

A Review of Product Knowledge and Determinants of Consumer Purchase Intention on Plant-Based Meat Products In Malaysia

Nur Mardhiyyah Mohd Azman¹, Rosmaliza Muhammad^{1*}, Nursyafiqah Ramli², Siti Khuzaimah Abu Bakar¹

*Corresponding author

¹ Faculty of Hotel and Tourism Management, Universiti Teknologi MARA (UiTM), Puncak Alam, Selangor Malaysia

² Faculty of Hospitality and Tourism Management, UCSI University, Cheras, Kuala Lumpur Malaysia

nurmardhiyyah.azman@gmail.com, rosmaliza35@uitm.edu.my, nursyafiqah@ucsiuniversity.edu.my, ctab691@uitm.edu.my
Tel: 60 19-907 9959

Abstract

Chronic diseases caused by poor health choices have been identified as a significant contributor to mortality. The poor dietary intake of Malaysians including high consumption of meat and other animal-based products may contribute to development of non-communicable diseases, such as obesity, hypertension, diabetes, and cancer. The amount of meat eaten by Malaysians per person has increased to more than 55 kg a year in 2019, and obviously, a transition towards plant-based diets is urgently needed. Nevertheless, product knowledge and determinants of consumer purchase intention of plant-based meat need to be explored further for Malaysians to effectively adopt a healthy diet.

Keywords: Consumers; Purchase Intention; Plant-Based Meat; Malaysia

eISSN: 2398-4287 © 2023. The Authors. Published for AMER and cE-Bs by e-International Publishing House, Ltd., UK. This is an open-access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). Peer-review under the responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers), and cE-Bs (Centre for Environment-Behaviour Studies), College of Built Environment, Universiti Teknologi MARA, Malaysia
DOI: <https://doi.org/10.21834/e-bpj.v8iS115.5106>

1.0 Introduction

People's dietary habits have been evolving based on environmental factors. Currently, due to greater health and animal welfare awareness, there is a steady decrease in meat consumption as consumers start to explore plant-based food (Alexandre, 2017). Plant-based food, which supposedly has a lower amount of salt, saturated fats, and added sugars, has been promoted by activists and scientists as part of a healthy lifestyle because eating vegetables have been linked to a low risk of early death and may provide protection against non-communicable diseases (NCDs) (World Health Organisation Europe, 2021). Plant-based meat, which comes in various forms like burger patties, sausages, fillets and "minced meat", is marketed for its ecological and health benefits compared to real meat. While the ingredients varied among plant-based meat products, the new generation of alternatives is specifically formulated to mimic the sensory experience and macronutrient content of red meat using plant protein and fat, such as soy and coconut oil, and novel ingredients like red vegetable extract for colouring and flavouring.

The tendency to consume animal proteins in Malaysia has recently been offset by a move towards plant-based substitutes (Drewnowski et al., 2020). Lately, there has been an increase in understanding and consumption of plant-based food in Malaysia, especially tofu and tempeh, which can be used to prepare favourite dishes as a standalone ingredient or a complement to meat (Teo & Kong, 2021). Seeing the potential in the local market, companies like Phuture Foods — which has received RM7 million in investments to expand its plant-based meat products — are beginning to emerge and offer consumers a healthy food alternative (Vegconomist, 2022).

Current research is mostly focused on factors affecting the willingness of consumers to purchase meat or its substitute (Wilk & Phillips, 2019). Estell et al. (2021) examined the attitude and perceptions of Australian consumers and nutritional professionals toward plant-based meat. In Finland, Knaapila et al. (2022) studied the consumption and reception towards plant-based meat by people in the Nordic country. In Asia, Hwang et al. (2020) studied the factors affecting consumers' intention to buy substitute meat in South Korea, and Zahra et al. (2021) later looked into sustainable meat consumption among Pakistani consumers. Moreover, Laukkanen (2021) also

eISSN: 2398-4287 © 2023. The Authors. Published for AMER and cE-Bs by e-International Publishing House, Ltd., UK. This is an open-access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). Peer-review under the responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers), and cE-Bs (Centre for Environment-Behaviour Studies), College of Built Environment, Universiti Teknologi MARA, Malaysia
DOI: <https://doi.org/10.21834/e-bpj.v8iS115.5106>

conducted a study on Finnish consumers' willingness to purchase plant-based meat. However, there has been limited study on factors affecting purchase intention of plant-based meat in Malaysia. Similarly, past research has discovered that, while the Theory of Planned Behaviour (TPB) basically believes that behavioural intentions are the outcome of subjective norms, attitudes, and perceived behavioural control, a variety of domain-specific elements that are not accounted for in the model are equally relevant (Wong et. al, 2019). Thus, the objectives of this study are to examine the effect of the factors (attitude, subjective norms, perceived behavioural control, health consciousness, environmental concern) and product knowledge as a mediator on consumers' purchase intention towards plant-based meat products in Malaysia. In addition, this study aims to elucidate these factors among Malaysian consumers.

2.0 Literature review

The notion of a healthy diet is continuously expanding to reflect the increasing understanding of how food, nutrients and other components can help maintain health and prevent disease (Cena & Calder, 2020). According to the World Health Organisation NCDs such as cardiovascular disease, cancer, chronic respiratory illnesses, diabetes, obesity and cognitive impairment are among the world's major causes of mortality and disability, impacting both developed and developing nations (WHO, 2019). Mellentin (2020) stated that 'plant-based' has been one of the top ten global food trends since 2014, and it will be one of the top three trends by 2020. Plant-based meat, formulated to mimic the taste and sensory experience of red meat, are marketed for their ecological and health benefits compared to red meat. While ingredients vary amongst plant-based meat products, the new generation of alternatives is formulated specifically to mimic the sensory experience and macronutrient content of meat by using plant proteins such as soy, fats such as coconut oil and other novel ingredients such as red-coloured vegetable extracts. According to Frontiers (2020), John Harvey Kellogg developed meat replacements variously from nuts, grains, and soy, starting around 1877, to feed patients in his vegetarian Battle Creek Sanitarium. Kellogg's Sanitas Nut Food Company sold his meat substitute Protose, made from peanuts and wheat gluten. It became Kellogg's most popular product as several thousand tons had been consumed by 1930.

In reality, the plant-based food industry was valued at USD 4.3 billion in 2020 and is expected to increase to USD 8.3 billion by 2025 (Markets and Markets TM, 2020), with a compound annual growth rate of 27.5% until 2030 when other alternative proteins such as insects and cultured meat are also considered (UBS Report, cited in Choudhury et al., 2020). According to an online survey, roughly 33% of US customers said they would be extremely likely to purchase plant-based meat, and another 41.8% said they would be slightly or moderately inclined if it were readily accessible on the market (Bryant et al., 2019).

As countries become industrialised, more citizens will begin to adopt a Western or globalised lifestyle, including their diet. However, in the case of Malaysia, the shift has brought on many adverse health issues, so much so that the nation gained the unflattering title of "The Fattest in Asia" in 2014. This scenario has persisted until today due to apathy, leading to a huge rise in diseases and mortality nationwide, besides placing a great burden on healthcare resources. Hence, it is necessary to conduct a closer examination of people's eating habits and encourage them to eat right for better health (Goh et al., 2020). The transition of eating habits is also related to meat consumption (Cena & Calder, 2020).

2.1 Plant-based meat

In 2015, the consumption rate of poultry meat in Malaysia was 49 kg annually, and this placed the country among the top global consumers of meat and meat production (Statista, 2022). The farming methods used to produce meat have been shown to have negative consequences on the ecology and global climate; hence, scientists have urged people to substantially reduce their meat consumption (Statista, 2022). However, Malaysian consumers find it hard to give up their beloved meat dishes and thus, an alternative, that is plant-based meat, is now seen as a feasible solution to satiate the people's appetite for food that looks, feels and tastes like conventional meat (Nayak, 2021).

2.2 Theory of Planned Behaviour

According to Bonsjak et. al (2020), as of April 2020, the TPB had been empirically scrutinised in over 4,200 papers referenced in the Web of Science bibliographic database, making it one of the most applied theories in the social and behavioural sciences. In this regard, the TPB is an "extension" of Ajzen and Fishbein's (1980) principle of rational action (TRA), which was based on the notion that human behaviour is influenced by attitude (Gu, 2019). In contrast, a number of studies have produced an expanded TPB model because the initial model was insufficient to accurately predict individual behaviour (Manickam, 2022). For instance, Asif et al. (2017) incorporated health consciousness, environmental concerns and consumer awareness into the TPB model. They expanded their model to help researchers comprehend the consumers' intention to purchase organic food. Moreover, a study by Shen and Chen (2020) also extended the TPB model by including product knowledge as one of the factors that help consumers to purchase an innovation of the agri-food industry. Hence, an enhanced TPB model will be used to investigate the purchase intention of Malaysian consumers for plant-based meat based on product knowledge, attitude, subjective norms, perceived behavioural control, environmental concerns and health awareness.

This study intends to determine the most influential factors that affect consumer purchase intention of plant-based meat products among Malaysian consumers and to examine the effect of product knowledge as a mediator of the factors and consumer purchase intention toward plant-based meat products among Malaysian consumers. Therefore, the framework in Figure 1 was adapted with minor modifications based on the study conducted by Asif et al. (2017). The factors (as the independent variable) were divided into five elements; attitude, subjective norms, perceived behavioural control, environmental concern and health consciousness. Meanwhile, product knowledge acts as a mediator between the attributes and purchase intention (as the dependent variable).

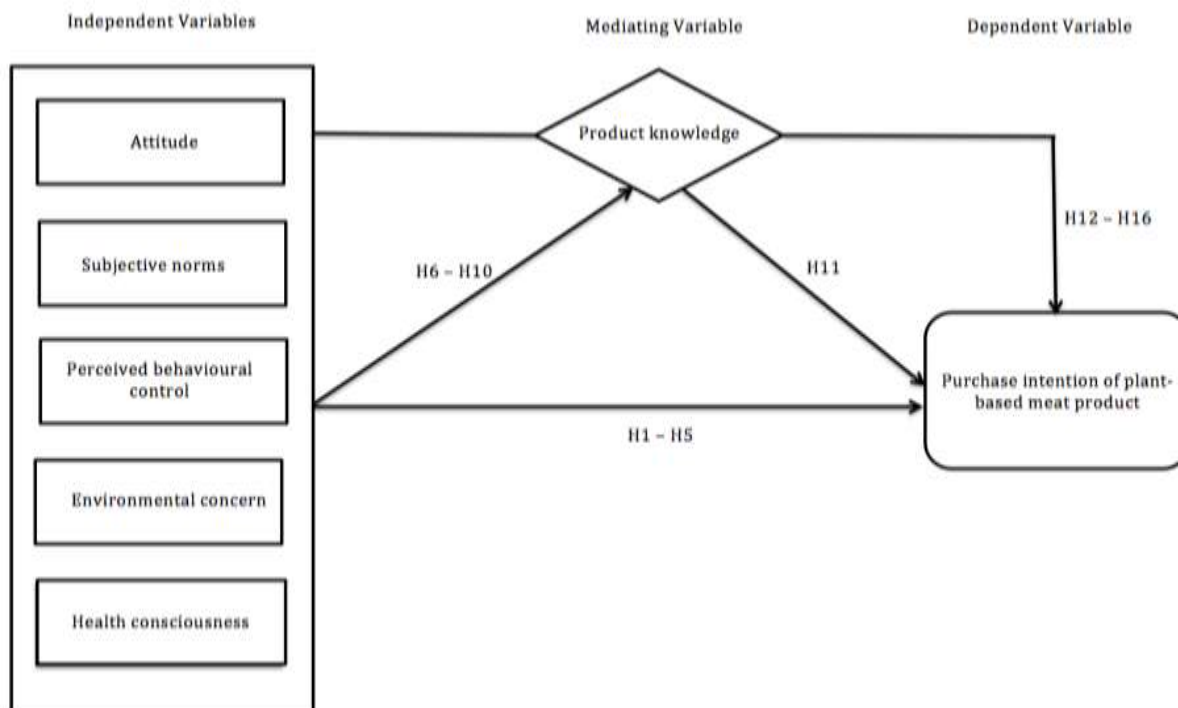


Fig. 1: Conceptual framework of study based on theory of planned behaviour (Source:) Asif, Xuhui, Nasiri & Ayyub (2017) and Shen & Chen (2020)

Azjen and Fishbein (1980) defined attitude as the evaluative influence of people’s pleasant or bad sentiments when executing a certain activity. Estell et al. (2021) constructed a study of nutrition professionals and consumer attitudes towards plant-based meat and found out that most of the respondents agreed that they purchased plant-based meat products as an act of curiosity in trying out a new food trend. Clear and fact-based marketing on the benefits of plant-based meat can help customers establish favourable views and attitudes, increasing the products’ market potential (Laukkanen, 2021).

Meanwhile, subjective norms are defined as the individual’s assessment of whether the prospective reference group or persons approve or disapprove of the provided action (Azjen & Fishbein, 1980). A person’s diet is easily influenced by their surroundings. Based on a study on the consumption of plant-based food among Canadian consumers, knowing where to look for information about plant-based food can help them figure out where some of their decisions come from. For example, respondents said that family and friends were the most trusted places to get information (Clark & Bogdan, 2019). This explains the significance of social influence in a person’s decision-making process.

In addition, perceived behavioural control is the perceived ease or difficulty of doing the activity, which is thought to reflect both experience and expected obstructions and hurdles (Azjen, 1991). According to Ajzen (2002), individual confidence is measured not only on self-perception from the standpoint of convenience of doing, but also on the ability to receive and control the effect of the choice to conduct or vice versa. In the study, people’s belief that they have power over their behaviour, whether the action is performed or not, is included in the perceived behavioural control component. When a product is difficult to obtain or the consumer cannot afford it, it reduces behavioural intention due to a lack of perceived control.

Next, Gambier (2014) described environmental concern as a person’s behavior and psychology when they begin to realise the importance of their surroundings. This awareness can increase their desire to participate in protecting the environment. The objective of American food company Impossible Foods, according to founder Pat Brown, is to “decrease humanity’s detrimental impact on the global environment by totally replacing the use of animals as a food production method”. A study has found that the inclusion of an “environmental protection-based motivation” variable will positively influence purchase intention (Lee, 2015). However, Shen (2020) posited that environmental concern does not directly affect purchase intention, but it helps consumers to understand the consequences of purchasing a product on their surroundings.

Health consciousness is defined as self-awareness of one’s own health and readiness to engage in health-promoting behaviours. Not surprisingly, health-conscious people actively seek out and follow advice on how to enhance their health (Espinosa & Kadic-Maglajlic, 2018). In a report, Tonsor et al. (2021) stated that the current threat to the beef industry from plant-based proteins is small. Evaluating results from choice experiments, they found that plant-based burgers are currently weak substitutes for beef. They report that beef still exceeds plant-based proteins in consumer perceptions of taste, appearance, price and naturalness, although plant-based proteins scored highest on health concerns.

Product knowledge is required when purchasing a product to identify the quality of the product and consumers will feel more comfortable using a product if they are aware of its ingredients or quality (Elsya & Indiryani, 2020). However, a study in Taiwan by Shen

and Chen (2020) found no significant relationship between product knowledge and purchase intention of vegetarian burgers. Nevertheless, it is important to explore how product knowledge could influence purchase intention of plant-based meat in Malaysia.

Lastly, according to Takaya (2019), purchase intention is the desire of consumers to buy a brand or conduct activities linked to purchases, as evaluated by the amount of consumer tendency to make purchases. Businesses are now engaging in promotional and marketing campaigns to influence consumer purchase decisions in an effort to better understand consumer purchase intention (Dudovskiy, n.d). Suppliers and producers of plant-based meat may place a great deal of importance on the ways in which customers choose their goods and services, as this provides them with multiple competitive advantages over their rivals. Corresponding to Ajzen's (1991) theory, attitudes, subjective norms and perceptions of behavioural control can be used to predict intention with high accuracy.

3.0 Methodology

This study involved a quantitative approach where it is concerned with quantifying and analysing variables in order to get findings. The unit of analysis for this current study was individual (Malaysian consumers). The criteria for Malaysian consumers for this study were consumers who age between 18 to 64 years old, consume meat regularly and never consume plant-based meat products. Next, this study involved a correlational study and carried out in contrived settings. The time horizon was cross sectional as the data only collected once in a short period of time. Furthermore, this study used purposive sampling under a non-probability sampling method.

The data that was collected using a self-administered questionnaire. The items listed in the questionnaire adapted from several previous studies. The languages used are both English and Malay. The questionnaires in the Google Form were passed through several social medias such as Telegram, Instagram and Whatsapp to efficiently reach the target respondents.

Besides, as for determining the sample size, it seems sample-to-variable ratio rules suitable to be used in this study. A minimum observation-to-variable ratio of 5:1 is suggested by the sample-to-variable ratio, while values of 15:1 or 20:1 are recommended (Hair et al., 2018). Thus, 140 respondents were needed to carry out this study. This study able to reach 405 respondents, however, after undergoing 2 screening questions, only 220 responses were valid. Once the data were collected, there are several tests that ran by using Statistical Package for Social Science (SPSS) Software version 28.0 such as reliability, factor, correlational, regression and bootstrapping analysis.

However, using the entire Malaysian population as the target population in a study can be regarded too broad and a constraint in methodology. In such circumstances, researchers may choose to focus their research on a certain region, city, or demographic group within Malaysia.

4.0 Findings

This study found out that all of the hypotheses were supported. These findings highlighted that the factors (attitude, subjective norms, perceived behavioural control, health consciousness, environmental concern) affect consumers' purchase intention towards plant-based meat products in Malaysia and product knowledge was significantly mediates the relationship between the factors and consumers' purchase intention.

5.0 Discussion

The findings from this study showed that if consumers have a greater attitude toward plant-based meat products, they would have greater purchase intention. These findings are consistent with previous research, which found that attitude is the largest predictor of intention to consume plant-based meat (Kopplin & Rausch, 2021). According to Erida (2017), consumers' existing product knowledge will play a role in shaping their developing intent to buy. Consumers who have extensive product knowledge are confident in their ability to make quality judgements based on that knowledge. Thus, consumers are frequently aware of a product's value, which improves their intent to buy. This was aligned with a study by Wong et al. (2019), where, customers who have developed environmental concerns have a strong desire to purchase sustainable foods, and environmental concerns are regarded as one of the most important factors in the context of purchase intent (Fauzan & Azhar, 2019).

The study has a limitation that it only looked at plant-based food purchasing intentions in general. The Malaysian plant-based food market is growing, and there are many different types of plant-based food items available (Manickam, 2022) as beyond plant-based meat substitutes, the field of plant-based foods is vast and includes a diverse range of goods. Plant-based dairy substitutes, plant-based eggs, plant-based seafood, plant-based snacks, and a range of other plant-based food categories are available.

6.0 Conclusion and Recommendations

As conclusion, despite the proliferation of such studies, little has looking on the psychological factors affecting consumers purchase intention towards plant-based meat in Malaysia. In fact, little published or unpublished research related to Malaysia has been identified. With that, this study explored within the Malaysia context. This study helps to add to the existing body of knowledge, fill a gap in the literature, offer new insights and even questions existing theory.

As for the recommendation, it is suggested that future research make use of a longitudinal study. Since customers' purchasing intentions are not constant but rather extremely dynamic, a longitudinal study is better appropriate for this investigation. This is because

of the shifts that would make people more interested in purchasing plant-based foods. Therefore, future researchers can get useful results by using a longitudinal study to investigate consumers' intent to buy plant-based foods. Besides, future researchers may use quantitative approaches to get in depth information related to factors affecting consumer's purchase intention of plant-based meat products in Malaysia.

Acknowledgements

The writers wish to thank the staff members at the Postgraduate Department, Faculty of Hotel and Tourism Management, UiTM Puncak Alam, Selangor, Malaysia, for their assistance.

Paper contribution to related field of study

This research may be useful to companies involved in producing plant-based meat as it explores the perspectives of local consumers about their products. The companies can understand what Malaysian consumers like and take effort to improve their products in terms of texture, taste and colour. This, in turn, will help to increase consumer interest and satisfaction towards their products. The food industry can work to improve the quality of plant-based meat, such as structural and sensory resemblance to real meat, in order to achieve widespread acceptance. This research also helps to promote the benefits of plant-based meat as a substitute to red meat and poultry among Malaysian consumers. It may also help to promote research in other areas, in particular those related to consumer purchasing intention. Future researchers can study the factors that influence the consumers' intention to purchase cultured meat, for instance. This will expand the literature on psychological studies and discover new knowledge in related areas.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T).
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32, 665-683. [10.1111/j.1559-1816.2002.tb00236.x](https://doi.org/10.1111/j.1559-1816.2002.tb00236.x).
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall
- Bosnjak, M., Ajzen, I., & Schmidt, P. (2020). The theory of planned behavior: Selected recent advances and applications. *Europe's Journal of Psychology*, 16(3), 352–356.
- Cena, H. & Calder, P., C. (2020). Defining a Healthy Diet: Evidence for The Role of Contemporary Dietary Patterns in Health and Disease. *Nutrients*, 12, 334. [doi:10.3390/nu12020334](https://doi.org/10.3390/nu12020334)
- Conner, M. & Armitage, C., J. (2008) Attitudinal ambivalence. In *Frontiers of Social Psychology. Attitudes and Attitude Change*.
- Clark, L., F. & Bogdan, A., M. (2019). Plant-based foods in Canada: information, trust and closing the commercialization gap. *British Food Journal*, 121(10), 2535-2550. [10.1108/BFJ-12-2018-0826](https://doi.org/10.1108/BFJ-12-2018-0826)
- Deraman, F. (2012). Hotel guests' intention to engage in green activities.
- Dudovskiy, J. (n.d). Consumer buyer behaviour definition. *Business Research Methodology*. <https://research-methodology.net/consumer-buyer-behaviour-definition/>
- Estell, M., Hughes, J., & Grafenaer, S. (2021). Plant protein and plant-based meat alternatives: consumer and nutrition professional attitudes and perceptions. *Sustainability*. <https://doi.org/10.3390/su13031478>
- Gambier, L., & Bertrandias, L. (2014). Others' environmental concern as a social determinant of green buying. *Journal of Consumer Marketing*, 31(6/7), 417–429. <https://doi.org/10.1108/JCM-05-2014-0966>
- Elsya, P. & Indriyani, R. (2020). The impact of product knowledge and product involvement to repurchase intention for Tupperware products among housewives in Surabaya, Indonesia.
- Erida A., R. (2017). The Effect Of Brand Image, Product Knowledge and Product Quality On Purchase Intention Of Notebook With Discount Price As Moderating Variable. *J. Bus. Stud. Manag. Rev.* 126–32.
- Espinosa, A., & Kadic-Maglajlic, S. (2018). The mediating role of health consciousness in the relation between emotional intelligence and health behaviors. *Frontiers in Psychology*, 9.
- Godfray, H., C., J., Aveyard, P., Gamett, T., Hall, J., W., Key, T., J., Lorimer, J., Scarborough, P., Springmann, M., Jebb, S., A., & Pierrehumbert, R., T. (2018). Meat consumption, health, and the environment. *Food Security*, 10.1126/science.aam5324
- Goh, E., Azam-Ali, S., McCullough, F. et al. (2020) The nutrition transition in Malaysia ; key drivers and recommendations for improved health outcomes. <https://doi.org/10.1186/s40795-020-00348-5>
- Gu, S. (2019). Using the theory of planned behaviour to explain customers' online purchase intention. 5. 226-249.

Hair, J., F., Black, W., C., Babin, B., J., & Anderson, R., E. (2018). *Multivariate data analysis* (8th ed.).

Hashem, H. (2021, November 12). Malaysia's growing plant-based food market attracts global brands and local startups. <https://salaamgateway.com/story/malaysias-growing-plant-based-food-market-attracts-global-brands-and-local-startups>

Hermann, J., R. (2019). Protein and the body. Division of Agricultural Sciences and Natural Resources. <https://extension.okstate.edu/fact-sheets/print-publications/t/protein-and-the-body-t-3163.pdf>

Hwang, J., You, J., Moon, J., Jeong, J. (2020). Factors affecting consumers' alternative meats buying intentions: plant-based meat alternative and cultured meat. *Sustainability*. 12(10).3390/su12145662

International Food Information Council (n.d). What is the Flexitarian Diet?. <https://foodinsight.org/wp-content/uploads/2019/10/FlexitarianDiet.pdf>

Jayanti, R., K., & Burns, A., C. (1998). The antecedents of preventive health care behavior: An empirical study. *Journal of the Academy of Marketing Science*. 26(1), 6-15. <https://doi.org/10.1177/0092070398261002>

Knaapila, A., Michel, F., Jouppila, K., Sontag-Strohm, T., Piironen, V. (2022). Millennials' consumption of and attitudes toward meat and plant-based meat alternatives by consumer segment in finland. *Foods*. 11, 456. <https://doi.org/10.3390/foods11030456>

Laukkanen, S. (2021). Consumers' willingness to purchase plant-based meat substitutes. <https://lutpub.lut.fi/handle/10024/162392>

Lee, H., J., Yun, Z. (2015). Consumers' perceptions of organic food attributes and cognitive and affective attitudes as determinants of their purchase intentions toward organic food. *Food Quality and Preference*. 39. 259–267.

Manickam, H., V. (2022). Purchase intention towards plant-based food in Malaysia. Department of International Business

Mirage News. (2021, August 31). Growing interest in plant-based protein products in Malaysia create export potential. *Mirage News*. https://www.dosm.gov.my/v1/uploads/files/5_Gallery/2_Media/4_Stats%40media/1_General%20News/2021/8%20Ogos/31%20Ogos%20-%20General%205%20-%20mirage%20news.pdf

Morgan, R. (2019). The slow but steady rise of vegetarianism in Australia. <http://www.roymorgan.com/findings/vegetarianisms-slow-but-steady-rise-in-australia-201608151105>

Nayak, A. (2021). Why plant-based meats are healthier than regular meats, according to dietitians. *Insider*. <https://www.insider.com/guides/health/diet-nutrition/plant-based-meat>

Newsom, J., T., McFarland, B., H., Kaplan, M., S., Huguet, N. & Zani, B. (2005). The health consciousness myth: implications of the near independence of major health behaviors in the North American population. *Social Science and Medicine*. 60, 433–437. <https://doi.org/10.1016/j.socscimed.2004.05.015>

Poore, J., Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. *Science*. 360. 987–92. 10.1126/science.aag0216

Popkin B., M., Adair, L., S. (2012). Now and then : the global nutrition transition: the ¹SEP pandemic of obesity in developing countries. *Nutr Rev*. 70(1). 3–21. <https://doi.org/10.1111/j.1753-4887.2011.00456.x>

Ravimalar, R. (2022, September 22). Food: Whetting Malaysians' appetite for plant-based meat. *The Edge Markets*. <https://www.theedgemarkets.com/article/food-whetting-malaysians-appetite-plantbased-meat#:~:text=Demand%20for%20plant-based%20meat,to%20have%20an%20artificial%20aftertaste>

Stark, C. (2013). Guidelines for Food and Nutrient Intake. *Nutrition*. 34–47.

Statista (2022). Meat consumption per capita in Malaysia in 2021, by type (in kilograms).

Shen, Y., C. & Chen, H., S. (2020). Exploring Consumers' Purchase Intention of An Innovation of the Agri-Food Industry: A Case of Artificial Meat.

Steward, M., D., Hutt, M., D., Walker, B., A. & Kumar, A. (2009). Role identity and ¹SEP attributions of high-performing salespeople. *Journal of Business & Industrial Marketing*. 463-47.

Tonsor, G., T., McKendree, M., G., S., Schroeder, T., C., & Hendricks, N., P. (2020). Impacts of retail and export demand on United States cattle producers. *Journal Agricultural Economics*. 102. 866–83.

Takaya, R. (2019). Antecedents analysis of purchase intention. *Business and Entrepreneurial Review*. 16(1). 10.25105/ber.v16i1.4906.

Wilks, M., & Philips, C., J., C. (2019). Testing potential psychological predictors of attitudes towards cultured meat. *Appetite*. 136, 137–145. <https://doi.org/10.1371/journal.pone.0171904>

Whitney, E., N. & Rolfes, S., R. (2015). Understanding Nutrition. *Nutrition*. 34–47

Wong, S. L., Hsu, C. C., & Chen, H. S. (2019). To Buy or Not to Buy? Consumer Attitudes and Purchase Intentions for Suboptimal Food. *International journal of environmental research and public health*, 15(7), 1431.

World Health Organisation Europe (2021). Plant-based diets and their impact on health, sustainability and the environment. <https://apps.who.int/iris/bitstream/handle/10665/349086/WHO-EURO-2021-4007-43766-61591-eng.pdf?sequence=1&isAllowed=y>

World Health Organ of Switzerland (2013). Global Action Plan for the Prevention and Control of Noncommunicable Diseases.

Zahra, S., McCarthy, B. & Chaechi, T. (2021). Sustainable meat consumption intentions: conceptualisation, scale development and validation. *Emerald Insight*. 124 (5). 1659-1679. 10.1108/BFJ-02-2021-0113