



**DEVELOPMENT OF EXTENDED THEORY OF PLANNED BEHAVIOUR  
FACTORIAL MODEL FOR ORGANIC FOOD CONSUMPTION AMONG  
MALAYSIAN ADULTS**

By

**NUR AQILAH AMALINA BINTI JAAFAR**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in  
Fulfilment of the Requirements for the Degree of Doctor of Philosophy**

**March 2023**

**FPSK (P) 2023 4**

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

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**2023**

**Chair : Professor Norhasmah binti Sulaiman, PhD**  
**Faculty : Medicine and Health Sciences**

The increasing demand for food has led to modernization and reliance on artificial inputs in agriculture, which has raised people's concerns regarding food safety and the environment. As a result, organic food, which is grown sustainably without synthetic pesticides, fertilizers, and GMOs, is becoming a popular choice for consumers. However, organic food actual consumption remains low in Malaysia, and previous research have mainly focused on predicting people's intention to consume organic food. This study aimed to understand factors influencing intention and actual consumption of organic food among Malaysian adults with two study phases.

Phase 1 (quantitative) comprised a pilot survey (stage 1) to test construct validity and reliability of the instrument. This was followed by an actual survey (stage 2) that collected 424 responses to develop an extended theory of planned behaviour (E-TPB) factorial model for organic food consumption among Malaysian adults. Both surveys utilized online sampling through Facebook. The E-TPB model predicted 72.2% of organic food consumption intention, with attitude formed by food safety, health and environmental concerns being the strongest predictor, followed by perceived behavioural control and subjective norm. Gender was found to have a small effect on consumption intention, with women having a higher intention than men.

The model predicted 24.2% of actual consumption, with consumption intention being the strongest predictor. The actual consumption was also contributed by food choice motives specifically "food safety and nutrition" and "health and mood" as well as individual monthly income level. Moreover, the study found that trust in organic food certification, labelling, and control moderated the relationship between intention and actual consumption of organic food.

In Phase 2, three focus group discussions were conducted via Zoom to explain the factors of organic food consumption identified in the quantitative study. Two discussions were held with regular and non-to-occasional organic food consumers, while the third involved relevant stakeholders. Five themes emerged for organic food perception: "food safety", "accessibility", "affordability", "production", and "appearance". The factors that influence organic food consumption were categorized as "internal" and "external" factors.

The identification of these themes provided specific insights into the psychological and physical factors that affect organic food consumption, thereby enhancing the quantitative findings. The discussions also revealed three primary themes related to organic food certification, labelling, and control: "public confidence", "governance", and "strategy". These themes emphasized the crucial role of trust in strengthening the relationship between intention and actual consumption of organic food by providing key elements associated with it.

The quantitative study found that the E-TPB factorial model of organic food consumption had satisfactory predictive validity and fit indices and also established the moderating role of trust in the intention-actual consumption relationship. The qualitative findings further shed light on how identified factors contribute to organic food consumption. The study's results can benefit industry players and stakeholders promoting sustainable development goals through organic food consumption, although caution is advised when generalizing to all Malaysian adults due to the online sampling. Future research could further investigate predictors and variables that mediate or moderate to better understand actual organic food consumption.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**PEMBANGUNAN MODEL FAKTORIAL TEORI LANJUTAN TINGKAH LAKU TERANCANG BAGI PENGAMBILAN MAKANAN ORGANIK DALAM KALANGAN DEWASA MALAYSIA**

Oleh

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Permintaan yang semakin meningkat untuk makanan telah membawa kepada pemodenan dan pergantungan kepada input tiruan dalam pertanian, yang telah menimbulkan kebimbangan orang ramai mengenai keselamatan makanan dan alam sekitar. Akibatnya, makanan organik, yang ditanam secara lestari tanpa racun perosak sintetik, baja, dan GMO, menjadi pilihan popular untuk pengguna. Walau bagaimanapun, pengambilan sebenar makanan organik kekal rendah di Malaysia, dan penyelidikan terdahulu tertumpu terutamanya pada meramalkan niat orang ramai untuk mengambil makanan organik. Kajian ini bertujuan untuk memahami faktor-faktor yang mempengaruhi niat dan pengambilan sebenar makanan organik dalam kalangan orang dewasa Malaysia dengan dua fasa kajian.

Fasa 1 (kuantitatif) terdiri daripada tinjauan rintis (peringkat 1) untuk menguji kesahan dan kebolehpercayaan konstruk instrumen. Ini diikuti dengan tinjauan sebenar (peringkat 2) yang mengumpul 424 respons untuk membangunkan model faktorial teori lanjutan tingkah laku terancang (E-TPB) bagi pengambilan makanan organik dalam kalangan orang dewasa Malaysia. Kedua-dua tinjauan menggunakan pensampelan dalam talian melalui Facebook. Model E-TPB meramalkan 72.2% daripada niat pengambilan makanan organik, dengan sikap yang dibentuk oleh kebimbangan keselamatan makanan, kesihatan dan alam sekitar menjadi peramal yang paling kuat, diikuti oleh kawalan tingkah laku yang dirasakan dan norma subjektif. Jantina didapati mempunyai kesan kecil ke atas niat pengambilan, dengan wanita mempunyai niat yang lebih tinggi daripada lelaki.

Model juga meramalkan 24.2% daripada pengambilan sebenar, dengan niat pengambilan menjadi peramal terkuat. Pengambilan sebenar juga disumbangkan oleh motif pilihan makanan khususnya "keselamatan dan pemakanan makanan" dan "kesihatan dan mood"

serta tahap pendapatan bulanan individu. Selain itu, kajian mendapati bahawa kepercayaan terhadap pensijilan, pelabelan dan kawalan makanan organik menyederhanakan hubungan antara niat dan pengambilan sebenar makanan organik.

Dalam Fasa 2 (kualitatif), tiga perbincangan kumpulan fokus telah diadakan melalui Zoom untuk menerangkan secara khusus faktor pengambilan makanan organik yang dikenal pasti daripada kajian kuantitatif. Dua perbincangan telah diadakan dengan pengguna makanan organik biasa dan bukan-ke-sekali-sekala, manakala yang ketiga melibatkan pihak berkepentingan berkaitan. Lima tema muncul untuk persepsi makanan organik: "keselamatan makanan", "kebolehcapaian", "kemampuan", "pengeluaran", dan "penampilan". Faktor-faktor yang mempengaruhi pengambilan makanan organik dikategorikan sebagai faktor "dalaman" dan "luaran".

Pengenalpastian tema ini memberikan pandangan khusus tentang faktor psikologi dan fizikal yang mempengaruhi pengambilan makanan organik, dengan itu meningkatkan penemuan kuantitatif. Perbincangan itu juga mendedahkan tiga tema utama yang berkaitan dengan pensijilan, pelabelan dan kawalan makanan organik: "keyakinan awam", "tadbir urus", dan "strategi". Tema-tema ini menekankan peranan penting kepercayaan dalam mengukuhkan hubungan antara niat dan pengambilan sebenar makanan organik dengan menyediakan elemen utama yang berkaitan dengannya.

Kajian kuantitatif mendapati model faktorial E-TPB bagi pengambilan makanan organik mempunyai kesahan ramalan yang memuaskan dan indeks kesesuaian dan juga membuktikan peranan kepercayaan moderasi hubungan niat-pengambilan sebenar. Penemuan kualitatif memberikan pemahaman yang komprehensif tentang bagaimana faktor yang dikenal pasti menyumbang kepada pengambilan makanan organik. Keputusan kajian boleh memberi manfaat kepada pemain industri dan pihak berkepentingan bagi menyokong pembangunan lestari melalui pengambilan makanan organik. Walaubagaimanapun, dinasihatkan untuk berhati-hati dalam membuat generalisasi kepada semua orang dewasa Malaysia disebabkan pensampelan dalam talian. Kajian masa hadapan boleh menyiasat lebih lanjut peramal dan pembolehubah yang menjadi pengantara atau moderasi untuk lebih memahami pengambilan makanan organik sebenar.

## ACKNOWLEDGEMENTS

In the name of Allah, the Most Gracious and the Most Merciful

Alhamdulillah, all praises to Allah for His blessing and strength given to me to complete this study. I would like to express my sincere gratitude to several individuals and organizations for supporting me throughout my study.

First, I wish to express my sincere gratitude to my supervisor, Prof. Dr. Norhasmah binti Sulaiman, for her supervision and constant support in my study and writing of this thesis. Not forgotten, my appreciation to my co-supervisors, Dr. Redzwan bin Sabran and Dr. Shamsul Azahari bin Zainal Badari for their advice and knowledge.

A very special thanks to my beloved husband, Muhamad Akram Arif bin Jamaludin for the insightful discussions, and constant loving throughout the ups and downs of my study journey. Most importantly, I would like to express my gratitude to Umar Zafry bin Muhamad Akram Arif, my first child, for whom I have waited five years and for whose smile, laughter, and even tears have inspired me to persevere and keep my head high to complete this study.

My sincere thanks are extended to my family, which includes my dear parents, Mr. Jaafar bin Ahmad and Mrs. Noor Asiah binti Busrah, my in-laws; Dr. Jamaludin bin Omar, and Mrs. Alawiah binti Musa, as well as my siblings, nephews, and nieces for their unwavering support and encouragement. I would also like to dedicate this thesis to my beloved late younger brother, Arwah Muhammad Amir Farhan Bin Jaafar.

Sincere appreciation to all of my friends, especially Asma, Ain, Akmarina, Nadhirah, and Dahlia for their generosity and moral support during this study journey. Thanks for the friendship and memories.

I am incredibly grateful to the Universiti Putra Malaysia and the Ministry of Education of Malaysia for granting me the doctoral scholarship. This financial support has enabled me to complete my PhD studies successfully.

Last but not least, I would like to thank all my respondents and informants for participating in the study. To those who have indirectly contributed to this research, your kindness means a lot to me. Thank you very much.

I certify that a Thesis Examination Committee has met on (date of viva voce) to conduct the final examination of Nur Aqilah Amalina binti Jaafar on her thesis entitled "Development of extended Theory of Planned Behaviour (E-TPB) factorial model for organic food consumption among Malaysian adults" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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## LIST OF ABBREVIATIONS

AC	Actual Consumption
AGFI	Adjusted Goodness of Fit Index
ANOVA	Analysis of Variance
AT	Attitude
AVE	Average Variance Extracted
BMI	Body Mass Index
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CI	Confidence Interval
CR	Construct Reliability
EFA	Exploratory Factor Analysis
EU	European Union
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GOF	Goodness-of-fit Statistic
HBM	Health Belief Model
IFI	Incremental Fit Index
IFOAM	International Federation of Organic Agriculture Movements
IN	Consumption Intention
MI	Modification Index
MLR	Multiple Linear Regression
NFI	Normed-Fit Index
ROFC	Regular organic food consumer

NOOFC	Non-to-occasional organic food consumer
PBC	Perceived Behavioural Control
RMSEA	Root Mean Square Error of Approximation
SCT	Social Cognitive Theory
SEM	Structural Equation Modelling
SN	Subjective norm
TLI	Tucker-Lewis index
TPB	Theory of Planned Behaviour
TR	Trust in Organic Food Certification, Labelling and Control
TRA	Theory of Reasoned Action
UK	United Kingdom
UPM	Universiti Putra Malaysia
USA	United State of America
USDA	United States Department of Agriculture
WHO	World Health Organization

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of the study

Increasing global food demand has led to the industrialization of agricultural-based food. As such, chemical synthetic agricultural inputs including pesticides, fertilizers, growth regulators and feed additives are used extensively in conventional farming to expedite and increase agriculture yield (Botinggo et al., 2021; Udin et al., 2019). This raises concerns among people worldwide to question whether or not the food is safe for their consumption. Furthermore, it is estimated that in low-middle and developing countries, there is about US\$ 110 billion lost in productivity and medical expenses each year due to unsafe food costs (World Bank, 2019). Particularly, fruits and vegetables are at risk of containing higher pesticide residues than other food groups of plant origin.

As such in China, the usage of synthetic pesticides such as organochlorine, organophosphorus, pyrethroid and organic nitrogen is relatively higher and more frequent in conventional fruits and vegetables despite the maximum limit being ruled by the government (Yu et al., 2018). Also, in developing countries, there is a rising concern about unsafe fruits and vegetables due to the high chemical residues of pesticides including in Vietnam (Ngo et al., 2019) and Thailand (Maichum et al., 2017). Similarly, in Malaysia, synthetic pesticides especially organophosphate (OP) pesticides are commonly used in the local production of vegetables, fruit, root crops, and grain crops (Botinggo et al., 2021).

Due to their toxicity and widespread use in agricultural settings, pesticides pose a severe threat to the public, especially rural populations. For instance, farmers are prone to be exposed to pesticides through inhalation, oral ingestion or dermal uptake which lead to various diseases (Udin et al., 2019). As an example, a study had found that skin itchiness was reported among 42.9% of Malaysian farmers (60 of 140 pesticide handlers) who used Class II pesticides 2,4-D and paraquat in the paddy-growing areas of Kerian, Perak (Baharuddin et al., 2011).

It was also found that there are several long-term impacts of pesticide exposure on the population, in addition to various acute effects such as skin and eye irritation, headaches, dizziness, coughing, nausea, blurred vision, fatigue, and respiratory disorders (Elahi et al., 2019). A systematic review by Kim et al. (2017) on the use of pesticides and their detrimental impacts on human health and ecological systems revealed that chronic diseases, including cancer, leukaemia, hormone or endocrine disruption, hypersensitivity, as well as respiratory diseases such as asthma and allergies, can result from long-term exposure to pesticides. An increased risk of recurrent otitis media in children associated with long-term pesticide exposure was also reported (Buscail et al., 2015).

Furthermore, there are also risks of heavy metal contamination in agricultural produce. This includes contamination of cadmium (Cd), lead (Pb) and arsenic (As) due to the usage of chemical pesticides and fertilizers in the conventional farming system (Barański et al., 2021). These heavy metals could enter the human body through the food chain. Long-term exposure of pesticide via the food supply chain can cause chronic impairment including memory loss, damaging the nervous system, increasing cancer risk and infertility without being detected (Yu et al., 2018). Subsequently, due to the food safety and health risks associated with food from conventional farming, the growing demand for a more sustainable agricultural food produce, in the form of organic food, has been documented worldwide. For instance, the global sales of organic food amounted to USD 106 billion in 2019, up from USD 18 billion in 2000 (Statista, 2021).

Technically, organic food products are derived from the organic production system, which is produced and processed according to international standards of organic agriculture, with the products being certified by an independent certificate authority. The essential requirement for organic food production includes the prohibition of modern synthetic chemicals in pesticides, fertilizers, genetically modified organisms (GMO), industrial solvents, or chemical food additives as well as the processing techniques using irradiation (IFOAM-Organics International, 2017). It involves a series of sustainable agricultural technologies based on natural rules and ecological principles, making it perceived as a realistic option for a healthy future (Cristache et al., 2018).

There are also significant differences in terms of nutrient content and nutritional value between organic food and its conventional counterpart. Studies found that organic food contained higher antioxidants or anti-inflammatory ingredients, vitamins and minerals (Barański et al., 2014; Yu et al., 2018). Eating organic food has also shown to reduce the likelihood of obesity by 11.0% due to its greater nutritional content and less exposure to pesticides, antibiotics, and hormones that raise body mass index (BMI), abdominal fat and insulin resistance (Bhagavathula et al., 2022). Nevertheless, others postulate that the association between organic food consumption and reduction in overweight or risk of obesity is possibly due to long-term consumption, or resulting from lifestyle factors or dietary patterns (Vigar et al., 2019).

Apart from food safety and health aspects, the consumption of organic food is much related to environmental protection. This is coherent with the fact that organic farming has long-term positive benefits for the environment on soil, water, air, climate change and biodiversity. This is because organic farming prohibits the use of genetically modified organisms and encourages development of the ecological system as highlighted by The Food and Agriculture Organization (FAO). Previous epidemiological studies among the adult population in developed and developing countries found that environmental concerns were more important drivers of food choice motives among individuals who regularly consume organic food (Baudry et al., 2017; Janssen, 2018; Van Huy et al., 2019)

Following that, the demand for organic food has grown remarkably in Malaysia (Saleki et al., 2019) as well as other developing countries like Vietnam (Nguyen et al., 2018), Tanzania (Pacho, 2020) and India (Yadav and Pathak, 2017) as people are increasingly

concerned about nutrition, health, food safety, quality and a sustainable environment. Nevertheless, actual consumption is low despite strong awareness and intention to consume organic food. An earlier study by Dardak et al. (2009) found that Malaysian adults rarely buy organic products as to them eating organic food would not significantly improve their health. Similarly, less than 10.0% of the sampled respondents in several previous studies were reported to consume organic food on a regular basis (Hasanov and Khalid, 2015; Hossain and Lim, 2016). This trend contradicts with surveys from developed countries like the USA and Italy, where about 20.0% to 50.0% of respondents regularly purchased organic food (Gundala and Singh, 2021; Scalvedi and Saba, 2018).

Moreover, the high price of organic food causes people to not be able to translate their intention to consume organic food into actual consumption. In Malaysia, the price difference between organic food and conventional food is very substantial. The difference is as much as 100.0% to 300.0% compared to only a 25.0% to 35.0% price gap in the United States and European Union (EU) (Somasundram et al., 2016). The substantial price difference is also caused by the high dependency on imported organic food due to the shortage of local supply and product quality issues (Song et al., 2016).

Furthermore, the slow growth of the local organic food industry was contributed by trustworthiness issues on the certification and labelling of organic food. Particularly, there are different organic logos, certifications and unverified "organic food" claims reported in several local studies (Somasundram et al., 2016; Song, 2017). This creates confusion and mistrust within the population regarding the authenticity of organic food and deters them from buying the products. However, little empirical research on how and how much trust influences an individual's decision-making for organic food has been conducted.

A recent study found that Malaysian consumers have the required knowledge of the local "myOrganic" logo, but it has a low significant association with their intentions to purchase organic food along with trust in the certification (Song and Kanesh, 2022). Moreover, studies demonstrate that trust, along with attitude, subjective norm, and perceived behavioural control, as in the theory of planned behaviour (TPB), is one of the primary psychological factors that can affect people's decisions to consume organic food. For instance, Sultan et al., (2020) found that trust specifically in organic food certification and labelling helps to overcome perceived behavioural factors (i.e., price and availability) and strengthen one's intention to perform a behaviour. Schäufele and Hamm (2018) concluded that a lack of trust in the organic food label is also a psychological barrier that could contribute to the intention-behaviour gap. Even so, not much study is available on the role of trust in organic food labelling and certification to strengthen one's intention to be translated into actual consumption of organic food in a strong psychological theoretical framework like the TPB (Canova et al., 2020).

Furthermore, organic food consumption involves multiple factors which makes it a complex decision-making process. Integrating the variety of relevant factors could potentially reveal the prominent factors and which factors are being trade-offs by individuals when it comes to choosing organic food over conventional ones. Thus, this study aims to identify the significant factors of intention and actual consumption of

organic food among Malaysian adults. The factors include an individual's sociodemographic characteristics, health status, food choice motives and psychological factors with trust in organic food certification, labelling and control as the moderating factor within the TPB. Additionally, this study aims to test the predictive power of TPB in relation to both the intention and actual consumption of organic food. Further exploration of the contribution of these factors towards the intention and actual consumption of organic food was conducted using a qualitative study specifically through a focus group discussion (FGD) approach.

## 1.2 Problem statement

Food safety issues, particularly on the usage of pesticides as well as synthetic chemical inputs in agricultural-based food products, have been reported worldwide including in Malaysia. For instance, in 2018, the Agri-Food and Veterinary Authority of Singapore (AVA) issued a recall for iceberg lettuces after detecting high levels of pesticide in the vegetable imported from a Malaysian farm (New Straits Times, 2018). Additionally, one recent local news report has stated that the Consumers' Association of Penang (CAP), Malaysia has urged the government to ban the use of glyphosate as a herbicide, which was used in growing a variety of crops and in oil palm plantations (The Star, 2020). The consumer organization also highlighted that a shift from conventional agribusiness to organic food should be enhanced following the increasing demand for safer food among the population. This news indicates that the agricultural industry in Malaysia is still depending on conventional methods which uses pesticides despite growing concerns on the safety of the food.

Moreover, recent data shows that there is about a 30.0% increase in the number of listed active ingredients for pesticides permitted in Malaysia, which is from 1420 (before 2017) to 1786 (in 2019) active ingredients (Department of Agriculture, 2019). This contradicts the government's initiative to shift from conventional agricultural methods to a more sustainable agriculture system. In the Malaysia Agro-Food Policy 2011-2020, the government encourages local farmers to shift to organic food production which prevents the usage of synthetic agricultural inputs including pesticides.

Despite the increasing availability of food products labeled as "organic" in local supermarkets and online retail websites, the organic food market in Malaysia still remains niche, with limited consumption among certain groups of people (Mohamad et al., 2014; Somasundram et al., 2016). This limited consumption may be influenced by various factors, including differences in beliefs, values, and priorities related to sustainable food consumption, as well as sociodemographic factors such as income and education level (Ibitoye et al., 2014).

Previous studies in Europe have suggested that health, anthropometry (i.e., BMI), lifestyle, dietary habits, physical activity, and sociodemographic characteristics are significantly associated with organic food consumption (Bradbury et al., 2014; Kesse-Guyot et al., 2013). For instance, individuals who are more health-conscious, physically active, and have higher socio-economic status are more likely to consume organic food.



However, there is limited understanding of the factors related to individual background, including sociodemographic and health status, that may influence organic food consumption among Malaysian adults. Therefore, it is necessary to conduct research that examines how sociodemographic characteristics and individual health status, particularly body weight status and the presence of chronic diseases, contribute to organic food consumption. This research could provide valuable insights into identifying additional factors that significantly predict organic food consumption among Malaysian adults.

Next, there are inconsistencies and mixed findings from previous studies related to factors that contribute to organic food consumption among Malaysians. For instance, a study by Voon et al. (2011) indicated that perceived behavioural control (PBC) does not significantly contribute to people's intention to consume organic food, which is in contrast to the finding from (Song et al., 2016). The researchers claim that people could justify paying the higher price for organic food given its benefits and desirable qualities. Besides, other studies found that subjective norms significantly influenced the intention to consume organic food norm as people are more likely to comply with their close ones (Rezai et al., 2017; Saleki et al., 2019). However, others found that subjective norm was found to have no significant effect on purchase intention. This could be because purchasing organic food has yet to become a social norm among Malaysian (Chekima et al., 2019; Tan et al., 2022).

Furthermore, the majority of the previous studies also only focused on the consumption intention rather than the actual consumption of organic food especially in developing nations (Chekima et al., 2019). In the context of Malaysia, only 50.0% of existing studies on organic food consumption among adults extend the understanding of consumption intention to the actual consumption of organic food (Jaafar et al., 2020). Moreover, the study assessed actual consumption based on general statements pertaining to the purchase of organic food rather than the frequency of consumption of various types of organic food at a particular time. This includes statements like " I am a regular purchaser of organic food " and " I purchase organic food for my own consumption" (Saleki et al., 2019; Song et al., 2016). Besides, most of the available studies do not clearly state how the actual consumption is being measured and what items are used (Siwar et al., 2019; Song, 2017).

More importantly, growing evidence show that a gap exists between intention and actual consumption when it comes to sustainable behaviour (Akbar et al., 2019; Nguyen et al., 2019; Sultan et al., 2020). Likewise, a survey among organic food consumers in Klang Valley, Malaysia revealed that price consciousness moderates the relationship between intention and actual purchase of organic food (Saleki et al., 2019). In other words, among those who are price concerned, the correlation between intention and actual purchase of organic food is weaker. Therefore, this study attempts to investigate factors that contribute to both the intention and actual consumption of organic based on the frequency of consuming different types of organic food among the adult population. The identified key factors may help increase Malaysian adults' consumption of organic foods, leading to a more sustainable food consumption.

In addition to that, research conducted by Ayyub et al. (2018) and Nuttavuthisit and Thøgersen (2017) indicated that people's inability to transform their intentions into actual consumption is hampered by a lack of trust in organic food certification and labelling. Several local studies also highlighted the importance of trust in shaping public confidence to choose organic food over conventional ones (Saleki et al., 2019; Somasundram et al., 2016; Wong and Aini, 2017). However, none of the research addresses how and how much trust influences individuals' decision-making for organic food empirically.

In Malaysia, it is vital to investigate trust issues in the local organic food market. This is due to the abundance of imported organic food products, resulting in numerous organic logos being available in the market, leading to confusion among consumers (Misra and Singh, 2016). The voluntary nature of the term "organic" on food labels implies that food products can be advertised as organic without being certified by a third-party organization. Instead, food producers depend on a self-regulatory assessment process that follows Malaysian Standards MS 1529. This system may confuse consumers, making it challenging to differentiate between certified and non-certified organic products. Furthermore, the absence of a dependable organic food labelling certification may encourage fraudulent practices, which is a matter of concern as organic food is typically sold at a premium price.

So far, only one study has been conducted which emphasized the reliability of organic food certification, logos and labelling to promote consumer trust in organic food consumption in Malaysia's context (Song, 2017). Trust is a psychological state that is derived from transactional, evaluative, affective and/or emotional judgement of the organic food quality, taste, certification, production and marketing processes (Sultan et al., 2020). Thus, integrating it into a psychological theoretical framework of the TPB is necessary to understand the intention-behaviour gap as well as inform the effectiveness of local governance of organic food.

Other than that, there is a population gap based on the review of prior research. Most of the organic food studies among Malaysians are limited to certain areas. For example, studies were conducted specifically around Klang Valley and Selangor areas (Hasanov and Khalid, 2015; Ibitoye et al., 2014; Kai et al., 2013; Leong and Paim, 2015; Lim et al., 2014; Siwar et al., 2019; Song, 2017; Wong and Aini, 2017), Penang (Quah and Tan, 2009a; Quah and Tan, 2009b), and Sarawak (Voon et al., 2011). Apart from the aforementioned, only one (1) study had been conducted across Malaysia by Song et al. (2016) which covered 11 states (Kuala Lumpur, Selangor, Negeri Sembilan, Johor, Perak, Penang, Kedah, Pahang, Terengganu, Sabah, and Sarawak). However, this study was limited to exploring marketing stimuli factors and perceived value, which only partially explains the actual purchase of organic food. Therefore, there is a need for a comprehensive national study across multiple states in Malaysia that incorporates sociodemographic characteristics, health status, food choice motives, and psychological factors that influence the consumption of organic food among Malaysians.

It is also noted that there is a significant lack of qualitative research on the subject of organic food consumption in Malaysia, despite numerous quantitative studies being

conducted (Lim, Yong, et al., 2014; Siwar et al., 2019; Voon et al., 2011; Wong and Aini, 2017). While numerical evidence from quantitative studies is valuable, it may not fully capture the complexities of consumers' perceptions and behaviours towards organic food. By contrast, qualitative data is believed to offer richer, more in-depth insights (Creswell and Clark, 2011) that can lead to a better understanding of how certain factors influence organic food consumption. Therefore, the incorporation of qualitative or mixed-method research designs could be helpful in addressing the current methodological gap in the field, providing a more comprehensive understanding of consumers' perceptions and behaviours towards organic food. The findings using this approach would be valuable in developing strategic initiatives and measures aimed at promoting sustainable agricultural production through organic food consumption. Based on the identified gaps in the literature, this study seeks to address the following main research questions:

1. Does integrating sociodemographic characteristics, health status, food choice motive and psychological factors in the TPB improve the prediction of intention and actual consumption of organic food among Malaysian adults?
2. Does trust in organic food certification, labelling and control moderate the relationship between intention and actual consumption of organic food among Malaysian adults?
3. What are the Malaysian adults' perceptions of organic food and the reason behind the significant factors influencing its consumption?

### **1.3 Objectives of the study**

The general objective of the study is to investigate factors influencing intention and actual consumption of organic food among Malaysian adults in a factorial model using an extended Theory of Planned Behaviour (E-TPB). For that, this study will be conducted according to the below specific objectives:

1. To examine the sociodemographic characteristics, health status, food choice motives, psychological factors, intention and actual consumption of organic food among Malaysian adults.
2. To determine the relationships between sociodemographic characteristics, health status, food choice motive and psychological factors towards intention and actual consumption of organic food among Malaysian adults.
3. To determine the contribution of the sociodemographic characteristics, health status, food choice motive and psychological factors towards intention and actual consumption of organic food among Malaysian adults.
4. To test the ability of TPB in predicting intention and actual consumption of organic food among Malaysian adults.

5. To investigate the moderating effect of trust in organic food certification, labelling and control on the relationship between intention and actual consumption of organic food among Malaysian adults.
6. To explore Malaysian adults' perceptions about organic food as well as to comprehend and clarify the factors that influence its consumption.

The first five specific objectives were achieved through a quantitative study that produced the E-TPB, while the last objective was addressed through a qualitative study that provided a deeper understanding and explanation of the quantitative findings.

#### **1.4 Study hypotheses**

Based on the research questions, objectives of the study and path relationship within the theoretical framework of TPB, several hypotheses of this study were constructed as follows.

1. There are significant relationships between sociodemographic characteristics, health status, food choice motives and psychological factors towards intention and actual consumption of organic food among Malaysian adults.
2. There are significant contributions of sociodemographic characteristics, health status, food choice motives and psychological factors to intention and actual consumption of organic food among Malaysian adults.
3. There are significant contributions of consumption intention to actual consumption of organic food among Malaysian adults.
4. Trust in organic food certification, labelling and control significantly moderates the relationship between consumption intention and actual consumption of organic food among Malaysian adults.

#### **1.5 Significance of the study**

This study could bring some significant research insights. Firstly, it would provide an approximation of how frequently Malaysian adults consume organic food. Knowing the demand for organic food consumption could also serve as an indicator of the effectiveness of existing policies that aim to enhance organic agriculture in Malaysia, as is highlighted in the National Agro-Food Policy, 2011-2020. In fact, it would be beneficial for supporting the growing number of local organic food producers which have increased from 71 producers in 2019 to 110 in June 2022 (Department of Agriculture, 2022).

Besides, this study provides empirical evidence on integrated factors which include sociodemographic characteristics, health status, food choice motive and psychological factors associated with the intention and actual consumption of organic food. In particular, the results of the significant sociodemographic characteristics and health

status related to intention and actual consumption of organic food would be essential in motivating a sustainable diet among the targeted population. Next, examining prominent food choice motives for choosing organic food may help organic food producers and retailers better understand the market and people's needs.

The study also offers more empirical data to the existing research on the application of the well-known psychological model TPB for determining the intention and actual consumption of organic food in the context of a developing nation, Malaysia. Understanding the relative impact of each psychological factor along with sociodemographic characteristics, health status and food choice motives on intention and actual consumption of organic food can help stakeholders create a strategic communication approach. This could raise people's awareness and confidence in organic food consumption. Moreover, the addition of trust in organic food certification, labelling and control as a moderating variable in the TPB provides theoretical and practical significant contributions. The study also emphasizes how vital it is to raise public confidence in organic food certification, labelling, and control as well as effective communication to enhance organic food consumption in a developing organic food market like Malaysia.

Promoting the consumption of organic food aligns with the second and twelfth Sustainable Development Goals (SDGs), which aim to eliminate hunger and ensure access to safe, nutritious, and sufficient food for all, including poor and at-risk individuals, by 2030, while also promoting responsible consumption and production. Organic food production and consumption support sustainable food practices that benefit the environment and result in more nutritious produce. Encouraging sustainable food consumption can also aid in managing the triple burden of nutrition, which encompasses malnutrition, obesity, and hidden hunger. As concerns over food quality, safety, and biodiversity loss continue to grow, it is crucial for Malaysia to transition strategically from conventional to organic food agriculture. Therefore, the study's findings can guide policymakers and stakeholders in developing effective policies that promote organic food consumption as a means of achieving a sustainable food system.

## **1.6 Scope and Limitations of Study**

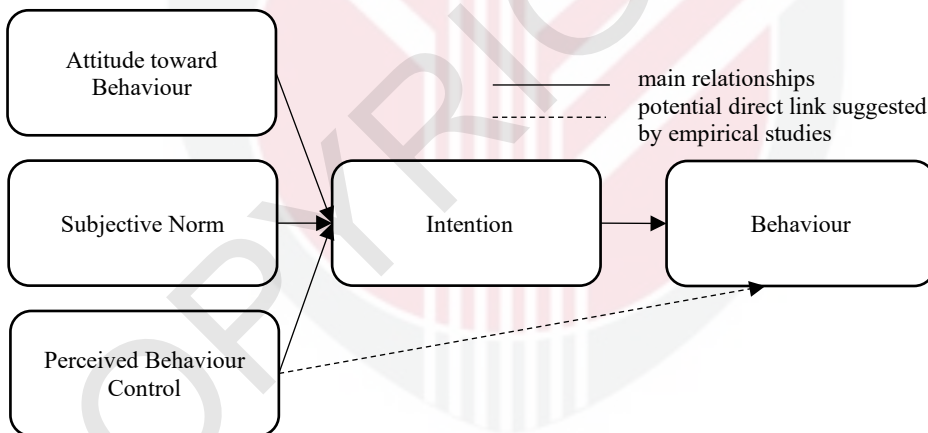
This study investigates various factors that influence the intention and actual consumption of organic food, including sociodemographic characteristics, health status, food choice motives, and psychological factors in an extended Theory of Planned Behaviour (E-TPB) factorial model. However, the study is limited to a sample of Malaysian adults, which was obtained through online sampling, specifically using the Facebook Ads platform.

It is important to note several limitations when interpreting the study's findings. First, the sample size may not represent the entire population of Malaysian adults, which could affect the generalizability of the study's findings. Second, the study relied on self-reported measures, which could be subject to social desirability bias or memory recall bias. Third, the cross-sectional design of the study limits the ability to establish causal

relationships between variables. Fourth, the study focused only on sociodemographic characteristics, health status, food choice motives, psychological factors, and trust as a moderator between intention and actual consumption of organic food. Therefore, other potential factors that may influence organic food consumption were not considered in this study.

### 1.7 Theoretical framework

Multiple theories have been developed by previous scholars to study human behaviour including Social Cognitive Theory (SCT), Health Belief Model (HBM) and Integrated Behaviour Model (IBM). Nevertheless, the Theory of Planned Behaviour (TPB) model developed by Ajzen (1991) as illustrated in Figure 1.1 has been widely used especially in predicting health-related behaviour. This theory was originally developed based on the Theory of Reasoned Action (TRA) by a similar researcher. Each construct involved in the TPB is discussed below. Ajzen's TPB includes three fundamental variables used to predict the purchase intention of end-users and eventually behaviour. These three key mechanisms comprise subjective norms, attitude, and behavioural control (Ajzen, 1985). Nonetheless, this theory seems to underscore a dualistic approach to the prediction of intention as it seems as if the two dominant components in the TPB model are attitude and subjective norm.



**Figure 1.1: Model of the theory of planned behaviour**  
(Source: Ajzen, 1991)

Attitudes are behavioural beliefs determined by outcome evaluations (Ajzen, 1991). The formation of an attitude toward a behaviour is dependent on the expectancy-value formulation, which assesses a person's subjective likelihood that engaging in an interesting behaviour will result in a given outcome or deliver a specific experience (Ajzen, 2020). Concern for one's health, food safety, quality, and the influence of consuming organic food on the environment are typical indicators of a positive attitude in the context of organic food (Chekima et al., 2019; Pham et al., 2019; Voon et al., 2011). A review of multiple studies on organic food consumption found that the TPB framework's relationship between attitude and behavioural intention is perhaps the most

anticipated and is stronger than the other predictors (i.e., perceived behavioural control and subjective norm) (Scalco et al., 2017).

Subjective norm is about normative and social influences or beliefs that are determined by an individual's motivation to comply (Ajzen, 1991). It is influenced by both descriptive normative beliefs and injunctive normative beliefs. The injunctive normative belief is the expectation or subjective likelihood that a particular reference person or group (e.g., friends, family, spouse, work colleagues, one's doctor or supervisor) will approve or disapprove of the performance of the behaviour in question. Descriptive normative beliefs, on the other hand, are beliefs about whether important others will perform the behaviour themselves (Ajzen, 2020). The most significant social influences on the purchase and consumption of organic foods come from friends, family, co-workers, specific reference groups, and other environmental factors, such as social media (Nguyen and Truong, 2021; Pomsanam et al., 2014; Scalco et al., 2017).

Perceived behavioural control (PBC) relates to individuals' views of their capability to carry out a specified behaviour and it is governed by a complete set of accessible control beliefs (Ajzen, 1991). PBC contributes to the prediction of both intention and behaviour in the presence of a specific situation. In most cases, when a person has complete control over the behaviour or situation, intentions alone should be sufficient to predict behaviour, as articulated in the theory of reasoned action. Furthermore, the direct influence of PBC on predicting behaviour may not be very accurate when a person has relatively limited information about the behaviour, when requirements or available resources have shifted, or when new and unfamiliar factors interfered (Ajzen, 1991). Therefore, it makes sense that in this study the PBC would not directly relate to behaviour in the context of consuming organic food, as one should have full control over resources to do so given that organic food is typically linked with high prices and limited availability (Voon et al., 2011).

Intention refers to the likelihood of executing a specific behaviour, in relation to normative influences and attitudinal considerations (Ajzen, 1991). The intention may perhaps offer organic marketers some valued insights into how end-users are expected to act regarding certain products. Therefore, a positive intention can lead people to decide on buying products within a specific food category. In TPB, the intention to engage in a particular behaviour depends on a rational and pre-meditated choice (Ajzen, 1991). For more than a decade, previous studies related to organic food consumption still used the TPB as the underpinning theory (Canova et al., 2020; Chekima et al., 2019; Maichum et al., 2017; Yadav and Pathak, 2017). This confirms the strength of the TPB as a psychological theoretical framework and its relevancy. Thus, this study employed TPB as the underpinning theory and aim to examine the main relationships in the model along with other potential additional studied variables.

## **1.8 Research framework**

The research framework of the study consists of two phases. The first phase involves investigating factors that contribute to the intention and actual consumption of organic

food. Several possible factors were included namely, sociodemographic characteristics (i.e., age, gender, ethnicity, marital status, monthly income level and education level) and health status (i.e., body weight status and presence of chronic disease). Besides, the food choice motives factors consist of five motives namely “health and mood”, “food safety and nutrition”, “familiarity and morality”, “price and sensory appeal” and “convenience” were also included. In addition to that, the framework includes the psychological factors derived from the TPB model namely attitude (measured by food safety, health and environmental concerns), subjective norm (friends and family) and perceived behavioural control (measured by cost and availability).

An additional factor known as trust in organic food certification, labelling and control was also included as the moderating factor on the relationships between intention and actual consumption of organic food. This addition followed the findings of prior studies, which revealed that mistrust in the control system and the authenticity of food labelled as organic have significant negative effects on self-reported purchasing behaviour (Ayyub et al., 2018; Smed et al., 2013). Furthermore, the lack of trust in organic food labels despite the government's certification discourages people to consume organic food while having strong intentions to do so (Somasundram et al., 2016).

Other researchers have conceptualized trust as a stand-alone construct (Nuttavuthisit and Thøgersen, 2017) instead of incorporating it into the existing construct of the TPB as done by Lobb et al. (2007) and Voon et al. (2011) who measured trust as a formative factor of the perceived behavioural and attitude constructs respectively. The former of the two aforementioned approaches is preferable as trust is found to be a unique theoretical construct that is different from the propositions of the TPB (Nuttavuthisit and Thøgersen, 2017).

The variable was chosen to serve as a moderating variable instead of a mediator between intention and actual consumption of organic food because past studies revealed that trust predicted the intention, rather than intention predicting trust (Carfora et al., 2019; Latip et al., 2020). In contrast to a moderator, a mediator is a variable that is in a causal sequence between two variables and functions as both a dependent and an independent variable at the same time (MacKinnon et al., 2007). Furthermore, a number of recent research indicated that trust could help to explain the gap between intention and actual behaviour in studies of sustainable behaviour (Moon et al., 2017; Sultan et al., 2020; Tandon et al., 2020).

Besides that, the study focused on investigating trust in organic food certification, labelling, and control as a moderating variable in the relationship between intention and actual consumption of organic food, instead of using socio-demographic factors such as gender and income. This decision was based on the prediction that individuals with higher levels of trust in organic food certification, labelling, and control would be more likely to follow through on their intention to consume organic food compared to those with lower levels of trust (Sultan et al., 2020). Moreover, previous studies have indicated that gender and income can have a direct impact on an individual's intention and/or actual consumption of organic food. Specifically, it has been suggested that women and individuals with higher incomes are more likely to consume organic food than men and



those with lower incomes (Dangi et al., 2020). Thus, this study aimed to investigate whether trust moderates the relationship between intention and actual consumption while also accounting for the direct effects of socio-demographic factors.

The results of Phase 1 of the study were further explored with the qualitative study using focus group discussion in Phase 2 of the study. Particularly, the findings from Phase 2 are used to further explain the quantitative findings. This includes the contribution of sociodemographic characteristics, health status, food choice motives and psychological factors in predicting the intention and actual consumption of organic food. Furthermore, the findings of both quantitative and qualitative studies would help to outline several potential measures related to promoting organic food consumption among Malaysian adults. The flow of the research is summarized in Figure 1.2.

## 1.9 Definition of variables

### Health status

*Conceptual definition:* Health status refers to body weight status and the presence of chronic diseases in the adult. Body weight status is defined by a body mass index (BMI), which is a ratio of body weight (in kilograms) to height squared (in meters) Meanwhile, chronic diseases are defined broadly as conditions that last 1 year or more and require ongoing medical attention or limit activities of daily living or both including heart disease, cancer, diabetes, etc.

*Operational definition:* The health status of the respondents involved in this study is reflected in their body mass index (BMI) and the presence of chronic disease. Each of the parameters was measured as follows:

**Body weight Status:** Self-reported body weight (in kg) and height (in cm) of the respondents would be used to estimate their body weight status.

**Presence of chronic disease:** Self-reported chronic disease experienced by the respondents by declaring yes for having any chronic diseases or no for otherwise.

### Food Choice Motives

*Conceptual definition:* Individuals' motivation with regard to food choice.

*Operational definition:* A Food Choice Questionnaire with 11 motives including health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity, ethical concern, risk perception and religion will be used to measure the food choice motives among respondents.

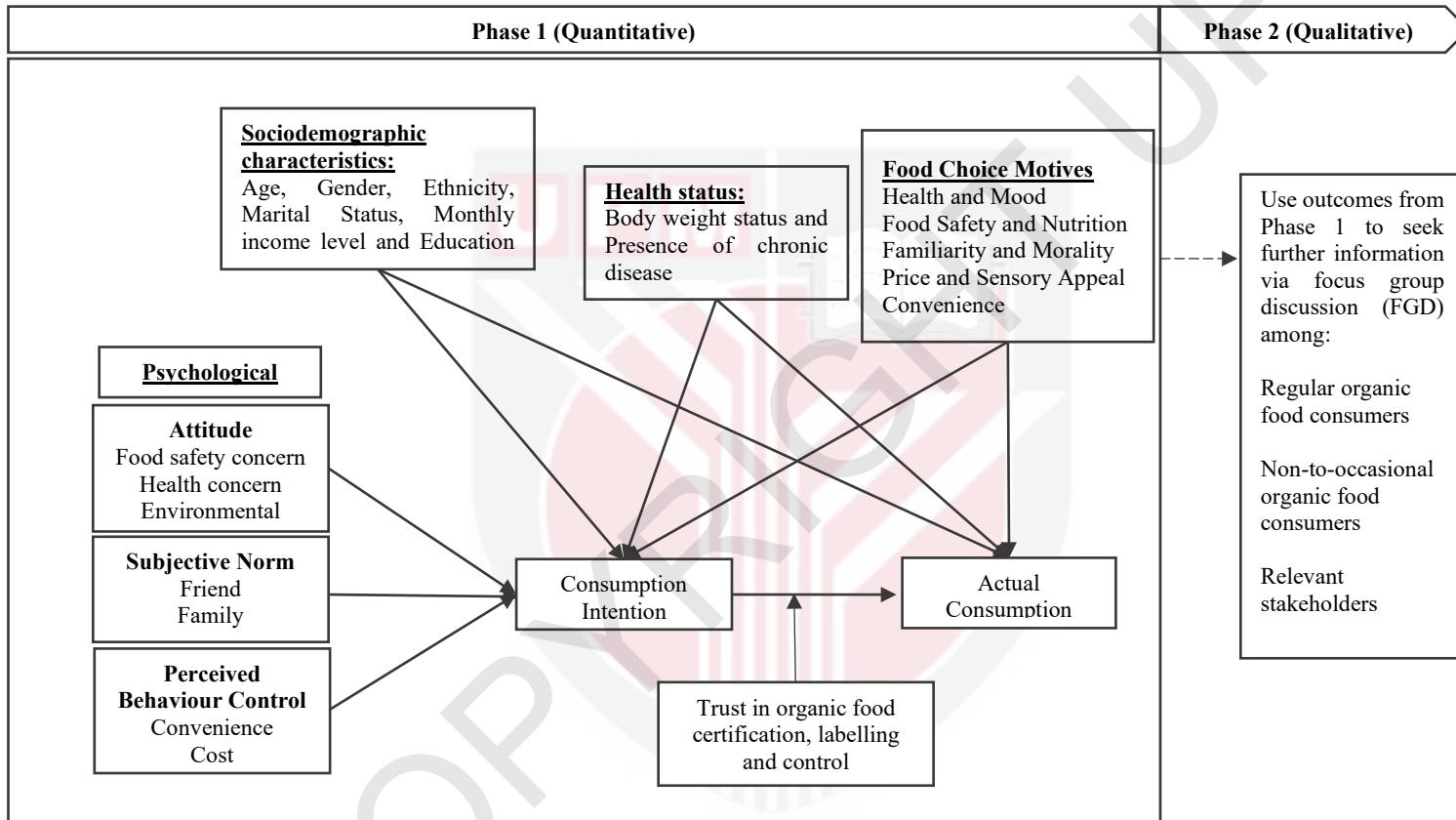


Figure 1.2 Research Framework

## **Psychological factors**

The psychological factors involved in this study are based on the TPB which includes:

### ***Attitude***

*Conceptual definition:* A disposition to respond favourably or unfavourably to an object, person, institution, or event (Ajzen, 1991).

*Operational definition:* Attitude towards organic food is measured through the degree of agreement on food safety, health and environmental aspect of organic food compared to conventional ones

### ***Subjective Norm***

*Conceptual definition:* A person's aggregate belief that individuals or groups think they should perform the behaviour under investigation (Ajzen and Fishbein, 1980).

*Operational definition:* Perceived social pressures received by individuals from others, who are important to them whether to include organic food products in their food intake or otherwise. Subjective norm refers to the influence of family and friends on organic food consumption.

### ***Perceived Behavioural Control***

*Conceptual definition:* The belief that one's actions are under one's control and are not under the control of external factors such as powerful others or left up to chance (Ajzen, 1991).

*Operational definition:* Refers to individuals' perception about the relative difficulty to purchase organic packaged food specifically in terms of products' price and the availability of organic food perceived by the respondent.

### ***Consumption intention***

*Conceptual definition:* What people say they do, plan to do or would do under certain circumstances (Ajzen, 1991).

*Operational definition:* Refer to the willingness or individuals' aim to include organic food in their food intake.

### ***Actual Consumption***

*Conceptual definition:* Observable acts that are studied in their own right (Fishbein and Ajzen, 1975).

*Operational definition:* Refers to the self-reported frequency of individuals' purchases of organic packaged food for their own consumption which includes the types of the organic food product. The actual experience of consuming organic food is based on the 12 different items of organic food categories.

### ***Trust in organic food certification, labelling and control***

*Conceptual definition:* Trust is defined as confidence in one's expectations, where desirable conduct is viewed as certain while undesirable conduct is removed from consideration (Luhmann, 1979).

*Operational definition:* Refers to individuals' beliefs about the reliability and credibility in the governance of organic food labelling and certification.

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