Understanding Consumers' Organic Food Purchasing Behaviour in Laos and Australia

By

Chitpasong Kousonsavath

A thesis submitted to the University of Adelaide

in fulfilment of the requirements for the degree of

Doctor of Philosophy



The Centre for Global Food and Resources

School of Economics and Public Policy

The University of Adelaide

June 2024

Table of contents

Table of contents ii
List of Tables iv
List of Figures v
Declaration vi
Acknowledgements vii
Publications arising from this thesis. viii
Abstract ix
Chapter 1: Introduction 1
1.1. Research gaps and motivations. 4
1.2. Research questions. 6
1.3. Research method and data collection. 7
1.4. Thesis structure 9
Chapter 2: Statement of Authorship 11
Chapter 2: Exploring the influence of consumers' knowledge on attitude and purchase intention for organic foods: A case study from Australia market. 13
2.1. Introduction 14
2.2. Theoretical framework and hypothesis development. 16
2.3. Materials and Methods 18
2.3.1. Participants 18
2.3.2. Questionnaire 19
2.3.2.1. Measurement of subjective knowledge 19
2.3.2.2. Measurement of objective knowledge 19
2.3.2.3. Measurement of attitudes and stated purchase intention. 20
2.3.3. Statistical analyses 21
2.4. Results and Discussion 21
2.5. Conclusions 28
2.6. Appendix 31
Appendix A: Pearson correlation of key measurement variables. 31
Appendix B: Measurement items for key variables assessed. 31
Appendix C: Percentage of correct answer of certified organic food knowledge among buyers and non-buyers 33
Appendix D: Knowledge and attitude among different age groups and genders. 34
Chapter 3: Statement of Authorship 35
Chapter **3:** Consumers' knowledge and trust in organic food labels 37

3.1. Introduction 38
3.2. Literature and hypotheses 40
3.3. Data and methods 43
3.4. Results 46
3.5. Discussion and conclusion 52
3.6. Appendix 55
Appendix A: Trust in organizations for providing accurate food safety information. 55
Appendix B: Pearson correlation of key measurement variables. 56
Appendix C: Regression results for factors influencing trust among younger consumer group (aged 18-44 years) 57
Appendix E: Measurement items. 58
Appendix F: Descriptive statistics of variables. 60
Chapter 4: Statement of Authorship 61
Chapter 4: Egoistic and altruistic values in organic food consumption: a comparative study between Australia and Laos. 63
4.1. Introduction 64
4.2. Analytical framework 66
4.3. Data and measures 68
4.4. Results and discussion 70
4.5. Concluding remarks 75
Chapter 5: Summary, discussions and implications, limitations, and recommendations for future research 77
5.1. Summary of key findings 77
5.2. Discussion, and policy implications 79
5.3. Limitations and recommendation for the future research 80
Appendix 1: Online Australian Consumer Survey Questionnaires 82
Appendix 2: A focus group discussion flyer 88
Appendix 3: Focus group discussion scripts (Lao consumer survey) 89
Appendix 4: Supplementary for the focus group discussion (product logos awareness) 92
Appendix 5: Supplementary for the focus group discussion (socio-demographic questionnaire) 93
Appendix 6: Focus group discussion results summaries. 95
Appendix 7: Face-to-face consumer survey questionnaire (Lao consumer survey) 102
References 115

List of Tables

Table 2.1. Respondent's profile. 21
Table 2.2. Mean score of objective knowledge. 23
Table 2.3. Regression estimation of factor associations with total objective knowledge score. 24
Table 2.4. Determinants of subjective knowledge scores. 24
Table 2.5. Subjective and objective knowledge among buyers and non-buyers. 25
Table 2.6. Association between subjective and objective knowledge. 26
Table 2.7. Factors influencing attitude towards certified organic foods. 26
Table 2.8. Factors influencing purchase intention of organic foods. 27
Table 3.1. Visualization of the six organic food labels assessed. 44
Table 3.2. Regression results linking knowledge and socio-demographic factors with trust in different organic food labels. 48
Table 3.3. Results of independent samples t-tests comparing trust in organic food labels among the high and low knowledge 50
Table 3.4. Regression estimation of factors associated with purchase intention. 51
Table 4.1. Statements measured for egoistic and altruistic values for a product labelled with organic food logo. 69
Table 4.2. Descriptive statistics of variables. 69
Table 4.3. Baseline estimates from probit models with sample selection. 71
Table 4.4. Robustness check results of the roles of egoistic and altruistic values in organic food awareness and purchasing behaviour 72
Table 4.5. Subsample results of the roles of egoistic and altruistic values in organic food awareness and purchasing behaviour 73

List of Figures

Figure 2.1. Proposed conceptual framework. 18
Figure 2.2. Perceptions of food product with 'Australian Certified Organic' food label (n=1,001). 22
Figure 3.1. Proposed conceptual framework. 43
Figure 3.2. Level of trust for different organic food labels assessed (n=1,001) 47
Figure 4.1. Proposed conceptual framework. 67

Declaration

I, Chitpasong Kousonsavath, certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint award of this degree.

The author acknowledges that copyright of published works contained within the thesis resides with the copyright holder(s) of those works.

I give permission for the digital version of my thesis to be made available on the web, via the University's digital research repository, the Library Search and also through web search engines, unless permission has been granted by the University to restrict access for period of time.

28 June 2024

Chitpasong KOUSONSAVATH

Acknowledgements

This thesis was developed during my PhD candidature from 2020-2024, and data gathered from consumers in Australia and Laos were utilized. The successful completion of this thesis would not be fulfilled without a significant support from so many people surrounding me.

I would like to firstly express my gratitude to the important persons supported me for my entire PhD journey. I would like to offer my gratefulness to my principal advisor Dr. Di Zeng, my co-supervisors Dr. Lenka Malek, and my former principal supervisor Professor. Wendy J. Umberger for investing their time, knowledge, and generosity to walked me through this journey successfully. Their support has immensely contributed to my professional as well as personal development. I am so grateful to have them around and guided me.

This PhD journey might not have been completed successfully without my beloved family support. I would like to express my sincere thanks to my mother, my husband, my three beautiful children and sisters, who have given me strengths, encouragements, and support throughout my journey. Without their kind support and generosity, I could hardly find myself at where I am today. My deepest thanks to my beloved father (who is rested peacefully in heaven), who has inspired and encouraged me to come this far. He always showed me to be brave enough to go beyond my comfort zone and enjoy every single experience gained on the way. I sadly wish he would still be here with me today.

Finally, special thanks to my beloved super friends Nikki Dumbrell, Trang Thi Thu Nguyen, Sara Ratna Qanti, Livia Padilha and Jack Hetherington. These young bright scientists have warmly welcome and integrated me in such a wonderful and friendly environment. Doing a PhD can be quite a lonely journey sometimes but when having good friends surrounding, that journey could be quite a wonderful and memorable journey and not so lonely. My special appreciations to the Australian government, Australian people, ethe John Allwright Fellowship, the Australian Centre for International Agricultural Research (ACIAR), and the Crawford Fund, for continue investing in my career and personal development and made me who I am today.

Publications arising from this thesis.

Published and unpublished articles

Kousonsavath, C., Malek, L., Umberger, W. J., Zeng, D., 2024. Exploring the influence of consumers' knowledge on attitude and purchase intention for organic foods: A case study from Australia market. *Submitted on June 26th to the British Food Journal.*

Kousonsavath, C., Malek, L., Umberger, W. J., Zeng, D., 2024. Consumers' knowledge and trust in organic food labels. *Unpublished and unsubmitted work presented in manuscript style.*

Kousonsavath, C., Malek, L., Umberger, W. J., Zeng, D., 2024. Egoistic and altruistic values in organic food consumption: a comparative study between Australia and Laos. *Submitted on June 27th to the Food Policy.*

Conference presentations

Kousonsavath, C., Malek, L., Umberger, W. J., Zeng, D., 2024. Exploring the influence of consumers' knowledge on attitude and purchase intention for organic foods: A case study from Australia market. Contributed paper presented at the 68th Annual Conference of the Australasian Agricultural and Resource Economics Society (AARES), 7-9 February 2024.

Abstract

Growing concerns over health and environmental issues have significantly changed food consumption behaviour in the past decades. These growing concerns have driven demand for organic foods, which are perceived as healthier and more environmentally friendly options. While numerous studies have explored factors influencing organic food purchasing behaviour, the role of consumers' knowledge regarding organic food production and certification processes in this context remains understudied. This thesis aims to provide insight into this domain.

The main body of this thesis is constructed from two different datasets. The first dataset was from the 1,001 Australian consumers gathered from an online consumer survey conducted in 2021 and will be used to compile a large portion of this thesis. The second dataset was coming from 272 Lao consumers collected from a face-to-face consumer survey conducted in 2022 and will be used to address a comparative aspect of organic food purchasing behaviour in an emerging and a mature organic food market.

The first study explores the association between consumers' subjective and objective knowledge on the attitude and purchase intention towards organic foods. Econometric analysis reveals a strong and positive correlation between subjective knowledge and stated purchase intention, but a weak relationship with attitude. Objective knowledge was found to indirectly influence purchase intention through increasing positive attitude. A further breakdown analysis revealed that organic food buyers have higher subjective and objective knowledge compared to non-buyers.

The second study investigates the association between consumers' knowledge, and trust in different organic food labels. Results reveal a positive association between subjective knowledge and trust in all organic food labels assessed, while different results were found for objective knowledge. While negative associations were found for scientific knowledge and trust in all organic food labels, positive correlations were found between general food production knowledge, and trust in claim and international labels, and certified organic food knowledge was positively correlated with trust in claim and domestic labels. Consumers with high subjective and objective knowledge expressed higher level of trust.

The third study reveals heterogeneity in organic food purchasing behaviour between Australia and Laos, which respectively represent mature and emerging organic food markets. Empirical results suggest that among Australian consumers, both egoistic and altruistic values play significant roles in organic food awareness, but neither is driving purchasing behaviour. Among Lao consumers, egoistic

values are significantly associated with both awareness and purchasing behaviour while altruistic values are not. These findings provide evidence for the differences between emerging and mature organic food markets and offer important implications to various stakeholders in the design and implementation of effective promotional campaigns and marketing strategies.

Chapter 1: Introduction

Food consumption trends continue to change, and changes are driven by numerous factors. These include the increasing usage of chemical fertilizers (Basha et al., 2015), environmental degradation (Thogersen, 2014; Thogersen et al., 2015), and increased environmental and ethical consumption (Thogersen et al., 2015). The trend of increased environmental and ethical consumption is noticeable in developed countries (Anisimova, 2016; Boizot-Szantai et al., 2017; Cachero-Martínez, 2020; Hansmann et al., 2020), and it has facilitated the emergence and growth of credence goods, claiming to be organic, free of genetically modified organisms (GMOs), cage-free, gluten-free, fair trade and many more (Stanton & Cook, 2019). Consumers can be overwhelmed by such claims, especially if they have limited knowledge regarding the claims. In fact, these credence attributes cannot usually be straightforwardly perceived by consumers either before or after consumption without key information being provided by producers (Botelho et al., 2017; Giannakas, 2002).

Healthfulness and environmental friendliness have become increasingly important in shaping organic food consumption behaviour (Prakash et al., 2023). This has led to an increased in organic food market value by 13% in 2020 (Sadiq et al., 2023). An increasing trend in organic food consumption is significantly noticeable in those developed and wealthy nations (Molinillo et al., 2020), but the trend is also visible in the developing world (Yadav & Pathak, 2017). Organic foods carry several credence attributes (Massey et al., 2018). They are perceived by some consumers to be safer, healthier, and environmentally friendly options as compared to conventional foods (Janssen, 2018; Yazdanpanah et al., 2015). An organic food production system is defined by the International Federation of Organic Agriculture Movements (IFOAM) as '*a production system that sustains the health of soil, ecosystem and people*' (von Meyer-Höfer et al., 2015). This production system was introduced in the early 1900s (Heckman, 2007), with a focus on soil health, as it was believed that healthy soil is connected with healthy crops, livestock and human beings (Heckman, 2007). By 1980, the idea of an organic production system was already developed in the United States and even more so when the Federal Organic Foods Production Act was accepted that same year (Heckman, 2007).

In the past two decades, demand for organic food has increased exponentially (Janssen, 2018; Molinillo et al., 2020), especially in developed countries such as the United States, Europe, the United Kingdom and Australia (Sultan et al., 2020), where organic foods are usually sold at a premium price (Sriwaranun et al., 2015). The demand for organically produced goods is also growing in the developing world, especially the Asian region (Prakash et al., 2018); however, much less is known regarding organic food purchasing behaviour in this context. In recent years, researchers have started

investigating motivations behind organic purchase intentions in many developing countries (Basha & Lal, 2019; Hasimu et al., 2017; Loebnitz & Aschemann-Witzel, 2016; Teng & Lu, 2016). Multiple determinants have been found to influence consumers' purchase intentions for organic food products in these studies, such as environmental concerns, health consciousness, food safety and trust (Lee et al., 2020; Massey et al., 2018; Sadiq et al., 2020).

The present thesis focuses on Australia as an example of a developed organic market, and Laos as an example of an emerging organic market.

In Australia, the organic food production system was introduced in the 1920s, and the development has been divided into four key stages (Paull, 2014). The first stage (1920s-1930s) was featured by the introduction of the 'Biodynamic agriculture', which was the differentiation between chemical and non-chemical agricultural production system. The second stage occurred during the 1940s and 1950s, when an association named 'Australian Organic Farming and Gardening Society (AOFGS)'was working on organic farming promotion (Paull, 2014). The publication of the book Silent Spring in 1962 was an outstanding move towards the third stage of organic development in the 1960s and 1970s. This book played a key role in spreading the concept of organic production. In addition, the accident at the nuclear power plant in Chernobyl, Ukraine in 1986 was a turning point for many countries including Australia to pay attention to the food production systems to ensure food safety. This incident has led to the significant development of the last stage of organic production in Australia (1980s to the present) during this period, when the first organic certification body was found, and organic production standards, logo and labelling were introduced (Paull, 2014).

Globally, Australia has the largest area of farmland under certified organic production system, with 35.7 million hectares of farmland are under certified organic management (Willer et al., 2022). By region, New South Wales has the highest number of organic food operators, follow by Victoria and Queensland (Australian Organic Limited, 2021). Fruits, vegetables, meat, eggs and poultry are key produces (Jacqueline et al., 2019). The domestic demand for organic products continues to grow, with a total estimated market value worth more than 2,354 million Australian dollars which expected to further increase to 4,642 million Australian dollars in 2025 (Willer et al., 2022). In 2020, Australia has exported organic products to more 62 international markets, and processed foods are key organic export products (Willer et al., 2022). North America and East Asian markets (e.g., Mainland China, Hong Kong, Taiwan, South Korean, Japan and Mongolia) are key export markets for Australian organic products (Jacqueline et al., 2019) .

In terms of the certification system, Australia does not have a unified entity to perform organic food certification. Instead, there are five organic certifiers approved by the Department of Agriculture, Fisheries and Forestry, including the ACO Certification Ltd (ACO), Bio-Dynamic Research Institute (BDRI), NASAA Certified Organic (NCO), Organic Food Chain Pty Ltd (OFC) and Southern Cross Certified Australia Pty Ltd (SXC) (Department of Agriculture Fisheries and Forestry, 2023). These certification bodies collectively enforce the National Standard for Organic and Bio-Dynamic Produce (National Standard/NS) under the Export Control Act 1982 (Ford, 2020). Organic food products export overseas markets are guaranteed to be in compliance with a rigorous certification and inspection process (Ford, 2020). However, different regulations apply for organic foods selling domestically, where a product can be claimed as 'organic' without undergone a rigorous certification process (Chang et al., 2005; Ford, 2020). The organic industry, led by the Australia Certified Organic, is trying to work with the government to mandatory regulated organic products selling domestically, yet so far, this is still an ongoing mission.

Laos is a landlocked country situated in South East Asia, with total population of 7.5 million people (Department of Foreign Affairs and Trade, 2022). Agriculture remains an important sector for the country that hosts 70% of the population (Australian Centre for International Agricultural Resesearch, 2020). According to the recent country report from the World Bank, the service sector, mining and hydro-power sectors were key sectors contributed to the national economy, while manufacturing and agriculture sectors are said to have a mixed performance to the recent economic development (The World Bank, 2022).

In the late 1990s, the foundations of sustainable production practices in Laos were initiated by Non-Government Organizations (NGOs), and most of their efforts were concentrated on the production aspects (Panyakul, 2012). Going into the 21st century, various organic food movements emerged. These included market linkages and the establishment of the Lao certification body under the Ministry of Agriculture and Forestry (MAF) (Panyakul, 2012). In 2019, there were roughly 2,165 organic producers (Takeo & Bouthsakone, 2023).

The first organic agriculture standards were jointly developed between the project Promotion of Organic Farming and Marketing in Lao PDR (PROFIL) and the Ministry of Agriculture and Forestry in 2004 – 2005 (Panyakul, 2012). The contents of the standards were based on the International Federation of Organic Agriculture Movements (IFOAM) and the Organic Certification Thailand (ACT) organic production standard. The organic agriculture standards were subsequently approved and put into effect by the Ministry of Agriculture and Forestry in 2005 (Panyakul, 2012). Two years after the

standards was approved, the Lao Certification Body (LCB) was established and commenced its inspection services in 2009 (Panyakul, 2012).

The regulatory framework governing the organic food market in Laos bears resemblance to that of the United States. A product can be labelled as organic if it contains no less than 95 percent of certified raw materials (Ministry of Agriculture and Forestry, 2005). While the organic production landscape in Laos is witnessing a growing trend, it remains at the early stage of development. Therefore, there is a pressing need for collaborative effort between the government and stakeholders within the organic food industry to gain a deeper insight into the underlying motivations driving the purchase and consumption behaviour of organic foods. The findings from this research therefore can help pave the way for a meaningful advancement in the organic food sectors in Laos and Australia to encouraging to a more sustainable and health-conscious food choices.

1.1. Research gaps and motivations.

Literature examining factors influencing consumers' purchasing intention for organic foods has grown exponentially over the past decades (Basha et al., 2015; Chang & Chang, 2017; Ham et al., 2018; Massey et al., 2018; Ryan & Casidy, 2018; Teng & Wang, 2015). A recent meta-analysis of 150 journal articles published between 1991-2016 synthesized factors driving the purchase of organic foods revealed that credence attributes, where the health benefits of organic foods were the most important value perceived by consumers (Massey et al., 2018). Health related values and attitudes of organic foods (e.g., good for health, health considerations) were also acknowledged to be most common determinant for organic food purchase intentions (Anisimova, 2016; Asif et al., 2018; Bryla, 2016; Hansen et al., 2018; Janssen, 2018; Singh & Verma, 2017; Teng & Lu, 2016; Yadav & Pathak, 2016; Zagata & Lostak, 2012). Others were also found concerns over animal welfare and environment, product quality (e.g., value for money), and lifestyle (e.g., healthy lifestyle) as other key factors for organic food purchasing behaviour (Lee & Yun, 2015; Thogersen et al., 2015; Van Doorn & Verhoef, 2015).

In Australia, several studies have explored organic food purchasing and consuming behaviour (Anisimova, 2016; Henryks et al., 2015; Sultan et al., 2020; Sultan et al., 2018). These studies have cast a spotlight on various dimensions of organic foods. For example, drivers and barriers for organic food consumption (Anisimova, 2016; Lockie et al., 2004), consumer segmentation (Sultan et al., 2018), role of communication, satisfaction and trust (Sultan et al., 2020), and organic food labelling scheme (Henryks et al., 2015). However, little is known regarding consumers' knowledge in association with

purchase intention and trust in organic food labels in this context. In Laos, the knowledge regarding organic food purchasing behaviour is even more limited.

For a product to be certified as "organic", it needs to meet a series of standard requirements. Producers, processors, and those involved in wholesaling or retailing must possess a comprehensive hold of the complex production and certification process underlying the organic label. However, most consumers, particularly those lay consumers, often lack in-depth understanding of the criteria a product must fulfil before being certified as organic. This gap in consumers' knowledge has been a focal point in prior literature, illustrating the dearth of insight into the extent of consumers' pre-existing product knowledge and whether this knowledge is accurately possessed or misinterpreted (Stanton & Cook, 2019). Consequently, marketers have to decide either to accept the consequences of the lack of consumers' knowledge or to put more effort to enhance consumer knowledge and understanding (Stanton & Cook, 2019).

Consumers' level of knowledge holds considerable sway over their behavioural tendencies. For instance, it influences their nature to seek out information (Brucks, 1985), and their approach to information processing (Klerck & Sweeney, 2007). Moreover, empirical evidence reveals that consumers' knowledge is direct linked to their decision-making rationale (Stanton & Cook, 2019), attitudes (Aertsens et al., 2011), willingness to pay (Han, 2019), and the pattern they exhibit in their consumption behaviour (Pieniak, 2010). Therefore, it is vitally important to better understand the role of consumers' knowledge in association with organic food purchasing and consuming behaviour, as this will provide insights to stakeholders and help bridge the gap between consumers' knowledge and the complexities of organic food choices.

Organic food production and certification process are complexed, demanding a wealth of information to understand. Moreover, it is loaded with numerous credence attributes, such as health, environmentally friendliness and animal welfare, which remain challenging for average consumers to verify even after consumption (Giannakas, 2002). In this domain of uncertainty, trust is vitally important, especially since the visually and sensory differences between organic and conventional foods are minimal (Thorsoe, 2015). Hence, consumers are trusting the claim made by retailers (Thorsoe, 2015). The lack of trust over the certification process for organic foods has been identified as a barrier to purchase intention, even among consumers holding positive attitudes (Aertsens et al., 2009). Conversely, a higher level of consumer trust in farmers yields a positive effect on the intention to purchase organic food (Carfora et al., 2019), and trust in organic food certification logo was contributed to increasing willingness to pay (Janssen & Hamm, 2012; Muringai et al., 2017).

Therefore, a question emerges regarding whether higher knowledge on the process involved in production and certification process of organic food mitigate uncertainty and amplify trust levels, and ultimately increase purchase intentions. This study aims to answer this question by exploring the meaningful association between consumers' knowledge and trust for organic food certification labels.

Going beyond the abovementioned hypothesized relationship, the possible differences in organic food purchasing behaviour in emerging and mature organic markets will also be addressed in this thesis. This comparative aspect was considered due to the limited knowledge of how consumers in two different stages of market development would behave (von Meyer-Höfer et al., 2015). Also, while a considerable amount of organic food consumption behaviour research has been conducted in developed countries (Aitken et al., 2020; Ditlevsen et al., 2020; Sultan et al., 2020), but research in emerging economies is limited (von Meyer-Höfer et al., 2015), with extremely limited studies conducted in Laos. Therefore, understanding factors influencing organic food consumption behaviour in a comparative aspect would help give insight into consumer behaviour in the different stages of organic food market development.

1.2. Research questions.

The overall objective of this research project is to gain a better understanding of the factors motivating organic food consumers' purchasing behaviour. Specific attention was paid to consumers' knowledge, and its association with attitude, purchase intention and trust in organic food labels. Below are the key objectives of this research, which directly lead to the development of the thesis structure below:

1. To examine how knowledgeable the Australian consumers are when it comes to certified organic food production and certification.
    a. How knowledgeable are the Australian consumers when it comes to certified organic food production and certification? What do consumers think they know about 'certified' organic foods (subjective knowledge)? What do consumers actually know about 'certified' organic foods? (Objective knowledge).
    b. How does knowledge affect their attitudes and/or purchase intention towards certified organic food? What type of knowledge influences consumers' attitudes and behaviour toward 'certified' organic foods? How is consumers' science literacy (objective knowledge) associated with subjective knowledge of 'certified' organic foods?
2. To identify who Australian consumers trust to provide accurate food safety information. How do different types of knowledge influence trust in certified organic food labels? How does trust

influence certified organic purchasing behaviour? How is consumers' science literacy associated with level of trust of 'certified' organic foods?

3. To explore and understand factors influencing consumer heterogeneity in organic food purchasing behavior in Australia and Laos; What role do altruistic versus egoistic values play in the organic food purchasing decisions of Lao consumers?

1.3. Research method and data collection.

Two sets of cross-sectional data were used to construct this thesis. The author was involved differently in the data collection process in Australia and Laos. The conceptualisation and questionnaire development were the major involvement of the author in the Australian consumer survey, as this data collection was part of a bigger consumer survey project: Food Insights and Experiences Survey (the 'FoodIES'). A much more extensive involvement was the case for the Lao data collection process. Details of the data collection process in the two countries are outlined below.

Australian consumer survey online

The online consumer survey in Australia with 1,001 consumers was conducted from July and August 2021 by Dynata™, a leading online survey company. Participants were recruited under the selection criteria to be representative of the population: age range (18 and over), role of household food shopping (solely or joint), gender balance, geographical locations, and income range. The national representative is ensured in terms of age, gender, location (metropolitan, and distribution across Australian states/territories). The ethics approval has been granted from the University of Adelaide Human Research Ethics Committee (FoodIES: Food Insights and Experiences Survey H-2018-173). The questionnaire was developed, covering overall perceptions about organic foods, consumers' knowledge, trust in organic food labels, attitude, and purchase intentions (see Appendix 1). These key questions were included in the larger survey questionnaire, where social demographic information was also collected.

Face-to-face consumer survey

In case of the data collection in Laos, a mixed methods approach was adopted, as organic food consumption behaviour is less explored compared to Australia. Qualitative methods, such as focus group discussions, were used to explore the current stage of consumers' food purchasing and organic food consumption behaviour. The insights gained were used to revise the quantitative consumer survey questionnaire which was administered face-to-face at key markets around Vientiane capital.

Six focus group discussions, involving 46 participants took place at the Faculty of Agriculture, National University of Laos, in May 2022. The main reason for having focus group discussion sessions was to better understand the general food consumption behaviour and learn more about organic food knowledge and consumption behaviour. The results from these focus group discussions were then used to finalise the face-to-face survey questionnaire. For the survey implementation, a recruitment post was created (see Appendix 2). Staff and students at the faculty of agriculture were reached out in the survey.

A focus group discussion script (see Appendix 3) was developed to guide the discussion. It covers key questions pertaining to household food shopping behaviour, knowledge about organic food, organic food purchasing behaviour, trust issues, trust in different organic food certification bodies, and awareness of various organic food logos. Questions were structured in a logical manner to ensure a smooth flow of conversation. Alternative questions were listed in case participants required further clarification regarding the main questions proposed. In order to gain a comprehensive understanding of consumers' behaviour, several product logos were presented to assess consumers' awareness (see Appendix 4) and socio-demographic questionnaire (see Appendix 5) have also been developed to collected supporting data such as logo awareness, gender, age, education level, marital status, household composition, employment status, income and income sources.

The face-to-face consumer survey was conducted from August-November 2022. Prior to the commencement of the survey, the questionnaire was finalised, translated, and tested with 22 consumers. The questionnaire consisted of seven sections, including food purchasing behaviour, organic food knowledge and consumption, attitude/subjective norms/perceived behavioural control, intention to purchase and willingness to pay, product differentiation and trust and social-demographic information (see Appendix 7). Participants were recruited based on age (18 years old and over), role in household food shopping and living status in Vientiane capital. Four enumerators were trained to familiarise themselves with the questionnaire content prior to the conduct of the survey.

Consumers were interviewed at the key wet markets located in Venetian capital (e.g., Talad Lao, Dong Dok market, ITEC organic market). A recruitment post was also created (see Appendix 8) and posted on social media platforms (Facebook and WhatsApp) to increase the response rate. At the end of the survey, 352 questionnaires were received, however, after the quality check and further follow ups were performed, a total of 272 questionnaires were validated and thus used for the data analysis. Prior to the organization of the focus group discussions and face-to-face consumer survey, the ethics approval was granted from the University of Adelaide Human Research Committee (H-2021-070).

1.4. Thesis structure

This thesis contains five chapters, and the remaining chapters are as follows:

Chapter two presents an analysis of data from a sample of 1,001 consumers, aimed at investigating the relationship between consumers' subjective and objective knowledge, attitudes and purchase intention for certified organic foods. The study employed regression methods to examine the association among the key variables. Empirical findings indicated that there was a positive association between subjective and objective knowledge, attitudes, and purchase intention for certified organic foods. To further investigate the differences in knowledge between buyers and non-buyers, independent t-tests were performed, and the results showed that buyers had significantly higher knowledge compared to non-buyers. Moreover, a Chi-square test was performed to compare the percentage of correct answers regarding certified organic food knowledge between buyers and non-buyers. Results indicated that buyers had a higher percentage of correct answers compare to non-buyers. These findings confirm the importance of improving consumers' actual knowledge of organic food production, which could potentially drive their purchase.

Chapter three explores the association between consumers' knowledge and trust in different organic food labels, presents the results from the 1,001 Australian consumers, but this time the research attention has been paid to the association between consumers' knowledge and trust for different organic food labels, and purchase intention will also be discussed in this chapter. Ordinary Least Squares (OLS) regression and the independent t-tests were employed for the data analysis. Results revealed that both subjective and scientific knowledge were correlated with trust in all three categories of organic food labels assessed. However, positively correlation was found for subjective knowledge, while negative association was found for scientific knowledge. Positive correlations were also found between general food production knowledge, and trust in claim and international labels, while certified organic food knowledge was positively correlated with trust in claim and domestic labels. In addition, consumers with higher subjective and objective knowledge expressed higher level of trust in all organic food labels examined. These findings provide valuable insights for all stakeholders, offering comprehensive perspectives from both scholarly and practical standpoints.

Chapter four exploring the heterogeneity in organic food purchasing behaviour within both emerging and mature organic food markets. Drawing upon data from 1,001 Australian consumers, and 272 Lao consumers, this chapter provides a comparative analysis focusing on the impact of altruistic and egoistic values toward organic food on both organic food awareness and purchasing behaviour. Addressing the gap in existing comparative studies, it contrasts the organic food purchasing behaviour

of consumers in mature and emerging markets. Results suggested the significance of egoistic values in the emerging market of Laos, where they were found to significantly influenced both organic food awareness and purchasing behaviour. Conversely, no association was observed between altruistic values and organic food behaviour in Laos. In the mature market of Australia, altruistic values were positively associated with organic food awareness, yet exhibited a negative correlation with purchasing behaviour. Meanwhile, egoistic values were positively correlated with organic food awareness in Australia but showed no significant association with purchasing behaviour.

Chapter five finally provides a summary of findings in general, where possible generate practical implications for the industry and/or related government agencies currently working on improving organic food market.

Chapter 2: Statement of Authorship

Title of Paper	Exploring the influence of consumers' knowledge on attitude and purchase intention for organic foods: A case study from Australian market
Publication Status	Submitted for publication
Publication Details	Submitted to the British Food Journal

Principal Author

Name of Principal Author (Candidate)	Chitpasong Kousonsavath		
Contribution to the Paper	Conceptualization, Methodology, Formal analysis, Writing-reviewing and editing		
Overall percentage (%)	60%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	28/06/2024

Co-Authors Contributions

By signing the Statement of Authorship, each author certifies that:

i. the candidate' s stated contribution to the publication is accurate (as detailed above);
ii. permission is granted for the candidate in include the publication in the thesis; and
iii. the sum of all co-author contribution is equal to 100% less the candidate' s stated contribution.

Name of the Co-Author	Dr. Lenka Malek		
Contribution to the paper	Conceptualization, Methodology, Resources, Writing-reviewing and editing, Supervision.		
Signature		Date	28/06/2024

Name of the Co-Author	Professor. Wendy J. Umberger		
Contribution to the paper	Conceptualization, Methodology, Writing-reviewing and editing, Supervision, Funding acquisition.		
Signature		Date	28/06/2024

Name of the Co-Author	Dr. Di Zeng		
Contribution to the paper	Writing-reviewing and editing, Supervision		
Signature		Date	28/06/2024

Chapter 2: Exploring the influence of consumers' knowledge on attitude and purchase intention for organic foods: A case study from Australia market.

Chitpasong Kousonsavath[a,*], Lenka Malek[b], Wendy J. Umberger[c,d], Di Zeng[a]

[a]*Centre for Global Food and Resources, School of Economics and Public Policy, The University of Adelaide, Level 6 Nexus 10 Tower, 10 Pulteney Street, SA, 5005, Australia*
[b]*School of Agriculture, Food and Wine, The University of Adelaide, Waite Campus, PMB 1, Glen Osmond, SA, 5064, Australia*
[c]*Wine Innovation Central Building Level 1, Waite Campus, Urrbrae, SA 5064, Australia*
[d]*School of Agriculture, Food and Ecosystem Sciences, The University of Melbourne, Grattan Street, Parkville, Victoria, 3010, Australia*

Abstract

Organic foods are widely recognized for their health benefits and positive environmental impact and are often considered a better alternative for promoting sustainable consumption. While potential drivers of and barriers towards organic food consumption have been explored, there has been limited exploration of consumers' understanding of organic food production and how this knowledge translates into purchase intention. This study aims to investigate consumers' subjective and objective knowledge of certified organic food and its association with attitude and stated purchase intention. An online survey of 1,001 Australian consumers in 2021, showed that Australians generally have higher knowledge of organic food inspection and certification processes, but are less knowledgeable regarding production-related aspects. Econometric analysis reveals that subjective knowledge is strongly and positively associated with stated purchase intention, but only weakly related to attitude. Further, objective knowledge was found to be higher among organic food buyers compared to non-buyers.

Keywords: certified organic foods, subjective knowledge, objective knowledge, attitudes, stated purchase intention.

*Corresponding author at: Centre for Global Food and Resources, School of Economics and Public Policy, The University of Adelaide, Level 6 Nexus Tower, 10 Pulteney Street, SA, 5005, Australia.
E-mail address: Chitpasong.kousonsavath@adelaide.edu.au (C. Kousonsavath)

2.1. Introduction

Organic food is generally perceived as being produced in an environmentally friendly way such that it is free from pesticides and chemicals, and the farming practices are safe for the environment, human health and animal welfare (Aitken et al., 2020; Li et al., 2021; Toups, 2013). In the past decades, organic food production practices have becoming increasingly popular throughout the world (Aitken et al., 2020). More than 190 countries have organic production activities, and the global market values more than 120 billion euros in 2020 (Willer et al., 2022). Meanwhile, researchers have been trying to identify and understand factors potentially influencing consumers' organic food purchasing and consuming behaviour (Anisimova, 2016; Asif et al., 2018; Basha & Lal, 2019; Ditlevsen et al., 2020). Examined factors have included personal values (Ditlevsen et al., 2020), perceived benefits health, nutrition, environmental impacts, animal welfare (Massey et al., 2018; Padel & Foster, 2005), consumption barriers (Bryla, 2016), and past consumption experience (Koklic et al., 2019). However, much less is understood regarding how much consumers actually know about organic food production, and whether or not such information translates into behaviour. Addressing these unanswered research questions is important as a lack of or incorrect knowledge about organic certification and labelling systems may contribute to low confidence in this production system and may ultimately impede purchase of organic products (Aertsens et al., 2011; Han, 2019; Padel & Foster, 2005). On the other hand, increasing consumers' awareness about organic food production and certification systems may be an effective way to boost organic food demand (Chang & Zepeda, 2005).

Certain factors related to organic food production and certification systems may make it challenging for consumers to have an accurate understanding. First, there is no simple definition of organic food that could be easily understood by consumers. The complexity of 'organic' definition (as certified) is difficult to absorb by typical consumers (Stanton & Cook, 2019). Second, credence attributes[†] (e.g., food products labelled as organic, local food, animal welfare) cannot be easily verified by consumers (Dahlhausen et al., 2018; Lee & Hwang, 2016; Stanton & Cook, 2019). This is simply because consumers do not have sufficient technical expertise to evaluate these attributes (Fernqvist & Ekelund, 2014; Ford et al., 1988). Third, information asymmetry between producers and consumers further makes it harder for average consumers to justify product performance (Giannakas, 2002). The credence attribute of organic food and information asymmetry together make signalling (label/logo) of vital importance (Rousseau & Vranken, 2013). However, without proper understanding of the true meaning

[†] Credence goods are those with attributes that consumers cannot ascertain even after purchase or consumption of the product.

of ‘organic’ or ‘certified organic’, the signalling may be less useful. As Stanton and Cook (2019) has pointed out, an organic label is only useful when it is noticed, understood, and trusted. Hence, it is meaningful to rigorously assess consumers knowledge regarding certified organic food, preferably in a setting where the organic food industry and certification system are well established so that consumers are sufficiently exposed to them.

Australia is a leading organic food producer in the world. More than 35.7 million hectares of agricultural land are certified organic, making it the largest holder of agricultural land under certified organic management (Willer et al., 2022). Australian has adopted organic production system as early as in 1920s (Paull, 2014). In 2020, the domestic and export retail sales of organic product values more than 2 billion Australian dollars (Willer et al., 2022). Recently studies show that Australians spend roughly AUD$ 60 per person per year on organic food products (Sultan et al., 2020), and over six in ten shoppers have previously purchased organic fruit and vegetables at least once in the past twelve months (Jacqueline et al., 2019). Among these shoppers, 55% of consumers are looking to buy organic foods with organic certification and 51% are aware of the Australian Organic ‘Bud’ logo. On the other hand, domestic producers can use the term ‘organic’ without going through rigorous organic food production standards and audits, and the only way consumers are able to verify if a food is truly organic is through the product labelling mechanism, and those with limited knowledge could be prevented from purchasing such food products (Ford, 2020). A relatively knowledgeable consumer group and a well-functioning certification system jointly make Australia an ideal setting to investigate consumers’ knowledge about organic food and certification.

Previous Australian studies have focused on examining organic food consumption motivations (Lockie et al., 2002); socio-demographic characteristics and attitudes towards food safety (Lockie et al., 2004); consumer perceptions and demand for organic foods (Chang & Zepeda, 2005); segmentation of organic food consumers (Sultan et al., 2018); and effect of perceived communication, satisfaction and trust (Sultan et al., 2020). However, organic food knowledge among Australian consumers is not well explored to inform the industry in strategic decision making. The lack of understanding about organic food certification has been observed amongst Australian consumers (Lockie et al., 2002). While the importance of organic certification has been acknowledged among consumers (Ford, 2020), little is understood about consumers’ knowledge regarding requirements for growers or the certification process.

Consumers’ product knowledge plays an important role in consumer information search and information processing behaviour (Klerck & Sweeney, 2007; Park et al., 1994; Raju et al., 1995).

Studies have been implemented on genetically modified foods (Fernbach et al., 2019; Klerck & Sweeney, 2007; Zhang & Liu, 2015), pro-environmental behaviour (Choi & Johnson, 2019; Han, 2019; Liu et al., 2018), product evaluation and purchase intention (Lee & Lee, 2009) and willingness to pay (Connor et al., 2022). Regarding organic food knowledge, higher knowledge can be positively associated with attitudes and consumption (Aertsens et al., 2011; Gracia & Magistris, 2007; Padel & Foster, 2005). Knowledge and education may factor into the behaviour of pro-environmental consumers (Liu et al., 2018). In the United States, the lack of knowledge and awareness about organic foods has been identified as a reason why consumers do not buy organic food (Aertsens et al., 2011). These studies are however limited except for a few (Aertsens et al., 2011; Pieniak, 2010), where empirical findings may still require further verification due to limitations regarding sample size and representativeness in search of external validity.

This article breaks down consumers' objective knowledge into science literacy, general food production knowledge and knowledge about organic food production and certification. It then empirically assesses the potential links among knowledge (both subjective and objective), attitudes, and purchasing intention. Using a large nationally representative consumer survey in Australia, regression modelling is used to establish and disentangle the relationships. This article is one of the first studies implemented with fine-scale knowledge classification, and a first of its kind in the context of Australia.

The rest of the article proceeds as follows. Section Two provides a brief literature review regarding consumer behaviour towards organic food consumption. Section Three describes data and empirical methods. Section four presents empirical findings, and Section Five concludes with implications to stakeholders in the organic food industry.

2.2. Theoretical framework and hypothesis development

To explore possible associations among consumers' knowledge, attitudes, and purchase intention, it is important to understand how knowledge is measured and how it could potentially affect behaviour. Consumers' knowledge has been classified into three different categories, objective knowledge, subjective knowledge and experience (Brucks, 1985). Objective knowledge refers to what an individual actually knows (Brucks, 1985; Han, 2019). This type of knowledge increases his/her ability to filter out irrelevant information during their decision-making process, objectively evaluate and choose a product aligned with their preferences (Selnes & Gronhaug, 1986). Subjective knowledge, also known as self-perceived-knowledge (Raju et al., 1995) or self-assessed knowledge (Park et al.,

1994), reflects an individual's perception of their knowledge (Brucks, 1985; Han, 2019). It reflects their confidence in their knowledge and their perceived level of understanding (Brucks, 1985).

Conceptually, subjective and objective knowledge are two distinct types of knowledge (Brucks, 1985), and both types of knowledge may have significant impacts on the consumer decision-making process (Flynn & Goldsmith, 1999; Raju et al., 1995), information processing and search behaviour (Klerck & Sweeney, 2007; Utkarsh et al., 2019). This impact may manifest in the form of extrinsic factors, such as price, warranty, or intrinsic factors, such as performance-related attributes of a product (Raju et al., 1995). Objective knowledge is often influenced by the information provided at the point of purchase, whereas subjective knowledge is often related to a consumer's personal experience with the product (Park et al., 1994). In general, limited knowledge of consumers has been identified as a barrier to the consumption of organic foods (Aarset et al., 2004; Roitner-Schobesberger et al., 2008). Conversely, research has shown that increasing consumer awareness of organic foods can lead to greater consumption likelihood (Briz & Ward, 2009). There is evidence for a weak association between subjective and objective knowledge (Radecki, 1995). This is worth further testing and thus leads to the first hypothesis of the current study:

H1: *Subjective knowledge about certified organic food will be positively associated with objective knowledge.*

Researchers have previously investigated the association between consumers' knowledge and organic food consumption (Aertsens et al., 2011; Lu et al., 2017; Pieniak, 2010; Stanton & Cook, 2019; Zhang & Liu, 2015), which is often found to be positive (Lu et al., 2017; Stanton & Cook, 2019; Zhang & Liu, 2015). One mechanism is that consumers' knowledge can influence their attitudes towards organic food (Aertsens et al., 2011; Fatha & Ayoubi, 2021; Pieniak, 2010). Positive attitudes towards organic food have been found to be positively correlated with both subjective and objective knowledge, which in turn drives purchasing behaviour (Aertsens et al., 2011; de Magistris & Gracia, 2008; Nguyen et al., 2019).

There are mixed findings regarding the relationship between consumers' knowledge and attitude towards organic food. For example, subjective knowledge has been found to be negatively correlated with attitude towards organic food, while objective knowledge may have a positive correlation (Fatha & Ayoubi, 2021). On the other hand, both subjective and objective knowledge could be positively correlated with attitudes towards organic food consumption (Aertsens et al., 2011). According to Pieniak (2010), subjective knowledge is a stronger predictor than objective knowledge for consumer

organic vegetable choice. These mixed findings suggest the need for further exploration to better understand the relationship between knowledge and attitudes towards organic food.

H2: *Both subjective and objective knowledge are positively associated with consumers' attitudes towards certified organic food and later to their purchase intention.*

Based on the literature reviewed and hypothesises developed, the conceptualized research model below was developed. This is presented in Figure 2.1. Specifically, scientific knowledge, general food production knowledge, certified organic food knowledge and subjective knowledge are all assumed to affect consumers' attitudes, which in term affect purchase intention of organic foods. Empirical analysis below looks to explore these hypothesized linkages in detail.

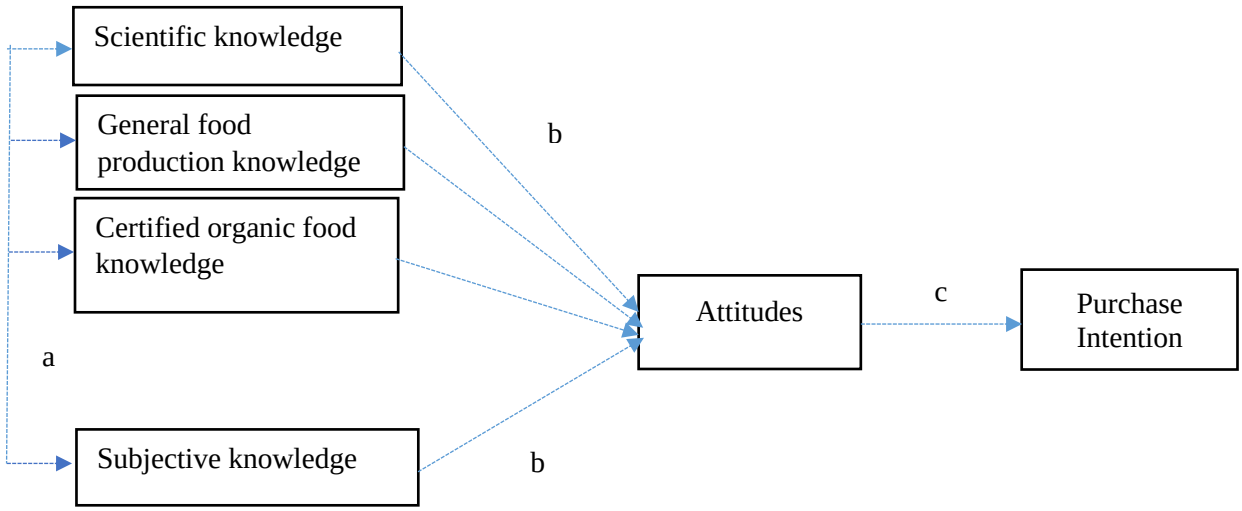


Figure 2.1. Proposed conceptual framework.

2.3. Materials and Methods

2.3.1. Participants

The online consumer survey with 1,001 Australian consumers was conducted from July to August 2021. The Dynata™, an online panel provider was responsible for the respondent recruitments following multiple criteria including age (18 and over), role of household food shopping (solely or join responsible for household food shopping), gender balance (male 49%, female 51%), geographical locations (regional and metropolitan), and income range (≤$25,000 and over). The national representativeness is ensured in terms of age, gender, location (metropolitan, and distribution across Australian states/territories). The data quality through piloting was assessed prior to the actual online survey was launched. The ethics approval has been granted from the University of Adelaide Human Research Ethics Committee (H-2018-173).

2.3.2. Questionnaire

The questionnaire contained several sections, including overall beliefs about food labelled with certified organic logo, consumers' knowledge, awareness, past organic food purchasing behaviour as well as attitudes and stated purchase intention for certified organic food. The socio-demographic data were also collected as a part of the bigger survey questionnaire of the Food Insights and Experience survey project.

Prior to assessment of participants' knowledge, attitudes and purchase intention, their organic food logo awareness was assessed (the Bud logo was used as the most common label on organic food products sold in Australia). The participants were asked whether they had previously seen the Bud logo on a food product. They were further asked if they had previously purchased a food product with the Bud logo, which could help predict their purchase intention in the future.

2.3.2.1. Measurement of subjective knowledge

Subjective knowledge has been measured in various ways in previous studies. Flynn and Goldsmith (1999) considered multiple constructs against different fashion aspects, such as fashion opinion leadership, fashion innovativeness, and enduring involvement with fashion. Fernbach et al., (2019) instead adopted a single-item rating scale, which is arguably more appropriate, as the study was only measuring genetic modified foods knowledge. The current study also assesses certified organic food knowledge; thus, a single-item rating scale was considered appropriate. A 7-point Likert scale (1= I know nothing at all, 7= I know a great deal) was used to collect answers for the following question: How would you rate your understanding of 'certified organic' food?

2.3.2.2. Measurement of objective knowledge

This study breaks down objective knowledge into three subcategories: scientific, general food production and certified organic food knowledge. Previous studies have mainly focussed on the production aspect yet largely overlooked the inspection and certification process which is critical to organic food production. To address this gap, measurement items that covered the inspection and certification process of certified organic foods were included.

Scientific knowledge

The consumers' scientific knowledge contains ten True/False/Don't know statements adopted from the previous literature assessing science literacy (Fernbach et al., 2019). The participants were asked

to allocate their answer against each construct (e.g., The centre of the earth is very hot, all insects have eight legs). A score of one was allocated to respondents who answered 'correctly, and a score of zero was allocated for respondents who answered, 'incorrectly or indicated 'Don't know'. Thus, the total scientific knowledge score was calculated by summing all scores, with a minimum possible score of 0 and maximum possible score of 10.

General food production knowledge

Seven statements adopted from the National Standard for Organic and Bio-Dynamic Produce-Edition 3.7 (2016 version) were used to assess general food production knowledge. These statements related to food production regulation, apply to most food available in Australia. The participants were asked to allocate Yes/No/Don't know to each statement (e.g., The use of genetic engineering methods is permitted). A score of one was assigned to each correct response and zero to an incorrect or 'don't know' response. The total score for the general food production knowledge was the sum over each statement, therefore, the lowest score is 0 and highest score is 7.

Certified organic food knowledge

Twelve statements designed to explore how much respondents actually understand about certified organic food production, processing and certification system. The statements used were taken from the National Standard for Organic and Bio-Dynamic Produce-Edition 3.7 (last updated September 2016). Again, respondents allocated Yes/No/Don't know to each statement (e.g., The use of pesticides produced from synthetic chemicals is permitted). Similarly, a score of one was assigned to each correct response and zero to an incorrect or 'don't know' response. The total certified organic food knowledge was calculated by summing scores; therefore, the lowest score is 0 and the highest score is 12. The total objective knowledge score was summed up from the total score of each objective knowledge component measured, ranging from 0 to 29.

2.3.2.3. Measurement of attitudes and stated purchase intention.

Attitudes

A single 'stem' construct was proposed to the participants (e.g., In general, purchasing organic food product is…), and four bi-polar 'attitude scales' were used (good-bad, harmful-beneficial, useful-worthless, pleasant-unpleasant) to measure their attitudes towards certified organic foods. Each scale has 7 progressive attitude scales, where one represents the most negative attitude and seven represents the most positive attitude. The consumers' attitude score was calculated by summing scores from all four constructs, leading to the lowest score of 4 and highest score 28, and then dividing by the number of measurement constructs (4 constructs). Therefore, the mean attitude score of respondents is ranked

between 1 to 7, where 1 indicates extremely negative and 7 is extremely positive, and 4 is a neutral attitude.

Purchase intention.

A 7-point Likert scale was used to measure stated purchase intentions for buying certified organic foods (1= Strongly disagree and 7= Strongly agree), and three statements were used in this study (e.g., I expect to buy organic food in the future, I want to buy organic food in the future, I intend to buy organic food in the future). The intention score is calculated by summing scores from the three statements, and then dividing by the number of statements. Thus, the total purchase intention score will be from 1 to 7.

2.3.3. Statistical analyses

Based on the conceptualized research model, the survey data were analysed in SPSS (version 27), with the level of the confidence interval was set at 0.05. The reliability check (Cronbach's Alpha value) for questions with multiple statements were performed. Overall, the Cronbach's Alpha value is ranging from 0.74 - 0.96, suggested high level of internal consistency.

2.4. Results and Discussion

2.4.1. Participant characteristics

A total of 1,001 respondents completed the online consumer survey. Characteristics of respondents are shown in Table 2.1. Overall, 77.9% of respondents played a major role in household food shopping; 50.6% were female, with an average age of 45.3 years old; 65.9% lived in metropolitan areas (as compared to regional areas); and 33.5% had children under 18 years old living in the household. Additionally, approximately 40.9% of the respondents had completed tertiary education (bachelor's degree or postgraduate degree).

Table 2.1. Respondent's profile.

	Percentage (%)		**Percentage (%)**
Female	50.6	Children aged <18yrs in household	33.5
Age (years)		Living in metropolitan area	65.9

Mean age (SD)	*45.3 (16.5)*	**Household food shopping role**	
18-24	12.5		
25-34	20.5	I do the majority of the food	77.9
35-44	18.4	shopping.	
45-54	15.6	I share the food shopping	22.2
55-64	15.6		
≥65	17.5		
Household income (pre-tax)		**Education levels**	
≤$35,000	18.3	Secondary education‡	26.9
$35,001- $65,000	23.1	Vocational education	32.3
$65,001- $105,000	26.0	Undergraduate degree	29.1
$105,001-$165,000	20.7	Postgraduate degree	11.8
>$165,001	12.0		

Note: n=1,001

Perceptions of organic foods

Respondents' perceptions of food products with the 'Australian Certified Organic' food label, are shown in Figure 2.2. Respondents most commonly believed that 'Australian Certified Organic' foods were 'free of pesticides/chemicals' (36%), 'a healthier choice' (27%), followed by 'better for the environment' (20%), and 'produced in a more sustainable manner' (18%).

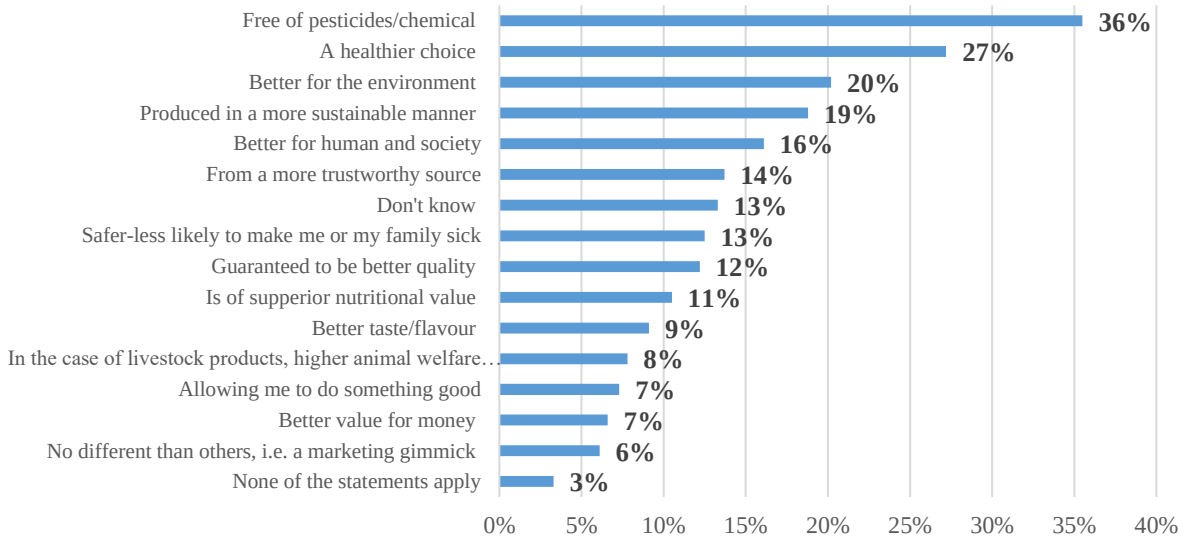


Figure 2.2. Perceptions of food product with 'Australian Certified Organic' food label (n=1,001).

‡ Education information: Secondary education=below year 10, 10, 11 and 12, Vocational education= Certificate III or IV, Diploma level or Advanced diploma, Undergraduate= bachelor degree, graduate certificate or graduate diploma, Post-graduate degree= master degree and higher.

Objective knowledge

A summary of the mean total objective knowledge score and its respective categories of objective knowledge are shown in Table 2.2. On average, consumers had a relatively neutral level of total objective knowledge and all subcategories of objective knowledge.

Table 2.2. Mean score of objective knowledge.

Objective knowledge	Mean	SD	Min	Max
Total objective knowledge	15.7	6.42	0	29
Total scientific knowledge	6.5	2.35	0	10
Total general food production knowledge	3.2	2.26	0	7
Total certified organic food knowledge	5.9	3.59	0	12

Note: n=1,001

Regarding certified organic food knowledge, the highest percentage of correct answers (*n=1,001*) were received for questions related to organic food certification process (64.2%), seeds and planting materials (64.1%), and the organic food auditing process (59.9%). Surprisingly, only 48.3% of respondents correctly answered the question about the use of synthetic chemicals in the organic food production system (see Appendix B). This is interesting, given the core characteristics of organic foods are being '*free of pesticides/chemicals*, and assumed be well perceived by majority of consumers (Smith & Paladino, 2010). It therefore should be different from the organic certification process, which was found lacking of consumer understanding (Lockie et al., 2002). Chi-square test results show statistically significant differences in the percentage of correct answer of certified organic food knowledge between buyers and non-buyers (see Appendix C).

Results of the multiple linear regression estimation that identifies factors associated with the total objective knowledge score (dependent variable) are shown in Table 2.3. Factors statistically significantly and positively associated with the total objective knowledge include attitude towards certified organic food, BUD logo awareness, age, gender (1=Male; 0=Female) and education level.

Our results differed from previous literature regarding findings for age, gender, and education level. Aertsens et al., (2011) found no association for these variables. Results regarding the role of attitude was similar, but interpretation of association should be made with caution (Aertsens et al., 2011), as the objective knowledge can have an impact on attitude (Fatha & Ayoubi, 2021). On the other hand, no statistically significant association were found for household income, living in metropolitan area, and past organic food purchasing behaviour. Similar findings were also found for income and living area (Aertsens et al., 2011).

Table 2.3. Regression estimation of factor associations with total objective knowledge score.

	Coefficient	Std. Error	Sig.	R^2
Attitude	.239	.160	.000	.205
Bud logo awareness	.193	.467	.000	
Past organic food purchasing behaviour	.047	.538	.201	
Age	.204	.012	.000	
Gender (1=Male; 0=Female)	.133	.380	.000	
Education level	.128	.100	.000	
Income	.030	.149	.340	
Living in metropolitan area	-.008	.409	.781	

Note: n=1,001

Subjective knowledge

Overall, consumers indicated a neutral level of subjective knowledge regarding certified organic food, with a mean score of 4 out of seven (SD = 1.47). In addition, 41.9% of respondents rated their subjective knowledge at 5, 6 or 7, indicating a relatively high perceived understanding about certified organic food.

Results of the multiple linear regression conducted to investigate factors associated with subjective knowledge score (the dependent variable) are shown in Table 2.4. The results indicate that attitudes towards certified organic food, objective knowledge (Scientific knowledge (-), General food production knowledge, Certified organic food knowledge), past organic food purchasing behaviour, age (-), gender (1=Male; 0= Female) and education levels were all significantly associated with subjective knowledge. However, income, metropolitan residence and Bud logo awareness were not found to be associated with subjective knowledge.

Of the three types of objective knowledge assessed, scientific knowledge was found to have a negative association with subjective knowledge. The fact that scientific knowledge constructs were quite general and not at all related to the certified organic food knowledge may be the reason explaining the negative association.

Table 2.4. Determinants of subjective knowledge scores.

	Coefficient	Std. Error	Sig.	R^2
Attitude	.090	.038	.003	.232
Scientific knowledge	-.081	.019	.009	
General food production knowledge	.131	.024	.000	
Certified organic food knowledge	.186	.016	.000	
Past organic food purchasing behaviour	.146	.122	.000	
Gender (1=Male; 0=Female)	.065	.088	.028	

Education levels	.166	.023	.000
Age	-.123	.003	.000
Income	.021	.034	.488
Living in metropolitan area	-.042	.093	.156
Bud logo awareness	.053	.107	.143

Note: n=1,001

Subjective and objective knowledge among buyers and non-buyers

Subjective knowledge and objective knowledge scores of previous buyers and non-buyers of organic foods are compared in Table 2.5. Both subjective knowledge and objective knowledge differed significantly between the two groups, with buyers scoring higher on all knowledge variables including the individual knowledge variables (scientific knowledge, general food production knowledge, and certified organic food knowledge) that comprise the 'total objective knowledge' score. In addition, buyers demonstrated a more positive attitude towards certified organic food and higher purchase intention compared to non-buyers.

Table 2.5. Subjective and objective knowledge among buyers and non-buyers.

	Buyers (n=258)		**Non-buyers (n=743)**	
	Mean	SD	Mean	SD
Subjective knowledge	4.7	1.22	3.8	1.48
Scientific knowledge	7.0	2.00	6.3	2.43
General food production knowledge	3.8	2.09	3.0	2.28
Certified organic food knowledge	7.2	3.25	5.5	3.59
Attitude	5.6	1.10	4.9	1.16
Purchase intention	5.3	1.22	4.1	1.53

Note: the independent T-Test confirms the groups are significantly differ among each type of knowledge, attitude, and purchase intention ($p < 0.001$).

(a)Association between subjective and objective knowledge

A multiple linear regression analysis was conducted to investigate the association between subjective and objective knowledge (Table 2.6). The results indicated a significant association, but the correlation was relatively weak. The weak association was consistent with previous research (Ellen, 1994; Radecki, 1995). The relatively weak association between subjective and objective knowledge indicated that, what they think they know is not always match with what they actually know (Pieniak, 2010).

Further analysis revealed that the degree of correlation varied depending on the type of objective knowledge assessed. Specifically, a negative correlation was observed for scientific knowledge, while a positive correlation was found for general food production knowledge, and certified organic food knowledge. The negative association between scientific knowledge and subjective knowledge may be

due to the fact that scientific knowledge measurement constructs were failed to directly related to context of certified organic food knowledge (Radecki, 1995). The negative correlation was previously acknowledged (Fernbach et al., 2019).

Table 2.6. Association between subjective and objective knowledge.

	Coefficient	Std. Error	Sig.	R^2
Scientific knowledge	-.082	.019	.008	.135
General food production knowledge	.177	.025	.000	
Certified organic food knowledge	.247	.016	.000	

Note: n=1,001

(b)Attitude

The survey respondents had a generally positive attitude towards certified organic food, with 71.9% of the sample had an attitude mean score falling in the range of 5 to 7. Among the three types of objective knowledge examined, certified organic food knowledge was found to be positively correlated with attitude, while a negative correlation was found for scientific knowledge, and no association was found for general food production knowledge. A positive association was further found for the subjective knowledge (Table 2.7).

The negative association of the scientific knowledge may again reflect the generalization of scientific knowledge constructs assessed. No relationship between scientific knowledge and attitude was also found for genetically modified food, while biology and genetics knowledge were more associated with attitude (Allum et al., 2008).

Past organic food purchasing behaviour was also positively associated with attitude, which confirmed the previous research findings (Koklic et al., 2019).

Some other variables such as Bud logo awareness, living in metropolitan area, education levels, household income and having children under 18 years old living in the household found to have no association with attitude towards certified organic food.

Table 2.7. Factors influencing attitude towards certified organic foods.

	Coefficient	Std. Error	Sig.	R^2
Subjective knowledge	.092	.026	.005	.188
Scientific knowledge	-.072	.016	.025	
General food production knowledge	.042	.020	.276	
Certified organic food knowledge	.262	.013	.000	
Past organic food purchasing behaviour	.147	.101	.000	
Bud logo awareness	.041	.089	.277	
Age	-.080	.002	.013	

Income	-.001	.009	.987
Education levels	.014	.019	.660
Gender (1=Male; 0=Female)	.088	.071	.004
Living in metropolitan area	.002	.011	.944
Children age <18yrs in household	.050	.037	.100

Note: n=1,001

(c)Purchase intention

The results of the study showed that, subjective knowledge, attitude and past organic food consumption behaviour were all positively correlated with purchase intention (Table 2.8). Among three different objective knowledge variables tested, only scientific knowledge was found to be negatively associated with purchase intention.

The significant association between subjective knowledge and purchase intention was previously highlighted. Subjective knowledge was suggested to be more important factor in predicting purchase-related behaviour (Pieniak, 2010; Selnes & Gronhaug, 1986), as well as increasing the probability of buying and becoming a regular organic food buyer (Gracia & de Magistris, 2008). Our finding was different from literature investigating genetically modified foods (Klerck & Sweeney, 2007), which may derive from opposite risk perception between organic and genetically modified foods. Objective knowledge, on the other hand, was found to be more indirectly contributed to certified organic food purchasing behaviour by increasing subjective knowledge, and promoting a more positive attitude (Pieniak, 2010).

Table 2.8. Factors influencing purchase intention of organic foods.

	Coefficient	**Std. Error**	**Sig.**	**R^2**
Attitude	.528	.031	.000	.563
Subjective knowledge	.296	.025	.000	
Scientific knowledge	-.051	.016	.029	
General food production knowledge	-.007	.019	.802	
Certified organic food knowledge	.008	.013	.786	
Past organic food purchasing behaviour	.153	.097	.000	
Bud logo awareness	-.048	.086	.080	
Age	-.110	.002	.000	
Income	.006	.008	.804	
Education levels	.060	.018	.012	
Gender (1=Male; 0=Female)	-.035	.068	.114	
Living in metropolitan area	.007	.011	.759	
Children age <18yrs in household	-.019	.035	.394	

Note: n=1,001

The past organic food consumption behaviour has played a meaningful role here. Our results confirm the finding that the past organic food consumption behaviour played an important role in predicting the future organic food buying intention (Kidwell & Jewell, 2008; Koklic et al., 2019).

In addition to the initial data analysis, the subsample groups analysis was also further analysed for some socio-demographic factors. Results indicated that, the younger consumer group had a better subjective knowledge, while the older group have higher scientific, and certified organic food knowledge, and similar for general food production knowledge. The younger group was also found to have a more positive attitude towards certified organic foods compared to those older age, with an average attitude score of 5.2 and 5 respectively (Appendix D: Table 1).

In term of gender, males were found to have higher knowledge in all knowledge categories compared to females, however, a statistically significant difference was found for scientific and certified organic food knowledge. Our finding was contradicted with previous research, where women were found to have higher objective knowledge (Ammann et al., 2023; Fatha & Ayoubi, 2021). Female participants found to have a more positive attitude towards certified organic food compared to males, with the mean attitude score of 5.2 and 5 respectively (Appendix D: Table 2).

2.5. Conclusions

This study empirically examined the relationship between consumers' subjective and objective knowledge, attitude, and purchase intention for certified organic foods. The multiple linear regression was used to address the proposed hypothesises. The proposed conceptual model was tested through regression modelling to identify possible factors influencing organic food purchase intention. Subjective knowledge, objective knowledge (*scientific knowledge*), attitude towards certified organic food have explained 56% of the variance in certified organic food purchase intention.

The consumers' subjective and objective knowledge influenced organic food purchasing behaviour differently. While subjective knowledge was directly associated with purchase intention, objective knowledge indirectly influenced purchase intention by increasing a more positive attitude towards certified organic foods, which further translates into higher purchase intention. Our findings also revealed that organic food buyers were more knowledgeable compared to non-buyers. Therefore, a greater attention from the industry and policy makers hence should also be paid for improving overall objective knowledge among the public to better their relevant understanding. The information

campaign could incorporate information on the use of the synthetic chemicals which currently received lower percentage.

As an exploratory study in its regard, this research faces number of limitations. Firstly, this study did not consider product specification. There are various types of certified organic food products available in the market, and consumers' knowledge may vary depending on type of product. Secondly, this study context is within Australia, and more empirical investigations are needed in search of external validity. Moreover, consumers' knowledge may vary depending on the maturity of the market (e.g., matured versus emerging market), and the different ways of promoting organic food products. Despite these, our findings have provided improved understanding of the role of consumers' knowledge in the organic food consumption behaviour. The finding has responded to the pointed made by (Ellen, 1994) to whether or not those who have reported high perceived knowledge would actually executed their behaviour, and in our case they do make a better good product selection choice.

Acknowledgements

The authors would like to acknowledge the financial supported for the data collection process from the Food Insights and Experiences Survey (H-2018-173) project funded by the Centre for Global Food and Resources, the University of Adelaide.

Data Availability Statement

The data will be made available up on the request.

Author Contributions

Chitpasong Kousonsavath: Conceptualization, Methodology, Investigation, Formal analysis, Writing-original draft, Writing-reviewing and editing; **Lenka Malek**: Conceptualization, Methodology, Resources, Writing-reviewing and editing, Supervision; **Wendy J. Umberger**: Conceptualization, Methodology, Writing-reviewing and editing, Supervision, Funding acquisition; **Di Zeng**: Writing-review and editing, Supervision.

Declaration of interest:

The authors would like to declare that there are no known financial or personal conflict of interest.

Declaration of Generative AI and AI-Assistant Technologies in the Writing Process

During the preparation of this work, the authors used ChatGPT in order to help improve readability. After using this tool, the authors have reviewed and edited the content as needed and take full responsibility for the content of publication.

2.6. Appendix

Appendix A: Pearson correlation of key measurement variables.

Constructs	Mean (SD)	1	2	3	4	5	6
1.Subjective knowledge	4.0(1.47)						
2.Total objective knowledge	15.7(6.42)	.312**					
3.Science literacy	6.5(2.35)	.029	.604**				
4.General food production knowledge	3.2(2.26)	.313**	.814**	.276**			
5.'Certified' organic food knowledge	5.9(3.59)	.340**	.879**	.251**	.643**		
6.Attitude	5.5(1.19)	.260**	.272**	-.009	.246**	.336**	
7.Purchase intention	4.4(1.55)	.492**	.222**	-.051	.231**	.285**	.649**

Note: n=1,001, (*p<.05, **p<.01)

Appendix B: Measurement items for key variables assessed.

Items measured	Mean	Min	Max
Subjective knowledge			
How would you rate your understanding of "certified organic" food?	4.07 (SD=1.479)	1	7
Objective knowledge			
Science literacy **(Cronbach's α=0.741)**	6.51 (SD=2.350)	0	10
The center of the earth is very hot			
The oxygen we breathe comes from plants			
Antibiotics kills viruses as well as bacteria			
All radioactivity is man made			
Almost all food energy for living organisms comes originally from sunlight			
All insects have eight legs			
The earth orbits the sun			
The continents have been moving their location for millions of years and will continue to move			
Lasers work by focusing sound waves			
Electrons are smaller than atoms			
Knowledge for overall food production in Australia (Cronbach's α=0.859)	3.26 (SD=2.267)	0	7
The use of genetic engineering methods is permitted			
The use of pesticides produced from synthetic chemicals is permitted.			
The use of additives and processing aids is permitted only where their use does not compromise the authenticity of the product or detract from the overall quality of the product.			
Production methods emphasise the use of renewable resources			
Production methods emphasise the conservation of energy, soil, and water			
Production methods emphasise the recognition of livestock welfare needs			
Production methods emphasise environmental maintenance and enhancement			

"Certified organic" food knowledge (**Cronbach's α=0.925**)	5.97 (SD=3.593)	0	12
The use of genetic engineering methods is permitted			
The use of pesticides produced from synthetic chemicals is permitted.			
The use of additives and processing aids is permitted only where their use does not compromise the authenticity of the product, or detract from the overall quality of the product.			
Production methods emphasise the use of renewable resources			
Production methods emphasise the conservation of energy, soil, and water			
Production methods emphasise the recognition of livestock welfare needs			
Production methods emphasise environmental maintenance and enhancement			
Certified organic farmers, processors, transporters and retailers MUST undergo auditing and verifying processes by the approved organic certifier every 12 months.			
Certified organic plants must be grown from organic seed or organic plant materials.			
Certified organic food, as far as possible, excludes unnecessary packaging.			
Certified organic food packaging, as far as possible, incorporates recycled and biodegradable materials.			
Any person who produces or markets, certified organic food products MUST be certified for the activity through an approved certifying organisation.			
Attitude **(Cronbach's α= 0.841)**			
In general, purchasing organic food is…….			
Bad - Good	5.40 (SD=1.322)	1	7
Harmful – Beneficial	5.40 (SD=1.279)	1	7
Useful – Worthless	3.36 (SD=1.750)	1	7
Unpleasant – Pleasant	5.18 (SD=1.393)	1	7
Purchase intention **(Cronbach's α= 0.964)**			
I expect to buy organic food products in the future	4.45 (SD=1.594)	1	7
I want to buy organic food products in the future	4.51 (SD= 1.621)	1	7
I intend to buy organic food products in the future	4.38 (SD= 1.623)	1	7

Appendix C: Percentage of correct answer of certified organic food knowledge among buyers and non-buyers

	Answer	**Non-Buyers (*n=743*)**	**Buyers (*n=258*)**	**Chi-Square**
		% Correct answer	% Correct answer	
The use of genetic engineering methods is permitted	No	35.4	45.0	.012
The use of pesticides produced from synthetic chemicals is permitted	No	45.2	57.0	.000
The use of additives and processing aids is permitted only where their use does not compromise the authenticity of the product, or detract from the overall quality of the product	Yes	30.7	39.5	.000
Production methods emphasise the use of renewable resources	Yes	41.2	56.2	.000
Production methods emphasise the conservation of energy, soil and water	Yes	44.5	58.5	.001
Production methods emphasise the recognition of livestock welfare needs	Yes	47.6	65.9	.000
Production methods emphasise environmental maintenance and enhancement	Yes	47.0	67.1	.000
Certified organic farmers, processors, transporters and retailers **MUST** undergo auditing and verifying processes by the approved organic certifier every 12 months	Yes	55.6	72.5	.000
Certified organic plants must be grown from organic seed or organic plant materials	Yes	60.2	75.6	.000
Certified organic food packaging, as far as possible, excludes unnecessary packaging	Yes	40.9	51.2	.000
Certified organic food packaging, as far as possible, incorporates recycled and biodegradable materials	Yes	42.8	63.2	.000
Any person who produces or markets, certified organic food products **MUST** be certified for the activity through an approved certifying organisation	Yes	59.5	77.9	.000

Appendix D: Knowledge and attitude among different age groups and genders.

Table 1: Knowledge and attitude among younger and older consumer groups.

	Younger group (n= 514)		Older group (n= 487)	
	Mean	SD	Mean	SD
Subjective knowledge	4.3	1.43	3.8	1.48
Scientific knowledge	5.9	2.39	7.1	2.14
General food production knowledge	3.2	2.33	3.2	2.20
Certified organic food knowledge	5.6	3.67	6.3	3.47
Attitude	5.2	1.18	5.0	1.19

Note: Younger consumer group age 18-44, older consumer group age ≥ 45.

Table 2: Knowledge and attitude among males and females.

	Males (n= 490)		Females (n= 511)	
	Mean	SD	Mean	SD
Subjective knowledge	4.1	1.53	4.0	1.42
Scientific knowledge	7.0	2.27	5.9	2.30
General food production knowledge	3.5	2.27	3.0	2.23
Certified organic food knowledge	6.1	3.51	5.8	3.66
Attitude	5.0	1.19	5.2	1.17

Note: A statistically significant was found for scientific, general food production knowledge, and attitude ($p < 0.001$), but not for subjective knowledge ($p < 0.197$), and certified organic food knowledge ($p < 0.217$)

Chapter 3: Statement of Authorship

Title of Paper	Consumers' knowledge and trust in organic food labels
Publication Status	Unpublished and unsubmitted work presented in manuscript style
Publication Details	Preparation for submission to Appetite

Principal Author

Name of Principal Author (Candidate)	Chitpasong Kousonsavath		
Contribution to the Paper	Conceptualization, Methodology, Formal analysis, Writing-reviewing and editing		
Overall percentage (%)	60%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	28/06/2024

Co-Authors Contributions

By signing the Statement of Authorship, each author certifies that:

iv. the candidate' s stated contribution to the publication is accurate (as detailed above);
v. permission is granted for the candidate in include the publication in the thesis; and
vi. the sum of all co-author contribution is equal to 100% less the candidate' s stated contribution.

Name of the Co-Author	Dr. Lenka Malek		
Contribution to the paper	Conceptualization, Methodology, Resources, Writing-reviewing and editing, Supervision.		
Signature		Date	28/06/2024

Name of the Co-Author	Professor. Wendy J. Umberger

Contribution to the paper	Conceptualization, Methodology, Writing-reviewing and editing, Supervision, Funding acquisition.		
Signature		Date	28/06/2024

Name of the Co-Author	Dr. Di Zeng		
Contribution to the paper	Writing-reviewing and editing, Supervision		
Signature		Date	28/06/2024

Chapter **3:** Consumers' knowledge and trust in organic food labels

Chitpasong Kousonsavath[a,*], Lenka Malek[b], Wendy J. Umberger[c,d], Di Zeng[a]

[a]*Centre for Global Food and Resources, School of Economics and Public Policy, The University of Adelaide, Level 6 Nexus 10 Tower, 10 Pulteney Street, SA, 5005, Australia*
[b]*School of Agriculture, Food and Wine, The University of Adelaide, Waite Campus, PMB 1, Glen Osmond, SA, 5064, Australia*
[c]*Wine Innovation Central Building Level 1, Waite Campus, Urrbrae, SA 5064, Australia*
[d]*School of Agriculture, Food and Ecosystem Sciences, The University of Melbourne, Grattan Street, Parkville, Victoria, 3010, Australia*

Abstract

Trust is crucially importance in the marketing of products characterized by credence attributes. This paper aims to investigate the association between consumers' knowledge, trust in different organic food labels, and purchase intention for organic foods. Multiple linear regression was used to analyse data from 1,001 Australian consumers collected via an online survey in 2021. Results revealed that both subjective and sub-categories of objective knowledge (*Scientific, General food production and Certified organic food knowledge*) were correlated with trust in all organic food labels (*'claims', 'Domestic', 'International'*) assessed. However, positive correlation was found for subjective knowledge, while negative association was found for scientific knowledge. Positive correlations were also found between general food production knowledge, and trust in claim and international labels, while certified organic food knowledge was positively correlated with trust in claim and domestic labels. In addition, consumers with higher subjective and objective knowledge expressed higher level of trust in all organic food labels tested. These findings provide a valuable insight for all stakeholders, offering comprehensive perspectives from both scholarly and practical standpoints.

Keywords: Trust, Subjective knowledge, Objective knowledge, Purchase intention, Organic food labels

* Corresponding author at: Centre for Global Food and Resources, Level 6 Nexus Tower, 10 Pulteney Street, SA, 5005.
E-mail address: Chitpasong.kousonsavath@adelaide.edu.au (C. Kousonsavath)

3.1. Introduction

Food production and consumption have become increasingly complex in recent years, with distance between consumers and food suppliers being greater apart (Macready et al., 2020). The loss of connection between suppliers and consumers have led to reduced consumer trust and need for enhanced food regulation (Meyer et al., 2012). Moreover, consumers are faced with numerous claims (e.g., organic, fair trade) on food products, and it can be difficult for consumers to determine whether these claims are true. Where signalling tools are increasingly relied on (e.g., product labels), consumers are required to place their trust in both manufacturers and farmers complying with necessary production regulations (Janssen & Hamm, 2012; Macready et al., 2020) . However, a lack of trust in different actors in food supply chain and the labelling process has been noted among some consumers (Aarset et al., 2004; Ngo et al., 2020) . Such lack of consumers' trust and confidence could potentially impede food system transformation to a more sustainable and healthier food choices (Macready et al., 2020). Trust is therefore of practical significance to increase public confidence among consumers and ensure that products that consumer purchase are actually as healthy and sustainably oriented as they claim to be (Macready et al., 2020). As a result, it is important for the agribusinesses to address concerns and take steps to build trust with consumers.

In the case of organic food, trust is even more critical regarding various credence attributes that are associated with it, such as food healthfulness, sustainability (of food production), authenticity and safety (Macready et al., 2020). These attributes are not readily visible to consumers, and they can be challenging for consumers to verify either before or after they have purchased/consumed the product (Grunert, 2002). Therefore, credence attributes are increasingly important in establishing and enhancing trust in the modern food marketing system (Fernqvist & Ekelund, 2014). Specifically, labelling is most commonly used to signal to consumers the differences between products (Prentice et al., 2019). However, the confusion of consumers over the term 'organic', and their limited knowledge about the organic certification process could negatively impact their trust in the labelling process (Aarset et al., 2004). Moreover, previous research highlights that the organic label is only useful when it is noticed, understood and trusted (Stanton & Cook, 2019). Consequently, signalling mechanisms alone may not deliver the message well to consumers.

In many western countries such as the United States, a product cannot be claimed as 'organic' without meeting the regulatory standards (Kuchler et al., 2020). However, Australia has a distinct labelling regulation for organic foods in domestic markets, where the term 'organic' can be used without a product undergoing a rigorous certification process (Ford, 2020, p. 7), which could lead to potential

misuse of the term (Lockie et al., 2004). Currently, in Australia, there are five organic food certifiers authorised and governed by the Department of Agriculture, Fisheries and Forestry: ACO Certification Ltd (ACO), NASAA Certified Organic (NCO), Bio-Dynamic Research Institute (BDRI), Organic Food Chain Pty Ltd (OFC), and Southern Cross Certified Australia Pty Ltd (SXC) (Department of Agriculture Fisheries and Forestry, 2023). Moreover, there is no standardized organic certification label, which means that if a product undergoes the certification process, the logo of the certifying company will appear on the package. There was an attempted by the Organic Federation of Australia in collaboration with the organic industry for over fifteen years to harmonise the organic food label, yet the task has not been achieved so far (Joanna & David, 2010). Therefore, organic claims, domestic and international certified logos can all be found in Australian organic food markets. In this case, exploring which label/logo consumers trust more could be informative for certifiers as well as retailers to justify their labelling strategies.

Existing research shows that knowledge and trust both play an important role in consumers' decision-making process (Anisimova, 2016; Macready et al., 2020). Limited knowledge regarding how a product is organically certified has been previously recognized among consumers, not only in Australia (Ford, 2020), but also in other countries such as Czech Republic, Germany, Norway and France (Aarset et al., 2004; Zagata & Lostak, 2012). Consumers' trust in relation to food and organic food in Australia has also been explored (Anisimova, 2016; Meyer et al., 2012), with previous studies focusing on trust in food production and regulation (Meyer et al., 2012); and trust in sellers, manufacturers, certifying institutions, the organic label and products carrying the organic label (Anisimova, 2016). However, less attention has been paid to the association between consumers' knowledge and trust in organic labelling. To help fill this knowledge gap, this study aims to explore consumers' trust in different organic food labels, as well as the roles of consumers' knowledge in association with trust. The results from this study could yield practical implications for multiple stakeholders in the organic food industry.

The rest of the article is organised as follows. Section Two provides a brief literature review from previous studies regarding consumer knowledge and its association with trust. Section Three describes data and methodology. Section four highlights key findings. Section Five concludes and presents possible implication from the findings.

3.2. Literature and hypotheses

At the core of our study is investigating how knowledge affects consumers' trust in organic food labels, and how the latter in turn affects their purchase intention. Knowledge in the general food system context may refer to either information or experience related to conditions, requirements and effects of food production, and concerning about food actors (e.g., farmers, food processors) (Thorsøe et al., 2016). Knowledge has a capacity to empower the decision-making process (Thorsøe et al., 2016), and significantly affect the rationale of product choice (Stanton & Cook, 2019). Conceptually, there are two distinct types of consumers' knowledge: including subjective knowledge – what an individual thinks they know, and objective knowledge – what the individual actually knows (Brucks, 1985). These two types of knowledge play different roles in the information processing process (Brucks, 1985), and in organic food consumption behaviour (Aertsens et al., 2011; Pieniak, 2010). Providing information on production and control processes could help reduce uncertainty and distrust among consumers who may be sceptical about the organic certification process (Aertsens et al., 2009). Others argue that information alone might not be enough, and direct involvement (e.g., connecting food producers and consumers) in food production could also help increase trust (Meyer et al., 2012). However, involving consumers in food production system seems hard to achieve due to the complexity of the modern food supply chain (Meyer et al., 2012), therefore consumers are relying on signalling from food supply chain actors (de Jonge et al., 2008; Macready et al., 2020).

Food labelling has a vital role to play in signalling consumers the differences of product attributes, not only for credence foods market but also for general food markets. Labelling acts as an 'access point' for the consumers to get access to a (food) system; it is a communication channel between consumers and the food system (Tonkin et al., 2015). Specifically, labelling helps consumers distinguish products (Aitken et al., 2020), provides information of how food is produced (Meyerding & Merz, 2018), and can be a cue for forming quality expectations (Yin et al., 2016). Overall, food labels can influence consumers' purchasing decisions (Daugbjerg et al., 2014) if the consumer uses the label in their decision-making process and they are more likely to use the label if he/she trusts the message conveyed by the label (Thogersen, 2000). Therefore, it is important for businesses to work on building and maintaining consumers' trust in food labels.

In academic literature, trust can be generally defined as '*a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intention or behaviour of another*'(Rousseau et al., 1998, p. 395). This definition highlights several conditions for trust to occur. First, how others will act is uncertain, and without such uncertainty trust might not be needed. Second,

there is interdependence among individuals, where the interest of one party cannot be achieved without reliance on others. Third, there is positive expectation from others (Rousseau et al., 1998). This definition may well capture the case of organic food, where uncertainty is associated with concerns over if the product is organic, and consumers as key stakeholders wish to make the right purchase decision. Trust therefore plays a significant role in decision making under such uncertain conditions (Ding et al., 2015).

Many scholars are trying to explore the role of trust in relation to food. This includes, trust and consumers' attitudes towards food technologies, for example: how food is produced and processed, origin of food and the credibility of information regarding product attributes to consumers (Hobbs & Goddard, 2015), food safety concerns (Jonge et al., 2007; Le et al., 2020), credence quality of food (Sheldon, 2017), food supply chain actors (Jonge et al., 2007; Macready et al., 2020), traceability systems (Liu et al., 2019), and product brands (Lassoued & Hobbs, 2015; Ngo et al., 2020). Trust was found to play a crucial role in influencing consumers' attitudes and purchase intentions (Hsu et al., 2012; Hsu & Chen, 2014; Jose et al., 2020; Kouy et al., 2016; Krittinee & John, 2017), helping to bridge the gap between knowledge and uncertainty (Meyer et al., 2012), and increasing consumers' willingness to pay (Roosen et al., 2015).

In the food production context, trust has been classified into two distinct categories: trust that the individual consumer has in the behaviour of farmers and retailers, and trust in third-party institutions (e.g., certifiers, non-government organizations) (Jose et al., 2020). Trust is a key precondition that has to be built prior to establishing a credence goods market (Liu et al., 2019; Nuttavuthisit & Thøgersen, 2017), and when a premium price is involved (Thorsoe, 2015). Trust takes time to build but can be quickly destroyed given its fragility (Berg, 2004; Slovic, 1999). Previous research shows that a lack of trust in the certification process or labels is negatively associated with purchase intention of organic foods (Ha et al., 2019), even among consumers with positive attitudes towards organic food (Aertsens et al., 2009). Mistrust of the organic food in supermarkets (Padel & Foster, 2005), the regulatory system and the authenticity of organic foods have also been found to be important barriers for organic food consumption among British and Thai consumers (Nuttavuthisit & Thøgersen, 2017). On the other hand, higher levels of consumers' trust in farmers has a positive influence on purchase intention of organic milk (Carfora et al., 2019), and increasing willingness to pay (Violet et al., 2017).

A few studies have attempted to understand the association between knowledge and trust in organic food labels (Daugbjerg et al., 2014; Roh et al., 2022; Yin et al., 2016). Higher knowledge about labelling attributes (e.g., production standards behind labels), has been associated with a higher degree

of trust, and a higher likelihood of buying organic foods (Daugbjerg et al., 2014). Others have also found a positive association between product knowledge and trust, though association between organic food knowledge and trust was rather vague (Yin et al., 2016). This unclear association was contextually justified by the imperfect Chinese organic food certification system and the 'fake organic storm of Kweichow Moutai', the fake organic claim made by the Chinese liquor company, that led to mistrust in the overall organic food certification system in China (Yin et al., 2016). Despite the important role knowledge plays in association with consumers' trust, knowledge remains understudied.

The empirical evidence regarding the respective roles that subjective and objective knowledge play in predicting level of trust in organic food is limited. One study attempted to explore association of self-reported and objective knowledge on trust in organic food labels (Thorsøe et al., 2016), where positive association was found for subjective knowledge , and no association was found for objective knowledge (Thorsøe et al., 2016). Consumers with low level of organic food knowledge was found to have expressed higher level of trust in organic food labels (Thorsøe et al., 2016).This phenomenal was explained as a 'blind trust', where knowledge paly little role (Thorsøe et al., 2016). Others that have attempted to investigate consumers' knowledge, mostly examined perceived or subjective knowledge (Roh et al., 2022; Teng & Wang, 2015). This paper argues that objective knowledge should also play its role, though empirical findings are limited. Without a sufficient knowledge among consumers, the organic food certification system might not be operated successfully (Zagata & Lostak, 2012). As knowledge and information can enhance the justification of trust and reducing the size of risk in the decision-making process (Curry, 2010). Considering the results of these previous studies, we hypothesize:

H1*: Subjective and objective knowledge will be positively correlated with trust.*

Trust in organic food labels and its association with consumption behaviour has been previously explored (Janssen & Hamm, 2012; Konuk, 2018a; Sultan et al., 2020; Teng & Wang, 2015; Yin et al., 2016). Different elements of trust in organic food labels have been highlighted in these studies. For instance, trust in organic food labels and certifiers (Teng & Wang, 2015), and trust in organic milk labels from different brands (Yin et al., 2016). Utilising well-known and trusted organic food labels was found to be important (Janssen & Hamm, 2012). Moreover, the greater the trust in a certification label and certified producers, the greater chance the organic products will be chosen (Curvelo et al., 2019). Thus, especially in a context like Australia where a unified organic food label is missing, and

various organic food labels are used, it is important to examine which label consumers' trust; this can help certifiers, producers, processors, and retailers to strategically justify their labelling scheme.

Previous studies have also explored the association between trust and purchase intention for organic foods, with several studies confirming the positive association between the two variables (Anisimova, 2016; Curvelo et al., 2019; Teng & Wang, 2015). For instance, Teng and Wang (2015) found that trust acts as mediator linking organic labelling information and perceived knowledge with purchase intention. Others also pointed out that mistrust in the authenticity of organic foods and control system have had a negative consequence on stated purchasing behaviour for organic foods among Thia consumers (Nuttavuthisit & Thøgersen, 2017). However, trust in different organic food labels and its association with purchase intention for organic foods were left unexplored. Therefore, this study will address this research gap and provide the insight of the association between consumers' trust in different organic food labels and purchase intension. The study will help better explain organic food purchasing behaviour in the marketing context, where multiple labels are adopted. Based on the literature, the following hypothesis is developed:

H2*: Consumers trust in different organic food labels will be correlated with purchase intention in varying ways.*

The conceptual framework can be depicted in Figure 3.1 below.

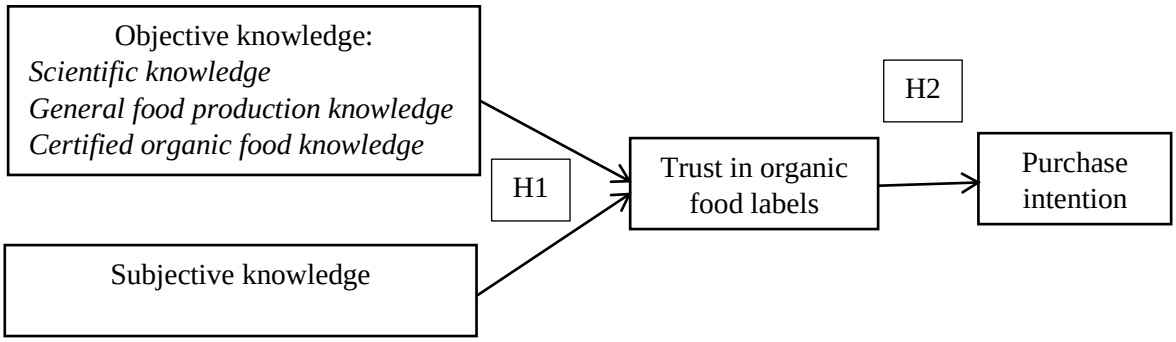


Figure 3.1. Proposed conceptual framework.

3.3. Data and methods

Data for this study was collected using an online consumer survey administered to 1,001 respondents in Australia in 2021. Participants were eligible to complete the survey if they play a major or share role in the household food shopping.

Sampling quotas were set for age, gender, household income and residential area (considering state/territory and metropolitan vs. regional/rural) to match the sample to the general Australian adult population. Participants were recruit based on age range, gender balance, household food shopping role, income range and residential area ensuring the representativeness. The ethics approval has been granted from the university of Adelaide Human Research Ethics Committee (H-2018-173).

3.3.1. Construction of measures

Awareness and trust in six certified organic food labels were assessed. The six labels (see Table 3.1) were selected based on market observations (availability on the Australia market). Awareness of each label was assessed by asking respondents to select all labels that they have seen or are aware of; and trust was assessed using a 7-point scale (1= do not trust at all, 7= trust completely).

For analysis, the six labels were categorized into three different groups: 'claim labels' ('organic' and 'certified organic'), 'domestic labels' ('Australian Certified Organic' and 'NASAA'), and 'international labels' ('EU's green leave' and 'United States Department of Agriculture (USDA)'). A mean trust score was calculated for each category.

The survey also assessed respondents' confidence in the safety of the Australian food supply (using a 7-point Likert scale where 1= Not at all confident, and 7= Extremely confident), and their level of trust in various following people/organisations to provide accurate information about food safety information (using a 7-point scale where 1= do not trust at all, and 7= trust completely).

Table 3.1. Visualization of the six organic food labels assessed.

'Claim' labels	'Domestic' labels	'International labels
Organic	Australian Certified Organic	
Certified Organic	NASAA CERTIFIED ORGANIC	USDA ORGANIC

Subjective knowledge

Subjective knowledge was assessed using a single item drawn from existing literature (Fernbach, Light, Scott, Inbar, & Rozin, 2019). Specifically, each respondent was asked how he/she would rate his/her

understanding of 'certified organic' food. Answers were collected on a 7-point Likert scale (1= I know nothing at all, 7= I know a great deal).

Objective knowledge

Three types of objective knowledge were measured, including scientific knowledge, knowledge about general food production, and knowledge about certified organic food. Scientific knowledge was assessed using ten statements drawn from Fernbach et al. (Fernbach et al., 2019) (e.g., 'the centre of the earth is very hot', 'all insects have eight legs'). General food production knowledge, was assessed using seven statements related to general food production regulation from the National Standard for Organic and Bio-Dynamic Produce-Edition 3.7[§] (2016 version) (e.g., 'the use of genetic engineering methods is permitted', 'the use of pesticides produced from synthetic chemicals is permitted') (Department of Agriculture and Water Resources, 2016). Knowledge about certified organic food was assessed using twelve statements taken from the National Standard for Organic and Bio-Dynamic Produce-Edition 3.7 (2016 version) (e.g., 'certified organic plants must be grown from organic seed or organic plant materials', 'certified organic farmers, processors, transporters and retailers must undergo auditing and verifying processes by the approved organic certifiers every 12 months') (Department of Agriculture and Water Resources, 2016). Three response options were provided for each statement ('true', 'false' and 'don't know'). For each statement, a score of one was allocated to respondents who answered correctly, and zero was allocated to respondents who either answered incorrectly or chose "don't know". The total score for each of the three types of knowledge was calculated by summing up the individual scores of the respective statements, such that 'scientific knowledge' scores could range from zero to ten, 'general food production knowledge' from zero to seven, and 'certified organic food knowledge' from 0 to 12.

Purchase intention.

Intention to purchase organic foods was assessed using the statement, 'I expect to buy organic food in the future', with responses provided on a 7-point Likert scale (from 1 = strongly disagree to 7 = strongly agree). The average purchase intention score was then used.

3.3.2. Data analysis

Data were analysed using the SPSS (version 27) and the level of the confidence was set at 0.05. The Cronbach's Alpha value for question with multiple items measured ranged from 0.74 - 0.96, suggesting

[§] The National Standards of Organic and Bio-Dynamic Produce-Edition 3.7 was used in this study as the 3.8 edition was made available as of the 1st January 2022, after the data collection is completed.

high level of internal consistency. Descriptive statistics, independent t-tests and the Ordinary Least Square (OLS) regressions were used for data analysis.

3.4. Results

A total of 1,001 Australian consumers have completed the survey. Among these, 50.6 % were females, and the average age was 45.3 years old. Overall, 77.9% of respondents played a major role in household food shopping; 65.9% lived in a metropolitan area, and the rest of them lived in a regional area. Approximately 40.9% of the respondents had completed tertiary education (bachelor's degree or postgraduate degree), and 33.5% had children under 18 years old living in the household.

A description of variables used in the present analysis is provided, with specific wording of questions provided in Appendix E.

Perceptions of safety of the food supply and trust in information sources

Australians generally had a high level of confidence in the safety of their food supply, with an average score of 5.6 out of 7 (SD= 1.02). In addition, 60% of respondents rated their confidence level at 6 or above, indicating relatively high level of confidence for overall food supply safety. In terms of trust in organizations to provide accurate food safety information, results showed that respondents have the highest level of trust in government organizations, the Commonwealth Scientific and Industrial research Organization (CSIRO), and professional experts, with an average trust score of 5.2 out of 7, followed by the Animal Welfare Organization and Food Safety Information Council (see Appendix A).

Awareness of and trust in organic food labels

Participants were firstly asked to declare their awareness of each of the six selected organic food labels. Overall, 47.5% of participants were aware of the Australian Certified Organic label (Bud logo), making it the most recognized one, which is consistent with recent findings (Ford, 2020). This was followed by the United States Department of Agriculture (USDA) label (45.4%) and the pure claim of 'organic' (36.7%).

When it came to trust, Australians, on average, reported a neutral level of trust for all six organic food labels examined, with an average score of 4 out of 7. Only 13% of consumers expressed complete trust in the Bud logo (score of 7), and this proportion was even lower for the remaining labels (6-9%) (see Fig 3.2).

A similar pattern of consumer trust in foreign organic products was observed in other countries, where consumers exhibited distrust in foreign organic products due to the long distance the foods travelled (Thorsøe et al., 2016). As a comparison, recent literature suggested that Thai and Chinese consumers expressed higher trust in foreign organic foods (Nuttavuthisit & Thøgersen, 2017; Yin et al., 2019). This higher level of trust might have derived from the lack of trust in their domestic certification system in the developing country contexts (Nuttavuthisit & Thøgersen, 2017; Yin et al., 2016).

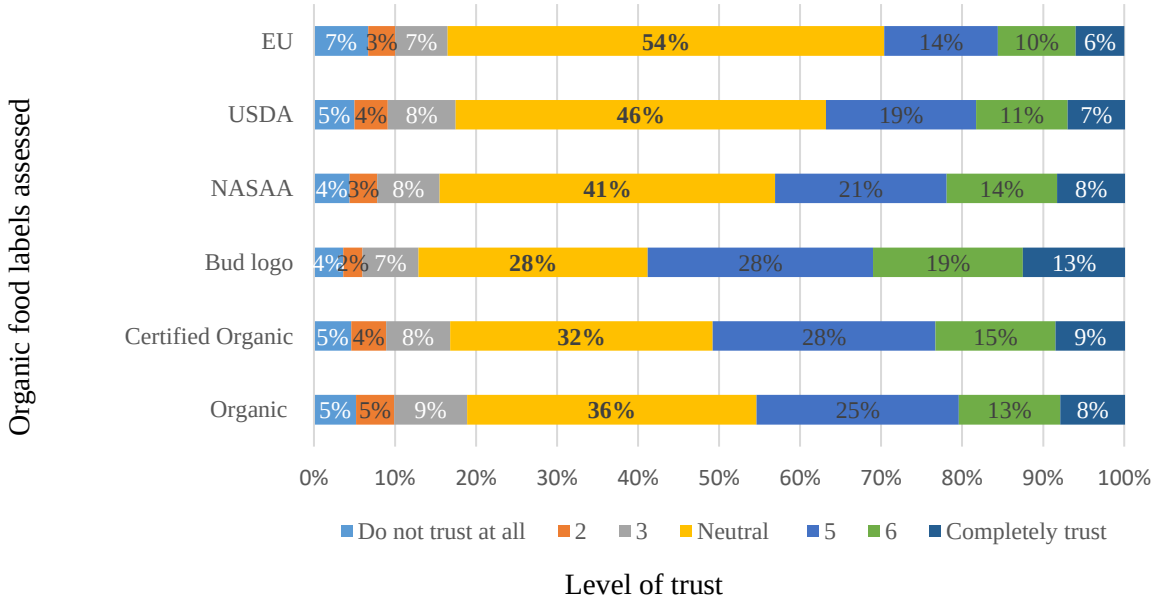


Figure 3.2. Level of trust for different organic food labels assessed (n=1,001)

It is also interesting to observe that, Australians rated high level of trust (score of 5, 6 or 7) in the claim 'organic' (46%) and 'certified organic' (52%). Previous research acknowledged that the term 'organic' was most sought-after label for distinguishing organic food from conventional alternatives (Padel & Foster, 2005). The higher trust in these labels might reflect the level of confidence in food safety supply in Australia.

Association between consumers' knowledge and trust

Multiple linear regression models were estimated to investigate possible associations between consumers' knowledge and trust in organic food labels. Results are shown in Table 3.2. It was found that both subjective and scientific knowledge were correlated with trust in all three categories of trust. However, positive association was found for subjective knowledge, while negatively associated was found for scientific knowledge. Results confirmed the positive role of the subjective knowledge which

was previously found (Roh et al., 2022; Thorsøe et al., 2016). Conceptually, subjective knowledge was found to be closely related to the confidence in the knowledge she/he had and confidence in the decision-making abilities (Brucks, 1985; Han, 2019), and in this case may related to the confidence in quality and safety of organic foods. Positive association between consumer confidence in brand quality and trust was previously found (Lassoued & Hobbs, 2015). The knowledge they had might also make consumers value label or certification which indicate the authenticity of the product (Roh et al., 2022). The negative association found between scientific knowledge and trust may derived from the fact that the scientific knowledge constructs adopted were generalized (e.g., All insects have eight legs). In addition, for consumers' trust to be built is might not entirely depend on information they have but also how consumers interpret facts in different contexts (Zagata & Lostak, 2012).

Different results were found for knowledge regarding general food production and certified organic food. Specifically, general food production knowledge was positively correlated with trust in the claim and international labels, but not for the domestic labels. On the other hand, certified organic food knowledge was positively correlated with trust in the claim and domestic labels, but not for the international labels. The decision of consumers to which label to trust may not be entirely up to the knowledge possessed, but may also be associated with trust in the institutions behind labels or claims (Daugbjerg et al., 2014). In addition, level of confidence in claims or labels may also play its part, as previously proven that trust and level of confidence are closely related (de Jonge et al., 2008).

Among the covariates, age played a role in consumer trust in the claim and international labels, but not for the domestic labels. This association between age and trust was previously observed (Watanabe et al., 2021; Yin et al., 2016), where older people tend to have more incline trust in organic foods (Yin et al., 2016). However, our finding suggested otherwise, where the older consumers manifested less trust in organic food labels. This result consistent with what has been previously highlighted that, the level of trust decreased by age among consumers in Belgium (Berg, 2004), and older age group of people tend to be more scepticism towards new cultivation, production and distribution forms (Berg, 2004). Intuitively, having children under 18 years old living in the household has a positive association with trust in the claim labels.

Table 3.2. Regression results linking knowledge and socio-demographic factors with trust in different organic food labels.

Variables	Trust in 'Claim labels'		Trust in 'Domestic labels'		Trust in 'International labels'	
	Coefficient	Std. Err	Coefficient	Std. Err	Coefficient	Std. Err
SK	.286***	.029	.311***	.027	.330***	.026

SCK	-.144***	.018	-.109***	.017	-.179***	.016
GFK	.111**	.022	.061	.021	.113**	.020
COK	.150***	.014	.193***	.014	.036	.013
Age	-.101**	.003	-.074	.003	-.137***	.002
Income	.009	.010	-.023	.009	-.005	.009
Education levels	.019	.021	.047	.020	.052	.019
Gender	.018	.080	-.005	.076	.043	.072
Children in household (age<18yrs old)	.068*	.088	.056	.084	.067	.080
Live in metropolitan area	.029	.085	.048	.081	.044	.077
R^2	.235		.242		.258	
F	31.71***		32.90***		35.72***	

Note: n= 1,001, *p<0.05, **p<0.01, ***p<0.001.
SK= Subjective knowledge
SCK= Scientific knowledge
GFK= General food production knowledge
COK= Certified organic food knowledge

To further explore possible heterogeneity in the overall associations, sub-samples grouped by age were further examined, where the median age of 44 years was used as a cut point between younger and older groups. The same regression model was estimated for each subsample. Results showed that, increasing subjective knowledge was associated with higher level of trust for both younger and older groups, while increase in scientific knowledge led to lower trust in both groups. As found in the literature, subjective knowledge is closely related to the confidence in one's decision making ability (Brucks, 1985), and trust was also found to be correlated with consumer confidence in safety of food (de Jonge et al., 2008). The general food production knowledge was only positively correlated with trust in the international labels among the younger group, and the claim labels for the older group. The certified organic food knowledge was found to play a role for trust in the claim and domestic labels for the younger group, and only for the domestic label for the older group (see Appendix C). This is possibly because older consumers tend to be more sceptical (de Jonge et al., 2008), though further investigation would be needed to establish this as a contributing factor.

Trust among the high and low subjective and objective knowledge consumers

Further analysis was carried out to investigate the level of trust among participants with high and low subjective and objective knowledge regarding certified organic food. To do this, participants were divided into two groups based on their knowledge levels, where the mid-point score of 6 (out of 12)

was used for objective knowledge and 4 (out of 7) for subjective knowledge. Participants with scores above the midpoint were classified as having high level of knowledge, and those below the midpoint were classified as having low level of knowledge.

Results of the independent t-tests comparing the mean trust score for participants with low and high subjective and objective knowledge are shown in Table 3.3. Findings suggest that both low and high subjective and objective knowledge groups have expressed a significant difference in level of trust in all organic food labels tested. Overall, participants with high level of subjective and objective knowledge have rated higher level of trust in the organic food labels assessed. In contrast, low subjective and objective knowledge group have rated trust at a neutral or just slightly higher.

Table 3.3. Results of independent samples t-tests comparing trust in organic food labels among the high and low knowledge.

	Objective Knowledge		df	*p*-value	Subjective knowledge		df	*p*-value
	Low (*n=513*)	High (*n=488*)			Low (*n=582*)	High (*n=419*)		
Trust in claim labels								
Organic	4.0 (1.35)	4.7 (1.43)	999	0.000	4.0 (1.29)	4.8 (1.47)	999	0.000
Certified Organic	4.1 (1.31)	4.9 (1.42)			4.1 (1.28)	5.1 (1.40)		
Trust in domestic labels								
Bud logo	4.3 (1.30)	5.2 (1.39)	999	0.000	4.4 (1.32)	5.3 (1.36)	999	0.000
NASAA	4.1 (1.24)	4.7 (1.44)			4.0 (1.24)	5.0 (1.37)		
Trust in international labels								
USDA	4.0 (1.27)	4.5 (1.43)	999	0.000	3.9 (1.21)	4.8 (1.37)	999	0.000
EU	4.0 (1.26)	4.3 (1.43)		0.001	3.8 (1.18)	4.6 (1.44)		

Our findings are consistent with what has been previously found with respect of higher levels of eco-label knowledge contributing to higher levels of trust in label (Daugbjerg et al., 2014). Consumers with higher both objective and subjective knowledge have expressed high level of trust in the organic food labels, compare consumers with lower level of knowledge.

Our findings contradicted with previous studies (Thorsøe et al., 2016), where both high and low consumers' knowledge regarding organic food have expressed high level of trust in organic labels. This phenomenon has been termed 'blind trust', where knowledge plays a limited role in level of trust

(Thorsøe et al., 2016) . However, the 'blind trust' might not be the case for Australian consumers, where knowledge seems to play a significant role in consumer trust in organic food labels.

Association between trust and purchase intention

Multiple linear regression was further estimated to investigate factors associated with purchase intention for organic foods. These results are shown in Table 3.4. It is seen that trust in 'claim', 'domestic' and 'international' labels were strongly and positively associated with purchase intention, which is in line with literature (Konuk, 2018a; Pandey & Khare, 2017; Roh et al., 2022). The positive correlation might arise given that trust could lower transaction cost (e.g., If I trust you, behaviour verification is not needed, therefore reducing possible transaction cost) (Chiles & McMackin, 1996), and increase consumer confidence (de Jonge et al., 2008). However, when all trust variables were included in one regression model, trust in 'international' label became insignificant. This may suggest multicollinearity among the trust variables.

Among the covariates, age was negatively correlated with purchase intention, while education level was positively correlated with purchase intention. The negative findings for age consistent to previous studies (Hwang, 2016), where the likelihood of purchasing organic foods among older segment was less than those younger age (18-25 years old) (Hwang, 2016). The less likelihood of purchasing organic foods among older age groups was resulted from the fact that, the environmental concerns and ethical self-identity (e.g., considering a broader level of society as a whole) aspects of organic foods were not improve purchase intention, and that self-representation (e.g., 'Having organic food is part of how I express my personality') and food safety concerns were more meaningful motives (Hwang, 2016). It is also possible that on younger consumers possessed higher levels of environmental concerns and thus might show higher purchase intention of organic foods (Ahmed et al., 2021; Amoako et al., 2020).

Table 3.4. Regression estimation of factors associated with purchase intention.

Variables	**Purchase intention for organic food**							
	Coefficient	Std	Coefficient	Std	Coefficient	Std	Coefficient	Std
Trust in 'claim labels'	.506***	.031	-	-	-	-	.281***	1.35
Trust in 'domestic labels'	-	-	.507***	.032	-	-	.299***	1.30
Trust in 'international labels'	-	-	-	-	.422***	.036	-.023	1.25
Age	-.091**	.003	-.110***	.003	-.072*	.003	-.098***	16.53
Income	-.004	.010	.011	.010	.004	.011	.004	4.38
Education levels	.114***	.022	.095	.022	.113***	.024	.099***	2.00

Gender	-.044	.083	-.034	.083	-.053	.088	-.038	0.50
Children in household (age<18yrs old)	.026	.093	.031	.093	.041	.099	.021	0.47
Live in metropolitan area	.058*	.090	.050	.090	.056	.095	.052	0.47
R^2	.335		.338		.257		0.36	
F	73.07***		73.89***		50.34***		63.93***	

Note: n= 1,001, *p<0.05, **p<0.01, ***p<0.001.

The regression results yielded different outcomes for association between consumer knowledge and trust. The positive association between subjective knowledge and trust was supported, however, the hypothesis between objective knowledge and trust were not fully supported. Among the sub-categories of objective knowledge (scientific, general food production and certified organic food knowledge), only general food production and certified organic food knowledge were found to have positive association with trust, while scientific knowledge yielded opposite direction. The higher level of scientific knowledge was not led to higher level of trust in organic food labels. Lack of specification of the scientific constructs adopted may be the reason for the opposite direction of association between the scientific knowledge and trust. As the positive association was found for the general food production and certified organic food knowledge, which were less generalization compared to scientific knowledge.

In case of the purchase intention for organic foods, the finding was supportive of the hypothesises that trust will be positively associated with purchase intention for organic foods. The increasing level of trust can contribute to an increasing purchase intention for all organic food labels assessed. However, when all trust variables were included in the same model, association between trust for 'international' label and purchase intention became insignificant.

3.5. Discussion and conclusion

In the credence goods market, where the attributes (e.g., sustainability, safety) are difficult to verify by consumers (Macready et al., 2020), labelling acts as an essential tool for signalling special product attributes to consumers. It allows the credence attributes to be communicated and provides additional information to consumers to make an informed decision. This study investigated the associations between consumers' knowledge, trust in different organic food labels, and purchase intention. Novel insight was provided with respect to three different types of knowledge (scientific, general food production, and certified organic food knowledge) and their associations with trust and purchase intention.

Our study uncovered a relatively important role the term 'organic' and 'certified organic' played, as these claim labels also received high level of trust from consumers. The presence of the terms 'organic' or 'certified organic' might be more straightforward for average consumers looking for clue, rather than trying to decode the meaning of the labels or certifying entities. These results also echoes previous findings that the term 'organic' was the most sought-after label for distinguishing organic food from conventional alternatives (Padel & Foster, 2005). However, the claim labels should be used with caution, with previous studies showing that use of false claims can undermine efforts to promote more sustainable food consumption in the future, damaging the credibility and decreasing in consumer trust (Coveney, 2008; Daugbjerg et al., 2014).

Our results confirmed the important role of subjective knowledge as an antecedent of trust. In order for consumer to trust in organic food quality, consumers might not necessarily need extensive knowledge about organic foods, but rather need to know enough to develop trust (Zagata & Lostak, 2012). Establishing trust may not entirely depend on the information individual possesses, but also how the information is interpreted in different contexts, and their ability to cope with existing counter-arguments through 'faith' (Zagata & Lostak, 2012). In this study, we found that consumers with higher subjective and objective knowledge levels expressed higher level of trust in organic food labels. The higher level of trust received may be resulting from fact that knowledge and information can enhance the justification element of trust and reducing the size of risk in the decision-making process (Zagata & Lostak, 2012). In addition, our finding confirmed the positive correlation between trust and purchase intention (Konuk, 2018b; Roh et al., 2022), that is of practical value for stakeholders in the industry.

While the current study made several novel contributions to the literature, certain limitations should be noted. While we comprehensively explored consumers' objective knowledge to a greater extent than previous studies, (scientific, general food production and certified organic food knowledge), consumers' understanding of the meaning of food labels was beyond the scope of our study and needs further testing. Also, product specification (e.g., organic milk, organic apple) can also be considered, as it was previously suggested that consumers' trust can vary with product (Watanabe et al., 2021). These remaining limitations await further research alongside this domain to further validate the results for policy decision support. Despite the limitations, this study contributes to the literature of trust in organic food consumption behaviour.

Acknowledgements

The authors would like to acknowledge the financial supported for the data collection process from the Food Insights and Experiences Survey (H-2018-173) project funded by the Centre for Global Food and Resources, the University of Adelaide.

Data Availability Statement

The data will be made available up on the request.

Author Contributions

Chitpasong Kousonsavath: Conceptualization, Methodology, Investigation, Formal analysis, Writing-original draft, Writing-reviewing, and editing; **Lenka Malek**: Conceptualization, Methodology, Resources, Writing-reviewing and editing, Supervision; **Wendy J. Umberger**: Conceptualization, Methodology, Writing-reviewing and editing, Supervision, Funding acquisition; **Di Zeng**: Writing-review and editing, Supervision.

Declaration of interest:

The authors would like to declare that there are no known financial or personal conflict of interest.

Declaration of Generative AI and AI-Assistant Technologies in the Writing Process

During the preparation of this work, the authors used ChatGPT in order to help improve readability. After using this tool, the authors have reviewed and edited the content as needed and take full responsibility for the content of publication.

3.6. Appendix

Appendix A: Trust in organizations for providing accurate food safety information.

No	Organizations to provide accurate FOOD SAFETY information	Mean	SD
1	CSIRO-Commonwealth Scientific and Industrial Research Organization	5.2	1.27
2	Doctors/medical professionals	5.2	1.29
3	Animal Welfare Organization (e.g. RSPCA)	5.0	1.41
4	Food Safety Information Council	5.0	1.24
5	Consumer Organization (e.g. Choice)	4.9	1.28
6	Farmers (e.g. an individual farmer)	4.8	1.28
7	Dietitians/nutritionists	4.8	1.27
8	Food Industry Associations (e.g. Australian Food and Grocery Council)	4.8	1.26
9	Government agencies (e.g. Food Standards Australia New Zealand)	4.8	1.35
10	Farmers associations (e.g. Cattle Council Australia)	4.8	1.28
11	Universities	4.7	1.34
12	Environmental Organizations (e.g. Landcare)	4.7	1.43
13	Other Research Organization	4.6	1.19
14	Independent or local food stores (e.g. Butcher, Bakery)	4.6	1.26
15	Family/Friends/Work Colleagues	4.5	1.33
16	Supermarkets (e.g. Coles, IGA)	4.4	1.38
17	Food processors	4.4	1.36
18	Animal Rights/protection Organization (e.g. Animal Australia)	4.3	1.63
19	Celebrity chef	3.5	1.64

Note: Trust score is ranked form 1-7 (1= Do not trust at all, 7= Trust completely), n= 1,001

Appendix B: Pearson correlation of key measurement variables.

Constructs	Mean (SD)	1	2	3	4	5	6	7
1.SK	4.0(1.47)							
2.COK	5.9(3.59)	.340**						
3.GFK	3.2(2.26)	.313**						
4.SCK	6.5(2.35)	.029	.251**	.276**				
5.Trust in 'claim labels'	4.4(1.35)	.406**	.280**	.272**	-.096**			
6.Trust in 'domestic labels'	4.6(1.30)	.427**	.312**	.267**	-.060	.816**		
7.Trust in 'international labels'	4.2(1.25)	.424**	.174**	.213**	-.159**	.750**	.788**	
8.PI	4.4(1.55)	.492**	.285**	.231**	-.051	.552**	.553**	.479**

Note: n=1,001, *p<0.05, **p<0.01.
SK= Subjective knowledge
COK= Certified organic food knowledge
GFK= General food production knowledge
SCK= Scientific knowledge
PI= Purchase intention

Appendix C: Regression results for factors influencing trust among younger consumer group (aged 18-44 years)

Variables	Trust in 'Claim labels'		Trust in 'Domestic labels'		Trust in 'International labels'		Mean (SD)
	Coefficient	Std. Err	Coefficient	Std. Err	Coefficient	Std. Err	
SK	.226***	.041	.253***	.038	.305***	.039	4.30 (1.43)
SCK	-.161***	.024	-.160***	.022	-.209***	.023	5.95 (2.39)
GFK	.100	.033	.098	.030	.150**	.031	3.29 (2.33)
COK	.196***	.020	.208***	.018	.061	.019	5.65 (3.67)
Age	-.076	.008	-.006	.008	-.036	.008	31.37 (7.40)
Income	.060	.013	.017	.012	-.009	.013	7.72 (4.27)
Educ	.036	.032	.031	.030	.072	.030	6.06 (1.89)
Gender	.052	.111	.043	.103	.112**	.104	0.43 (0.49)
Having children in household	.100*	.117	.073	.108	.051	.110	0.50 (0.50)
Liv	.041	.132	.057	.122	.027	.124	0.76 (0.42)
R^2	.207		.223		.230		
F	14.37***		15.70***		16.35***		

Note: n=514, *p<0.05, **p<0.01, ***p<0.001.

Appendix D: Regression results for factors influencing trust among older consumers group. (age ≥45 years)

Variables	Trust in 'Claim labels'		Trust in 'Domestic labels'		Trust in 'International labels'		Mean (SD)
	Coefficient	Std. Err	Coefficient	Std. Err	Coefficient	Std. Err	
SK	.342***	.041	.346***	.040	.357***	.035	3.82 (1.48)
SCK	-.132**	.027	-.063	.027	-.141**	.024	7.10 (2.14)
GFK	.134*	.032	.049	.031	.080	.028	3.22 (2.20)
COK	.095	.021	.173**	.020	.008	.018	6.30 (3.47)
Age	-.127**	.007	-.101*	.007	-.072	.006	60.08 (8.98)
Income	-.055	.014	-.077	.014	.000	.012	6.32 (4.40)
Educ	.017	.030	.058	.029	.017	.026	5.36 (2.06)
Gender	.006	.117	-.043	.116	-.048	.102	0.55 (0.49)
Kid	.026	.171	.006	.168	.066	.149	0.16 (0.36)
Liv	.030	.113	.060	.111	.073	.099	0.55 (0.49)
R^2	.216		.223		.177		
F	14.39***		14.97***		11.47***		

Note: n=487, *p<0.05, **p<0.01, ***p<0.001.

Appendix E: Measurement items.

Items measured	Mean	Min	Max
Subjective knowledge			
How would you rate your understanding of "certified organic" food?	4.0 (SD=1.47)	1	7
Objective knowledge			
Scientific knowledge (Cronbach's α=0.74)	6.5 (SD=2.35)	0	10
The center of the earth is very hot (True)	81.0%		
The oxygen we breathe comes from plants (True)	84.1%		
Antibiotics kills viruses as well as bacteria (False)	45.7%		
All radioactivity is man-made (False)	58.1%		
Almost all food energy for living organisms comes originally from sunlight (True)	68.5%		
All insects have eight legs (False)	73.3%		
The earth orbits the sun (True)	81.0%		
The continents have been moving their location for millions of years and will continue to move (True)	75.6%		
Lasers work by focusing sound waves (False)	36.4%		
Electrons are smaller than atoms (True)	47.3%		
General food production knowledge (Cronbach's α=0.85)	3.2 (SD=2.26)	0	7
The use of genetic engineering methods is permitted (True)	44.6%		
The use of pesticides produced from synthetic chemicals is permitted (True)	41.6%		
The use of additives and processing aids is permitted only where their use does not compromise the authenticity of the product or detract from the overall quality of the product (True)	44.5%		
Production methods emphasise the use of renewable resources (True)	43.7%		
Production methods emphasise the conservation of energy, soil, and water (True)	48.8%		
Production methods emphasise the recognition of livestock welfare needs (True)	56.3%		
Production methods emphasise environmental maintenance and enhancement (True)	46.6%		
"Certified organic" food knowledge (Cronbach's α=0.92)	5.9 (SD=3.59)	0	12
The use of genetic engineering methods is permitted (False)	37.9%		

The use of pesticides produced from synthetic chemicals is permitted (False)	48.3%		
The use of additives and processing aids is permitted only where their use does not compromise the authenticity of the product, or detract from the overall quality of the product (True)	33.0%		
Production methods emphasise the use of renewable resources	45.1%		
Production methods emphasise the conservation of energy, soil, and water (True)	48.2%		
Production methods emphasise the recognition of livestock welfare needs (True)	52.3%		
Production methods emphasise environmental maintenance and enhancement (True)	52.1%		
Certified organic farmers, processors, transporters and retailers MUST undergo auditing and verifying processes by the approved organic certifier every 12 months (True)	59.9%		
Certified organic plants must be grown from organic seed or organic plant materials (True)	64.1%		
Certified organic food, as far as possible, excludes unnecessary packaging (True)	43.6%		
Certified organic food packaging, as far as possible, incorporates recycled and biodegradable materials (True)	48.1%		
Any person who produces or markets, certified organic food products MUST be certified for the activity through an approved certifying organisation (True)	64.2%		
Purchase intention. (Cronbach's α= 0.964)			
I expect to buy organic food products in the future	4.4 (SD=1.59)	1	7
I want to buy organic food products in the future	4.5 (SD= 1.62)	1	7
I intend to buy organic food products in the future	4.3 (SD= 1.62)	1	7

Note: % indicates percentage of correct answer.

Appendix F: Descriptive statistics of variables.

Variables	Description	Mean	SD
Explanatory variables:			
Age	Age of respondent (in year)	45.34	16.53
Educ	Highest education completed (in year)	5.72	2.00
Gender	1 = Male, 0 = Female	0.49	0.50
Income	Household income (before tax)	7.04	4.38
Living area (Liv)	1 = Live in metropolitan area; 0= Live in regional area	0.66	0.47
Having children in household	Having child(ren) under 18 living in the family (1= Yes, 0= No)	0.33	0.47
Consumers' knowledge:			
Subjective knowledge (SK)	1= Know nothing at all to 7=Know a great deal	4.07	1.47
Objective knowledge:			
Scientific knowledge (SCK)	Sum of scores: 0 = Zero answered correctly, 10 = All answered correctly	6.51	2.35
General food production knowledge (GFK)	Sum of scores: 0 = Zero answered correctly, 7 = All answered correctly.	3.26	2.26
Certified organic food knowledge (COK)	Sum of scores: 0 = Zero answered correctly, 12 = All answered correctly	5.97	3.59
Independent variables:			
Trust in 'claim labels'	1= Do not trust at all, 7= Trust completely	4.46	1.35
Trust in 'domestic labels'	1= Do not trust at all, 7= Trust completely	4.63	1.30
Trust in 'international labels'	1= Do not trust at all, 7= Trust completely	4.24	1.25
Purchase intention	1= Strongly disagree, 7= Strongly agree	4.45	1.55

Note: Income information (1=Below$25,000, 2=$25,001-$35,000,3=35,001-$45,000,4=$45,001-$55,000, 5=$55,001-65,000,6=$65,001-$75,000, 7=$75,001-$85,000,8=$85,001-$105,000,9-105,001-$115,000, 10=$115,001-$125,000,11=$125,001-$145,000,12=$145,001-$165,000,13=$165,001-$185,000,14=$185,001-$205,000,15=$205,001-$225,000, 16=$225,001-$245,000, 17=$245,001-$265,000, 18=$265,001-$285,000,19>$285,000,20= Prefer not to say).
Education information=1=Below year 10, 2= Year 10,3= Year 11, 4= Year 12, 5= Certificate (III or IV), 6=Diploma level or Advanced Diploma, 7=Bachelor degree, 8= Graduate Certificate or Graduate Diploma, 9= Postgraduate degree (Masters or PhD)

Chapter 4: Statement of Authorship

Title of Paper	Egoistic and altruistic values in organic food consumption: a comparative study between Australia and Laos.
Publication Status	Submitted for publication
Publication Details	Submitted to the Food Policy

Principal Author

Name of Principal Author (Candidate)	Chitpasong Kousonsavath		
Contribution to the Paper	Conceptualization, Methodology, Formal analysis, Writing-reviewing and editing, Funding acquisition.		
Overall percentage (%)	60%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	28/06/2024

Co-Authors Contributions

By signing the Statement of Authorship, each author certifies that:

vii. the candidate' s stated contribution to the publication is accurate (as detailed above);
viii. permission is granted for the candidate in include the publication in the thesis; and
ix. the sum of all co-author contribution is equal to 100% less the candidate' s stated contribution.

Name of the Co-Author	Dr. Lenka Malek		
Contribution to the paper	Conceptualization, Methodology, Resources, Writing-reviewing and editing, Supervision.		
Signature		Date	28/06/2024

Name of the Co-Author	Professor. Wendy J. Umberger

Contribution to the paper	Conceptualization, Methodology, Writing-reviewing and editing, Supervision, Funding acquisition.		
Signature		Date	28/06/2024

Name of the Co-Author	Dr. Di Zeng		
Contribution to the paper	Writing-reviewing and editing, Supervision		
Signature		Date	28/06/2024

Chapter 4: Egoistic and altruistic values in organic food consumption: a comparative study between Australia and Laos.

Chitpasong Kousonsavath[a,*], Lenka Malek[b], Wendy J. Umberger[c,d], Di Zeng[a]

[a]*Centre for Global Food and Resources, School of Economics and Public Policy, The University of Adelaide, Level 6 Nexus 10 Tower, 10 Pulteney Street, SA, 5005, Australia*
[b]*School of Agriculture, Food and Wine, The University of Adelaide, Waite Campus, PMB 1, Glen Osmond, SA, 5064, Australia*
[c]*Wine Innovation Central Building Level 1, Waite Campus, Urrbrae, SA 5064, Australia*
[d]*School of Agriculture, Food and Ecosystem Sciences, The University of Melbourne, Grattan Street, Parkville, Victoria, 3010, Australia*

Abstract

Organic food consumption is expected to generate both private and social benefits, but how these incentives may stimulate organic food consumption is not well understood. This study aims to comparatively explore the roles of egoistic and altruistic values in consumers' organic food awareness and purchasing behaviour in two distinct organic food markets: Australia and Laos. Empirical analyses are facilitated by survey data collected from 1,001 Australian consumers in 2021, and 272 Lao consumers in 2022. Probit models with sample selection are estimated. Empirical results suggest that among Australian consumers, both egoistic and altruistic values play significant roles in organic food awareness, but neither is driving purchasing behaviour. Among Lao consumers, egoistic values are significantly associated with both awareness and purchasing behaviour while altruistic values are not. These findings evidence the differences between emerging and mature organic food markets and offer important implications to various stakeholders in the design and implementation of effective promotional campaign as well as marketing strategies.

Keywords: organic food; egoistic values; altruistic values; awareness; purchasing behaviour; Australia; Laos

* Corresponding author at: Centre for Global Food and Resources, School of Economics and Public Policy, The University of Adelaide, Level 6 Nexus Tower, 10 Pulteney Street, SA, 5005, Australia.
E-mail address: Chitpasong.kousonsavath@adelaide.edu.au (C. Kousonsavath)

4.1. Introduction

Food consumption behaviour has been undergoing drastic changes over the last three decades throughout the world (Pot et al., 2015; Rana & Paul, 2017). Dietary pattern transitions towards healthier and more environmentally friendly consumption become popular given intensive food production system and associated lifestyle diseases and environmental degradation (Rana & Paul, 2017). Consequently, organic food, perceived as a healthier and more environmentally friendly option free of synthetic chemicals, is increasingly adopted (Boobalan & Nachimuthu, 2020; Janssen, 2018; Yazdanpanah et al., 2015). Accordingly, organic food production system as 'a production system that sustains the health of soil, ecosystem and people' also experiences fast expansion (von Meyer-Höfer et al., 2015).

The growths of the organic food industry have attracted scholarly attention in the past decades (Kushwah et al., 2019; Ryan & Casidy, 2018). Most studies focus on developed countries where mature organic food markets exist (Anisimova et al., 2019; Hansmann et al., 2020; Schäufele & Hamm, 2018). For instance, the healthfulness and environmental friendliness of food consumption is particularly valued in France and Australia (Boizot-Szantai et al., 2017; Sultan et al., 2020). Organic food also receives growing popularity, in terms of production and consumption, in developing nations such as India and Vietnam (Ha et al., 2019; Yadav, 2016). In fact, Asian countries host more than 40 percent of the global organic's producers and have become arguably the third largest organic product markets (Asif et al., 2018; Boobalan & Nachimuthu, 2020). However, less is known regarding organic food awareness or consumption in this context. Except for these studies that (Boobalan & Nachimuthu, 2020; von Meyer-Höfer et al., 2015) that have explored organic food purchasing behaviour in both mature and emerging market from a comparative perspective. This lacking information is however needed. For one thing, it helps understand the big picture of organic food consumption patterns across countries and territories with diverse economic development stages and varying maturity levels of organic food markets. For another, such information is especially helpful for developing countries in the industrialization process suffering from deteriorating environmental quality, where more sustainable agricultural practices are desired.

The present study compares organic food consumption behaviour in Australia and Laos, a developed country with mature organic food market and a developing country where such market is only emerging. Australia started organic agriculture in the 1920s (Paull, 2014), and has become the world's largest producers of organic food production in terms of land allocation (Willer et al.,

2022). Australia had more than 4,233 organic operations across the country in 2021, with a retail organic food market valued at more than two billion Australian dollars in 2020 (Willer et al., 2022). Laos, on the other hand, has adopted the organic food production system in the 1990s and slowly developed its market since the 2000s (Makino & Inthalangsee, 2023; Panyakul, 2012). In Laos, organic coffee and tea are key export products to the European Union markets, with their export value increasing from approximately 26 million to 32 million Australian dollars during 2019-2020 (United Nations, 2021). At the moment, Laos has roughly 2,165 organic food producers (Makino & Inthalangsee, 2023).

Australia and Laos have different organic certification processes and market regulations. In Australia, certifiers authorized by the Department of Agriculture, Fisheries and Forestry are responsible for the inspection and certification process of organic food products (Department of Agriculture Fisheries and Forestry, 2023). In the domestic market, the term 'organic' can be used without the product undergoing a rigorous certification process (Ford, 2020). Relatively stronger market regulations with mandatory certification are applied for organic products that are exported overseas (Export Control Act 2020). In contrast to Australia, Laos Certification Body (LCB) under the Ministry of Agriculture and Forestry is fully responsible for implementing inspection and certification processes, especially for organic products sold domestically (Panyakul, 2012). LCB also acts as an intermediary for organic operators to get access to the international certification in collaboration with the Certification Alliance (Bounyasouk, 2012). In Laos, a domestic product cannot make the claim or be labelled as 'organic' if it contains less than 95 percent of certified raw materials (Ministry of Agriculture and Forestry, 2005).

Australia and Laos have distinct food supply chains. In Australia, supermarkets play a vital role in household food shopping, while in Laos, traditional wet markets currently dominate the food supply chain. Institutional differences and varying difficulties in food safety regulation may lead to diverse levels of consumer confidence. Jie and Gengatharen (2019) suggests that concerns about food safety and quality are key motivators for changes in retail supermarkets in Australia, where superior food safety control system is generally expected. In contrast, Laos faces persistent food safety challenges. The lack of food safety knowledge along the supply chain, limited surveillance resources, and inadequate enforcement of food safety regulations are found to be key issues causing heightened food safety concerns (Nguyen et al., 2020). These concerns can factor into organic food purchase (Hsu et al., 2016; Paul & Rana, 2012), likely through organic food awareness. This mediator is somehow overlooked which, together with its possible heterogeneous effects across contexts, awaits further investigation.

The current study aims to narrow these knowledge gaps. Using survey data from both countries in recent years, we specifically investigate the possible roles of altruistic and egoistic values in driving organic food awareness and purchasing behaviour. Our contribution is twofold. Firstly, the paper highlights the role of the altruistic and egoistic values of organic foods in association with awareness and purchasing behaviour of consumers in an emerging and mature organic food markets. Secondly, the data analysis method used allowed us to capture motivations of those who buying organic foods at the same time excluding those who are not aware or are ware but never buy.

The rest of the paper proceeds as follows. Section Two briefly reviews relevant academic literature and present our empirical hypotheses. Section Three introduces survey data and analytical methods. Section Four presents and interprets empirical findings. Section Five finally concludes with policy implications.

4.2. Analytical framework

Multiple drivers of organic food consumption have been identified in literature. Health-related values of organic foods (e.g., free from synthetic chemicals) are commonly identified as determinant for purchase intentions (Anisimova et al., 2019; Asif et al., 2018; Bryla, 2016; Hansen et al., 2018; Janssen, 2018; Paul & Rana, 2012; Singh & Verma, 2017; Teng & Lu, 2016). Consumers' perceptions of these benefits may intuitively alleviate their food safety concerns and can usually serve as key motivations towards organic food consumption (Hsu et al., 2016; Nagaraj, 2021; Tleis et al., 2017). Other benefits may also accrue to environment, animal welfare, product quality (e.g., value for money), and lifestyle (Lee et al., 2015; Olesen et al., 2010; Thogersen et al., 2015; Van Doorn & Verhoef, 2015). Empirical studies from different contexts have revealed diverse roles of these perceptions. For instance, in Germany, pro-environmental attitudes and preference for sustainable product are found to be major drivers for organic wine (Schäufele & Hamm, 2018) , while Swiss consumers are more motivated by health rather than environmental benefits (Hansmann et al., 2020). In Australia, naturalness and sensory appeals of organic food appear to be key motivators (Lockie et al., 2004). These perceived benefits are also identified as key drivers in several developing country markets (Thogersen et al., 2015); (Asif et al., 2018; Tleis et al., 2017).

These motivations can be easily grouped into two categories, including egoistic values that organic food consumption benefits individual health (Prakash et al., 2019), and altruistic values that it is

good for environment or animal welfare (Prakash et al., 2019). Both altruistic and egoistic values are found to play their roles in organic food consumption and purchasing behaviour of consumer (Ditlevsen et al., 2020; Molinillo et al., 2020; Pearson et al., 2013; Schäufele & Hamm, 2018), though non consensus is reached regarding their respective importance across the contexts. A comprehensive analysis from Germany covering more than 13,074 consumers suggests altruistic values (e.g. animal welfare) to be more influential on consumers' attitudes and purchase intentions for organic foods (Padilla Bravo et al., 2013). Others conclude that egoistic values (e.g. health consciousness) play a stronger role in organic purchase intentions among consumers in an emerging market such as India, Pakistan, and Turkey (Asif et al., 2018; Yadav & Pathak, 2016). These contradictory findings may derive from different socioeconomic contexts as well as varying levels of organic food market maturity. Therefore, further comparative investigations are needed to help establish the external validity of these results.

In the current study, it is hypothesized that both egoistic and altruistic values affect organic food awareness and purchase behaviour. Intuitively, organic food awareness is a necessary first step towards purchasing behaviour. Therefore, it is analytically assumed to be a mediator of the effects of egoistic and altruistic values on organic food purchasing behaviour. These relationships are graphically presented in Figure 4.1.

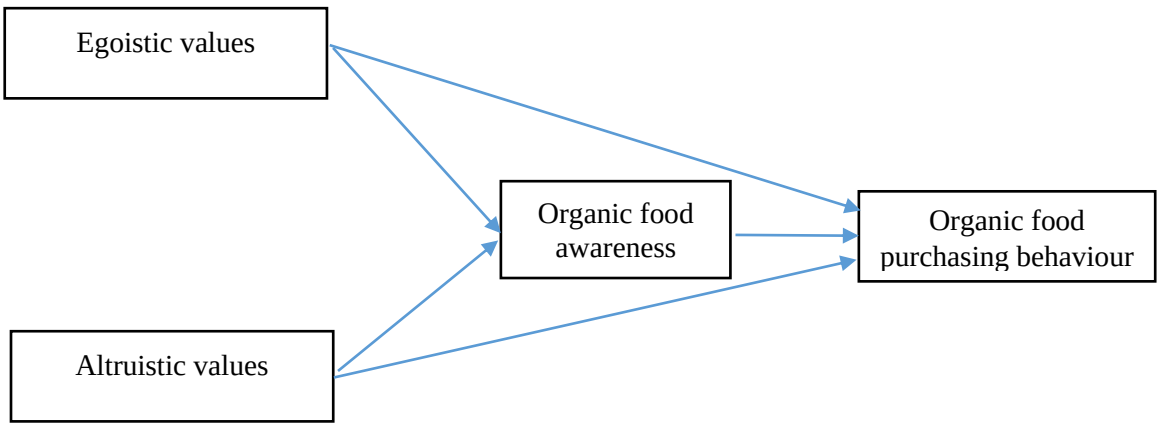


Figure 4.1. Proposed conceptual framework.

In the empirical analysis, regression modelling is employed to test the above hypotheses. Specifically, a bivariate probit model with sample selection is estimated (Van de Ven & Van Praag, 1981). Measures of both egoistic and altruistic values along with other covariates are used to predict organic food awareness and purchasing behaviour. It is appropriate in our case because

organic food purchasing behaviour can only occur if the respondent is aware of organic food's existence and market.

4.3. Data and measures

Empirical analysis is facilitated by two sets of survey data respectively from Australia and Laos. An Australian online consumer survey of 1,001 respondents was conducted in 2021. Participants were eligible to participate if they play a major or share role in household food shopping. Sampling quotas in multiple criteria such as age, gender, and household income were assigned in search of national representativeness. Piloting was implemented before the actual data collection to test survey instruments and ensure data quality. The second data set was a face-to-face consumer survey with 272 Lao consumers conducted in 2022. Participants living in Vientiane, the capital city were identified as eligible to joining the survey. Focus group discussions were conducted to verify and finalise survey instruments in the questionnaire. Piloting was also conducted prior to the actual data collection process. These two surveys were designed in a comparable way with the same focus on food consumption behaviour highlighting organic food. In the Lao survey, a higher rejection rate was encountered given that some people were not used to social surveys and/or might not possess related knowledge. Despite this difficulty, the final sample sizes are relatively proportional to the populations of the two countries.

The key explanatory variables include measures of egoistic and altruistic values (see Table 4.1). The egoistic values of organic food products are assessed using eight different statements representing the perceptions towards a food product with organic certification logo. These statements include "*A healthier choice, from a more trustworthy source*". The respondents were asked to allocate the answer 'yes/no/do not know' against each statement. A score of one is allocated to the answer of 'yes' and zero score for 'no' or 'do not know'. The summation of the scores over all eight statements is then used as the measure of egoistic values. The same method is used for measuring the altruistic values of organic food products. Five statements against a product with organic certification logo were used (e.g., *Better for environment, in case of animal products, higher animal welfare standards apply*). Similarly, a score of one is allocated to the answer of 'yes' and zero score for 'no' or 'do not know', and the aggregate score over these five statements is used to measure altruistic values.

Table 4.1. Statements measured for egoistic and altruistic values for a product labelled with organic food logo.

Egoistic values (Egoistic): Better value for money Guaranteed for better quality. From a more trustworthy source A healthier choice This is a product of superior nutritional value. Safe-less likely to make me or my family sick. Better taste/flavour Free from pesticides/chemical	1 score for 'Yes'; 0 score for 'Otherwise'
Altruistic values (Altruistic): Allowing me to do something good. In case of animal products, higher animal welfare standards apply. Better for human and society Better for environment Produced in a more sustainable manner	1 score for 'Yes'; 0 score for 'Otherwise'

Among the covariates, food safety confidence is assessed on a Likert scale in both countries (Jan Karem et al., 2023). Similarly, readiness to take food safety risk is also measured this way from completely unwilling to take any risk to fully prepared to do so. Other covariates include conventional demographic features (gender, age, education, marital status, household size, whether the family has a child under the age of five) and socioeconomic characteristics (income, employment status, whether the respondent is the main person in family doing food shopping).

A summary of these variables is presented in Table 4.2. Data from Australian and Lao surveys vary in many ways. Apart from the socioeconomic differences associated with varying economic development stages, it is also noticed that, because the Lao survey has been implemented in Vientiane, the capital city, respondents are generally younger and better educated. More females are present in the survey as they are main food shoppers and thus were more willing to participate in the survey. While the Lao respondents have higher awareness of organic food, they have less purchasing experience. Moreover, Australian respondents have higher food safety confidence and are less ready to take food safety risks. All these discrepancies, however, are expected and are controlled for in the quantitative analysis below.

Table 4.2. Descriptive statistics of variables.

	Australian survey (n=1,001)	Lao survey (n=272)
Purchase experience of organic food (1 = yes; 0 = no)	0.543 (0.499)	0.357 (0.480)
Awareness of organic food (1 = yes; 0 = no)	0.475 (0.500)	0.607 (0.489)
Egoistic values (0 to 8: total score over 8 agree/disagree/do-not-know statements)	1.272 (1.457)	5.004 (2.395)

Altruistic values (0 to 5: total score over 5 agree/disagree/ do-not-know statements)	0.701 (1.038)	3.066 (1.501)
Gender (1 = male; 0 = female)	0.490 (0.500)	0.346 (0.476)
Age (years)	45.335 (16.539)	28.088 (7.762)
Education (1 to 9: from primary school or below to postgraduate degree)	5.722 (2.007)	7.092 (1.564)
Annual income (thousand Australian dollars)	58.772 (53.047)	5.105 (5.465)
Marital status (1 = married; 0 = otherwise)	0.589 (0.492)	0.316 (0.466)
Household size (number of family members)	2.681 (1.361)	4.974 (2.194)
Shopping role (1 = main food shopper; 0 = otherwise)	0.778 (0.416)	0.426 (0.495)
Employment status (1 = working fully time' 0 = otherwise)	0.399 (0.490)	0.632 (0.483)
Having child(ren) under age 5 (1 = yes; 0 = no)	0.126 (0.332)	0.213 (0.410)
Food safety confidence (1 to 5: from not at all confident to extremely confident)	5.624 (1.027)	3.048 (0.774)
Readiness to take food safety risks (1 to 10: from not at all to fully ready)	4.194 (2.809)	6.018 (2.389)

Source: authors' own surveys from Australia and Laos.

4.4. Results and discussion

Baseline regression estimation

Probit models with sample selection are estimated using a two-stage procedure to identify the respective roles of altruistic and egoistic values in consumers' organic food awareness and purchasing behaviour in the two studied countries. Table 4.3 reports the marginal effects of estimated coefficients of the two surveys side to side. Both models are properly identified with evidence for selection, suggesting the appropriateness of using the two-stage correction.

From the Australian survey, it is seen that both egoistic and altruistic values are significantly and positively associated with organic food awareness. However, neither has a strong correlation with organic food purchase. This is possibly explained by the fact that awareness is not a decision, but purchase is, and making real spending on organic food may need much stronger incentives. In comparison, results from the Lao survey show that egoistic values have positive and significant correlations with both organic food awareness and purchasing behaviour, while altruistic values are not. This is again reasonable because, given the developing country nature of Laos, people are generally positioned lower in the demand hierarchy and thus place larger weights on individual benefits that are perceived more relevant.

In both models, food safety perception as jointly measured by confidence and readiness to take such risks plays a significant role affecting organic food awareness. Australian respondents who feel more ready to face food safety risks are less likely to be aware of organic food options. Similarly, Lao respondents who are more confident in public food safety manifest a similar relationship. The roles of

other covariates exhibit less consistent patterns. Age is affecting organic food purchasing behaviour, while its role is negative in Australia (older people are less likely to purchase) yet positive in Laos (older people are more likely to do so). The latter relationship is intuitive as in Laos where food safety remains a nontrivial issue among the public, older people may take measures against possible risks.

Table 4.3. Baseline estimates from probit models with sample selection.

	Australian survey (n=1,001)		Lao survey (n=272)	
	Awareness	Purchase	Awareness	Purchase
Egoistic values	0.164 (0.034) ***	0.036 (0.037)	0.214 (0.055) ***	0.240 (0.095) **
Altruistic values	0.204 (0.048) ***	-0.084 (0.049) *	-0.007 (0.082)	-0.163 (0.105)
Gender	-0.144 (0.088)	0.085 (0.097)	0.637 (0.192) ***	-0.115 (0.309)
Age	-0.001 (0.003)	-0.007 (0.003) **	0.005 (0.015)	0.096 (0.028) ***
Education	0.079 (0.023) ***	-0.040 (0.024) *	0.194 (0.059)	0.069 (0.114)
Annual income	-0.005 (0.012)	0.021 (0.012) *	-0.000 (0.000)	0.000 (0.000)
Marital status	0.003 (0.095)	0.007 (0.103)	0.158 (0.255)	0.099 (0.347)
Household size	-0.012 (0.036)	-0.026 (0.040)	0.004 (0.041)	0.014 (0.052)
Shopping role	0.035 (0.103)	-0.126 (0.115)	-0.360 (0.181) **	-0.082 (0.267)
Employment status	-0.013 (0.098)	-0.072 (0.109)	0.498 (0.185) ***	-0.141 (0.380)
Having child(ren) under age 5	0.080 (0.137)	0.133 (0.154)	-0.144 (0.224)	-0.292 (0.325)
Food safety confidence	0.022 (0.030)		-0.306 (0.119) ***	
Readiness to take food safety risks	-0.033 (0.012) ***		-0.007 (0.039)	
Constant	-0.715 (0.271) ***	1.325 (0.259) ***	-1.475 (0.743) **	-3.614 (1.758) **
ρ (Fisher z-transformation)	-0.999 (0.170) **		0.708 (0.191) ***	
Log likelihood	-946.749		-236.523	
Wald χ^2	17.46 (0.016) **		28.42 (0.003) ***	
Selected observations	475		165	
Non-selected observations	526		107	

*** p<0.01; ** p<0.05; * p<0.1.

Source: authors' estimation with survey data from Australia and Laos.

To further test the above findings, several robustness check procedures are implemented. First, because the baseline estimation utilizes a Likert-scale educational measure which may not fully account for its categorical nature, we turn to incorporate a series of dummy variables to control for education and re-estimate the model. Second, the baseline model is alternatively estimated with Heckman selection model. The difference between the above probit model with sample selection and Heckman selection model lies in the second-stage, where a linear model is specified in the latter. Specifically, the Heckman selection model is estimated in two different ways, respectively with full maximum likelihood and two-step consistent estimators. Although a nonlinear model may fit the conditional expectation function better for limited dependent variable models, a linear function relies on fewer assumptions and is more robust against potential model misspecification that no empirical study can

claim to be free of (Angrist, 2001; Angrist & Pischke, 2009). Hence, these alternative procedures may serve the purpose of validating the above baseline regression results.

The key estimates (marginal effects of the probit model with sample selection, and two Heckman selection model procedures) are reported in Table 4.4. It is seen that, in most cases, the estimated effects of egoistic and altruistic values in both organic food awareness and purchasing behaviour are extremely close to our baseline results, lending credence to the latter. The only noticeable discrepancy exists in the estimates of the role of egoistic values in organic food purchasing behaviour in the Heckman selection model procedures, which appear to be smaller than our baseline results. However, they do not loss any statistical significance and hence does not impede our inferences from a qualitative perspective. Given the validity of baseline findings, it is worth to further investigate if any heterogeneity exists in subsamples, which may potentially help with the precision of targets in policy designs.

Table 4.4. Robustness check results of the roles of egoistic and altruistic values in organic food awareness and purchasing behaviour.

		Australian survey (n=1,001)		Lao survey (n=272)	
		Awareness	Purchase	Awareness	Purchase
Probit model with sample selection (alternative education measures)	Egoistic values	0.172 (0.035) ***	0.062 (0.054)	0.210 (0.057) ***	0.239 (0.110) **
	Altruistic values	0.208 (0.049) ***	-0.059 (0.060)	-0.014 (0.083)	-0.167 (0.110)
Heckman selection model (full maximum likelihood)	Egoistic values	0.166 (0.035) ***	0.033 (0.021)	0.214 (0.055) ***	0.077 (0.029) **
	Altruistic values	0.208 (0.048) ***	-0.023 (0.028)	-0.006 (0.082)	-0.049 (0.31)
Heckman selection model (two-step consistent estimator)	Egoistic values	0.165 (0.035) ***	0.018 (0.031)	0.214 (0.055) ***	0.076 (0.032) **
	Altruistic values	0.204 (0.049) ***	-0.042 (0.041)	-0.006 (0.082)	-0.050 (0.031)

*** p<0.01; ** p<0.05; * p<0.1.

Source: authors' estimation with survey data from Australia and Laos.

Subsample analysis

Subsamples are differentiated according to four categories, including gender, age, education level and income. Gender has a natural male/female breakdown in both surveys with no other gender status reported. For age, education and income, dichotomous groups are considered where respondents are categorized as being either younger or older, either better or less educated, and either of higher or lower income with ad hoc breakpoints as close to midpoints as possible. Probit models with sample

selection correction are then estimated with each subsample to detect any possible heterogeneity in the roles of egoistic and altruistic values in organic food awareness and purchasing behaviour.

These estimates are reported in Table 4.5. Analyses with Australian data show that, the roles of egoistic and altruistic values are universally significant in driving organic food awareness with no between-subgroup discrepancies. Moreover, both appear to be significantly correlated with organic food purchasing behaviour among Australian males, while no correlation turns out to be highly significant among other subgroup classifications. From the Lao survey, egoistic values are highly significantly associated with organic food awareness in most subgroup classifications except for male and younger respondents. Regarding organic food purchases, its role is only significant among male, younger respondents, and those with lower education level and higher income. This contrasts findings from Australian survey where the role of both values are rather limited in driving organic food purchases.

Table 4.5. Subsample results of the roles of egoistic and altruistic values in organic food awareness and purchasing behaviour.

			Australian survey (n=1,001)		Lao survey (n=272)	
			Awareness	Purchase	Awareness	Purchase
Gender	Male	Egoistic values	0.265 (0.054) ***	0.353 (0.057) ***	0.075 (0.093)	0.276 (0.092) ***
		Altruistic values	0.224 (0.070) ***	0.162 (0.074) ***	0.268 (0.139) *	-0.072 (0.130)
	Female	Egoistic values	0.098 (0.047) **	-0.008 (0.050)	0.299 (0.072) ***	0.304 (0.245)
		Altruistic values	0.194 (0.066) ***	-0.069 (0.070)	-0.126 (0.110)	-0.168 (0.189)
Age	Younger	Egoistic values	0.184 (0.050) ***	-0.008 (0.067)	0.115 (0.068) *	0.230 (0.069) ***
		Altruistic values	0.209 (0.070) ***	-0.125 (0.074) *	0.073 (0.109)	-0.089 (0.107)
	Older	Egoistic values	0.152 (0.052) ***	0.115 (0.090)	0.696 (0.203) ***	0.076 (0.159)
		Altruistic values	0.217 (0.069) ***	-0.015 (0.093)	-0.345 (0.215)	-0.196 (0.224)
Education level	Lower	Egoistic values	0.150 (0.055) ***	0.076 (0.079)	0.397 (0.117) ***	0.381 (0.122) ***
		Altruistic values	0.266 (0.075) ***	-0.136 (0.100)	-0.019 (0.149)	-0.083 (0.156)
	Higher	Egoistic values	0.174 (0.047) ***	0.101 (0.096)	0.189 (0.072) ***	0.161 (0.084) *
		Altruistic values	0.160 (0.064) **	0.061 (0.119)	-0.029 (0.103)	-0.193 (0.123)
Income	Lower	Egoistic values	0.171 (0.051) ***	-0.009 (0.056)	0.177 (0.079) **	0.141 (0.085) *
		Altruistic values	0.146 (0.069) **	-0.058 (0.075)	-0.021 (0.128)	-0.046 (0.147)

	Higher	Egoistic values	0.163 (0.047) ***	0.091 (0.051) *	0.269 (0.085) ***	0.420 (0.137) ***
		Altruistic values	0.287 (0.069) ***	-0.099 (0.070)	0.059 (0.117)	-0.247 (0.161)

*** p<0.01; ** p<0.05; * p<0.1.
Source: authors' estimation with survey data from Australia and Laos.

Discussion

The above results present several interesting comparisons. Altruistic values are positively associated with organic food awareness only in the Australian survey, which however cannot stimulate purchasing behaviour, similar to literature findings from Australian consumers (Smith & Paladino, 2010). Egoistic values, on the other hand, are found to play a significant role in organic food awareness among Australians, but no association are found regarding purchasing behaviour. This may reflect the relatively high level of confidence in the safety of food supply Australians have and thus there is a lack of association between egoistic values and organic food awareness or purchasing behaviour.

In Laos, altruistic values do not play a role at all in either organic food awareness or purchasing behaviour, where both are driven by egoistic values. These echo previous findings from developing economies with emerging organic food markets such as India, Indonesia, and China, where egoistic values play a crucial role in purchasing behaviour for organic food (Dong & Gao, 2024; Septiani et al., 2019; Yadav, 2016). They may reflect the pyramid of needs (Pichère et al., 2015): individuals would firstly satisfy their physical needs (e.g., food, drink) before moving up to safety needs, which is the case of relatively lower income developing economies as Laos represents.

The distinct roles of egoistic and altruistic values between the contexts straightforwardly suggest different emphases in increasing the effectiveness of government-led promotions or marketing campaigns of organic food. Developed economies like Australia may observe a high level of public awareness of organic food options, yet encouraging people to buy them remains a challenge ironically with higher food safety standards. In other words, organic food may appear to be less attractive as compared to regular food that is already perceived as safe to consume. Therefore, future promotions or organic food products remain a challenge, and more efforts are needed in differentiating organic food options from the traditional ones. On the contrary, for Laos and similar developing countries, promotion of organic food could emphasize egoistic values under current socioeconomic conditions. Organic food businesses in Laos may incorporate egoistic values of products (e.g. free from pesticides and other chemicals) into their marketing mixes, given that they are significantly associated with consumers' purchasing behaviour.

Promotion and marketing efforts may further look at different socioeconomic groups among the population. Subsample analyses above suggest that different groups may be affected differently by egoistic and altruistic values in their organic food consumption behaviour. Therefore, in various countries/regions, identification of such discrepancies in dimensions such as gender, age, education and income subgroups could be meaningful, which awaits context-specific investigation.

4.5. Concluding remarks

Organic food perceived as a healthier and more environmentally friendly option has gained increasing attention from consumers and government agencies around the world. This study looks at the roles of egoistic and altruistic values in organic food awareness and purchasing behaviour. Empirical analyses from Australia and Laos using probit models with sample selection have uncovered useful practical knowledge regarding consumers' organic food in association with organic food awareness and purchasing behaviour. It is found that among Australian consumers, both egoistic and altruistic values play significant roles in organic food awareness, but neither is driving purchasing behaviour. Among Lao consumers, egoistic values are significantly associated with both awareness and purchasing behaviour while altruistic values are not. The results are robust through multiple alternative estimation procedures. Subsample analyses have further identified the heterogeneous roles that egoistic and altruistic values play.

Several implications arise that could potentially assist stakeholders' decision making. Specifically, the missing link between organic food awareness and purchase as observed from the roles of egoistic and altruistic values in Australia needs to be established to realistically encourage organic food consumption. On the other hand, stakeholders in developing countries may emphasise the egoistic benefits of organic food consumption, which may better fit in the current economic development stage and stimulate consumption. While the above findings do not speak directly of the merits of these measures, they are worth serious consideration in promotions and marketing campaigns to increase their effectiveness.

As one of the first comparative studies in this regard, the current research has some limitations. First, female participants are overly presented in Laos as compared to the gender structure due to the fact that women are the main household food shoppers. Second, the Lao survey received a significantly high rejection rate, resulted in a relatively small sample. Nevertheless, the above study does present some interesting and useful findings in assisting stakeholder decision making. Future research along this pipeline is encouraged to not only overcome these remaining limitations but also further establish

the external validity of our findings, which may translate into policies and business strategies that stimulate organic food consumption and thus help achieve the United Nations Sustainable Development Goals.

Acknowledgements

The authors would like to acknowledge the financial supported for the data collection process in Australia from the Food Insights and Experiences Survey (H-2018-173) project funded by the Centre for Global Food and Resources, the University of Adelaide. The authors would also like to extend the acknowledge to the financial supported from the Crawford Fund for the data collection process in Laos, under the 'A Comparative Study of Consumers' Organic Food Purchasing Behaviour in Laos and Australia' project (H-2021-070).

Data Availability Statement

The data will be made available up on the request.

Author Contributions

Chitpasong Kousonsavath: Conceptualization, Methodology, Investigation, Formal analysis, Writing-original draft, Writing-reviewing and editing; **Lenka Malek**: Conceptualization, Methodology, Resources, Writing-reviewing and editing, Supervision; **Wendy J. Umberger**: Conceptualization, Methodology, Writing-reviewing and editing, Supervision, Funding acquisition; **Di Zeng**: Writing-review and editing, Supervision.

Declaration of interest:

The authors would like to declare that there are no known financial or personal conflict of interest.

Declaration of Generative AI and AI-Assistant Technologies in the Writing Process

During the preparation of this work, the authors used ChatGPT to help improve readability. After using this tool, the authors have reviewed and edited the content as needed and take full responsibility for the content of publication.

Chapter 5: Summary, discussions and implications, limitations, and recommendations for future research

5.1. Summary of key findings

This thesis seeks to deepen our comprehension of consumers' organic food purchasing behaviour, with a specific focus on the interplay between consumers' knowledge and its influence on purchasing behaviour and trust. It also investigates the influence of altruistic and egoistic values towards organic food, examining their association with consumer awareness and purchasing behaviour in Australia and Laos, which respectively represent well-established and emerging organic food markets. A significant aspect addressed in this study is the relatively underexplored domain of consumers' knowledge regarding organic food purchasing behaviour. Moreover, it contributes to the limited comparative analysis between mature and emerging organic food markets. The primary findings of this thesis (chapter 2, 3 and 4) draw upon data collected from Australia and Laos. The first dataset comprises a representative sample of 1,001 consumers across Australia, obtained via an online consumer survey conducted in 2021, which informs the findings in chapter 2, 3 and partially chapter 4. The second dataset, consisting of 272 Lao consumers, was collected using face-to-face consumer surveys conducted in 2022, and form the basis for the findings in chapter 4.

Different data collection methods were employed to suit the unique environments of the two studied countries. For Australia, an online consumer survey was deemed more appropriate and was integrated into the larger Food Insights and Experiences Survey project conducted by the Centre of Global Food and Resources, at the University of Adelaide. The PhD candidate contributed to the questionnaire design, while Dynata™ was responsible for participant recruitment based on provided eligibility criteria. In contrast, face-to-face consumer surveys were conducted in Laos to accommodate limited internet access and lower familiarity with online questionnaire participation. The PhD candidate played multiple roles in this process, including questionnaire development, conducting focus group discussions, enumerator training, and managing the data collection.

In **chapter 2**, the study aims to answer the following research questions: How knowledgeable Australian consumers are when it comes to certified organic food production and certification? And how does knowledge affect their attitudes and/or behaviour towards certified organic food? Multiple linear regressions were estimated to analyze the data. Reliability check of the multiple-item questions was performed, and the results are at the acceptable ranges. Further analysis was conducted to compare certified organic food knowledge among organic food buyers and non-buyers.

Overall, Australians have higher knowledge in organic food certification and inspection processes, but are less knowledgeable in production aspect. Furthermore, econometric analysis revealed that subjective knowledge was strongly and positively associated with stated purchase intention, but only weakly related to attitude. On the other hand, objective knowledge was found to have no association with stated purchase intention, but strongly influence attitude towards organic food and which then later influenced stated purchase intention. In addition, sub-sample analysis suggested that organic food buyers do have higher knowledge compared to non-buyers.

In **chapter 3**, the study aims to answer the following research questions. How do different types of knowledge influence trust in certified organic food labels? How does trust influence certified organic purchasing behaviour? How is consumers' science literacy associated with level of trust in 'certified' organic food labels?

Multiple linear regression revealed significant correlations between subjective and sub-categories of objective knowledge (*Scientific, General food production and Certified organic food knowledge*) with trust in organic food labels. Positive correlations were observed between subjective knowledge and trust in organic food labels. Similarly, positive associations were found between general food production knowledge, and trust in claim and international labels, while certified organic food knowledge correlated positively with trust in claim and domestic labels. However, a negative association was uncovered between scientific knowledge and organic food labels. In addition, consumers with higher subjective and objective knowledge have demonstrated greater trust across trust all tested organic food labels.

In **chapter 4**, the study aims to explore the roles of altruistic and egoistic values towards organic food in association with organic food awareness and purchasing behaviour among consumers in mature (Australia) and emerging (Laos) organic food markets. Probit models with sample selection were employed to comparatively analyse the data from 1,001 Australian consumers via an online survey conducted in 2021, and from 272 Lao consumers face-to-face survey conducted in 2022. Results reveal heterogeneity behaviour among consumers in mature and emerging organic food markets. Both egoistic and altruistic values were found to play a role in organic food awareness, but not for the purchasing behaviour among consumers in Australia where a mature organic food market exists. In contrast, egoistic values played a role in both organic food awareness and purchasing in Laos, while

altruistic values did not in either. These distinct findings point to varying potential focal points in organic food campaigns and marketing activities in different settings.

5.2. Discussion, and policy implications

Healthfulness and environmental friendliness have become increasingly important in shaping organic food consumption behaviour (Prakash et al., 2023). This has led to an increased in organic food market value by 13% in 2020 (Sadiq et al., 2023). An increasing trend in organic food consumption is significantly noticeable in those developed and wealthy nations (Molinillo et al., 2020), but the trend is also visible in the developing world (Yadav & Pathak, 2017). The increasing demand for organic food has caught research attention, and several motivations and barriers behind organic food purchasing behaviour have been identified in the past decades. However, much less research focus has been paid to consumer knowledge and its association with organic food purchasing behaviour, especially in the Australian context.

The result from Chapter 2 showed that Australians were more knowledgeable in terms of organic food inspection and certification process but lack knowledge in production aspects. The results showed a significant role of subjective knowledge in association with stated organic food purchasing behaviour, however when considering to actual buying behaviour, organic food buyers are more knowledgeable than non-buyers. In addition, although objective knowledge was not found to have a direct effect on purchase intention, it does play an important role in improving attitudes toward organic food and later significantly increase their stated purchase intention.

The findings from Chapter 3 further confirm the prominent role of consumer knowledge. The result from this chapter indicates that both subjective and objective knowledge play an important role in increasing level of trust in organic food labels. Consumers with high subjective and objective knowledge have a higher level of trust in organic food labels. The findings also indicate that, among the three sub-categories of objective knowledge (scientific, general food production and certified organic food knowledge), the general food production and certified organic food knowledge positively influenced level of trust in organic food labels.

The findings from both chapters indicate that improving consumers knowledge, especially the objective knowledge regarding the general food production and certified organic food knowledge, may play an important role in supporting organic food purchasing behaviour. Policy makers and organic food businesses should pay more attention to improve consumer knowledge and make sure that consumers' confidence in their level of knowledge regarding organic foods is reflects correct

knowledge. Correct knowledge of consumers can lead to their making informed decisions and potentially contribute to increasing organic food consumption.

The findings from Chapter 4 have shed light on different aspects of organic food purchasing behaviour. The egoistic values toward organic food were found to be more important in driving organic food purchasing behaviour among consumers in Laos that presents an emerging organic food market. The altruistic values of organic food on the other hand found to be more important among consumers' awareness in the more mature Australian market.

The heterogeneity in organic food purchasing behaviour among consumers in a more mature and emerging market should be considered when promoting organic foods. In an emerging organic food market and where consumers are relatively less confident over the safety of food supply systems, embedding egoistic values towards organic food into organic food promotion campaigns could potentially help increase organic food awareness and purchasing behaviour. The fact that organic foods are free from harmful chemicals may indicate that it is a safer option compared to the conventional counterpart. Thus, the Lao government can integrate the egoistic values towards organic food into the promotion campaign, which could help achieving the goal of sustainable agricultural policy promotion at the same time as increasing demand for organic foods.

5.3. Limitations and recommendation for the future research

This thesis has contributed to enriching organic food purchasing behaviour literatures in much less understood aspects like consumers' knowledge and heterogeneity between the mature and emerging markets. However, there are some limitations that need to be taken into consideration when interpreting findings of this research and when designing future research.

In the first study (chapter 2), product specification was not considered, and given several organic food products are available in the market and consumers knowledge may vary depending on which product consumers are frequently purchased or interested to buy may affect their product knowledge. This may be considered given available data. In addition, while the second study (chapter 3) extensively covers various aspects of consumers' objective knowledge, the study has restricted its focus regarding consumers' understanding of the meaning of each organic food label assessed. This element is important because if consumers are unaware or do not understand the meaning of the certification logo, potential bias may arise in their level of trust.

Finally, the Lao survey overrepresented female participants since women are the main household food shoppers. This may not line up well with population gender composition and may make the study less comparable to those from other countries. This study received a significantly high rejection rate, resulted in a relatively small sample size, therefore, a results validation from a larger sample is needed. The allocation between altruistic and egoistic values towards organic food could be clearer in some respects. For instance, ‘allowing me to do something good’ may be classified as a moral attitude rather than altruistic value (Yadav & Pathak, 2016). Nevertheless, the thesis makes contribution to the literature in several aspects abovementioned and the remaining limitations await further efforts in establishing the external validity of the current findings.

Appendix 1: Online Australian Consumer Survey Questionnaires
Q23-25: SHOWN IN WAVE 1 and 2 AND show in WAVE 8 (July 2021)

Food labels awareness, purchase and perceptions

These next questions ask about your awareness of and experience with different food labels

22. Below are some labels or certifications that you may or may not have seen before on food products.

Select ALL labels that you **have seen or are aware of.**



A1



B3



C12

		
C14	C15	C16

❑ None of the above

[SPLIT THIS Q ACROSS 3 SCREENS, ACCORDING TO THE BLOCKS INDICATED; RANDOMISE ORDER OF IMAGES FOR EACH RESPONDENT- THEN KEEP IN SAME ORDER IN NEXT Q] [IF AN ITEM/IMAGE IS NOT SELECTED IN THIS Q THEN DO NOT SHOW THAT ITEM IN NEXT Q]
[PLEASE ENSURE IMAGES ARE APPROX EQUAL SIZE AND LARGE ENOUGH FOR TEXT TO BE LEGIBLE; MAY NEED MULTIPLE SCREENS FOR THIS Q]

23. Have you previously **PURCHASED** food products with the following labels/claims?
Please select all that apply [SHOW ALL ITEMS/IMAGES SELECTED IN PREVIOUS Q, MAX 9 ITEMS/IMAGES ON ONE SCREEN]

❑ None of the above

24. For each label, tick all statements which you believe apply to food products with that label.
Select all that apply

	
	A1
Better value for money	
Guaranteed to be better quality	
From a more trustworthy source	
A healthier choice	
Is of superior nutritional value	
Allowing me to do something good	
Safer – less likely to make me or my family sick	
Better taste/flavour	
In the case of livestock products, higher animal welfare standards apply	
Free of pesticides/chemical	
Better for humans and society	
Better for the environment	
Produced in a more sustainable manner	
No different than others, i.e. a marketing gimmick	
Don´t know	
None of the statements apply	

[RANDOMISE COLUMNS BETWEEN RESPONDENTS] [AT LEAST ONE OPTION MUST BE TICKED IN EACH COLUMN]

I1. How would you rate your **UNDERSTANDING** of **'certified organic' food**?

I know nothing at all 1	2	3	4	5	6	**I know a great deal** 7

I2. Considering **MOST** food available to you in Australia, which of the following do you think applies?

Select one answer from the options below.

[CAROUSEL FORMAT Q; RANDOMISE ITEM(ROW) ORDER]

	Yes	**No**	**Don't know**
The use of genetic engineering methods is **permitted**			
The use of pesticides produced from synthetic chemicals is **permitted**.			
The use of **additives** and **processing aids** is **permitted** only where their use does not compromise the authenticity of the product or detract from the overall quality of the product.			
Production methods emphasise the **use of renewable resources**			
Production methods emphasise the **conservation of energy, soil, and water**			
Production methods emphasise the **recognition of livestock welfare needs**			
Production methods emphasise **environmental maintenance and enhancement**			

I3. Now considering '**CERTIFIED ORGANIC'** food available in Australia, which of the following applies?

Select one answer from the options below

[CAROUSEL FORMAT Q; RANDOMISE ITEM(ROW) ORDER]

	Yes	**No**	**Don't know**
The use of genetic engineering methods is **permitted**			
The use of pesticides produced from synthetic chemicals is **permitted**.			
The use of **additives** and **processing aids** is **permitted** only where their use does not compromise the authenticity of the product or detract from the overall quality of the product.			
Production methods emphasise the **use of renewable resources**			
Production methods emphasise the **conservation of energy, soil, and water**			
Production methods emphasise the **recognition of livestock welfare needs**			

	Yes	No	Don't know
Production methods emphasise **environmental maintenance and enhancement**			
Certified organic farmers, processors, transporters and retailers **MUST** undergo auditing and verifying processes by the **approved organic certifier every 12 months**.			
Certified organic plants must be **grown from organic seed or organic plant materials.**			
Certified organic food, as far as possible, **excludes unnecessary packaging.**			
Certified organic food packaging, as far as possible, **incorporates recycled and biodegradable materials.**			
Any person who **produces or markets**, certified organic food products **MUST** be **certified** for the activity through an **approved certifying organisation**.			

I4. In general, purchasing organic food product is…

[RANDOMISE ITEM(ROW) ORDER]

Bad 1	2	3	4	5	6	Good 7
Harmful 1	2	3	4	5	6	Beneficial 7
Useful 1	2	3	4	5	6	Worthless 7
Unpleasant 1	2	3	4	5	6	Pleasant 7

I5. To what extent do you agree with each statement?

[RANDOMISE ITEM(ROW) ORDER]

	Strongly disagree 1	**2**	**3**	**4**	**5**	**6**	**Strongly agree 7**
I **expect to** buy organic food products in the future							
I **want to** buy organic food products in the future							
I **intend to** buy organic food products in the future							

Information sources

In the next two questions we want to find out what information sources you trust and rely on

38. How much do you **TRUST** the following people/organisations to provide accurate information about **FOOD SAFETY?**

	Do not trust at all 1	2	3	Neutral 4	5	6	Trust completely 7
Farmers (e.g. an individual farmer)							
Farmer Associations (e.g. Cattle Council Australia, Australian Eggs, Grain Producers Australia)							
Food Processors (e.g. dairy, meat or grain processor)							
Food Industry Associations (e.g. Australian Food and Grocery Council, Dairy Industry Association of Australia)							
Supermarkets (e.g. Coles, IGA, Woolworths, Aldi)							
Independent or local food stores (e.g. butcher, bakery, fruit and vegetable shop)							
Universities							
CSIRO- Commonwealth Scientific & Industrial Research Organization							
Other research organisation							
Government/government agencies (e.g. FSANZ-Food Standards Australia New Zealand)							
Food Safety Information Council [http://foodsafety.asn.au/](national health promotion charity)							
Consumer organisation (e.g. Choice)							
Environmental organisation (e.g., Landcare, World Wide Fund for Nature (WWF), etc.)							
Animal welfare organisation (e.g., RSPCA)							
Animal rights/protection organisation (e.g., Voiceless, Animals Australia)							
Doctors/medical professionals							
Dietitians and nutritionists							
Celebrity chefs							
Family/Friends/Work colleagues							

[PLEASE RANDOMISE ORDER OF ROWS BETWEEN RESPONDENTS AND KEEP SAME ORDER FOR NEXT Q; IF POSSIBLE PLEASE ALWAYS SHOW YELLOW HIGHLIGHTED ITEMS IN SAME ORDER]

39. How much do you **TRUST** the following **labels** on food products in Australia?

	Do not trust at all 1	2	3	Neutral 4	5	6	Trust completely 7
Organic							
Certified Organic							
Australian Certified Organic							
NASAA CERTIFIED ORGANIC							
USDA ORGANIC							

[PLEASE RANDOMISE ORDER OF ROWS BETWEEN RESPONDENTS]

Appendix 2: A focus group discussion flyer

A COMPARATIVE STUDY OF CONSUMERS' ORGANIC FOOD PURCHASING BEHAVIOUR IN LAOS AND AUSTRALIA

The University of Adelaide, Australia under the collaboration with the Faculty of Agriculture, the National University of Laos is recruiting adults age 18 and over, responsible for household food shopping and living in Vientiane capital.



The participants will attend a focus group discussion session organized at the market [insert the name of the market]. The focus group study aims to explore Laos consumers' current knowledge, awareness and attitudes regarding organic food products and production systems.

Time commitment: **approx. 1 hour**
Reimbursement: **cash payment of 40,000LAK**

Thank you
Professor. Wendy Umberger (on behalf of the project team)

Appendix 3: Focus group discussion scripts (Lao consumer survey)

Focus group discussion questioning script.

Researcher introduction, thank you and purpose of activity. **(1min)**	Hi, my name is Chitpasong Kousonsavath from the National University of Laos, and I am currently doing my PhD at the University of Adelaide, Australia. I am going to lead our discussion today. I would like to point out that I am not here to convince you of anything or try to sway your opinion. My role is just to ask questions and then encourage and moderate our discussion. I would like to start off by thanking each of you for participating in our discussion today. You have been chosen to participate in this research because you are the main person responsible for your household's food shopping and you are residing in Vientiane capital. For this research, we are particularly interested in your views and experiences related to food purchasing behaviour and perceptions regarding organic food products. This research is part of my post-graduate research project that I am doing as part of a PhD degree, therefore I appreciate your time and any thoughts you would like to share today. I want to also let you know that we will provide you with your incentive after we complete the focus group discussion.
Ground rules. **(2min)**	Before we begin our discussion, I would like to go over some ground rules, which will allow our discussion to flow more freely. 1. Please talk one at the time and avoid side conversations with the people sitting next to you. We are recording the session because we don't want to miss any of your comments. If several people are talking at the same time, we won't understand what each of you is saying. 2. You don't need to answer every single question, but I would like to hear from each of you today as the discussion progresses. 3. It's important to remember that there are no right or wrong answers but rather different points of view. So please feel free to share your opinion even if it differs from what others have said and feel free to comment on each other's remarks. We will be on a first name basis today but in our reports, there will not be names, or any other kind of personal identifier attached to comments, so the points raised are completely anonymous. So, you can be assured of complete confidentiality.

	We will be here for one hour and will not be taking a formal break. Water is provided on the table for your refreshment and toilet is (location), please feel free to leave the table if you would like to go to the toilet, but please do so quietly. To make sure that I will catch up with our proposed time frame I might run the discussion faster or skip questions if needed.
Group warmer activity. **(3mins)** (*this activity aims to get everyone talk at least once before the questioning session is started*)	Well, let's begin. Let's find out a bit about everyone. We will go around in circle, and one by one I would like to tell us your name and which village you are currently reside? After this activity, proceed to questions

Priority issues to discuss.

1. Knowledge about organic foods
2. Issue of trust in the organic farming and marketing

Introduction Qs **(5 min)**	So, let's get started with the Qs: 1. I would like you to think back to the last time when you went grocery shopping for food products for your household. What are some important factors you consider when you are shopping for food?
Transition Qs **(5min)**	1. Out of factors mentioned on your paper, can you write down which of them are the most **(top three)** important factors.

Awareness/perceptions/trust of organic food products

Key Qs (50 min)	The aim of this session is to have a better idea about organic food in general. 1. Prior to participating in this study, how many of you have heard about 'organic' foods? Please raise your hands if you do. 2. Now we'd like to understand what the term 'organic' means **to you**? Even if you haven't heard of this term before, what would you think it means if you saw the word 'organic' on a food product or heard about it? (ask participants to take a few minutes to write down the meaning of the term on a piece of

	paper- then discuss responses) Further follow up what make them define the term in that way. 3. Have you purchased organic food products before? **If yes**, what organic foods do you buy? How often do you buy them? Where? What make you buy them? **3.1.**If you **haven't** purchased organic food products before, have you **wanted** to buy them? Why? Why not? 4. How do you know if the food product is organic or non-organic? (depending on the answer, and if respondent mention about the 'certified' logo) 4.1. What do you think is the meaning of this [organic certification logo]? 5. How do you trust if it is organic or not? (i.e. because the producer told me/because I see the certified logo). When you see the lettuce with the word 'organic', how do you know this information is true/can be believed? What makes you believe that the product is organic? Or how do you know if you can trust this? 6. Who or what types of organisations would you like to certify organic food product (i.e. government body, private sector, university, certifying company)? What make you think this (certification body mentioned) would be best certify organic food product? Can you think of any other labels/logos on food products that you trust? What makes you think they are reliable/can be believed?
Show these logos to participants. Present these logos to participants after the question 6. (the results about the awareness of these logos will be used to justify how many logos to be included in the questionnaire)	       

Conclusion	So, that brings us to the end of the discussion. Is there anything that hasn't already been raised that you think is important to include or mention? Thank you again for your participation and contributions in our discussion.

Appendix 4: Supplementary for the focus group discussion (product logos awareness)

Please mark (√) under the following logo if you have seen the logo, and please mark (×) if you have not seen the logo.



☐



☐



☐



☐



☐



☐



☐



☐

Appendix 5: Supplementary for the focus group discussion (socio-demographic questionnaire)

Name of the market: ……Date:……

Group number:……(this number indicate which group respondent belongs to)

SOCIO-DEMOGRAPHICAL INFORMATION

1.1. What is your **GENDER**?

☐ 1.1.1 Male ☐ 1.1.2. Female

1.2. How old are you? ……..years old

1.3. What is your highest **EDUCATION LEVEL**?

☐ 1.3.1. Uneducated ☐ 1.3.4. High school ☐ 1.3.7. College
☐ 1.3.2. Primary school ☐ 1.3.5. Vocational school ☐ 1.3.8. Undergraduate
☐ 1.3.3. Secondary school ☐ 1.3.6. High diploma ☐ 1.3.9. Postgraduate

1.4. What is your **MARITAL STATUS**?

☐ 1.4.1. Unmarried ☐ 1.4.4. Widow
☐ 1.4.2. Married ☐ 1.4.5. Others…… **(*Please specify*)**
☐ 1.4.3. Divorced

1.5. **HOW MANY** people are living in your household (including yourself)?.....people

1.6. How many of them are children **AGE UNDER 18** years?.....people

1.7. Please select the children age that applied? (***tick all applied***)

☐ 1.7.1. <1-year-old ☐ 1.7.5. 8-11 years old
☐ 1.7.2. 1-2 years old ☐ 1.7.6. 12-14 years old
☐ 1.7.3. 3-4 years old ☐ 1.7.7. 15-17 years old
☐ 1.7.4. 5-7 years old

1.8. What is your current **EMPLOYMENT STATUS**?

☐ 1.8.1. Unemployed ☐ 1.8.6. A part-time student (Not working)
☐ 1.8.2. Working full time ☐ 1.8.7. Retired
☐ 1.8.3. Working part-time ☐ 1.8.8. Full time home duties
☐ 1.8.4. Both working & studying
☐ 1.8.5. A full time student (Not working)

If working full time or part time, which of the following sector are you working for? ……

1.9. What is your household **INCOME**? ……(LAK/Month)

Where is your main source of income coming from?

- ☐ From husband only
- ☐ From wife only
- ☐ From husband and wife
- ☐ From parents only
- ☐ From parents and part-time job
- ☐ Others……..…(***Please specify***)

THANK YOU!

Appendix 6: Focus group discussion results summaries.

Summary of the focus group discussions

The sixth focus group discussions with household food shoppers were organized at the faculty of agriculture, National University of Laos on 11th -13th May 2022. There were 46 participants involved in the discussions, or average 8 people per group.

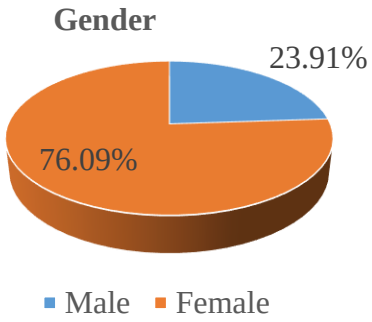
The key objective of the discussion was to explore and better understand the household food shopping behaviour as well as the organic food production and certification knowledge and behaviour. Results from the focus group discussions used to improve the Lao consumer survey instruments.

Below are details of discussion regarding general food shopping behaviour as well as organic food purchasing behaviour. The socio-demographic data of participants was also collected and details are also outline below:

Socio-demographic of participants

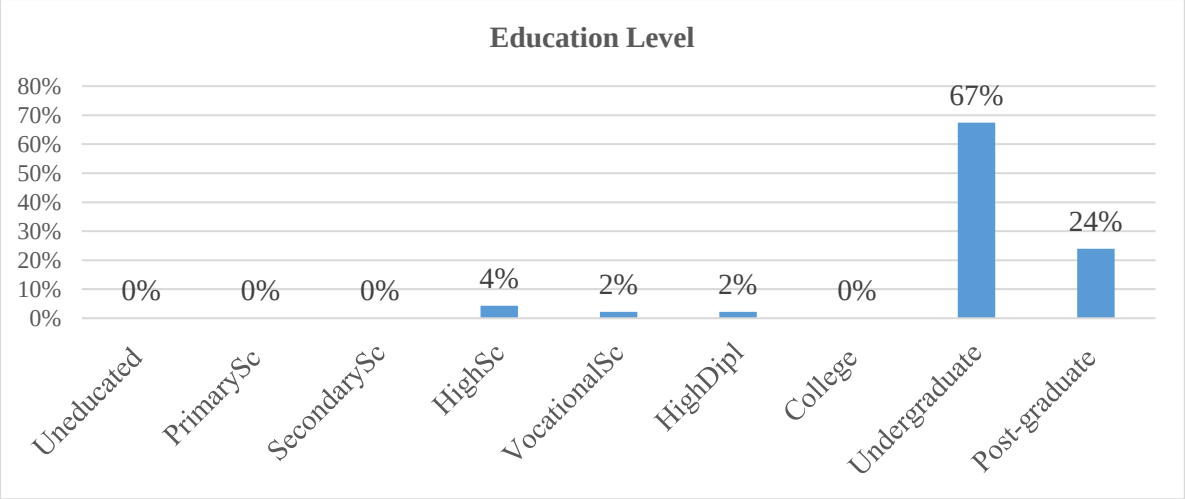
- ### Gender and age

More than fifty percent of participants were female participated in the discussion, and the average age of participants was 27.43 years old.



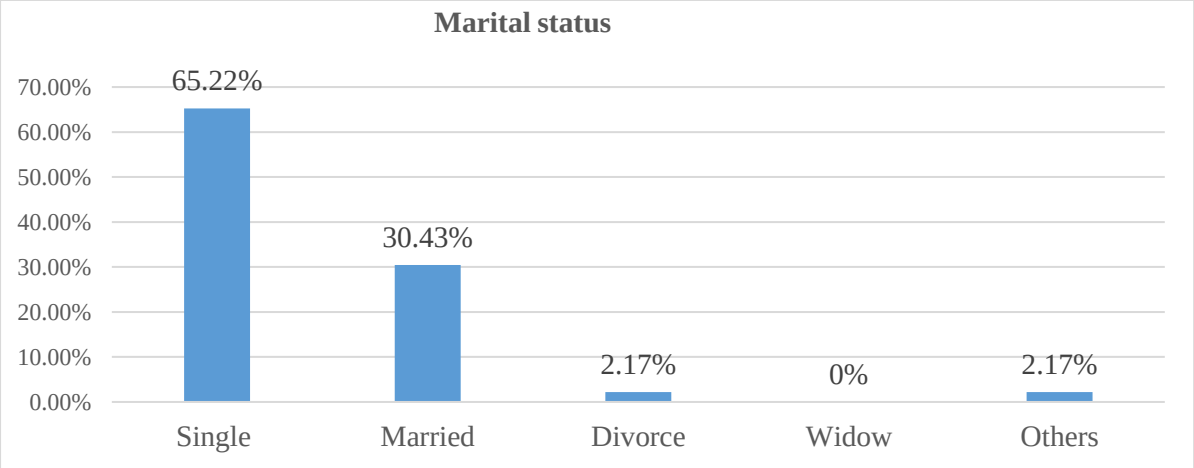
- ### Education level

The education level of participants was mostly undergraduate, with some of them have completed post-graduate level.



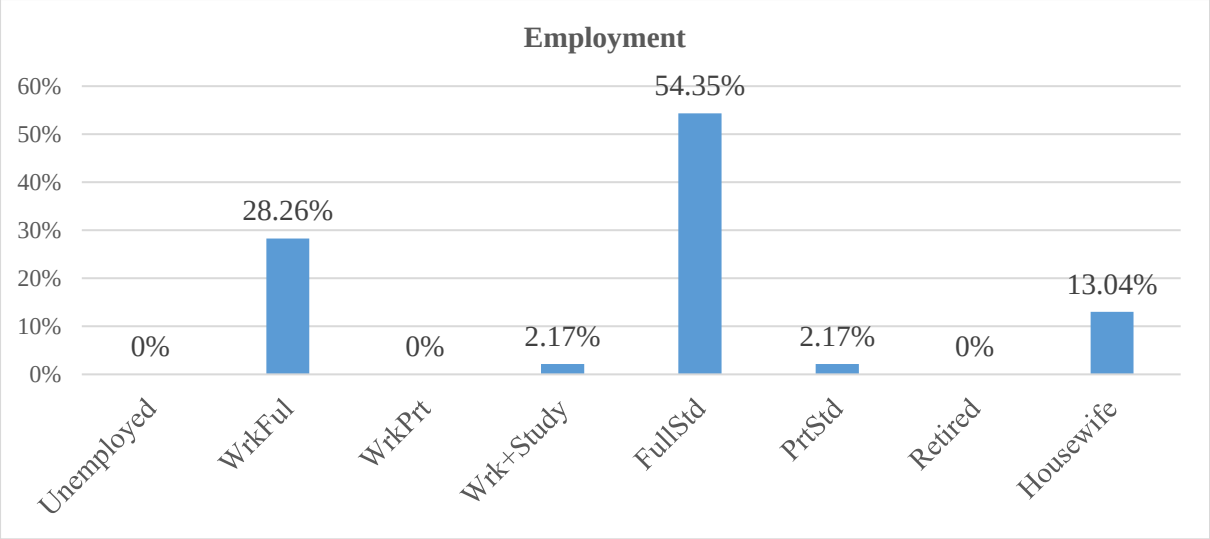
- **Marital status**

Majority of participants are single (65%) and some of them are married (30%). The average household size of participants is 5,23 people.



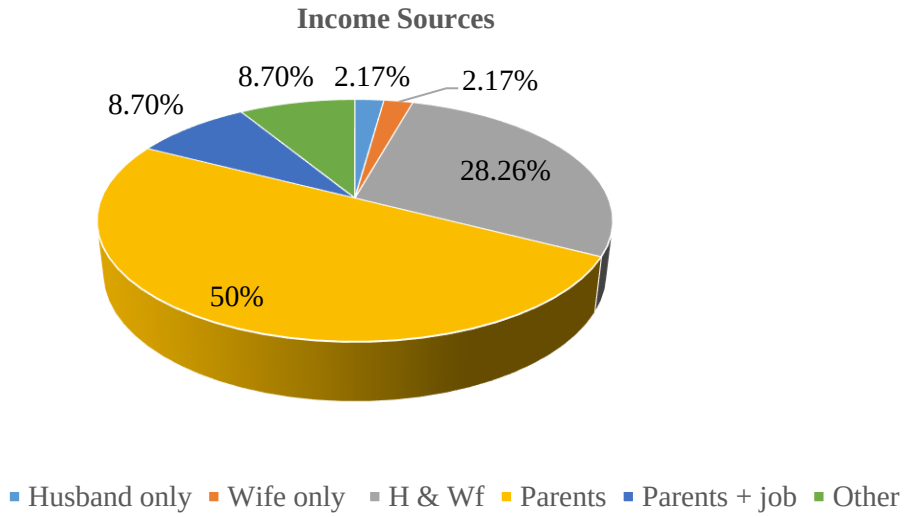
- **Employment status**

Vast majority of participants are university students (54%) and some of them are working full time (28%) and followed by housewife (13%).



- ***Income sources***

Due to the majority of participants are students, so most of their income are coming from parents (50%). For those participants who already married, income source is coming from both husband and wife (28.26%). The average monthly household income of participants is 3,488,700**LAK/month.**



Key factors for food shopping consideration

One important question the focus group would like to explore is the factors considered when shopping for food. The table below highlights some key factors considered when purchasing foods. Among these factors, price, freshness and outside appearance of food product were most mentioned during the discussion.

NO	IMPORTANT FACTORS FOR FOOD SHOPPING CONSIDERATION	TOP THREE
1	Price of the product (not too expensive, reasonable compare to quantity and quality received), cheap price	Price
2	Product freshness/cleanliness	Freshness
3	Appearance (colour, shape)	Appearance/quality
4	Product quality (not looking spoilage, not having strange smell)	
5	Seller behaviour (friendly)/good service/convincing seller	
6	Origin of the product	
7	Range of product line selling in the shop (one stop shop)	
8	Familiarity (consider what they used to consumed)	
9	Safety issue (by observing the product/experiencing the product)	
10	Honesty of sellers, and cleanliness of the shop	

Organic food knowledge

The core of this research is to better understand the organic food shopping behaviour. However, it is also important to firstly look at consumer knowledge about organic food.

Therefore, the very first question asked was about if participants have heard about organic food or not. The discussion disclosed that **80.43%** have heard about it and 19.56% have not. And when ask future where have you heard about organic foods, the surrounding people, internet and study tour were frequently mentioned from participants.

For those who have heard about organic foods, the question on the meaning of the term 'organic' was further discussed. Participants were asked to write idea about organic meaning and discussed with other participants. Different meanings were raised during the discussions; thus, the organic meanings were grouped into different categories such as price, production system, standards, health and quality and access related. Below are meanings of the term 'organic' described by participants

Meaning of organic food:

- Price-related-the price must be higher/expensive
- Production system-related-a product received from the non-chemical production system, used bio-fertilizer (i.e. compost, bio-extract manure), the use of synthetic chemicals is prohibited, chemical free production system. Interestingly one participant said the production system ***allows some chemicals use***, naturally produced product.
- Standard related-the production system which has follow a certain production standard, products that meet certain standards, product that has demand from the market, and products accepted by the market. This kind of product would have undergone an auditing process at some points.

- Health and quality-related-products for maintaining good health, have high quality/good quality, safe to eat, safer for consumers, full of nutrition
- Access-related-hard to find.

The reasons for buy and not buying organic food:

For those participants declared having purchase organic foods, the moderator was then followed up on what kind of organic food product bought. All of participants disclosed that organic fruits and vegetables are most bought products. Participants were then asked what make them buy organic foods, and the reasons are listed below:

- Why DO you buy organic foods?

    1. Because it is clean
    2. Because it is safe/I trusted/believe in this production system
    3. It can be kept longer in the fridge
    4. It is supporting farmers
    5. It is good for health

For those who do not buy organic foods were also asked to give their reasons, and below are the reasons:

- Why DON'T you buy organic foods?

    1. This product is for a specific group of people only
    2. The price is quite/too high
    3. I don't know the differences between organic and conventional foods
    4. I don't think the OA product different from conventional product
    5. I wanted to buy but I don't have enough budget
    6. Difficult to find/organic food shops/markets are located far from where I live
    7. Most of organic products are sold at the premium shop (this may imply locations where average shoppers do not usually shop)

The future prospect of purchase intentions was also asked to non-organic food buyers in order to see if there are any buying intentions or not.

Intentions to buy:

- I would like to buy organic foods in the future because I have learned and realised the negative impacts from consuming the contaminated food.
- I might buy this product in the future because it's good for my health

The differentiation between organic and conventional were also raised to identify ways consumers used, and what make them trust/believe that the product is truly organic were also asked. The perceptions below were mentioned during the discussion:

- **Observing**-how the product looks (i.e. if the leave is very green, and got fatty steam, maybe lots of chemical fertilizers were applied)

- Trust by **experience**- when keeping in the fridge colour would change (from green to yellow) but not rotting, and has longer shelf life.
- **Selling point**-authorized organic foods markets are trustworthy
- **Discuss with producers**-this case apples to participant who has some knowledge about organic production locations.
- **Sign** (organic logo)-the logo can give a signal, however, if there are more logos appear on the product I would be more sceptical (marketing tricks)
- If there is **trademark** and **contact details** about suppliers indicated on the product packaging (reliability of product in general)
- **Additional product information**-if there is information about the product presented at the selling points (banner, poster)

As organic logo was mentioned during the discussion, thus question regarding the meaning of the organic logo was further discussed and below are some of the participants' thought:

OA logo meaning

What do you think when you see this logo?

- It should be safe,
- The price must be high (because it is a good product: free from chemical, clean and safe to eat)
- It should be trustworthy
- I can trust that the product is really organic

Some other logos were also presented to the participants in a separated paper, where participants were asked to indicated their awareness against eight different logos by put on either a cross (unaware) or tick (aware) mark in the box below each logo. These eight logos presented both domestic and international logos and showing different food standards but mainly organic food certified logos. Below are results of different product logo awareness.

Results showed that most of participants were unaware of the international logos, and among three domestic logos (Lao organic, Lao GAP and Lao fair trade), Lao organic logo was mostly seen by participants.

Logos awareness

Logo	Aware (%)	Unaware (%)	Logo	Aware (%)	Unaware (%)
	**60.87**	39.13		8.70	**91.30**
	30.43	**67.39**		2.17	**97.83**

	0	**100**		2.17	**97.83**
	4.35	**95.65**		4.35	**95.65**

The organizations certify organic food products were also explored in order to see which organization is more trustworthy when it comes to certify organic food. Some government organizations and few private and international organizations were pointed out during the discussion. The reasons why they think such as organization would be best certifying organic food was then further elaborated. Below are government and non-government organizations and the reasons why participants though they are the credible organization for doing this job.

Organic product certifies organizations.

- Ministry of Agriculture and Forestry, because when we think about crops or animals' production it should be MAF.
- Ministry of Public Health, especially the food and drug department because this organization is working with food products.
- University-**BUT** co-certify with food and drug department (13%)
- Ministry of agriculture and forestry-**BUT** co-certify with food and drug department (13%)
- Private certifying company/supermarket
- The world food programme: The international organizations should issue the organic logo because the international organization is more focus on quality aspect of product.

The Ministry of public health is the best organization certifying organic food because their works are related to food. The university or MAF can co-certify organic food product with the food & drug department but not solely certify.

Organic food and chemical-free foods are the same, it is only the matter of how you call it (expert calls organic foods, but general people call chemical-free foods)

Appendix 7: Face-to-face consumer survey questionnaire (Lao consumer survey)

Thank you for agreeing to complete our consumer survey today.

This questionnaire has been divided into seven different sections and this interview will take approximately 15-20 minutes to complete.

This study has been reviewed by the University of Adelaide Human Research Ethics Committee (approved number: H-2021-070)

This survey is going to be conducted with Lao consumers in Vientiane capital only. We would like to better understand what factors influence consumers' purchase decisions for organic food products in Laos.

Several questions contained in this questionnaire require you to indicate the degree you agree or disagree with different statements. All information gathered from this interview will remain confidential and your name will remain anonymous. Your name will not be disclosed in any results of this research. Only the researchers leading this project will be able to get access to this data.

The results of this research may be published in aggregated form in peer-review journals, blogs, and other social media platforms, and they may also be presented at conferences.

Please answer all question honestly and please take your time to carefully reflect on each question before you answer them.

If you have any question regarding this survey please contact:

Professor Wendy Umberger: wendy.umberger@adelaide.edu.au or +61 83137263

Dr. Di Zeng: di.zeng@adelaide.edu.au or +61 831 36226

Dr. Lenka Malek: lenka.malek@adelaide.edu.au or +61 83189137

Mrs. Chitpasong Kousonsavath: chitpasong.kousonsavath@adelaide.edu.au or +61 45 1136 714 (Australian number) and (+856 20) 28779991 (Lao number).

If you would like to contact someone independent of the project please contact the Human Research Ethics Committee's Secretary by email hrec@adelaide.edu.au or phone +61 8 8313 6028.

CONSUMER SURVEY QUESTIONNAIRE (LAOS)

GENERAL INFORMATION	**QCode**:……
Name of interviewer:……..……..Date:……Time:……	
Name of market:……	

The participation in this survey is completely voluntary basic, so please feel free to let us know if there are some points that you feel uncomfortable to answer or you would like to drop out from this interview.

SCREENING QUESTION

What role do you play in your household's food shopping?

- ☐ I do the majority of food shopping for my household.
- ☐ I share the role of food shopping with another household member
- ☐ Someone else does the majority of food shopping for my household [SCREEN OUT]

This survey is going to focus on your food purchasing behaviour, and it is important that we have information about your household income. So, may I ask roughly how much cash income does your household earn per month?

…… LAK/month

[SCREEN OUT IF UNWILLING TO DECLARE INCOME]

Where does your main source of income come from?

- ☐ From husband only
- ☐ From wife only
- ☐ From both husband and wife
- ☐ From parents only
- ☐ From part-time job
- ☐ Others…… (***Please explain***)

II. SECTION II: FOOD PURCHASE BEHAVIOR

2.1. How frequently does your household shop for food? (Please tick the box that applied) (VN survey)

- ☐ 2.1.1. Everyday
- ☐ 2.1.2. 2-3 times/week
- ☐ 2.1.3. Once/week
- ☐ 1.1.4. 2-3 times/month
- ☐ 1.1.5. Once/month
- ☐ 1.1.6. Less than once/month

2.2. Considering the past four weeks (one month), what has been your household's average **WEEKLY** expenses on the following food items? (FOODIQ)

Key Food Items	Amount spent (LAK/Week)
Rice (glutinous/non-glutinous rice)	
Fresh fruits	
Fresh vegetables	
Fresh meat and eggs	
Fresh fish and seafood	
Dairy products (including milk, yogurt)	
Ready meals (chilled and frozen selling in Point Mart)	
Other frozen food (sausage, French fries)	
Other packaged/processed food or beverage (canned food)	
TOTAL/Week	

2.3. Where do you usually purchase these food items? (VN project)

(***multiple answers applied, assign 1=Yes and 0= No***)

Rice (glutinous/non-glutinous rice)

Wet markets/Retail markets (e.g. Huakhua, Phonetong, Khuadin, etc….)	
Wholesale market/night markets (e.g. Haikham, Lao-Aussie market, etc..)	
Super markets (e.g. ITEC, Rimping)	
Mobile vendors (e.g. fruit cart, mobile grocery vendor, etc….)	
Informal street market (selling without having method for a permanent built-up structure)	
Organic markets (e.g. ITEC, Xangsamhua, ect…….)	
Organic farm shops (e.g. AgroAussie, Lao Farmer Product, etc…)	
Order through the online shopping App (i.e. Food Panda)	
Order through the store directly (i.e. Farm Fresh, CP Fresh)	
Phone order	
Convenience stores (e.g. J-mart)	
Semi-permanent stand	
Other (Please specify) ……	

Fresh fruits

Wet markets/Retail markets (e.g. Huakhua, Phonetong, Khuadin, etc….)	
Wholesale market/night markets (e.g. Haikham, Lao-Aussie market, etc..)	
Super markets (e.g. ITEC, Rimping)	
Mobile vendors (e.g. fruit cart, mobile grocery vendor, etc….)	
Informal street market (selling without having method for a permanent built-up structure)	
Organic markets (e.g. ITEC, Xangsamhua, ect…….)	
Organic farm shops (e.g. AgroAussie, Lao Farmer Product, etc…)	
Order through the online shopping App (i.e. Food Panda)	
Order through the store directly (i.e. Farm Fresh, CP Fresh)	
Phone order	
Convenience stores (e.g. J-mart….)	
Semi-permanent stand	
Other (Please specify) ……	

Fresh vegetables

Wet markets/Retail markets (e.g. Huakhua, Phonetong, Khuadin, etc….)	
Wholesale market/night markets (e.g. Haikham, Lao-Aussie market, etc..)	
Super markets (e.g. ITEC, Rimping)	
Mobile vendors (e.g. fruit cart, mobile grocery vendor, etc….)	
Informal street market (selling without having method for a permanent built-up structure)	
Organic markets (e.g. ITEC, Xangsamhua, ect…….)	
Organic farm shops (e.g. AgroAussie, Lao Farmer Product, etc…)	
Order through the online shopping App (i.e. Food Panda)	
Order through the store directly (i.e. Farm Fresh, CP Fresh)	
Phone order	
Convenience stores (e.g. J-mart….)	
Semi-permanent stand	
Other (Please specify) ……	

Fresh meat and eggs

Wet markets/Retail markets (e.g. Huakhua, Phonetong, Khuadin, etc….)	
Wholesale market/night markets (e.g. Haikham, Lao-Aussie market, etc..)	
Super markets (e.g. ITEC, Rimping)	
Mobile vendors (e.g. fruit cart, mobile grocery vendor, etc….)	
Informal street market (selling without having method for a permanent built-up structure)	
Organic markets (e.g. ITEC, Xangsamhua, ect…….)	
Organic farm shops (e.g. AgroAussie, Lao Farmer Product, etc…)	
Order through the online shopping App (i.e. Food Panda)	
Order through the store directly (i.e. Farm Fresh, CP Fresh)	
Phone order	
Convenience stores (e.g. J-mart….)	
Semi-permanent stand	
Other (Please specify) ……	

Fresh fish and seafood

Wet markets/Retail markets (e.g. Huakhua, Phonetong, Khuadin, etc….)	
Wholesale market/night markets (e.g. Haikham, Lao-Aussie market, etc..)	
Super markets (e.g. ITEC, Rimping)	
Mobile vendors (e.g. fruit cart, mobile grocery vendor, etc….)	
Informal street market (selling without having method for a permanent built-up structure)	
Organic markets (e.g. ITEC, Xangsamhua, ect…….)	
Organic farm shops (e.g. AgroAussie, Lao Farmer Product, etc…)	
Order through the online shopping App (i.e. Food Panda)	
Order through the store directly (i.e. Farm Fresh, CP Fresh)	
Phone order	
Convenience stores (e.g. J-mart….)	
Semi-permanent stand	
Other (Please specify) ……	

Dairy products (including milk, yogurt)

Wet markets/Retail markets (e.g. Huakhua, Phonetong, Khuadin, etc….)	
Wholesale market/night markets (e.g. Haikham, Lao-Aussie market, etc..)	
Super markets (e.g. ITEC, Rimping)	

Mobile vendors (e.g. fruit cart, mobile grocery vendor, etc….)	
Informal street market (selling without having method for a permanent built-up structure)	
Organic markets (e.g. ITEC, Xangsamhua, ect…….)	
Organic farm shops (e.g. AgroAussie, Lao Farmer Product, etc…)	
Order through the online shopping App (i.e. Food Panda)	
Order through the store directly (i.e. Farm Fresh, CP Fresh)	
Phone order	
Convenience stores (e.g. J-mart….)	
Semi-permanent stand	
Other (Please specify) ……	

Ready meals (chilled and frozen)

Wet markets/Retail markets (e.g. Huakhua, Phonetong, Khuadin, etc….)	
Wholesale market/night markets (e.g. Haikham, Lao-Aussie market, etc..)	
Super markets (e.g. ITEC, Rimping)	
Mobile vendors (e.g. fruit cart, mobile grocery vendor, etc….)	
Informal street market (selling without having method for a permanent built-up structure)	
Organic markets (e.g. ITEC, Xangsamhua, ect…….)	
Organic farm shops (e.g. AgroAussie, Lao Farmer Product, etc…)	
Order through the online shopping App (i.e. Food Panda)	
Order through the store directly (i.e. Farm Fresh, CP Fresh)	
Phone order	
Convenience stores (e.g. J-mart….)	
Semi-permanent stand	
Other (Please specify) ……	

Other frozen food (sausage, French fries, frozen vegies)

Wet markets/Retail markets (e.g. Huakhua, Phonetong, Khuadin, etc….)	
Wholesale market/night markets (e.g. Haikham, Lao-Aussie market, etc..)	
Super markets (e.g. ITEC, Rimping)	
Mobile vendors (e.g. fruit cart, mobile grocery vendor, etc….)	
Informal street market (selling without having method for a permanent built-up structure)	
Organic markets (e.g. ITEC, Xangsamhua, ect…….)	
Organic farm shops (e.g. AgroAussie, Lao Farmer Product, etc…)	
Order through the online shopping App (i.e. Food Panda)	
Order through the store directly (i.e. Farm Fresh, CP Fresh)	
Phone order	
Convenience stores (e.g. J-mart….)	
Semi-permanent stand	
Other (Please specify) ……	

Other packaged/processed food or beverage (fridge or pantry items)

Wet markets/Retail markets (e.g. Huakhua, Phonetong, Khuadin, etc….)	
Wholesale market/night markets (e.g. Haikham, Lao-Aussie market, etc..)	
Super markets (e.g. ITEC, Rimping)	
Mobile vendors (e.g. fruit cart, mobile grocery vendor, etc….)	
Informal street market (selling without having method for a permanent built-up structure)	
Organic markets (e.g. ITEC, Xangsamhua, ect…….)	
Organic farm shops (e.g. AgroAussie, Lao Farmer Product, etc…)	

Order through the online shopping App (i.e. Food Panda)	
Order through the store directly (i.e. Farm Fresh, CP Fresh)	
Phone order	
Convenience stores (e.g. J-mart….)	
Semi-permanent stand	
Other (Please specify) ……	

2.4. How **IMPORTANT** are the following factors to you when you are grocery shopping for food?

*(please allocate **1= Not at all important, 5= Extremely important)***

(FOODIQ)	Not at all important 1	Not important 2	Neutral 3	Important 4	Extremely important 5
Food safety (not cause illness)					
Appearance					
Smell					
Taste					
Animal welfare/low impact on animals					
Novelty (new product)					
Country of origin					
Environmental impact					
Price					
Fairness/fair trade					
Organic production system					
No food additives/preservation					
No genetically modified organisms					
No use of hormones					
No use of antibiotics					
Free from chemical substances					
Health and nutrition					
Convenience (one stop shop)					
Convenient (how convenient it is to buy, prepare/eat)					
Naturalness					
Familiarity (what used to eat)					
Locally grown					
Others……. (*Please specify*)					

2.5. In your opinion, what are the three most important **FOOD SAFETY** issues today? (FOODIQ)

(Please ranking from **1= most important**, 2= second most important, **3= third most important**)

FOOD SAFETY ISSUES	**Ranking**
Foodborne illness from bacteria/contaminants	
Use of chemical substances (pesticide, herbicide, chemical fertilizer)	
Food additives	
Hormone and antibiotic use	
Genetically modified organisms	
Imported food products from overseas	
Food contamination from foreign objects (e.g. metal, glass, needle…)	
None of the above	

Others……(***please specify***)	

2.6. **Overall**, how confident are you in the safety of the food supply in Laos? (FOODIQ)

Please put the √ symbol in the box that applied

Not at all confident 1	Not confident 2	Neutral 3	Confident 4	Extremely confident 5

2.7. Are you generally a person who is fully prepared to take food safety risks or do you try to avoid taking food safety risks? (FOODIQ)

Unwilling to take any risks 0	1	2	3	4	5	6	7	8	9	Fully prepared to take risks 10

- Have you previously **SEEN** a product with this logo? (Ask every single person for all statements)
- If Yes, have you previously **PURCHASED** a product with this logo? And what do you think this logo is referring to?
- If NO, what do you think the product with this logo would refer to?

	 (Yes/No/don't know)
Better value for money	
Guaranteed for better quality	
From a more trust worthy source	
A healthier choice	
This is a product of superior nutritional value	
Allowing me to do something good	
Safe- less likely to make me or my family sick	
Better taste/flavour	
In case of animal products, higher animal welfare standards apply	
Free of pesticides/chemicals	
Free from genetically modified organisms	
Better for human and society	
Better for environment	
Produced in a more sustainable manner	
No different than others, e.g. marketing gimmick	
None of these statements apply	

III. SECTION III: ORGANIC KNOWLEDGE AND CONSUMPTION

3.1. Have you ever seen or heard of food products that are sold as '**ORGANIC OR CERTIFIED ORGANIC**'?

☐ 3.1.1. Yes, ***heard from***…… ☐ 3.1.2. No (***Go to section VII***)

3.2. How would you rate your **UNDERSTANDING** about 'certified organic'?

Not at all 1	2	3	4	5	6	A great deal 7

3.3. What does the term '**ORGANIC**' mean to you?

Statement about the meaning of organic[5]	**TRUE**	**FALSE**	Don't Know/ No opinion
It' s a chemical free production system (i.e. artificial fertilizer, pesticides)			
It' s an environmentally friendly production system			
It's a production system concerns about animal welfare			
It's an antibiotic and hormone free production system			
It's a production system allows for some chemicals use e.g. fertilizer, pesticide, herbicide			
All of statements are applied			
None of them			

3.4. Have you ever previously bought organic food products?

☐ 3.4.1. Yes ☐ 3.4.2. No (***Go to Q3.8, Q3.9& VII***)

If yes, what kind of organic food products have you previously purchased? And how much do you spend on?

Key Food Items	**Amount spent**
Organic Rice (glutinous/non-glutinous rice)	
Organic fresh fruits	
Organic fresh vegetables	
Organic fresh meat and egg	
Organic fresh fish and seafood	
Organic dairy products (including milk, yogurt)	
Organic ready meals (chilled and frozen selling in Point Mart)	
Other organic frozen food (sausage, French fries)	
Other organic packaged/processed food or beverage (canned food)	

[5] Decision of the Minister of Agriculture and Forestry on Organic Agriculture Standards, number 1666/MAF, Vientiane, date 30 December 2005

3.5. How often do you buy organic food products?

- ☐ 3.5.1. Every day (7 times/week)
- ☐ 3.5.2. 5-6 times/week
- ☐ 3.5.3. 2-4 times/week
- ☐ 3.5.4. Once/week
- ☐ 3.5.5. 2-3 times/month
- ☐ 3.5.6. Once/month
- ☐ 3.5.7. Less than once/month

3.6. **WHERE** do you usually go and shop for organic food products? ……

3.7. What are '**REASONS FOR**' you to consume/purchase organic food products?
(1= strongly disagree, 7= strongly agree)

The reason that I am **BUYING** organic food products is because:	Strongly disagree 1	2	3	Neither 4	5	6	Strongly agree 7
Better value for money							
Guaranteed to be better quality							
From a more trustworthy source							
A healthier choice							
This is a product of superior nutritional value							
Allowing me to do something good							
Safe- less likely to make me or my family sick							
Better taste/flavour							
In case of animal products, higher animal welfare standards apply							
Free of pesticides/chemicals							
Free from genetically modified organisms							
Better for human and society							
Better for environment							
Produced in a more sustainable manner							
No different than others, e.g. marketing gimmick							
I believe that organic food products are produced under strict organic production guidelines							
My friends/family encourage me to buy organic food products							
My work colleagues encourage me to buy organic food products							
I find it easy to find organic food products where I shop for food							

3.8. What are reasons **'REASONS AGAINST'** for you to not consuming/purchasing organic food products? ***1= strongly disagree, 7= strongly agree)***

The reason that I am **NOT** buying organic food products is because:	Strongly disagree 1	2	3	Neither 4	5	6	Strongly agree 7
I do not have access to information regarding the benefits of consuming organic food products							
Organic food products are not good value for my money							

The price is too high							
They are not easy for me to access/not available where I can easily access them							
I do not think that organic food products are really produced organically							
I do not think that the organic food producers strictly follow the organic production standards							
Organic food products do not have a wide range of choices[6]							

3.9. Would you like to buy organic food product?

If NOT, Why not…….

If YES, Why……

IV. SECTION IV: ATTITUDES/SUBJECTIVE NORMS/PERCEIVED BEHAVIOURAL CONTROL

4.1. Following statements about organic food products below, how strongly you agree or disagree with these statements: ***(1= strongly disagree, 5= strongly agree)***

Attitudes (*modified from Jensen et al., 2019*)[7]	Strongly Disagree 1	2	Neither agree nor disagree 3	4	Strongly agree 5
Animals engaged in organic food production have better animal welfare compared to conventional food production					
Organic food production results in less local pollution compared to conventional food production					
Organic food production results in lower greenhouse emission (i.e. climate impact) compared to conventional food production					
Modified from[8]					
Purchasing organic food products is beneficial for my health					
Subjective norms (*modified from Wang et al., 2013*[9]**)**					
My colleagues and my friends are buying organic food products					
Most people who are important to me think that I should buy organic food products					
I decide myself whether I will buy organic food product or not					
Perceived behavioural control					
I know where to buy organic food products					
I can identify organic food product easily					
I have easy access to organic food products if I want to buy them					

[6] Sriwaranun, Y, Gan, C, Lee, M & Cohen, DA **2015**, 'Consumers' willingness to pay for organic products in Thailand', *International Journal of Social Economics*, vol. 42, no. 5, pp. 480–510.

[7] Jensen, C 2019, 'Heterogeneity in consumers' perceptions and demand for local (organic) food products', *Food Quality and Preference*, vol. 73, pp. 255–265.

[8] Carfora, V, Cavallo, C, Caso, D, Del Giudice, T, De Devitiis, B, Viscecchia, R, … Cicia, G 2019, 'Explaining consumer purchase behavior for organic milk: Including trust and green self-identity within the theory of planned behavior', *Food Quality and Preference*, vol. 76, pp. 1–9.

[9] Wang, Y, Wiegerinck, VJ, Krikke, H. & Zhang, H 2013, 'Understanding the purchase intention towards remanufactured product in closed-loop supply chains: An empirical study in China', *International Journal of Physical Distribution & Logistics Management*, vol. 43, no. 10, pp. 866–888.

4.2. For the following statements below, please indicate your desirability ***(1= Extremely undesirable, 5= Extremely desirable)***

	Extremely undesirable 1	2	Neither undesirable nor desirable 3	4	Extremely desirable 5
Good animal welfare production systems are…					
Food production systems that produce less pollution are…					
Food production systems that produce lower greenhouse emissions (i.e. lower climate impact) are…					

4.3. How important is it for you to: ***(1= Not at all important, 5= Extremely important)?***

	Not at all important 1	2	Neither not at all important nor extremely important 3	4	Extremely important 5
Buy organic food products that my colleagues and my friends are buying					
Buy organic food products that most people, who are important to me, think I should buy					
Purchasing food that is beneficial for my health					

4.4. To what extend do you agree or disagree with these statements (***1= strongly disagree, 5= strongly agree)***

It would be MUCH MORE DIFFICULT for me to purchase organic food products if	Strongly disagree 1	2	Neither agree nor disagree 3	4	Strongly agree 5
I did not know where to buy organic food products					
I was not able to identify organic food products easily					
I did not have enough financial capability to purchase organic food[10]					
I did not have enough time to purchase organic food					
I could not buy organic food product conveniently[11]					

V. SECTION V: INTENTION AND WILLINGNESS TO PAY

5.1. Following statements about organic food products below, how strongly you agree or disagree with these statements: (***1= strongly disagree, 5= strongly agree)***

[10] Dinc-Cavlak, O & Ozdemir, O 2022, 'Using the Theory of Planned Behavior to Examine Repeated Organic Food Purchasing: Evidence from an Online Survey', *Journal of International Food & Agribusiness Marketing*, vol. ahead-of-print, no. ahead-of-print, pp. 1–30.

[11] Wang, Y, Wiegerinck, VJ, Krikke, H. & Zhang, H 2013, 'Understanding the purchase intention towards remanufactured product in closed-loop supply chains: An empirical study in China', *International Journal of Physical Distribution & Logistics Management*, vol. 43, no. 10, pp. 866–888.

	Strongly disagree 1	2	Neither agree nor disagree 3	4	Strongly agree 5
I expect to buy organic food products in the future					
I want to buy organic food products in the future					
I will encourage my relatives and friends to buy organic food products in the future [12]					

5.2. During this time of the year, how much would you usually pay for a kilo of the conventional lettuce? ……. LAK/kg

5.3. If a kilo of the conventional lettuce costs ……. LAK (USE A REFERENCE PRICE ASKED IN Q5.2), what is the maximum amount extra that you would be willing to pay for a kilo of '**CERTIFIED ORGANIC LETTUCE**'? ……. LAK/Kg

VI. SECTION VI: PRODUCT DIFFERENTIATION AND TRUST

6.1. How do you differentiate between organic and non-organic food product? ……

6.2. What makes you believe that a food product is organic or not? ……..

6.3. How important is it to you for food products to be **CERTIFIED ORGANIC**?

Not at all important 1	Not important 2	Neutral 3	Important 4	Extremely important 5

6.4. How much would you **TRUST** the following bodies to **CERTIFY ORGANIC FOOD** products?

Different certification bodies (FOODIQ)	Do not trust at all 1	2	3	4	Trust Completely 5
Farmers (e.g. Organic farmer/farmer group)					
Government agencies (e.g. Laos Certification Body), under Ministry of Agriculture and Forestry					
Supermarket certification system (e.g. Rimping)					
Independent organic food stores (e.g. organic food stores)					
Universities					
International organizations (Non-governmental organisations)					
Overseas certify Companies (e.g. US certify company)					
Others……(***Please specify***)					

VII. SECTION V: SOCIAL DEMOGRAPHIC INFORMATION

7.1. What is your **GENDER**?

☐ 7.1.1 Male ☐ 7.1.2. Female

7.2. How old are you? ……. years old

7.3. What is your highest **EDUCATION LEVEL**?

[12] Wang, Y, Wiegerinck, VJ, Krikke, H. & Zhang, H 2013, 'Understanding the purchase intention towards remanufactured product in closed-loop supply chains: An empirical study in China', *International Journal of Physical Distribution & Logistics Management*, vol. 43, no. 10, pp. 866–888.

☐ 7.3.1. Uneducated ☐ 7.3.4. High school ☐ 7.3.7. College

☐ 7.3.2. Primary school ☐ 7.3.5. Vocational school ☐ 7.3.8. Undergraduate

☐ 7.3.3. Secondary school ☐ 7.3.6. High diploma ☐ 7.3.9. Postgraduate

7.4. What is your **MARITAL STATUS**?

7.5. **HOW MANY** people are living in your household (including yourself)?.....people

☐ 7.4.1. Unmarried ☐ 7.4.4. Widow

☐ 7.4.2. Married ☐ 7.4.5. Others…… **(*Please specify*)**

☐ 7.4.3. Divorced

7.6. How many of them are children **AGE UNDER 18** years?.....people (FOODIQ)

7.7. Please select the ages of children that live in your household. (***tick all that apply***) (FOODIQ)

☐ 7.7.1. <1-year-old ☐ 7.7.5. 8-11 years old

☐ 7.7.2. 1-2 years old ☐ 7.7.6. 12-14 years old

☐ 7.7.3. 3-4 years old ☐ 7.7.7. 15-17 years old

☐ 7.7.4. 5-7 years old

7.8. What is your current **EMPLOYMENT STATUS**?

☐ 7.8.1. Unemployed ☐ 7.8.6. A part-time student (Not working)

☐ 7.8.2. Working full-time ☐ 7.8.7. Retired

☐ 7.8.3. Working part-time ☐ 7.8.8. Full time home duties

☐ 7.8.4. Both working & studying

☐ 7.8.5. A full time student (Not working)

If working, which sector are you working for……

End of Interview!

References

Aarset, B, Beckmann, S, Bigne, E, Beveridge, M, Bjorndal, T, Bunting, J, . . . Young, J. (2004). The European consumers' understanding and perceptions of the "organic" food regime: The case of aquaculture. *British food journal (1966), 106*(2), 93-105. doi:https://doi.org/10.1108/00070700410516784

Aertsens, J, Mondelaers, K, Verbeke, W, Buysse, J, & Van Huylenbroeck, G. (2011). The influence of subjective and objective knowledge on attitude, motivations and consumption of organic food. *British food journal (1966), 113*(11), 1353-1378. doi:https://doi.org/10.1108/00070701111179988

Aertsens, J, Verbeke, W, Mondelaers, K, & Van Huylenbroeck, G. (2009). Personal determinants of organic food consumption: a review. *British food journal (1966), 111*(10), 1140-1167. doi:https://doi.org/10.1108/00070700910992961

Ahmed, N, Li, C, Khan, A, Qalati, SA, Naz, S, & Rana, F. (2021). Purchase intention toward organic food among young consumers using theory of planned behavior: role of environmental concerns and environmental awareness. *Journal of environmental planning and management, 64*(5), 796-822. doi:https://10.1080/09640568.2020.1785404

Aitken, R, Watkins, L, Williams, J, & Kean, A. (2020). The positive role of labelling on consumers' perceived behavioural control and intention to purchase organic food. *Journal of cleaner production, 255*, 120334. doi:https://10.1016/j.jclepro.2020.120334

Allum, N, Sturgis, P, Tabourazi, D, & Brunton-Smith, I. (2008). Science knowledge and attitudes across cultures: a meta-analysis. *Public understanding of science (Bristol, England), 17*(1), 35-54. doi:https://10.1177/0963662506070159

Ammann, J, Arbenz, A, Mack, G, Nemecek, T, & El Benni, N. (2023). A review on policy instruments for sustainable food consumption. *Sustainable Production and Consumption, 36*, 338-353. doi:https://doi.org/10.1016/j.spc.2023.01.012

Amoako, GK, Dzogbenuku, RK, & Abubakari, A. (2020). Do green knowledge and attitude influence the youth's green purchasing? Theory of planned behavior. *International journal of productivity and performance management, 69*(8), 1609-1626. doi:https://10.1108/IJPPM-12-2019-0595

Angrist, JD. (2001). Estimation of Limited Dependent Variable Models With Dummy Endogenous Regressors: Simple Strategies for Empirical Practice. *Journal of business & economic statistics, 19*(1), 2-28. doi:https://10.1198/07350010152472571

Angrist, JD, & Pischke, Jr-S. (2009). *Mostly harmless econometrics : an empiricist's companion*. Princeton: Princeton University Press.

Anisimova, T. (2016). Integrating Multiple Factors Affecting Consumer Behavior Toward Organic Foods: The Role of Healthism, Hedonism, and Trust in Consumer Purchase Intentions of Organic Foods. *Journal of food products marketing, 22*(7), 809-823. doi:https://10.1080/10454446.2015.1121429

Anisimova, T, Mavondo, F, & Weiss, J. (2019). Controlled and uncontrolled communication stimuli and organic food purchases: The mediating role of perceived communication clarity, perceived health benefits, and trust. *Journal of marketing communications, 25*(2), 180-203. doi:https://10.1080/13527266.2017.1387869

Asif, M, Xuhui, W, Nasiri, A, & Ayyub, S. (2018). Determinant factors influencing organic food purchase intention and the moderating role of awareness: A comparative analysis. *Food quality and preference, 63*, 144-150. doi:https://10.1016/j.foodqual.2017.08.006

Australian Centre for International Agricultural Resesearch, A. (2020). Laos. Retrieved from https://www.aciar.gov.au/publication/aop2020/laos

Australian Organic Limited. (2021). The Australian Organic Market Report. Retrieved from https://austorganic.com/resources-and-research/publications/market-report-2021/

Basha, MB, & Lal, D. (2019). Indian consumers' attitudes towards purchasing organically produced foods: An empirical study. *Journal of cleaner production, 215*, 99-111. doi:https://10.1016/j.jclepro.2018.12.098

Basha, MB, Mason, C, Shamsudin, MF, Hussain, HI, & Salem, MA. (2015). Consumers Attitude Towards Organic Food. *Procedia Economics and Finance, 31*, 444-452. doi:https://doi.org/10.1016/S2212-5671(15)01219-8

Berg, L. (2004). Trust in food in the age of mad cow disease: a comparative study of consumers' evaluation of food safety in Belgium, Britain and Norway. *Appetite, 42*(1), 21-32. doi:https://doi.org/10.1016/S0195-6663(03)00112-0

Boizot-Szantai, C, Hamza, O, & Soler, LG. (2017). Organic consumption and diet choice: An analysis based on food purchase data in France. *Appetite, 117*, 17-28. doi:https://doi.org/10.1016/j.appet.2017.06.003

Boobalan, K, & Nachimuthu, GS. (2020). Organic consumerism: A comparison between India and the USA. *Journal of Retailing and Consumer Services, 53*, 101988. doi:https://doi.org/10.1016/j.jretconser.2019.101988

Botelho, A, Dinis, I, Lourenço-Gomes, L, Moreira, J, Costa Pinto, L, & Simões, O. (2017). The effect of sequential information on consumers' willingness to pay for credence food attributes. *Appetite, 118*, 17-25. doi:https://doi.org/10.1016/j.appet.2017.07.021

Bounyasouk, T. (2012). Organic Certification System in Lao PDR (PPT). Retrieved from https://unctad.org/system/files/official-document/DITC_TED_OA1212LOAF_Organic_Certif.pdf. Retrieved 01/03/2024, from Ministry of Agriculture and Forestry https://unctad.org/system/files/official-document/DITC_TED_OA1212LOAF_Organic_Certif.pdf

Briz, T, & Ward, RW. (2009). Consumer awareness of organic products in Spain: An application of multinominal logit models. *Food Policy, 34*(3), 295-304. doi:https://doi.org/10.1016/j.foodpol.2008.11.004

Brucks, M. (1985). The Effects of Product Class Knowledge on Information Search Behavior. *The Journal of consumer research, 12*(1), 1-16. doi:https://10.1086/209031

Bryla, P. (2016). Organic food consumption in Poland: Motives and barriers. *Appetite, 105*, 737-746. doi:https://doi.org/10.1016/j.appet.2016.07.012

Cachero-Martínez, S. (2020). Consumer behaviour towards organic products: The moderating role of environmental concern. *Journal of risk and financial management, 13*(12), 1-13. doi:10.3390/jrfm13120330

Carfora, V, Cavallo, C, Caso, D, Del Giudice, T, De Devitiis, B, Viscecchia, R, . . . Cicia, G. (2019). Explaining consumer purchase behavior for organic milk: Including trust and green self-identity within the theory of planned behavior. *Food quality and preference, 76*, 1-9. doi:https://doi.org/10.1016/j.foodqual.2019.03.006

Chang, H-S, & Zepeda, L. (2005). Consumer perceptions and demand for organic food in Australia: Focus group discussions. *Renewable Agriculture and Food Systems, 20*(3), 155-167. doi:https://10.1079/RAF2004103

Chang, H-S, Zepeda, L, & Griffith, GR. (2005). The Australian Organic Food Products Market: Overview, Issues and Research Needs. *Australasian agribusiness review, 13*. doi:https://10.22004/ag.econ.126551

Chang, S-H, & Chang, C-W. (2017). Tie strength, green expertise, and interpersonal influences on the purchase of organic food in an emerging market. *British food journal (1966), 119*(2), 284-300. doi:https://doi.org/10.1108/BFJ-04-2016-0156

Chiles, TH, & McMackin, JF. (1996). Integrating Variable Risk Preferences, Trust, and Transaction Cost Economics. *The Academy of Management Review, 21*(1), 73-99. doi:https://10.2307/258630

Choi, D, & Johnson, KKP. (2019). Influences of environmental and hedonic motivations on intention to purchase green products: An extension of the theory of planned behavior. *Sustainable Production and Consumption, 18*, 145-155. doi:https://doi.org/10.1016/j.spc.2019.02.001

Connor, M, Cuong, OQ, Demont, M, Sander, BO, & Nelson, K. (2022). The influence of climate change knowledge on consumer valuation of sustainably produced rice in Vietnam. *Sustainable Production and Consumption, 31*, 1-12. doi:https://doi.org/10.1016/j.spc.2022.01.034

Coveney, J. (2008). Food and trust in Australia: building a picture. *Public health nutrition, 11*(3), 237-245. doi:https://10.1017/S1368980007000250

Curry, N. (2010). Differentiating Trust in Rural Decision-making, Drawing on an English Case Study: Differentiating trust in rural decision-making. *Sociologia ruralis, 50*(2), 121-138. doi:https://10.1111/j.1467-9523.2009.00503.x
Curvelo, ICG, Watanabe, EAdM, & Alfinito, S. (2019). Purchase intention of organic food under the influence of attributes, consumer trust and perceived value. *Revista de gestão, 26*(3), 198-211. doi:https://10.1108/REGE-01-2018-0010
Dahlhausen, JL, Rungie, C, & Roosen, J. (2018). Value of labeling credence attributes—common structures and individual preferences. *Agricultural economics, 49*(6), 741-751. doi:https://10.1111/agec.12456
Daugbjerg, C, Smed, S, Andersen, LM, & Schvartzman, Y. (2014). Improving Eco-labelling as an Environmental Policy Instrument: Knowledge, Trust and Organic Consumption. *Journal of environmental policy & planning, 16*(4), 559-575. doi:https://10.1080/1523908X.2013.879038
de Jonge, J, van Trijp, JCM, van der Lans, IA, Renes, RJ, & Frewer, LJ. (2008). How trust in institutions and organizations builds general consumer confidence in the safety of food: A decomposition of effects. *Appetite, 51*(2), 311-317. doi:https://doi.org/10.1016/j.appet.2008.03.008
de Magistris, T, & Gracia, A. (2008). The decision to buy organic food products in Southern Italy. *British food journal (1966), 110*(9), 929-947. doi:https://10.1108/00070700810900620
Department of Agriculture and Water Resources. (2016). National Standard for Organic and Bio-Dynamic Produce, Edition 3.7.
Department of Agriculture Fisheries and Forestry. (2023). Organic Approved Certififying Bodies (Export). Retrieved from https://www.agriculture.gov.au/about/contact/phone/approved-certifying-bodies. from Department of Agriculture, Fisheries and Forestry https://www.agriculture.gov.au/about/contact/phone/approved-certifying-bodies
Department of Foreign Affairs and Trade, AG. (2022). Laos. Retrieved from https://www.dfat.gov.au/sites/default/files/laos-cef.pdf
Ding, Y, Veeman, MM, & Adamowicz, WL. (2015). Functional food choices: Impacts of trust and health control beliefs on Canadian consumers' choices of canola oil. *Food Policy, 52*, 92-98. doi:https://doi.org/10.1016/j.foodpol.2014.12.002
Ditlevsen, K, Denver, S, Christensen, T, & Lassen, J. (2020). A taste for locally produced food - Values, opinions and sociodemographic differences among 'organic' and 'conventional' consumers. *Appetite, 147*, 104544-104544. doi:https://doi.org/10.1016/j.appet.2019.104544
Dong, Y, & Gao, L. (2024). Consumer attitude and behavioural intention towards organic wine: the roles of consumer values and involvement. *British food journal (1966), 126*(4), 1743-1764. doi:https://10.1108/BFJ-02-2023-0085
Ellen, PS. (1994). Do we know what we need to know? Objective and subjective knowledge effects on pro-ecological behaviors. *Journal of Business Research, 30*(1), 43-52. doi:https://doi.org/10.1016/0148-2963(94)90067-1
Fatha, L, & Ayoubi, R. (2021). A revisit to the role of gender, age, subjective and objective knowledge in consumers' attitudes towards organic food. *Journal of strategic marketing, ahead-of-print*(ahead-of-print), 1-17. doi:https://doi.org/10.1080/0965254X.2021.1939405
Fernbach, PM, Light, N, Scott, SE, Inbar, Y, & Rozin, P. (2019). Extreme opponents of genetically modified foods know the least but think they know the most. *Nature human behaviour, 3*(3), 251-256. doi:https://10.1038/s41562-018-0520-3
Fernqvist, F, & Ekelund, L. (2014). Credence and the effect on consumer liking of food – A review. *Food quality and preference, 32*, 340-353. doi:https://doi.org/10.1016/j.foodqual.2013.10.005
Flynn, LR, & Goldsmith, RE. (1999). A Short, Reliable Measure of Subjective Knowledge. *Journal of Business Research, 46*(1), 57-66. doi:https://doi.org/10.1016/S0148-2963(98)00057-5
Ford, GT, Smith, DB, & Swasy, JL. (1988). An Empirical Test of the Search, Experience and Credence Attributes Framework. *Advances in consumer research, 15*, 239.
Ford, N. (2020). *Australian Organic Limited Organic Domestic Regulation Discussion Paper*: Australian Organic Ltd.

Giannakas, K. (2002). Information asymmetries and consumption decisions in organic food product markets. *Canadian journal of agricultural economics, 50*(1), 35-50. doi:https://10.1111/j.1744-7976.2002.tb00380.x
Gracia, A, & de Magistris, T. (2008). The demand for organic foods in the South of Italy: A discrete choice model. *Food Policy, 33*(5), 386-396. doi:https://doi.org/10.1016/j.foodpol.2007.12.002
Gracia, A, & Magistris, TdCdIyTAdAZUdEA. (2007). Organic food product purchase behaviour: a pilot study for urban consumers in the South of Italy. *Spanish journal of agricultural research : SJAR, 5*(4), 439-451. doi:https://10.5424/sjar/2007054-5356
Grunert, KG. (2002). Current issues in the understanding of consumer food choice. *Trends in Food Science & Technology, 13*(8), 275-285. doi:https://doi.org/10.1016/S0924-2244(02)00137-1
Ha, TM, Shakur, S, & Pham Do, KH. (2019). Rural-urban differences in willingness to pay for organic vegetables: Evidence from Vietnam. *Appetite, 141*, 104273. doi:https://doi.org/10.1016/j.appet.2019.05.004
Ham, M, Pap, A, & Stanic, M. (2018). What drives organic food purchasing? – evidence from Croatia. *British food journal (1966), 120*(4), 734-748. doi:https://10.1108/BFJ-02-2017-0090
Han, T-I. (2019). Objective knowledge, subjective knowledge, and prior experience of organic cotton apparel. *Fashion and textiles, 6*(1), 1-15. doi:https://10.1186/s40691-018-0168-7
Hansen, T, Sørensen, MI, & Eriksen, M-LR. (2018). How the interplay between consumer motivations and values influences organic food identity and behavior. *Food Policy, 74*, 39-52. doi:https://doi.org/10.1016/j.foodpol.2017.11.003
Hansmann, R, Baur, I, & Binder, CR. (2020). Increasing organic food consumption: An integrating model of drivers and barriers. *Journal of cleaner production, 275*, 123058. doi:https://doi.org/10.1016/j.jclepro.2020.123058
Hasimu, H, Marchesini, S, & Canavari, M. (2017). A concept mapping study on organic food consumers in Shanghai, China. *Appetite, 108*, 191-202. doi:https://doi.org/10.1016/j.appet.2016.09.019
Heckman, J. (2007). A history of organic farming: Transitions from Sir Albert Howard's War in the Soil to USDA National Organic Program. *Renewable Agriculture and Food Systems, 21*(3), 143-150. doi:https://10.1079/raf2005126
Henryks, J, Pearson, D, Anisimova, T, & Sultan, P. (2015). Are Organic Food Labels Inadequate? Evidence from Consumers in Australia. *Business and management studies (Print), 1*(2), 45. doi:https://10.11114/bms.v1i2.808
Hobbs, JE, & Goddard, E. (2015). Consumers and trust. *Food Policy, 52*, 71-74. doi:https://10.1016/j.foodpol.2014.10.017
Hsu, C-L, Chang, K-C, & Chen, M-C. (2012). Flow Experience and Internet Shopping Behavior: Investigating the Moderating Effect of Consumer Characteristics: Flow Experience and Internet Shopping Behavior. *Systems research and behavioral science, 29*(3), 317-332. doi:https://doi.org/10.1002/sres.1101
Hsu, C-L, & Chen, M-C. (2014). Explaining consumer attitudes and purchase intentions toward organic food: Contributions from regulatory fit and consumer characteristics. *Food quality and preference, 35*, 6-13. doi:https://doi.org/10.1016/j.foodqual.2014.01.005
Hsu, S-Y, Chang, C-C, & Lin, TT. (2016). An analysis of purchase intentions toward organic food on health consciousness and food safety with/under structural equation modeling. *British food journal (1966), 118*(1), 200-216. doi:https://10.1108/BFJ-11-2014-0376
Hwang, J. (2016). Organic food as self-presentation: The role of psychological motivation in older consumers' purchase intention of organic food. *Journal of Retailing and Consumer Services, 28*, 281-287. doi:https://doi.org/10.1016/j.jretconser.2015.01.007
Jacqueline, W, Shawn, L, & Andrew, L. (2019). *Australian Organic Market Report 2019*. Retrieved from https://www.ausfoodnews.com.au/wp-content/uploads/AusOrganic_MarketResearchReport2019_FINAL-DOCMNT.pdf
Jan Karem, H, Dagmar, K, & Steffen, MK. (2023). Investigating Direction Effects in Rating Scales With Five and Seven Points in a Probability-Based Online Panel. *Survey research methods, 17*(2). doi:https://doi.org/10.18148/srm/2023.v17i2.8006
Janssen, M. (2018). Determinants of organic food purchases: Evidence from household panel data. *Food quality and preference, 68*, 19-28. doi:https://doi.org/10.1016/j.foodqual.2018.02.002

Janssen, M, & Hamm, U. (2012). Product labelling in the market for organic food: Consumer preferences and willingness-to-pay for different organic certification logos. *Food quality and preference, 25*(1), 9-22. doi:https://doi.org/10.1016/j.foodqual.2011.12.004
Joanna, H, & David, P. (2010). Misreading between the lines: consumer confusion over organic food labelling. *Australian journal of communication, 37*(3), 73-86.
Jonge, dJ, Trijp, vJCM, Renes, RJ, & Frewer, LJ. (2007). Understanding Consumer Confidence in the Safety of Food: Its Two-Dimensional Structure and Determinants. *Risk analysis, 27*(3), 729-740. doi:https://doi.org/10.1111/j.1539-6924.2007.00917.x
Jose, H, Kuriakose, V, & Koshy, MP. (2020). What motivates Indian consumers' to buy organic food in an emerging market? *Asia-Pacific journal of business administration, 12*(2), 97-113. doi:https://10.1108/APJBA-11-2018-0208
Kidwell, B, & Jewell, RD. (2008). The influence of past behavior on behavioral intent: An information-processing explanation. *Psychology & marketing, 25*(12), 1151-1166. doi:https://10.1002/mar.20258
Klerck, D, & Sweeney, JC. (2007). The effect of knowledge types on consumer-perceived risk and adoption of genetically modified foods. *Psychology & marketing, 24*(2), 171-193. doi:https://10.1002/mar.20157
Koklic, MK, Golob, U, Podnar, K, & Zabkar, V. (2019). The interplay of past consumption, attitudes and personal norms in organic food buying. *Appetite, 137*, 27-34. doi:https://doi.org/10.1016/j.appet.2019.02.010
Konuk, FA. (2018a). Price fairness, satisfaction, and trust as antecedents of purchase intentions towards organic food. *Journal of consumer behaviour, 17*(2), 141-148. doi:https://10.1002/cb.1697
Konuk, FA. (2018b). The role of store image, perceived quality, trust and perceived value in predicting consumers' purchase intentions towards organic private label food. *Journal of Retailing and Consumer Services, 43*, 304-310. doi:https://doi.org/10.1016/j.jretconser.2018.04.011
Kouy, S, Sangkumchaliang, P, & Aditto, S. (2016). Consumers' attitude and intention to purchase organic goods in Cambodia. *International journal of business, 21*(4), 328.
Krittinee, N, & John, T. (2017). The Importance of Consumer Trust for the Emergence of a Market for Green Products: The Case of Organic Food. *Journal of business ethics, 140*(2), 323-337. doi:https://10.1007/s10551-015-2690-5
Kuchler, F, Bowman, M, Sweitzer, M, & Greene, C. (2020). Evidence from Retail Food Markets That Consumers Are Confused by Natural and Organic Food Labels. *Journal of consumer policy, 43*(2), 379-395. doi:https://10.1007/s10603-018-9396-x
Kushwah, S, Dhir, A, Sagar, M, & Gupta, B. (2019). Determinants of organic food consumption. A systematic literature review on motives and barriers. *Appetite, 143*, 104402-104402. doi:https://doi.org/10.1016/j.appet.2019.104402
Lassoued, R, & Hobbs, JE. (2015). Consumer confidence in credence attributes: The role of brand trust. *Food Policy, 52*, 99-107. doi:https://doi.org/10.1016/j.foodpol.2014.12.003
Le, AT, Nguyen, MT, Vu, HTT, & Nguyen Thi, TT. (2020). Consumers' trust in food safety indicators and cues: The case of Vietnam. *Food control, 112*, 107162. doi:https://10.1016/j.foodcont.2020.107162
Lee, H-J, & Hwang, J. (2016). The driving role of consumers' perceived credence attributes in organic food purchase decisions: A comparison of two groups of consumers. *Food quality and preference, 54*, 141-151. doi:https://doi.org/10.1016/j.foodqual.2016.07.011
Lee, H-J, & Yun, Z-S. (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. doi:https://doi.org/10.1016/j.foodqual.2014.06.002
Lee, JK, & Lee, W-N. (2009). Country-of-Origin Effects on Consumer Product Evaluation and Purchase Intention: The Role of Objective Versus Subjective Knowledge. *Journal of international consumer marketing, 21*(2), 137-151. doi:https://doi.org/10.1080/08961530802153722

Lee, KH, Bonn, MA, & Cho, M. (2015). Consumer motives for purchasing organic coffee. *International Journal of Contemporary Hospitality Management, 27*(6), 1157-1180. doi:https://doi.org/10.1108/IJCHM-02-2014-0060
Lee, TH, Fu, C-J, & Chen, YY. (2020). Trust factors for organic foods: consumer buying behavior. *British food journal (1966), 122*(2), 414-431. doi:https://10.1108/BFJ-03-2019-0195
Li, L, Wang, Z, Li, Y, & Liao, A. (2021). Consumer innovativeness and organic food adoption: The mediation effects of consumer knowledge and attitudes. *Sustainable Production and Consumption, 28*, 1465-1474. doi:https://doi.org/10.1016/j.spc.2021.08.022
Liu, R, Gao, Z, Nayga, RM, Snell, HA, & Ma, H. (2019). Consumers' valuation for food traceability in China: Does trust matter? *Food Policy, 88*, 101768. doi:https://doi.org/10.1016/j.foodpol.2019.101768
Liu, Y, Hong, Z, Zhu, J, Yan, J, Qi, J, & Liu, P. (2018). Promoting green residential buildings: Residents' environmental attitude, subjective knowledge, and social trust matter. *Energy policy, 112*, 152-161. doi:https://10.1016/j.enpol.2017.10.020
Lockie, S, Lyons, K, Lawrence, G, & Grice, J. (2004). Choosing organics: a path analysis of factors underlying the selection of organic food among Australian consumers. *Appetite, 43*(2), 135-146. doi:https://doi.org/10.1016/j.appet.2004.02.004
Lockie, S, Lyons, K, Lawrence, G, & Mummery, K. (2002). Eating 'Green': Motivations behind organic food consumption in Australia. *Sociologia ruralis, 42*(1), 23-40. doi:https://10.1111/1467-9523.00200
Loebnitz, N, & Aschemann-Witzel, J. (2016). Communicating organic food quality in China: Consumer perceptions of organic products and the effect of environmental value priming. *Food quality and preference, 50*, 102-108. doi:https://doi.org/10.1016/j.foodqual.2016.02.003
Lu, L, Rahman, I, & Chi, CG-Q. (2017). Ready to Embrace Genetically Modified Wines? The Role of Knowledge Exposure and Intrinsic Wine Attributes. *Cornell hospitality quarterly, 58*(1), 23-38. doi:https://10.1177/1938965516629775
Macready, AL, Hieke, S, Klimczuk-Kochańska, M, Szumiał, S, Vranken, L, & Grunert, KG. (2020). Consumer trust in the food value chain and its impact on consumer confidence: A model for assessing consumer trust and evidence from a 5-country study in Europe. *Food Policy, 92*, 101880. doi:https://doi.org/10.1016/j.foodpol.2020.101880
Makino, T, & Inthalangsee, B. (2023). A comparative study between organic agriculture for vegetables and fruits production in Lao PDR and the MRL approach used by other countries in the Mekong region. *Journal of ASEAN Studies, 11*(2). doi:https://doi.org/10.21512/jas.v11i2.9235
Massey, M, O'Cass, A, & Otahal, P. (2018). A meta-analytic study of the factors driving the purchase of organic food. *Appetite, 125*, 418-427. doi:https://doi.org/10.1016/j.appet.2018.02.029
Meyer, SB, Coveney, J, Henderson, J, Ward, PR, & Taylor, AW. (2012). Reconnecting Australian consumers and producers: Identifying problems of distrust. *Food Policy, 37*(6), 634-640. doi:https://doi.org/10.1016/j.foodpol.2012.07.005
Meyerding, SGH, & Merz, N. (2018). Consumer preferences for organic labels in Germany using the example of apples – Combining choice-based conjoint analysis and eye-tracking measurements. *Journal of cleaner production, 181*, 772-783. doi:https://doi.org/10.1016/j.jclepro.2018.01.235
Ministry of Agriculture and Forestry, M. (2005). *Dicision of the Ministry of Agriculture and Forestry on Organic Agriculture Standards*: Ministry of Agriculture and Forestry.
Molinillo, S, Vidal-Branco, M, & Japutra, A. (2020). Understanding the drivers of organic foods purchasing of millennials: Evidence from Brazil and Spain. *Journal of Retailing and Consumer Services, 52*, 101926. doi:https://doi.org/10.1016/j.jretconser.2019.101926
Muringai, V, Goddard, E, Bruce, H, Plastow, G, & Ma, L. (2017). Trust and Consumer Preferences for Pig Production Attributes in Canada: TRUST AND CONSUMER PORK PREFERENCES. *Canadian journal of agricultural economics, 65*(3), 477-514. doi:https://doi.org/10.1111/cjag.12138
Nagaraj, S. (2021). Role of consumer health consciousness, food safety & attitude on organic food purchase in emerging market: A serial mediation model. *Journal of Retailing and Consumer Services, 59*, 102423. doi:https://doi.org/10.1016/j.jretconser.2020.102423

Ngo, HM, Liu, R, Moritaka, M, & Fukuda, S. (2020). Urban consumer trust in safe vegetables in Vietnam: The role of brand trust and the impact of consumer worry about vegetable safety. *Food control, 108*, 106856. doi:https://doi.org/10.1016/j.foodcont.2019.106856

Nguyen, HV, Nguyen, N, Nguyen, BK, Lobo, A, & Vu, PA. (2019). Organic Food Purchases in an Emerging Market: The Influence of Consumers' Personal Factors and Green Marketing Practices of Food Stores. *International journal of environmental research and public health, 16*(6), 1037. doi:https://doi.org/10.3390/ijerph16061037

Nguyen, TV, Ha, TM, Boulom, S, Voe, P, Heang, C, Ha, DA, . . . Pham, DH. (2020). Consumers' risk perception of vegetables in Southeast Asia: Evidence from Laos, Cambodia, and Viet Nam. *APN science bulletin (Online), 10*(1). doi:https://10.30852/sb.2020.1130

Nuttavuthisit, K, & Thøgersen, J. (2017). The Importance of Consumer Trust for the Emergence of a Market for Green Products: The Case of Organic Food. *Journal of business ethics, 140*(2), 323-337. doi:https://10.1007/s10551-015-2690-5

Olesen, I, Alfnes, F, Røra, MB, & Kolstad, K. (2010). Eliciting consumers' willingness to pay for organic and welfare-labelled salmon in a non-hypothetical choice experiment. *Livestock Science, 127*(2-3), 218-226. doi:https://doi.org/10.1016/j.livsci.2009.10.001

Padel, S, & Foster, C. (2005). Exploring the gap between attitudes and behaviour: Understanding why consumers buy or do not buy organic food. *British food journal (1966), 107*(8), 606-625. doi:https://10.1108/00070700510611002

Padilla Bravo, C, Cordts, A, Schulze, B, & Spiller, A. (2013). Assessing determinants of organic food consumption using data from the German National Nutrition Survey II. *Food quality and preference, 28*(1), 60-70. doi:https://doi.org/10.1016/j.foodqual.2012.08.010

Pandey, S, & Khare, A. (2017). The Role of Retailer Trust and Word of Mouth in Buying Organic Foods in an Emerging Market. *Journal of food products marketing, 23*(8), 926-938. doi:https://10.1080/10454446.2017.1266543

Panyakul, V. (2012). Lao's organic agriculture: 2012 update. Retrieved from https://unctad.org/system/files/official-document/Lao%20Organic%20Agriculture%202012%20Update.pdf. Retrieved 050324, from Earth Net Foundation/Green Net https://unctad.org/system/files/official-document/Lao%20Organic%20Agriculture%202012%20Update.pdf

Park, CW, Mothersbaugh, DL, & Feick, L. (1994). Consumer Knowledge Assessment. *The Journal of consumer research, 21*(1), 71-82. doi:https://psycnet.apa.org/doi/10.1086/209383

Paul, J, & Rana, J. (2012). Consumer behavior and purchase intention for organic food. *The Journal of consumer marketing, 29*(6), 412-422. doi:https://10.1108/07363761211259223

Paull, J. (2014). A history of the organic agriculture movement in Australia. *Organics in the Global Food Chain* 37-61. doi:https://hcommons.org/deposits/item/hc:32927

Pearson, D, Henryks, J, Sultan, P, & Anisimova, T. (2013). Organic food: Exploring purchase frequency to explain consumer behaviour. *Journal of organic systems, 8*(2), 50.

Pichère, P, Cadiat, A-C, & Probert, C. (2015). *Maslow's hierarchy of needs* (1st ed.). Namur: Lemaitre Publishing.

Pieniak, Z, Aertsens, J & Verbeke, W (2010). Subjective and objective knowledge as determinants of organic vegetables consumption. *Food quality and preference, 21*, 581-588. doi:https://doi.org/10.1016/j.foodqual.2010.03.004

Pot, GK, Prynne, CJ, Almoosawi, S, Kuh, D, & Stephen, AM. (2015). Trends in food consumption over 30 years: evidence from a British birth cohort. *European journal of clinical nutrition, 69*(7), 817-823. doi:https://10.1038/ejcn.2014.223

Prakash, G, Choudhary, S, Kumar, A, Garza-Reyes, JA, Khan, SAR, & Panda, TK. (2019). Do altruistic and egoistic values influence consumers' attitudes and purchase intentions towards eco-friendly packaged products? An empirical investigation. *Journal of Retailing and Consumer Services, 50*, 163-169. doi:https://doi.org/10.1016/j.jretconser.2019.05.011

Prakash, G, Singh, PK, Ahmad, A, & Kumar, G. (2023). Trust, convenience and environmental concern in consumer purchase intention for organic food. *Spanish journal of marketing-ESIC, 27*(3), 367-388. doi:https://10.1108/SJME-09-2022-0201

Prakash, G, Singh, PK, & Yadav, R. (2018). Application of consumer style inventory (CSI) to predict young Indian consumer's intention to purchase organic food products. *Food quality and preference, 68*, 90-97. doi:https://10.1016/j.foodqual.2018.01.015
Prentice, C, Chen, J, & Wang, X. (2019). The influence of product and personal attributes on organic food marketing. *Journal of Retailing and Consumer Services, 46*, 70-78. doi:https://doi.org/10.1016/j.jretconser.2017.10.020
Radecki, CM, Jaccard, J. (1995). Perceptions of knowledge, actual knowledge, and information search behavior *Journal of Experimental Social Psychology, 31*(2), 107-138. doi:https://doi.org/10.1006/jesp.1995.1006
Raju, PS, Lonial, SC, & Glynn Mangold, W. (1995). Differential Effects of Subjective Knowledge, Objective Knowledge, and Usage Experience on Decision Making: An Exploratory Investigation. *Journal of consumer psychology, 4*(2), 153-180. doi:https://10.1207/s15327663jcp0402_04
Rana, J, & Paul, J. (2017). Consumer behavior and purchase intention for organic food: A review and research agenda. *Journal of Retailing and Consumer Services, 38*, 157-165. doi:https://doi.org/10.1016/j.jretconser.2017.06.004
Roh, T, Seok, J, & Kim, Y. (2022). Unveiling ways to reach organic purchase: Green perceived value, perceived knowledge, attitude, subjective norm, and trust. *Journal of Retailing and Consumer Services, 67*, 102988. doi:https://doi.org/10.1016/j.jretconser.2022.102988
Roitner-Schobesberger, B, Darnhofer, I, Somsook, S, & Vogl, CR. (2008). Consumer perceptions of organic foods in Bangkok, Thailand. *Food Policy, 33*(2), 112-121. doi:https://doi.org/10.1016/j.foodpol.2007.09.004
Roosen, J, Bieberstein, A, Blanchemanche, S, Goddard, E, Marette, S, & Vandermoere, F. (2015). Trust and willingness to pay for nanotechnology food. *Food Policy, 52*, 75-83. doi:https://doi.org/10.1016/j.foodpol.2014.12.004
Rousseau, DM, Sitkin, SB, Burt, RS, & Camerer, C. (1998). NOT SO DIFFERENT AFTER ALL: A CROSS-DISCIPLINE VIEW OF TRUST. *The Academy of Management review, 23*(3), 393-404. doi:https://10.5465/AMR.1998.926617
Rousseau, S, & Vranken, L. (2013). Green market expansion by reducing information asymmetries: Evidence for labeled organic food products. *Food Policy, 40*, 31-43. doi:https://doi.org/10.1016/j.foodpol.2013.01.006
Ryan, J, & Casidy, R. (2018). The role of brand reputation in organic food consumption: A behavioral reasoning perspective. *Journal of Retailing and Consumer Services, 41*, 239-247. doi:https://doi.org/10.1016/j.jretconser.2018.01.002
Sadiq, M, Adil, M, & Paul, J. (2023). Organic food consumption and contextual factors: An attitude–behavior–context perspective. *Business strategy and the environment, 32*(6), 3383-3397. doi:https://10.1002/bse.3306
Sadiq, M, Paul, J, & Bharti, K. (2020). Dispositional traits and organic food consumption. *Journal of cleaner production, 266*, 121961. doi:https://doi.org/10.1016/j.jclepro.2020.121961
Schäufele, I, & Hamm, U. (2018). Organic wine purchase behaviour in Germany: Exploring the attitude-behaviour-gap with data from a household panel. *Food quality and preference, 63*, 1-11. doi:https://doi.org/10.1016/j.foodqual.2017.07.010
Selnes, F, & Gronhaug, K. (1986). "Subjective and Objective Measures of Product Knowledge Contrasted". *Advances in consumer research, 13*, 67.
Septiani, S, Najib, M, & Sumarwan, U. (2019). *Egoistic and Altruistic Motives on the Purchaseing Behavioral Model of Organic Food in the Indonesian Market* Paper presented at the International Conference of Organizational Innovation.
Sheldon, IM. (2017). Certification Mechanisms for Credence Attributes of Foods: Does It Matter Who Provides Diagnosis? *Annual review of resource economics, 9*(1), 33-51. doi:https://10.1146/annurev-resource-100516-053630
Singh, A, & Verma, P. (2017). Factors influencing Indian consumers' actual buying behaviour towards organic food products. *Journal of cleaner production, 167*, 473-483. doi:https://doi.org/10.1016/j.jclepro.2017.08.106

Slovic, P. (1999). Trust, Emotion, Sex, Politics, and Science: Surveying the Risk-Assessment Battlefield. *Risk analysis, 19*(4), 689-701. doi:https://doi.org/10.1111/j.1539-6924.1999.tb00439.x
Smith, S, & Paladino, A. (2010). Eating clean and green? Investigating consumer motivations towards the purchase of organic food. *Australasian marketing journal, 18*(2), 93-104. doi:https://10.1016/j.ausmj.2010.01.001
Sriwaranun, Y, Gan, C, Lee, M, & Cohen, DA. (2015). Consumers' willingness to pay for organic products in Thailand. *International journal of social economics, 42*(5), 480-510. doi:https://10.1108/IJSE-09-2013-0204
Stanton, JV, & Cook, LA. (2019). Product knowledge and information processing of organic foods. *The Journal of consumer marketing, 36*(1), 240-252. doi:https://10.1108/JCM-07-2017-2275
Sultan, P, Tarafder, T, Pearson, D, & Henryks, J. (2020). Intention-behaviour gap and perceived behavioural control-behaviour gap in theory of planned behaviour: moderating roles of communication, satisfaction and trust in organic food consumption. *Food quality and preference, 81*. doi:https://doi.org/10.1016/j.foodqual.2019.103838
Sultan, P, Wong, HY, & Sigala, M. (2018). Segmenting the Australian organic food consumer market. *Asia Pacific journal of marketing and logistics, 30*(1), 163-181. doi:https://10.1108/APJML-10-2016-0211
Takeo, M, & Bouthsakone, I. (2023). A Comparative Study Between Organic Agriculture for Vegetables and Fruits Production in Lao PDR and the MRL Approach Used by Other Countries in the Mekong Region. *JAS : Journal of Asean Studies, 11*(2), 391-415. doi:https://10.21512/jas.v11i2.9235
Teng, C-C, & Lu, C-H. (2016). Organic food consumption in Taiwan: Motives, involvement, and purchase intention under the moderating role of uncertainty. *Appetite, 105*, 95-105. doi:https://doi.org/10.1016/j.appet.2016.05.006
Teng, C-C, & Wang, Y-M. (2015). Decisional factors driving organic food consumption: Generation of consumer purchase intentions. *British food journal (1966), 117*(3), 1066-1081. doi:https://doi.org/10.1108/BFJ-12-2013-0361
The World Bank. (2022). Lao PDR Economic Mornitor Retrieved from https://thedocs.worldbank.org/en/doc/df7b578ac035fe4dad0129a278b8c850-0070062022/original/LaoPDREconomicMonitorOctober2022.pdf
Thogersen, J. (2000). Psychological determinants of paying attention to eco-labels in purchase decisions: Model development and multinational validation. *Journal of consumer policy, 23*(3), 285-313. doi:https://10.1023/A:1007122319675
Thogersen, J. (2014). Unsustainable Consumption: Basic Causes and Implications for Policy. *European psychologist, 19*(2), 84-95. doi:https://10.1027/1016-9040/a000176
Thogersen, J, Dutra de Barcellos, M, Gatterman Perin, M, & Zhou, Y. (2015). Consumer buying motives and attitudes towards organic food in two emerging markets: China and Brazil. *International marketing review, 32*(3-4), 389-413. doi:https://doi.org/10.1108/IMR-06-2013-0123
Thorsoe, MH. (2015). Maintaining Trust and Credibility in a Continuously Evolving Organic Food System. *Journal of agricultural & environmental ethics, 28*(4), 767-787. doi:https://10.1007/s10806-015-9559-6
Thorsøe, MH, Christensen, T, & Povlsen, KK. (2016). "'Organics' are good, but we don't know exactly what the term means!" Trust and Knowledge in Organic Consumption. *Food, culture, & society, 19*(4), 681-704. doi:https://doi.org/10.1080/15528014.2016.1243767
Tleis, M, Callieris, R, & Roma, R. (2017). Segmenting the organic food market in Lebanon: an application of k-means cluster analysis. *British food journal (1966), 119*(7), 1423-1441. doi:https://10.1108/BFJ-08-2016-0354
Tonkin, E, Wilson, AM, Coveney, J, Webb, T, & Meyer, SB. (2015). Trust in and through labelling – a systematic review and critique. *British food journal (1966), 117*(1), 318-338. doi:https://10.1108/BFJ-07-2014-0244
Toups, M. (2013). America Goes Green: An Encyclopedia of Eco-Friendly Culture in the United States. In (Vol. 27, pp. 18-18). Harlow: Emerald Group Publishing Limited.

United Nations. (2021). Lao farmers reaching for global, organic coffee markets. Retrieved from https://laopdr.un.org/en/134654-lao-farmers-reaching-global-organic-coffee-markets
Utkarsh, Sangwan, S, & Agarwal, P. (2019). Effect of consumer self-confidence on information search and dissemination: Mediating role of subjective knowledge. *International journal of consumer studies, 43*(1), 46-57. doi:https://10.1111/ijcs.12482
Van de Ven, WPMM, & Van Praag, BMS. (1981). The demand for deductibles in private health insurance: A probit model with sample selection. *Journal of econometrics, 17*(2), 229-252. doi:https://10.1016/0304-4076(81)90028-2
Van Doorn, J, & Verhoef, PC. (2015). Drivers of and Barriers to Organic Purchase Behavior. *Journal of Retailing, 91*(3), 436-450. doi:https://doi.org/10.1016/j.jretai.2015.02.003
Violet, M, Ellen, G, Heather, LB, Graham, P, & Lifen, M. (2017). Trust and Consumer Preferences for Pig Production Attributes in Canada: TRUST AND CONSUMER PORK PREFERENCES. *Canadian journal of agricultural economics, 65*, 477-514. doi:https://doi.org/10.1111/cjag.12138
von Meyer-Höfer, M, Olea-Jaik, E, Padilla-Bravo, CA, & Spiller, A. (2015). Mature and Emerging Organic Markets: Modelling Consumer Attitude and Behaviour With Partial Least Square Approach. *Journal of food products marketing, 21*(6), 626-653. doi:https://doi.org/10.1080/10454446.2014.949971
Watanabe, EAdM, Alfinito, S, & Barbirato, LL. (2021). Certification label and fresh organic produce category in an emerging country: an experimental study on consumer trust and purchase intention. *British food journal (1966), 123*(6), 2258-2271. doi:https://10.1108/BFJ-09-2020-0808
Willer, H, Jan Trávníček, Claudia Meier, & Bernhard Schlatter. (2022). *The World of Organic Agriculture Statistics and Emerging Trend 2022*. In W. Helga, T. Jan, M. Claudia, & S. Bernhard (Eds.). Retrieved from https://www.fibl.org/fileadmin/documents/shop/1344-organic-world-2022.pdf
Yadav, R. (2016). Altruistic or egoistic: Which value promotes organic food consumption among young consumers? A study in the context of a developing nation. *Journal of Retailing and Consumer Services, 33*, 92-97. doi:https://10.1016/j.jretconser.2016.08.008
Yadav, R, & Pathak, GS. (2016). Intention to purchase organic food among young consumers: Evidences from a developing nation. *Appetite, 96*, 122-128. doi:https://doi.org/10.1016/j.appet.2015.09.017
Yadav, R, & Pathak, GS. (2017). Determinants of Consumers' Green Purchase Behavior in a Developing Nation: Applying and Extending the Theory of Planned Behavior. *Ecological economics, 134*, 114-122. doi:https://10.1016/j.ecolecon.2016.12.019
Yazdanpanah, M, Forouzani, M, & Hojjati, M. (2015). Willingness of Iranian young adults to eat organic foods: Application of the Health Belief Model. *Food quality and preference, 41*, 75-83. doi:https://doi.org/10.1016/j.foodqual.2014.11.012
Yin, S, Chen, M, Chen, Y, Xu, Y, Zou, Z, & Wang, Y. (2016). Consumer trust in organic milk of different brands: the role of Chinese organic label. *British Food Journal, 118*(7), 1769-1782. doi:https://doi.org/10.1108/BFJ-11-2015-0449
Yin, S, Han, F, Wang, Y, Hu, W, & Lv, S. (2019). Ethnocentrism, Trust, and the Willingness to Pay of Chinese Consumers for Organic Labels from Different Countries and Certifiers. *Journal of food quality, 2019*, 1-13. doi:https://10.1155/2019/8173808
Zagata, L, & Lostak, M. (2012). In Goodness We Trust. The Role of Trust and Institutions Underpinning Trust in the Organic Food Market. *Sociologia ruralis, 52*(4), 470-487. doi:https://10.1111/j.1467-9523.2012.00574.x
Zhang, M, & Liu, G-L. (2015). The effects of consumer's subjective and objective knowledge on perceptions and attitude towards genetically modified foods: objective knowledge as a determinant. *International journal of food science & technology, 50*(5), 1198-1205. doi:https://10.1111/ijfs.12753