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Research Article

Exploring the Consumer Behavior of Organic Food Consumption: A Qualitative Study in Macao

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ABSTRACT

In recent years, worldwide demand for health and nutritious foods grew remarkably with the increase of health-conscious consumers. Harmful effects caused by the use of chemical pesticides in agriculture further motivate consumers to shift their focus towards organic foods. In the present study, we aimed to explore the consumption behaviour of Macao consumers towards organic foods. A qualitative explorative design was employed using face-to-face semi-structured in-depth interview among 43 customers (25 females and 18 males) of a local health-oriented café in Macao. Price, credibility, health concern, and accessibility were the most important considerations when purchasing organic foods. Despite the belief that healthy eating is essential, older consumers were reluctant to invest in organic foods. In contrast, younger consumers were interested in consuming organic foods to fulfil their curiosities, while being a parent was the primary motive to purchase. However, work preoccupation was the main barrier restricting their healthy eating habits. More importantly, although Macao consumers were highly attracted to food delivery apps to reduce time and physical effort, its usage indeed hamper the consumption of organic foods due to the limited availability. This original study offers practical implications to existing organic food businesses by investigating the consumption behaviour of Macao consumers towards organic foods. Findings also facilitate organic food manufacturers to achieve wider market penetration and to better meet the needs and demands of health-conscious consumers in Macao.

Keywords: Organic food, Consumer attitude, Purchase intention, Consumer behaviour

INTRODUCTION

Non-communicable diseases (NCDs) account for 74% of global deaths, making them the leading cause of mortality. With urbanization on the rise, the incidence of chronic diseases is increasing among the growing global population. This has led to a heightened demand for

healthy, safe, and sustainable food products, such as organic foods. Organic foods are produced without chemical fertilizers, synthetic pesticides, veterinary drugs, preservatives, irradiation, or genetically modified organisms. Organic agriculture promotes biodiversity, biological cycles, and soil health, aligning with environmental and social sustainability goals (FAO, n.d.). The global organic food market has been expanding steadily, with sales reaching USD $147.8 billion in 2021. Asia alone accounted for over USD $14.6 billion in organic retail sales, with China leading the way with 2.75 million hectares dedicated to organic agriculture (Willer et al., 2023). Asia is home to almost half of the world's organic producers, highlighting its potential to meet the growing population's needs. In 2022, the organic sector in Asia showed promising growth, rebounding from the impact of the COVID-19 pandemic.

Over the past decade, several papers have been published on the drivers and barriers to organic food consumption in China (Thøgersen et al., 2015; Xie et al., 2015; Cao et al., 2021; Liu et al., 2021), Japan (Tandon et al., 2021; Itawani et al., 2023; Sampa et al., 2024), Taiwan (Teng & Lu, 2016; Chang & Chen, 2022) and other countries (Sriwaranun et al., 2015; Lian, 2017; Nguyen et al., 2019; Kushwah et al., 2019; Pangaribuan et al., 2020; Wijaya et al., 2022) within the Asian region. However, a comprehensive study has not been done in Macao, and our study aims to fill this research gap. While official statistics on the size and value of Macao's organic food market are currently unavailable, the demand for organic products is steadily increasing, evidenced by the emergence of more organic food businesses in the region.

The Macao Health Bureau (2017) reported an increase in overweight and obesity rates among Macao residents, with 25.5% being overweight and 5.1% being obese in 2016, compared to 22.4% and 3.9% in 2006, respectively. The COVID-19 pandemic highlighted the importance of a nutritious diet and physical activity for health and well-being, leading to a rise in the sales of organic foods (Macao Daily News, 2020). Research by The Macao Association of Vegetarian Culture (2021) found that 1.3% of residents are vegetarian, and over 30% are inclined towards a vegetarian diet, primarily for personal health reasons (55%), followed by personal values (10%) and religious beliefs (8%). These findings indicate a growing health consciousness and preference for organic foods among consumers in Macao. In line with this trend, the food and beverage industries in Macao are also emphasizing health and organic concepts. To gain a better understanding of Macao consumers' purchasing behaviour towards organic foods, it is crucial to examine their perceptions, purchase intent, and attitudes, as well as identify the main motivators and barriers. Therefore, this study aims to investigate Macao consumers' attitudes, purchase intent, and behaviours towards organic foods, while exploring the key factors that influence their attitudes and barriers to purchasing organic foods in Macao.

Through this study, we aimed to answer a few research questions. First, what are the main motives of Macao consumers when purchasing organic foods? Consumers in most developed countries have broader food choices than in past decades. They value food quality and are increasingly concerned about nutritional values, health, and food safety (Gil et al., 2000). In recent years, convenience, genetically modified, organic, ethnic, and functional foods are denominated as novel foods. They compete with traditional foods and are welcomed by the active younger generation in the modern economy (Manuela et al., 2013).

Consumers consider organic foods to be better than conventional foods, often associating them with positive outcomes on safety, health, environmental sustainability, and animal welfare. Gender, age, income, and education level influence the intention of consumers to purchase organic foods. Wee et al. (2014) contended that women are more likely to consume organic foods than men. Women might provide increased attention to food selection because they are primarily responsible for meal planning and food shopping within a household. Wee et al. (2014) also mentioned that older consumers are likely to buy organic foods due to their increased awareness of health issues while the younger generations are willing to pay relatively more for organic foods for the benefits of good health and longer life expectancy (Yu et al., 2014). In addition, consumers with higher incomes and higher education levels have a substantial interest in organic products than non-organic consumers (O'Donovan & McCarthy, 2002; Pal, 2012; Wee et al., 2014). These factors are crucial determinants of consumers' attitude towards organic foods. Therefore, the second research question is, what are the attitude, purchase intent, and behaviour of Macao consumers towards organic foods?

Despite the belief that organic foods are considered healthier than conventional foods (Radman, 2005), there are certain barriers that restrain consumers from purchasing organic foods. Lang & Conroy (2021) stated that 'organic food is a credence good', that is, consumers couldn't verify its quality even after purchase and consumption. Therefore, consumer trust in organic food is crucial to its consumption (Giampietri et al., 2018). Some consumers doubt whether organic food has no pesticide residues and are suspicious of the superiority of organic to conventional food (Chen, 2009; Lang & Conroy, 2021). Żakowska-Biemans (2011) asserted that premium price and lack of availability further decrease consumer interest in purchasing organic foods as convenience is an important factor which drives organic food choice and purchase among consumers (Chen, 2007). Hence, the third research question is, what are the barriers to purchasing organic foods among Macao consumers?

From a theoretical point of view, this study is valuable as the findings will contribute new knowledge to the existing research gap as there are very limited studies on organic food industry in Asia (Abdullah et al., 2022; Dangi et al., 2020; Kantamaturapoj & Marshall, 2020; Nguyen et al., 2019). In particular, there is a paucity of studies related to organic food consumption behaviour in Macao. This will offer great significance to existing literature and provide scholars with a more comprehensive and multi-dimensional understanding of research on organic food choice and consumption behaviour. From a practical point of view, this study presents better understanding of consumers' behaviour for organic food manufacturers and marketers in order to develop precise approaches to meet their target markets' needs and demands. Ultimately, these valuable insights not only promote the growth of organic food businesses, but also drive implementation of healthy eating trends among consumers.

THEORETICAL BACKGROUND

Employing the Health Belief Model in Organic Food Consumption Research

The Health Belief Model (HBM), a well-established psychological framework, has been extensively applied to understand and predict health behaviours. It was initially developed in the 1950s by a group of social psychologists at the U.S. Public Health Service, including Hochbaum, Rosenstock, and Kegels. However, the foundational work on the HBM from this period was not published in the form of a single, consolidated academic paper or book. Instead, the model evolved over time through various studies and reports conducted by these and other researchers. The HBM provides a comprehensive lens to examine why individuals make certain health-related decisions (Rosenstock, 1974). Core constructs of the model, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy, offer a structured approach to dissecting the multifaceted nature of health behaviour decision-making. In this study, we examine the organic food consumption behaviour of oriental customers through the lens of HBM and attempt to examine it.

Qualitative Studies in Food Consumption

In the realm of food consumption, particularly organic food, quantitative studies (Alagarsamy & Mehrolia, 2023; Yazdanpanah et al., 2015) have leveraged the HBM to ascertain key factors influencing consumer choices; for instance, research utilized the HBM to unravel the complexities behind organic food purchasing behaviours, identifying perceived health benefits and environmental concerns as significant motivators (Aertsens et al., 2009). Similarly, studies have highlighted perceived barriers such as cost and availability as crucial determinants in the decision-making process regarding organic food (Hughner et al., 2007). Likewise, a study by Soodan & Rana (2019) indicated that perceived severity and perceived susceptibility were the two primary factors demonstrating a significant positive influence on the intention to consume organic food. A more recent study utilized the HBM to illustrate how perceptions of health benefits and risks impacted the shift toward organic foods, especially during the COVID-19 pandemic when health consciousness was at its peak (Masih et al., 2025). Despite the rich insights provided by these quantitative studies, there remains a need for in-depth qualitative exploration. Qualitative research can uncover the nuanced reasoning and personal experiences underpinning the statistical trends observed in quantitative data. It provides an avenue to delve into the lived experiences of consumers, offering a granular understanding of how the HBM constructs manifest in real-world contexts. Aligned with this need, the current study aims to expand on the quantitative findings using a qualitative approach grounded in the HBM. By developing interview questions inspired by the HBM and informed by existing quantitative research, this study seeks to explore the underlying explanations for behaviours and attitudes towards organic food consumption. It intends to offer a richer, more contextual understanding of the factors influencing these behaviours, beyond what can be gleaned from quantitative data alone. This research is poised to make a significant contribution to the field of organic food consumption. By integrating the theoretical underpinnings of the HBM with qualitative methodologies, it aims to provide new insights into consumer motivations and barriers, thereby informing more effective strategies for promoting organic food consumption. This approach also demonstrates the value of bridging quantitative findings with qualitative explorations to

achieve a more holistic understanding of consumer behaviours in the field of health and nutrition.

METHODOLOGY

Research Design and Sampling Strategy

Qualitative explorative studies, such as those advocated by Denzin & Lincoln (2011), are particularly advantageous for understanding organic food consumption. This approach allows for in-depth insights into consumer behaviours and motivations, revealing the nuanced and personal factors influencing their choices (Denzin & Lincoln, 2011). Unlike quantitative methods, qualitative research delves into the subjective experiences of individuals, offering a rich, detailed understanding of the social and cultural contexts that shape organic food purchasing decisions (Denzin et al., 2023). This depth of exploration is crucial for comprehensively understanding complex consumer behaviours. Purposeful sampling (Palys, 2008) is a strategic approach employed in qualitative research to select information-rich cases that offer in-depth insights relevant to the study. In recruiting interviewees for a study focused on understanding behaviours and preferences, such as in the context of organic food consumption, this sampling strategy is particularly effective. By aiming for a balanced gender representation and a broad spectrum of ages, the sampling strategy ensures a diverse and comprehensive range of perspectives. This diversity is crucial in capturing the varied influences and motivations across different demographic segments. The resultant sample, being well-rounded, allows the study to more accurately reflect the complexities and nuances of the subject matter at hand. The profile of key informants (Marshall & Rossman, 2014), as presented in Table 1, would detail the demographic characteristics such as age, gender, and other relevant factors, ensuring transparency in the sampling process and aiding in the validation of the research findings.

Participants and Study Location

While purposeful sampling may overlook diverse perspective resulting in a limited understanding in the broader context, the authors decided to select a specific café to conduct the interview as the health-themed café was a strategic choice to engage key informants who could provide valuable insights. This café's unique selling point of natural and healthy foods attracts customers who likely align with the topic of organic food consumption. In addition, although purposeful sampling is resource intensive requiring significant time and effort in identifying and recruiting specific participants who meet the criteria, a diverse range of participants were able to be selected from the health-themed café ensuring equal representation across gender, age, occupation, and dietary preferences. The café's focus on homemade bakery products and additive-free coffee aligns with the organic food concept, making its patrons ideal candidates for the study. Recognizing this compatibility, the researcher obtained approval to conduct on-site interviews.

To ensure accurate and comfortable expression of views, the interviews were conducted in Cantonese, the participants' native language. Each interviewee was informed about the study's purpose and assured of data confidentiality. They had the freedom to withdraw from the interview at any time. Participants were identified by numbers instead of names to ensure privacy and provided consent for voice recording. The interviews, lasting approximately 30-45 minutes on average, were audio-recorded, transcribed, and translated into English for analysis.

Interview Questions

The development of the semi-structured interview questions was methodically carried out, drawing upon the expertise and insights from previous research in the field. The list of interview guiding questions was divided into two parts. The first part focused on gathering demographic information such as gender, age, marital and education statuses, household income, occupation, and type of diet. This approach aligns with Chen (2007) and Jordan & Elnagheeb (1991), who emphasize the importance of understanding the demographic background of consumers to better interpret their choices and behaviours.

The second part of the questions delved into factors influencing attitude, purchase intent, and consumer behaviour towards organic foods. This section was informed by the findings of Manuela et al. (2013) and Miles & Frewer (2001), who investigated the various dimensions influencing organic food consumption. Tandon et al. (2021) also provided valuable insights into contemporary consumer behaviours, which were crucial in framing these questions.

Before finalizing the interview questions, a pilot test was conducted by the authors along with several customers of the café, ensuring the clarity and relevance of the questions. The final version of the questions was made available in both English and traditional Chinese to accommodate the linguistic preferences of the interviewees. This meticulous process of question formulation, guided by established literature in the field (Harrell & Bradley, 2009), ensured that the interviews would yield comprehensive and valuable data relevant to the study's objectives.

Data Collection and Analysis

A qualitative data analysis approach was utilized in this study, adhering to the steps of data reduction, data display, verification, and drawing conclusions, as delineated by Huberman & Miles (2002). The process began with the transcription of the audio files from the interviews. The initial coding phase, or open coding, was conducted through inductive coding, following the methodologies set forth by Gioia et al. (2013) and Strauss (1987). The authors independently coded the data, subsequently comparing and aligning the codes to ensure consistency. An inter-rater reliability of 85% was achieved, confirming a high level of coding consistency, prior to advancing to the next phase of analysis. The NVivo 11 software package facilitated the coding process.

After the initial phase of coding, a comprehensive list of codes was established. The second round of coding encompassed both deductive examination of literature and inductive analytical coding. This stage involved data reduction as per Huberman & Miles (2002). The Gioia methodology (Gioia et al., 2013) was employed for further data analysis, resulting in the formation of a structured data format, as illustrated in Figure 1. This format entailed categorizing interview phrases into first-order concepts, which were then synthesized into second-order themes. These themes were subsequently refined into aggregated dimensions, thereby constructing the study's data structure.

In the third stage of analysis, comparative analysis, as recommended by Pettigrew & Whipp (1991), was used to scrutinize the underlying factors and phenomena related to the observed effects. The data structure (Figure 1) supported an iterative analytical process, allowing for continuous interaction between the emerging data, themes, concepts, and dimensions (Gioia et al., 2013). This stage also included detailed comparisons across interviews to identify similarities and differences. In the findings section, a selection of representative quotations was used to exemplify the study's results, providing an in-depth and contextually rich interpretation of the findings.

FINDINGS

A total of 43 participants comprised of 58% females (25) and 42% males (18) consented to participate and completed the interview. Most of the interviewees were non-vegetarian while a few were flexitarian or lacto-ovo-vegetarian (Table 1).

First Dimension: Perceptions and Motives to Consume Organic Foods

Positive Perceptions and Motives

Health Benefits: A predominant motive for consuming organic foods is the perceived health benefits. Studies by Smith-Spangler et al. (2012) have explored how consumers often believe organic products are healthier, citing fewer pesticides and chemicals. This aligns with the notion that organic foods may offer a safer and more natural alternative to conventional food products. Excerpt of two interviewees illustrated their positive perceptions of organic products:

Interviewee 7: 'The major reason is that when you hear 'organic', the connection is directly linked to 'healthy'. If I am eating too much greasy food and I want to give myself something healthier to eat, then I would choose something organic'.

Interviewee 14: '...because it claims to be healthy, without impurities. It seems healthier and good for the body. So that I would buy'.

Environmental Friendliness: The environmental impact of food production is increasingly a consideration for consumers. Research by Schösler et al. (2012) highlights that environmentally conscious consumers often choose organic foods due to their lower ecological footprint and sustainable farming practices. Interviewees show awareness of how organic farming impact the environment and appreciate its benefits to not just the environment but human bodies as illustrated below:

Interviewee 2: 'From my understanding, organic food should be pesticide-free or chemical-free, and often requires a longer production cycle'.

Interviewee 13: 'For me, organic foods... maybe their methods of raising animals may not use things such as antibiotics, or they may not use excessive chemicals to get them to grow. The same methods apply to plant growth, much less application of pesticide or fertilizers to accelerate growth'.

Negative Perceptions and Challenges

Taste Concerns: Despite the perceived benefits, some consumers remain sceptical about the taste of organic foods. A study by Hughner et al. (2007) found that taste is a significant factor in food choice, and some consumers believe organic products may lack the flavour intensity of non-organic foods. Interviewees expressed their experience of organic food flavour below:

Interviewee 33: 'I found most of the organic food (packaged food products) are tasteless'.

Interviewee 41: 'Whatever package food products with the label of organic, for example, biscuits and chips, I am very unlikely to purchase because of their taste… which I found too light'.

Cost Issues: The higher cost of organic foods is a well-documented barrier. Janssen & Hamm (2011) discusses how the premium pricing of organic products can make them less accessible to a broader audience, particularly affecting lower-income consumers. Similar comments are revealed from the interviewees as below:

Interviewee 3: 'I would not buy if it was too expensive. Also, something that I think is healthy food but expensive. I'm not sure I would buy it'.

Interviewee 28: 'The price of organic food is at least 15% more than non-organic ones. It is more, like double the price if it is meat. I found it too pricy'.

Food Labelling Control: Concerns about the authenticity and regulation of organic labels are prominent. Pearson et al. (2011) address consumer scepticism regarding the accuracy of organic labelling and whether products truly meet organic standards. Many interviewees shared the same concerns as revealed below:

Interviewee 16: 'It is hard to tell whether the product is organic or not. It cannot be seen by the naked eye. Because there has been food that is inconsistent with the organic standard'.

Interviewee 30: 'I just realize that the price tag goes up at least 20% when it comes with the food label of "Organic" or "USDA" certified. Sometimes, I think about the certification process and wonder how credible it is'.

Limited Knowledge: A lack of comprehensive knowledge about organic food is another challenge. A study by Aertsens et al. (2009) indicates that limited understanding of what constitutes organic food can lead to consumer hesitancy and confusion, impacting purchasing decisions.

Interviewee 21: 'I think organic refers to no pesticide, hormones, and all other funny chemicals during farming veggies, staples and raising livestock. Isn't it?'.

Interviewee 37: 'To be honest, I don't know exactly how it works when it is labelled organic item…I think they (organic products) are better for the body'.

In conclusion, while health and environmental considerations are strong motivators for the consumption of organic foods, these are offset by concerns related to taste, cost, labelling, and knowledge gaps. This first dimension of analysis, enriched with research findings, underscores the need for a multifaceted approach to address these issues and effectively cater to consumer needs in the organic food market.

Second Dimension: Organic Food Consumption Behaviour and the Third Dimension: Lifestyle

The second dimension, organic food consumption behaviour, reflects the practical aspects of how consumers engage with organic products, encompassing accessibility, choice, and the use of technology. Meanwhile, the third dimension reveals how lifestyle impose barrier to consume organic products and subsequently increase the usage of food delivery apps. The results of second and third dimensions will be presented together due to the pattern of food delivery apps usage are prominently revealed in both dimensions.

Accessibility and Limited Choices

Interviewees reported challenges in accessing organic foods, with limited choices in the city. This echoes the findings of Smith & Paladino (2010), who discuss how the availability of organic products can significantly influence consumer behaviour. While online purchases offer a solution, they are typically restricted to non-perishable items, as highlighted by Guptill & Wilkins (2002), emphasizing the logistics challenges in organic food retail. These are also reflected from interviewees' expressions in purchasing organic food as below:

Interviewee 11: '…only the large-scale supermarket sells organic food'.

Interviewee 28: 'I normally shop online and have them shipped from overseas'.

Barrier to Consumption

Short Lunch Breaks and Workplace Facilities: The impact of short lunch breaks and lack of facilities for cooking or reheating food at workplaces is a significant barrier observed in the East. This contrasts with some Western workplaces where there might be more emphasis on work-life balance and employee wellness, as indicated by Jabs & Devine (2006). The high-paced work culture in many Eastern cities often leads to prioritizing work over meal times.

Interviewee 17: 'Quite often, I use my lunch time to check out the operations and I will spend like 15 minutes in my office for a sandwich or something. I seldom have an hour-long lunch break'.

Interviewee 25: 'There is only a noodle shop near my office. I normally order food delivery or just go to the noodle shop for a noodle. Lunch is always not healthy for me…'.

Limited Healthy Food Options: The availability of healthy, organic food options in the immediate environment plays a crucial role. Story et al. (2008) highlighted the influence of the food environment on eating behaviours in Western urban settings, but this issue takes on different nuances in the East, where traditional food choices and availability might differ significantly.

Time Constraints Post-Work: Cultural differences in work-life balance also influence post-work activities, including meal preparation. In many Eastern cultures, as supported by the study of Jabs et al. (2007), long working hours and commutes can limit the time and energy for cooking at home, a challenge that might be less pronounced in some Western societies.

In conclusion, while there are universal themes in the lifestyle influences on organic food consumption, the cultural context of East versus West brings unique dimensions to these challenges and behaviours. Understanding these cultural nuances is essential for a holistic view of consumer behaviour in different geographical settings and can guide more culturally sensitive strategies for promoting organic food consumption.

Use of Food Delivery Apps

The widespread use of food delivery apps has transformed consumer eating habits, as indicated by previous studies (Eu & Sameeha, 2021; Tribhuvan, 2020). However, these apps often offer limited healthy options, aligning with the concerns expressed by interviewees about hygiene and healthiness. The research by Neff et al. (2009) sheds light on how these apps tend to favour convenience over health, presenting a challenge for health-conscious consumers. The utilization of food delivery apps, a common practice in both East and West, shows varying implications due to cultural differences. In Western contexts, as discussed by Neff et al. (2009), these apps often prioritize convenience over health. However, in Eastern cultures, where food plays a central role in social and family life, the balance between convenience and dietary preferences might manifest differently. The cultural emphasis on traditional and wholesome meals in many Eastern societies might influence the types of food ordered and the expectations from these services. Similar observation was reflected from interviewees when they expressed the usage of food delivery apps:

Interviewee 10: 'I think it depends on the location where I work... before I worked in Cotai (a local area which is considered a bit remote), the food delivery apps were very useful for me; however, I don't think there are many healthy choices (organic meals) available'.

Interviewee 26: 'I am not aware that there are healthy food choices from food delivery app. I see mostly greasy food'.

Work Life and Environmental Constraints: The impact of a busy work life and workplace environments, such as workplace location, restrictions on cooking, plays a crucial role in dietary choices. Research by Devine et al. (2006) has shown how work environments significantly influence eating habits, with time constraints and available facilities dictating food choices.

Interviewee 20: 'The trouble with using a food delivery app is the minimum charge. If I only want to eat salad, but others (colleagues who placing order together) don't want to, you can't force them to eat it. In contrast, I follow their choice and order food that colleagues like instead'.

Interviewee 18: 'Because I want to get out of the working environment, to go for a walk. If I order food delivery to the office, it means I have to stay at the office for the whole day'.

Availability of Healthy Options: Despite these challenges, some interviewees noted the availability of healthy options via food delivery apps, along with nutritional information. This finding is supported by the work of Bates et al. (2020) and Eu & Sameeha (2021), who highlight a growing trend in food delivery services to cater to health-conscious consumers, acknowledging the demand for healthier, well-informed food choices.

Interviewee 5: 'It's very convenient, because food delivery apps have so many choices. I also found salad and some healthy choices'.

Interviewee 15: 'I think it's quite good. Because you can also look at the nutrition values, like calories and fibre for each item (as provided by the app)'.

Hygiene Concerns: Many interviewees expressed concerns on the food preparation and transportation process. In particular, the hot and humid weather of Asia in the summer add burden to the hygiene issue during food delivery. Interviewees expressed varies concerns as excerpt below illustrates:

Interviewee 8: 'Honestly, if you want me to buy salad online, I don't believe a restaurant would wash vegetables completely, since I don't really know how the shop operates'.

Interviewee 19: 'Food transportation from stop 1 to stop 10—you don't know what happens during the period, what is the storage temperature of the food. Does the food handler wear gloves for packing, or who touched their nose and directly touched the food?'.

In conclusion, these two dimensions uncover the complex interplay between consumer behaviour, availability of options, technology, and lifestyle factors in the context of organic food consumption. The challenges and opportunities identified through the interviews, supported by recent research, provide valuable insights into how consumers navigate the organic food landscape amid their daily constraints and preferences.

Fourth Dimension: Demographic Influences

The fourth dimension of the analysis, focusing on demographic influences, sheds light on significant cultural aspects related to diet and cooking style that affect organic food consumption. In addition, family size, gender and age also impose influence on organic food consumption.

Diet and Cooking Style

Preference for Cooked Vegetables: In many Asian cultures, there is a pronounced preference for cooked vegetables over raw salads (Izzah et al., 2012; Lipoeto et al., 2013; Rennie & Wise, 2010). This preference is indicative of broader culinary trends in Asia, where cooked dishes are more prevalent than raw vegetable salads, commonly associated with organic foods in Western diets.

Interviewee 27: 'I cook all my food (cook on fire), I seldom eat anything raw, including vegetables'.

Interviewee 38: 'Probably it is a habit, I just don't feel right if the food is not cooked on fire before I eat. Organic vegetables will be a waste if I buy and use, coz I will boil them and eat'.

Perceptions of Organic Foods in Cooking: The belief that the benefits of organic foods diminish once cooked is a unique perception highlighted in the study. This aligns with findings by Chan & Lau (2000), who discuss how cooking methods and food preparation practices influence perceptions of green and organic products in Asian contexts. Interviewees expressed their cooking with organic food as below:

Interviewee 23: 'Whenever I like to eat salad (no need to cook on fire), I will certainly look for organic vegetables. I think they are fresh and free from pesticide'.

Interviewee 41: 'When I boil vegetables, I think all the good vitamins and minerals will be gone too, so there is no need to buy organic… everything is gone after boiling, right?!'.

Cultural Dietary Preferences and Organic Food: The intersection of traditional dietary preferences with the perception of organic foods is further elaborated in works like Pieroni & Price (2006), which delve into traditional food practices and their relation to contemporary health and organic food trends in various cultures.

Interviewee 2: 'I would buy conventional vegetables when they need to be cooked. If I want to make a salad, I would like to select organic, because that is directly eating it'.

Demographic (family size, gender and age) Influences

Female Consumers with Young Children: The study indicates that female consumers, especially those with young children, prefer organic food, paralleling Cairns et al. (2013) and Caso et al. (2024) findings on mothers prioritizing organic choices for family health.

Interviewee 20: 'Because I want to give the best [good food] to my baby to eat, organic food seems healthier and carries less pesticide, so I buy it. Baby cannot eat food that contains pesticides'.

Interviewee 13: '…because people said that eating too many chickens that contain hormones would cause problems on the body. I'm not very clear, but I want to try whether there is a difference… it's because of family and my curiosity'.

Age Group Preferences: Differing preferences across age groups, with younger consumers showing more curiosity towards organic foods, reflect trends observed in Western studies by Hughner et al. (2007) and Gracia & De Magistris (2008), despite cultural differences in dietary habits. Younger interviewees expressed interest to try out organic products as below:

Interviewee 29: 'I like this trend of organic food. I feel safe and good to buy and consume organic products, like veggie, fruit and even snacks'.

Interviewee 43: 'I heard so much about organic from different media and KOL (Key Opinion Leaders), whenever I get the chance to try organic, I am eager to try and experience the difference between organic and normal food'.

Nevertheless, interviewees who are more mature, aged between 40 and above do not show much interest nor curiosity in trying out organic products. They show doubt about the value and benefits of organic products.

Interviewee 33: 'I am curious about organic food at the beginning, but I won't spend, like what… 20-50% more on the price tag for organic food, which I think it is not worth the money'.

Interviewee 37: 'I think this word organic is just some kind of marketing gimmick… try to earn more money from consumers. I seldom buy any of these so-called organic products'.

Incorporating these cultural and demographic insights provides a more nuanced understanding of how traditional dietary practices and perceptions shape organic food consumption. This understanding is crucial for developing strategies that are culturally sensitive and effective in promoting organic food within diverse demographic groups.

DISCUSSIONS

The rich data obtained from the 43 interviews offers a comprehensive understanding of the phenomenon being studied. We make an effort to illustrate the findings through the utilization of a model, represented as Figure 2 - the Ecology of Organic Food Consumption in Asia, to present our findings.

The Ecology of Organic Food Consumption in Asia Model

The Ecology of Organic Food Consumption in Asia model as depicts in Figure 2, offers a comprehensive framework, aligning with the notion of integrated behavioural models highlighted in studies like those by Fishbein & Ajzen (2011). It encapsulates both macro factors (Lifestyle and Demographic Influence) and micro-level elements (Perceptions and Motives, Organic Food Consumption Behaviour), echoing the multi-level approach advocated in health behaviour research (Glanz & Bishop, 2010).

Macro Factors: Lifestyle and Demographic Influence

At the macro level, the model aligns with findings by Story et al. (2008) that emphasize the influence of lifestyle and environment on food choices. It also incorporates key demographic factors, a vital element in consumer behaviour research across diverse cultural settings, as highlighted by Hughner et al. (2007). An intriguing aspect of the demographic influence observed in this study relates to age and gender. The data reveals a distinct trend where younger interviewees, particularly those below 40, exhibit more curiosity and a greater willingness to try organic food. This trend contrasts with older interviewees, aged 40 and above, who show less inclination towards experimenting with organic food options. Furthermore, female interviewees demonstrate a more pronounced interest in consuming organic food, aligning with global trends in health-conscious consumer behaviour. These demographic insights, alongside cultural dietary variations such as the Asian preference for cooked vegetables underscore the complexity and multifaceted nature of food consumption behaviours.

Micro Factors: Personal Perceptions and Consumption Behaviours

The micro-level analysis is rooted in the principles of the Health Belief Model (Rosenstock, 1974), focusing on individual perceptions and motives. This aspect aligns with the work of Aertsens et al. (2009), who examined how personal health beliefs and environmental concerns influence organic food purchasing decisions.

Insights from interview data reveal nuances in technology use and consumption barriers, akin to the barriers discussed in the consumer behaviour studies by Jabs & Devine (2006). The use of food delivery apps and the challenges they present in making healthy food choices reflect the evolving nature of food consumption in urban settings, a topic explored by Neff et al. (2009).

This model's focus on the Asian context addresses the gap noted in Western-centric research, providing a much-needed perspective in the field of organic food consumption studies. The model responds to calls for more geographically diverse research in the field of consumer behaviour, as highlighted by Chan & Lau (2000) and Pieroni & Price (2006).

Theoretical Contributions of the Ecology Model

The "Ecology of Organic Food Consumption in Asia" model represents a significant theoretical advancement in the field of consumer behaviour. By integrating both macro and micro-level factors, it extends the traditional application of the HBM beyond individual health behaviours to encompass broader societal and cultural influences. This approach resonates with the multi-level theoretical perspectives advocated by Glanz & Bishop (2010), offering a more holistic understanding of consumer decisions in the context of organic food consumption. Traditionally, the HBM has been utilized to understand health-related actions primarily at an individual level, focusing on perceptions and self-efficacy (Rosenstock, 1974). The Ecology model innovatively expands this scope to include external environmental and demographic factors, aligning with the modern understanding of health behaviour as a product of complex interactions between personal beliefs and external environments, as discussed in the work of Fishbein & Ajzen (2011).

Bridging Cultural Contexts in Behavioural Theories

A crucial theoretical contribution of this model is its contextual adaptation of predominantly Western-centric behavioural theories to the Asian cultural setting. It addresses a gap highlighted by researchers like Chan & Lau (2000), who note the need for culturally sensitive applications of consumer behaviour theories. By tailoring the HBM to incorporate factors such as traditional dietary practices and urban lifestyle influences specific to Asia, the model offers a blueprint for adapting behavioural theories to diverse cultural contexts.

IMPLICATIONS

This model has significant implications for both research and practice in global health and consumer behaviour. It demonstrates the importance of incorporating cultural nuances into theoretical frameworks, thus enhancing the applicability and effectiveness of health promotion strategies across different populations. Practitioners and policymakers can use this model to design interventions that are more aligned with the specific needs and contexts of Asian consumers, as suggested by the application-focused research in public health (Schösler et al., 2012).

Future Research

The Ecology of Organic Food Consumption in Asia model sets a new direction for future research. It invites scholars to explore the integration of cultural context in behavioural theories, particularly in non-Western settings. By providing a comprehensive framework that accounts for a wide range of influences on consumer behaviour, the model encourages a more inclusive and globally relevant approach to consumer behaviour research, addressing calls for broader methodological diversity in the field (Gracia & De Magistris, 2008).

CONCLUSION

Macao consumers were motivated by health promotion, environmental concerns, and curiosity towards the consumption of organic foods but were discouraged by their price, credibility, and accessibility. This was especially true among the older generations, male consumers, or working adults where consumption of organic foods were less common. With the transformation of social and dietary trends of the younger generations, food delivery apps have become more widespread and preferable, thus, organic foods should be made easily available by food merchants to cater for the needs of health-conscious consumers. This potentially creates a positive impact on organic food businesses in Macao while improving the dietary intakes and overall health of Macao populations. Therefore, it is suggested that the Macao government and related organizations continue to promote organic food consumption via health promotion campaigns to enhance knowledge and trust towards organic foods, while the organic food businesses should increase products availability and accessibility. Future studies are warranted to investigate the marketing mix strategies of organic foods based on the findings of the present study.

Conflict of Interest

The authors confirm that they have no conflicts of interest with respect to the work described in this paper.

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Table 1: Demographic characteristics of all participants (n = 43)

Participant Number	Gender	Age Range (years)	Education Level	Marital Status	Occupation	Household Income (MOP/month)	Type of Diet
1	Female	18-28	Master's	Single	Sales	15,001-30,000	Non-vegetarian
2	Female	29-39	Bachelor's	Single	Teacher	15,001-30,000	Non-vegetarian
3	Female	18-28	Bachelor's	Single	Pâtissier	5,001-15,000	Non-vegetarian
4	Female	29-39	Master's	Single	Media workforce	35,001-40,000	Flexitarian
5	Female	40-50	High School	Married	Housewife	15,001-30,000	Non-vegetarian
6	Female	51-60	High School	Married	Housewife	50,001 or above	Non-vegetarian
7	Female	18-28	Bachelor's	Single	Clerical worker	45,001-50,000	Non-vegetarian
8	Female	29-39	Bachelor's	Single	Clerical worker	15,001-30,000	Non-vegetarian
9	Female	29-39	Bachelor's	Single	Clerical worker	15,001-30,000	Non-vegetarian
10	Female	40-50	Bachelor's	Single	Clerical worker	30,001-35,000	Non-vegetarian
11	Female	61-70	High School	Married	Clerical worker	30,001-35,000	Flexitarian
12	Female	18-28	Bachelor's	Single	Barista	5,001-15,000	Lacto-ovo-vegetarian
13	Male	29-39	Master's	Single	Teacher	45,001-50,000	Non-vegetarian
14	Male	29-39	Bachelor's	Single	Teacher	35,001-40,000	Non-vegetarian
15	Male	18-28	Bachelor's	Single	Student	30,001-35,000	Non-vegetarian
16	Male	51-60	High School	Married	Pâtissier	35,001-40,000	Non-vegetarian
17	Male	40-50	High School	Married	Operation director	45,001-50,000	Non-vegetarian
18	Male	29-39	Master's	Single	Clerical worker	15,001-30,000	Non-vegetarian
19	Male	51-60	Master's	Married	Civil servant	50,001 or above	Flexitarian
20	Male	29-39	High School	Married	Accountant	50,001 or above	Non-vegetarian
21	Female	51-60	Bachelor's	Married	Housewife	50,001 or above	Flexitarian
22	Female	51-60	Bachelor's	Married	Civil servant	50,001 or above	Flexitarian
23	Female	40-50	Bachelor's	Married	Civil servant	50,001 or above	Flexitarian
24	Female	40-50	Bachelor's	Married	Civil servant	50,001 or above	Flexitarian
25	Female	40-50	Bachelor's	Married	Clerical worker	50,001 or above	Flexitarian
26	Female	40-50	Doctorate	Married	Business owner	50,001 or above	Flexitarian
27	Female	40-50	Bachelor's	Divorced	Business owner	50,001 or above	Flexitarian
28	Female	40-50	Master's	Single	Business owner	50,001 or above	Flexitarian
29	Female	29-39	Master's	Single	Clerical worker	50,001 or above	Vegetarian
30	Female	40-50	Bachelor's	Married	Medical technician	50,001 or above	Vegetarian
31	Female	40-50	Doctorate	Married	Teacher	50,001 or above	Lacto-ovo-vegetarian
32	Female	29-39	Master's	Single	Clerical worker	15,001-30,000	Flexitarian

33	Female	51-60	Bachelor’s	Married	Retired	50,001 or above	Flexitarian
34	Male	51-60	Bachelor’s	Married	IT technician	50,001 or above	Flexitarian
35	Male	61-70	Bachelor’s	Married	Retired	50,001 or above	Flexitarian
36	Male	51-60	Master’s	Married	Clerical worker	50,001 or above	Flexitarian
37	Male	61-70	Bachelor’s	Married	Medical technician	50,001 or above	Vegetarian
38	Male	51-60	Bachelor’s	Married	Retired	50,001 or above	Flexitarian
39	Male	51-60	Bachelor’s	Married	Civil servant	50,001 or above	Flexitarian
40	Male	51-60	Bachelor’s	Married	Business owner	50,001 or above	Flexitarian
41	Male	51-60	Bachelor’s	Married	Baker	50,001 or above	Flexitarian
42	Male	61-70	Bachelor’s	Divorced	Retired	30,001-35,000	Flexitarian
43	Male	18-28	High School	Single	Student	30,001-35,000	Flexitarian

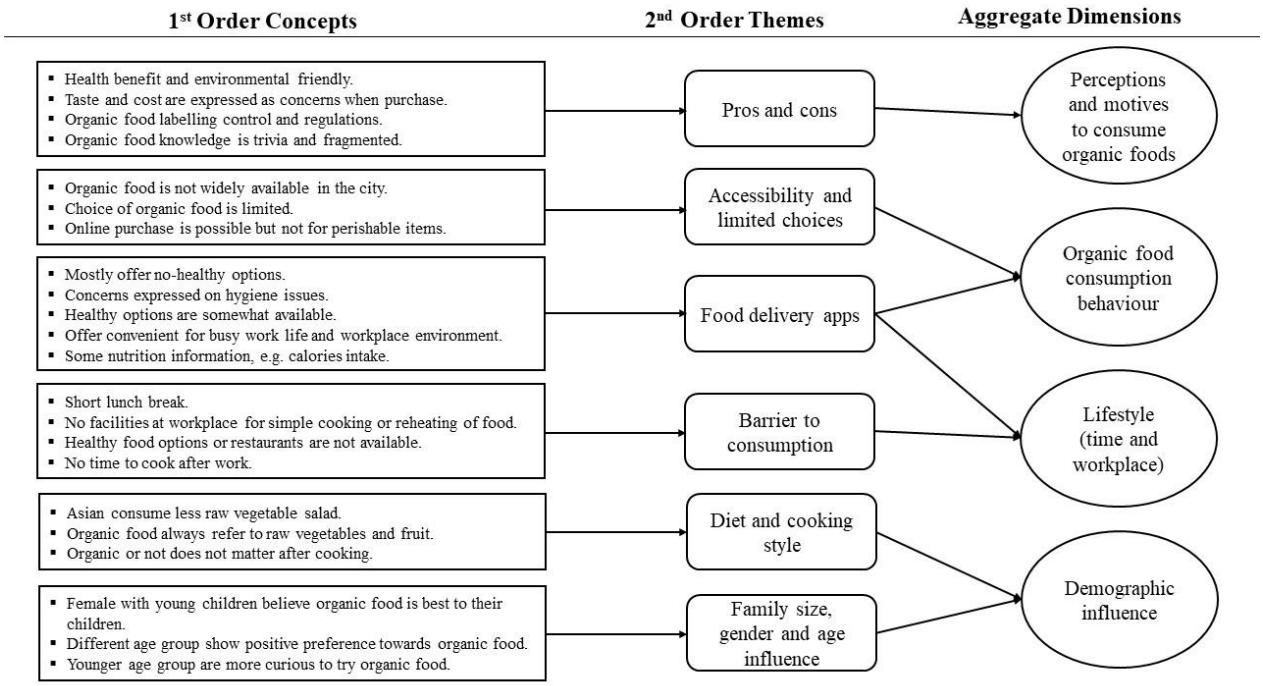

Figure 1: Data Structure

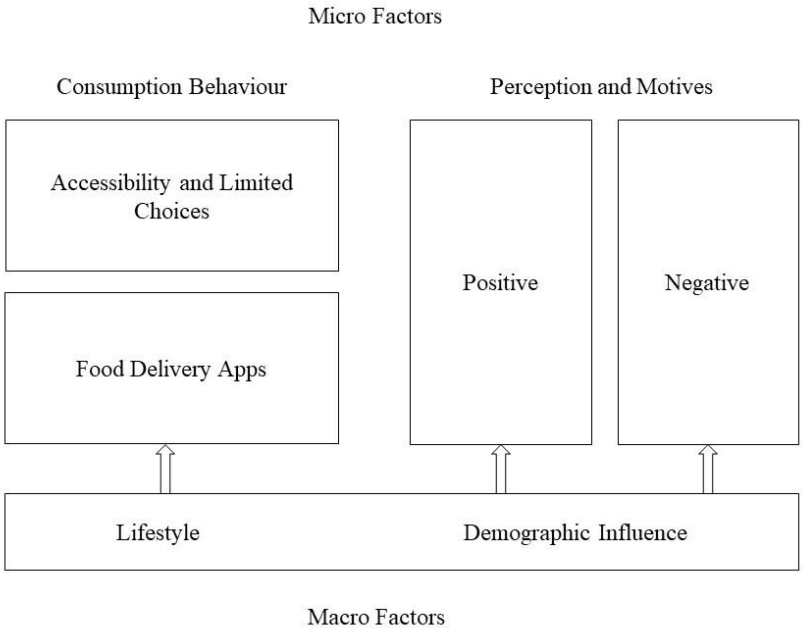

Figure 2: The Ecology of Organic Food Consumption in Asia