaces beef with plant-based ingredients. There are many variants of dendeng which are "dendeng balado", "batokok", "lombok" and "baracik". Dendeng is quite famous in Negeri Sembilan and Perak. Because of their distinct flavors and textures, mushrooms have long been praised as a great option for vegetarians looking to replace meat. With so many different species to choose from, every kind of mushroom has unique qualities to offer. Mushrooms, such as the robust and meaty portobello and the delicate and adaptable shiitake, can approximate the flavor and texture of conventional meats while offering an abundance of nutrients. Two types of mushrooms were suitable to be processed to make vegetarian dendeng. Firstly, button mushroom which is also known as *Agaricus bisporus*. It is a highly regarded, farmed

mushroom with a stellar reputation for edibility and high nutritional values (Usman et al., 2021). Secondly, king oyster mushroom. Widely consumed edible fungus due to its unique flavor and multiple health-promoting benefits (Ma et al., 2022).

Malaysian consumers' views and behaviors around vegetarian and plant-based cuisine have been the subject of several recent studies. According to research, Malaysian consumers are becoming more interested in plant-based, vegan, and vegetarian options, especially in the ready-to-eat (RTE) food industry (Ahmat et al., 2024). Plant-based, genetically modified, gluten-free, and allergy-free foods were highly preferred by Malaysian respondents, and their behavioral intentions towards RTE foods were strongly influenced by attitudes and subjective norms. More than 58.6% of non-vegetarian Chinese consumers in Malaysia had favorable opinions about vegetarian food and diets, according to a different study. These opinions were influenced by social influences, religious teachings, environmental and animal welfare concerns, food preferences, knowledge, attitudes, and beliefs (Mohamed et al., 2017). Furthermore, a study conducted in Malaysia on plant-based meat substitutes found a substantial correlation between customer purchasing intention and attitude, subjective norms, perceived behavioral control, product knowledge, and environmental concern (Bakar et al., 2023). To address the growing demand, the Malaysian Agricultural Research and Development Institute (MARDI) is actively working to promote the organic and plant-based food sector through a variety of initiatives and activities. Despite this, the local organic food market is still limited, with more than 60% of organic items coming from outside the country. Issues with product diversity, stability of supply, and price discrepancies from conventional foods still exist. These observations emphasize the necessity of ongoing market expansion and legislative assistance to fortify the regional ecology for organic and plant-based foods (Somasundram et al., 2016).

Numerous studies have shown that customers' primary incentive for selecting plant-based meat substitutes is health perceptions, which frequently take precedence over ethical or environmental considerations. Consumer choice was most strongly influenced by the perceived healthfulness of plant-based or blended meat products in both Germany and Belgium, outweighing charitable considerations like environmental or animal welfare (Profeta et al., 2021). Similar to this, a global bibliometric review discovered that while sustainability and ethical considerations are important, health is frequently the primary driver of individual dietary change (Sendhil et al., 2024). While health was the primary motivator for nutritionists in Australia, average consumers were more likely to cite ethical considerations, indicating some audience-specific variation.

Conceptual framework

A conceptual framework suggests that consumers' willingness to buy is the result of another two variables which are consumers' views and consumers' preferences. Consumers' willingness to buy is a dependent variable of this survey and the other two variables are independent variables (*Figure 1*).

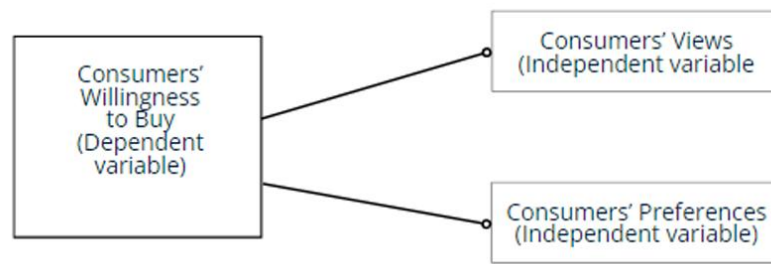


Figure 1. The conceptual framework.

Materials and Methods

Research design

This study uses a non-experimental type of research design in descriptive non-experimental research. The descriptive research design is observing and collecting data on a specific topic without attempting to determine cause-and-effect correlations. Descriptive research aims to present a complete and accurate image of the population or phenomenon under study and characterize the correlations, patterns, and trends found in the data. This study implements the quantitative research method and collects information using a cross-sectional survey. This survey was conducted using a Google form, distributed online (using social media applications such as WhatsApp, Telegram, Instagram and Facebook Page) and offline (face-to-face distribution). Thirty respondents participated in a pilot study to assess the questionnaire items' relevance and intelligibility. The language and structure of a few questions were modified in response to their input in order to increase comprehension and guarantee dependability during the actual data collection procedure. All the information that was collected from the respondents was confidential and exclusive to this research data. All information collected was kept confidential and used for academic purposes only. Researchers were not disclosing your name or any personal information to third parties. All participants were informed of the study's goal and provided their voluntary consent before participation, under ethical research norms. Ethical approval was obtained from the Ethics Committee for Research involving Human Subjects of Universiti Putra Malaysia (JKEUPM) with reference number JKEUPM-2024-1031. In addition, no individual description was made on any part of the study or publication.

Sampling design

The sampling method used was convenience sampling and the location research was in Klang Valley. The data were collected using a close-ended questionnaire to encourage the respondents to participate in the study and ease the answering of questions. Klang Valley was the study location of this study where the participants should be people from Klang Valley to ensure the validity of this data collection. The study employed a convenience sampling method limited to consumers residing in Klang Valley, Selangor, which may affect the generalizability of the findings to a wider population. However, this region was selected due to its diverse demographic composition and higher likelihood of encountering potential consumers familiar with plant-based food products, thereby providing relevant insights for the study's objectives. Klang Valley consists of a few areas which are Kuala Lumpur, Klang, Kajang, Subang

Jaya, Petaling Jaya, Selayang, Shah Alam, Ampang Jaya, Putrajaya and Sepang. The target respondents for this study are the respondents above 18 years old. The total population of Klang Valley can be estimated at 4.29 million. The questionnaire needs to be participated by 384 respondents to determine the correct sample size (Krejcie and Morgan, 1970).

Subject criteria

Inclusion criteria are aged 18 years old and above; male or female; Klang Valley citizens; practicing a vegetarian diet and having an interest to try plant-based meat products. The exclusion criteria are not Klang Valley residents, people who have no interest in trying plant-based meat products.

Research instruments

The data was collected using a close-ended questionnaire to encourage the respondents to actively participate in the study to ease of answering questions. The questionnaire consisted of 4 parts of questions. Section A: Consumers' Views questions comprised six questions, and all the questions were about the views of consumers about homemade vegetarian dendeng. Section B: Consumers' Preferences questions comprised eight questions. These questions are related to the consumers' preferences for homemade vegetarian dendeng. To know the consumers' willingness to buy homemade vegetarian dendeng, eight questions were asked in Section C: Consumers' Willingness to Buy. Questions related to consumer willingness to buy vegetarian dendeng in terms of being influenced by external factors or internal factors. The last part of this questionnaire is Section D: Demographic questions. In this part, the respondents were asked about their age, gender, race, religion, level of education, monthly income, occupation, their current stay in the Klang Valley area, vegetarianism practice, and frequency of meat consumption. It is crucial to know who are asked to be our respondents and the demographic question might help to analyze responses by collecting meaningful information. All questions were measured using 5-point Likert scale items in which '1' is indicated as 'Strongly Disagree' and '5' is indicated as 'Strongly Agree' except for the last section where the respondents must answer the questions based on the options given. The total questionnaires are 32 items. In this study, the questions were prepared in bilingual English and Malay as a medium of the instruments to access a wider audience in Klang Valley, including the ones with lower English proficiency. Some of the questions 13 were adapted from previous studies and then modified to suit the study's context and population. Besides that, the questions were reviewed by three internal experts in social sciences (peer-reviewed method). The questionnaire was organized into the following themes.

Consumers' views questions

Perceptions or views are 'ideas, thoughts, or images consumers hold as a result of how they comprehend or see food-related sustainability'. The view is a viewpoint towards something or an individual's view about something. The questions were adapted from a few previous studies which are Consumers' attitudes towards alternatives to conventional meat products: Expectations about taste and satisfaction, and the role of disgust (Vural et al., 2023), Plant protein and plant-based meat alternatives: consumer and nutrition professional attitudes and perceptions (Estell et al.,

2021) and Consumers' attitudes towards lab-grown meat, conventionally raised meat and plant-based protein alternatives (De Oliveira Padilha et al., 2022). This section contains questions to assess respondents' agreement regarding statements related to consumers' views towards homemade vegetarian dendeng. This section used a 5-point Likert scale (1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree) to assess ten items covering consumers' views. The highest score indicated a higher view and perception towards homemade vegetarian dendeng.

Consumers' preferences

Consumers' preferences can be defined as a stronger consumer's interest or desire for someone or something than a person or thing else. Preference is when you select something over something else, it's because you prefer or value it more than the other product. The questions will be adapted from Consumer cognition and attitude towards artificial meat in China (Min et al., 2024), Willingness to adopt a more plant-based diet in China and New Zealand: applying the theories of planned behavior, meat attachment and food choice motives (Wang and Scrimgeour, 2021), Consumers' experiences and preferences for plant-based meat food: evidence from a choice experiment in four cities of China (Wang et al., 2023a), Consumers' associations, perceptions and acceptance of meat and plant-based meat alternatives (Michel et al., 2021), Consumer preferences towards plant-based, hybrid and cultivated meat analogs offered in different meal contexts and at various consumption moments: a choice-based conjoint experimental design and an online survey (Coucke et al., 2023), Is cultured meat a promising consumer alternative? exploring key factors determining consumers' willingness to try, buy and pay a premium for cultured meat (Rombach et al., 2022), Consumers' willingness to purchase three alternatives to meat proteins in the United Kingdom, Spain, Brazil and the Dominican Republic (Gómez-Luciano et al., 2019) and Predictors of plant-based alternatives to meat consumption in Midwest University Students (Davitt et al., 2021). This section contains questions about the respondents' preferences for homemade vegetarian dendeng. The questions cover aspects of visualizing and giving their opinion in terms of their preferences for vegetarian dendeng. This section contains questions to assess respondents' agreement regarding statements related to consumers' preferences towards homemade vegetarian dendeng. This section used a 5-point Likert scale (1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree) to assess ten items covering consumers' preferences. The higher scores indicate a good level of perception of the homemade vegetarian dendeng among potential consumers in Klang Valley.

Consumers' willingness to buy

Consumers' willingness to buy can be defined as whether the consumer is willing to purchase something at a particular price. A consumer's behavioral intention to acquire a certain good or service is referred to as their willingness to buy. It shows that they are willing and able to obtain things according to their requirements, preferences, and goals (Lu and Hsee, 2019). The question was adapted from previous studies which were Consumer cognition and attitude towards artificial meat in China (Min et al., 2024), Is China ready for change? consumer behavior towards buying plant-based meat alternatives: applying the COM-B model (Jiang and Farag, 2023), Consumers' experiences and preferences for plant-based meat food: evidence from a choice

experiment in four cities of China (Wang et al., 2023b), Consumers' purchasing intent regarding conventional, plant-based, and cultured meats (Stollar et al., 2022), Consumers' willingness to purchase three alternatives to meat proteins in the United Kingdom, Spain, Brazil and the Dominican Republic (Gómez-Luciano et al., 2019), Factors affecting consumers' alternative meats buying intentions: plant-based meat alternative and cultured meat (Hwang et al., 2020) and Alternative proteins, evolving attitudes: comparing consumer attitudes to plant-based and cultured meat in Belgium in two consecutive years (Bryant and Sanctorum, 2021). This section contains questions about the respondents' willingness to buy homemade vegetarian dendeng. The questions regarding the willingness to buy vegetarian dendeng may be affected by certain factors. This section used a 5-point Likert scale (1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree) to assess ten items covering consumers' preferences. The higher scores indicate a good level of perception of the homemade vegetarian dendeng among potential consumers in Klang Valley.

Respondents' demographic profiles

A demographic profile is a business tool that identifies several characteristics when companies attempt to define a market segment. Common characteristics in the profile include age, sex, income, household size and education. Other more specific items in the demographic profile may seek information on a consumer's purchasing habits. The questions were also adapted from previous studies which are Consumer perception and acceptability of plant-based alternatives to chicken (Ettinger et al., 2022), Complexity of consumer acceptance to alternative protein foods in a Multiethnic Asian population: A comparison of plant-based meat alternatives, cultured meat, and insect-based products (Chia et al., 2024), Consumers' experiences and preferences for plant-based meat food: Evidence from a choice experiment in four cities of China (Wang et al., 2023a), Plant-based meats in China: a cross-sectional study of attitudes and behaviors (Chung et al., 2023) and Towards sustainable eating habits of generation Z: Perception of and willingness to pay for plant-based meat alternatives (Meixner et al., 2024). This section contains questions about the respondents' backgrounds. Respondents were asked about their age, gender, race, religion, level of education, monthly income, occupation, location where they stay, vegetarianism practice and frequency of meat consumption.

Data analysis

Descriptive and inferential statistics were used to assess and contrast the information gathered and analyzed using the Statistical Package for Social Sciences (SPSS) software. Pearson Correlation Coefficient tested relationships between variables, including views, preferences, and willingness to pay for homemade vegetarian dendeng. A pilot test ensured questionnaire clarity, with revisions made based on expert and respondent feedback to enhance validity.

Results and Discussion

Descriptive analysis for respondent's demographic profile

Table 1 shows the frequency and percentage of the potential consumers of Klang Valley, Selangor in terms of age, gender, race, religion, highest level of education, monthly income, occupation, residence location, vegetarianism practices and frequency

of meat consumption. The total number of respondents for this research is 400. The majority of respondents are aged 21-30 (283, 70.8%), indicating a young respondent base, followed by the next largest age group is 31-40 (59, 14.8%) and very few respondents are older than 40 (5.6% combined). Females dominate the sample (308, 77% vs. 23% male). Besides that, results showed that predominantly Malay (339, 84.8%) meanwhile minority groups include Chinese (34, 8.5%), Indian (10, 2.5%) and others (17, 4.3%). In addition, out of 400 respondents, the respondents are mostly Islam (348, 87%). Other religions include Buddhism (35, 8.8%), Hinduism (8, 2%), Christianity (7, 1.8%) and others (2, 0.5%). *Table 1* also reported that respondents are highly educated group including those having a Bachelor's Degree (270, 67.5%) and some hold a Master's (29, 7.2%) and only (9, 2.3%) a PhD. In terms of monthly income, (262, 65.5%) of the respondents have no income, likely due to a large number of students (see occupation). Most others earn less than RM4000, suggesting a lower income profile. For occupation, the findings revealed that 73.5% are students, which aligns with high non-income and high education levels. In addition, workers wake up 21% and few are employers, self-employed or unemployed. As we focus on Klang Valley, there are 10 areas and the top three areas such as Putrajaya (22.8%), Petaling Jaya (18%) and Kajang (16%). The least respondents came from Ampang Jaya (1%) and Selayang (2.3%). Vegetarianism practices among the respondents showed that 81.3% are not vegetarians while only 18.8% practice vegetarianism. Other than that, respondents were also asked about the frequency of meat consumption. Most of the respondents (43%) consume meat moderately (7-13 times a week), 4.18% low consume it 1-6 times/week, whereas only 13.8% are high-frequency consumers and very few (1.5%) never consume meat at all.

Table 1. Respondent's demographic profile (n=400).

Characteristics	Total (N)	Percentage (%)
Age	18-20 years (36)	9.0%
	21-30 years (283)	70.8%
	31-40 years (59)	14.8%
	41-50 years (15)	3.8%
	51-60 years (7)	1.8%
Gender	Male (92)	23.0%
	Female (308)	77.0%
Race	Malay (339)	84.8%
	Chinese (34)	8.5%
	Indian (10)	2.5%
	Others: please state (17)	4.3%
Religion	Islam (348)	87.0%
	Buddhism (35)	8.8%
	Hinduism (8)	2.0%
	Christianity (7)	1.8%
	Others (2)	5.0%
Highest level of education	Malaysian Certificate of Education (SPM) (2)	0.5%
	Matriculation (19)	4.8%
	Foundation (27)	6.8%
	STPM (14)	3.5%
	Diploma (30)	7.5%
	Bachelor's Degree (270)	67.5%
	Master (29)	7.2%
	Doctor of Philosophy (PhD) (9)	2.3%
Monthly income	No income (262)	65.5%
	Less than RM2000 (44)	11.0%
	RM2001-RM 3999 (50)	12.5%
	RM4000-RM5999 (25)	6.3%
	RM6000-RM7999 (8)	2.0%
	RM8000 and above (11)	2.8%
Occupation	Employer (7)	1.8%
	Worker (84)	21.0%

	Unemployed (6)	1.5%
	Self-employed (9)	2.3%
	In education, student (294)	73.5%
Residence location	Kuala Lumpur (51)	12.8%
	Klang (24)	6.0%
	Kajang (64)	16.0%
	Subang Jaya (32)	8.0%
	Petaling Jaya (72)	18.0%
	Selayang (9)	2.3%
	Shah Alam (27)	6.8%
	Ampang Jaya (4)	1.0%
	Putrajaya (91)	22.8%
Vegetarianism practices	Sepang (26)	6.5%
	Yes (75)	18.8%
	No (325)	81.3%
Frequency of meat consumption	Never (6)	1.5%
	Lower (1–6 times a week) (167)	41.8%
	Moderate (7–13 times a week) (172)	43.0%
	High (14 or more times a week) (55)	13.8%

Descriptive analysis of consumers' views

Table 2 presents survey data on consumers' view of homemade vegetarian dendeng (a plant-based version of traditional meat, likely a popular local dish) in which all the questions were in a 5-Likert scale format, and respondents needed to choose their preferred scale given (Table 2). Regarding the first item, 'I think vegetarian dendeng tastes just as good as traditional meat dendeng' with a mean score=3.26 and standard deviation=1.044, indicates slight agreement, though many respondents were neutral (152). Taste is still not strongly endorsed, suggesting room for improvement. This implies hesitancy, perhaps because of unfamiliarity with the goods. The second item, 'I think vegetarian dendeng is healthier than original meat dendeng' with a mean score=3.93 and standard deviation=0.999, reflects moderate agreement with strong support (134 "Strongly agree", 147 "Agree"). Only 25 respondents disagree, and nine respondents strongly disagree with the statement. This could mean health perception is a key positive factor. Next, the statement 'Vegetarian dendeng should contain iron to match traditional meat dendeng' received a mean score=4.18 and standard deviation=0.814, exhibiting strong agreement (161 "Strongly agree", 167 "Agree"). Based on the previous study, there is an increasing awareness and demand for items with the nutritional profile of traditional meats. This contains not only protein but also vital vitamins and minerals, such as iron (Latunde-Dada et al., 2023). Iron content is highly valued and considered important by consumers.

Table 2. Frequency (n=400), mean and standard deviation for each question on consumers' views.

Variables	Category	Frequency	Mean	Standard Deviation
I think vegetarian dendeng tastes just as good as traditional meat dendeng.	Strongly disagree	22	3.26	1.044
	Disagree	64		
	Neutral	152		
	Agree	113		
	Strongly agree	49		
I think vegetarian dendeng is healthier than original meat dendeng.	Strongly disagree	9	3.93	0.999
	Disagree	25		
	Neutral	85		
	Agree	147		
	Strongly agree	134		
Vegetarian dendeng should contain iron to match traditional meat dendeng	Strongly disagree	0	4.18	0.814
	Disagree	15		
	Neutral	57		
	Agree	167		
	Strongly agree	161		

Vegetarian dendeng is more environmentally friendly than traditional meat.	Strongly disagree	7	3.84	1.036
	Disagree	39		
	Neutral	93		
	Agree	134		
	Strongly agree	127		
Vegetarian dendeng is more nutritious than traditional meat dendeng.	Strongly disagree	23	3.42	1.118
	Disagree	60		
	Neutral	117		
	Agree	128		
	Strongly agree	72		
Vegetarian dendeng contains more protein than traditional meat dendeng.	Strongly disagree	51	2.66	1.039
	Disagree	135		
	Neutral	135		
	Agree	59		
	Strongly agree	20		
Total mean			21.29	6.05
Average mean			3.55	1.008

Other than that, for statement 'Vegetarian dendeng is more environmentally friendly than traditional meat' shows a mean score=3.84 and standard deviation=1.036, illustrating that the majority of respondents agree (134 "Agree", 127 "Strongly agree"). Respondents perceived environmental benefits are recognized. However, ninety-three respondents felt neutral about the statement, while 39 respondents disagreed that vegetarian dendeng is more environmentally friendly than traditional meat. The remaining 7 respondents strongly disagreed with the statement. The next statement was that 'Vegetarian dendeng is more nutritious than traditional meat dendeng' obtained a mean score=3.42 and a standard deviation=1.118, indicated moderate agreement, but with a lot of neutral responses (117) meaning that respondents were uncertain about the nutritious level of vegetarian dendeng, while the remaining 60 respondents disagreed, and 23 respondents strongly disagreed with the statement. Fakhreddine et al. (2023) affirmed that products marketed with claims of improving health or preventing diseases (e.g., fortified foods or nutraceuticals) attract health-conscious consumers. Based on this study, consumers' perceptions of food items that offer health benefits have a big impact on how favorably health claims are assessed. Products with health claims are more likely to pique the interest of customers who prioritize health benefits. The last statement 'Vegetarian dendeng contains more protein than traditional meat dendeng' showed a mean score=2.66 and standard deviation=1.039, revealing the lowest mean with 135 neutral, 135 disagreed and 51 strongly agreed. This suggests a lack of confidence or knowledge about the protein content in homemade vegetarian dendeng among respondents.

From *Figure 2*, the average ratings of customers' opinions (CV1 through CV6) on handmade vegetarian dendeng were graphically represented using a line chart. The range of the mean scores was 2.66 to 4.18. Scores above the neutral point (3.0) were displayed by CV3 (M=4.18), CV2 (M=3.93), and CV4 (M=3.84), suggesting a broad trend of agreement among respondents for these topics. While CV6 (M=2.66) dropped below the neutral threshold, indicating relative disagreement or uncertainty, CV1 (M=3.26) and CV5 (M=3.42) also showed a small agreement. With a noticeable dip at CV6, indicating a lower level of consumer perception in that area, the line chart made it easier to discern the degree of agreement or neutrality across each variable.

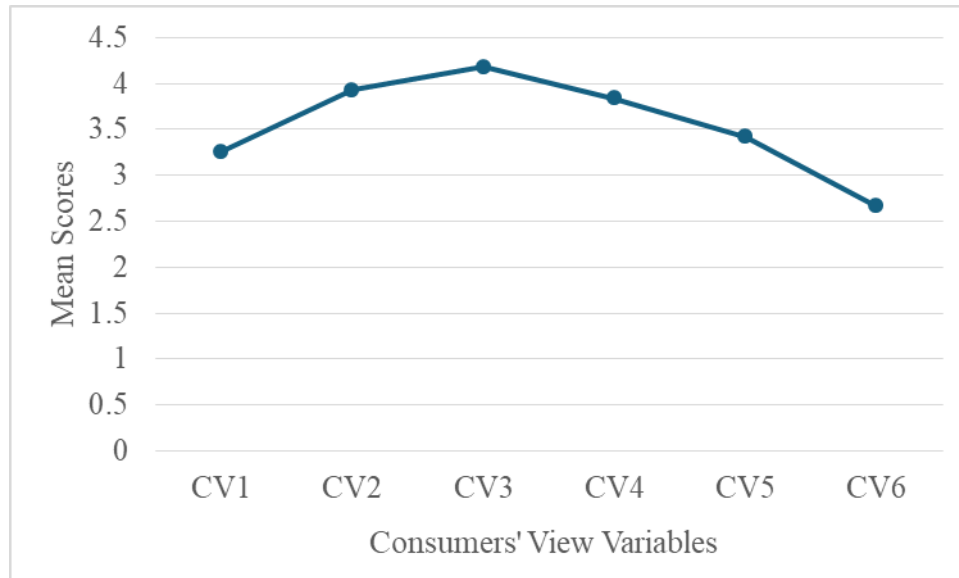


Figure 2. Line chart for mean scores of consumers' views variables.

Descriptive analysis of consumers' preferences

Table 3 measures respondents' intentions, preferences, and priorities related to plant-based dendeng. This section started with the statement 'I would like to taste vegetarian dendeng'. Most respondents are highly interested in trying the product (n=208, strongly agree), 150 respondents agree, and 30 respondents feel neutral about tasting vegetarian dendeng. Fortunately, only a few respondents were not interested in tasting vegetarian dendeng (9 disagree, 3 strongly disagree). The mean score of 4.38 indicates a high interest in tasting vegetarian dendeng. The standard deviation (0.782) suggests that most respondents had similar opinions on this statement. Secondly, respondents were asked 'I would like to try a more plant-based product such as vegetarian dendeng'. Similar to the previous results, most of the respondents (n=165) strongly agreed with this statement while the other 149 respondents agreed. However, 59 respondents were not confident about trying a more plant-based product. The other 21 disagreed and only 6 strongly disagreed to have interest in trying a more plant-based product. The mean score=4.12 and a standard deviation=0.946, shows broad interest in plant-based eating generally. Next, most respondents (n=145) were uncertain about choosing vegetarian dendeng over meat dendeng. Only 47 strongly agree and 62 agree with this statement. Unfortunately, the remaining 100 disagree and 46 strongly disagree with choosing vegetarian dendeng over meat dendeng. The mean score of 2.91 indicates their low preference in choosing vegetarian dendeng over meat dendeng. The standard deviation (1.153) proves that the opinions of the respondents vary widely regarding this statement. Besides that, this explained lower agreement and the majority of respondents were neutral or disagreed which indicates hesitancy in making a complete switch from meat. Previous studies showed that dietary customs and cultural background have a big impact on meat preferences. Certain meat varieties or preparation techniques may be preferred cultures, which could affect consumer behavior generally (Garmyn, 2020). The statement 'I prefer vegetarian dendeng because it is a sustainable and environmentally friendly choice', with a mean score of 3.13 and a standard deviation of 1.093 revealed moderate agreement meaning that many were neutral (148) or slightly positive.

Environmental benefits are acknowledged, but not a major decision factor by respondents.

Table 3. Frequency (n=400), mean and standard deviation for each question on consumers' preferences.

Variables	Category	Frequency	Mean	Standard Deviation
I would like to taste vegetarian dendeng.	Strongly disagree	3	4.38	0.782
	Disagree	9		
	Neutral	30		
	Agree	150		
	Strongly agree	208		
I would like to try a more plant-based product such as vegetarian dendeng.	Strongly disagree	6	4.12	0.946
	Disagree	21		
	Neutral	59		
	Agree	149		
	Strongly agree	165		
I would like to choose vegetarian dendeng over meat dendeng.	Strongly disagree	46	2.91	1.153
	Disagree	100		
	Neutral	145		
	Agree	62		
	Strongly agree	47		
I prefer vegetarian dendeng because it is a sustainable and environmentally friendly choice.	Strongly disagree	30	3.13	1.093
	Disagree	79		
	Neutral	148		
	Agree	96		
	Strongly agree	47		
It is important to me that the vegetarian dendeng is as appealing as meat dendeng.	Strongly disagree	12	3.93	1.037
	Disagree	25		
	Neutral	82		
	Agree	140		
	Strongly agree	141		
I prefer vegetarian dendeng that has a meat-like smell.	Strongly disagree	14	3.75	1.052
	Disagree	35		
	Neutral	96		
	Agree	149		
	Strongly agree	106		
It is very important to me that vegetarian dendeng has a chewy and meaty texture	Strongly disagree	5	4.13	0.849
	Disagree	9		
	Neutral	65		
	Agree	173		
	Strongly agree	148		
I prefer vegetarian dendeng over traditional meat dendeng because it is made without harming animals.	Strongly disagree	72	2.95	1.291
	Disagree	72		
	Neutral	118		
	Agree	82		
	Strongly agree	56		
Total mean			21.29	6.05
Average mean			3.55	1.008

Besides that, the next statement 'It is important to me that the vegetarian dendeng is as appealing as meat dendeng' received a mean score of 3.93 and a standard deviation of 1.037. The number of respondents that strongly agree (n=141) and agree (n=140) were slightly different. Only 82 respondents felt neutral with this statement. The remaining respondents disagree (n=25) and strongly disagree (n=12) with the statement. These findings show a high importance placed on appeal and similarity to meat. Other than that, the statement 'I prefer vegetarian dendeng that has a meat-like smell' obtained a mean score=3.75 and a standard deviation=1.052. Many respondents strongly agree (n=106) and agree (149) with this statement that meat-like sensory traits are valued. Furthermore, for the statement 'it is very important to me that vegetarian dendeng has a chewy and meaty texture', 173 agreed, 148 strongly agreed, 65 were neutral and the remaining disagreed (n=9) and strongly disagreed (n=5). The mean score was high (4.13) proving that the textural of the vegetarian dendeng is crucial for the respondents.

There is a very high important on texture being similar to meat for respondents. These findings are supported by Udomkun et al. (2018) who reported that color, texture, and flavor are important characteristics that influence customer preferences. For example, buyers frequently like meat with a pleasing texture and a fresh appearance. When it comes to determining consumers' willingness to pay for meat products, the in-mouth feel is especially important. Lastly, most respondents (188) feel neutral with the statement 'I prefer vegetarian dendeng over traditional meat dendeng because it is made without harming animals.' This provides a mean score of 2.95 and a standard deviation of 1.291. Eighty-two respondents agree while the other 56 respondents strongly agree with this statement. This item had the highest standard deviation, showing polarized views. Ethical reasons are less influential than taste/texture for this sample.

From *Figure 3*, the mean scores for eight variables about vegetarian dendeng were displayed using a line chart. CP1 ("I would like to taste vegetarian dendeng") received the highest score (M=4.38), followed by CP2 and CP7, indicating a high preference for texture and openness to plant-based alternatives. The results showed considerable interest in tasting and trying plant-based items. CP3 ("I would like to choose vegetarian dendeng over meat dendeng") and CP8 ("...because it is made without harming animals"), on the other hand, scored below the neutral point (M=2.91 and M=2.95, respectively), suggesting a lower emotional connection to ethical motivations or a reluctance to completely replace meat products. Strong preferences and more neutral or cautious responses were easily distinguished by the visual representation, which included a neutral reference line at 3.0.

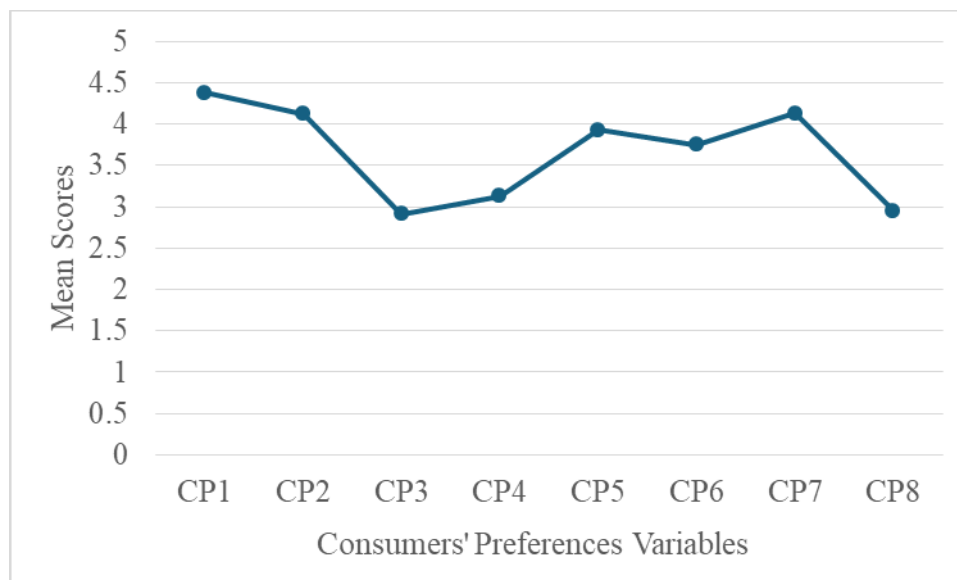


Figure 3. Line chart for mean scores of consumers' preferences variables.

Descriptive analysis of consumers' willingness to buy

Table 4 evaluates how open consumers are to purchasing, trying and paying for vegetarian dendeng (a plant-based meat alternative). This section starts with the consumer's likeliness to buy vegetarian dendeng. Most of them agreed (n=143) to buy vegetarian dendeng while others strongly agreed (n=96) and 117 were neutral. This indicates a positive purchase intent. Only a small number of respondents disagree (n=27) and strongly disagree (n=17) with the statement. The mean score (3.69) indicates

neutral responses from them, while the standard deviation (1.043) shows that the responses varied differently among the respondents. Next, 148 respondents agree that they are ready to buy vegetarian dendeng. The others strongly agreed (n=82), and neutral (n=116) where they were uncertain and neutral about buying the vegetarian dendeng. The remaining respondents disagree (n=44) and strongly disagree (n=10) with the statement. The moderate mean score (3.62) shows their neutral urge to buy vegetarian dendeng while the standard deviation (1.009) proves that the opinions were varied for this statement. This is slightly lower than item 1, suggesting some hesitation in immediate action. Besides that, 180 respondents agreed that they were interested in buying homemade vegetarian dendeng, while 88 respondents strongly agreed, and 92 respondents had moderate interest in buying the product. The remaining respondents disagree (n=29) and strongly disagree (n=11) to show their interest in buying vegetarian dendeng. The mean score of 3.76 and a standard deviation of 0.966 exhibits the highest mean in the table, indicating strong interest, even if not all are ready to buy now. In addition, 128 respondents were uncertain about paying a premium price, while 111 respondents disagreed. 36 respondents strongly agree and 59 agree to pay the vegetarian dendeng at a premium price. The remaining 66 respondents strongly disagree with the statement. The mean score of 2.72 considered one of the lowest scores means that price sensitivity is a major barrier.

Table 4. Frequency (n=400), mean and standard deviation for each question on consumers' willingness to buy.

Variables	Category	Frequency	Mean	Standard Deviation
I would like to buy vegetarian dendeng.	Strongly disagree	17	3.69	1.043
	Disagree	27		
	Neutral	117		
	Agree	143		
	Strongly agree	96		
I am ready to buy vegetarian dendeng.	Strongly disagree	10	3.62	1.009
	Disagree	44		
	Neutral	116		
	Agree	148		
	Strongly agree	82		
I am interested in buying vegetarian dendeng.	Strongly disagree	11	3.76	0.966
	Disagree	29		
	Neutral	92		
	Agree	180		
	Strongly agree	88		
I am willing to pay vegetarian dendeng at a premium price.	Strongly disagree	66	2.72	1.170
	Disagree	111		
	Neutral	128		
	Agree	59		
	Strongly agree	36		
I am interested in buying vegetarian dendeng regularly.	Strongly disagree	43	2.94	1.085
	Disagree	84		
	Neutral	160		
	Agree	79		
	Strongly agree	34		
I would consider buying homemade vegetarian dendeng if I saw it at a store.	Strongly disagree	18	3.51	1.014
	Disagree	41		
	Neutral	120		
	Agree	161		
	Strongly agree	60		
I am planning to regularly purchase vegetarian dendeng in the future.	Strongly disagree	44	2.90	1.100
	Disagree	92		
	Neutral	165		
	Agree	59		
	Strongly agree	40		
I will buy this vegetarian dendeng if it is offered at the same price as meat today.	Strongly disagree	25	3.43	1.135
	Disagree	57		
	Neutral	115		

	Agree	127	
	Strongly agree	76	
Total mean			26.57
Average mean			3.32
			8.522
			1.065

About 160 respondents were interested in buying vegetarian dendeng regularly, while others agreed (n=79) and strongly agreed (n=34). The remaining respondents disagree (n=84) and strongly disagree (n=43) with the idea of buying the product regularly. The mean score of 2.94 shows the disagreement of respondents with the statement and the standard deviation proves that their opinions were varied. The mean score is below neutral, suggesting people may view it as an occasional option, not a staple. Similarly, the statement that people will regularly purchase vegetarian dendeng in the future also had the same pattern. The total number of uncertain respondents was high (n=165) while the others disagreed (n=92) and strongly disagreed (n=44). The remaining respondents agreed (n=59) and strongly agreed (n=40) with the statement. The means score is 2.90, suggesting disagreement and the standard deviation (1.100) shows low regular purchase intent. Almost 161 respondents strongly agreed to consider the thought of buying homemade vegetarian dendeng if they saw it in a store. Sixty were strongly agreed, 120 felt neutral, 41 disagreed, and eight of them strongly disagreed. The mean score of 3.51 and the standard deviation of 1.014 indicates that there is a reasonably positive-curiosity and impulse buying may support sales of niche or artisanal versions. Lastly, 127 respondents agreed, and 76 respondents strongly agreed with the statement that they would buy the vegetarian dendeng if it were offered at the same price as meat today. 115 respondents were neutral, and the remaining respondents disagreed (n=57) and strongly disagreed (n=25) with the statement. Thus, the mean score of 3.43 and the standard deviation of 1.135 proves that rice parity could boost willingness to buy. These findings are in accordance with Liao et al. (2025) who stated that one important factor influencing consumers' desire to purchase vegetarian meat products is price. While increased prices may turn off price-conscious customers, competitive pricing when compared to typical beef might increase attraction.

From *Figure 4*, the mean scores for the eight variables gauging customer willingness to purchase vegetarian dendeng were displayed in a line chart. Strong interest in buying the product was indicated by CW3's highest mean (M=3.76). On the other hand, lower mean scores for intent to consistently buy (CW5, CW7) and readiness to pay a premium (CW4, M=2.72) indicated consumer hesitation towards pricing and long-term commitment. Price sensitivity was identified as a critical element when CW8 (M=3.43) showed a higher desire when the price equaled that of traditional meat. These trends imply that although there is a significant level of initial interest, competitive pricing and product accessibility may be necessary for long-term purchases.

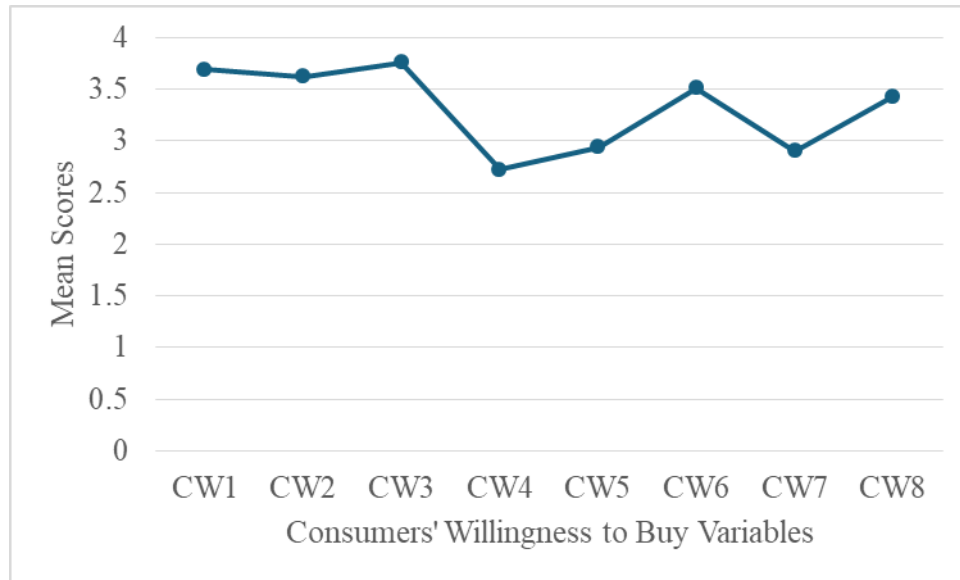


Figure 4. Line chart for mean scores of consumers' willingness to buy variables.

Regression analysis

Table 5 examines how Consumers' Views and Consumers' Preferences predict their Willingness to Buy (WTB) vegetarian dendeng. The F-values are 310.209 and 459.972, and the sig-F value for both is 0.001. Since the sig-F values are less than the alpha value of 0.05, the regression model fits the data well. Both predictors have p-values=0.001, which are highly significant ($p < 0.05$). This indicates that both views and preferences significantly influence consumers' willingness to buy vegetarian dendeng. Consumers' Views (CV) t value is 17.613 and sig-t value is 0.001. Since the sig-t value is less than the alpha value of 0.05, Consumers' Views significantly influence Consumers' Willingness to Buy (CWTB). Based on Liao et al. (2025), product safety and flavor positively influence consumers' attitudes, whereas environmental protection and flavor positively influence subjective norms. Consumers' Preferences (CP) t value is 21.447 and the sig-t value is 0.001. Since the sig-t value is less than the alpha value of 0.05, Consumers' Preferences significantly influence Consumers' Willingness to Buy (CWTB). Consumers' Preferences ($\beta = 0.968$) show a stronger influence than Consumers' Views ($\beta = 0.865$) on willingness to buy. This means that personal liking and attitudes toward vegetarian dendeng are more predictive of purchase intent than general beliefs or opinions. According to previous research, product nutrition and price positively influence consumer attitudes toward plant-based meat products (Liao et al., 2025). In terms of model fit (F-values), F-values are large (310.209 and 459.972), indicating that both models are statistically significant and explain a good proportion of the variance in the dependent variable (WTB). The larger F-value for preferences again supports that it is a stronger predictor. In summary, it is found that both views (e.g., beliefs about health, taste, nutrition) and preferences (e.g., appeal, smell, texture) strongly influence purchase decisions. However, preferences have a greater impact on whether a consumer is willing to buy vegetarian dendeng. Marketing strategies should therefore focus more on enhancing and aligning product characteristics with consumer preferences (e.g., texture, taste, familiarity) rather than solely educating them on benefits.

Table 5. Results of regression analysis.

Dependent Variable	Predictor	Beta	t	Sig.	F-sig
Consumers WTB	Consumers' Views	0.865	17.613	0.001	310.209 (0.001)
Consumers WTB	Consumers' Preferences	0.968	21.447	0.001	459.972 (0.001)

Independent sample T-test analysis

Table 6 examines whether gender and vegetarianism practices significantly influence consumers' views, preferences, and willingness to buy vegetarian dendeng. The results showed significant differences in consumers' views ($t=-2.103$, $p=0.036$), preferences ($t=-3.261$, $p=0.001$), and willingness to buy ($t=-3.181$, $p=0.001$) based on gender. These findings revealed gender significantly affects all three variables: views, preferences, and willingness to buy. Since p-values are all <0.05 , men and women differ significantly in their perceptions and behaviors toward vegetarian dendeng. The negative t-values suggest that males may score lower than females (coding where male=1, female=2). Based on previous studies, women generally prefer veggies, whole grains, tofu, and dark chocolate, matching with better dietary choices, but men tend to choose red and processed meats (Feraco et al., 2024). Similarly, significant differences were also observed across vegetarianism practices for views ($t=2.899$, $p=0.004$), preferences ($t=2.638$, $p=0.009$), and willingness to buy ($t=4.214$, $p=<0.001$). Consumers who practice vegetarianism have significantly different (likely more favorable) views, preferences, and willingness to buy vegetarian dendeng. All p-values are highly significant (<0.01), indicating strong differences based on dietary practices. Besides that, concerns exist regarding whether meat alternatives provide sufficient protein, vitamins, and minerals while also containing potentially harmful elements, such as high sodium and artificial additives. In brief, both gender and vegetarianism practices significantly impact consumer behavior regarding vegetarian dendeng. This implies that targeted marketing strategies based on demographic segmentation (especially gender and diet) can improve effectiveness. Those who already practice vegetarianism are naturally more inclined to be receptive.

Table 6. Results of independent sample t-test.

Demographic	Consumers Variables	Sig. F	t-value	Sig-t	Significant
Gender	Views	0.788	-2.103	0.036	Yes
	Preferences	0.783	-3.261	0.001	Yes
	Willingness to Buy	0.902	-3.181	0.002	Yes
Vegetarianism Practices	Views	0.066	2.899	0.004	Yes
	Preferences	0.146	2.638	0.009	Yes
	Willingness to Buy	0.166	4.214	<0.001	Yes

ANOVA analysis

Table 7 explores whether various demographic variables (age, race, religion, education, income, occupation, residence, and meat consumption frequency) significantly influence consumers' views, preferences, and willingness to buy vegetarian dendeng. The significance threshold is $\alpha=0.05$. Surprisingly, a significant difference was found for only one demographic variable such as frequency of meat consumption on consumers' views ($F=3.071$, $p=0.028$), preferences ($F=4.259$, $p=0.006$), and willingness to buy ($F=4.566$, $p=0.004$), indicating that consumers with different meat consumption frequencies had varying perceptions toward vegetarian dendeng. These findings discovered that the less frequently a person consumes meat, the more favorable their views, preferences, and purchase intent toward vegetarian dendeng. This suggests strong potential for targeting low- to moderate-meat consumers in product promotions.

Based on Szenderak et al. (2022), meat eaters frequently have ingrained preferences for the taste and feel of meat, which makes them hesitant to switch to vegetarian alternatives if the sensory experience does not meet their expectations. ANOVA results showed that all demographic factors, including age, race, religion, education, income, occupation, and residence location, did not have a significant effect on consumers' views, preferences, and willingness to buy ($p>0.05$). These findings imply that demographic diversity (beyond meat consumption frequency) does not play a major role in shaping consumer perception or intent to purchase vegetarian dendeng. The product's appeal could therefore be broad-based across various demographic groups, supporting more inclusive marketing strategies.

Table 7. Results of ANOVA analysis.

Demographic	Consumers variables	Sig. value ($\alpha=0.05$)	Significance
Age	Views	0.715	No
	Preferences	0.988	No
	Willingness to Buy	0.965	No
Race	Views	0.819	No
	Preferences	0.745	No
	Willingness to Buy	0.840	No
Religion	Views	0.939	No
	Preferences	0.863	No
	Willingness to Buy	0.763	No
Education	Views	0.496	No
	Preferences	0.391	No
	Willingness to Buy	0.556	No
Income	Views	0.196	No
	Preferences	0.827	No
	Willingness to Buy	0.437	No
Occupation	Views	0.697	No
	Preferences	0.928	No
	Willingness to Buy	0.116	No
Residence location	Views	0.185	No
	Preferences	0.094	No
	Willingness to Buy	0.506	No
Frequency of mean consumption	Views	0.028	Yes
	Preferences	0.006	Yes
	Willingness to Buy	0.004	Yes

Pearson correlation test analysis

Table 8 shows the relationships between three variables related to consumers: their view, their preference, and their willingness to buy. The test results indicated a positive (strong relationship) between consumers' views and preferences, as the correlation value is 0.718 (Table 8). The double asterisk (**) usually indicates that this correlation is statistically significant (meaning it's unlikely to have occurred by random chance). So, a more positive consumer view tends to be associated with a higher preference. There is also a strong positive correlation (0.662) between consumers' view and their willingness to buy. This implies that a more positive consumer view is generally linked to a greater willingness to make a purchase. As for the consumers' preferences and willingness to buy, results indicated a positive (strong relationship) with a correlation value of 0.732. This statistically significant result indicates that when consumers prefer something more, they are also much more likely to be willing to buy it. Another study showed that consumer perception interacts with trust and attitude as mediating factors in addition to having a direct impact on purchase intention (Wang et al, 2023b). Lastly, there is a positive (strong relationship) between consumers' views and willingness to buy, with a correlation value of 0.662. A study demonstrated a moderately favorable link between view and intention of buying ($r=0.470$, $n=138$, $p<0.01$). This suggests that

consumers who perceive home-based food handlers as using competent food handling techniques are more likely to buy from them (Soon et al., 2020).

Table 8. Pearson Correlation test analysis results.

Category	Consumers' View	Consumers' Preference	Consumers' Willingness to Buy
Consumers' View	1	0.718**	0.662**
Consumers' Preference	0.718**	1	0.732**
Consumers' Willingness to Buy	0.662**	0.732**	1

Note: ** mean the correlation was significant at the 0.01 level (2-tailed).

Conclusion

The author can conclude that consumers' average mean scores for views, preferences, and readiness to purchase indicate that they usually have a neutral opinion of handmade vegetarian dendeng. These ratings show that despite some interest in the goods, buyers are not significantly influenced by them. The average mean scores of 3.55 for opinions, 3.66 for preferences, and 3.22 for willingness to buy indicate a reasonable degree of acceptance and the possibility of market expansion if appropriately targeted. Significant factors impacting consumers' propensity to buy homemade vegetarian dendeng were identified using regression analysis. Consumers' preferences had a stronger influence on their willingness to buy vegetarian dendeng than their general views. Customers' opinions and preferences were discovered to be important factors, with favorable opinions and preferences increasing the likelihood of buying the goods. This implies that increasing customer knowledge and enjoyment of vegetarian dendeng may greatly increase sales. Producers can boost their product's appeal and get more customers to try it by concentrating on making these areas better. The opinions of consumers regarding homemade vegetarian dendeng were significantly influenced by demographic characteristics as well. Notably, the main differentiators were the frequency of meat eating, gender, and vegetarianism practices. Gender and vegetarianism practices significantly impacted consumers' views, preferences, and willingness to buy. Females and those practicing vegetarianism generally had more favorable perceptions. While vegetarians were more receptive to such items, men and women displayed different inclinations towards buying vegetarian dendeng. However, regular meat eaters tended to favor conventional meat-based dendeng, suggesting a switch to vegetarian options. Only the frequency of meat consumption significantly influenced consumers' views, preferences, and willingness to buy. Less frequent meat consumption correlated with more positive attitudes towards vegetarian dendeng. Gaining insight into these demographic subtleties might help marketers better target responsive audiences with their campaigns.

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Conflict of interest

The authors confirm that no conflict of interest was involved with any parties in this research.

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